PLANNING COMMISSION - SPECIAL MEETING

Wednesday, September 03, 2025 at 5:00 PM

Palmer Lake Town Hall – 28 Valley Crescent, Palmer Lake, Colorado

LIVE STREAM available on Town website

AGENDA

This agenda is subject to revision 24 hours prior to commencement of the meeting.

The Commission values public comment on issues relevant to Town government. To permit the fair and orderly expression of such comments, the Commission will adhere to the following rules for public comment, whether for an agenda item or during public comment for non-agenda items brought by the public.

A speaker must be recognized by the Chair to step to the podium, sign in, use the microphone, state name and address for the record, and address comments solely to the Commission, as a whole.

Each speaker is limited to 3 minutes, cannot pool time with another, and each speaker may only speak once per topic. Civility and respect is required. Comments should not be directed to Town staff, individual Commission members or to public members. Comments or disruption from audience members not recognized by the Chair are prohibited. Points already made should not be duplicated. Only written comments limited to one page will be permitted. Public members are also invited to submit comments by email to be distributed to the Commission separately. Note that comments submitted to the Town Commission are public record. Please understand that the Commission will listen and consider public comments; however, members will not discuss or take action on your comment but may refer it to staff and/or a future meeting for discussion.

Thank you for your cooperation.

Call to Order

Roll Call

Pledge

Public Hearing *- Continuation of Public Hearing before the Palmer Lake Planning Commission for the purpose of making a recommendation to the Palmer Lake Board of Trustees regarding the following applications: a) planned development plan (zone PD) for a family travel center on 24.77 acres consisting of gasoline, food, beverages and retail sales, along with rest rooms and rest areas, b) sketch development plan for subdivision, and c) petitions for annexation of a flagpole to parcels 7102200016 and 7102200014 and said parcels, for a total of approximately 25.20 acres, located at the southwest corner of I-25 and County Line/Palmer Divide Road, owned by Monument Ridge West, LLC. The Planning Commission may recommend for approval, approval with conditions, denial or continuation.* The introduction of the matter by Town staff, the presentation of the matter by the applicant, and the public comment portion of the public hearing have been completed, and the public comment portion has been closed. The purpose of the continued public hearing is to allow the Commission to receive responses to certain questions propounded by the Commission to the applicant and staff, and for the

Commission to discuss the applications and make its recommendation to the Board of Trustees.

Materials provided to the commission for their continued discussion include:

1. Staff Memo-Attorney Scott Krob
2. Planned Development Plan - Drawing
3. Planned Development Plan - Written Plan
4. Sketch Plan
5. Addendum
6. Additional Reports/Studies - Environmental Assessment, Water Study, Traffic Study

Public Comment - *This time is reserved for the public to speak to items not on the agenda.*

Next Meeting and Future Items

Adjourn

Americans with Disabilities Act

Reasonable accommodations for persons with a disability will be made upon request. Please notify the Town of Palmer Lake (at 719-481-2953) at least 48 hours in advance. The Town of Palmer Lake will make every effort to accommodate the needs of the public.

TO: PALMER LAKE PLANNING COMMISSION

FROM: PALMER LAKE DEVELOPMENT REVIEW TEAM (DRT)

RE: BUC-EE'S ANNEXATION AND DEVELOPMENT ITEMS ON AUGUST 20, 2025 AGENDA

DATE: August 15, 2025

Introduction

The Planning Commission has three items before it: annexation; zoning in the form of a Planned Development (PD) (including PDP Graphic Plan and PDP Written Plan); and the first stage of subdivision, referred to as sketch plan. All three relate to a request to annex property to the Town of Palmer Lake that is located approximately 1.5 miles from the Town's current boundary, at the southwest corner of the intersection of County Line Road and I-25, for the purpose of developing a Buc-ee's Travel Center comprised of approximately 74,000 sq. ft. of retail and 120 fueling stations.

A note regarding Planned Developments and Annexations generally

Usually, the PC is charged with looking at a land use application and deciding whether it satisfies certain criteria that apply to the type of application involved. If the criteria set forth in the Town Code are not satisfied, then the PC generally recommends denial of the application. However, it is different when the PC or the BOT consider a PD, and particularly in the annexation context, as there is substantial flexibility to be negotiated between the Town and the applicant with regard to matters addressed in the Town Code.

This increased flexibility in creating a Planned Development (PD), particularly in the context of an annexation, is recognized in the draft annexation agreement you will be receiving before your meeting. As discussed in greater detail below, the PD sections of the Town Code contemplate the negotiation and modification of dimensional requirements and development standards, among other things, than what would otherwise apply to the subject property. In addition, as part of an annexation, the Town and the applicant are able, by agreement, to exempt the property from provisions of the

code that would otherwise apply or to vary such requirements, as applied to the subject property.

1. Annexation

Please note: Certain aspects of a proposed draft annexation agreement are in the process of being refined and finalized by the staff and the applicant, including updating based on discussions with the BOT, as recently as last night. A draft annexation agreement will be provided prior to the PC hearing on August 20, 2025. Although the ultimate issue of annexation, including the negotiation of the annexation agreement is to be determined by the BOT, the Palmer Lake Town Code, provides for the Planning Commission's review of certain aspects of the annexation. It provides, in part:

17.14.040. Annexation of land.

…

(b) Specific procedure

…

(7) The town shall provide to the applicant a draft annexation agreement prior to the zoning public hearing before the planning commission. The annexation agreement shall outline the responsibilities of the applicant and the town regarding the provision and extension of streets and utilities, the dedication of water rights, the payment of fees and charges related to the annexation and proposed development, the provision of facilities for the public and for residents and occupants of the annexed land, and other matters related to the impacts of the annexation on the town. Any changes or additions to the annexation agreement proposed by the town or suggested by the applicant shall be resolved before the public hearing before the planning commission. …The final annexation agreement shall be signed by the applicant and made available to the town clerk before final action by the town board of trustees on the proposed annexation.

…

(e) *Criteria for decision.* In making their recommendation or decision, the planning commission, and board of trustees, respectively, shall approve the annexation of land, only if it makes the findings required by C.R.S. § 31-12-110. In addition, the annexation shall comply with the annexation policies of the town's community master plan (aka comprehensive plan).

C.R.S. §31-12-110, requires the following findings:

> § 31-12-110. Findings
>
> (1) Upon the completion of the hearing, the governing body of the annexing municipality, by resolution, shall set forth its findings of fact and its conclusion based thereon with reference to the following matters:
>
> (a) Whether or not the requirements of the applicable provisions of section 30 of article II of the state constitution and sections 31-12-104 and 31-12-105 have been met;
>
> (b) Whether or not an election is required under section 30(1)(a) of article II of the state constitution and section 31-12-107(2).
>
> (2) The governing body shall also determine whether or not additional terms and conditions are to be imposed.
>
> (3) A finding that the area proposed for annexation does not comply with the applicable provisions of section 30 of article II of the state constitution or sections 31-12-104 and 31-12-105 shall terminate the annexation proceeding.

At the conclusion of the eligibility hearing on May 29, 2025, the Board of Trustees adopted Resolution 46-2025 making all of the findings required by Section 31-12-110, C.R.S. Accordingly, this aspect of the criteria has been satisfied and no further action is needed by the PC or BOT on this this criteria.

The remaining criteria for the PC to provide a recommendation on with regard to the annexation portion of the application, is whether the proposed land uses are consistent with the Town's master plan. This is essentially the PC consideration of the PD zoning, which is discussed in greater detail in the next section of this memo.

Although a draft annexation agreement must be provided prior to the PC's public hearing on this development application, the PC's consideration of the annexation agreement should be limited to the land use aspects of the agreement. This is consistent with the general authority of the PC under the Town Code and Colorado statute. Those provisions create the Palmer Lake Planning Commission and authorize it to exercise all rights and powers granted by §§ 31-23-201, et seq., C.R.S. Those

statutes authorize a planning commission to develop the community master plan and to review and provide recommendations on land use matters such as zoning and subdivision, as provided for in the Town Code.

Accordingly, the Planning Commission's review of the proposed annexation and the draft annexation agreement should be limited to consideration of the land use aspects. All other items in the annexation agreement are solely a matter of negotiation between the Board of Trustees and the applicant.

In reviewing the applicant's land use proposal for a PD, there are a few provisions of the draft annexation agreement that the PC should keep in mind. As discussed above, in the PD context, and particularly in the annexation context, where there is a conflict between the provisions of the Town Code and the PDP/FDP or Annexation Agreement, the terms that were negotiated related to this specific piece of property as reflected in the FDP/PDP and the annexation agreement, govern over any contrary provisions of the Town Code. With regard to the subdivision regulations, the applicant has stated they are not seeking any modifications to the subdivision requirements as allowed by the adopted PD ordinance. As discussed in greater detail below, you will see that the applicant seeks to vary Town Code provisions related to lighting, sign and landscape standards, among others.

My understanding is that the lighting, sign, and landscape standards adopted by the Town were primarily directed at development and land uses within the area that was included in the Town of Palmer Lake at the time of their adoption and were not necessarily tailored to apply to a development along a well-lit and highly traveled interstate highway located well outside the Town limits as they existed at the time the standards were adopted. . The site in question was included in the 3-Mile Annexation Plan during the drafting of the Community Master Plan. The reasoning was that it was better to have a say in the development and control of a development at this site because this site is also included in the Town of Monument's 3-Mile Annexation and is currently zoned for commercial development in El Paso County. Accordingly, it is appropriate for the Planning Commission to consider and provide recommendations on lighting, signs, and landscaping that fit the land use and development of the subject property, independent of whether they vary from the standards that apply within the existing Town.

2. Zoning – Planned Development (PD)

The applicant is proposing a Planned Development Zoning designation pursuant to Section 17.72 of the municipal code. The PD zone designation allows "*the negotiation of a specialized zoning district that accommodates innovative patterns of development. This district is*

intended to be used only when no district in this Code, and no combination of districts can be used to approve a new development that provides substantial additional benefits to the town that would not otherwise be required by this Code, nor is it intended to be used to approve variations from the standards and criteria in this Code. Since the planned development accommodates innovative patterns of development, development standards, dimensional requirements, and permitted uses are negotiated and shall be allowed as set forth in the planned development plan (PDP) and final development plan (FDP). Significant additional benefits to the town must be demonstrated. This chapter is to implement the provisions of the Planned Unit Development Act of 1972 (C.R.S. § 24-67-101 et seq.) as amended."(17.72.010)

The PDP is comprised of two required submittal items: A written plan and a graphic plan. the applicant's proposal is for a 74,000 square foot retail travel center, supported by 820 parking spaces and 120 fueling stations. Sheet 5 of the drawing set outlines all proposed uses. Unlike many PD developments, this development has one planning area, one primary use, no phases, and one owner.

The reason for the request to zone the property PD is 7-fold:

1. There is no existing zone district that allows both retail and gas station services.
2. The applicant has proposed different sign standards given its location along Interstate 25.
3. The applicant has proposed different lighting standards and operates 24 hours a day, 365 days a year.
4. The applicant has suggested modifications to the required setbacks found in 17.72.070 by allowing specific encroachments into the setbacks.
5. The applicant has proposed different parking standards. The proposed Parking Ratio is: 1 parking stall per every 100 square feet of travel center building (minimum).
6. The applicant is allowed to propose different dimensional standards. This is a negotiated item and allowed per 17.72.140 (7). For example, lot coverage is 80% per their written PDP and the maximum building height is 40 ft.
7. The applicant has proposed landscaping standards for both the perimeter of the site and the parking lot.

The criteria for approval of the requested zoning to PD can be found in Section 17.72.050. - Conditions and standards and also in Section 17.14.010. The applicant's written plan addresses these criteria. It is the role of the Planning Commission to determine if these criteria have been met and if the Planning Commission is satisfied with the negotiated items proposed by the applicant. The DRT's suggestion is to review the written plan and proposed standards, and Sheet 5 of the drawing set. The lighting plan and landscape plan should also be reviewed.

3. Subdivision
    a. Overview of Subdivision Codes. The general requirements of a subdivision are outlined in the Town Codes under Title 16. The proposed project is classified as a Major Subdivision in accordance with Section 16.20.030 of the Town Code. The Major Subdivision classification is due to the requirement for public infrastructure to serve the proposed development. In accordance with Section 16.20.030 of the Town Code, a Major Subdivision consists of three phases: sketch plan, preliminary plat and final plat. This submittal has been prepared by the applicant pursuant to the first phase of the process, the sketch plan. Section 16.20.020 of the Town Code outlines the procedures and requirements for the sketch plan phase of a subdivision submittal and is the basis upon which the applicant should prepare the sketch plan submittal documents.
    b. Criteria for Approval. The criteria by which a sketch plan submittal is evaluated to determine approval are given in Section 16.20.080, Paragraph (5). Based on the review of the sketch plan submittal documents against the specified criteria, the Planning Commission may decide to approve the sketch plan, approve it with conditions, or deny approval of the sketch plan.
    c. Applicant's Proposal. The submitted sketch plan documents have been prepared to address the items required in Section 16.20.020 of the Town Code. It is noted that the proposed project is a PD zoning, which allows for negotiation of certain project parameters through the PD process and through the annexation agreement. Negotiated project parameters may deviate from Town Code requirements as described above for the reasoning of the PD zoning. Although those negotiated processes are outside the sketch plan process, the negotiated project parameters are reflected in the Sketch Plan submittal documents.
    d. Proposal Review. The proposal has addressed the required items stated in Section 16.20.020 of the Town Code with regard to the Sketch Plan submittal. The following items are noted for the Sketch Plan submittal documents:
        i. The negotiated project parameters which may deviate from Town Code requirements as described above for the PD zoning rationale are included in the drawing set. The DRT's suggestion is to review those items and the drawings' representations of those items.

ii. A table of open space dedication was provided on the Sketch Plan drawings. The table appears to indicate the land dedication areas provided to meet the Title 17 Zoning requirements, with a note that the annexation agreement includes cash in lieu. The cash in lieu negotiated as part of the annexation agreement appears to be applied to the Title 16 Subdivision requirements for land dedication. The table also references the Grading and Erosion Control drawing. The Grading and Erosion Control drawing was included in the PDP submittal package rather than including that drawing in the Sketch Plan drawing set.
iii. The legal description included in the drawing set appears inconsistent with the legal description provided in the annexation maps and should be corrected.

We look forward to discussing these matters with you on August 20, 2025.

BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO

LEGAL DESCRIPTION

A PARCEL OF LAND BEING A PORTION OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222106819, IN THE EL PASO COUNTY OFFICE OF THE CLERK AND RECORDER, SITUATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 2, AS MONUMENTED BY A NO. 6 REBAR WITH

3.25" ALUMINUM CAP STAMPED, "LS 17496", IN MONUMENT BOX;

THENCE COINCIDENT WITH THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 2, SOUTH 00°29'49" EAST, A DISTANCE OF 30.00 FEET TO THE WESTERLY EXTENSION OF THE NORTH LINE OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222083003, SAID WESTERLY EXTENSION ALSO BEING THE NORTHERLY LINE OF THAT PROPERTY DESCRIBED AT RECEPTION NO. 222106819;

THENCE COINCIDENT WITH SAID WESTERLY EXTENSIONS AND SAID NORTH LINES, NORTH 89°22'36" EAST, A DISTANCE OF 394.91 FEET TO THE NORTHEAST CORNER OF SAID DEED RECORDED AT RECEPTION NO. 222083003 AND THE NORTHWEST CORNER OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222082953, IN SAID RECORDS;

THENCE COINCIDENT WITH THE NORTH LINE OF LAST SAID SPECIAL WARRANTY DEED, CONTINUING NORTH 89°22'36" EAST, A DISTANCE OF 109.52 FEET TO THE NORTHEAST CORNER OF SAID DEED AND THE **POINT OF BEGINNING**;

THENCE CONTINUING COINCIDENT WITH THE NORTH LINE OF SAID RECEPTION NO. 222106819, NORTH 89°22'36" EAST, A DISTANCE OF 111.41 FEET TO THE WESTERLY MOST NORTHEAST CORNER OF SAID RECEPTION NO. 222106819, ALSO BEING WESTERLY RIGHT-OF-WAY OF INTERSTATE-25;

THENCE COINCIDENT WITH THE EASTERLY LINE OF SAID RECEPTION NO. 222106819 AND SAID WESTERLY RIGHT-OF-WAY THE FOLLOWING FOUR (4) COURSES:

1) SOUTH 83°59'37" EAST, A DISTANCE OF 96.54 FEET;
2) SOUTH 44°10'02" EAST, A DISTANCE OF 76.80 FEET ;
3) SOUTH 04°18'32" EAST, A DISTANCE OF 929.95 FEET;
4) SOUTH 07°01'30" WEST, A DISTANCE OF 457.05 FEET;

THENCE NORTH 89°11'43" WEST, A DISTANCE OF 736.97 FEET TO THE EAST RIGHT-OF-WAY LINE OF BEACON LITE ROAD AS DESCRIBED IN BOOK 571, PAGE 55;

THENCE COINCIDENT WITH SAID EAST RIGHT-OF-WAY LINE, NORTH 00°29'49" WEST, A DISTANCE OF 835.22 FEET THE SOUTHWEST CORNER OF SAID RECEPTION NO. 222083003;

THENCE COINCIDENT WITH THE SOUTHERLY AND EASTERLY LINES OF SAID RECEPTION NO. 222083003 THE FOLLOWING SIX (6) COURSES:

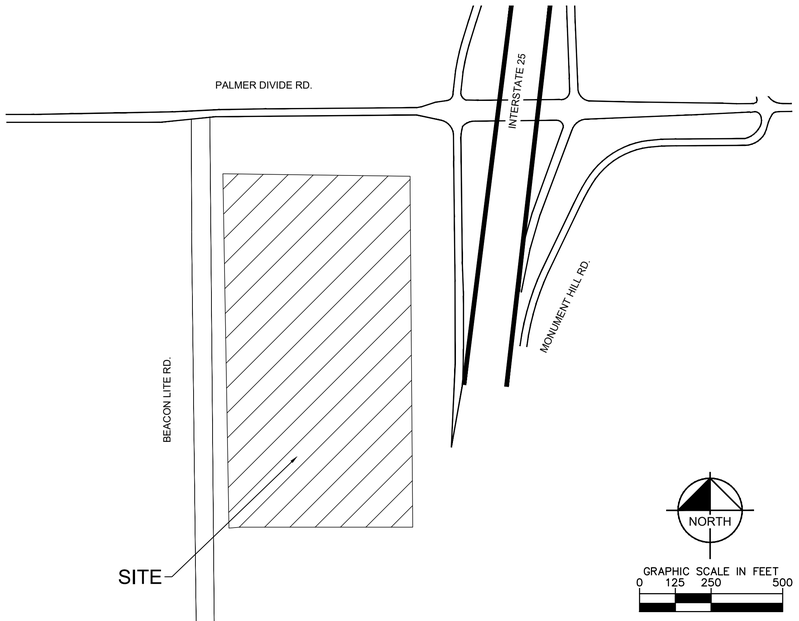
1) NORTH 89°51'19" EAST, A DISTANCE OF 7.75 FEET;
2) NORTH 00°08'41" WEST, A DISTANCE OF 188.22 FEET;
3) NORTH 04°08'13" EAST, A DISTANCE OF 160.73 FEET;
4) NORTH 00°08'41" WEST, A DISTANCE OF 203.28 FEET;
5) NORTH 44°02'37" EAST, A DISTANCE OF 49.33 FEET, TO THE WESTERLY EXTENSION OF THE SOUTH LINE OF SAID RECEPTION NO. 222082953;
6) COINCIDENT WITH SAID WESTERLY EXTENSION, SOUTH 88°38'48" EAST, A DISTANCE OF 416.66 FEET TO THE SOUTHEAST CORNER OF SAID RECEPTION NO. 222082953;
7) NORTH 00°07'32" EAST, A DISTANCE OF 21.93 FEET TO THE **POINT OF BEGINNING**.

LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF EL PASO NOVEMBER 20, 2024 AT RECEPTION NO. 224092706.

NOTES:

1. CASH IN LIEU OF LAND DEDICATION FOR PARKS AND OPEN SPACE WILL BE PAID PER THE ANNEXATION AGREEMENT.
2. PROJECT IS NOT A PHASED DEVELOPMENT.
3. REFER TO THE GENERAL DEVELOPMENT GUIDELINES FOR WRITTEN GUIDELINES.
4. AN ECOLOGICAL ASSESSMENT REPORT PREPARED BY ECOS ECOSYSTEM SERVICES LLC, PROJECT NUMBER 2025-3-1 WAS PREPARED AND SUBMITTED IN SUPPORT OF THE APPLICATION. THE CONCLUSION OF THE REPORT WAS THAT THERE ARE NO SIGNIFICANT NATURAL FEATURES OR SENSITIVE HABITAT THAT NEEDS TO BE PRESERVED PURSUANT TO US FISH AND WILDLIFE OR THE COLORADO DIVISION OF WILDLIFE STANDARDS. ALL PROPOSED VEGETATION WILL BE NATIVE SPECIES WHICH WILL ENHANCE THE SITE AND PROVIDE HABITAT FOR ANIMAL SPECIES FOUND IN THE AREA.
   - 4.1. CONDUCT PRECONSTRUCTION SURVEYS TO IDENTIFY THE PRESENCE OF ANY ACTIVE GOLDEN EAGLE, MIGRATORY BIRD, OR RAPTOR NESTS.
   - 4.2. IF ACTIVE NESTS ARE IDENTIFIED, AVOID ALL CONSTRUCTION ACTIVITIES DURING THE NON-MIGRATORY BIRD BREEDING SEASON, WHICH EXTENDS FROM MARCH 15 THROUGH AUGUST 31.
   - 4.3. CONSULT WITH THE U.S. FISH AND WILDLIFE SERVICE (USFWS) TO ENSURE FULL COMPLIANCE WITH THE MIGRATORY BIRD TREATY ACT AND THE BALD AND GOLDEN EAGLE PROTECTION ACT.
   - 4.4. FOR RAPTORS, FOLLOW COLORADO PARKS AND WILDLIFE'S (CPW) RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS FOR COLORADO RAPTORS, WHICH INCLUDE PRECONSTRUCTION SURVEYS, APPROPRIATE SPATIAL BUFFERS, AND SEASONAL RESTRICTIONS TO PROTECT SENSITIVE SPECIES.
   - 4.5. IF A NEST IS DISCOVERED DURING CONSTRUCTION, ALL WORK SHOULD CEASE IMMEDIATELY. CPW AND USFWS SHOULD BE CONTACTED FOR FURTHER GUIDANCE BEFORE ANY ACTIVITY RESUMES.
5. THE PROJECT IS OUTSIDE OF ANY MAPPED FEMA SPECIAL FLOOD HAZARD AREAS (I.E. FLOOD-PLAINS). THE SITE IS LOCATED WITHIN FLOOD ZONE X.
6. PROPOSED BUILDING SETBACKS AND SETBACK EXCEPTIONS WILL BE PER THE WRITTEN PD.

OPEN SPACE DEDICATION TABLE	
OPEN SPACE REQUIREMENT	15% OF 24.77 AC
	161,846 SF (3.72 AC)
TOTAL OPEN SPACE PROVIDED	300,202 SF (6.89 AC)
TOWN CODE EXCLUDES 85% OF DETENTION POND AND SLOPES GREATER THAN 15% FROM OPEN SPACE CALCULATION	
DETENTION POND AREA	61,772 SF (1.42 AC)
ONSITE SLOPES GREATER THAN 15%*	57,520 SF (1.32 AC)
OPEN SPACE DEDICATION PROVIDED PERSUANT TO TOWN CODE	179,902 (4.13 AC)
NOTE: ALTHOUGH MINIMUM OPEN SPACE REQUIRED PER TOWN CODE HAS BEEN PROVIDED, THE ANNEXATION AGREEMENT INCLUDES CASH IN LIEU	
*REFER TO GRADING AND EROSION CONTROL PLAN FOR AREAS WHERE SLOPE EXCEEDS 15%	



VICINITY MAP

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	SWMP NOTES
3	SWMP NOTES
4	GESC NOTES
5	PLANNED DEVELOPMENT PLAN
6	EXISTING CONDITIONS
7	INITIAL EROSION CONTROL PLAN
8	INTERIM EROSION CONTROL PLAN
9	FINAL EROSION CONTROL PLAN
10	EROSION CONTROL DETAILS (1 OF 2)
11	EROSION CONTROL DETAILS (2 OF 2)
12	GRADING PLAN
13	WALL ELEVATION & CROSS SECTION
14	UTILITY PLAN
-SUPPLEMENTAL SHEETS-	
LANDSCAPE PLAN	
PLANT MATERIALS	
PHOTOMETRIC PLAN	
SIGNAGE PLAN	
SWMP	

LAND USE TABLE		
APPROXIMATE TOTAL BUILDING SQUARE FOOTAGE	75,500 (74,000 SF TRAVEL CENTER + 1,500 SF GENERATOR ENCLOSURE)	
BUILDING LOT COVERAGE %	7%	
PROPOSED MAX. BUILDING HEIGHT (FT)	40	
TOTAL ACERAGE	24.77 AC	
PROPOSED IMPERVIOUSNESS	71%	
LAND USE	TRAVEL CENTER	
EXISTING ZONING	C-1, CC	
PROPOSED ZONING	PD	
LOTS	1	
PARKING SPACES	PROPOSED	REQUIRED
TOTAL PARKING SPACES	820	504
STANDARD PARKING SPACES (10' X 20' MINIMUM)	797	
ADA PARKING SPACES	23	15
LOADING SPACES (12' X 50' MINIMUM)	2	2
BUS/RV PARKING SPACES	11	
BICYCLE SPACES	10	
PARKING RATIO (SPACES / 1,000 SF TRAVEL CENTER)	11.2	10
WATER DEMAND	37,300 GPD	
SEWER DEMAND	51-93 GPM	

CONTACT INFORMATION

OWNER
MONUMENT RIDGE WEST, LLC
5055 LIST DRIVE
COLORADO SPRINGS, CO 80191

APPLICANT
CSMS MANAGEMENT, LLC
SCOTT RATCLIFF, P.E.
11200 W BROADWAY, STE 2332
PEARLAND, TX 77584
TEL: 979.529.2704

CIVIL ENGINEER
KIMLEY-HORN & ASSOCIATES
KYLE WATSON, P.E.
6200 S. SYRACUSE WAY, SUITE 300
GREENWOOD VILLAGE, CO 80111
TEL: 303.228.2300

SURVEYOR
KIMLEY-HORN & ASSOCIATES
DARREN R. WOLTERSTORFF, PLS 38281
6200 S. SYRACUSE WAY, SUITE 300
GREENWOOD VILLAGE, CO 80111
TEL: 303.228.2300

ENGINEER'S STATEMENT

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE TOWN FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

ENGINEER OF RECORD SIGNATURE

DATE

OWNER'S STATEMENT

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN AND ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS

OWNER SIGNATURE

DATE

MAYOR CERTIFICATE:

THIS PLANNED DEVELOPMENT PLAN OF BUC-EE'S WAS APPROVED FOR FILING BY THE PALMER LAKE, COLORADO, BOARD OF TRUSTEES ON THIS _____ DAY OF _____, 2025, SUBJECT TO ANY NOTES SPECIFIED HEREON AND ANY CONDITIONS INCLUDED IN THE ORDINANCE OF APPROVAL.

MAYOR, BOARD OF TRUSTEES

DATE

ATTEST:

BY:_____ERICA ROMERO
TOWN CLERK

PLANNING COMMISSION CHAIR

DATE

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

Kimley»Horn

© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
COVER SHEET

SHEET
1

C:\VC\\ACCDocs\Kimley-Horn\Buc-ees Palmer Lake\Project Files\CAD\PlanSheets\Planned Development Plan\CV-PDP-196094002.dwg
THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

SITE DESCRIPTION

GENERAL PROJECT DESCRIPTION

THE SITE CONSISTS OF ±24.77 ACRES OF CURRENTLY UNDEVELOPED LAND BETWEEN BEACON LITE ROAD AND INTERSTATE 25 JUST SOUTH OF PALMER DIVIDE ROAD. THE LIMITS OF CONSTRUCTION ARE ±34.1 ACRES (24.8 ACRES ON-SITE, 9.3 ACRES OFF-SITE). THE SITE IS ZONED COMMERCIAL. THE PROJECT WILL CONSIST OF GRADING WITHIN THE LIMITS OF CONSTRUCTION AND THE CONSTRUCTION OF A BUC-EE'S TRAVEL CENTER AND ASSOCIATED FUEL PUMPS, PARKING AREAS, LANDSCAPING, STORMWATER INFRASTRUCTURE, AND OFF-SITE ROAD IMPROVEMENTS. THERE IS ALSO ASSOCIATED OFF-SITE WORK
THERE ARE NO STREAMS OR IRRIGATION CHANNELS THAT CROSS THE PROJECT AREA.

VEGETATION

THE EXISTING SITE IS CURRENTLY VACANT WITH GROUNDCOVER INCLUDING NATIVE WEEDS, BRUSH, GRASSES, AND TREES, AS WELL AS EXISTING UNPAVED FARM ROADS.
NATIVE GRASSES ON THE SITE HAVE AN AVERAGE APPROXIMATE GROUNDCOVER DENSITY OF 80%. THIS DENSITY WAS OBTAINED BY SURVEY INFORMATION, SITE VISITS, AND A DESKTOP REVIEW OF THE EXISTING CONDITIONS. APPROXIMATELY 40% OF THE PROJECT SITE HAS TREE COVER. AN EFFORT HAS BEEN MADE TO PRESERVE AS MANY TREES AS POSSIBLE WITH THE DEVELOPMENT.

DRAINAGE CHARACTERISTICS

THE SITE IS CURRENTLY UNDEVELOPED AND DOES NOT INCLUDE ANY EXISTING SITE IMPROVEMENTS. THE PROPERTY GENERALLY SLOPES WEST TO EAST AND DRAINS TO A ROADSIDE DITCH ALONG INTERSTATE 25 AND ULTIMATELY UNDER THE INTERSTATE VIA CULVERTS.
THE FLOOD INSURANCE RATE MAPS (FIRM) 08041C0065G EFFECTIVE DATE DECEMBER 7, 2018, BY FEMA, INDICATES THAT THE SITE IS LOCATED IN ZONE X (OUTSIDE OF THE 500-YEAR FLOOD PLAIN).

IMMEDIATE AND ULTIMATE RECEIVING WATERS

- IMMEDIATE RECEIVING WATERS: UNNAMED CHANNEL ADJACENT TO INTERSTATE 25 TO THE EAST OF THE SITE
- ULTIMATE RECEIVING WATERS: GREENLAND RANCH CREEK
- STORMWATER RUNOFF EXITING THE SITE COLLECTS ALONG INTERSTATE 25 AND IS CONVEYED EAST THROUGH A SERIES OF CLOSED AND OPEN CONVEYANCE SYSTEMS, ULTIMATELY DISCHARGING INTO GREENLAND RANCH CREEK, LOCATED APPROXIMATELY A HALF MILE NORTHEAST OF THE SITE.
- IN THE PROPOSED CONDITION, DISCHARGE FROM THE ON-SITE STORMWATER DETENTION FACILITIES WILL DISCHARGE INTO THE EXISTING CHANNEL ALONG INTERSTATE 25 AND MAINTAIN EXISTING DRAINAGE PATTERNS TO THE ULTIMATE OUTFALL FROM THERE. BOTH FULL-SPECTRUM WATER QUALITY AND STORMWATER DETENTION PONDS WILL HAVE A FULL OUTLET CONTROL STRUCTURE AS WELL AS AN EMERGENCY SPILLWAY, BOTH OF WHICH WILL OUTFALL TO THE EXISTING CHANNEL ALONG INTERSTATE 25.

SITE SOILS

A REVIEW OF THE NATURAL RESOURCE CONSERVATION SERVICE (NRCS) WEB SOIL SURVEY DETERMINED THAT SOILS ONSITE ARE GENERALLY HYDROLOGIC SOIL GROUP (HSG) TYPE C. THE K FACTOR FOR THE ONSITE SOILS IS 0.20 (ON A SCALE OF 0.02 TO 0.69), WHICH INDICATES A LOW SUSCEPTIBILITY OF THE SOIL TO SHEET AND RILL EROSION BY WATER. THE WIND ERODIBILITY GROUPS IDENTIFIED FOR THE ONSITE SOILS ARE GROUPS 2 AND 3 (HIGHEST GROUP IS GROUP 8) WHICH INDICATES A HIGH SUSCEPTIBILITY TO WIND EROSION.
A GEOTECHNICAL ANALYSIS WAS PERFORMED FOR THE SITE. THE GEOTECHNICAL ENGINEERING REPORT, PREPARED BY TERRACON AND DATED 01/31/2024, INDICATES THAT GROUNDWATER WAS ENCOUNTERED BETWEEN 8.5 AND 22 FEET BELOW EXISTING GRADES.

AREAS AND VOLUMES

THE TOTAL ANTICIPATED PROJECT DISTURBANCE AREA IS APPROXIMATELY ±34.1 ACRES (±24.8 ONSITE ACRES). THE ESTIMATED EARTHWORK QUANTITIES ON-SITE ARE AS FOLLOWS:

- CUT: ±63,155 CUBIC YARDS
- FILL: ±287,045 CUBIC YARDS
- NET: ±223,889 CUBIC YARDS FILL

TIMING AND PHASING SCHEDULE

THE OPERATOR SHALL UTILIZE THE FOLLOWING GENERAL CONSTRUCTION PRACTICES WHICH ARE REQUIRED THROUGHOUT THE PROJECT AT LOCATIONS SHOWN ON THE GRADING AND EROSION CONTROL PLAN OR AS DICTATED BY CONSTRUCTION ACTIVITIES.

- MATERIALS HANDLING AND SPILL PREVENTION
- WASTE MANAGEMENT AND DISPOSAL
- HAZARDOUS MATERIAL STORAGE AND CONTAINMENT AREA
- VEHICLE MAINTENANCE FUELING AND STORAGE
- SOLID WASTE CONTAINMENT FACILITY
- SANITARY WASTE FACILITY
- STREET SWEEPING (SS) - PERFORMED BY THE OPERATOR

THESE PRACTICES SHALL REMAIN ACTIVE AND OPERATIONAL THROUGHOUT THE DURATION OF CONSTRUCTION AND BE IDENTIFIED ON THE EROSION CONTROL PLAN. DUE TO ANY PHASING REQUIRED FOR THE PROJECT, IT IS UNDERSTOOD THAT THESE CONTROL MEASURES MAY BE RELOCATED AS NEEDED TO FACILITATE CONSTRUCTION OPERATIONS. THE OPERATOR SHALL LOCATE AND IDENTIFY THE ORIGINAL AND CURRENT LOCATION OF THESE CONTROL MEASURES ON THE GRADING AND EROSION CONTROL PLAN THROUGHOUT THE CONSTRUCTION OF THE PROJECT. AN UPDATED COPY OF THE GRADING AND EROSION CONTROL PLAN SHALL BE KEPT ONSITE THROUGHOUT CONSTRUCTION OF THE PROJECT.
GENERAL CONSTRUCTION SEQUENCING AND ACTIVITIES ASSOCIATED WITH THIS PROJECT ARE DESCRIBED BELOW. THEY ARE PRESENTED IN THE ORDER (OR SEQUENCE) THEY ARE EXPECTED TO BEGIN, BUT EACH ACTIVITY WILL NOT NECESSARILY BE COMPLETED BEFORE THE NEXT BEGINS.

IF ACTIVE NESTS ARE IDENTIFIED, AVOID ALL CONSTRUCTION ACTIVITIES DURING THE NON-RAPTOR MIGRATORY BIRD BREEDING SEASON, WHICH EXTENDS FROM MARCH 15 THROUGH AUGUST 31.

CONTRACTOR SHALL AVOID INITIAL GROUND DISTURBANCE BETWEEN DECEMBER 1 AND APRIL 30 TO PROTECT MULE DEER AND ELK DURING CRITICAL WINTER PERIODS.

THE ANTICIPATED CONSTRUCTION START DATE IS Q4 2025 AND THE ANTICIPATED CONSTRUCTION COMPLETION DATE IS Q1 2027, WITH FINAL STABILIZATION ANTICIPATED Q3 2027.

INITIAL/INTERIM PHASE

THE INITIAL PHASE SHALL CONSIST OF APPLYING FOR AND RECEIVING THE CDPS GENERAL PERMIT AS WELL AS CONSTRUCTION/INSTALLATION OF TEMPORARY CONTROL MEASURES TO MINIMIZE POTENTIAL FOR EROSION AND SEDIMENT TRANSFER WHILE MOBILIZING AND PREPARING THE SITE FOR CONSTRUCTION ACTIVITIES. THE OPERATOR SHALL MINIMIZE SITE DISTURBANCE BY MINIMIZING THE EXTENT OF GRADING AND CLEARING TO EFFECTIVELY REDUCE SEDIMENT YIELD. THE OPERATOR SHALL COMPLETE THE ANTICIPATED INITIAL PHASE SEQUENCING AS FOLLOWS:

1. PREPARE AND SUBMIT THE STATE OF COLORADO, COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) COLORADO DISCHARGE PERMIT SYSTEM (CDPS) GENERAL PERMIT. A COPY OF THE PERMIT SHALL BE PROVIDED TO THE OWNER UPON RECEIPT FROM THE CDPHE
2. PREPARE AND SUBMIT THE EROSION CONTROL PLAN TO THE TOWN OF PALMER LAKE. A COPY OF THE PERMIT SHALL BE PROVIDED TO THE OWNER UPON RECEIPT FROM THE TOWN.
3. INSTALL VEHICLE TRACKING CONTROL (VTC) AS INDICATED ON THE GRADING AND EROSION CONTROL PLANS.
4. INSTALL AND DENOTE ON THE PLAN ANY OF THE FOLLOWING AREAS: TRAILER, PARKING, LAY DOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, FUEL AND MATERIAL STORAGE CONTAINERS, SOLID WASTE CONTAINERS, ETC.
5. PREPARE STABILIZED STAGING AREA (SSA) AND STOCKPILE AREA (SP). CONTRACTOR TO NOTE THE ACTUAL SIZE AND LOCATION OF THESE AREAS AND SHALL MINIMIZE THESE AREAS.
6. INSTALL PERIMETER CONTROLS INCLUDING SILT FENCE (SF) AS SHOWN ON THE GRADING AND EROSION CONTROL PLANS. ENSURE THAT THE LIMITS OF CONSTRUCTION ARE DEFINED AS NECESSARY AND KNOWN BY ALL PARTIES WHICH WILL BE RESPONSIBLE FOR CONSTRUCTION ON THE SITE.
7. INSTALL INLET PROTECTION (IP) AND ROCK SOCKS (RS) AROUND ALL INLETS AS DENOTED ON THE GRADING AND EROSION CONTROL PLANS.
8. INSTALL TEMPORARY SEDIMENT BASEMENT (TSB) AND WITH APPROPRIATE OUTFALL STRUCTURES AS SHOWN ON THE GRADING AND EROSION CONTROL PLANS.
9. INSTALL DRAINAGE SWALES (DS) WITH OUTFALL INTO THE TEMPORARY SEDIMENT BASIN.
10. INSTALL CHECK DAMS FOR EVERY 1.5 FT OF FALL ALONG THE FLOW LINE OF THE DRAINAGE SWALE LEADING TO THE SEDIMENT BASIN.
11. UPON COMPLETION OF THE INITIAL CONTROL MEASURE INSTALLATION THE OPERATOR SHALL SCHEDULE AND HOLD A MEETING WITH THE CONTRACTOR AND INSPECTOR THAT SHALL TAKE PLACE PRIOR TO THE PRE-CONSTRUCTION MEETING.
12. THE OPERATOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE TOWN AND OWNER TO CONFIRM CONTROL MEASURES INSTALLED ARE ADEQUATE PRIOR TO PROCEEDING WITH ADDITIONAL LAND DISTURBING ACTIVITIES.
13. BEGIN CLEARING AND GRUBBING OF THE SITE.
14. INSTALL CONCRETE WASHOUT AREA (CWA) PRIOR TO CONSTRUCTION OF CONCRETE IMPROVEMENTS.

FINAL PHASE

THE FINAL PHASE SHALL CONSIST OF CONSTRUCTION OF SITE IMPROVEMENTS, CONSTRUCTION OF PERMANENT CONTROL MEASURES, AND FINAL STABILIZATION OF THE SITE. THE OPERATOR SHALL COMPLETE THE ANTICIPATED FINAL PHASE SEQUENCING AS FOLLOWS:

1. CONFIRM EXISTING CONTROL MEASURES FROM THE INITIAL PHASE WHICH ARE TO BE MAINTAINED THROUGHOUT CONSTRUCTION, ARE IN WORKING ORDER AND COMPLIANT WITH APPLICABLE REGULATIONS.
2. REPAIR AND/OR REPLACE ANY EXISTING CONTROL MEASURES WHICH ARE DEEMED INADEQUATE.
3. TEMPORARILY SEED (TS), THROUGHOUT CONSTRUCTION, DENUDED AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE.
4. COMPLETE INSTALLATION OF UTILITIES AND CURB AND GUTTERS.
5. PERMANENTLY STABILIZE AREAS TO BE VEGETATED AS THEY ARE BROUGHT TO FINAL GRADE.
6. PREPARE SITE FOR PAVING.
7. PAVE SITE, INCLUDING GRAVEL ROADWAYS, CONCRETE SIDEWALK, AND PAVED PARKING LOT.
8. COMPLETE GRADING AND INSTALLATION OF FINAL STABILIZATION OVER ALL AREAS IN ACCORDANCE WITH THE APPROVED LANDSCAPE PLANS FOR THE PROJECT.
9. REMOVE REMAINING CONTROL MEASURES ONCE PERMANENT STABILIZATION HAS BEEN ACHIEVED AND ACCEPTED BY THE TOWN INSPECTOR. REPAIR AND STABILIZE AREAS DISTURBED THROUGH CONTROL MEASURE REMOVAL.
10. CONVERT SEDIMENT BASINS INTO FULL SPECTRUM WATER QUALITY AND STORMWATER DETENTION PONDS ONCE SITE HAS REACHED FINAL STABILIZATION. REMOVE TEMPORARY SEDIMENT BASIN OUTFALLS AND SPILLWAYS.
11. NOTIFY THE OWNER OF INTENT TO FILE THE NOTICE OF INACTIVATION WITH CDPHE AND RECEIVE OWNER ACCEPTANCE TO PROCEED WITH STORMWATER MANAGEMENT CLOSE-OUT.
12. PROCEED WITH FILING THE NOTICE OF INACTIVATION WITH CDPHE.
13. PROVIDE THE OWNER WITH A COPY OF ALL STORMWATER DOCUMENTATION (PERMITS, INSPECTION REPORTS, LOGS, ETC.) UPON COMPLETION OF PROJECT STORMWATER NOTICE OF INACTIVATION.

STORMWATER MANAGEMENT CONTROLS

QUALIFIED STORMWATER MANAGER

THE QUALIFIED STORMWATER MANAGER IS THE OPERATOR SELECTED FOR THE PROJECT. THE TERMS QUALIFIED STORMWATER MANAGER AND OPERATOR HAVE BEEN USED INTERCHANGEABLY THROUGHOUT THIS STORMWATER MANAGEMENT PLAN AND BOTH TERMS SHOULD BE INTERPRETED TO MEAN THE SAME THING. THE QUALIFIED STORMWATER MANAGER IS AN INDIVIDUAL KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROL AND POLLUTION PREVENTION, AND WITH THE SKILLS TO ASSESS THE EFFECTIVENESS OF STORMWATER CONTROLS IMPLEMENTED TO MEET THE REQUIREMENTS OF THE GENERAL PERMIT. THE QUALIFIED STORMWATER MANAGER IS RESPONSIBLE FOR DEVELOPING, IMPLEMENTING, MAINTAINING AND REVISING THE GRADING AND EROSION CONTROL PLAN. THE ACTIVITIES AND RESPONSIBILITIES OF THE QUALIFIED STORMWATER MANAGER SHALL ADDRESS ALL ASPECTS OF THE FACILITY'S GRADING AND EROSION CONTROL PLAN. THE QUALIFIED STORMWATER MANAGER WILL BE SUFFICIENTLY QUALIFIED FOR THE REQUIRED DUTIES PER THE TOWN OF PALMER LAKE ENGINEERING STANDARDS & SPECIFICATIONS.

COMPANY: _____

CONTACT: _____

ADDRESS: _____

PHONE: _____

EMAIL: _____

QUALIFIED STORMWATER MANAGER CONTACT INFO WILL BE GIVEN TO TOWN OF PALMER LAKE PRIOR TO WORK COMMENCING.

IDENTIFICATION OF POLLUTANT SOURCES

EVALUATION OF GENERAL SEDIMENT AND NON-SEDIMENT POLLUTION SOURCES ASSOCIATED WITH SITE CONSTRUCTION ACTIVITIES, AS OUTLINED WITHIN THE GENERAL PERMIT, CONSIST OF THE FOLLOWING:

- DISTURBED AND STORED SOILS - EARTH DISTURBING ACTIVITIES (GRADING, EXCAVATION, ETC.) WILL BE NECESSARY FOR THIS PROJECT; THEREFORE, THE POTENTIAL EXISTS FOR DISTURBED SITE SOILS TO CONTRIBUTE SEDIMENT TO STORMWATER DISCHARGES.
- VEHICLE TRACKING AND SEDIMENT - CONSTRUCTION TRAFFIC WILL BE ENTERING AND EXITING THE SITE; THEREFORE, THE POTENTIAL EXISTS FOR VEHICLE TRACKING TO CONTRIBUTE SEDIMENT TO STORMWATER DISCHARGES.
- MANAGEMENT OF CONTAMINATED SOILS - CONTAMINATED SOILS ARE NOT ANTICIPATED ON THIS SITE. IF ENCOUNTERED, THE QUALIFIED STORMWATER MANAGER SHALL TAKE APPROPRIATE CONTAINMENT AND TREATMENT MEASURES.
- LOADING AND UNLOADING OPERATIONS - LOADING AND UNLOADING OPERATIONS WILL BE TAKING PLACE AT THE SITE; THEREFORE, THE POTENTIAL EXISTS FOR THESE OPERATIONS TO INTRODUCE SEDIMENT AND NON-SEDIMENT POLLUTANTS TO STORMWATER DISCHARGES.
- OUTDOOR STORAGE OF MATERIALS - LIMITED OUTDOOR STORAGE OF MATERIALS IS ANTICIPATED WITH CONSTRUCTION OF THIS SITE; HOWEVER, OUTDOOR STORAGE OF CHEMICALS, FERTILIZERS, ETC. IS NOT ANTICIPATED.
- VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING - ROUTINE MAINTENANCE AND FUELING OF VEHICLES AND EQUIPMENT IS ANTICIPATED WITH THIS SITE; THEREFORE, THE POTENTIAL EXISTS FOR POLLUTANTS ASSOCIATED WITH THESE ACTIVITIES TO CONTRIBUTE POLLUTANTS TO STORMWATER DISCHARGES.
- SIGNIFICANT DUST OR PARTICULATE GENERATING PROCESSES - EARTH DISTURBING ACTIVITIES (GRADING, EXCAVATION, ETC.) WILL BE NECESSARY FOR THIS PROJECT; THEREFORE, THE POTENTIAL EXISTS FOR WINDBLOWN SITE SOILS TO CONTRIBUTE SEDIMENT TO STORMWATER DISCHARGES.
- ROUTINE MAINTENANCE - ROUTINE MAINTENANCE INVOLVING FERTILIZERS, PESTICIDES, DETERGENTS, FUELS, SOLVENTS, OILS, ETC., OTHER THAN THOSE IDENTIFIED WITHIN VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING ARE NOT ANTICIPATED WITH THIS PROJECT. IF ENCOUNTERED, THE QUALIFIED STORMWATER MANAGER SHALL TAKE APPROPRIATE CONTAINMENT AND TREATMENT MEASURES.
- ONSITE WASTE MANAGEMENT - WASTE MANAGEMENT CONSISTING OF SOLID WASTE PILES, LIQUID WASTES, DUMPSTERS, ETC. ARE ANTICIPATED ONSITE; THEREFORE, THE POTENTIAL EXISTS FOR THESE OPERATIONS TO INTRODUCE SEDIMENT AND NON-SEDIMENT POLLUTANTS TO STORMWATER DISCHARGES.
- CONCRETE TRUCK / EQUIPMENT WASHING - CONCRETE TRUCK AND EQUIPMENT WASHING ARE NOT ANTICIPATED WITH THIS PROJECT. IF ENCOUNTERED, THE QUALIFIED STORMWATER MANAGER SHALL TAKE APPROPRIATE CONTAINMENT AND TREATMENT MEASURES.
- DEDICATED ASPHALT AND CONCRETE BATCH PLANTS - DEDICATED ASPHALT AND/OR CONCRETE BATCH PLANTS ARE NOT ANTICIPATED WITH THIS PROJECT. IF ENCOUNTERED, THE QUALIFIED STORMWATER MANAGER SHALL TAKE APPROPRIATE CONTAINMENT AND TREATMENT MEASURES AND DOCUMENT AS NECESSARY.
- PORTABLE TOILETS - PORTABLE TOILETS WILL BE LOCATED A MINIMUM OF 10 FEET FROM STORMWATER INLETS AND 50 FEET FROM STATE WATERS. THEY WILL BE SECURED AT ALL FOUR CORNERS TO PREVENT OVERTURNING AND CLEANED ON A WEEKLY BASIS. THEY WILL BE INSPECTED DAILY FOR SPILLS. AS DECIDED BY THE QUALIFIED STORMWATER MANAGER, A SPILL LINER CAN BE ADDED BENEATH THE PORTABLE TOILETS.
- NON-INDUSTRIAL WASTE SOURCES - NON-INDUSTRIAL WASTE SOURCES LIMITED TO PORTABLE SANITARY FACILITIES ARE ANTICIPATED WITH THIS PROJECT.
- ADDITIONAL POLLUTANT SOURCES - ADDITIONAL AREAS OR PROCEDURES WHERE POTENTIAL SPILLS COULD OCCUR ARE NOT ANTICIPATED WITH THIS PROJECT.

BASED ON THE FOLLOWING, THE POTENTIAL TO CONTRIBUTE POLLUTANTS TO STORMWATER DISCHARGES IS NOT SIGNIFICANT FOR MOST OF THE POLLUTANTS IDENTIFIED ABOVE:

- RELATIVELY LOW FREQUENCY OF THE ACTIVITIES
- THE ABILITY TO SCHEDULE ACTIVITIES DURING DRY WEATHER
- EXISTING SITE TOPOGRAPHY
- THE ABILITY TO IMPLEMENT PRIMARY AND SECONDARY CONTAINMENT FOR PRODUCT STORAGE
- THE ABILITY TO LOCATE ACTIVITIES AWAY FROM DRAINAGE WAYS
- POTENTIAL POLLUTANT SOURCES NOTED BELOW SHALL BE MITIGATED BY USE OF BEST MANAGEMENT PRACTICES (BMPS) AS NOTED IN THE FOLLOWING SECTIONS:
- DISTURBED AND STORED SOILS
- VEHICLE TRACKING AND SEDIMENT
- LOADING AND UNLOADING OPERATIONS
- OUTDOOR STORAGE
- VEHICLE EQUIPMENT AND MAINTENANCE FUELING
- SIGNIFICANT DUST OR PARTICULATE GENERATING PROCESSES
- NON-INDUSTRIAL WASTE SOURCES

NON-STORMWATER DISCHARGE COMPONENTS

ONLY SPECIFICALLY AUTHORIZED NON-STORMWATER DISCHARGES ARE ALLOWED TO ENTER THE STORM SEWER AND ALL AUTHORIZED NON-STORMWATER DISCHARGES SHALL BE ELIMINATED OR REDUCED TO THE EXTENT PRACTICAL.
APPROPRIATE CONTROL MEASURES SHALL BE USED TO MINIMIZE THE DISCHARGE OF POLLUTANTS. SUCH CONTROL MEASURES WILL BE STRICTLY FOLLOWED TO ENSURE ANY IMPACTS FROM NON-STORMWATER DISCHARGES ARE REDUCED OR ELIMINATED.
APPROPRIATE CONTROL MEASURES ARE:

- EMERGENCY FIRE FIGHTING ACTIVITIES

- UNCONTAMINATED GROUND WATER OR SPRING WATER

IF POSSIBLE, DIRECT UNCONTAMINATED GROUND WATER OR SPRING WATER TO STABILIZED POINTS OF DISCHARGE. IF DISCHARGED TO A DISTURBED AREA, ASSURE MEASURES TO CONTROL EROSIVE VELOCITIES AND SEDIMENT CONTROL MEASURES ARE IMPLEMENTED. VELOCITY CONTROL MEASURES INCLUDE RIPRAP APRONS AND OTHER CONVEYANCE MEASURES. SEDIMENT CONTROL MEASURES MIGHT INCLUDE STONE CHECK DAMS, SEDIMENT TRAPS AND BASINS.

IF UNCONTAMINATED GROUND WATER IS DISCHARGED OFF-SITE, A CONSTRUCTION DEWATERING PERMIT WILL BE REQUIRED. THIS PERMIT WILL NOT APPLY IF DEWATERING IS NOT PERFORMED OR IF WATER IS NOT DISCHARGED OFF-SITE.

- LANDSCAPE IRRIGATION RETURN FLOWS

VOLUME OF WATER USED FOR IRRIGATION PRIOR TO ESTABLISHMENT OF VEGETATION SHALL BE CONTROLLED TO PREVENT EXCESS RUNOFF AND EROSION. TEMPORARY SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL ALL UPSTREAM DISTURBED AREAS ARE STABILIZED. SEDIMENT LOSS WILL BE CONTROLLED USING SEDIMENT CONTROL MEASURES SUCH AS WATTLES, SEDIMENT FENCE, AND VEGETATIVE BUFFERS.

CONTROL MEASURES FOR STORMWATER POLLUTION PREVENTION

THERE ARE THREE GENERAL TYPES OF CONTROL MEASURES THAT WILL BE UTILIZED FOR THE PROJECT: EROSION CONTROL, SEDIMENT CONTROL, AND SITE/MATERIAL MANAGEMENT CONTROL MEASURES. EROSION CONTROL MEASURES ARE USED TO LIMIT THE AMOUNT AND EXTENT OF EROSION. SEDIMENT CONTROL MEASURES ARE DESIGNED TO CAPTURE ERODED SEDIMENTS PRIOR TO THEIR CONVEYANCE OFFSITE. SITE/MATERIAL MANAGEMENT CONTROL MEASURES ARE RELATED TO CONSTRUCTION ACCESS AND STAGING. SEVERAL CONTROL MEASURES DESCRIBED BELOW MAY BE CATEGORIZED INTO MORE THAN ONE OF THE TYPES DESCRIBED ABOVE. ALSO, THESE CONTROL MEASURES MAY BE CATEGORIZED INTO ONE OR MORE OF THE FOLLOWING CONSTRUCTION PHASES WHICH PERTAIN TO THE PHASE OF DEVELOPMENT IN WHICH THEY MAY BE IMPLEMENTED. INITIAL STAGE CONTROL MEASURES SHALL BE INSTALLED ON EXISTING GRADES AT THE OUTSET OF CONSTRUCTION. FINAL STAGE CONTROL MEASURES SHALL BE INSTALLED ON PROPOSED GRADES AND DRAINAGE FEATURES AFTER INITIAL SITE GRADING. CONSTRUCTION OF THE IDENTIFIED IMPROVEMENTS WILL TAKE PLACE UNDER TWO PHASES OF CONSTRUCTION ANTICIPATED AS IDENTIFIED WITHIN THE CONSTRUCTION SEQUENCING INCLUDED WITHIN THIS REPORT.
REFER TO THE GRADING AND EROSION CONTROL PLANS FOR THE LOCATION AND IMPLEMENTATION OF EROSION CONTROL MEASURES FOR THE PHASES OF THE PROJECT.
THE FOLLOWING IS A BRIEF DESCRIPTION OF TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES TO BE UTILIZED ON THIS SITE AND THE APPLICATION THOSE CONTROL MEASURES ARE TREATING.

EROSION CONTROL

PROTECTION OF STEEP SLOPES IS NOT ANTICIPATED ON THIS PROJECT. STEEP SLOPES ARE DEFINED AS SLOPES GREATER THAN 3:1 THAT ARE HIGHER THAN 5-FEET VERTICALLY. TEMPORARY SLOPES DURING CONSTRUCTION THAT ARE GREATER THAN 3:1 NEED TO BE ADDRESSED ALONG WITH ANY PERMANENT SLOPES WHICH ARE GREATER THAN 3:1. THE PERMITTEE MAY NEED TO IMPLEMENT THE USE OF DIVERSION DITCHES TO REROUTE THE STORM RUNOFF, TERRACE THE GRADES TO BREAK UP THE FLOW OF INCIDENTAL RUNOFF DOWN SLOPES, COMPOST MULCH TO PROTECT THE EXPOSED SOIL OR OTHER CONTROL MEASURE AS APPROVED BY THE INSPECTOR. SLOPES STEEPER THAT 3:1 SHALL BE PROTECTED WITH AN EROSION CONTROL BLANKET. NO UN-PROTECTED FINAL GRADES SHALL BE ALLOWED GREATER THAN 2:1.
PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH DISTURBANCES HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH DISTURBANCE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH DISTURBANCE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN FOURTEEN (14) CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION MEASURES ARE IMPLEMENTED.
ALL DISTURBED AREAS SHALL BE STABILIZED AS SOON AS POSSIBLE. SEEDING AND MULCHING (SM), TO PROVIDE PROTECTION AGAINST RAIN AND WIND EROSION, SHALL BE PERFORMED TEMPORARILY, AS NEEDED, DURING THE PRE-CONSTRUCTION, INITIAL, AND INTERIM PHASES AND MAINTAINED UNTIL FINAL STABILIZATION IS COMPLETED. SITE STABILIZATION WILL BE ACHIEVED THROUGH USE OF TEMPORARY SEEDING AND MULCHING (TS) AND ULTIMATELY PERMANENT LANDSCAPING (PS). ALL DISTURBED AREAS WHICH ARE EITHER FINAL GRADED OR WILL REMAIN INACTIVE FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE REQUIRED TO BE STABILIZED WITHIN 14 DAYS OF THE COMPLETION OF THE GRADING ACTIVITIES.

SEDIMENT CONTROL

SILT FENCE (SF) IS LOCATED DOWNSTREAM OF DISTURBED AREAS AND PROVIDES A SEDIMENT BARRIER FOR RUNOFF. SF IS INSTALLED TO HELP REDUCE THE AMOUNT OF SEDIMENT IN SURFACE RUNOFF THAT WILL BE EXITING/ENTERING THE SITE. SF WILL BE INSTALLED ALONG PORTIONS OF THE LIMITS OF CONSTRUCTION LINE LOCATED THROUGHOUT THE SITE AS DENOTED ON THE SITE MAP. THE SF WILL BE INSTALLED DURING THE INITIAL PHASES OF CONSTRUCTION ACTIVITIES AND MAINTAINED THROUGHOUT CONSTRUCTION. A TEMPORARY SEDIMENT BASIN (TSB) IS LOCATED DOWNSTREAM OF ALL TEMPORARY DIVERSION DITCHES ON SITE TO CONTAIN AND CONTROL THE RELEASE OF TEMPORARY RUNOFF ON SITE DURING CONSTRUCTION ACTIVITIES. THE TSB IS TO BE CONSTRUCTED DURING THE INITIAL PHASE OF CONSTRUCTION.

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

Kimley»Horn

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DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
SWMP NOTES

SHEET
2

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THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

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SITE/MATERIAL MANAGEMENT

CONSTRUCTION ENTRANCES WITH VEHICLE TRACKING CONTROL (VTC) SHALL BE INSTALLED AT THE SITE IN AN EFFORT TO REDUCE OFF-SITE SEDIMENT TRACKING. THE VTC SHALL BE INSTALLED DURING THE INITIAL PHASE OF CONSTRUCTION ACTIVITIES.

A CONCRETE WASHOUT AREA (CWA) WILL BE INSTALLED NEAR THE VTC TO HELP ISOLATE CONCRETE TRUCK WASHOUT OPERATIONS UPON DEPARTURE. A CWA IS INSTALLED WHEN A SITE ANTICIPATES THE GENERATION OF CONCRETE WASH WATER. CWAS PROVIDE AN AREA FOR THE PROPER COLLECTION AND DISPOSAL OF ALL LIQUID CONCRETE WASTE. THE CWA WILL BE INSTALLED DURING THE INITIAL PHASE OF CONSTRUCTION ACTIVITIES. THREE BASIC APPROACHES ARE AVAILABLE TO THE CONTRACTOR AND INCLUDE AN ABOVE-GRADE STORAGE AREA, EXCAVATION OF A PIT IN THE GROUND, AND A PREFABRICATED HAUL-AWAY CONCRETE WASHOUT CONTAINER. ALL CONCRETE WASHOUT AREAS SHALL, AS A MINIMUM ADHERE TO THE FOLLOWING GUIDELINES:

- MAINTAIN A MINIMUM DISTANCE OF 400 FEET FROM A STREAM OR WATER BODY.
- MAINTAIN A MINIMUM DISTANCE OF 1,000 FEET FROM ANY WELLS OR DRINKING WATER SOURCE.
- SHALL NOT BE LOCATED IN A NATURAL DRAW OR DRAINAGE SWALE.
- SHALL NOT BE LOCATED IN AREAS OF HIGHLY PERMEABLE SOILS, I.E., GRAVELS AND SANDS.
- THE CHOSEN LOCATION SHALL BE SITED SO THAT IF A FAILURE OR OVERTOPPING OCCURS, THE FLOW WOULD BE DIRECTED TO A FLAT OR DEPRESSED GRASSY AREA AWAY FROM ANY WATER SOURCES.
- THE USE OF SOLVENTS, CLEANERS, OR HAZARDOUS MATERIALS WHEN CLEANING OR REMOVING CONCRETE IS STRICTLY PROHIBITED.
- BACKFLUSHING SHALL NOT BE PERMITTED ON SITE.
- ADEQUATE AND PROPER DISPOSAL OF CONTENTS IS REQUIRED ONCE THE CWA HAS REACHED ½ CAPACITY AND AT THE END OF CONCRETE CONSTRUCTION ACTIVITIES.

A STABILIZED STAGING AREA (SSA) TO PROVIDE AN AREA FOR CONSTRUCTION ACTIVITIES AND MATERIAL STORAGE WILL BE LOCATED ON THE WEST SIDE OF THE SITE. THE SSA PROVIDES A DESIGNATED AREA FOR STAGING OF CONSTRUCTION MATERIALS AND EQUIPMENT, PLACEMENT OF JOB TRAILER, CONTRACTOR PARKING, ETC.

STREET SWEEPING (SS) IS NECESSARY FOR ANY SITE THAT HAS TRACK OUT ONTO ADJACENT SITES OR ROADWAYS. PAVED AND IMPERVIOUS SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES MUST BE SWEPT ON A WEEKLY BASIS OR AS NEEDED DURING THE WEEK WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ONTO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. SCRAPED OR SWEPT MATERIAL SHALL NOT BE DEPOSITED IN THE STORM SEWER. MATERIALS COLLECTED BY THE INLET PROTECTION SHALL BE REMOVED AND SHALL NOT BE DEPOSITED IN THE STORM SEWER. STREET SWEEPING IS THE RESPONSIBILITY OF THE OPERATOR AND WILL NOT BE PERFORMED BY THE CITY OR COUNTY TO MEET THE REQUIREMENTS OF THIS PLAN.

OTHER POTENTIAL POLLUTION CONSIDERATIONS

MATERIALS HANDLING AND SPILL PREVENTION

ANY HAZARDOUS OR POTENTIALLY HAZARDOUS MATERIAL THAT IS BROUGHT ONTO THE CONSTRUCTION SITE SHALL BE HANDLED PROPERLY TO REDUCE THE POTENTIAL FOR STORMWATER POLLUTION. IN AN EFFORT TO MINIMIZE THE POTENTIAL FOR A SPILL OF PETROLEUM PRODUCT OR HAZARDOUS MATERIALS TO COME IN CONTACT WITH STORMWATER, THE FOLLOWING STEPS SHALL BE IMPLEMENTED:

- MATERIAL SAFETY DATA SHEETS (MSDS) INFORMATION SHALL BE KEPT ON SITE FOR ANY AND ALL APPLICABLE MATERIALS.
- ALL MATERIALS WITH HAZARDOUS PROPERTIES (SUCH AS PESTICIDES, PETROLEUM PRODUCTS, FERTILIZERS, DETERGENTS, CONSTRUCTION CHEMICALS, ACIDS, PAINTS, PAINT SOLVENTS, ADDITIVES FOR SOIL STABILIZATION, CONCRETE, CURING COMPOUNDS AND ADDITIVES, ETC.) SHALL BE STORED IN A SECURE LOCATION, UNDER COVER AND IN APPROPRIATE, TIGHTLY SEALED CONTAINERS WHEN NOT IN USE.
- THE MINIMUM PRACTICAL QUANTITY OF ALL SUCH MATERIALS SHALL BE KEPT ON THE JOB SITE AND SCHEDULED FOR DELIVERY AS CLOSE TO TIME OF USE AS PRACTICAL.
- A SPILL CONTROL AND CONTAINMENT KIT SHALL BE PROVIDED ON THE CONSTRUCTION SITE AND LOCATION(S) SHOWN ON SITE MAPS.
- ALL OF THE PRODUCT IN A CONTAINER SHALL BE USED BEFORE THE CONTAINER IS DISPOSED OF. ALL SUCH CONTAINERS SHALL BE TRIPLE RINSED, WITH WATER PRIOR TO DISPOSAL. THE RINSE WATER USED IN THESE CONTAINERS SHALL BE DISPOSED OF IN A MANNER IN COMPLIANCE WITH STATE AND FEDERAL REGULATIONS AND SHALL NOT BE ALLOWED TO MIX WITH STORMWATER DISCHARGES.
- ALL PRODUCTS SHALL BE STORED IN AND USED FROM THE ORIGINAL CONTAINER WITH THE ORIGINAL PRODUCT LABEL AND USED IN STRICT COMPLIANCE WITH THE INSTRUCTIONS ON THE PRODUCT LABEL.
- THE DISPOSAL OF EXCESS OR USED PRODUCTS SHALL BE IN STRICT COMPLIANCE WITH INSTRUCTIONS ON THE PRODUCT LABEL.

FUELING FOR CONSTRUCTION IS ANTICIPATED TO BE CONDUCTED WITH A FUEL TRUCK THAT WILL NOT BE KEPT PERMANENTLY ONSITE. IF UTILIZED, TEMPORARY ONSITE FUEL TANKS FOR CONSTRUCTION VEHICLES SHALL MEET ALL STATE AND FEDERAL REGULATIONS. TANKS SHALL HAVE APPROVED SPILL CONTAINMENT WITH THE CAPACITY REQUIRED BY THE APPLICABLE REGULATIONS. FROM NFPA 30: ALL TANKS SHALL BE PROVIDED WITH SECONDARY CONTAINMENT (I.E. CONTAINMENT EXTERNAL TO AND SEPARATE FROM PRIMARY CONTAINMENT). SECONDARY CONTAINMENT SHALL BE CONSTRUCTED OF MATERIALS OF SUFFICIENT THICKNESS, DENSITY AND COMPOSITION SO AS NOT TO BE STRUCTURALLY WEAKENED AS A RESULT OF CONTACT WITH THE FUEL STORED AND CAPABLE OF CONTAINING DISCHARGED FUEL FOR A PERIOD OF TIME EQUAL TO OR LONGER THAN THE MAXIMUM ANTICIPATED TIME SUFFICIENT TO ALLOW RECOVERY OF DISCHARGED FUEL. SECONDARY CONTAINMENT MAY ONLY BE REQUIRED ON LARGER FUEL TANKS AND THE QUALIFIED STORMWATER MANAGER SHOULD FAMILIARIZE THEMSELVES WITH AND FOLLOW LOCAL AND STATE REQUIREMENTS.

THE TANKS SHALL BE IN SOUND CONDITION FREE OF RUST OR OTHER DAMAGE WHICH MIGHT COMPROMISE CONTAINMENT. FUEL STORAGE AREAS SHALL MEET ALL ENVIRONMENTAL PROTECTION AGENCY (EPA), OSHA AND OTHER REGULATORY REQUIREMENTS FOR SIGNAGE, FIRE EXTINGUISHER, ETC. HOSES, VALVES, FITTINGS, CAPS, FILLER NOZZLES AND ASSOCIATED HARDWARE SHALL BE MAINTAINED IN PROPER WORKING CONDITION AT ALL TIMES. THE LOCATION OF FUEL TANKS SHALL BE SHOWN ON THE SITE MAPS AND SHALL BE LOCATED TO MINIMIZE EXPOSURE TO WEATHER AND SURFACE WATER DRAINAGE FEATURES.

THE OPERATOR SHALL DEVELOP AND IMPLEMENT A MATERIALS HANDLING AND SPILL PREVENTION PLAN (MHSPP) IN ACCORDANCE WITH THE EPA AND STATE OF COLORADO REQUIREMENTS. IN THE EVENT OF AN ACCIDENTAL SPILL, IMMEDIATE ACTION SHALL BE UNDERTAKEN BY THE OPERATOR TO CONTAIN AND REMOVE THE SPILLED MATERIAL. ALL HAZARDOUS MATERIALS, INCLUDING CONTAMINATED SOIL, SHALL BE DISPOSED OF BY THE OPERATOR IN THE MANNER SPECIFIED BY FEDERAL, STATE AND LOCAL REGULATIONS AND BY THE MANUFACTURER OF SUCH PRODUCTS. AS SOON AS POSSIBLE, THE SPILL SHALL BE REPORTED TO THE APPROPRIATE AGENCIES. AS REQUIRED UNDER THE PROVISIONS OF THE CLEAN WATER ACT, ANY SPILL OR DISCHARGE ENTERING WATERS OF THE UNITED STATES SHALL BE PROPERLY REPORTED. THE OPERATOR SHALL PREPARE A WRITTEN RECORD OF ANY SPILL AND ASSOCIATED CLEAN-UP ACTIVITIES OF PETROLEUM PRODUCTS OR HAZARDOUS MATERIALS IN EXCESS OF 1 GALLON OR REPORTABLE QUANTITIES, WHICHEVER IS LESS.

ACCIDENTAL SPILLS SHALL BE HANDLED EXPEDITIOUSLY AS OUTLINED IN CDPHE GUIDANCE. ANY SPILLS OF PETROLEUM PRODUCTS OR HAZARDOUS MATERIALS IN EXCESS OF REPORTABLE QUANTITIES AS DEFINED BY EPA OR THE STATE OR LOCAL AGENCY REGULATIONS, SHALL BE IMMEDIATELY REPORTED TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT SPILL REPORTING LINES.

- CDPHE ENVIRONMENTAL RELEASE AND INCIDENT REPORTING LINE (877) 518-5608.
- NATIONAL RESPONSE CENTER - (800) 424-8802

VEHICLE TRACKING AND DUST CONTROL

VEHICLE TRACKING CONTROL MEASURES (STRUCTURAL AND NON-STRUCTURAL) SHALL BE IMPLEMENTED IN ORDER TO CONTROL POTENTIAL SEDIMENT DISCHARGES FROM VEHICLE TRACKING. PRACTICES SHALL BE IMPLEMENTED FOR ALL AREAS OF POTENTIAL VEHICLE TRACKING WHICH INCLUDE BUT ARE NOT LIMITED TO REDUCED SITE ACCESS AND UTILIZATION OF DESIGNATED HAUL ROUTES.

AREAS OF SOIL THAT ARE DENUDED OF VEGETATION AND HAVE LITTLE PROTECTION FROM PARTICLES BEING PICKED UP AND CARRIED BY WIND SHOULD BE PROTECTED WITH A TEMPORARY COVER OR KEPT UNDER CONTROL WITH WATER OR OTHER SOIL ADHERING PRODUCTS TO LIMIT WIND TRANSPORTED PARTICLES EXITING THE SITE PERIMETER.

DEDICATED CONCRETE OR ASPHALT BATCH PLANTS

DEDICATED CONCRETE OR ASPHALT BATCH PLANTS ARE NOT ANTICIPATED WITH THIS PROJECT. IF ENCOUNTERED, THE QUALIFIED STORMWATER MANAGER SHALL TAKE APPROPRIATE CONTAINMENT AND TREATMENT MEASURES AND DOCUMENT AS NECESSARY.

WETLANDS AND STREAM CROSSINGS

NO WETLANDS OR STREAMS EXIST WITHIN THE PROJECT AREA.

WASTE MANAGEMENT AND DISPOSAL

AN EFFECTIVE FIRST STEP TOWARDS PREVENTING POLLUTION IN STORMWATER FROM WORK SITES INVOLVES USING A COMMON-SENSE APPROACH TO IMPROVE THE FACILITY'S BASIC HOUSEKEEPING METHODS. POOR HOUSEKEEPING PRACTICES RESULT IN INCREASED WASTE AND POTENTIAL FOR STORMWATER CONTAMINATION. WASTE DISPOSAL BINS ARE TO BE CHECKED DAILY FOR LEAKS AND CAPACITY. ALL LEAKS IN DISPOSAL BINS ARE TO BE REPORTED TO THE QUALIFIED STORMWATER MANAGER IN ORDER TO PREVENT CONTAMINATION TO THE SITE. WASTE DISPOSAL BINS THAT ARE FOUND TO BE AT 98-100% CAPACITY SHOULD BE EMPTIED BEFORE ADDITIONAL WASTE IS ADDED.

NO SOLID MATERIALS ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORMWATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS INCIDENTAL TO THE CONSTRUCTION ACTIVITIES, MUST BE COLLECTED AND PLACED IN CONTAINERS. SECURE COVERS FOR THE CONTAINERS SHALL BE PROVIDED IF REQUIRED BY STATE AND LOCAL REQUIREMENTS. THE LOCATION OF SOLID WASTE RECEPTACLES SHALL BE IDENTIFIED ON THE SWMP BY THE OPERATOR.

CONCRETE WASTE IS ANTICIPATED WITH THIS PROJECT; AND THEREFORE, A DEDICATED CONCRETE WASHOUT IS REQUIRED. THE QUALIFIED STORMWATER MANAGER SHALL TAKE APPROPRIATE CONTAINMENT AND TREATMENT MEASURES AND DOCUMENT AS NECESSARY

STABILIZATION AND STORMWATER MANAGEMENT

TEMPORARY STABILIZATION AND SHORT-TERM STORMWATER MANGEMENT

ALL AREAS THAT WILL BE DORMANT FOR MORE THAN 30 DAYS AFTER THE COMPLETION OF OVER-LOT GRADING WILL REQUIRE TEMPORARY SEEDING WITHIN 14 DAYS OF ESTABLISHMENT. THIS DOES NOT PRECLUDE THE 7-DAY REQUIREMENT FOR AREAS FULLY COMPLETED IN THE FUTURE. AT A MINIMUM, IN ENSURING THAT THIS REQUIREMENT IS FOLLOWED, ADEQUATE PHASING/SCHEDULING WILL BE REQUIRED.

FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

IN THE NATURAL CONDITION, THE SITE SOIL IS STABILIZED BY MEANS OF NATIVE VEGETATION. THE FINAL STABILIZATION TECHNIQUE TO BE USED AT THIS PROJECT FOR STABILIZING SOILS SHALL BE TO PROVIDE A PROTECTIVE COVER OF LANDSCAPING VEGETATION, PAVEMENT AND GRANULAR STABILIZATION MATERIAL. SEEDING SHOULD BE CONDUCTED AFTER FINAL GRADE IS ACHIEVED AND SOILS ARE PREPARED TO TAKE ADVANTAGE OF SOIL MOISTURE AND SEED GERMINATION. THE QUALIFIED STORMWATER MANAGER SHOULD EVALUATE THE SHORT AND LONG-TERM FORECASTS PRIOR TO APPLYING PERMANENT SEED.

FINAL SITE STABILIZATION IS ACHIEVED WHEN VEGETATIVE COVER PROVIDES PERMANENT STABILIZATION WITH A DENSITY GREATER THAN 70 PERCENT OF THE PRE-DISTURBANCE LEVELS, OR EQUIVALENT PERMANENT, PHYSICAL EROSION REDUCTION METHODS HAVE BEEN EMPLOYED OVER THE ENTIRE AREA TO BE STABILIZED BY VEGETATIVE COVER. THIS AREA IS EXCLUSIVE OF AREAS THAT ARE COVERED WITH ROCK (CRUSHED GRANITE, GRAVEL, ETC.) OR LANDSCAPE MULCH, PAVED OR HAVE A BUILDING OR OTHER PERMANENT STRUCTURE ON THEM.

THE SITE WILL NOT RELY ON ANY CONTROL MEASURES THAT ARE OWNED OR OPERATED BY ANOTHER ENTITY.

LONG-TERM STORMWATER MANAGEMENT WILL CONSIST OF TWO PRIVATE, FULL-SPECTRUM WATER QUALITY AND DETENTION PONDS LOCATED ON-SITE. THESE PONDS WILL BE OWNED AND MAINTAINED BY THE OWNER.

INSPECTION AND MAINTENANCE

INSPECTIONS SHALL BE THE RESPONSIBILITY OF THE QUALIFIED STORMWATER MANAGER THROUGHOUT THE CONSTRUCTION PROCESS.

INSPECTION SCHEDULE REQUIREMENTS

INSPECTION AND MAINTENANCE OF EROSION CONTROL MEASURES SHALL COMPLY WITH THE CRITERIA SET FORTH BY THE GENERAL PERMIT (COR400000), OR THE FOLLOWING, WHICHEVER IS MORE STRINGENT.

THE PERMITTEE OR CONTRACTOR SHALL MAKE ROUTINE CHECKS OF ALL EROSION CONTROL MEASURES TO DETERMINE IF REPAIRS OR SEDIMENT REMOVAL IS NECESSARY. WRITTEN INSPECTION RECORDS A MINIMUM OF ONCE BIWEEKLY AND WITHIN 24 HOURS AFTER EVERY SIGNIFICANT PRECIPITATION EVENT (INCLUDING SNOWMELT EVENTS) OR AFTER EVERY SIGNIFICANT PRECIPITATION EVENT THAT CAUSES SURFACE EROSION. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IMMEDIATELY. IF MORE FREQUENT INSPECTIONS ARE REQUIRED TO ENSURE THAT CONTROL MEASURES ARE PROPERLY MAINTAINED AND OPERATED, THE INSPECTION SCHEDULE SHALL BE MODIFIED TO MEET THIS NEED.

WHEN SNOW COVER EXISTS OVER THE ENTIRE SITE FOR AN EXTENDED PERIOD, INSPECTIONS ARE NOT ALWAYS FEASIBLE. THIS CONDITION SHOULD BE DOCUMENTED, INCLUDING DATE OF SNOWFALL AND DATE OF MELTING CONDITIONS TO BRING AWARENESS OF AND PREPARATION FOR AREAS WHERE MELTING CONDITIONS MAY POSE A RISK OF SURFACE EROSION.

A COPY OF THE SWMP SHALL BE MAINTAINED AT THE SITE AT ALL TIMES. ANY DEGRADATION OF THE CONTROL MEASURES DESCRIBED IN THE SWMP OR EXCESSIVE ACCUMULATION OF SEDIMENTS SHALL BE REMEDIED IMMEDIATELY UPON DISCOVERY. THE CONTRACTOR SHALL RECORD ALL STORM EVENTS ON THE STORM EVENT LOG FOR THE SITE.

INSPECTION PROCEDURES

THE INSPECTION SHALL INCLUDE OBSERVATIONS OF:

- THE CONSTRUCTION SITE PERIMETER AND DISCHARGE POINTS;
- ALL DISTURBED AREAS;
- VEHICLES AND EQUIPMENT;
- AREAS USED FOR MATERIAL / WASTE STORAGE THAT ARE EXPOSED TO PRECIPITATION;
- OTHER AREAS DETERMINED TO HAVE A SIGNIFICANT POTENTIAL FOR STORMWATER POLLUTION;
- EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE SWMP; AND
- ANY OTHER STRUCTURAL CONTROL MEASURES THAT MAY REQUIRE MAINTENANCE.

THE INSPECTION MUST DETERMINE IF THERE IS EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. CONTROL MEASURES SHOULD BE REVIEWED TO DETERMINE IF THEY STILL MEET THE DESIGN INTENT AND OPERATIONAL CRITERIA IN THE SWMP AND IF THEY CONTINUE TO ADEQUATELY CONTROL POLLUTANTS AT THE SITE. ANY CONTROL MEASURES NOT OPERATING IN ACCORDANCE WITH THE SWMP MUST BE ADDRESSED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES, TO MINIMIZE THE DISCHARGE OF POLLUTANTS AND THE SWMP MUST BE UPDATED AND INSPECTIONS MUST BE DOCUMENTED.

EXAMPLES OF SPECIFIC ITEMS TO EVALUATE DURING SITE INSPECTIONS ARE LISTED BELOW. THIS LIST IS NOT INTENDED TO BE COMPREHENSIVE. ULTIMATELY, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THE ADEQUACY OF SITE POLLUTANT DISCHARGE CONTROLS. ACTUAL PHYSICAL SITE CONDITIONS OR CONTRACTOR PRACTICES COULD MAKE IT NECESSARY TO INSTALL MORE CONTROLS THAN ARE SHOWN ON THE PLANS. ASSESSING THE NEED FOR ADDITIONAL CONTROLS AND IMPLEMENTING THEM OR ADJUSTING EXISTING CONTROLS WILL BE AN ONGOING REQUIREMENT UNTIL THE SITE ACHIEVES FINAL STABILIZATION.

1. VEHICLE TRACKING CONTROL - LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING. EXITS SHALL BE MAINTAINED AS NECESSARY TO PREVENT THE RELEASE OF SEDIMENT FROM VEHICLES LEAVING THE SITE. ANY SEDIMENT DEPOSITED ON THE ADJACENT ROADWAY SHALL BE REMOVED AS NECESSARY THROUGHOUT THE DAY OR AT THE END OF EVERY DAY AND DISPOSED OF IN AN APPROPRIATE MANNER. SEDIMENT SHALL NOT BE WASHED INTO STORM SEWER SYSTEMS.
2. EROSION CONTROL DEVICES - ROLLED EROSION CONTROL PRODUCTS (NETS, BLANKETS, TURF REINFORCEMENT MATS) AND MARGINALLY VEGETATED AREAS (AREAS NOT MEETING REQUIRED VEGETATIVE DENSITIES FOR FINAL STABILIZATION) MUST BE INSPECTED FREQUENTLY. RILING, RUTTING AND OTHER SIGNS OF EROSION INDICATE THE EROSION CONTROL DEVICE IS NOT FUNCTIONING PROPERLY AND ADDITIONAL EROSION CONTROL DEVICES ARE WARRANTED.
3. SEDIMENT CONTROL DEVICES - SEDIMENT BARRIERS (SILT FENCE, SEDIMENT CONTROL LOGS, ETC.), TRAPS AND BASINS MUST BE INSPECTED, AND THEY MUST BE CLEANED OUT AT SUCH TIME AS THEIR ORIGINAL CAPACITY HAS BEEN REDUCED BY 50 PERCENT. ALL MATERIAL EXCAVATED FROM BEHIND SEDIMENT BARRIERS OR IN TRAPS AND BASINS SHALL BE INCORPORATED INTO ONSITE SOILS OR SPREAD OUT ON AN UPLAND PORTION OF THE SITE AND STABILIZED. TO MINIMIZE THE POTENTIAL FOR SEDIMENT RELEASES FROM THE PROJECT, SITE PERIMETER CONTROL DEVICES SHALL BE INSPECTED WITH CONSIDERATION GIVEN TO CHANGING UP-GRADIENT CONDITIONS.
4. MATERIAL STORAGE AREAS - MATERIAL STORAGE AREAS SHOULD BE LOCATED TO MINIMIZE EXPOSURE TO WEATHER. INSPECTIONS SHALL EVALUATE DISTURBED AREAS AND AREAS USED FOR STORING MATERIALS THAT ARE EXPOSED TO RAINFALL FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM OR DISCHARGING FROM THE SITE. IF NECESSARY, THE MATERIALS MUST BE COVERED, OR ORIGINAL COVERS MUST BE REPAIRED OR SUPPLEMENTED. ALSO, PROTECTIVE BERMS MUST BE CONSTRUCTED, IF NEEDED, IN ORDER TO CONTAIN RUNOFF FROM MATERIAL STORAGE AREAS. ALL STATE AND LOCAL REGULATIONS PERTAINING TO MATERIAL STORAGE AREAS SHALL BE ADHERED TO.
5. VEGETATION - SEED/SOD SHALL BE FREE OF WEEDY SPECIES AND APPROPRIATE FOR SITE SOILS AND REGIONAL CLIMATE. SEEDING, SODDING, TACKING, AND MULCHING SHALL BE COMPLETED, IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED WITHIN THE PROJECT MANUAL AND LOCATIONS IDENTIFIED WITHIN THE PLANS, IMMEDIATELY AFTER TOPSOIL IS APPLIED AND FINAL GRADE IS REACHED. GRASSED AREAS SHALL BE INSPECTED TO CONFIRM THAT A HEALTHY STAND OF GRASS IS MAINTAINED. RIP-RAP, MULCH, GRAVEL, DECOMPOSED GRANITE OR OTHER EQUIVALENT PERMANENT STABILIZATION MEASURES MAY BE EMPLOYED IN LIEU OF VEGETATION BASED ON SITE-SPECIFIC CONDITIONS AND OWNER APPROVAL.
6. DISCHARGE POINTS - ALL DISCHARGE POINTS MUST BE INSPECTED TO DETERMINE WHETHER EROSION AND SEDIMENT CONTROL MEASURES ARE EFFECTIVE IN PREVENTING DISCHARGE OF SEDIMENT FROM THE SITE OR IMPACTS TO RECEIVING WATERS.

BASED ON THE INSPECTION RESULTS, ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IMMEDIATELY AND IN NO CASES LONGER THAN SEVENTY-TWO (72) HOURS AFTER IDENTIFICATION. THE INSPECTION REPORTS MUST BE COMPLETED AFTER EACH INSPECTION. AN IMPORTANT ASPECT OF THE INSPECTION REPORT IS THE DESCRIPTION OF ADDITIONAL MEASURES THAT NEED TO BE TAKEN TO ENHANCE PLAN EFFECTIVENESS. THE INSPECTION REPORT MUST IDENTIFY WHETHER THE SITE WAS IN COMPLIANCE WITH THE SWMP AT THE TIME OF INSPECTION AND SPECIFICALLY IDENTIFY ALL INCIDENTS OF NON-COMPLIANCE.

THE QUALIFIED STORMWATER MANAGER SHALL ENSURE THAT, AT A MINIMUM, THE FOLLOWING IS RECORDED FOR EACH INSPECTION AND KEPT ONSITE FOR REFERENCE:

A. THE INSPECTOR'S NAME (MUST BE A QUALIFIED STORMWATER MANAGER),
B. THE DATE AND TYPE OF THE INSPECTION (REGULAR INSPECTION VS. POST-STORM INSPECTION),
C. WEATHER CONDITIONS AT THE TIME OF THE INSPECTION,
D. PHASE OF CONSTRUCTION AT THE TIME OF THE INSPECTION,
E. ESTIMATED ACREAGE OF DISTURBANCE AT THE TIME OF INSPECTION,
F. THE MINIMUM FREQUENCY OF INSPECTIONS CHOSEN,
G. LOCATION(S) OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE,
H. LOCATION(S) OF CONTROL MEASURES NEEDING MAINTENANCE,
I. LOCATION(S) AND IDENTIFICATION OF INADEQUATE CONTROL MEASURES
J. LOCATION(S) AND IDENTIFICATION OF ADDITIONAL CONTROL MEASURES ARE NEEDED THAT WERE NOT IN PLACE AT THE TIME OF INSPECTION, AND
K. ANY CORRECTIVE ACTIONS TAKEN.

IF REPAIRS ARE NEEDED TO ANY CONTROL MEASURES, THEY SHALL BE COMPLETED IMMEDIATELY. AFTER ADEQUATE CORRECTIVE ACTION(S) AND MAINTENANCE HAVE BEEN TAKEN, OR WHERE A REPORT DOES NOT IDENTIFY ANY INCIDENTS REQUIRING CORRECTIVE ACTION OR MAINTENANCE, THE REPORT SHALL CONTAIN A STATEMENT STATING THE FOLLOWING:

"I VERIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL CORRECTIVE ACTION AND MAINTENANCE ITEMS IDENTIFIED DURING THE INSPECTION ARE COMPLETE, AND THE SITE IS CURRENTLY IN COMPLIANCE WITH THE PERMIT."

THIS STATEMENT MUST BE SIGNED BY A QUALIFIED STORMWATER MANAGER. IF IT IS INFEASIBLE TO INSTALL OR REPAIR OF CONTROL MEASURE IMMEDIATELY AFTER DISCOVERING THE DEFICIENCY, THE FOLLOWING INFORMATION MUST BE DOCUMENTED AND KEPT ON RECORD:

1. DESCRIBE WHY IT IS INFEASIBLE TO INITIATE THE INSTALLATION OR REPAIR IMMEDIATELY; AND
2. PROVIDE A SCHEDULE FOR INSTALLING OR REPAIRING THE CONTROL MEASURE AND RETURNING IT TO AN EFFECTIVE OPERATING CONDITION AS SOON AS POSSIBLE.

THE USE AND MAINTENANCE OF LOG BOOKS, PHOTOGRAPHS, FIELD NOTEBOOKS, DRAWINGS OR MAPS SHOULD ALSO BE INCLUDED IN THE SWMP RECORDS WHEN APPROPRIATE. CONTRACTOR SHALL USE THE INSPECTION AND SAMPLING REPORT FORMS.

CONTROL MEASURE MAINTENANCE/REPLACEMENT AND FAILED CONTROL MEASURES

SITE INSPECTION PROCEDURES NOTED ABOVE MUST ADDRESS MAINTENANCE OF CONTROL MEASURES THAT ARE FOUND TO NO LONGER FUNCTION AS NEEDED AND DESIGNED, AS WELL AS PREVENTIVE MEASURES TO PROACTIVELY ENSURE CONTINUED OPERATION.

THE QUALIFIED STORMWATER MANAGER SHALL IMPLEMENT A PREVENTATIVE MAINTENANCE PROGRAM TO ENSURE THAT CONTROL MEASURE BREAKDOWNS AND FAILURES ARE HANDLED PROACTIVELY. SITE INSPECTIONS SHOULD UNCOVER ANY CONDITIONS WHICH COULD RESULT IN THE DISCHARGE OF POLLUTANTS TO STORM SEWERS AND SURFACE WATERS AND SHALL BE RECTIFIED. FOR EXAMPLE, SEDIMENT SHALL BE REMOVED FROM SILT FENCES ON A REGULAR BASIS TO PREVENT FAILURE OF THE CONTROL MEASURE. SEDIMENT SHALL BE REMOVED TO AN APPROPRIATE LOCATION SO THAT IT WILL NOT BECOME AN ADDITIONAL POLLUTANT SOURCE.

THE INSPECTION PROCESS MUST ALSO INCLUDE REPLACEMENT OF CONTROL MEASURES WHEN NEEDED OR THE ADDITION OF NEW CONTROL MEASURES IN ORDER TO ADEQUATELY MANAGE THE POLLUTANT SOURCES AT THE SITE.

ANY CONTROL MEASURE DEFICIENCIES, REPLACEMENT OR ADDITIONAL CONTROL MEASURES THAT MAY BE REQUIRED SHALL BE DOCUMENTED ON THE STORMWATER MANAGEMENT SITE MAP AND ON THE APPROPRIATE INSPECTION FORM. IF AMENDMENTS TO THE SWMP ARE REQUIRED, THESE AMENDMENTS SHALL BE DOCUMENTED ON THE SWMP AMENDMENT LOG.

DISPOSITION OF TEMPORARY MEASURES

MOST TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MUST BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED. TRAPPED SEDIMENT AND DISTURBED SOIL AREAS RESULTING FROM THE DISPOSAL OF TEMPORARY MEASURES MUST BE RETURNED TO FINAL PLAN GRADES AND PERMANENTLY STABILIZED TO PREVENT FURTHER SOIL EROSION.

PLAN MODIFICATIONS

THE SWMP SHOULD BE VIEWED AS A "LIVING DOCUMENT" THAT IS CONTINUOUSLY BEING REVIEWED AND MODIFIED AS A PART OF THE OVERALL PROCESS OF EVALUATING AND MANAGING STORMWATER QUALITY ISSUES AT THE SITE. THE QUALIFIED STORMWATER MANAGER SHALL AMEND THE SWMP WHEN THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION OR MAINTENANCE OF THE SITE WHICH WOULD REQUIRE THE IMPLEMENTATION OF NEW OR REVISED BMPS OR IF THE SWMP PROVES TO BE INEFFECTIVE IN ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY OR WHEN BMPS ARE NO LONGER NECESSARY AND ARE REMOVED.

PLAN REVISIONS MADE PRIOR TO OR FOLLOWING A CHANGE(S) ONSITE, INCLUDING REVISIONS TO SECTIONS ADDRESSING SITE CONDITIONS AND CONTROL MEASURES, A NOTATION MUST BE INCLUDED IN THE PLAN THE IDENTIFIES:

- DATE OF SITE CHANGE,
- THE CONTROL MEASURE REMOVED OR MODIFIED,
- THE LOCATION(S) OF THOSE CONTROL MEASURES,
- ANY CHANGES TO THE CONTROL MEASURE, AND
- INITIALS OF THE INDIVIDUAL WHO UPDATED THE MAP.

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

Kimley»Horn
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DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
SWMP NOTES

SHEET
3

STANDARD NOTES FOR TOWN OF PALMER LAKE GRADING AND EROSION CONTROL PLANS

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.
2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED TOWN OF PALMER LAKE STANDARDS, INCLUDING THE TOWN OF PALMER LAKE MUNICIPAL CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN LAND USE PERMIT ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE LAND USE PERMIT IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND TOWN OF PALMER LAKE WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH TOWN STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.
8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE TOWN ENGINEER PRIOR TO IMPLEMENTATION.
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.
14. DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.
15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY TOWN OF PALMER LAKE ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ONSITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ONSITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.
24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY. \
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY TERRACON AND SHALL BE CONSIDERED A PART OF THESE PLANS.
29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

    COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
    WATER QUALITY CONTROL DIVISION
    WQCD – PERMITS
    4300 CHERRY CREEK DRIVE SOUTH
    DENVER, CO 80246-1530
    ATTN: PERMITS UNIT

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

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Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
GESC NOTES

SHEET
4

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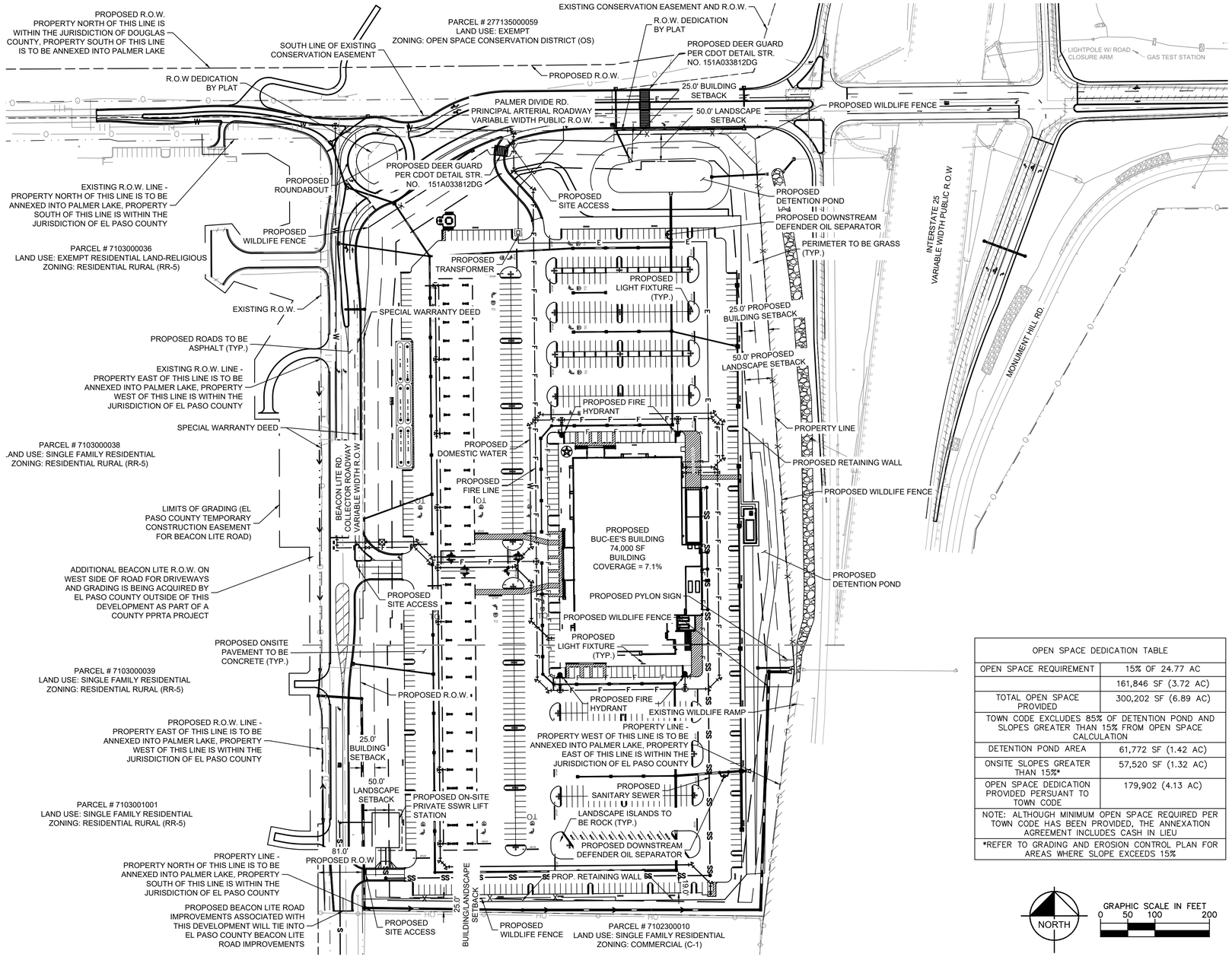
BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO



LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- EXISTING PROPERTY LINE - R.O.W. TO BE DEDICATED BY PLAT
- SPECIAL WARRANTY DEED
- BUILDING SETBACK
- LANDSCAPE SETBACK
- GRADING LIMITS
- SWALE FLOW LINE

ABBREVIATIONS

R.O.W. RIGHT OF WAY

NOTES:

1. ANY AREAS WITH SLOPE GREATER THAN 15% ARE LOCATED OUTSIDE OF THE PARKING LOT AND ARE TO TIE INTO EXISTING GRADES OR FOR STROMWATER DETENTION. REFER TO THE GRADING SHEETS FOR FULL SLOPE DETAILS.
2. PROJECT IS NOT A PHASED DEVELOPMENT.
3. AN ECOLOGICAL ASSESSMENT REPORT PREPARED BY ECOS ECOSYSTEM SERVICES LLC, PROJECT NUMBER 2025-3-1 WAS PREPARED AND SUBMITTED IN SUPPORT OF THE APPLICATION. THE CONCLUSION OF THE REPORT WAS THAT THERE ARE NO SIGNIFICANT NATURAL FEATURES OR SENSITIVE HABITAT THAT NEEDS TO BE PRESERVED PURSUANT TO US FISH AND WILDLIFE OR THE COLORADO DIVISION OF WILDLIFE STANDARDS. ALL PROPOSED VEGETATION WILL BE NATIVE SPECIES WHICH WILL ENHANCE THE SITE AND PROVIDE HABITAT FOR ANIMAL SPECIES FOUND IN THE AREA.
4. THE PROJECT IS OUTSIDE OF ANY MAPPED FEMA SPECIAL FLOOD HAZARD AREAS (I.E. FLOOD-PLAINS). THE SITE IS LOCATED WITHIN FLOOD ZONE X.
5. PROPOSED BUILDING SETBACKS WILL BE A MINIMUM 25 FEET ON ALL SIDES OF THE PROPERTY PER THE WRITTEN PD.
6. OUTDOOR TRASH RECEPTACLES WILL ALL BE DESIGNED TO BE BEAR-PROOF. FINAL SIZE, LOCATION, AND DESIGN WILL BE DETERMINED WITH THE FINAL DEVELOPMENT PLAN.
7. THE OPERATION AND MAINTENANCE MANUAL FOR THE DOWNSTREAM DEFENDERS IS INCLUDED AS A PART OF THIS PROJECT'S I&M PLAN.

LAND USE TABLE

APPROXIMATE TOTAL BUILDING SQUARE FOOTAGE	75,500 (74,000 SF TRAVEL CENTER + 1,500 SF GENERATOR ENCLOSURE)	
BUILDING LOT COVERAGE %	7%	
PROPOSED MAX. BUILDING HEIGHT (FT)	40	
TOTAL ACERAGE	24.77 AC	
PROPOSED IMPERVIOUSNESS	71%	
LAND USE	TRAVEL CENTER	
EXISTING ZONING	C-1, CC	
PROPOSED ZONING	PD	
LOTS	1	
PARKING SPACES	PROPOSED	REQUIRED
TOTAL PARKING SPACES	820	504
STANDARD PARKING SPACES (9' X 19' MINIMUM)	797	
ADA PARKING SPACES	23	15
LOADING SPACES (12' X 50' MINIMUM)	2	2
BUS/RV PARKING SPACES	11	
BICYCLE SPACES	10	
PARKING RATIO (SPACES / 1,000 SF TRAVEL CENTER)	11.1	10
WATER DEMAND	37,300 GPD	
SEWER DEMAND	TBD	

OPEN SPACE DEDICATION TABLE	
OPEN SPACE REQUIREMENT	15% OF 24.77 AC
	161,846 SF (3.72 AC)
TOTAL OPEN SPACE PROVIDED	300,202 SF (6.89 AC)
TOWN CODE EXCLUDES 85% OF DETENTION POND AND SLOPES GREATER THAN 15% FROM OPEN SPACE CALCULATION	
DETENTION POND AREA	61,772 SF (1.42 AC)
ONSITE SLOPES GREATER THAN 15%*	57,520 SF (1.32 AC)
OPEN SPACE DEDICATION PROVIDED PERSUANT TO TOWN CODE	179,902 (4.13 AC)
NOTE: ALTHOUGH MINIMUM OPEN SPACE REQUIRED PER TOWN CODE HAS BEEN PROVIDED, THE ANNEXATION AGREEMENT INCLUDES CASH IN LIEU	
*REFER TO GRADING AND EROSION CONTROL PLAN FOR AREAS WHERE SLOPE EXCEEDS 15%	

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

MAYOR CERTIFICATE:

THIS PLANNED DEVELOPMENT PLAN OF BUC-EE'S WAS APPROVED FOR FILING BY THE PALMER LAKE, COLORADO, BOARD OF TRUSTEES ON THIS _____ DAY OF _____, 2025, SUBJECT TO ANY NOTES SPECIFIED HEREON AND ANY CONDITIONS INCLUDED IN THE ORDINANCE OF APPROVAL.

_____ _____
MAYOR, BOARD OF TRUSTEES DATE

ATTEST:

BY:_____ERICA ROMERO
TOWN CLERK

_____ _____
PLANNING COMMISSION CHAIR DATE

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

Kimley»Horn
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6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
PLANNED DEVELOPMENT PLAN

SHEET 5

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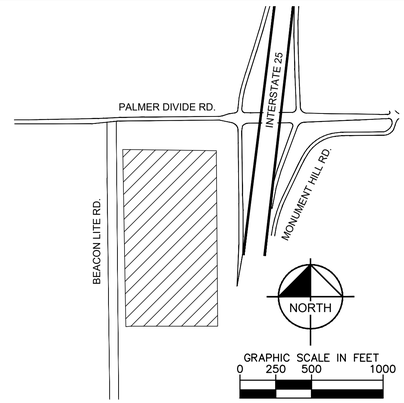
BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO

LEGEND

- PROPERTY LINE
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- XXXX% EXISTING SLOPE
- EXISTING VEGETATION EDGE
- EXISTING SWALE



VICINITY MAP

CONTACT INFORMATION

OWNER	APPLICANT	CIVIL ENGINEER
MONUMENT RIDGE WEST, LLC	CSMS MANAGEMENT, LLC	KIMLEY-HORN & ASSOCIATES
5055 LIST DRIVE	SCOTT RATCLIFF, P.E.	KYLE WATSON, P.E.
COLORADO SPRINGS, CO 80191	11200 W BROADWAY, STE 2332	6200 S. SYRACUSE WAY, SUITE 300
	PEARLAND, TX 77584	GREENWOOD VILLAGE, CO 80111
	TEL: 979.529.2704	TEL: 303.228.2300

ABBREVIATIONS

R.O.W. RIGHT OF WAY

LEGAL DESCRIPTION

A PARCEL OF LAND BEING A PORTION OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222106819, IN THE EL PASO COUNTY OFFICE OF THE CLERK AND RECORDER, SITUATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 2, AS MONUMENTED BY A NO. 6 REBAR WITH

3.25" ALUMINUM CAP STAMPED, "LS 17496", IN MONUMENT BOX;

THENCE COINCIDENT WITH THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 2, SOUTH 00°29'49" EAST, A DISTANCE OF 30.00 FEET TO THE WESTERLY EXTENSION OF THE NORTH LINE OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222083003, SAID WESTERLY EXTENSION ALSO BEING THE NORTHERLY LINE OF THAT PROPERTY DESCRIBED AT RECEPTION NO. 222106819;

THENCE COINCIDENT WITH SAID WESTERLY EXTENSIONS AND SAID NORTH LINES, NORTH 89°22'36" EAST, A DISTANCE OF 394.91 FEET TO THE NORTHEAST CORNER OF SAID DEED RECORDED AT RECEPTION NO. 222083003 AND THE NORTHWEST CORNER OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222082953, IN SAID RECORDS;

THENCE COINCIDENT WITH THE NORTH LINE OF LAST SAID SPECIAL WARRANTY DEED, CONTINUING NORTH 89°22'36" EAST, A DISTANCE OF 109.52 FEET TO THE NORTHEAST CORNER OF SAID DEED AND THE **POINT OF BEGINNING**;

THENCE CONTINUING COINCIDENT WITH THE NORTH LINE OF SAID RECEPTION NO. 222106819, NORTH 89°22'36" EAST, A DISTANCE OF 111.41 FEET TO THE WESTERLY MOST NORTHEAST CORNER OF SAID RECEPTION NO. 222106819, ALSO BEING WESTERLY RIGHT-OF-WAY OF INTERSTATE-25;

THENCE COINCIDENT WITH THE EASTERLY LINE OF SAID RECEPTION NO. 222106819 AND SAID WESTERLY RIGHT-OF-WAY THE FOLLOWING FOUR (4) COURSES:

1) SOUTH 83°59'37" EAST, A DISTANCE OF 96.54 FEET;
2) SOUTH 44°10'02" EAST, A DISTANCE OF 76.80 FEET ;
3) SOUTH 04°18'32" EAST, A DISTANCE OF 929.95 FEET;
4) SOUTH 07°01'30" WEST, A DISTANCE OF 457.05 FEET;

THENCE NORTH 89°11'43" WEST, A DISTANCE OF 736.97 FEET TO THE EAST RIGHT-OF-WAY LINE OF BEACON LITE ROAD AS DESCRIBED IN BOOK 571, PAGE 55;

THENCE COINCIDENT WITH SAID EAST RIGHT-OF-WAY LINE, NORTH 00°29'49" WEST, A DISTANCE OF 835.22 FEET THE SOUTHWEST CORNER OF SAID RECEPTION NO. 222083003;

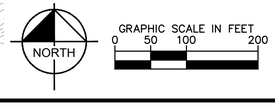
THENCE COINCIDENT WITH THE SOUTHERLY AND EASTERLY LINES OF SAID RECEPTION NO. 222083003 THE FOLLOWING SIX (6) COURSES:

1) NORTH 89°51'19" EAST, A DISTANCE OF 7.75 FEET;
2) NORTH 00°08'41" WEST, A DISTANCE OF 188.22 FEET;
3) NORTH 04°08'13" EAST, A DISTANCE OF 160.73 FEET;
4) NORTH 00°08'41" WEST, A DISTANCE OF 203.28 FEET;
5) NORTH 44°02'37" EAST, A DISTANCE OF 49.33 FEET, TO THE WESTERLY EXTENSION OF THE SOUTH LINE OF SAID RECEPTION NO. 222082953;
6) COINCIDENT WITH SAID WESTERLY EXTENSION, SOUTH 88°38'48" EAST, A DISTANCE OF 416.66 FEET TO THE SOUTHEAST CORNER OF SAID RECEPTION NO. 222082953;
7) NORTH 00°07'32" EAST, A DISTANCE OF 21.93 FEET TO THE **POINT OF BEGINNING**.

LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF EL PASO NOVEMBER 20, 2024 AT RECEPTION NO. 224092706.

NOTES:

1. ANY AREAS WITH SLOPE GREATER THAN 15% ARE LOCATED OUTSIDE OF THE PARKING LOT AND ARE TO TIE INTO EXISTING GRADES OR FOR STORMWATER DETENTION. REFER TO THE GRADING SHEETS FOR FULL SLOPE DETAILS.
2. PROJECT IS NOT A PHASED DEVELOPMENT.
3. AN ECOLOGICAL ASSESSMENT REPORT PREPARED BY ECOS ECOSYSTEM SERVICES LLC, PROJECT NUMBER 2025-3-1 WAS PREPARED AND SUBMITTED IN SUPPORT OF THE APPLICATION. THE CONCLUSION OF THE REPORT WAS THAT THERE ARE NO SIGNIFICANT NATURAL FEATURES OR SENSITIVE HABITAT THE NEEDS TO BE PRESERVED PURSUANT TO US FISH AND WILDLIFE OR THE COLORADO DIVISION OF WILDLIFE STANDARDS. ALL PROPOSED VEGETATION WILL BE NATIVE SPECIES WHICH WILL ENHANCE THE SITE AND PROVIDE HABITAT FOR ANIMAL SPECIES FOUND IN THE AREA.
4. THE PROJECT IS OUTSIDE OF ANY MAPPED FEMA SPECIAL FLOOD HAZARD AREAS (I.E. FLOOD-PLAINS). THE SITE IS LOCATED WITHIN FLOOD ZONE X.



NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

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Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
EXISTING CONDITIONS

SHEET
6

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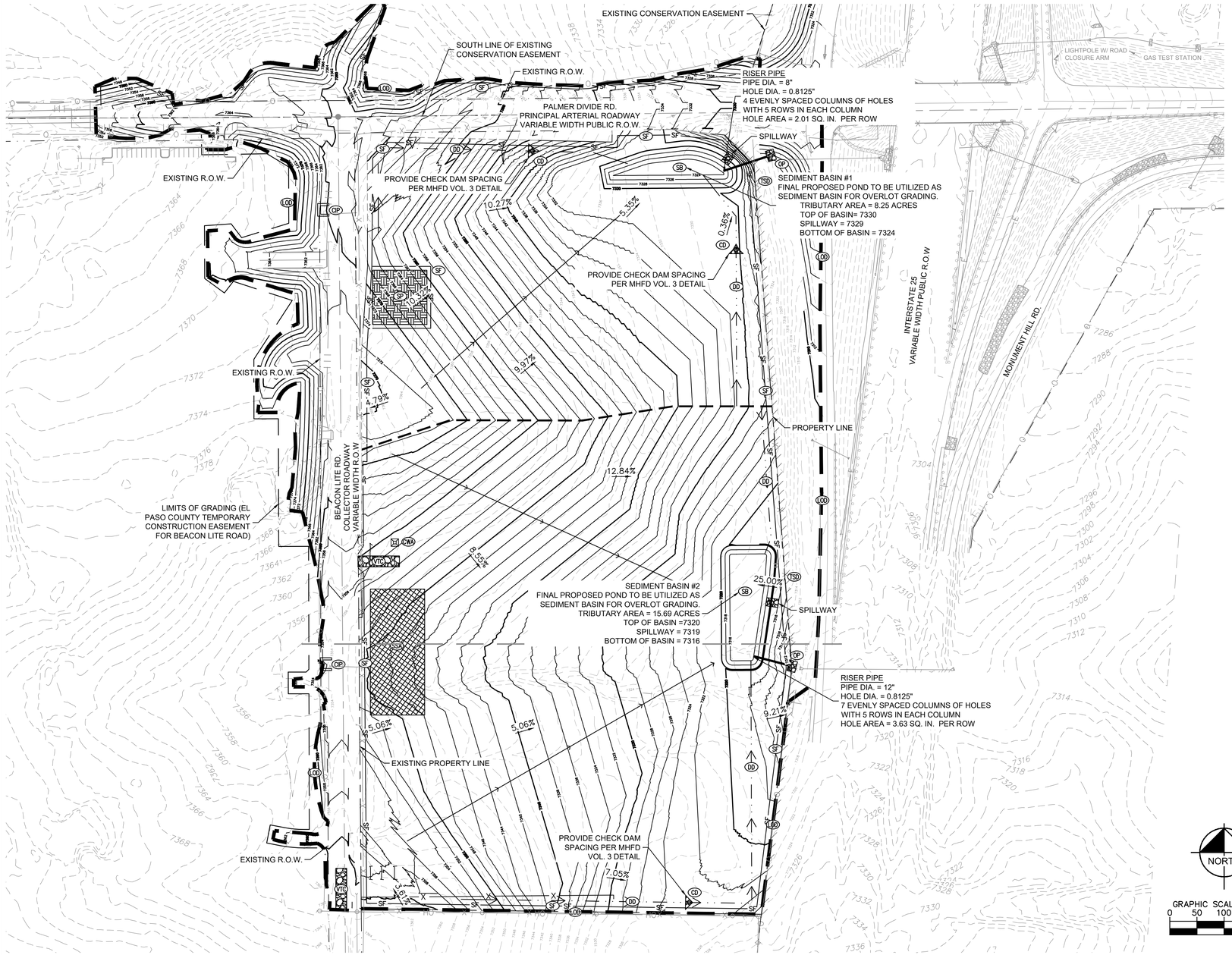
BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO



LEGEND

	PROPERTY LINE
	PROPOSED R.O.W
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
XXXX	PROPOSED MAJOR CONTOUR
XXXX	PROPOSED MINOR CONTOUR
XXXX%	PROPOSED SLOPE
SF	SILT FENCE
LOD	LIMITS OF DISTURBANCE
SB	SEDIMENT BASIN
CD	CHECK DAM
DD	DIVERSION DITCH
SP	STOCK PILE
SSA	STABILIZED STAGING AREA
CWA	CONCRETE WASH OUT AREA
VTC	VEHICLE TRACKING CONTROL
TSD	TEMPORARY SLOPE DRAIN
OP	OUTFALL PROTECTION
CD	CHECK DAM
CIP	CULVERT INLET PROTECTION

ABBREVIATIONS

R.O.W. RIGHT OF WAY

NOTES:

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6. ABSOLUTELY NO GRADING OR LAND DISTURBANCE SHALL TAKE PLACE WEST OF EL PASO COUNTY TEMPORARY CONSTRUCTION EASEMENT.

NORTH

GRAPHIC SCALE IN FEET
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MAYOR CERTIFICATE:

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MAYOR, BOARD OF TRUSTEES DATE

ATTEST:

BY:_____ERICA ROMERO
TOWN CLERK

_____ _____
PLANNING COMMISSION CHAIR DATE

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	1ST SUBMITTAL	KEW	04/24/2025

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DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
INITIAL EROSION CONTROL PLAN

SHEET
7

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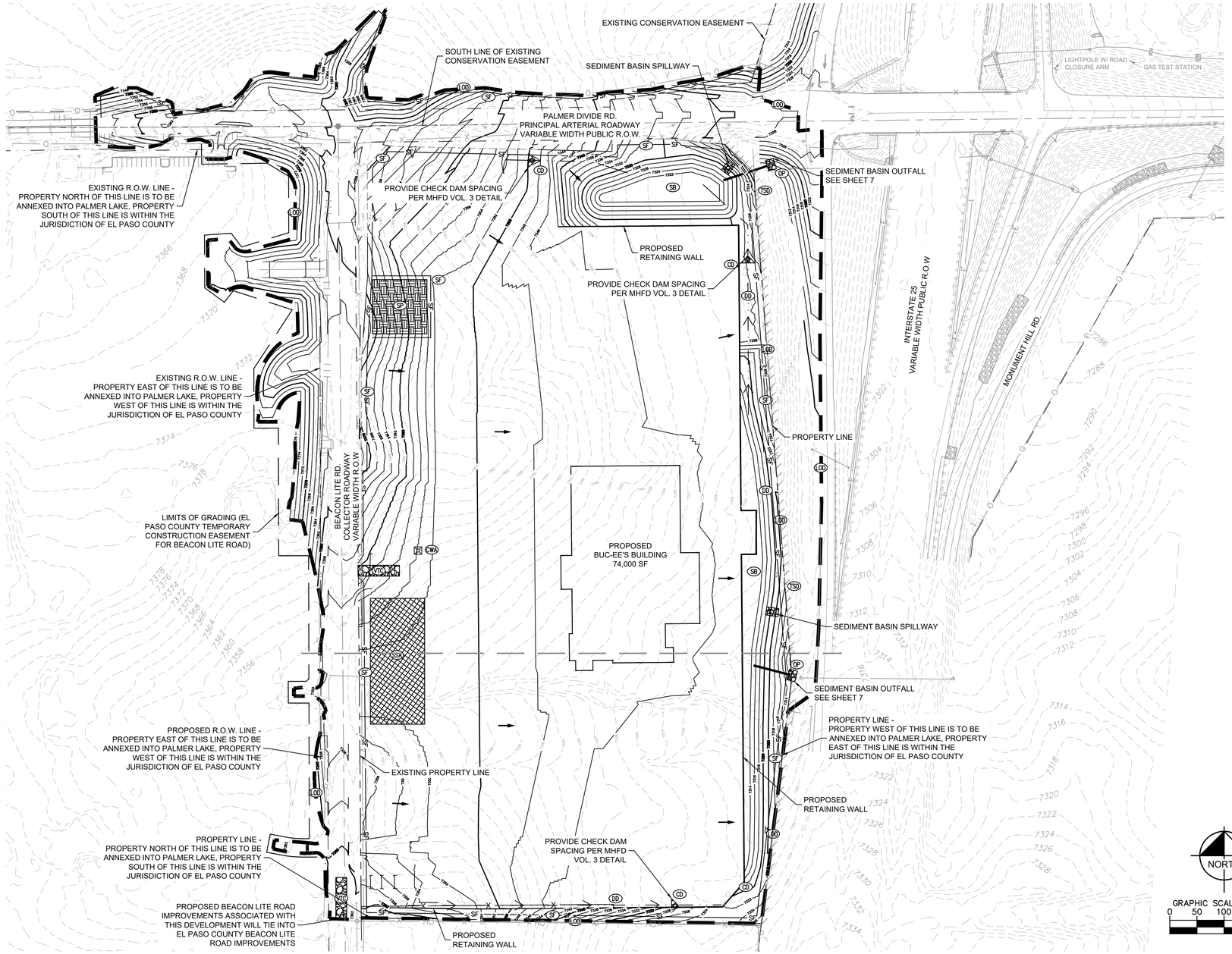
BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO



LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- XXXX — PROPOSED MAJOR CONTOUR
- XXXX — PROPOSED MINOR CONTOUR
- EXISTING SLOPE
- XXXX% PROPOSED SLOPE
- SF — SILT FENCE
- LOD — LIMITS OF DISTURBANCE
- SB — SEDIMENT BASIN
- CD — CHECK DAM
- DD — DIVERSION DITCH
- SP — STOCK PILE
- SSA — STABILIZED STAGING AREA
- CWA — CONCRETE WASH OUT AREA
- VTC — VEHICLE TRACKING CONTROL
- TSD — TEMPORARY SLOPE DRAIN
- OP — OUTFALL PROTECTION
- CD — CHECK DAM

ABBREVIATIONS

R.O.W. RIGHT OF WAY

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7. AVOID INITIAL GROUND DISTURBANCE BETWEEN DECEMBER 1 AND APRIL 30 TO PROTECT MULE DEER AND ELK DURING CRITICAL WINTER PERIODS.
8. IF ACTIVE NESTS ARE IDENTIFIED, AVOID ALL CONSTRUCTION ACTIVITIES DURING THE NON-RAPTOR MIGRATORY BIRD BREEDING SEASON, WHICH EXTENDS FROM MARCH 15 THROUGH AUGUST 31.

MAYOR CERTIFICATE:

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ATTEST:

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	1ST SUBMITTAL	KEW	04/24/2025

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DESIGNED BY: KEW
DRAWN BY: CM
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DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
INTERIM EROSION CONTROL PLAN

SHEET
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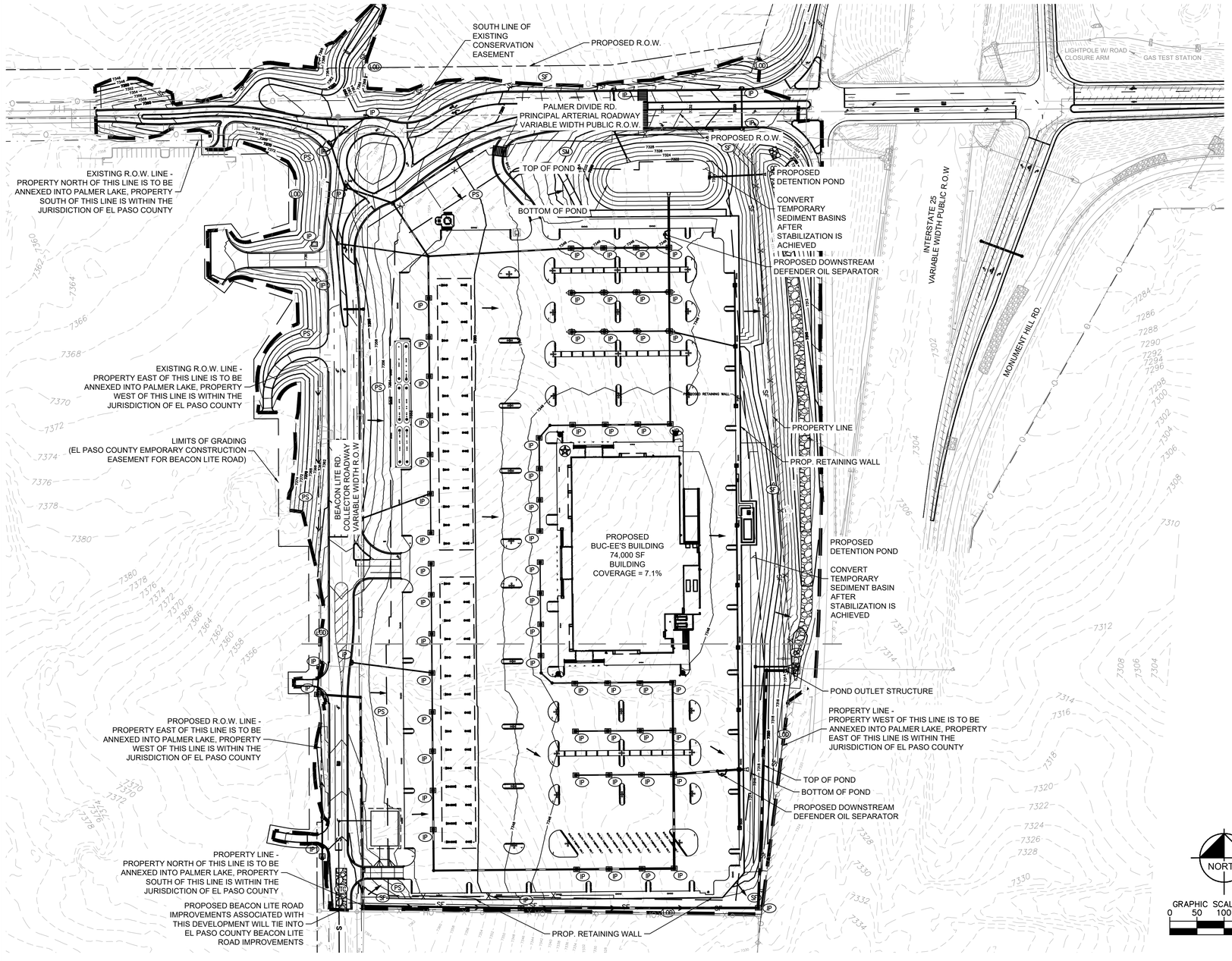
BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO



LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- GRADING LIMITS
- EXISTING MAJOR CONTOUR
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- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING SLOPE
- PROPOSED SLOPE
- SF — SILT FENCE
- LOD — LIMITS OF DISTURBANCE
- OP — OUTFALL PROTECTION
- IP — INLET PROTECTION
- TS — TEMPORARY SEEDING
- PS — PERMANENT SEEDING

ABBREVIATIONS

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9. PERMANENT SEED MIX SHOULD BE CONSISTENT WITH EXISTING VEGETATION

NORTH

GRAPHIC SCALE IN FEET
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BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
FINAL EROSION CONTROL PLAN

SHEET
9

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EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Winter wheat	Cool	20–35	1 - 2
7. Winter barley	Cool	20–35	1 - 2
8. Winter rye	Cool	20–35	1 - 2
9. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-2 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Temporary and Permanent Seeding (TS/PS) EC-2

Table TS/PS-2. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30		1,2,3	✓	✓
May 1–May 15			✓	
May 16–June 30	5			
July 1–July 15	5			
July 16–August 31				
September 1–September 30		6, 7, 8, 9		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the USDCM Volume 2 *Revegetation* Chapter and Volume 3 Mulching BMP Fact Sheet (EC-04) for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

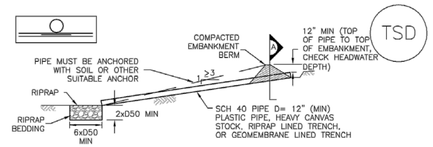
If a temporary annual seed was planted, the area should be reseeded with the desired perennial mix when there will be no further work in the area. To minimize competition between annual and perennial species, the annual mix needs time to mature and die before seeding the perennial mix. To increase success of the perennial mix, it should be seeded during the appropriate seeding dates the second year after the temporary annual mix was seeded. Alternatively, if this timeline is not feasible, the annual mix seed heads should be removed and then the area seeded with the perennial mix.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

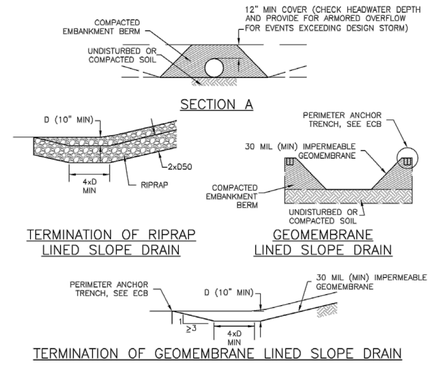
Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Temporary Slope Drains (TSD) EC-7

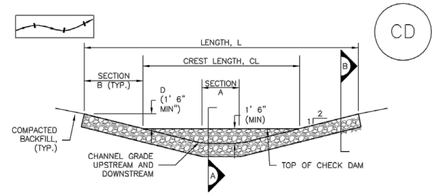


TEMPORARY SLOPE DRAIN PROFILE

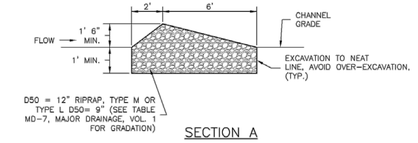


TSD–1. TEMPORARY SLOPE DRAIN PROFILE

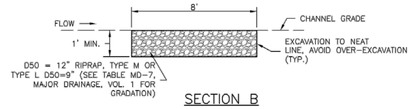
Check Dams (CD) EC-12



CHECK DAM ELEVATION VIEW



SECTION A



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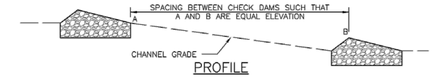
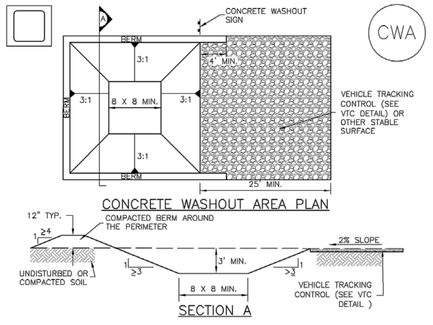


PROFILE

CD–1. CHECK DAM

Concrete Washout Area (CWA) MM-1



CONCRETE WASHOUT AREA PLAN

SECTION A

CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

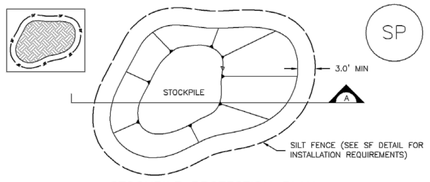
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

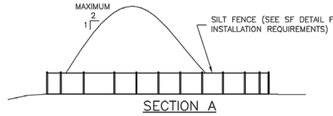
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

Stockpile Management (SP) MM-2



STOCKPILE PROTECTION PLAN



SECTION A

SP–1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

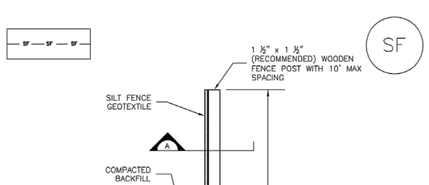
1. SEE PLAN VIEW FOR:
   –LOCATION OF STOCKPILES.
   –TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

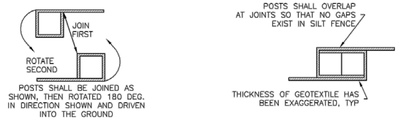
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30–60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

Silt Fence (SF) SC-1



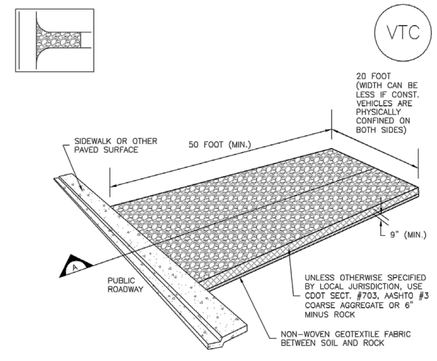
SILT FENCE

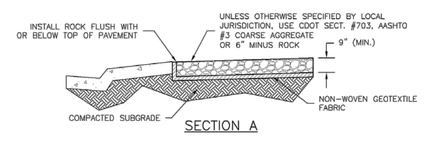


SECTION A

SF–1. SILT FENCE

Vehicle Tracking Control (VTC) SM-4





SECTION A

VTC–1. AGGREGATE VEHICLE TRACKING CONTROL

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
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BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
EROSION CONTROL DETAILS (1 OF 2)

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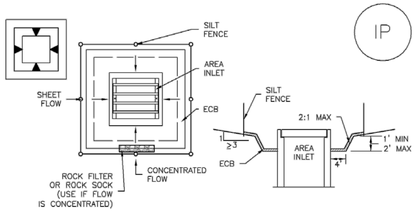


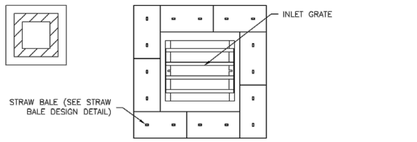
IP-5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

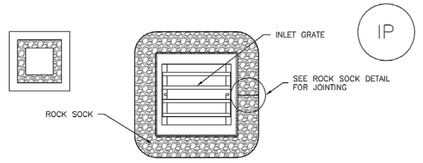


IP-6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

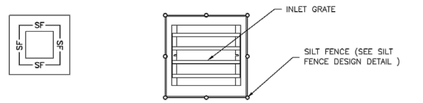
2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

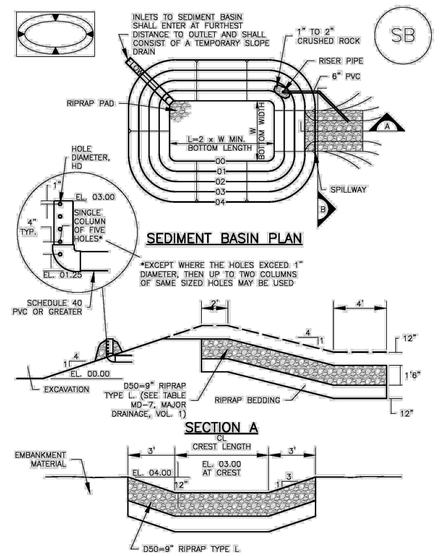


TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	9/32
2	21	3	13/16
3	28	5	½
4	33 ½	6	9/16
5	38 ½	8	23/32
6	43	9	23/32
7	47 ¼	11	25/32
8	51	12	27/32
9	55	13	⅞
10	58 ¼	15	15/16
11	61	16	33/32
12	64	18	1
13	67 ½	19	1 1/16
14	70 ½	21	1 ⅛
15	73 ¼	22	1 3/16

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF SEDIMENT BASIN.
   –TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   –FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   –FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.

2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.

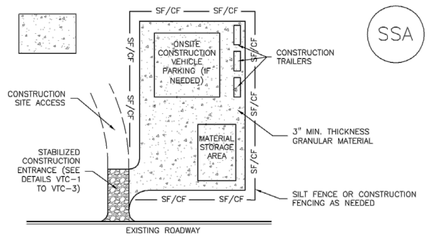
3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND–DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.

4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.

5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.



SSA–1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF STAGING AREA(S).
   –CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

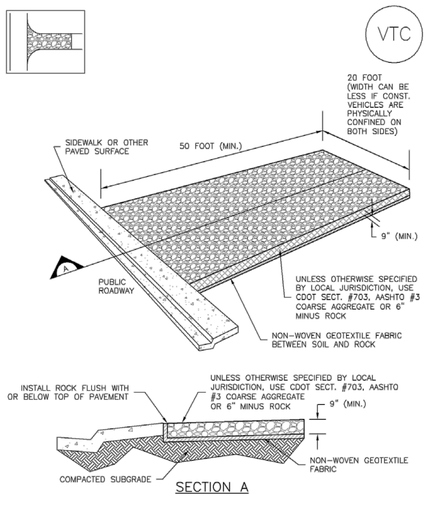
STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

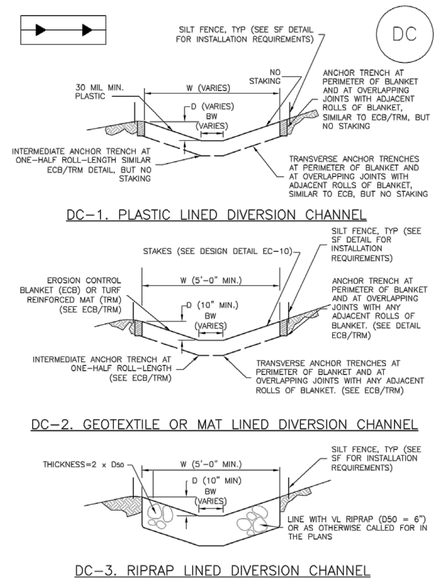
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.



VTC–1. AGGREGATE VEHICLE TRACKING CONTROL



NO.	DATE	BY
1	REVISION 1	KEW 07/08/2025
	1ST SUBMITTAL	KEW 04/24/2025
	REVISION	BY DATE

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DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
EROSION CONTROL DETAILS (2 OF 2)

SHEET
11

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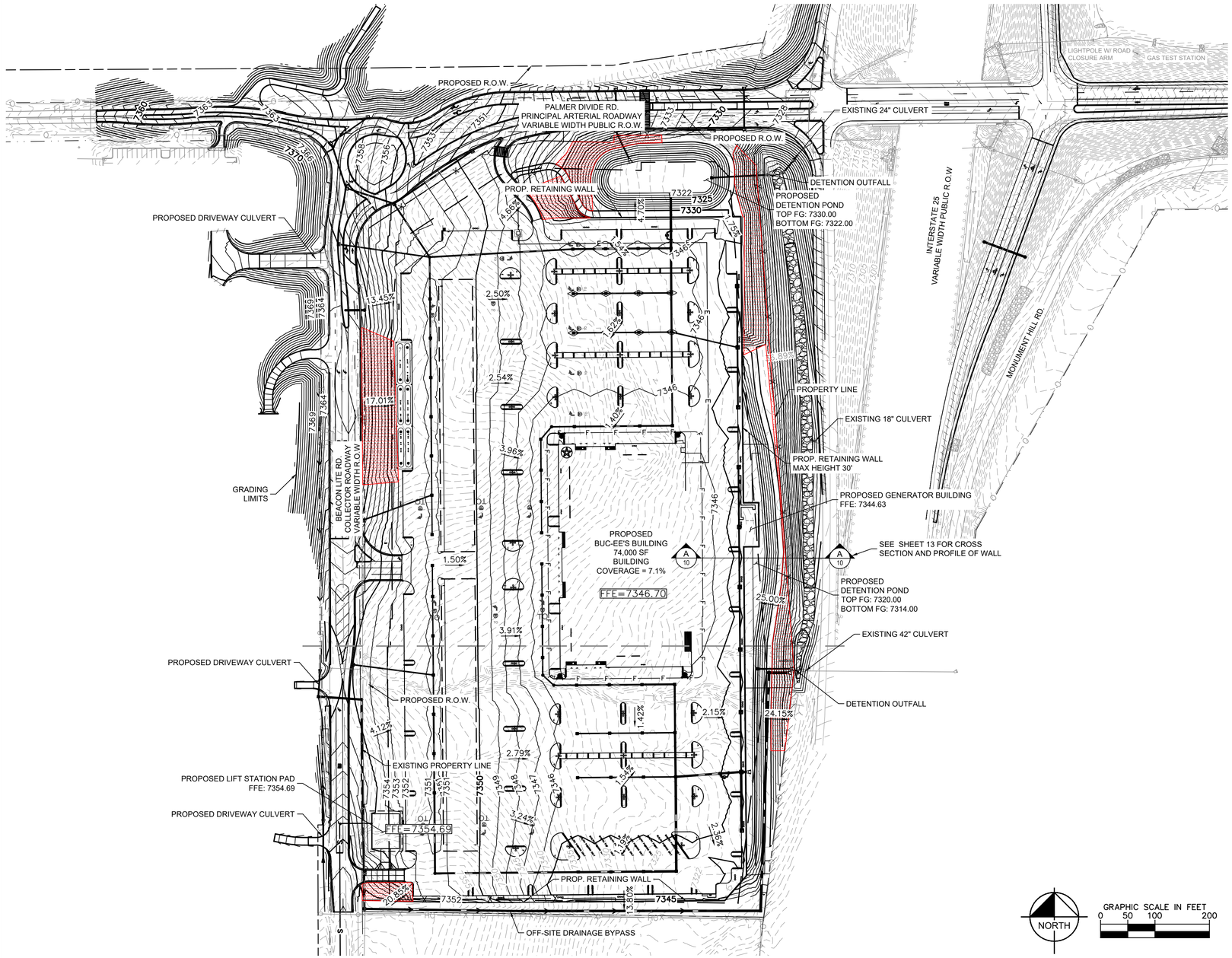
BUC-EE'S PALMER LAKE
PLANNED DEVELOPMENT PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO



LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- GRADING LIMITS
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- XXXX PROPOSED MAJOR CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- XXXX% EXISTING SLOPE
- XXXX% PROPOSED SLOPE
- PROPOSED SWALE
- ON-SITE SLOPES GREATER THAN 15%

ABBREVIATIONS

R.O.W. RIGHT OF WAY

NOTES:

1. ANY AREAS WITH SLOPE GREATER THAN 15% ARE LOCATED OUTSIDE OF THE PARKING LOT AND ARE TO TIE INTO EXISTING GRADES OR FOR STORMWATER DETENTION. REFER TO THIS SHEET FOR FULL SLOPE DETAILS.
2. PROJECT IS NOT A PHASED DEVELOPMENT.
3. AN ECOLOGICAL ASSESSMENT REPORT PREPARED BY ECOS ECOSYSTEM SERVICES LLC, PROJECT NUMBER 2025-3-1 WAS PREPARED AND SUBMITTED IN SUPPORT OF THE APPLICATION. THE CONCLUSION OF THE REPORT WAS THAT THERE ARE NO SIGNIFICANT NATURAL FEATURES OR SENSITIVE HABITAT THAT NEEDS TO BE PRESERVED PURSUANT TO US FISH AND WILDLIFE OR THE COLORADO DIVISION OF WILDLIFE STANDARDS. ALL PROPOSED VEGETATION WILL BE NATIVE SPECIES WHICH WILL ENHANCE THE SITE AND PROVIDE HABITAT FOR ANIMAL SPECIES FOUND IN THE AREA.
4. THE PROJECT IS OUTSIDE OF ANY MAPPED FEMA SPECIAL FLOOD HAZARD AREAS (I.E. FLOOD-PLAINS). THE SITE IS LOCATED WITHIN FLOOD ZONE X.

MAYOR CERTIFICATE:

THIS PLANNED DEVELOPMENT PLAN OF BUC-EE'S WAS APPROVED FOR FILING BY THE PALMER LAKE, COLORADO, BOARD OF TRUSTEES ON THIS _____ DAY OF _____, 2025, SUBJECT TO ANY NOTES SPECIFIED HEREON AND ANY CONDITIONS INCLUDED IN THE ORDINANCE OF APPROVAL.

_____ _____
MAYOR, BOARD OF TRUSTEES DATE

ATTEST:

BY:_____ERICA ROMERO
TOWN CLERK

_____ _____
PLANNING COMMISSION CHAIR DATE

NO.	REVISION	BY	DATE
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	1ST SUBMITTAL	KEW	04/24/2025

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DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
GRADING PLAN

SHEET
12

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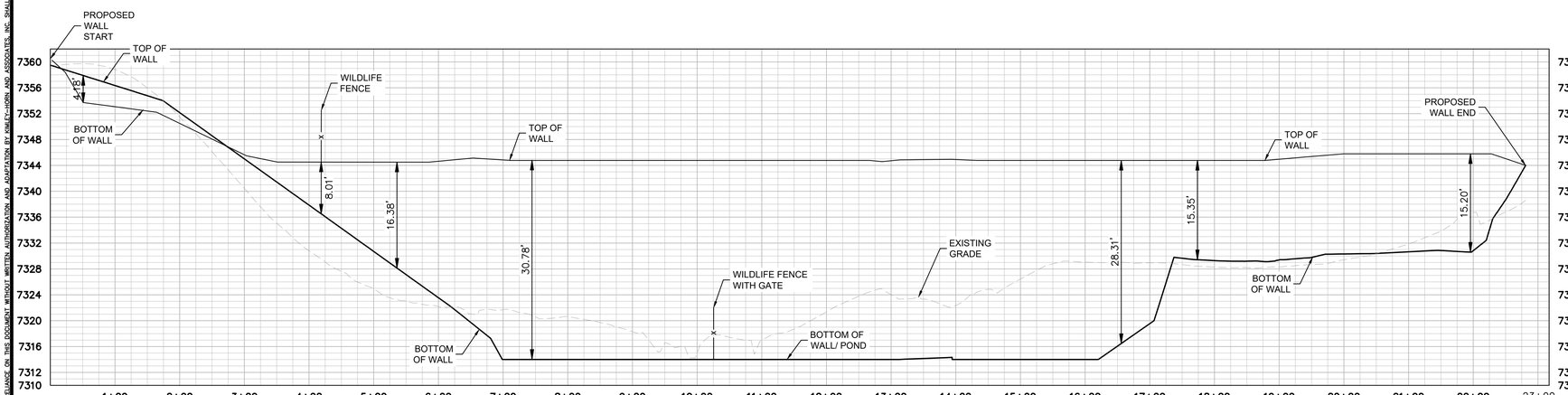
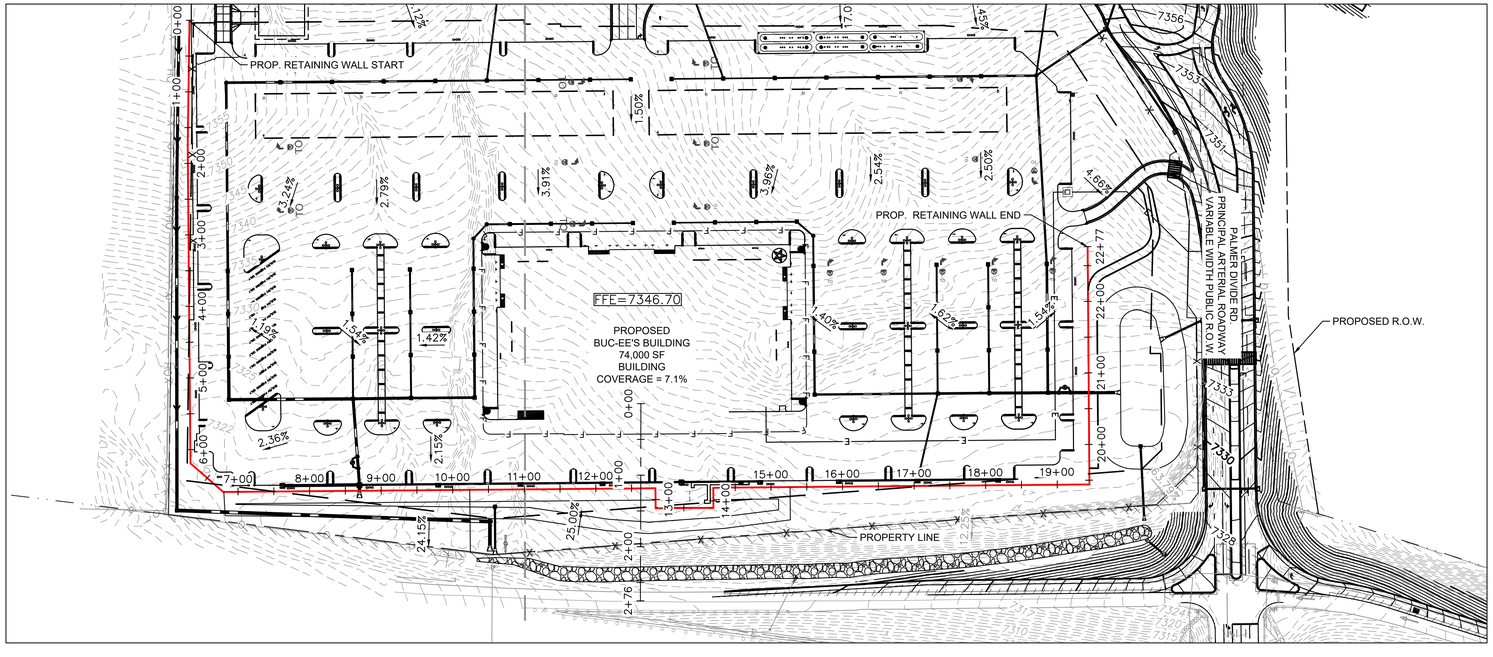
COUNTY OF EL PASO, STATE OF COLORADO



PROPOSED WALL WEST ELEVATION



PROPOSED WALL PLAN VIEW

GRAPHIC SCALE IN FEET
0 50 100 200

NORTH

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- PROPOSED WALL
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- XXXX PROPOSED MAJOR CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- XXXX% EXISTING SLOPE
- XXXX% PROPOSED SLOPE

NOTES:

1. ANY AREAS WITH SLOPE GREATER THAN 15% ARE LOCATED OUTSIDE OF THE PARKING LOT AND ARE TO TIE INTO EXISTING GRADES OR FOR STORMWATER DETENTION. REFER TO THE GRADING SHEETS FOR FULL SLOPE DETAILS.
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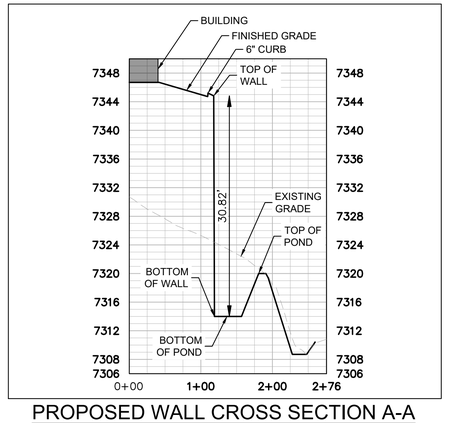

PROPOSED WALL CROSS SECTION A-A

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MAYOR, BOARD OF TRUSTEES DATE

ATTEST:

BY:_____ERICA ROMERO
TOWN CLERK

_____ _____
PLANNING COMMISSION CHAIR DATE

NO.	REVISION	BY	DATE
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DESIGNED BY: KEW
DRAWN BY: CM
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DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
WALL ELEVATION & CROSS SECTION

SHEET
13

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BUC-EE'S PALMER LAKE
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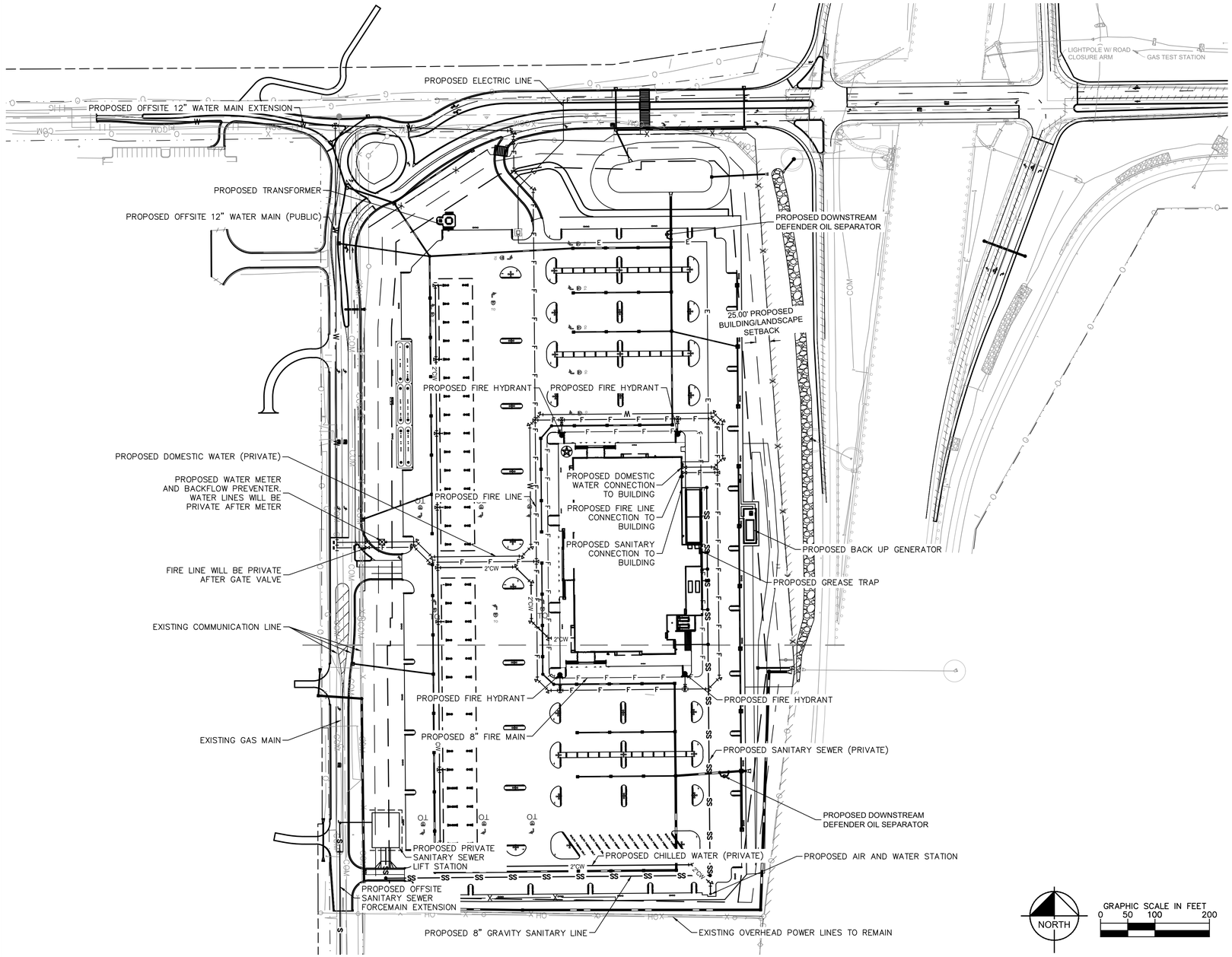

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- PROPOSED WATER LINE
- PROPOSED ELECTRIC LINE
- PROPOSED FIRE LINE
- PROPOSED SANITARY SEWER
- PROPOSED STORM
- PROPOSED SANITARY SEWER MANHOLE

ABBREVIATIONS

R.O.W. RIGHT OF WAY

NOTES:

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NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

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ATTEST:

BY:_____ERICA ROMERO
TOWN CLERK

_____ _____
PLANNING COMMISSION CHAIR DATE

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Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
UTILITY PLAN

SHEET
14

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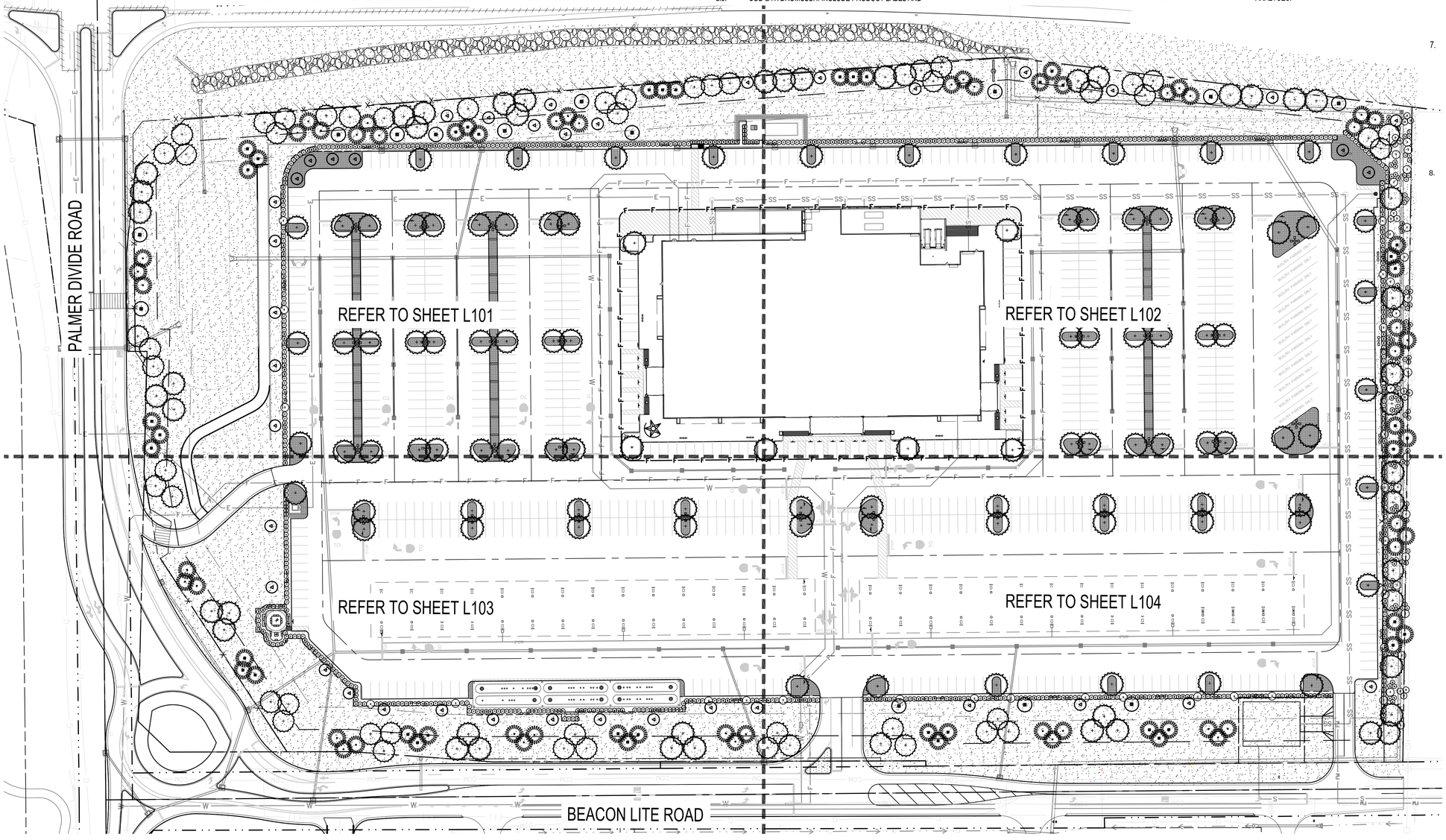
LANDSCAPE PLANTING NOTES:

1. ALL WEEDS WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE REMOVED AND TAKEN OFF SITE BY THE CONTRACTOR. ROOT SYSTEMS SHOULD BE ERADICATED.
2. FINISH GRADES OF PLANT BED AREAS (TOP OF MULCH), SOD (TOP OF SOD), HYDROMULCH (TOP OF TOPSOIL), SHALL BE FLUSH WITH ADJACENT PAVING.
3. TRENCHING AND SITE WORK PERFORMED WITHIN THE PROMINENT ROOT ZONES OF EXISTING TREES SHALL BE DONE BY HAND OR AIR SPADE UNLESS OTHERWISE SPECIFIED BY THE LANDSCAPE ARCHITECT. NO ROOTS OVER 1" DIA. SHALL BE CUT.
4. VERIFY PLANT COUNTS AND SQUARE FOOTAGES: IF QUANTITIES ON PLANT SCHEDULE DIFFER FROM GRAPHIC INDICATIONS, THEN GRAPHICS SHALL PREVAIL.
5. LANDSCAPE ARCHITECT TO REVIEW PLANT MATERIALS AT SOURCE OR BY PHOTOGRAPHS OF ACTUAL MATERIAL TO BE PLANTED PRIOR TO PURCHASE, DIGGING, OR SHIPPING OF PLANT MATERIALS.
6. PROVIDE MATCHING FORMS AND SIZES FOR PLANT MATERIALS WITHIN EACH SPECIES AND SIZE DESIGNATED ON THE DRAWINGS.
7. PLANT NAMES USED ON THE PLANS COMPLY WITH STANDARD HORTICULTURAL NOMENCLATURE, AND NAMES GENERALLY ACCEPTED IN THE NURSERY TRADE. THE LANDSCAPE ARCHITECT, OR OWNERS REPRESENTATIVE SHALL REVIEW ALL PLANTS AT THE TIME OF DELIVERY TO THE SITE. IF THE CONTRACTOR FAILS TO NOTIFY THE LANDSCAPE ARCHITECT, OR OWNERS REPRESENTATIVE FORTY-EIGHT (48) HOURS IN ADVANCE OF THE DELIVERY TIME, AND/OR DOES NOT CALL FOR OBSERVATION OF THE MATERIAL, THE CONTRACTOR SHALL BE LIABLE FOR ALL REMOVAL AND REPLACEMENT COSTS OF THE PLANT MATERIAL. THE PLANT MATERIAL WILL BE JUDGED AND ACCEPTED OR REJECTED ON BASIS OF THE FOLLOWING CRITERIA:
   a. PROVIDE PLANTS OF QUALITY, SIZE, GENUS, SPECIES, AND VARIETY AS INDICATED ON THE PLANS AND AS COORDINATED WITH THE LANDSCAPE ARCHITECT.
   b. PLANTS SHALL BE FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS, CONFORMING TO ANSI Z60.1
   c. TREE CANOPIES SHALL HAVE AN INTACT AND UNDAMAGED CENTRAL LEADER.
   d. TREES ARE REQUIRED TO STAND UPRIGHT WITH NO SUPPORT AND HAVE PROPER TRUNK CALIPER AND TAPER. TREES HAVING "BROOM STICK" TRUNKS WITH "POODLE" TOPS WILL NOT BE ACCEPTED.
   e. BARK SHALL BE DAMAGE FREE WITH ALL MINOR CUTS AND ABRASIONS SHOWING HEALING TISSUE. FOLIAGE, ROOTS AND STEMS OF ALL PLANTS SHALL BE OF VIGOROUS HEALTH AND NORMAL HABIT OF GROWTH FOR ITS SPECIES. ALL PLANTS SHALL BE FREE OF INSECT INFESTATIONS AND DISEASES. TOP GROWTH SHALL BE PROPORTIONATE TO BOTTOM GROWTH.
   f. SHRUBS TRANSPLANTED IN AN UP-SIZED CONTAINER LARGER THAN SPECIFIED SIZE, SHALL HAVE BEEN GROWN IN THAT CONTAINER FOR A SUFFICIENT LENGTH OF TIME TO DEVELOP NEW FIBROUS ROOTS, SO THAT ROOT MASS WILL FILL THE CONTAINER.
   g. AREAS DISTURBED BY CONSTRUCTION AND ARE NOT SCHEDULED TO BE IMPROVED SHALL BE REPAIRED TO THE STATE THAT IT WAS PRIOR TO THE START OF CONSTRUCTION.
8. ALIGN AND EQUALLY SPACE IN ALL DIRECTIONS PLANTS SO DESIGNATED PER THESE NOTES AND DRAWINGS.
9. EXACT LOCATIONS OF PLANT MATERIALS TO BE APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD PRIOR TO INSTALLATION. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO DIRECT THE ADJUSTMENT OF PLANTS TO EXACT LOCATION IN FIELD.
10. IF PLANT MATERIAL IS BALL AND BURLAP, CUT AND REMOVE BURLAP FROM TOP 1/3 OF BALL. CONTAINER GROWN STOCK WILL HAVE THE OUTSIDE EDGE OF THE ROOTBALL LOOSENED BY HAND AFTER REMOVING FROM THE CONTAINER.
11. PRUNE NEWLY PLANTED TREES ONLY AS DIRECTED BY LANDSCAPE ARCHITECT.
12. PROVIDE SPECIFIED EDGING AS DIVIDER BETWEEN PLANTING BEDS AND LAWN AREAS.
13. PLANT SPACING LISTED IN PLANT SCHEDULE IS A MAXIMUM TYPICAL SPACING. IF PLANTS ARE SHOWN CLOSER ON THE PLAN THEY SHOULD BE INSTALLED PER THE PLAN.
14. ALL PROPOSED TURF GRASS AREAS SHALL HAVE 6" DEPTH OF CLEAN (NO WEEDS, ROOTS, DEBRIS, VEGETATION) TOPSOIL, UNLESS A LESSOR DEPTH IS REQUIRED BY THE LOCAL JURISDICTION. TOP SOIL SHOULD BE ATTAINED FROM A REPUTABLE SOURCE LOCATED WITHIN 50 MILES OF THE PROJECT SITE.
15. ALL PLANTING BED SOIL MIX SHALL BE AMENDED TOPSOIL. CONTRACTOR TO PROVIDE SOIL TEST RESULTS TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL OF TOPSOIL TO BE USED, AND THE APPROPRIATE AMENDMENTS TO BE ADDED TO THE TOPSOIL TO PROVIDE OPTIMUM GROWING CONDITIONS. ALL TOPSOIL SHALL BE FREE OF ROCKS LARGER THAN $\frac{3}{4}$" DIAMETER, DELETERIOUS MATERIAL AND ANY DEBRIS.
16. SUBMITTALS
   a. PRODUCT DATA
      a.a. PESTICIDES AND HERBICIDES: INCLUDE PRODUCT LABEL AND MANUFACTURERS INSTRUCTIONS SPECIFIC TO THIS PROJECT. PROVIDE THE QUALIFICATIONS OF THE PERSON CERTIFIED TO APPLY THE PESTICIDES AND HERBICIDES.
      a.b. SOD & HYDROMULCH: INCLUDE PRODUCT LABEL AND MANUFACTURER'S APPLICATION INSTRUCTIONS SPECIFIC TO THIS PROJECT.
      a.c. IMPORTED TOPSOIL: INCLUDE PRODUCT LABEL AND MANUFACTURER'S APPLICATION INSTRUCTIONS SPECIFIC TO THIS PROJECT.
17. LABORATORY TEST RESULTS OF ALL SOIL MATERIALS INSTALLED ON SITE
   a. IF ON SITE SOIL IS USED, ONE TEST RESULT SHALL BE SUBMITTED FOR EACH ONE TON OF SOIL TO BE INSTALLED. FOR IMPORTED SOIL FROM A QUALIFIED SUPPLIER, ONE TEST RESULT PER TEN TONS WILL BE REQUIRED.
      a.a. PLEASE PROVIDE SOIL TEST ANALYSIS FROM ONE OF THE FOLLOWING LABS: LABORATORY REPORTS FROM TEXAS PLANT & SOIL LAB (956) 383-0739, TEXAS A&M AGRILIFE EXTENSION (979) 845-4816, WALLACE LABORATORIES LLC (310) 615-0116 OR APPROVED EQUAL.
      a.b. TESTS SHOULD PROVIDE RESULTS FOR: pH, NO3-N, P, K, Ca, Mg, Na, S, AND CONDUCTIVITY. THIS TEST IS A BASE TEST FOR BASIC FERTILIZER RECOMMENDATIONS. ADDITIONAL INFORMATION TO BE TESTED FOR IS MICRO + B + OM + TEXTURE ANALYSES (MICRONUTRIENT, BORON, ORGANIC MATTER AND TEXTURAL ANALYSIS).
      a.c. TEST RESULTS SHALL BE ACCOMPANIED WITH A LETTER FROM THE TESTING LAB SUMMARIZING THE TEST RESULTS AND CLEARLY IDENTIFYING IF THE SOIL IS SUITABLE FOR PLANT GROWTH OF THE TYPE OF PLANTS PROPOSED (TURF GRASS, SHRUBS, GROUND COVERS, PERENNIALS, TREES AND OTHER PLANTS) FOR THIS PROJECT. IF AMENDMENTS ARE NEEDED THE TYPE AND QUANTITY OF AMENDMENTS TO BE ADDED TO ATTAIN THE OPTIMUM GROWING CONDITION SHALL BE CLEARLY DESCRIBED.
   b. OBTAINING A SAMPLE:
      b.a. A SEPARATE SAMPLE SHALL BE TAKEN FOR:
         b.a.a. AREAS WITH DIFFERENT SOIL TYPES
         b.a.b. AREAS WITH DIFFERENT LAND USES OR FERTILIZER APPLICATION RATES
         b.a.c. AREAS WITH DIFFERENT CROPPING HISTORIES (SPECIES AND YIELDS)
         b.a.d. AREAS WITH DIFFERENT TERRAIN
      b.b. AVOID SAMPLING AREAS SUCH AS SMALL GULLIES, SLIGHT FIELD DEPRESSIONS, TERRACE, WATERWAYS, OR UNUSUAL AREAS
      b.c. WHEN SAMPLING FERTILIZED FIELDS, AVOID SAMPLING DIRECTLY IN THE FERTILIZED BAND AND WAIT AT LEAST 2 MONTHS AFTER LAST FERTILIZATION.
      b.d. WHEN TAKING A SAMPLE TAKE A 0-6" DEPTH SAMPLE.
         b.d.a. USE A SPADE, SOIL AUGER, OR SOIL SAMPLING TUBE.
         b.d.b. CLEAR PLANTS AND PLANT RESIDUE FROM THE SURFACE (DO NOT REMOVE DECOMPOSED BLACK MATERIAL THAT CAN NO LONGER BE IDENTIFIED AS A PLANT).
         b.d.c. PLACE EACH COLLECTED CORE/SAMPLE IN A CLEAN PLASTIC BUCKET OR OTHER NON-METALLIC CONTAINER AND THOROUGHLY MIX THE SOIL WHILE REMOVING ANY LARGE ROOTS/PLANT TISSUES THAT MIGHT HAVE BEEN COLLECTED.
         b.d.d. APPROXIMATELY $\frac{1}{2}$ TO $\frac{2}{3}$ FULL QUART-SIZED FREEZER RESEALABLE BAG OR A FULL SOIL SAMPLE BAG IS REQUIRED FOR ROUTINE ANALYSES.

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL BE FAMILIAR WITH ALL EXISTING SITE CONDITIONS INCLUDING UNDERGROUND UTILITIES, PIPES, AND STRUCTURES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR BODILY INJURY AND/OR ANY COST INCURRED DUE TO DAMAGE OF OWNER'S PROPERTY OR UTILITIES.
3. CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES PRIOR TO ANY EXCAVATION TO ENSURE UTILITIES ARE NOT DISTURBED. REFER TO CIVIL DRAWINGS FOR ALL SITE UTILITIES.
4. ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT DURING BIDDING AND PRIOR TO CONTRACTS BEING AWARDED TO CONTRACTORS, OR IT SHALL BE ASSUMED THAT THE CONTRACTOR CAN IMPLEMENT THE PLANS AS DRAWN AND SPECIFIED.
5. EXISTING CONDITIONS ARE SHOWN SHADED BACK TO ALLOW ALL PROPOSED IMPROVEMENTS TO STAND OUT. EXISTING BASE INFORMATION HAS BEEN IMPORTED FROM CIVIL AND ARCHITECTURAL DRAWINGS. REFER TO THESE DRAWINGS FOR SUPPLEMENTAL INFORMATION.
6. THE CONTRACTORS (GENERAL AND SUBCONTRACTORS) SHALL PROVIDE UNIT COSTS FOR ALL SOFTSCAPE AND HARDSCAPE MATERIAL SPECIFIED ON THE DRAWINGS AND SPECIFICATIONS. UNIT COSTS SHALL BE PROVIDED FOR MATERIALS AND INSTALLATION SEPARATELY. UNIT COSTS SHALL BE: 'EACH' FOR PLANT MATERIAL, 'SQUARE FOOT' OR 'SQUARE YARD' FOR PAVEMENTS, LINEAR FOOT FOR WALL AND FENCE, 'EACH' FOR SITE FURNISHINGS AND SITE AMENITIES, 'CUBIC YARD' OR 'CUBIC FOOT' FOR SOIL, MULCH AND OTHER BULK PRODUCTS AND 'EACH' OR 'LUMP SUM' FOR MISCELLANEOUS ITEMS. THE UNIT COST SHALL BE FORMATTED TO HAVE COLUMNS FOR; ITEMS, UNIT, UNIT COST, TOTAL ITEM COST.
7. LOCATE JOINTS IN CONCRETE PAVING ACCORDING TO PLAN. IF NONE SHOWN, CONTROL JOINTS SHALL CREATE SQUARE PANELS AND NOT EXCEED 10 FOOT SPACING AND SHALL BE 1/4 OF THE DEPTH OF THE PAVING. EXPANSION JOINTS SHALL NOT EXCEED 50 FOOT SPACING AND SHALL INCLUDE AN ASPHALT JOINT WITH FLEXIBLE SEALANT TO MATCH THE PAVEMENT COLOR. EXPANSION JOINTS TO HAVE 12" LONG #3 SMOOTH GALANIZED DOWEL IN VERTICAL CENTER OF JOINT, SPACED HORIZONTALLY EQUALLY 10 INCHES APART OR A MINIMUM OF TWO PER JOINT, WHICHEVER IS GREATER.
8. NATURAL PRARIE TURF GRASS WILL HAVE TEMPORARY IRRIGATION UNTIL ESTABLISHED, WHEN WATERING WILL NO LONGER BE NEEDED.



TREE KEY:

- NEW MEXICO LOCUST
- GAMBEL OAK
- 20' PONDEROSA PINE
- UTAH JUNIPER
- ROCKY MOUNTAIN JUNIPER
- BLUE SPRUCE
- PONDEROSA PINE

* REF. SHEET L105 FOR FULL PLANT SCHEDULE

LEGEND

- TURF MASTER LLC'S NATURES PRAIRIE TURF
- 2"-3" DIA. RIVER ROCK, 6" DEPTH
- FLAGSTONE PAVERS, REF. DETAIL 4/L105
- PROPERTY LINE
- STEEL EDGING

NORTH

SCALE IN FEET (1"=60'-0")

0 20 40 60 120 180

CIVIL BASE FILES: 07/03/2025

BLU FISH COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
Austin, TX 78704

P.O. BOX 40792
Austin, TX 78704

Phone: (512)388-4115

PROFESSIONAL SEAL:

MICHAEL FISHBAUGH 1487 12/09/20 Original Date of Licensure STATE OF COLORADO LANDSCAPE ARCHITECT

DATE SEALED: 07/17/2025

PROJECT NAME:
BUC-EE'S PALMER LAKE

OWNER:
BUC-EE'S LTD.

PROJECT LOCATION:
INTERSTATE HWY 25 & PALMER DIVIDE ROAD,
PALMER LAKE, CO

REVISIONS:

PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
OVERALL PLANTING PLAN

SHEET NO.:
L100

BLU FISH
COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
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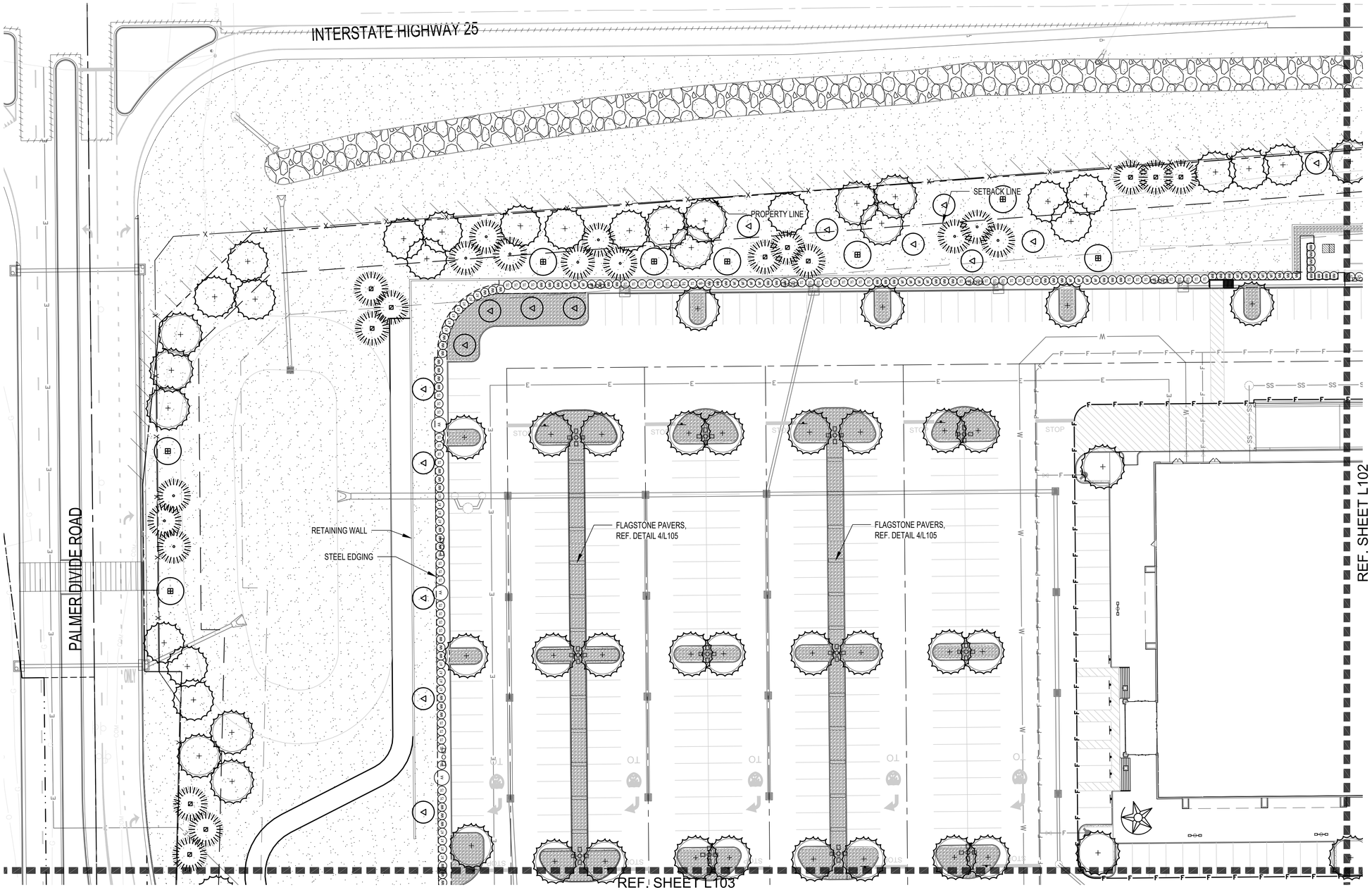

TREE KEY:

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- GAMBEL OAK
- UTAH JUNIPER
- ROCKY MOUNTAIN JUNIPER
- BLUE SPRUCE
- PONDEROSA PINE

* REF. SHEET L105 FOR FULL PLANT SCHEDULE

LEGEND

- TURF MASTER LLC'S NATURES PRAIRIE TURF
- 2"-3" DIA. RIVER ROCK, 6" DEPTH
- FLAGSTONE PAVERS, REF. DETAIL 4/L105
- PROPERTY LINE
- STEEL EDGING

NORTH

SCALE IN FEET (1"=30'-0")

0 15 30 60 90

CIVIL BASE FILES: 07/03/2025

PROFESSIONAL SEAL:

MICHAEL FISHBAUGH
1487
12/09/20
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

DATE SEALED: 07/11/2025

PROJECT NAME:
BUC-EE'S
PALMER LAKE

OWNER:
BUC-EE'S LTD.

PROJECT LOCATION:
INTERSTATE HWY 25 & PALMER DIVIDE ROAD.
PALMER LAKE, CO

REVISIONS:

PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
PLANTING PLAN

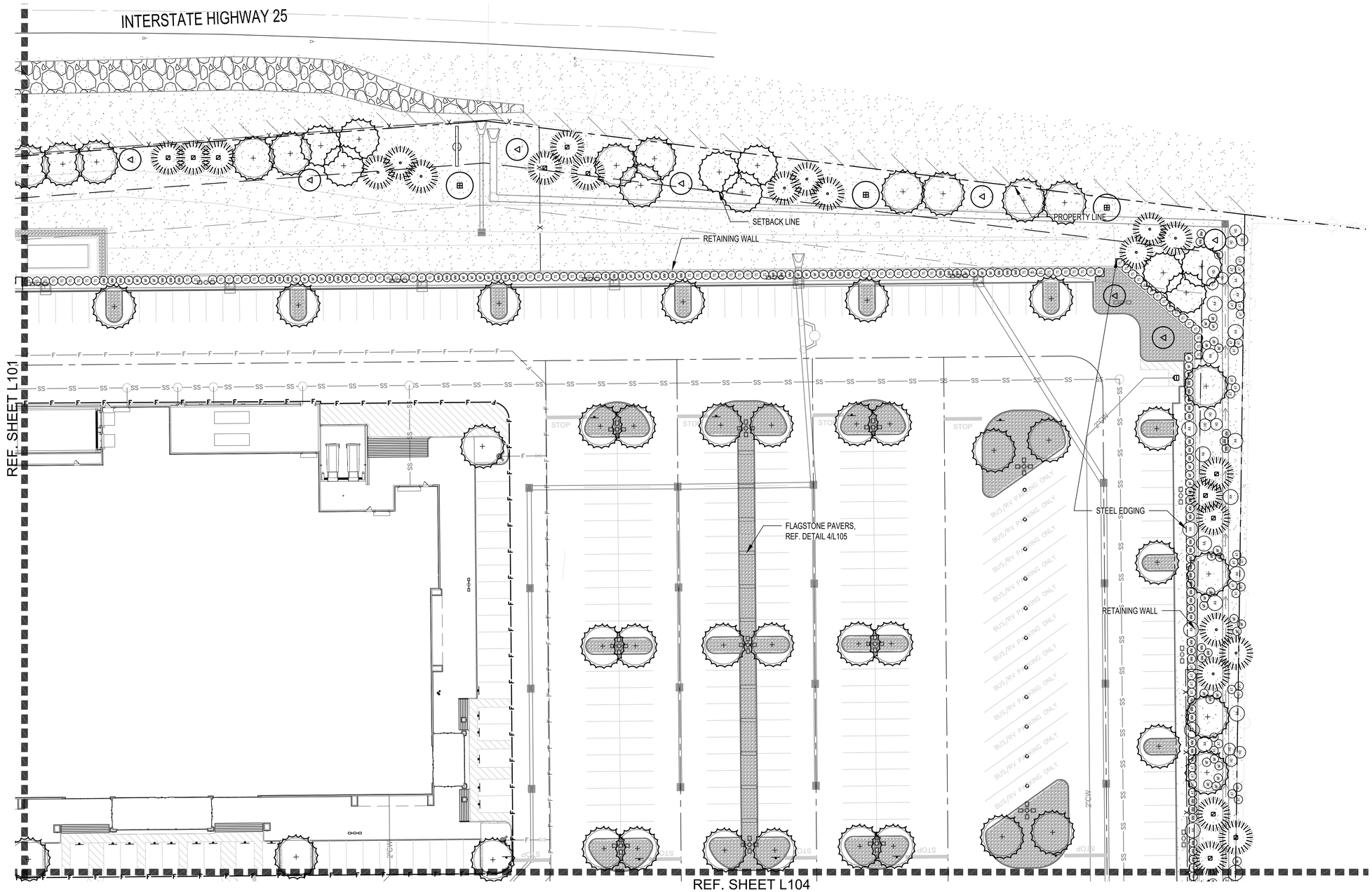
SHEET NO.:
L101

BLU FISH COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
Austin, TX 78704

P.O. BOX 40792
Austin, TX 78704

Phone: (512)388-4115



TREE KEY:

- NEW MEXICO LOCUST
- GAMBEL OAK
- UTAH JUNIPER
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- BLUE SPRUCE
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* REF. SHEET L105 FOR FULL PLANT SCHEDULE

LEGEND

- TURF MASTER LLC'S NATURES PRAIRIE TURF
- 2"-3" DIA. RIVER ROCK, 6" DEPTH
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- PROPERTY LINE
- STEEL EDGING

NORTH

SCALE IN FEET (1"=30'-0")

0 15 30 60 90

CIVIL BASE FILES: 07/03/2025

PROFESSIONAL SEAL:

MICHAEL FISHBAUGH
1487
12/09/20
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

DATE SEALED: 07/11/2025

PROJECT NAME:
BUC-EE'S PALMER LAKE

OWNER:
BUC-EE'S LTD.

PROJECT LOCATION:
INTERSTATE HWY 25 & PALMER DIVIDE ROAD,
PALMER LAKE, CO

REVISIONS:

PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
PLANTING PLAN

SHEET NO.:
L102

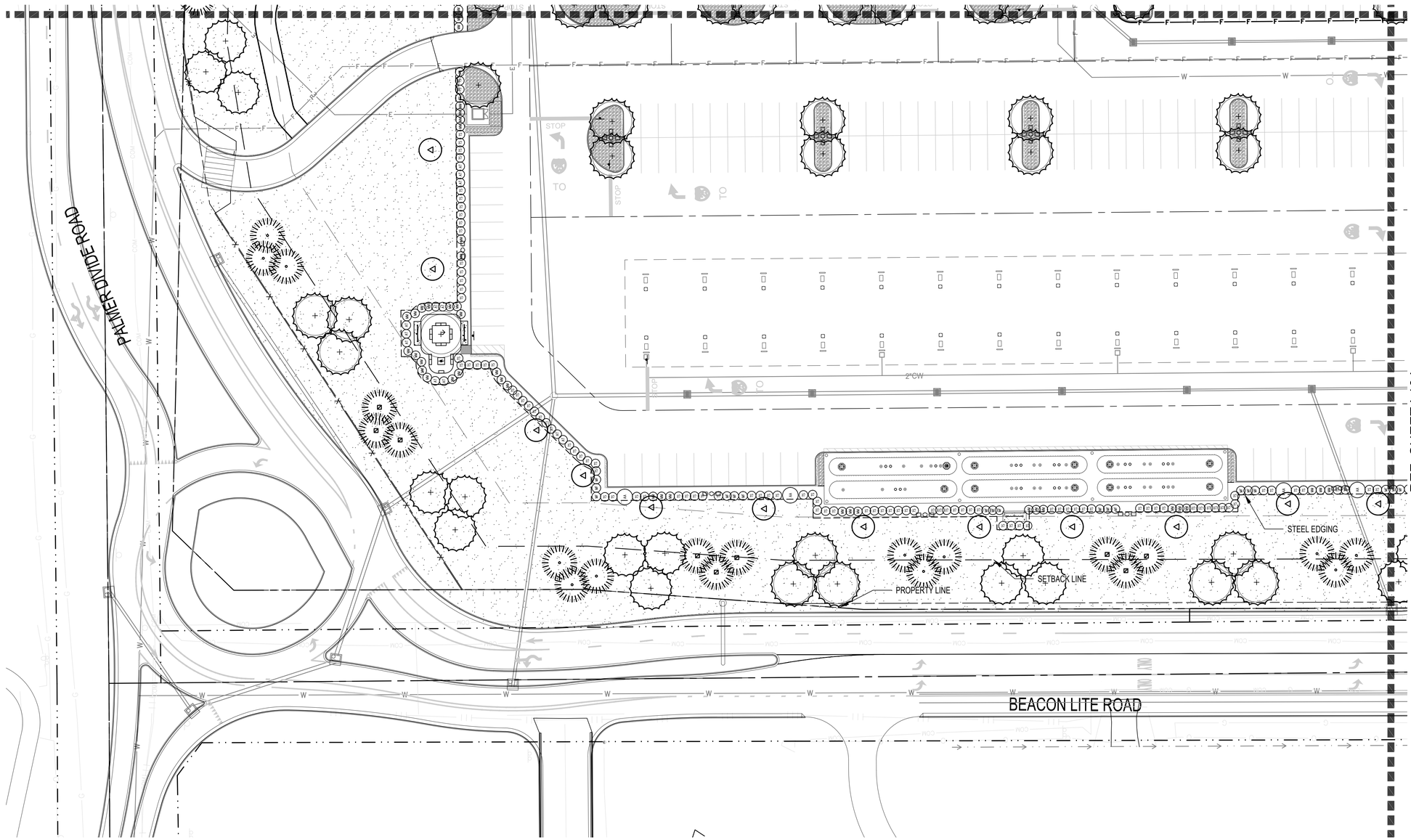
BLU FISH
COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
Austin, TX 78704

P.O. BOX 40792
Austin, TX 78704

Phone: (512)388-4115

REF. SHEET L101



TREE KEY:

- NEW MEXICO LOCUST
- GAMBEL OAK
- 20' PONDEROSA PINE
- UTAH JUNIPER
- ROCKY MOUNTAIN JUNIPER
- BLUE SPRUCE
- PONDEROSA PINE

* REF. SHEET L105 FOR FULL PLANT SCHEDULE

LEGEND

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- 2"-3" DIA. RIVER ROCK, 6" DEPTH
- FLAGSTONE PAVERS, REF. DETAIL 4/L105
- PROPERTY LINE
- STEEL EDGING

NORTH

SCALE IN FEET (1"=30'-0")

0 15 30 60 90

CIVIL BASE FILES: 07/03/2025

PROFESSIONAL SEAL:

MICHAEL FISHBAUGH
1487
12/09/20
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

DATE SEALED: 07/11/2025

PROJECT NAME:
BUC-EE'S
PALMER LAKE

OWNER:
BUC-EE'S LTD.

PROJECT LOCATION:
INTERSTATE HWY 25 & PALMER DIVIDE ROAD.
PALMER LAKE, CO

REVISIONS:

PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
PLANTING PLAN

SHEET NO.:
L103

BLU FISH
COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
Austin, TX 78704

P.O. BOX 40792
Austin, TX 78704

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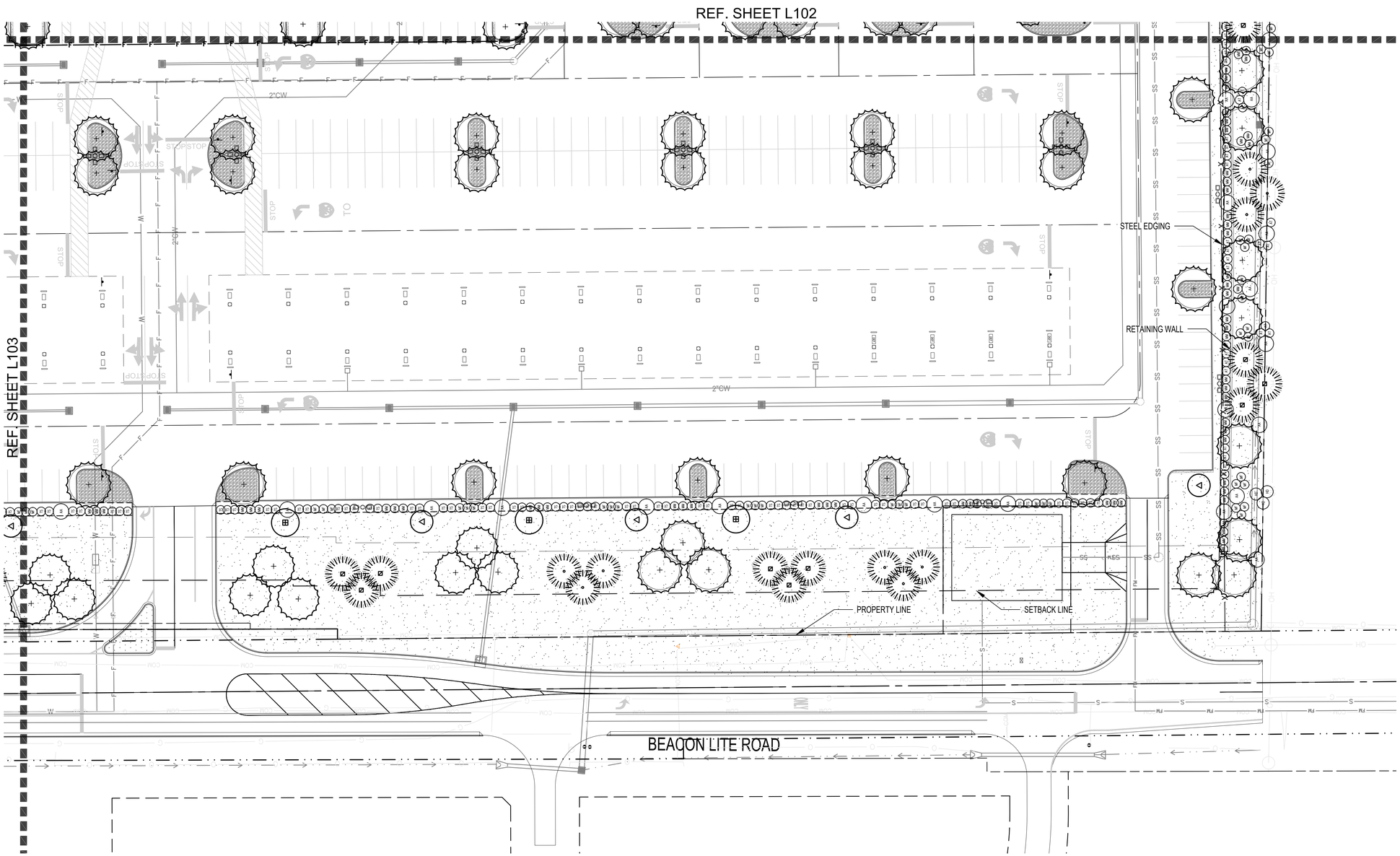

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* REF. SHEET L105 FOR FULL PLANT SCHEDULE

LEGEND

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- 2"-3" DIA. RIVER ROCK, 6" DEPTH
- FLAGSTONE PAVERS, REF. DETAIL 4/L105
- PROPERTY LINE
- STEEL EDGING

NORTH

SCALE IN FEET (1"=30'-0")

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CIVIL BASE FILES: 07/03/2025

PROFESSIONAL SEAL:

MICHAEL FISHBAUGH
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12/09/20
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

DATE SEALED: 07/11/2025

PROJECT NAME:
BUC-EE'S
PALMER LAKE

OWNER:
BUC-EE'S LTD.

PROJECT LOCATION:
INTERSTATE
HWY 25 &
PALMER DIVIDE
ROAD,
PALMER LAKE, CO

REVISIONS:

PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
PLANTING PLAN

SHEET NO.:
L104

PLANT LIST

NOTES:
1. THE CONTRACTORS (GENERAL AND SUBCONTRACTORS) SHALL PROVIDE UNIT COSTS FOR ALL SOFTSCAPE AND HARDSCAPE MATERIAL SPECIFIED ON THE DRAWINGS AND SPECIFICATIONS. UNIT COSTS SHALL BE PROVIDED FOR MATERIALS AND INSTALLATION SEPARATELY. UNIT COSTS SHALL BE: 'EACH' FOR PLANT MATERIAL, 'SQUARE FOOT' OR 'SQUARE YARD' FOR PAVEMENTS, LINEAR FOOT FOR WALL AND FENCE, 'EACH' FOR SITE FURNISHINGS AND SITE AMENITIES, 'CUBIC YARD' OR 'CUBIC FOOT' FOR SOIL, MULCH AND OTHER BULK PRODUCTS AND 'EACH' OR 'LUMP SUM' FOR MISCELLANEOUS ITEMS. THE UNIT COST SHALL BE FORMATTED TO HAVE COLUMNS FOR; ITEMS, UNIT, UNIT COST, TOTAL ITEM COST.
2. PLANT QUANTITIES ARE PROVIDED FOR OWNER CONVENIENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND PROVIDING PLANT QUANTITIES SHOWN ON THE LANDSCAPE PLAN.
3. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND SECURING TREE AND PLANT MATERIAL IN ADVANCE. BECAUSE OF THE LONG LEAD TIME ON THIS INSTALLATION AND THE RECENT SHORTAGE ON TREE CROP, CONTRACTOR SHALL RESERVE OR CONTRACT GROW TREES WITH A GROWER.

SHADE TREES

SYM.	QTY.	COMMON NAME, *BOTANICAL NAME*	MIN. SPEC.
⊞	14	NEW MEXICO LOCUST, *ROBINIA NEOMEXICANA*	B&B 3.5" CAL. MINIMUM
△	40	GAMBEL OAK, *QUERCUS GAMBELII*	B&B 3.5" CAL. MINIMUM

EVERGREEN TREES

SYM.	QTY.	COMMON NAME, *BOTANICAL NAME*	MIN. SPEC.
⧅	42	UTAH JUNIPER, *JUNIPERUS OSTEOSPERMA*	B&B 6' HT. MINIMUM
○	45	ROCK MOUNTAIN JUNIPER, *JUNIPERUS SCOPULORUM*	B&B 6' HT. MINIMUM
+	51	BLUE SPRUCE, *PICEA PUNGEANS* (31 BLUE, 20 GREEN)	B&B 6' HT. MINIMUM
+	143	PONDEROSA PINE, *PINUS PONDEROSA* (PONDEROSA PINE LOCATED WITHIN THE INTERIOR PARKING LOT SHALL BE LIMBED UP TO 7' ABOVE GRADE)	B&B 16' HT. MINIMUM
+	1	PONDEROSA PINE, *PINUS PONDEROSA*	B&B 20' HT. MINIMUM

SHRUBS

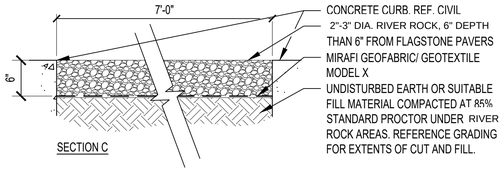
SYM.	QTY.	COMMON NAME, *BOTANICAL NAME*	MIN. CONTAINER	MAX. SPACING
HD	15	ROCK SPIREA, *HOLODISCUS DUMOSUS*	3 GALLON	6' O.C.
AT	96	WESTERN SAGE, *ARTEMISIA TRIDENTATA*	3 GALLON	4' O.C.
MF	130	FREMONT MAHONIA, *MAHONIA FREMONTII*	3 GALLON	4' O.C.
AA	48	SASKATOON SERVICEBERRY, *AMELANCHIER ALNIFOLIA*	3 GALLON	4' O.C.
TS	316	THREE LEAF SUMAC, *RHUS TRILOBATA*	3 GALLON	4' O.C.
WM	249	DWARF MOUNTAIN MAHOGANY, *CERCOCARPUS INTRICATUS*	3 GALLON	4' O.C.

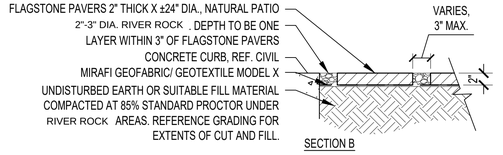
TURF

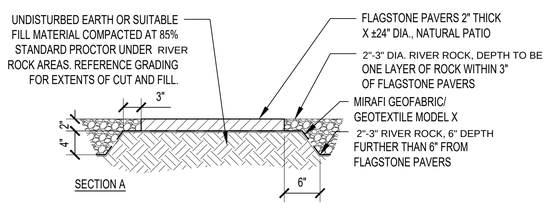
SYM.	QTY.	COMMON NAME, *BOTANICAL NAME*	CONTAINER	
	REF. PLAN	TURF MASTER LLC'S NATURES PRAIRIE TURF (CREEPING FESCUE, PRAIRIE JUNEGRASS, TUFTED HAIRGRASS, SIDEOATS GRAMA, SHEEP FESCUE)	HYDRO-MULCH	

LANDSCAPE CALCULATIONS

	REQUIRED PER WRITTEN PLANNED DEVELOPMENT	PROVIDED
INTERSTATE 25 FRONTAGE		
PERIMETER PARKING SPACES:	98 SPACES	
	REQUIRED	PROVIDED
SHRUBS (10 / 20 SPACES)	98	239
TREES (4 / 20 SPACES)	20	20
LANDSCAPE BUFFER		
LINEAR FOOTAGE	1464 FT.	
	REQUIRED	PROVIDED
TOTAL TREES	74	74
COUNTY LINE FRONTAGE		
PERIMETER PARKING SPACES:	68 SPACES	
	REQUIRED	PROVIDED
SHRUBS (10 / 20 SPACES)	68	218
TREES 4/20 SPACES)	15	15
LANDSCAPE BUFFER		
LINEAR FOOTAGE	1263 FT.	
	REQUIRED	PROVIDED
TOTAL TREES	51	52
PALMER DIVIDE FRONTAGE		
PERIMETER PARKING SPACES:	38 SPACES	
	REQUIRED	PROVIDED
SHRUBS (10 / 20 SPACES)	38	121
TREES (4 /20 SPACES)	8	8
LANDSCAPE BUFFER		
LINEAR FOOTAGE	725 FT.	
	REQUIRED	PROVIDED
TOTAL TREES	37	39

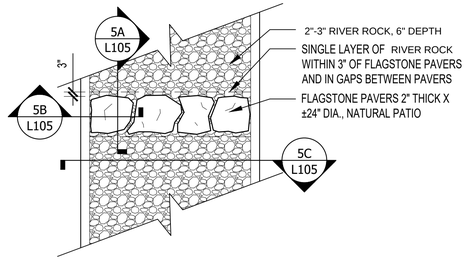






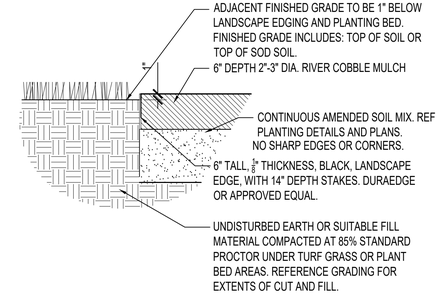
4 FLAGSTONE PATH - SECTIONS

Scale: 1" = 1'-0"



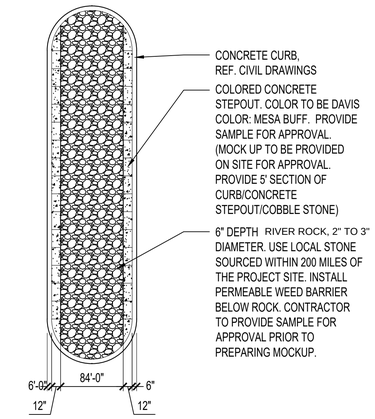
4 FLAGSTONE PATH - PLAN

Scale: 1/4" = 1'-0"



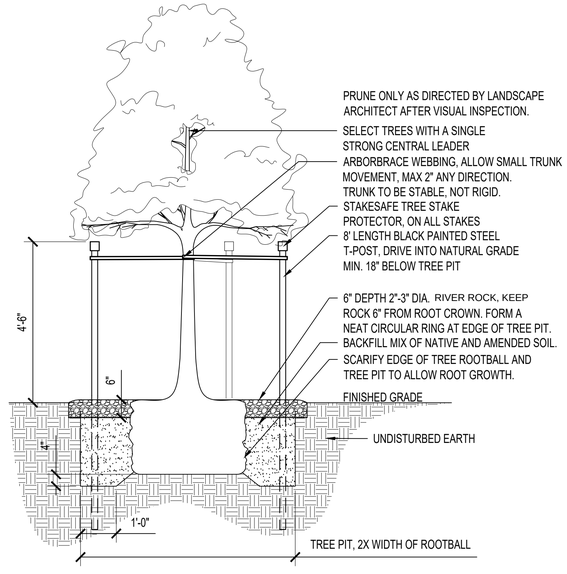
3 STEEL EDGING

Scale: 1" = 1'-0"



2 CURB ISLAND PLAN DETAIL

Scale: 1/8" = 1'-0"



1 SHADE TREE PLANTING

Scale: 1/2" = 1'-0"

BLU FISH COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
Austin, TX 78704

P.O. BOX 40792
Austin, TX 78704

Phone: (512)388-4115

PROFESSIONAL SEAL:

MICHAEL FISHBAUGH 1487 12/09/20 Original Date of Licensure STATE OF COLORADO LICENSED LANDSCAPE ARCHITECT

DATE SEALED: 07/11/2025

PROJECT NAME:
BUC-EE'S PALMER LAKE

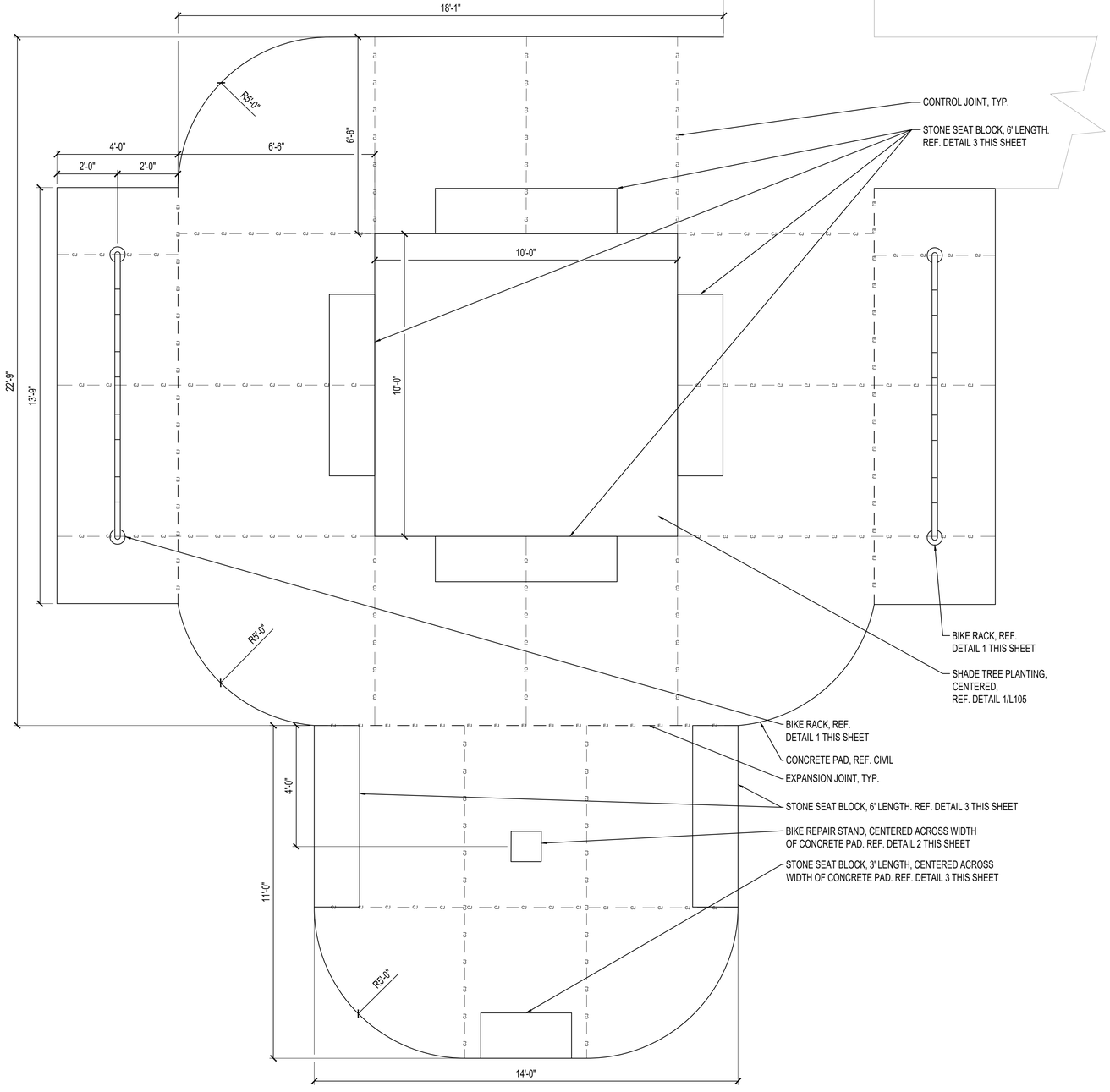
OWNER:
BUC-EE'S LTD.

PROJECT LOCATION:
INTERSTATE HWY 25 & PALMER DIVIDE ROAD,
PALMER LAKE, CO

REVISIONS:

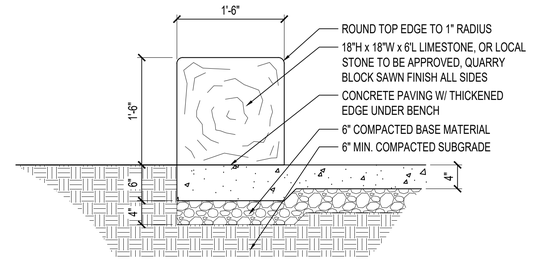
PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
PLANTING DETAILS

SHEET NO.:
L105



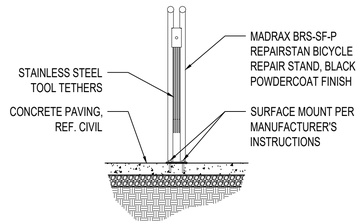
4 BIKE PLAZA - PLAN DETAIL

SCALE: 1/2" = 1'-0"



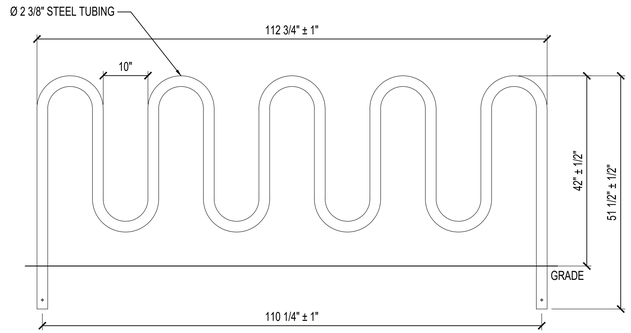
3 STONE SEAT BLOCK

SCALE: 1" = 1'-0"

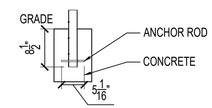


2 BIKE REPAIR STAND

SCALE: 1/2" = 1'-0"



9 LOOP - 11 BIKE



IN GROUND MOUNT

PRODUCT: HW238-11-IG(SF)
DESCRIPTION: HEAVY DUTY WINDER BIKE RACK
11 BIKE, IN GROUND MOUNT
DATE: 10-16-18
ENG: SMC
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NOTES:
1. INSTALL BIKE RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS
2. CONSULTANT TO SELECT COLOR (FINISH), SEE MANUFACTURER'S SPECIFICATIONS.
3. SEE SITE PLAN FOR LOCATIONS OR CONSULT OWNER

1 BIKE RACK

SCALE: 3/4" = 1'-0"

BLU FISH COLLABORATIVE
Landscape Architecture

107 Leland Street, Suite 2
Austin, TX 78704

P.O. BOX 40792
Austin, TX 78704

Phone: (512)388-4115

PROFESSIONAL SEAL:

DATE SEALED: 07/11/2025

PROJECT NAME:
BUC-EE'S
PALMER LAKE

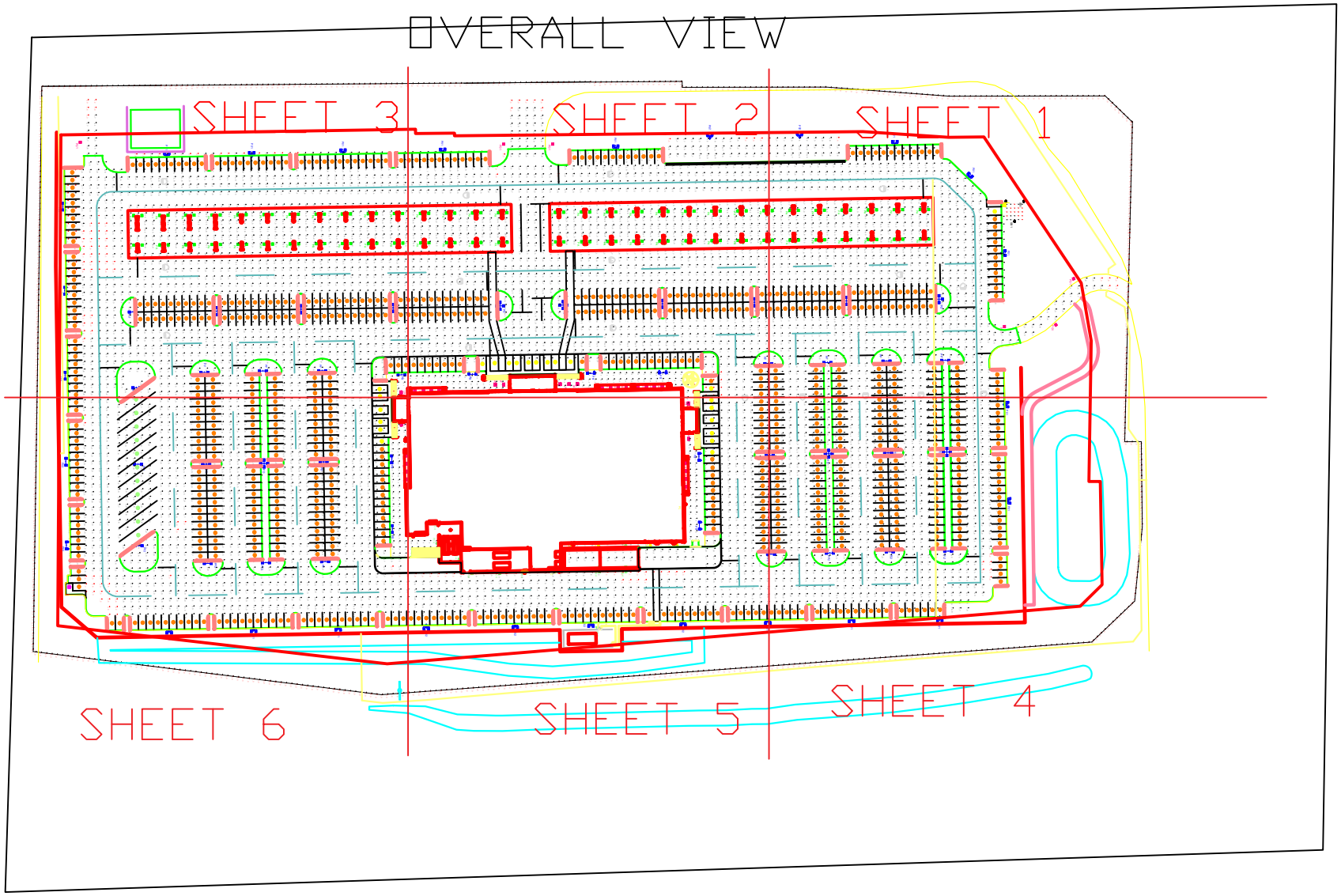
OWNER:
BUC-EE'S LTD.

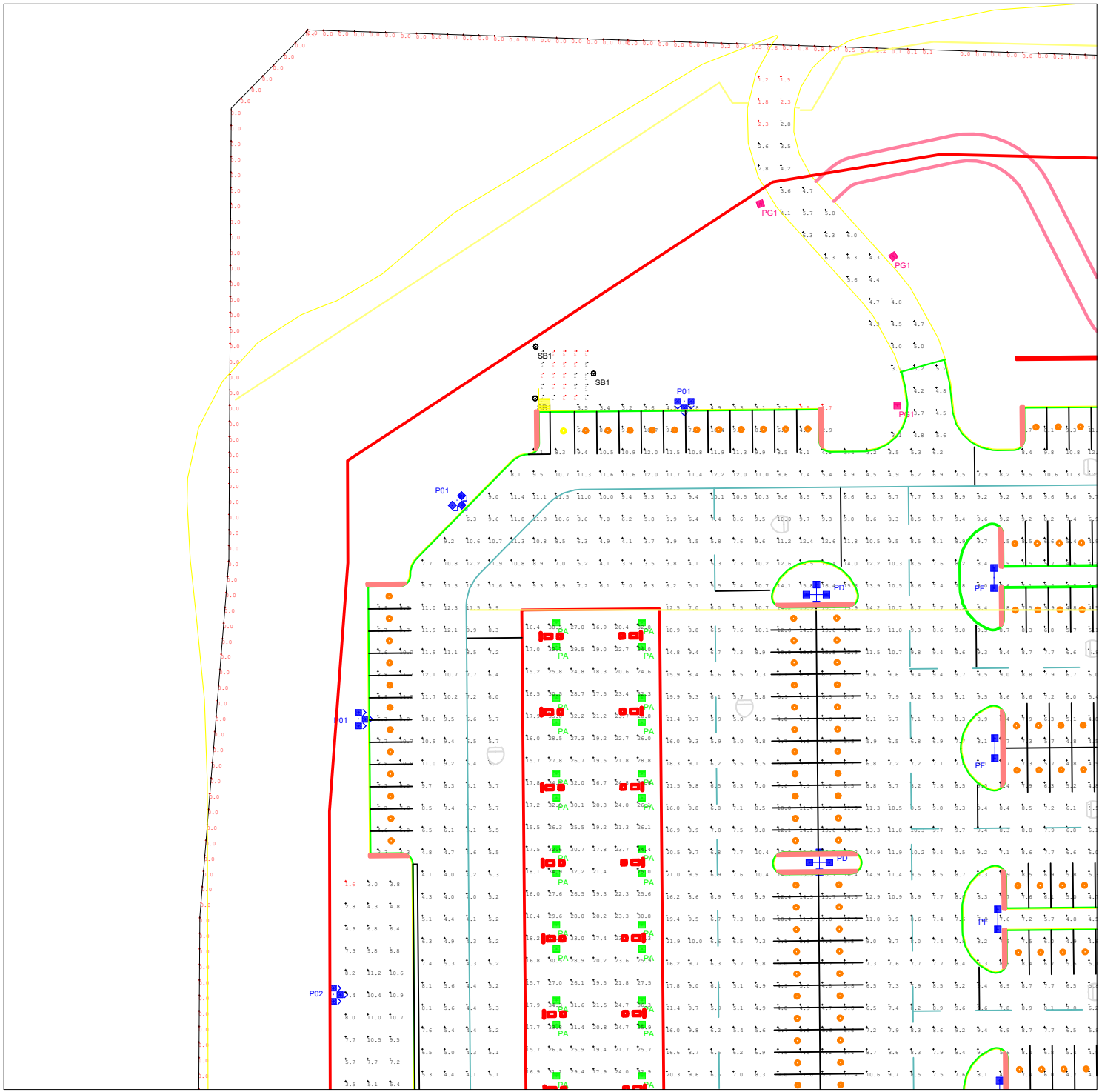
PROJECT LOCATION:
INTERSTATE
HWY 25 &
PALMER DIVIDE
ROAD,
PALMER LAKE, CO

REVISIONS:

PROJECT #: 001-24-04
DATE PRINTED: 8/11/25
DRAWING TITLE:
BIKE PLAZA
DETAILS

SHEET NO.:
L106


OVERALL VIEW
SHEET 3
SHEET 2
SHEET 1
SHEET 6
SHEET 5
SHEET 4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PG1
PG1
SB1
SB1
SB1
P01
P01
P01
P02
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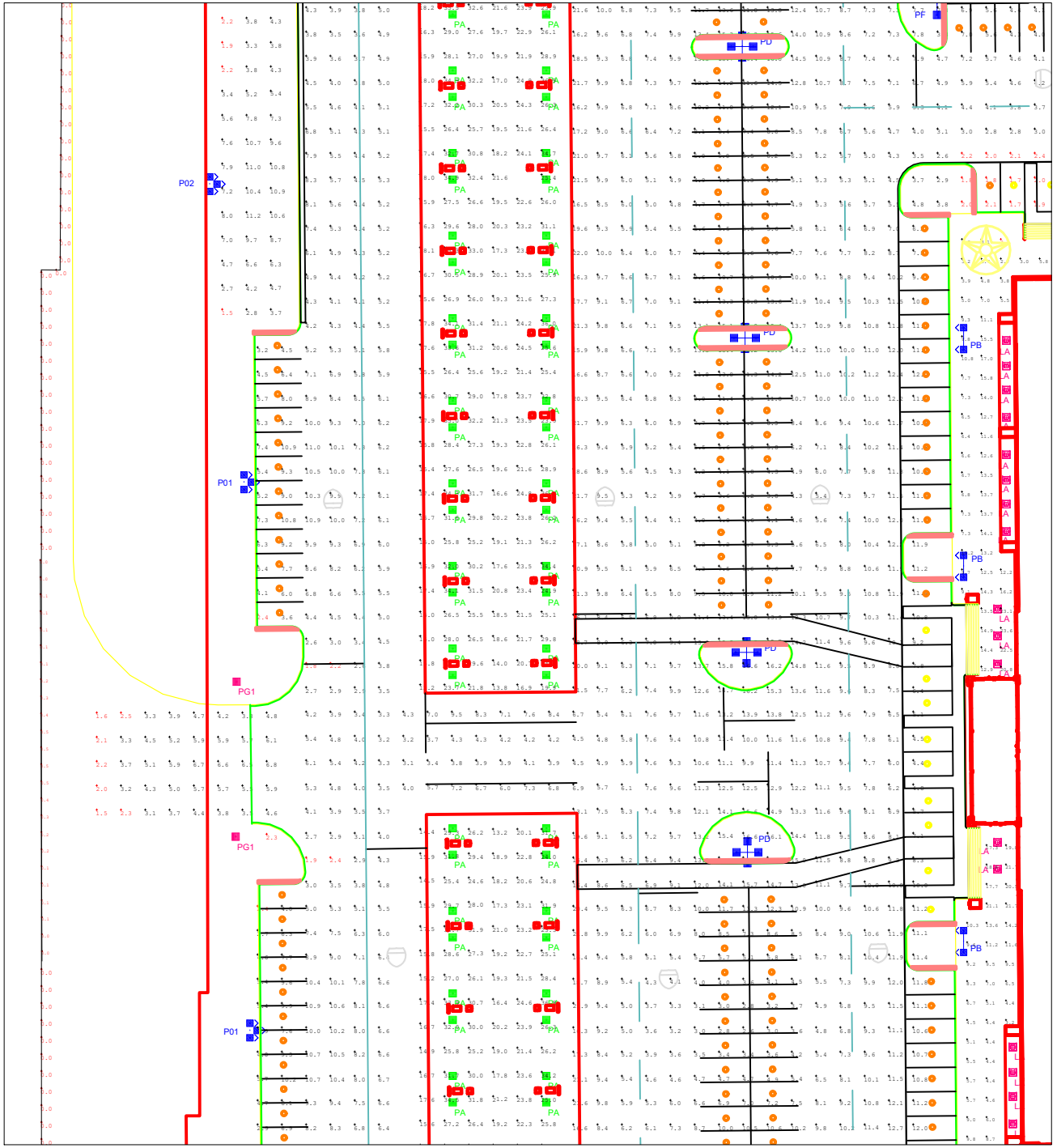
PD
PD
PF
PF
PF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PF
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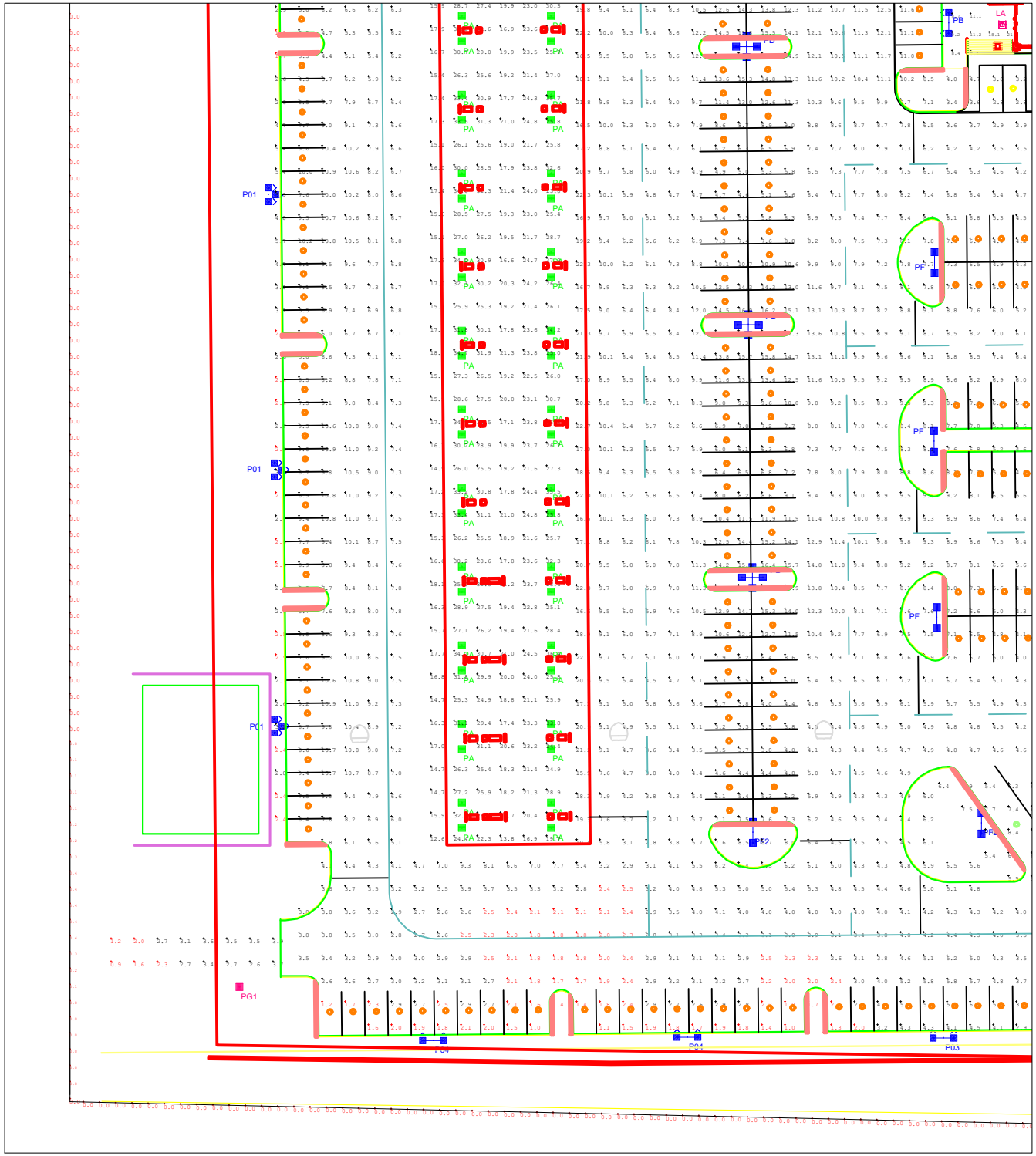
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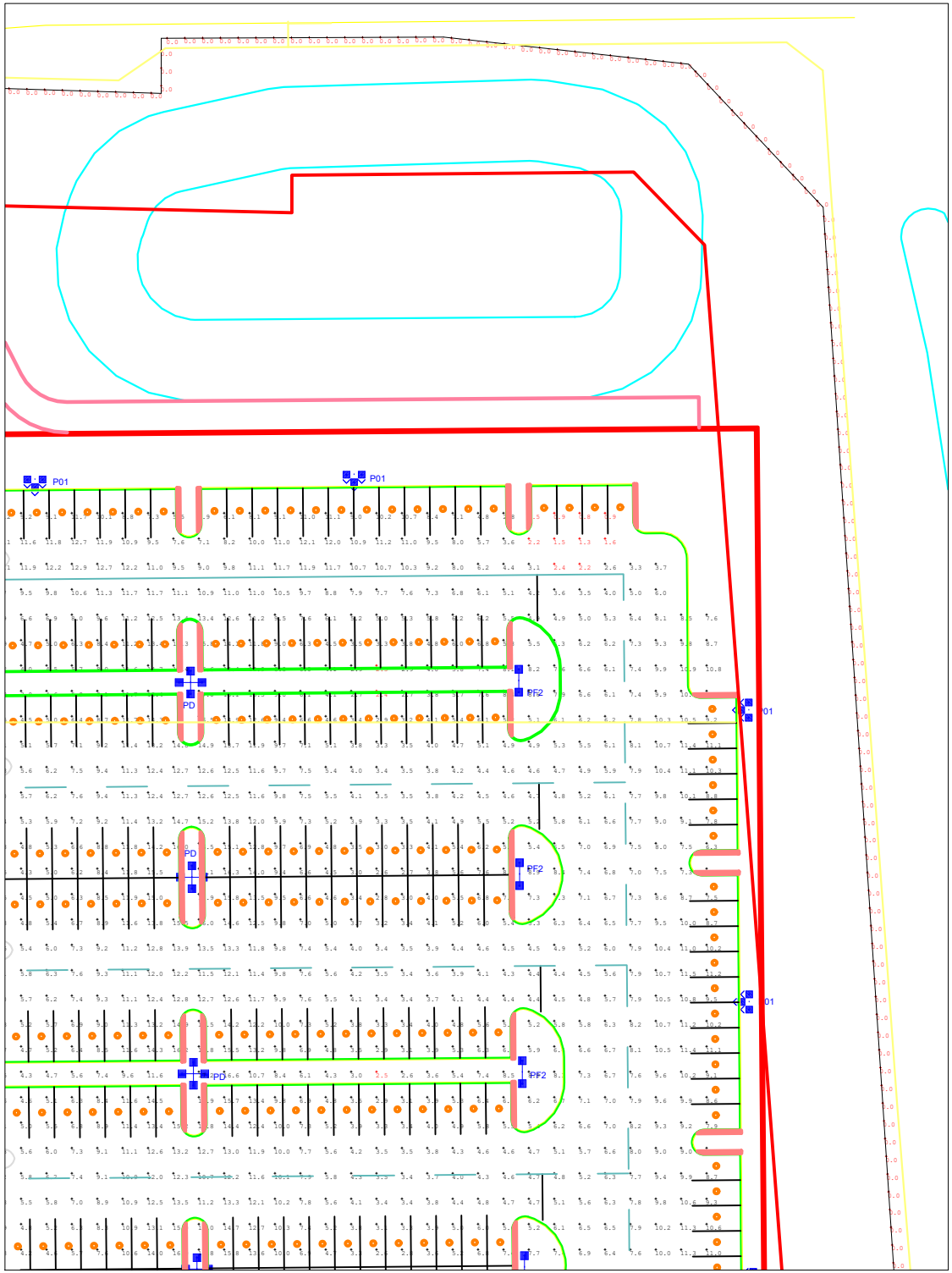
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PF2
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PF2
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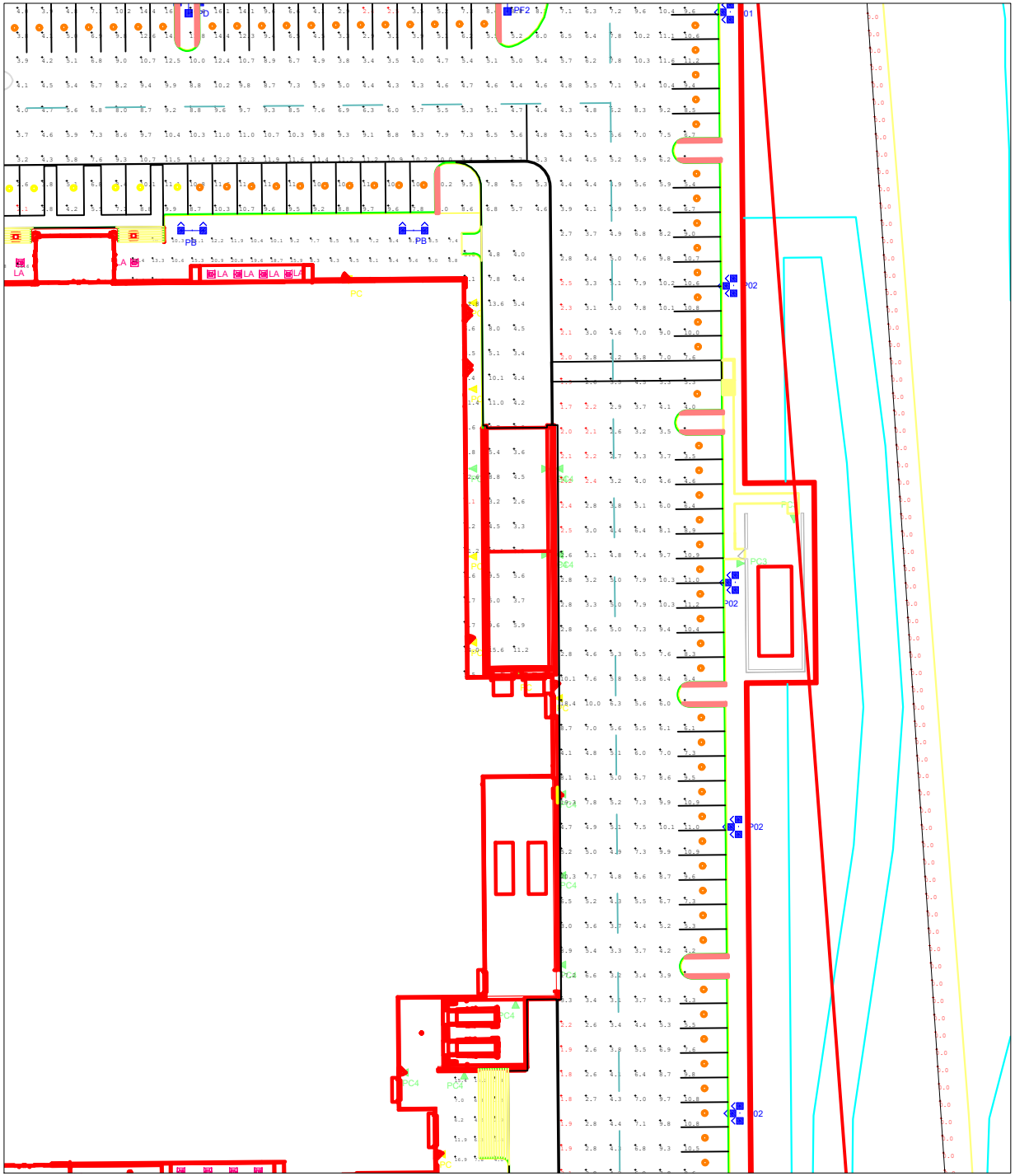
PF2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PF2
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PB
PB
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PC
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PC3
P02
P02
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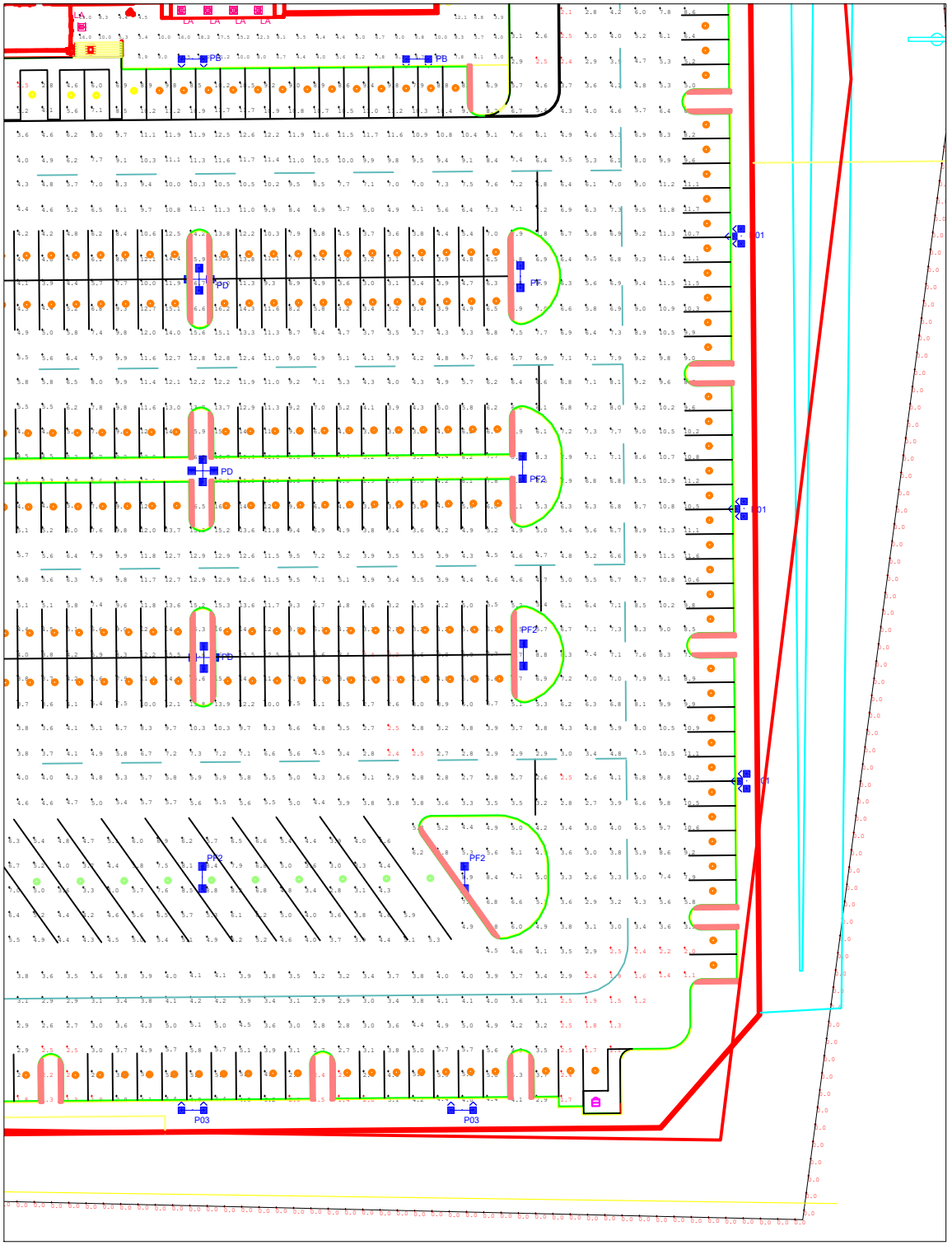
PC4
PC4
PC4
SC


LA
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PB
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PF
PD
PF2
PD
PF2
PF2
PF2
P03
P03
01
01
01

The lumen packages on the MRM Pole Mounted light fixtures will be custom lumen packages to accommodate the local requirements.

Luminaire Schedule

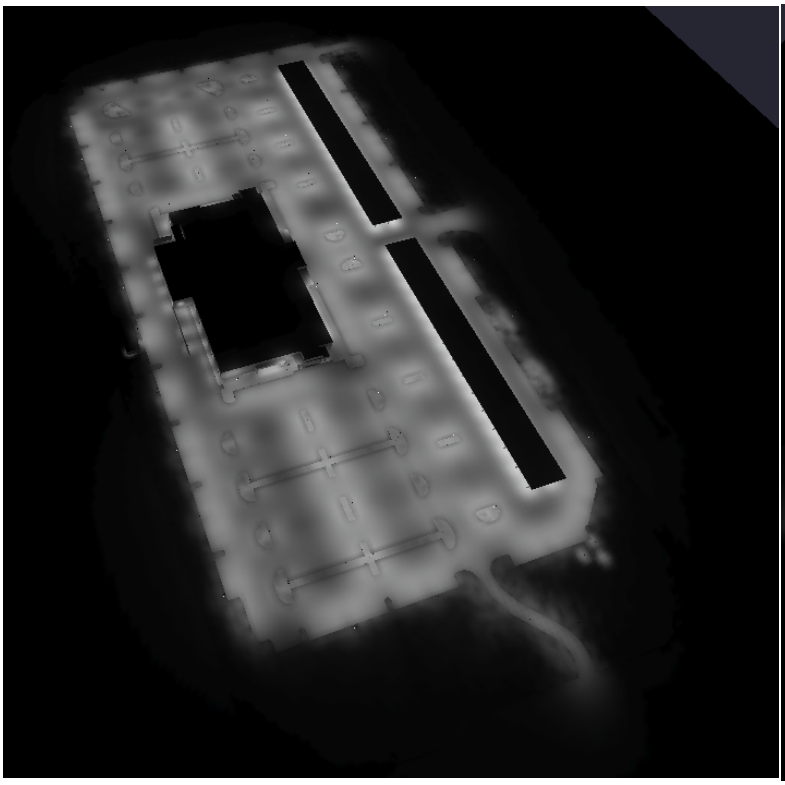
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	Mounting Height	Color Temperature
	3	SB1	Single	MRB-LED-30L-ACR-S-30	SB1	0.850	2655	38.4	115.2	3.8	3000
	3	P03	D180° 2RTD	MRM-LED-24L-SIL-4-30-70CRI-IL	P03	0.850	15165	160	960	29.5	3000
	2	P04	D180° 2RTD	MRM-LED-12L-SIL-4-30-70CRI-IL	P04	0.850	8183	85	340	29.5	3000
	10	PF2	D180°	MRM-LED-30L-SIL-2-30-70CRI-IH	PF2	0.850	22036	213	4260	29.5	3000
	16	P01	D180 2RTD 1-90	MRM-LED-30L-SIL-3-30-70CRI-IL	P01	0.850	20237	213	10224	29.5	3000
	6	P02	D180 2RTD 1-90	MRM-LED-30L-SIL-4-30-70CRI-IL	P02	0.850	19040	213	3834	29.5	3000
	11	PC4	SINGLE	WPSLL-04L-30	PC4	0.850	4147	40	440	10	3000
	2	PC3	SINGLE	WPSLL-04L-30	PC3	0.850	4147	40	80	10	3000
	30	LA	Single	XSPS-S-LED-VHO-WW-DFL	LA	0.850	5733	48.7	1461	12	3000
	120	PA	SINGLE	CRUS-SC-HO-30	PA	0.850	17889	125	15000	17	3000
	8	PB	D180° 2RTD	MRM-LED-36L-SIL-3-30-70CRI	PB	0.850	36614	254	4064	29.5	3000
	8	PC	SINGLE	WPSLL-08L-30	PC	0.850	7980	76.39	611.12	15	3000
	16	PD	4 @ 90°	MRM-LED-30L-SIL-FT-30-70CRI	PD	0.850	31233	213	13632	29.5	3000
	8	PF	D180°	MRM-LED-30L-SIL-3-30-70CRI	PF	0.850	31244	213	3408	29.5	3000
	6	PG1	SINGLE	MRM-LED-30L-SIL-3-30-70CRI-IL	PG1	0.850	20237	213	1278	29.5	3000

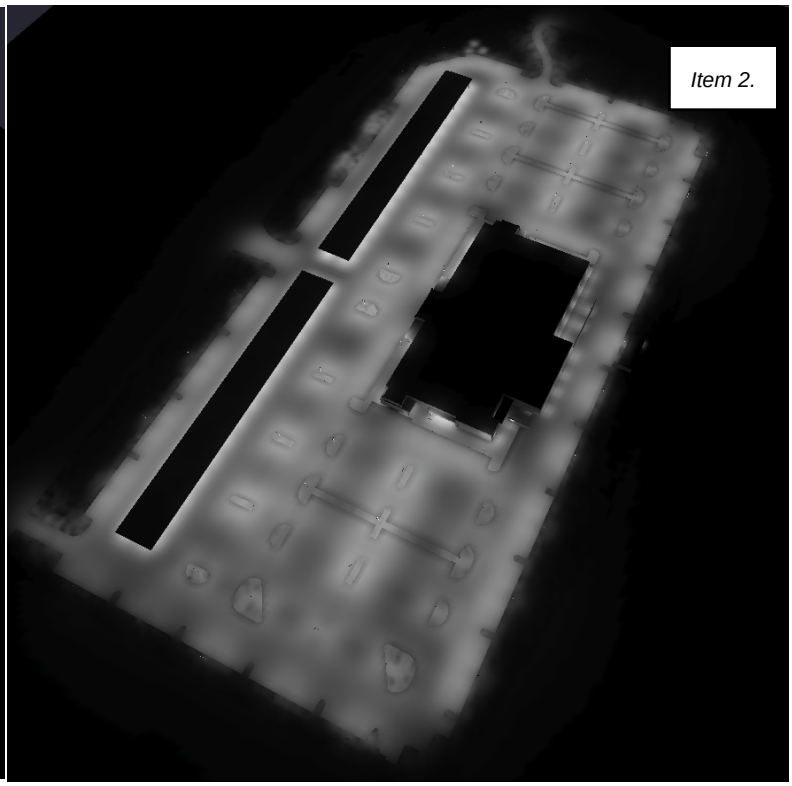
Calculation Summary

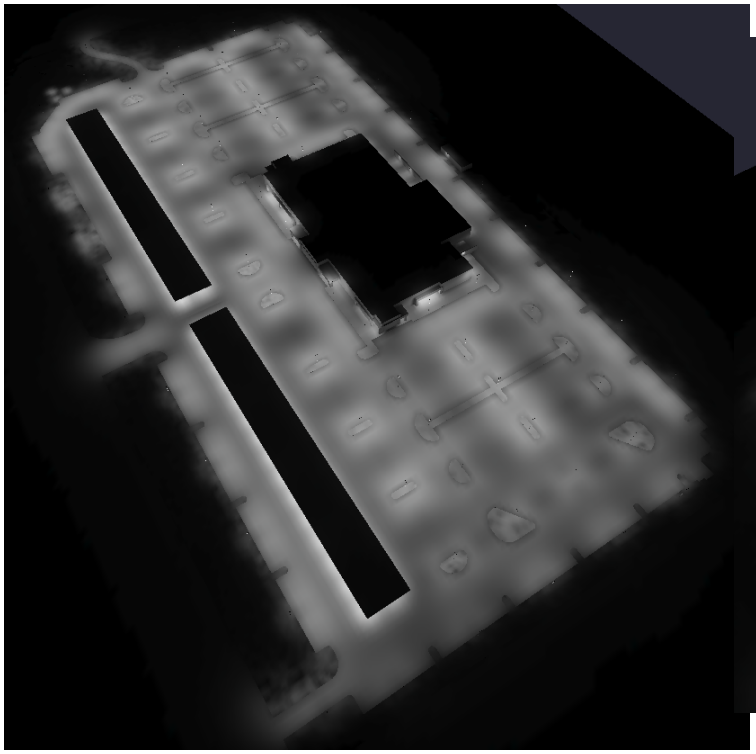
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Bicycle Areea	Illuminance	Fc	4.16	17.4	0.5	8.32	34.80
East Walkway_Entry 1	Illuminance	Fc	8.26	18.2	2.9	2.85	6.28
Front Walkway_Entry 1	Illuminance	Fc	10.42	23.6	2.2	4.74	10.73
Front Walkway_Entry 2	Illuminance	Fc	10.39	21.7	3.2	3.25	6.78
Fuel Canopy 1	Illuminance	Fc	24.49	37.3	12.2	2.01	3.06
Fuel Canopy 2	Illuminance	Fc	24.14	37.2	12.6	1.92	2.95
Fuel Tanks	Illuminance	Fc	6.63	11.2	1.5	4.42	7.47
Parking Lot	Illuminance	Fc	7.49	22.7	0.8	9.36	28.38
Property Line	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Property Line @ Entrance 1	Illuminance	Fc	0.17	0.4	0.0	N.A.	N.A.
Property Line @ Entrance 2	Illuminance	Fc	0.20	0.5	0.0	N.A.	N.A.
Property Line @ Entrance 3	Illuminance	Fc	0.31	0.8	0.0	N.A.	N.A.
Receiving Area	Illuminance	Fc	7.07	18.2	2.1	3.37	8.67
Roadway Entry 1	Illuminance	Fc	2.71	3.9	0.9	3.01	4.33
Roadway Entry 2	Illuminance	Fc	4.33	6.8	1.5	2.89	4.53
Roadway Entry 3	Illuminance	Fc	4.28	6.3	1.2	3.57	5.25
RV Parking Area	Illuminance	Fc	5.42	9.0	2.8	1.94	3.21
West Walkway_Entry 1	Illuminance	Fc	10.30	20.9	3.2	3.22	6.53

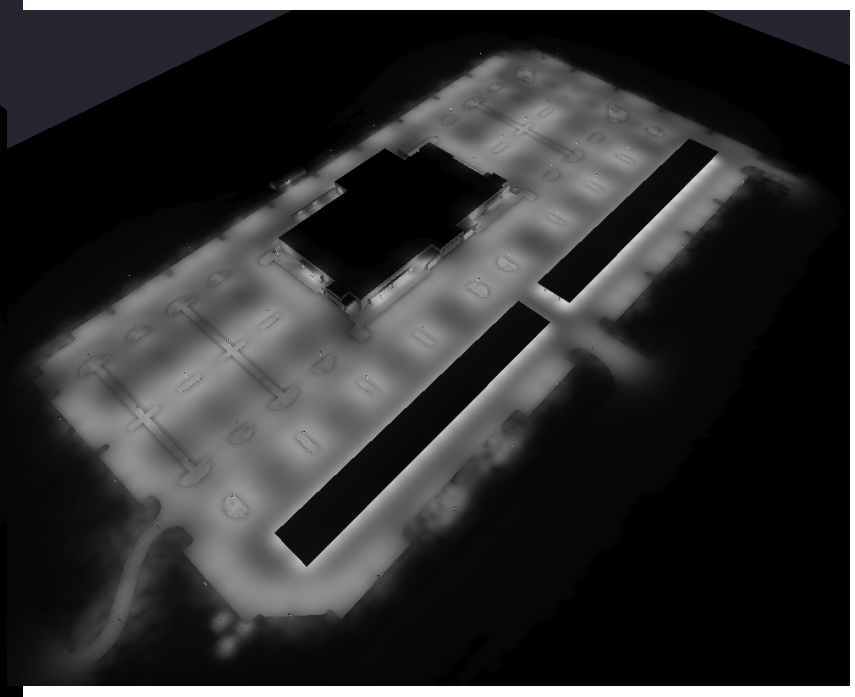
Luminaire Schedule

Symbol	Qty	Label	Tag	Arrangement Watts	Arrangement Luminaire Lumens	Total Lumens (Quanity*Arrangment Lumens)
	3	SB1	SB1	38.4	2655	7965
	3	P03	P03	320	30330	90990
	2	P04	P04	170	16366	32732
	10	PF2	PF2	426	44072	440720
	16	P01	P01	639	60711	971376
	6	P02	P02	639	57120	342720
	11	PC4	PC4	40	4147	45617
	2	PC3	PC3	40	4147	8294
	30	LA	LA	48.7	5733	171990
	120	PA	PA	125	17889	2146680
	8	PB	PB	508	73228	585824
	8	PC	PC	76.39	7980	63840
	16	PD	PD	852	124932	1998912
	8	PF	PF	426	62488	499904
	6	PG1	PG1	213	20237	121422









Mirada Medium (MRM)

Outdoor LED Area Light

MANUFACTURED IN THE USA | TITLE 24 COMPLIANT | cULus LISTED | IDA | DLC LISTED PREMIUM | RoHS COMPLIANT | IP66 | IK08

OVERVIEW	
Lumen Package	7,000 - 55,000
Wattage Range	48 - 438
Efficacy Range (LPW)	115 - 162
Weight lbs(kg)	30 (13.6)
Control Options	IMSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction

- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 37 lbs in carton.

Optical System

- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated sealed optical chamber in 1 component.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in IES Types 2, 3, 4, 5W, FT, FTA, AM, and LC/RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93-95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377. Also Available in Phosphor Converted Amber with Peak intensity at 610nm.
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical

- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz or optional High Voltage (347-480 Vac).
- L80 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 42L and 48L lumen packages rated to +40°C. 55L lumen package rate to +35°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls

- Optional integral passive infrared Bluetooth™ motion. Fixtures operate independently and can be commissioned via iOS or Android configuration app
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7. (see controls section for more details).

Installation

- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional 3" drill pattern B3 for easy fastening of LSI products.

Warranty

- LSI LED Fixtures carry a 5-year warranty.

Listings

- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- RoHS compliant
- Suitable for wet Locations.
- IP66 rated Luminaire per IEC 60598.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Patented Silicone Optics (US Patent NO. 10,816,165 B2)
- IK08 rated luminiare per IEC 66262 mechanical impact code

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Mirada Medium Outdoor LED Area Light

Have questions? Call us at (800) 436-7800

Type : Item 2.

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: MRM LED 36L SIL FTA UNV DIM 50 70CRI ALSCS04 BRZ IL

Prefix	Light Source	Lumen Package	Lens	Distribution	Orientation[2]	Voltage	Driver
MRM - Mirada Medium Area Light	**LED**	**7L** - 7,000 lms, 48W **9L** - 9,000 lms, 62W **12L** - 12,000 lms, 85W **18L** - 18,000 lms, 135W **24L** - 24,000 lms, 176W **30L** - 30,000 lms, 232W **36L** - 36,000 lms, 288W **42L** - 42,000 lms, 314W **48L** - 48,000 lms, 401W **55L** - 55,000 lms, 438W Custom Lumen Packages[1]	**SIL** - Silicone	**2** - Type 2 **3** - Type 3 **4** - Type 4 **5W** - Type 5 Wide **FT** - Forward Throw **FTA** - Forward Throw Automotive **AM** - Automotive Merchandise **LC** - Left Corner **RC** - Right Corner	**(blank)** - standard **L**- Optics rotated left 90° **R** - Optics rotated right 90°	**UNV** - Universal Voltage (120-277V) **HV** - High Voltage (347-480V)	**DIM** - 0-10V Dimming (0-10%)

Color Temp	Color Rendering	Finish		Options
50 - 5,000 CCT **40** - 4,000 CCT **30** - 3,000 CCT **AMB** - Phosphor Converted Amber[12]	**70CRI** - 70 CRI	**BLK -** Black **BRZ -** Dark Bronze **GMG -** Gun Metal Gray **GPT -** Graphite	**MSV -** Metallic Silver **PLP -** Platinum Plus **SVG -** Satin Verde Green **WHT -** White	**(Blank)** - None **IH -** Integral Half Louver (Moderate Spill Light Cutoff)[2] **IL -** Integral Louver (Sharp Spill Light Cutoff)[2]

Controls (Choose One)

(Blank) - None

Wireless Controls System
ALSC - AirLink Synapse Control System[13]
ALSCS02 - AirLink Synapse Control System with 12-20' Motion Sensor[13]
ALSCS04 - AirLink Synapse Control System with 20-40' Motion Sensor[13]
ALBCS1 - AirLink Blue Wireless Motion & Photo Sensor Controller (8-24' mounting height)[5]
ALBCS2 - AirLink Blue Wireless Motion & Photo Sensor Controller (25-40' mounting height)[5]

Stand-Alone Controls
EXT - 0-10v Dimming leads extended to housing exterior
CR7P - 7 Pin Control Receptacle ANSI C136.41[6]
IMSBTL1- Integral Bluetooth™ Motion and Photocell Sensor (8-24' MH)[5]
IMSBTL2- Integral Bluetooth™ Motion and Photocell Sensor (25-40' MH)[5]

Button Type Photocells
PCI120 - 120V
PCI208-277 - 208 -277V
PCI347 - 347V

Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800

ACCESSORY ORDERING INFORMATION[7]

CONTROLS ACCESSORIES	
Description	**Order Number**
PC120 Photocell for use with CR7P option (120V)[8]	**122514**
PC208-277 Photocell for use with CR7P option (208V, 240V, 277V)[8]	**122515**
Twist Lock Photocell (347V) for use with CR7P[8]	**122516**
Twist Lock Photocell (480V) for use with CR7P[8]	**1225180**
AirLink 5 Pin Twist Lock Controller (120-277V Only)[8]	**661409**
AirLink 7 Pin Twist Lock Controller (120-277V Only)[8]	**661410**
AirLink 7 Pin Twist Lock Controller (347-480V)	**679948**
Shorting Cap for use with CR7P	**149328**

FUSING OPTIONS[11]	
Single Fusing (120V)	See Fusing Accessory Guide
Single Fusing (277V)	
Double Fusing (208V, 240V)	
Double Fusing (480V)	
Double Fusing (347V)	

SHIELDING OPTIONS	
Mirada Small	See Shielding Guide
Mirada Medium	
Mirada Large	
Zone Medium	
Zone Large	
Slice Medium	

1. Custom lumen and wattage packages available, consult factory. Values are within industry standard tolerances but not DLC listed.
2. Not available with 5W distribution
3. Consult Factory for availability.
4. Not available in HV.
5. Motion sensors are field configurable via an app that can be downloaded from your smartphone's native app store. See controls section for more details.
6. Control device or shorting cap must be ordered separately. See Accessory Ordering Information.
7. Accessories are shipped separately and field installed.
8. Factory installed CR7P option required. See Options.
9. "CLR" denotes finish. See Finish options.
10. Only available with ALSC/ALSCH control options.
11. Fusing must be located in hand hole of pole. See Fusing Accessory Guide for compatability.
12. Only available in 9L, 12L, 18L and 24L Lumen Packages. Consult factory for lead time and availability.
13. Not available with 55L Lumen Package.

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Mirada Medium Outdoor LED Area Light

Have questions? Call us at (800) 436-7800

Type : Item 2.

ACCESSORIES

MOUNTING ACCESSORIES

Side Arm

Universal Mounting Bracket
Mounts to ≥ 3" square or round (tapered/straight) poles with (2) mounting hole spaces between 3.5" to 5"

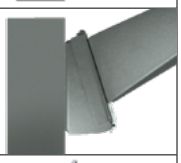
Part Number: BKA UMB CLR

Quick Mount Plate
True one person installation to existing/new contruction poles with hole spaces beteen 2.4 to 4.6"

Part Number: BKS PQM B3B5 XX CLR

15° Tilt Quick Mount Plate
True one person installation to existing/new contruction poles with hole spaces beteen 2.4 to 4.6"

Part Number: BKS PQ15 B3B5 XX CLR



Tenon / Slipfitter

Adjustable Slipfitter
Mounts onto a 2" (51mm) IP, 2.375" (60mm) O.D. tenon and provides 180° of tilt (max 45° above horizontal)

Part Number: BKA ASF CLR

Square Tenon Top
Mounts onto a 2" (51mm) IP, 2.375" (60mm) O.D. tenon and allows for mounting up to 4 luminaires

Part Number: BKA XNM *

Square Internal Slipfitter
Mounts inside 4" or 5" square pole and allows for mounting up to 4 lumianires

Part Number: BKA X_ISF * CLR

Wall Mount / Wood Pole

Wall Mount Bracket
Mounts onto vertical wall surface (hardware/anchors not included)

Part Number: BKS XBO WM CLR

Wood Pole Bracket
Mounts onto wooden poles (6" minimum OD, hardware/anchors not inlcuded)

Part Number: BKS XBO WP CLR

SHIELDING, POLES & MISC. ACCESSORIES

Shielding

Integral Louver
Field Install Integral Louver provides maximum backlight control by shiedling each individual row of LEDS

Part Number: 690981

Integral Half Louver
Field Install Integral Half Louver provides great backlight control without impacting front side distribution.

Part Number: 743415

External Shield
External shield blocks view of light source from anyside of luminaire, additional shielding configurations available

Part Number: 783607BLK (3") / 776538BLK (6")

Poles

Square Poles
14 - 39' steel and aluminum poles in 4", 5" and 6" sizes for retrofit and new construction

Part Number: 4SQ/5SQ/6SQ

Round Poles
10 - 30' steel and aluminum poles in 4" and 5" sizes for retrofit and new construction

Part Number: 4RP/5RP

Tapered Poles
20' - 39' steel and aluminum poles for retrofit and new construction

Part Number: RTP

Misc.

Bird Spikes
10' Linear Bird Spike Kit, 4' recommended per luminaire, includes silcone adhesive and application tool

Spike Part Number: 751631
Adhesive Part Number: 751632
Caulk Gun Part Number: 751636

Replace CLR with paint finish description

Replace X with: 3

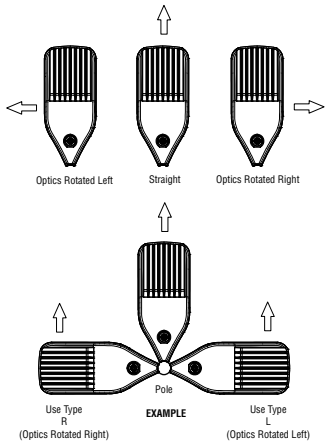
Replace XX with SQ for square pole or RD for round pole (≥3" OD)

Replace * with S (Single), D180 (Double @180°), D90 (Double @90°), T90 (Triple), Q90 (Quad)

Replace _ with 4 (4" square pole) or 5 (5" square pole)

OPTICS ROTATION

Top View



ACCESSORIES/OPTIONS

Integral Louver (IL) and House-Side Shield (IH)

Integral louver (IL) and half louver (IH) accessory shields available for improved backlight control without sacrificing street side performance. LSI's Integral Louver (IL) and Integral House-Side Shield (IH) options deliver backlight control that significantly reduces spill light behind the poles for applications with pole locations close to adjacent properties. The design maximizes forward reflected light while reducing glare, maintaining the optical distribution selected, and most importantly eliminating light trespass. Both options rotate

Luminaire Shown with Integral Louver (IL)

Luminaire Shown with IMSBTL Option

7 Pin Photoelectric Control

7-pin ANSI C136.41-2013 control receptacle option available for twist lock photocontrols or wireless control modules. Control accessories sold separately. Dimming leads from the receptacle will be connected to the driver dimming leads (Consult factory for alternate wiring).

Luminaire Shown with CR7P

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PERFORMANCE

Back to Quick Links

DELIVERED LUMENS*

Lumen Package	Distribution	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
			Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	
9L	2	70	9853	159	B2-U0-G2	9853	159	B2-U0-G2	9853	159	B2-U0-G2	62
	3		9926	160	B2-U0-G2	9926	160	B2-U0-G2	9926	160	B2-U0-G2	
	4		9178	148	B2-U0-G3	9713	157	B2-U0-G3	9498	153	B2-U0-G3	
	5W		9504	153	B3-U0-G2	9504	153	B3-U0-G2	9504	153	B3-U0-G2	
	FT		9856	159	B2-U0-G3	9856	159	B2-U0-G3	9856	159	B2-U0-G3	
	FTA		9900	160	B2-U0-G2	9900	160	B2-U0-G2	9900	160	B2-U0-G2	
	AM		10019	162	B2-U0-G1	10019	162	B2-U0-G1	10019	162	B2-U0-G1	
	LC/RC		9008	145	B2-U0-G3	9533	154	B2-U0-G3	9321	150	B2-U0-G3	
12L	2	70	13135	155	B3-U0-G2	13135	155	B3-U0-G2	13135	155	B3-U0-G2	85
	3		13232	156	B2-U0-G2	13232	156	B2-U0-G2	13232	156	B2-U0-G2	
	4		12223	144	B2-U0-G3	12935	152	B2-U0-G4	12648	149	B2-U0-G4	
	5W		12669	149	B4-U0-G2	12669	149	B4-U0-G2	12669	149	B4-U0-G2	
	FT		13138	155	B2-U0-G3	13138	155	B2-U0-G3	13138	155	B2-U0-G3	
	FTA		13196	155	B2-U0-G2	13196	155	B2-U0-G2	13196	155	B2-U0-G2	
	AM		13355	157	B2-U0-G2	13355	157	B2-U0-G2	13355	157	B2-U0-G2	
	LC/RC		11996	141	B2-U0-G3	12695	149	B2-U0-G3	12414	146	B2-U0-G3	
18L	2	70	19318	143	B3-U0-G3	19318	143	B3-U0-G3	19318	143	B3-U0-G3	135
	3		19461	144	B3-U0-G3	19461	144	B3-U0-G3	19461	144	B3-U0-G3	
	4		18013	133	B2-U0-G4	19063	141	B3-U0-G5	18640	138	B3-U0-G5	
	5W		18633	138	B4-U0-G2	18633	138	B4-U0-G2	18633	138	B4-U0-G2	
	FT		19324	143	B3-U0-G3	19324	143	B3-U0-G3	19324	143	B3-U0-G3	
	FTA		19408	144	B3-U0-G3	19408	144	B3-U0-G3	19408	144	B3-U0-G3	
	AM		19641	145	B3-U0-G2	19641	145	B3-U0-G2	19641	145	B3-U0-G2	
	LC/RC		17679	131	B2-U0-G3	18710	139	B2-U0-G3	18295	136	B2-U0-G3	
24L	2	70	24142	147	B4-U0-G3	25957	147	B4-U0-G3	25957	147	B4-U0-G3	176
	3		25001	149	B3-U0-G3	26149	149	B3-U0-G3	26149	149	B3-U0-G3	
	4		24396	152	B3-U0-G5	25600	160	B3-U0-G5	25457	159	B3-U0-G5	
	5W		24327	142	B5-U0-G3	25037	142	B5-U0-G3	25037	142	B5-U0-G3	
	FT		24994	148	B3-U0-G3	25964	148	B3-U0-G3	25964	148	B3-U0-G3	
	FTA		24171	148	B3-U0-G3	26077	148	B4-U0-G3	26077	148	B4-U0-G3	
	AM		24939	150	B3-U0-G2	26393	150	B3-U0-G2	26393	150	B3-U0-G2	
	LC/RC		25884	162	B3-U0-G4	25884	162	B3-U0-G4	25310	158	B3-U0-G4	
30L	2	70	30171	140	B4-U0-G3	32417	140	B4-U0-G3	32417	140	B4-U0-G3	232
	3		31243	141	B3-U0-G4	32656	141	B3-U0-G4	32656	141	B3-U0-G4	
	4		30631	144	B3-U0-G5	32141	151	B3-U0-G5	31961	150	B3-U0-G5	
	5W		30402	135	B5-U0-G3	31267	135	B5-U0-G3	31267	135	B5-U0-G3	
	FT		31233	140	B4-U0-G4	32424	140	B4-U0-G4	32424	140	B4-U0-G4	
	FTA		30207	140	B4-U0-G4	32566	140	B4-U0-G4	32566	140	B4-U0-G4	
	AM		3116	142	B4-U0-G3	32960	142	B4-U0-G3	32960	142	B4-U0-G3	
	LC/RC		32498	153	B3-U0-G5	32498	153	B3-U0-G5	31777	149	B3-U0-G5	

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PERFORMANCE (CONT.)

DELIVERED LUMENS*

Lumen Package	Distribution	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
			Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	
36L	2	70	35357	133	B4-U0-G3	38275	133	B4-U0-G3	38275	133	B4-U0-G3	288
	3		36614	134	B4-U0-G4	38557	134	B4-U0-G4	38557	134	B4-U0-G4	
	4		35402	139	B3-U0-G5	37148	146	B4-U0-G5	36940	145	B4-U0-G5	
	5W		35627	128	B5-U0-G4	36917	128	B5-U0-G4	36917	128	B5-U0-G4	
	FT		36602	133	B4-U0-G4	38283	133	B4-U0-G4	38283	133	B4-U0-G4	
	FTA		35399	134	B4-U0-G4	38450	134	B4-U0-G4	38450	134	B4-U0-G4	
	AM		36524	135	B4-U0-G3	38916	135	B4-U0-G3	38916	135	B4-U0-G3	
	LC/RC		37561	147	B3-U0-G5	37561	147	B3-U0-G5	36727	144	B3-U0-G5	
42L	2	70	41035	131	B5-U0-G4	42602	136	B5-U0-G4	42542	135	B5-U0-G4	314
	3		42493	135	B4-U0-G5	44115	140	B4-U0-G5	44053	140	B4-U0-G5	
	4		41453	132	B4-U0-G5	43497	138	B4-U0-G5	43254	138	B4-U0-G5	
	5W		41349	132	B5-U0-G4	42927	134	B5-U0-G4	42866	137	B5-U0-G4	
	FT		42481	135	B4-U0-G4	44103	140	B4-U0-G4	44040	140	B4-U0-G4	
	FTA		41083	131	B4-U0-G4	42652	136	B5-U0-G4	42591	136	B5-U0-G4	
	AM		42389	135	B4-U0-G3	44007	140	B4-U0-G3	43944	140	B4-U0-G3	
	LC/RC		43980	140	B3-U0-G5	43980	140	B3-U0-G5	43004	137	B3-U0-G5	
48L	2	70	45133	123	B5-U0-G4	46856	128	B5-U0-G4	46789	128	B5-U0-G4	401
	3		46737	128	B4-U0-G5	48521	133	B4-U0-G5	48452	132	B4-U0-G5	
	4		46006	126	B4-U0-G5	48275	132	B4-U0-G5	48005	131	B4-U0-G5	
	5W		45478	124	B5-U0-G4	47214	129	B5-U0-G4	47147	129	B5-U0-G4	
	FT		46723	128	B4-U0-G5	48507	133	B4-U0-G5	48438	132	B4-U0-G5	
	FTA		45187	123	B5-U0-G4	46912	128	B5-U0-G4	46845	128	B5-U0-G4	
	AM		4662	127	B4-U0-G3	48402	132	B4-U0-G3	48333	132	B4-U0-G3	
	LC/RC		48811	133	B4-U0-G5	48811	133	B4-U0-G5	47728	130	B4-U0-G5	
55L	2	70	50179	115	B5-U0-G4	52095	119	B5-U0-G4	52021	119	B5-U0-G4	438
	3		51963	119	B4-U0-G5	53947	123	B4-U0-G5	53870	123	B4-U0-G5	
	4		51635	119	B4-U0-G5	54181	125	B4-U0-G5	53878	124	B4-U0-G5	
	5W		50563	115	B5-U0-G4	52493	120	B5-U0-G4	52418	120	B5-U0-G4	
	FT		50539	115	B4-U0-G5	52468	120	B4-U0-G5	52394	120	B4-U0-G5	
	FTA		50239	115	B5-U0-G4	52157	119	B5-U0-G4	52082	119	B5-U0-G4	
	AM		52223	119	B4-U0-G3	54216	124	B4-U0-G3	54139	124	B4-U0-G3	
	LC/RC		54113	124	B4-U0-G5	54113	124	B4-U0-G5	52912	121	B4-U0-G5	

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PERFORMANCE (CONT.)

ELECTRICAL DATA (AMPS)*						
Lumens	**120V**	**208V**	**240V**	**277V**	**347V**	**480V**
9L	0.52	0.30	0.26	0.22	0.18	0.13
12L	0.71	0.41	0.35	0.31	0.24	0.18
18L	1.13	0.65	0.56	0.49	0.39	0.28
24L	1.33	0.77	0.67	0.58	0.46	0.33
30L	1.78	1.02	0.89	0.77	0.61	0.44
36L	2.12	1.22	1.06	0.92	0.73	0.53
42L	2.62	1.51	1.31	1.13	0.90	0.65
48L	3.05	1.76	1.53	1.32	1.05	0.76
55L	3.65	2.11	1.83	1.58	1.26	0.91

RECOMMENDED LUMEN MAINTENANCE[1] (0-25°C)					
Ambient	**Intial[2]**	**25h[2]**	**50hr[2]**	**75hr[2]**	**100hr[2]**
9L - 18L	100%	97%	93%	90%	86%
24L - 48L	100%	95%	89%	84%	79%
55L	100%	91%	82%	74%	67%

RECOMMENDED LUMEN MAINTENANCE[1] (40°C)					
Ambient	**Intial[2]**	**25h[2]**	**50hr[2]**	**75hr[2]**	**100hr[2]**
9L - 18L	100%	97%	92%	88%	84%
24L - 48L	100%	94%	87%	80%	74%

RECOMMENDED LUMEN MAINTENANCE[1] (50°C)					
Ambient	**Intial[2]**	**25h[2]**	**50hr[2]**	**75hr[2]**	**100hr[2]**
9L - 18L C	100%	96%	91%	87%	83%

*Electrical data at 25°C (77°F). Actual wattage may differ by +/-10%

1. Lumen maintenance values at 25C are calculated per TM-21 based on LM-80 data and in-situ testing.
2. In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.
3. In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing.

DELIVERED LUMENS*					
Lumen Package	**Distribution**	**Phosphor Converted Amber (Peak 610mm)**			**Wattage**
		Delivered Lumens	**Efficacy**	**BUG Rating**	
9L	2	5848	80	B2-U0-G2	74
	3	6018	82	B1-U0-G2	
	5W	5471	74	B3-U0-G1	
	FT	5801	79	B1-U0-G2	
	FTA	5924	81	B1-U0-G1	
	AM	5995	81	B1-U0-G1	
12L	2	7530	74	B2-U0-G2	102
	3	7749	76	B1-U0-G2	
	5W	7045	69	B3-U0-G2	
	FT	7470	73	B2-U0-G2	
	FTA	7628	75	B2-U0-G2	
	AM	7720	76	B1-U0-G1	
18L	2	9311	69	B2-U0-G2	135
	3	9582	71	B2-U0-G2	
	5W	8712	65	B3-U0-G2	
	FT	9237	68	B2-U0-G2	
	FTA	9433	70	B2-U0-G2	
	AM	9546	71	B2-U0-G1	
24L	2	10955	63	B2-U0-G2	175
	3	11273	64	B2-U0-G2	
	5W	10249	59	B3-U0-G2	
	FT	10867	62	B2-U0-G2	
	FTA	11097	63	B2-U0-G2	
	AM	11230	64	B2-U0-G1	

ELECTRICAL DATA - PHOSPHOR CONVERTED AMBER (AMPS)*						
Lumens	**120V**	**208V**	**240V**	**277V**	**347V**	**480V**
9L	0.62	0.36	0.31	0.27	0.21	0.15
12L	0.85	0.50	0.43	0.38	0.30	0.22
18L	1.13	0.65	0.56	0.49	0.39	0.28
24L	1.47	0.85	0.73	0.64	0.51	0.37

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PHOTOMETRICS

Back to Quick Links

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

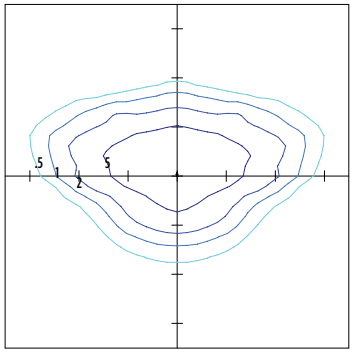
See the individual product page on https://www.lsicorp.com/ for detailed photometric data.

MRM-LED-30L-SIL-2-40-70CRI

Luminaire Data	
Type 2 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,416
Watts	232
Efficacy	140
IES Type	Type II - Short
BUG Rating	B4-U0-G3

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	4796	15%
Medium (30-60°)	19811	61%
High (60-80°)	7474	23%
Very High (80-90°)	335	1%
Uplight (90-180°)	0	0%
Total Flux	32416	100%

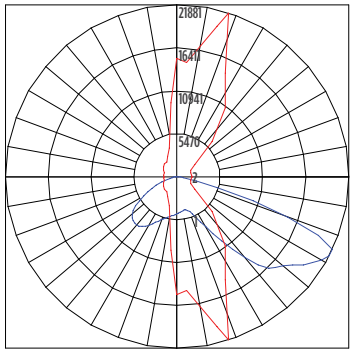
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



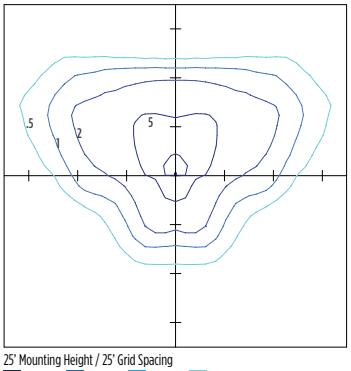
Vertical Plane Horizontal Cone

MRM-LED-30L-SIL-3-40-70CRI

Luminaire Data	
Type 3 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,656
Watts	232
Efficacy	141
IES Type	Type III - Short
BUG Rating	B3-U0-G4

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	3385	10%
Medium (30-60°)	16250	50%
High (60-80°)	12430	38%
Very High (80-90°)	591	2%
Uplight (90-180°)	0	0%
Total Flux	32656	100%

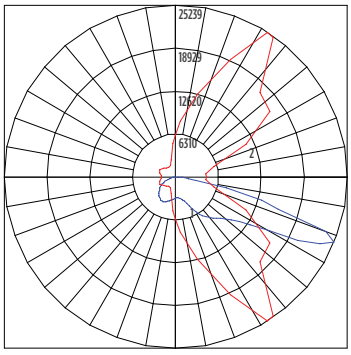
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



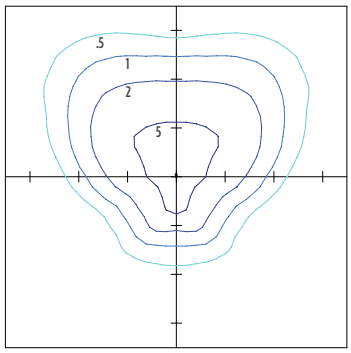
Vertical Plane Horizontal Cone

MRM-LED-30L-SIL-FT-40-70CRI

Luminaire Data	
Type FT Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,424
Watts	232
Efficacy	140
IES Type	Type IV - Short
BUG Rating	B3-U0-G4

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	3952	12%
Medium (30-60°)	15505	48%
High (60-80°)	12279	38%
Very High (80-90°)	688	2%
Uplight (90-180°)	0	0%
Total Flux	32424	100%

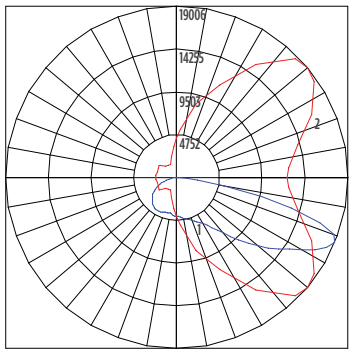
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



Vertical Plane Horizontal Cone

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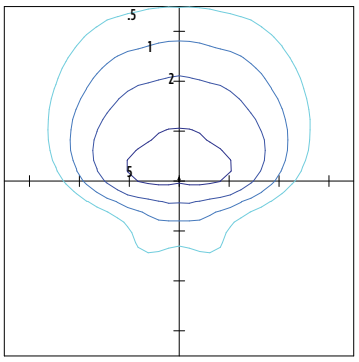
PHOTOMETRICS (CONT)

MRM-LED-30L-SIL-4-40-70CRI

Luminaire Data	
Type 4 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,141
Watts	213
Efficacy	151
IES Type	Type IV - Very Short
BUG Rating	B3-U0-G5

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	3119	10%
Medium (30-60°)	13569	42%
High (60-80°)	13649	42%
Very High (80-90°)	1804	6%
Uplight (90-180°)	0	0%
Total Flux	32141	100%

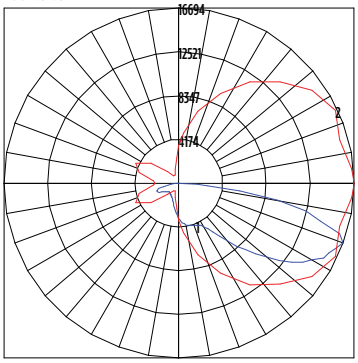
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



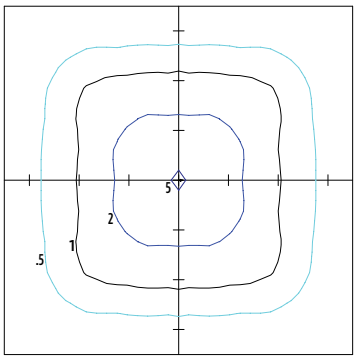
Vertical Plane Horizontal Cone

MRM-LED-30L-SIL-5W-40-70CRI

Luminaire Data	
Type 5W Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	31,267
Watts	232
Efficacy	135
IES Type	Type VS - Short
BUG Rating	B5-U0-G3

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	3138	10%
Medium (30-60°)	13193	42%
High (60-80°)	14641	47%
Very High (80-90°)	296	1%
Uplight (90-180°)	0	0%
Total Flux	31267	100%

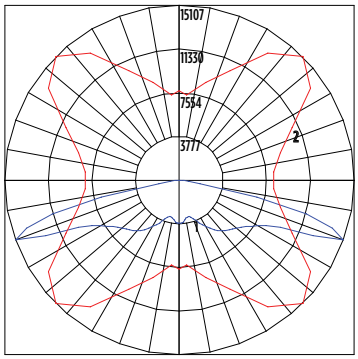
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



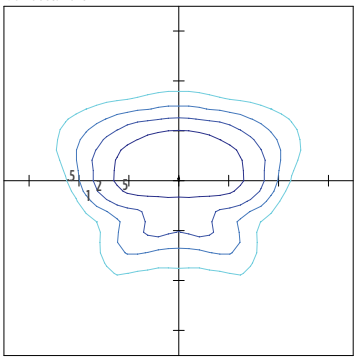
Vertical Plane Horizontal Cone

MRM-LED-30L-SIL-FTA-40-70CRI

Luminaire Data	
Type FTA Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,566
Watts	232
Efficacy	140
IES Type	Type VS - Short
BUG Rating	B4-U0-G3

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	6986	21%
Medium (30-60°)	19172	59%
High (60-80°)	5875	18%
Very High (80-90°)	534	2%
Uplight (90-180°)	0	0%
Total Flux	32566	100%

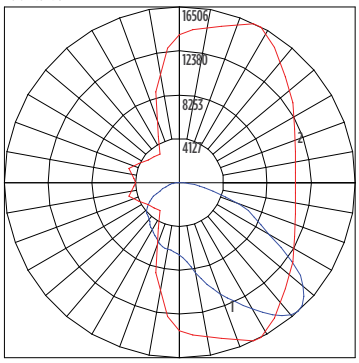
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



Vertical Plane Horizontal Cone

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PHOTOMETRICS (CONT)

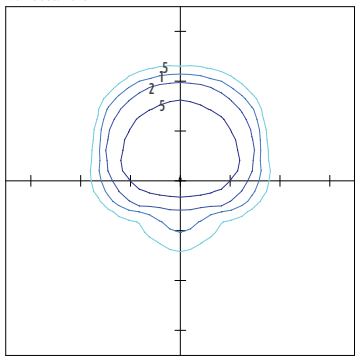
Back to Quick Links

MRM-LED-30L-SIL-AM-40-70CRI

Luminaire Data	
Type AM Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,960
Watts	232
Efficacy	142
IES Type	Type III - Very Short
BUG Rating	B3-U0-G3

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	6363	19%
Medium (30-60°)	22026	67%
High (60-80°)	4192	13%
Very High (80-90°)	379	1%
Uplight (90-180°)	0	0%
Total Flux	32960	100%

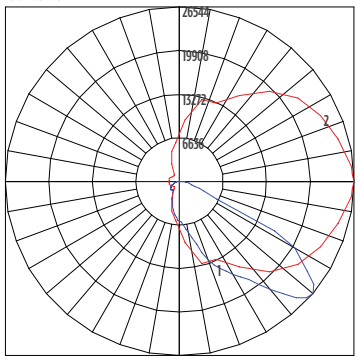
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



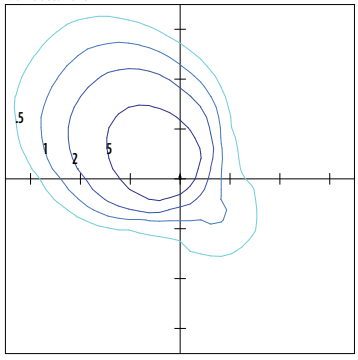
Vertical Plane Horizontal Cone

MRM-LED-30L-SIL-LC-40-70CRI

Luminaire Data	
Left Corner Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,498
Watts	213
Efficacy	153
IES Type	N/A
BUG Rating	B3-U0-G5

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	5083	16%
Medium (30-60°)	14808	46%
High (60-80°)	11603	36%
Very High (80-90°)	1005	3%
Uplight (90-180°)	0	0%
Total Flux	32498	100%

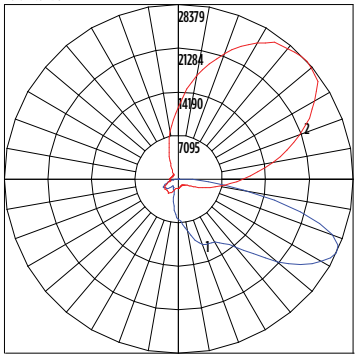
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



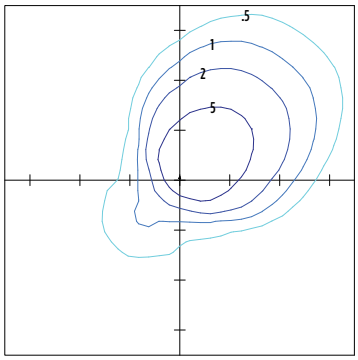
Vertical Plane Horizontal Cone

MRM-LED-30L-SIL-RC-40-70CRI

Luminaire Data	
Right Corner Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,498
Watts	213
Efficacy	153
IES Type	N/A
BUG Rating	B3-U0-G5

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	5083	16%
Medium (30-60°)	14808	46%
High (60-80°)	11603	36%
Very High (80-90°)	1005	3%
Uplight (90-180°)	0	0%
Total Flux	32498	100%

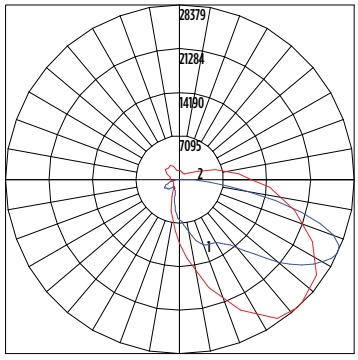
ISO Footcandle



25' Mounting Height / 25' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



Vertical Plane Horizontal Cone

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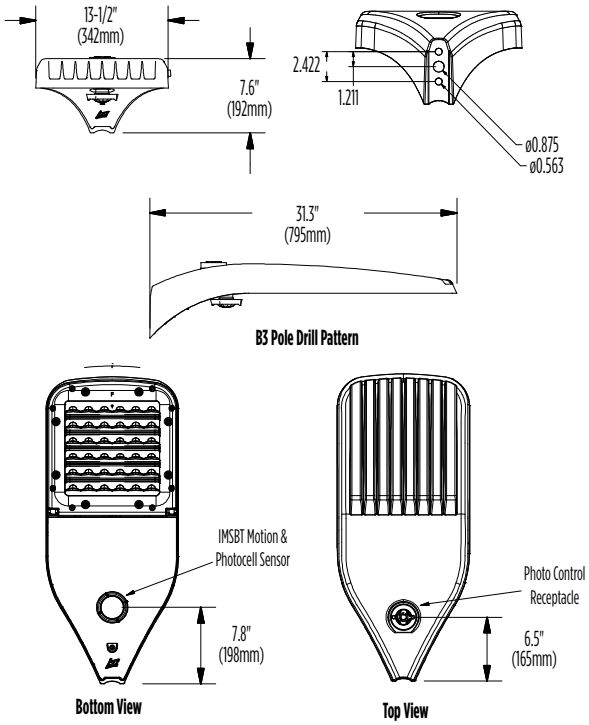
PRODUCT DIMENSIONS



Luminaire EPA Chart					
Tilt Degree		**0°**	**15°**	**30°**	**45°**
	Single	0.5	1.0	1.5	1.9
	D180°	1.0	1.5	1.5	1.9
	D90°	0.8	1.8	1.9	2.3
	T90°	1.0	4.0	2.5	2.8
	TN120°	1.0	2.9	3.3	3.9
	Q90°	1.0	4.0	2.5	2.8

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CONTROLS

Back to Quick Links

Integral Bluetooth™ Motion and Photocell Sensor (IMSBTxL)

Slim low profile sensor provides multi-level control based on motion and/or daylight. Sensor controls 0-10 VDC LED drivers and is IP66 rated for cold and wet locations (-40°F to 167°F). Two unique PIR lenses are available and used based on fixture mounting height. All control parameters are adjustable via an iOS or Android App capable of storing and transmitting sensor profiles.

Click here to learn more details about IMSBT

LEVITON App Apple Android

AirLink Blue (ALBCSx)

Wireless Bluetooth Mesh Outdoor Lighting Control System that provides energy savings, code compliance and enhanced safety/security for parking lots and parking garages. Three key components; Bluetooth wireless radio/sensor controller, Time Keeper and an iOS App. Capable of grouping multiple fixtures and sensors as well as scheduling time-based events by zone. Radio/Sensor Controller is factory integrated into Area/Site, Wall Mounted, Parking Garage and Canopy luminaires.

Click here to learn more details about AirLink Blue

AirLink Blue App Apple

Sensor Sequence of Operations

Standard Programming	On Event	Off Event	On Light Level	Dim Light Level	Daylight Harvesting	Delay To Off	Sensitivity
OMSBTxL/IMSBTxL	Motion	No Motion	100%	N/A	On; Auto Calibration	20 minutes	High
OMS	Motion	No Motion	N/A	N/A	N/A	30 seconds	Auto

Operation	Description
On Event	Trigger that activates lights to turn on; either automatic via motion detected or manually activated via push of button.
Off Event	Trigger that activates lights to turn off; either automatic via no motion detected or manually activated via push of button.
On Light Level	The light level that the fixtures will turn on to when ON EVENT occurs.
Dim Light Level	The light level that the fixtures will dim down to when no motion is detected.
Delay to Dim	The amount of time after which no motion is detected that the fixtures will be triggered to dim down. This sequence is optional, and sensor can be programmed to only trigger the fixture to turn off by entering 100% in this field.
Delay to Off	The amount of time after which no motion is detected that the fixtures will be triggered to turn off. If delay to dim is part of the programmed functionality, this is the amount of time after which no motion is detected after the fixture have already dimmed down.
Sensitivity	The sensitivity can be set to high, medium, low, or auto where applicable. High will detect smaller, simple motions. Low will only detect larger more complex motions. Auto temperature calibration adjusts the PIR sensitivity as ambient temperature rises to increase detection of heat movement through the field of view.

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Scottsdale® Legacy (CRUS)

LED Canopy Luminaire

IP66

TYPE : PA

OVERVIEW	
Lumen Package (lm)	5,000 - 22,000
Wattage Range (W)	38 - 152
Efficacy Range (LPW)	114 -156
Weight lbs (kg)	23 (10.4)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction

- Features a ultra-slim 11/16" profile die-cast housing, with flat clear or diffused tempered glass lens. Unit is water-resistant, sealed and IP66 rated. Integral designed heat sink does not trap dirt and grime, ensuring cool running performance over the life of the fixture.
- Standard color is white and is finished with LSI's DuraGrip® polyester powder coat process. DuraGrip withstands extreme weather changes without cracking or peeling.
- Luminaire assembly incorporates a pressure stabilizing vent breather to prevent seal fatigue and failure.

Optical System

- Features an array of select, mid-power, high brightness, high efficiency LED; 3000K, 4000K, 5000K color temperature, 80 CRI (nominal).
- Choice of Symmetric or Asymmetric distribution. Asymmetric provides a wider distribution pattern. Optional symmetric with diffused lens also available.
- Forward Throw distribution provides an industry leading unique distribution pattern that illuminates the area under the gas canopy and beyond. The forward through optic directs the light to the forecourt from the gas canopy eliminating the need for supplemental floodlights and extensive perimeter lighting.
- Diffuse lens available as an option to soften brightness of the luminaire.
- Six Lumen Packages: 5,000, 9,000, 10,000, 13,000, 18,000 and 22,000 Lumens.

Electrical

- High performance factory programmable driver features over-voltage, under voltage, short-circuit and over temperature protection with integral 6kV surge protection that meets IEEE C62.41.2 and ANSI C82.77-5 Location Category C Low standards. Additional field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/ IEEE C62.41.2). Custom lumen and wattage packages available.
- Driver components are fully encased in potting for moisture resistance. Complies with IEC and FCC standards. 0-10 V dimming supplied standard with all drive currents.
- Die-cast aluminum, wet location rated driver/electrical enclosure is elevated above canopy deck to prevent water entry, provide easy "knock-out" connection of primary wiring and acts as the primary heatsink ensuring cool operation of internal components for longer life. Seals to optical housing via one-piece molded silicone gasket.
- Universal voltage power supply, 120-277 VAC, 50/60 HZ and 347-480 VAC, 50/60 HZ input.
- -40°C to 55°C (-40°F to 131°F) ambient operating temperature. (Varies based on lumen package and mounting style see performance data for specifics.)
- Minimum 60,000 to 100,000 hours depending upon the ambient temperature of the installation location (see performance data for specifics.)

Hazardous Location

- Designed for lighter than air fuel applications. Product is suitable for Class 1 Divisions 2 only when properly installed per LSI installation instructions. See lsicorp.com for specific guidance. Not available on SLW.

Installation

- One-person installation.
- Installs in a 12" or 16" deck pan. Deck penetration consists of a 4" hole, simplifying installation and water sealing. Unit is designed to quickly retrofit into existing Scottsdale (4") hole as well as openings for Encore and Encore Top Access and to reconnect wiring for the SC/ECTA without having to relocate the conduit.
- Retro panels are available for existing Encores as well as kits for recessed and 2x2 installations (see separate spec sheets). Support brackets are provided standard, to prevent sagging of deck.

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings

- UL and ETL listed to UL 1598, UL 8750 and other U.S. and International safety standards. Suitable for wet locations.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Meets Buy American Act requirements.
- IDA compliant with 3000K or lower color temperature.

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Scottsdale® Legacy (CRUS) LED Canopy Luminaire

Have questions? Call us at (800) 436-7800

Type : Item 2.

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: CRUS SCFT LED VHO 50 UE WHT DFL

Prefix	Distribution	Light Source	Driver	Color Temperature	Input Voltage	Finish	Options[4]
CRUS - LED Canopy Luminaire	**SC** - Symmetric **AC**[1] - Asymmetric **SCFT**[2] - Combination Standard Symmetric and Forward Throw	**LED**	**SLW** - 5,000 Lumens **VLW** - 9,000 Lumens **LW** - 11,000 Lumens **SS** - 13,000 Lumens **HO** - 19,000 Lumens **VHO** - 22,000 Lumens[2] **Custom Lumen Packages**[3] **VHO** - 22,000 Lumens	**30** - 3000K **40** - 4000K **50** - 5000K	**UE** - Universal Voltage (120 - 277V) **HV** - High Voltage (347 - 480V)	**WHT** - White **BRZ** - Bronze **BLK** - Black	**HL**[5] - Hazardous Location **DFL** - Diffuse Lens

Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800

ACCESSORY ORDERING INFORMATION (Accessories are field installed)

Order Number	Description
525946	Retrofit Panels - EC / ECTA / SCF to CRUS, for 16" Deck Panel
530281	Retrofit Panels - ECTA / SCF to CRUS, for 12" Deck Panel
357282	Retrofit 2x2 Cover Panel Blank (no holes)

*Consists of (25) 7/8" hole plugs, (100) 5/16" hole plugs and (1) tube of RTV

Order Number	Description
354702	Retrofit RIC Cover Panel Blank (no holes)
1320540	Kit - Hole Plugs and Silicone (enough for 25 retrofits)*

1 AC distribution utilizes a reflector which alters the look from a standard SC distribution.
2 FT distribution option only available with VHO 22,000 lumen package.
3 Custom lumen and wattage packages available consult factory Values are within industry standard tolerances but not DLC listed.
4 Not available with SCFT.
5 Not available on SLW.

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PERFORMANCE

Delivered Lumens

Lumen Package	Distribution	3000K CCT			4000K CCT			5000K CCT			Wattage
		Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	
VHO	SC	21,301	140	B4-U0-G2	21,835	144	B4-U0-G2	22,697	150	B4-U0-G2	152
	AC	17,355	114	B3-U0-G3	17,799	117	B3-U0-G3	18,502	122	B3-U0-G3	
	SCFT	22,192	146	B3-U0-G3	22,598	149	B3-U0-G3	23,269	153	B3-U0-G3	
HO	SC	17,889	143	B3-U0-G1	18,346	146	B3-U0-G2	19,071	152	B4-U0-G2	125
	AC	14,582	116	B3-U0-G2	14,955	119	B3-U0-G2	15,546	124	B3-U0-G2	
SS	SC	13,113	141	B3-U0-G1	13,449	144	B3-U0-G1	13,980	150	B3-U0-G1	93
	AC	11,468	123	B3-U0-G2	11,761	126	B3-U0-G2	12,226	131	B3-U0-G2	
LW	SC	10,457	144	B3-U0-G1	10,724	148	B3-U0-G1	11,148	154	B3-U0-G1	73
	AC	9,145	126	B2-U0-G2	9,379	129	B2-U0-G2	9,749	134	B2-U0-G2	
VLW	SC	8,783	146	B3-U0-G1	9,008	149	B3-U0-G1	9,364	155	B3-U0-G1	60
	AC	7,681	127	B2-U0-G1	7,878	131	B2-U0-G1	8,189	136	B2-U0-G1	
SLW	SC	5,585	146	B2-U0-G1	5,728	150	B2-U0-G1	5,954	156	B2-U0-G1	38
	AC	4,884	128	B1-U0-G1	5,009	131	B1-U0-G1	5,207	136	B1-U0-G1	

*LEDs are frequently updated therefore values are nominal.

Electrical Data (AMPS)

Lumen Package	Wattage	120V	208V	240V	277V	347V	480V
VHO	152	1.27	0.73	0.64	0.55	0.44	0.32
HO	124	1.03	0.6	0.52	0.45	0.36	0.26
SS	92	0.77	0.44	0.38	0.33	0.27	0.19
LW	72	0.6	0.35	0.3	0.26	0.21	0.15
VLW	60	0.5	0.29	0.25	0.22	0.17	0.13
SLW	38	0.32	0.18	0.16	0.14	0.11	0.08

*Electrical data at 25C (77F). Actual wattage may differ by +/-10%.

OPERATING TEMPERATURE

Lumen Package	Mounting	Max
VHO	Metal/Wood Canopy	45 C
HO	Metal/Wood Canopy	45 C
SS	Metal/Wood Canopy	55 C

Recommended Lumen Maintenance[1] CRUS VHO

Ambient Temperature °C	Initial[2]	25k hr[2]	50k hr[2]	75k hr[3]	100k hr[3]
0 C	102%	97%	92%	88%	84%
10 C	102%	97%	92%	88%	84%
20 C	102%	97%	92%	88%	84%
25 C	102%	97%	92%	88%	84%
30 C	102%	97%	92%	88%	84%
40 C	101%	95%	90%	85%	80%
50 C	101%	94%	89%	83%	78%

Recommended Lumen Maintenance[1] CRUS SS

Ambient Temperature °C	Initial[2]	25k hr[2]	50k hr[2]	75k hr[3]	100k hr[3]
0	102%	97%	92%	88%	84%
10	102%	97%	92%	88%	84%
20	102%	97%	92%	88%	84%
25	102%	97%	92%	88%	84%
30	102%	97%	92%	88%	84%
40	102%	97%	92%	88%	84%
50	101%	95%	91%	86%	82%

1 Lumen maintenance values at 25 ° C are calculated per TM-21 based on LM-80 data and in-situ luminaire testing.
2 In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED).
3 In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times NA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED).

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PHOTOMETRICS

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

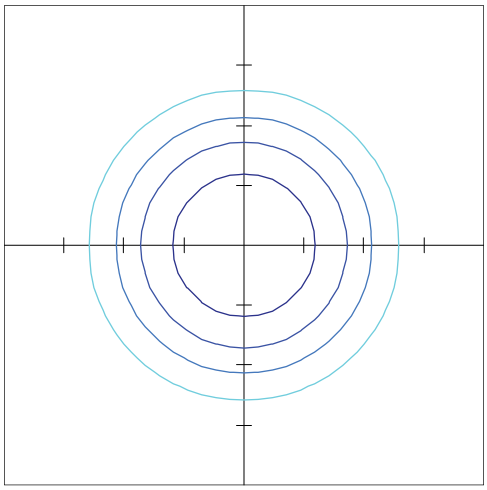
See the individual product page on https://www.lsicorp.com/ for detailed photometric data.

CRUS-SC-SS-50

Luminaire Data	
Type 5 Distribution	
Description	5000 Kelvin, 80 CRI
Delivered Lumens	13,980
Watts	93
Efficacy	150
IES Type	Type VS - Very Short
BUG Rating	B3-U0-G1

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	3,479.6	26.7%
Medium (30-60°)	7,109.8	54.5%
High (60-80°)	2,334.8	17.9%
Very High (80-90°)	114.4	0.9%
Uplight (90-180°)	0.0	0.0%
Total Flux	13,038.6	100%

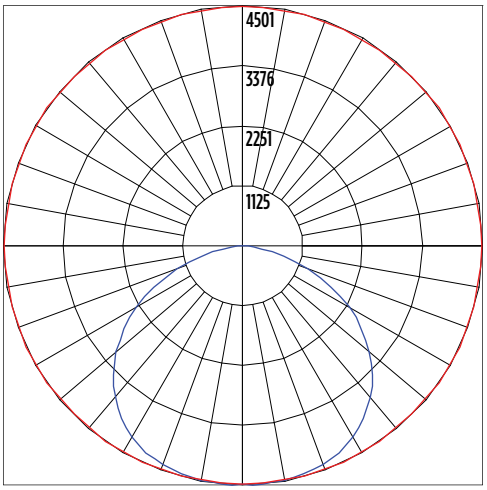
ISO Footcandle



10' Mounting Height / 10' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

Polar Curve



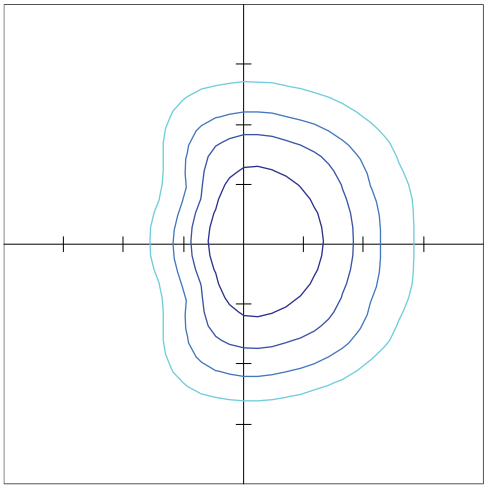
Vertical Plane Horizontal Cone

CRUS-AC-SS-50

Luminaire Data	
Type 3 Distribution	
Description	5000 Kelvin, 80 CRI
Delivered Lumens	12,226
Watts	93
Efficacy	131
IES Type	Type III, Very Short
BUG Rating	B3-U0-G2

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	3,240.3	27%
Medium (30-60°)	6,245.5	51%
High (60-80°)	2,594.6	21%
Very High (80-90°)	146.1	1%
Uplight (90-180°)	0	0%
Total Flux	12,227	100%

ISO Footcandle



15' Mounting Height / 15' Grid Spacing

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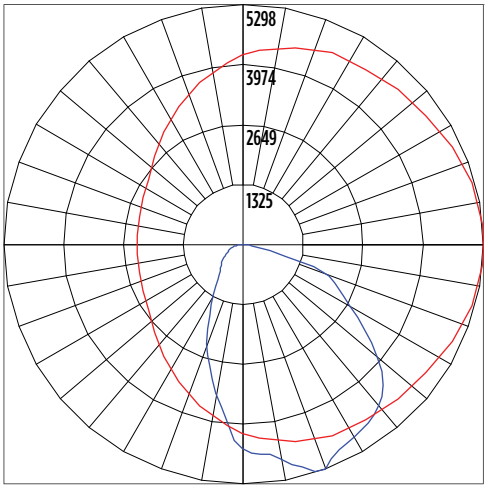
Polar Curve



Vertical Plane Horizontal Cone

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Scottsdale® Legacy (CRUS) LED Canopy Luminaire

Have questions? Call us at (800) 436-7800

Type : Item 2.

PHOTOMETRICS

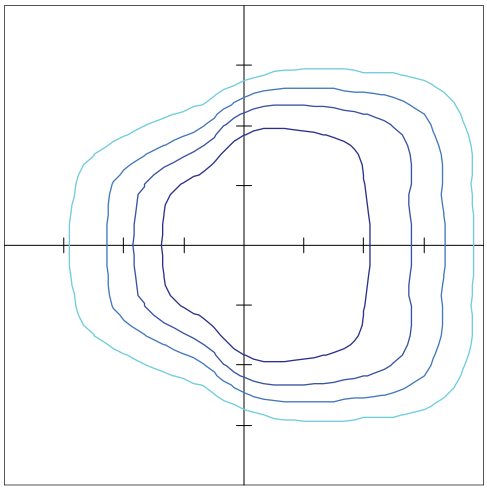
Back to Quick Links

CRUS-SCFT-SS-50

Luminaire Data	
Type 5 Distribution	
Description	5000 Kelvin, 80 CRI
Delivered Lumens	13,980
Watts	93
Efficacy	150
IES Type	Type VS - Very Short
BUG Rating	B3-U0-G3

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	2,397.7	10.30%
Medium (30-60°)	8,658.8	37.20%
High (60-80°)	4,914.2	21.10%
Very High (80-90°)	225.7	1.00%
Uplight (90-180°)	0	0%
Total Flux	23,269.3	100%

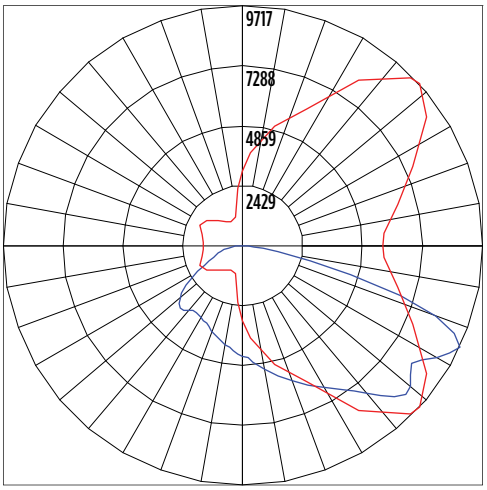
ISO Footcandle



10' Mounting Height / 10' Grid Spacing

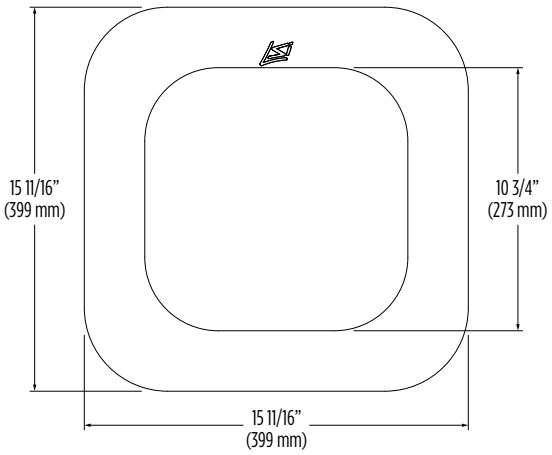
5 FC 2 FC 1 FC 0.5 FC

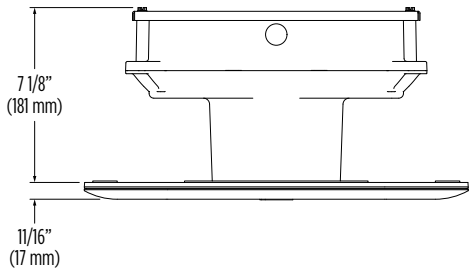
Polar Curve

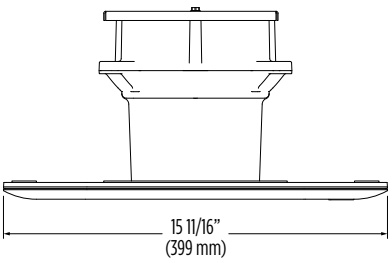


Vertical Plane Horizontal Cone

PRODUCT DIMENSIONS







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Slim Wall Pack (WPSLL)

Large LED Slim Wall Pack

OVERVIEW	
Lumen Package (lm)	4,000 - 8,000
Wattage Range (W)	40 - 80
Efficacy Range (LPW)	106 - 130
Weight lbs (kg)	7.9 (3.6)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction

- Rigid Precision Die cast-aluminum housing for durability and consistency.
- Vertical fins serve as a heat sink and resist accumulation of dust and debris.
- The Patent Pending thermal stacking heat removal technology extracts heat from within the housing moving it away from LEDs and integral components.
- Luminaire hinges open from the bottom to prevent leakage.
- Luminaire is proudly manufactured and tested in the U.S.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.

Optical System

- High-performance Chip On Board (COB) LEDs behind clear tempered glass for maximum light output.
- 3000K | 4000K | 5000K color temperatures.
- Minimum CRI of 71.
- Zero uplight.

Electrical

- High-performance driver features over-voltage, under voltage, short-circuit and over temperature protection.
- 0-10 volt dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz
- L70 Calculated Life: >100k Hours
- Total harmonic distortion: <20%
- Power factor: >.85
- Input power stays constant over life.
- Driver Off-State Power is 0 watts.
- Chip On Board (COB) LEDs with integrated circuit board mounted directly to the housing to maximize heat dissipation and promote long life.
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.
- Minimum 2.5kV surge rating
- Operating temperature: -40°C to +50°C (-40°F to +122°F).

Controls

- Optional 120V electronic button Photocontol.
- Apertures for field or factory installed photocontrol.

Installation

- Surface mounts direct to J-box or wall.
- Features a bubble level and removable hinged face frame for ease of installation.

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.
- 1 Year warranty on optional Button Photocell.

Listings

- Listed to UL 1598 and UL 8750.
- American Recovery and Reinvestment Act Funding Compliant.
- CSA Listed
- RoHS Compliant.
- State of California Title 24.
- Suitable For Wet Locations.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

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Slim Wall Pack (WPSLL)

Have questions? Call us at (800) 436-7800

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: WPSLL LED 6L UNV DIM 30 PCI 120 BZA

Prefix	Lumen Package	Voltage	Color Temperature	Controls	Options	Finish
WPSLL - Large Slim Wall Pack	**4L** - 4,000 **6L** - 6,000 **8L** - 8,000	**UNV** - Universal (120V-277V) **HV** - 347-480V Universal Voltage	**50** - 5000K **40** - 4000K **30** - 3000K	**PCI 120** - 120V Photocontrol **PCI 208-277** - 208-277V Photocontrol	**CWBB** - Emergency Back-up*	**WHT** - White **BLK** - Black **BRZ** - Bronze

Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800

PERFORMANCE

Delivered Lumens							
Lumen Package	3000K		4000K		5000K		Wattage
	Delivered Lumens	Efficacy	Delivered Lumens	Efficacy	Delivered Lumens	Efficacy	
4L	4147	110.74	4147	110.74	4853	130.34	40*
6L	6513	111.93	6513	111.93	7401	128.08	60
8L	8060	106.01	8060	106.01	9332	121.81	80

LED		HID			
Wattage	Annual Cost	Source Wattage	Total Wattage Used	Annual Cost	Annual Savings
40*	$18	100	129	$77	$59
		150	185	$100	$82
		175	210	$112	$94
60	$26	200	232	$128	$102
		250	285	$150	$124
		400	458	$226	$200
80	$35	200	232	$128	$93
		250	285	$150	$115
		400	458	$226	$191

*For emergency back-up only

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PHOTOMETRICS

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

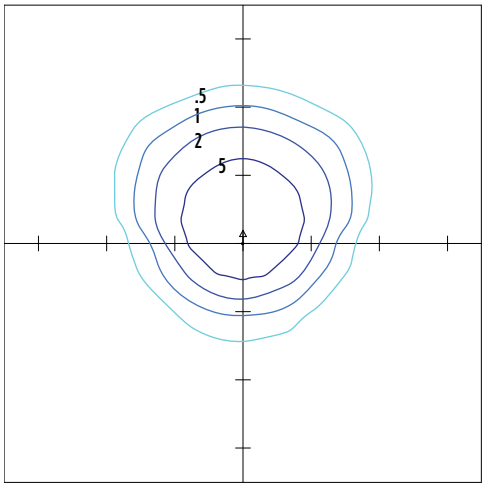
See the individual product page on https://www.lsicorp.com/ for detailed photometric data.

WPSLL-6L-40

Luminaire Data	
Wide Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	6,957
Watts	58.1
Efficacy	120
IES Type	Type III - Very Short
BUG Rating	B1-U0-G1

Zonal Lumen Summary		
Zone	**Lumens**	**% Luminaire**
Low (0-30°)	2025.1	29.1%
Medium (30-60°)	3812.2	54.8%
High (60-80°)	1105.7	15.9%
Very High (80-90°)	14.1	0.2%
Uplight (90-180°)	0.0	0.0%
Total Flux	6957.1	100%

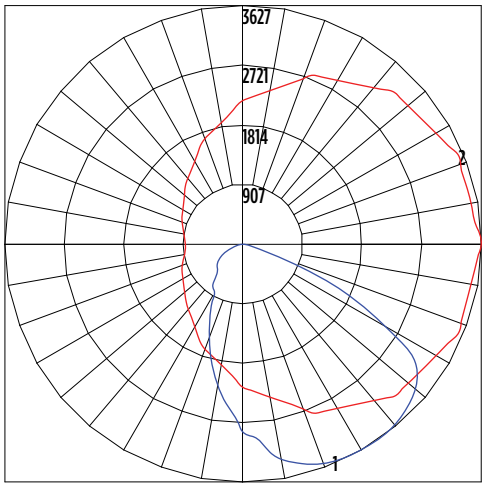
ISO Footcandle



10' Mounting Height / 10' Grid Spacing

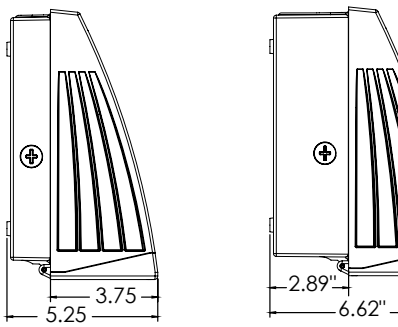
10 FC 5 FC 2 FC 1 FC

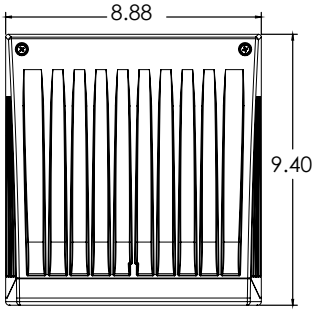
Polar Curve



Vertical Plane Horizontal Cone

PRODUCT DIMENSIONS





Deep back housing required for emergency battery back up

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XSPS

LED Soffit Light

OVERVIEW	
Lumen Package	4000 - 8000
Wattage Range	43 -59
Efficacy Range (LPW)	96 -104
Weight lbs (kg)	7.6 (3.5)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction

- Housing is die-formed aluminum with diffuse acrylic lens providing a water-resistant seal. Enclosure contains factory prewired driver and optical unit containing LEDs.
- Recess mount into an enclosed soffit with screws through the mounting frame. 8" clearance required for ease of installation.
- Finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling, and is guaranteed for five full years. Standard color is gloss white.
- Shipping weight: 7.6 lbs in carton.
- Suitable for wet locations.

Optical System

- Symmetric distribution with excellent uniformity and a BUG rating of B2-UO-G1. Diffuse lens is standard to minimizing visibility of LEDs.
- Select high-brightness LEDs.
- Available in 5000K, 4000K and 3000K
- Color temperatures per ANSI C78.377.
- Minimum CRI of 80.

Electrical

- High-performance factory programmable driver features over-voltage, under voltage, short-circuit and over temperature protection with integral surge protection that meets IEEE C62.41.2 and ANSI C82.77. -5 Location Category C Low standards.
- 0-10 volt dimming (10% - 100%) standard.
- 120-347VAC 50/60Hz
- Thermal protector standard on 5000-8000 lumen versions.
- L80 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to 40°C (-40°F to 104°F) for HO and VHO. -40°C to 45°C (-40°F to 113°F) for SS. -40°C to 35°C (-40°F to 95°F) for SHO .
- Power factor: >0.90
- Input power stays constant over life.
- High-efficacy LEDs with integrated circuit board mount to the housing to maximize heat dissipation and promote long life.
- Driver components are fully encased in potting material for moisture resistance. Driver complies with FCC standards.

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings

- Listed to UL 1598 and UL 8750
- Suitable For Damp Locations
- Meets Buy American Act requirements.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- IDA compliant with 3000K or lower color temperature.

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XSPS LED Soffit Light

Back to Quick Links

ORDERING GUIDE

TYPICAL ORDER EXAMPLE: **XSPS S LED SS CW 120 GWT DFL**

Prefix	Distribution	Light Source	Drive Current	Color Temperature	Input Voltage	Finish	Lens	Options
XSPS - LED Soffit	**S -** Symmetric	**LED**	**SS -** 4,000 Lumens **HO -** 5,000 Lumens **VHO -** 6,000 Lumens	**CW -** 5000K 80 CRI **NW -** 4000K 80 CRI **WW -** 3000K 80 CRI	**120 -** 120V **208 -** 208V **240 -** 240V **277 -** 277V **347 -** 347V	**GWT -** Gloss White	**DFL -** Diffused Acrylic Lens	**CMT -** Channel Bar Mounting Kit **BB -** Emergency Battery Pack[1]

1 - Emergency Battery Pack only available on the SS - 4000 lumen version (120, 208, 240 & 277V versions).

PERFORMANCE

DELIVERED LUMENS

Lumen Package	Distribution	Lens Type	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
				Delivered Lumens	Efficacy	Bug Rating	Delivered Lumens	Efficacy	Bug Rating	Delivered Lumens	Efficacy	Bug Rating	
SS	S	DFL	80	3816	123	B2-U0-G1	4022	129	B2-U0-G1	3966	128	B2-U0-G1	31
HO	S	DFL	80	4756	120	B2-U0-G1	5011	127	B2-U0-G1	4941	125	B2-U0-G1	40
VHO	S	DFL	80	5733	118	B2-U0-G1	6041	124	B2-U0-G1	5957	122	B2-U0-G1	49
SHO	S	DFL	80	7559	113	B3-U0-G1	7965	119	B3-U0-G1	7853	118	B3-U0-G1	67

LEDs are frequently updated therefore values are nominal.

Electrical Data (Amps)*

Lumen Package	Wattage	120V	208V	240V	277V	347V
SS	31	0.26	0.15	0.13	0.11	0.09
HO	40	0.33	0.19	0.16	0.14	0.11
VHO	49	0.41	0.23	0.2	0.18	0.14
SHO	67	0.56	0.32	0.28	0.24	0.19

*Electrical data at 25C (77F). Actual wattage may differ by +/-10%.

RECOMMENDED LUMEN MAINTENANCE

Ambient Temp C	Initial[1]	25K hrs.[1]	50K hrs.[1]	75K hrs.[2]	100K hrs.[2]
25 C	100%	95%	91%	86%	82%

1 - In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.
2 - In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing.

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PHOTOMETRICS

Back to Quick Links

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

For complete specifications and IES files, see website.

XSPS S LED HO NW DFL

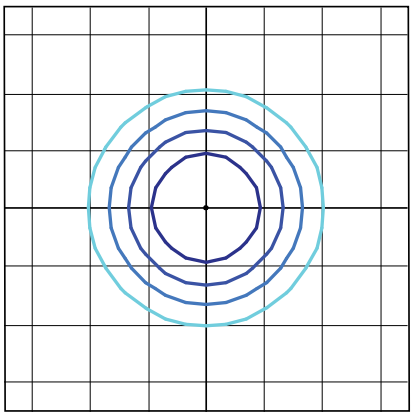
Luminaire Data

Type S Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	5,011
Watts	39.5
Efficacy	127
IES Type	Type VS - Very Short
BUG Rating	B2-U0-G1

Zonal Lumen Summary

Zone	Lumens	%Luminaire
Low (0-30°)	1536	31%
Medium (30-60°)	2565	51%
High (60-80°)	826	16%
Very High (80-90°)	84	2%
Uplight (90-180°)	0	0%
Total Flux	5011	100%

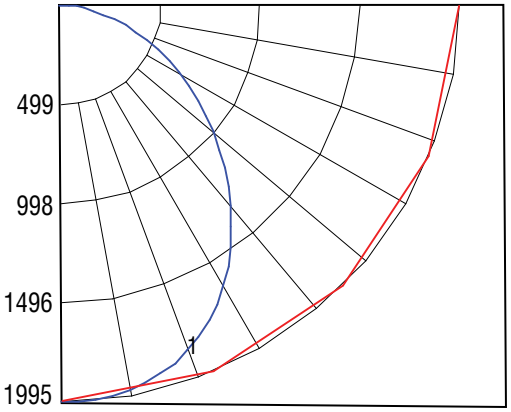
ISO FOOTCANDLE PLOT



10' Mounting Height/10' Grid Spacing

5 FC 2 FC 1 FC 0.5 FC

POLAR CURVE



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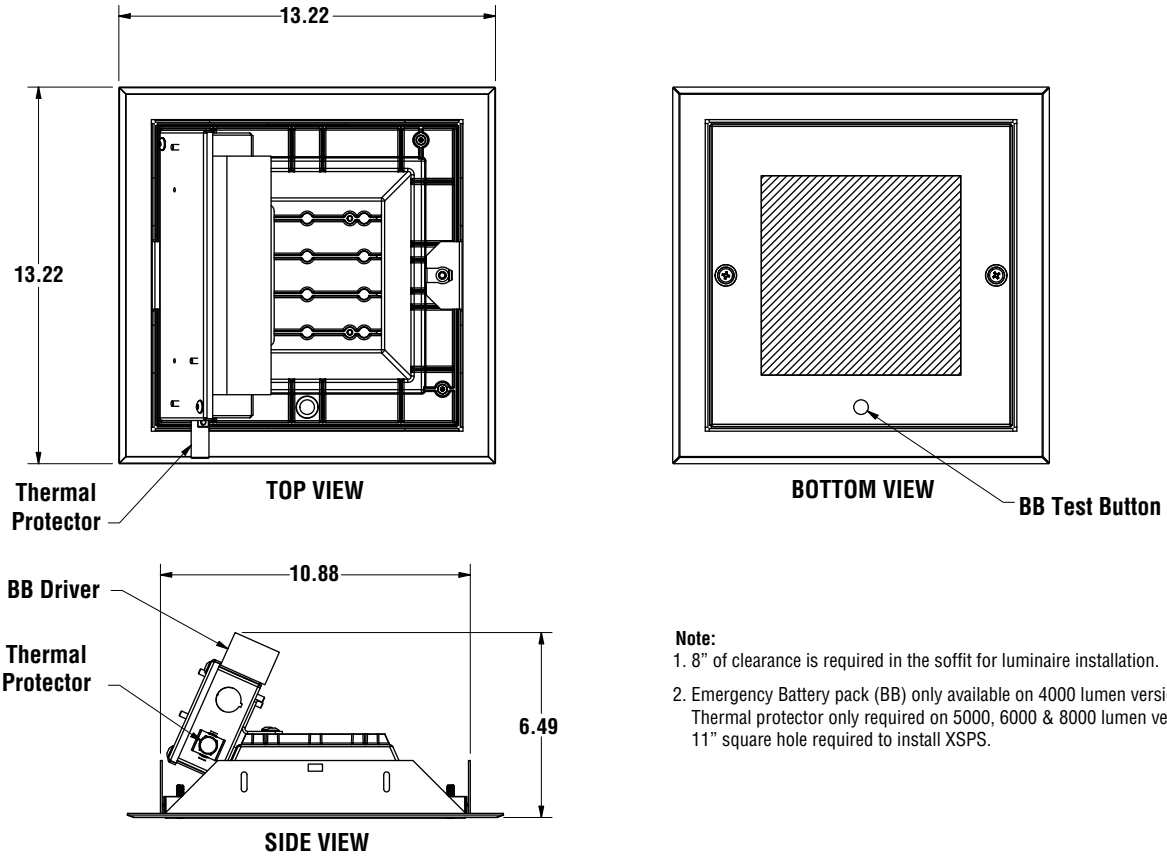
PRODUCT DIMENSIONS

Back to Quick Links



Note:
1. 8” of clearance is required in the soffit for luminaire installation.
2. Emergency Battery pack (BB) only available on 4000 lumen version. Thermal protector only required on 5000, 6000 & 8000 lumen versions. 11” square hole required to install XSPS.

Mirada Bollard (MRB)

Low Level Lighting

IP66

OVERVIEW	
Lumen Package (lm)	1,000 - 3,000
Wattage Range (W)	23 - 38
Efficacy Range (LPW)	72 - 84
Weight lbs (kg)	40 (18)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction

- Precision 2pc die-cast aluminum head maintains durability and consistency while providing vandal resistance, effective heat dissipation, and superior aesthetics.
- 8-5/8" OD one-piece extruded aluminum heavy wall .322 inch thick seamless shaft. Various heights are available in 6" increments starting at a minimum of 26" (maximum height is 62").
- Lower housing attaches to cast aluminum universal base plate with four stainless steel roll pins. Accommodates 4.5" - 6" bolt circles.
- Optional roughneck zinc plated steel base plate (.375" thick) with welded U shaped reinforcement. 3/8" diameter 302 stainless steel roll pins with 10,000 lb. shear load.
- IP66 rated Optical and Driver compartment protects integral components from harsh environments.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Luminaire is proudly manufactured in the U.S. of U.S. and imported parts.
- Shipping weight: 40 lbs in carton.

Optical System

- Available in two optical distributions, symmetrical and asymmetrical.
- High transmission clear flat acrylic lens seals the luminaire's optical chamber to IP66.
- Available in 5000K, 4000K, 3000K, and 2700K color temperatures per ANSI C78.377. Also available in Phosphor Converted Amber. Consult Factory for other color temperature requirements.
- Minimum CRI of 70.

Electrical

- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz. Optional High Voltage 347-480 Vac Input available.
- L91 Calculated Life: >100k Hours calculated @ 25°C per IESNA TM-21-11.
- Total harmonic distortion: <20%.
- Operating temperature: -40°C to +50°C (-40°F to +122°F); Cold-weather emergency battery backup rated for -20°C minimum ambient.
- Power factor: >.90.
- Input power stays constant over life.
- High-efficacy LEDs with integrated circuit board mount to the housing to maximize heat dissipation and promote long life.
- Driver components are fully encased in potting long material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.
- Electrical components are mounted on a removable power tray.
- Field replaceable surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- Optional 120v-277v integral emergency battery pack is available. The 90- minute batteries provide constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance.

Installation

- Easy leveling even in uneven areas and full 360-degree rotation for precise alignment during installation.
- Base plate installs with four heavy-duty 3/8" x 10" galvanized steel anchor bolts.
- Base plate attaches to lower extruded housing via four stainless steel roll pins.

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings

- Listed to UL 1598 and UL 8750.
- RoHS Compliant.
- Meets Buy American Act requirements.
- Suitable for wet locations.
- IP66 rated Driver compartment and IP66 rated optical chamber per IEC 60598.
- DarkSky approved with 3000K or warmer color temperature selection.

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Mirada Bollard (MRB) Low Level Lighting

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Type : Item 2.

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: MRB LED 25L ACR S UNV DIM 40 PCI120 BLK

Prefix	Light Source	Lumen Package	Lens	Distribution	Voltage	Driver
MRB - Mirada Bollard	**LED**	**25L** - 2,500 **30L** - 3,000 Custom Lumen Packages[5]	**ACR** - Acrylic	**A** - Asymmetric **S** - Symmetric	**UNV** - Universal Voltage (120-277V) **HV** - High Voltage (347-480V)	**DIM** - 0-10V Dimming (0-100%)

Color Temperature	CRI	Controls	Battery Backup	Finish	Options
50 - 5,000K **40** - 4,000K **35** - 3,500K [1] DarkSky Approved CCT's **30** - 3,000K **27** - 2,700K[1] **AMB** - Phosphor Converted Amber[1]	**Blank** - 70CRI	Button Type Photocells **PCI120** - 120V **PCI208-277** - 208-277V **PCI347** - 347V	**BB** - Battery Backup **CWBB** - Cold Weather Battery Backup	**BLK** - Black **BRZ** - Dark Bronze **GMG** - Gun Metal Gray **GPT** - Graphite **MSV** - Metallic Silver **PLP** - Platinum Plus **SVG** - Satin Verde Green **WHT** - White	**H** - XX (Specify Height)[2] **GFR** - GFI Duplex Receptacle **LAB** - Less Anchor Bolts **RN** - Roughneck Heavy Duty Mtg Plate

Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800

ACCESSORY ORDERING INFORMATION

Part Number	Description
699105BLK	House Side Shield (Black Paint Finish)
699105BRZ	House Side Shield (Dark Bronze Paint Finish)
285560	Galvanized anchor Bolt kit

PERFORMANCE

Delivered Lumens*

Lumen Package	Distribution	CRI	AMB CCT		2700K		3000K		4000K		5000K		Wattage
			Delivered Lumens	Efficacy	Delivered Lumens	Efficacy	Delivered Lumens	Efficacy	Delivered Lumens	Efficacy	Delivered Lumens	Efficacy	
25L	S	70	1713	56	2242	74	2156	71	2487	82	2485	81	30.5
30L	S	70	2110	55	2761	72	2655	69	3063	80	3061	80	38.4
25L	A	70	1327	58	1736	76	1670	73	1926	84	1925	84	23.0
30L	A	70	1634	56	2138	74	2056	71	2372	82	2370	81	29.1

*LED Chips are frequently updated therefore values are nominal.

Electrical Data - Current Draw AMPS[8]

Lumen Package	Distribution	120V	208V	240V	277V	347V	480V
25L	S	0.25	0.15	0.13	0.11	0.09	0.06
30L	S	0.32	0.18	0.16	0.14	0.11	0.08
25L	A	0.19	0.11	0.10	0.08	0.07	0.05
30L	A	0.24	0.14	0.12	0.10	0.08	0.06

*Electrical data at 25C (77F). Actual wattage may differ by +/-10%.

Recommended Lumen Maintenance[6]

Ambient Temperature	Initial[7]	25K hrs.[7]	50K hrs.[7]	75K hrs.[8]	100K hrs.[8]
0C	100%	98%	95%	93%	90%
10C	100%	98%	95%	93%	90%
20C	100%	98%	95%	93%	91%
25C	100%	98%	96%	93%	91%
30C	99%	96%	93%	91%	88%
40C	99%	95%	91%	88%	85%
50C	99%	94%	89%	84%	80%

1 Consult Factory for availability.
2 Standard height is 44". Non Standard heights are available in 6" increments. Minimum height is 26", 32" with battery backup option. Maximum height is 62".
3 Accessories are shipped seperately and field installed.
4 Not available in HV Voltage.
5 Custom lumen and wattage packages available consult factory. Values are within industry standard tolerances but not DLC listed.
6 Lumen maintenance values at 25C are calculated per TM-21 based on LM-80 data and in-situ testing.
7 In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.
8 In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing

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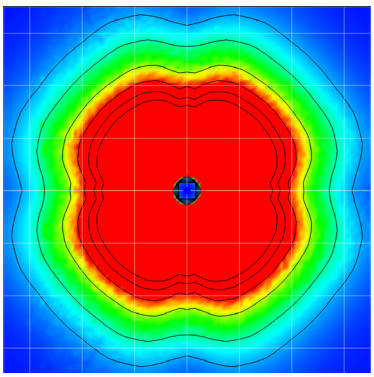
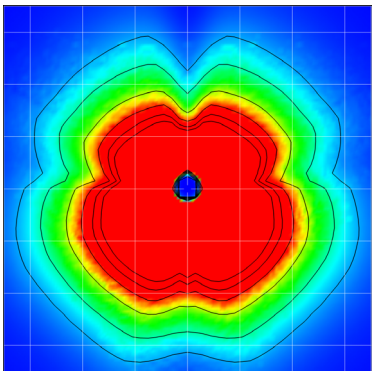
PHOTOMETRICS

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79. As specified by IESNA LM-79 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

See the individual product page on https://www.lsicorp.com/ for detailed photometric data.



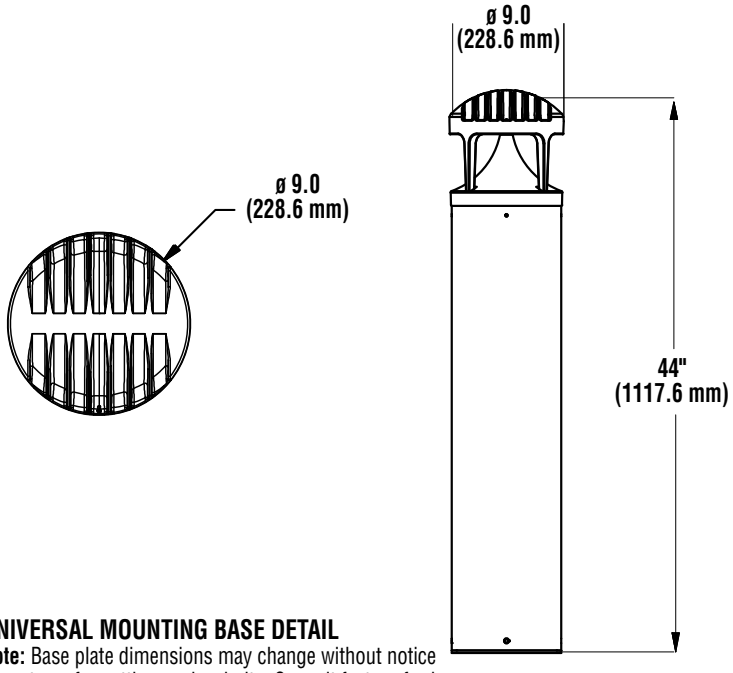
Symmetric



Asymmetric

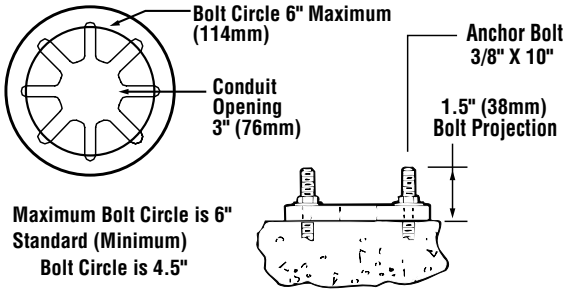
PRODUCT DIMENSIONS

Back to Quick Links



UNIVERSAL MOUNTING BASE DETAIL

Note: Base plate dimensions may change without notice Do not use for setting anchor bolts. Consult factory for base plate templates.



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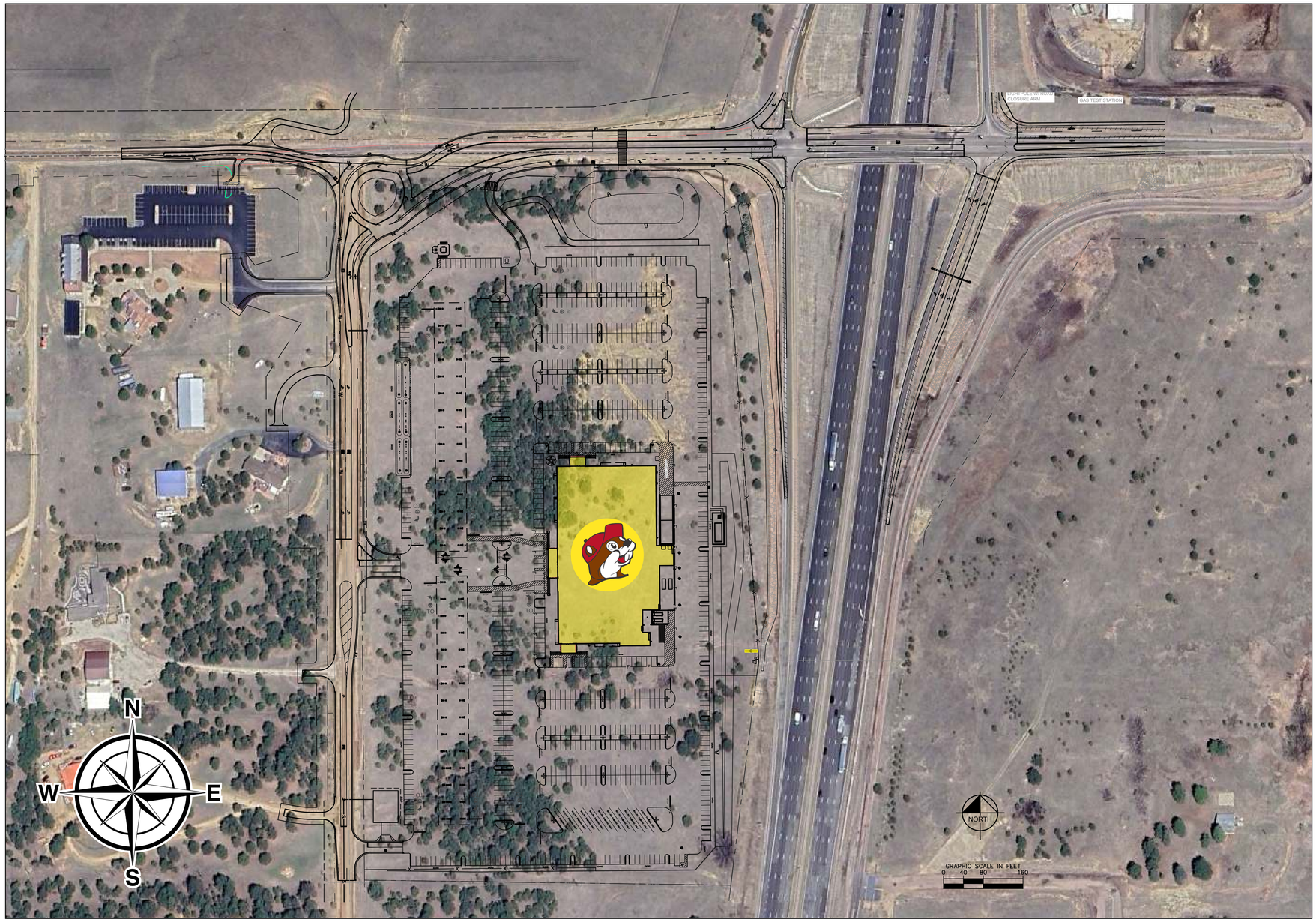
BUC-EE'S

I-25 & Palmer Divide Rd Palmer Lake , CO



Apex SIGN GROUP

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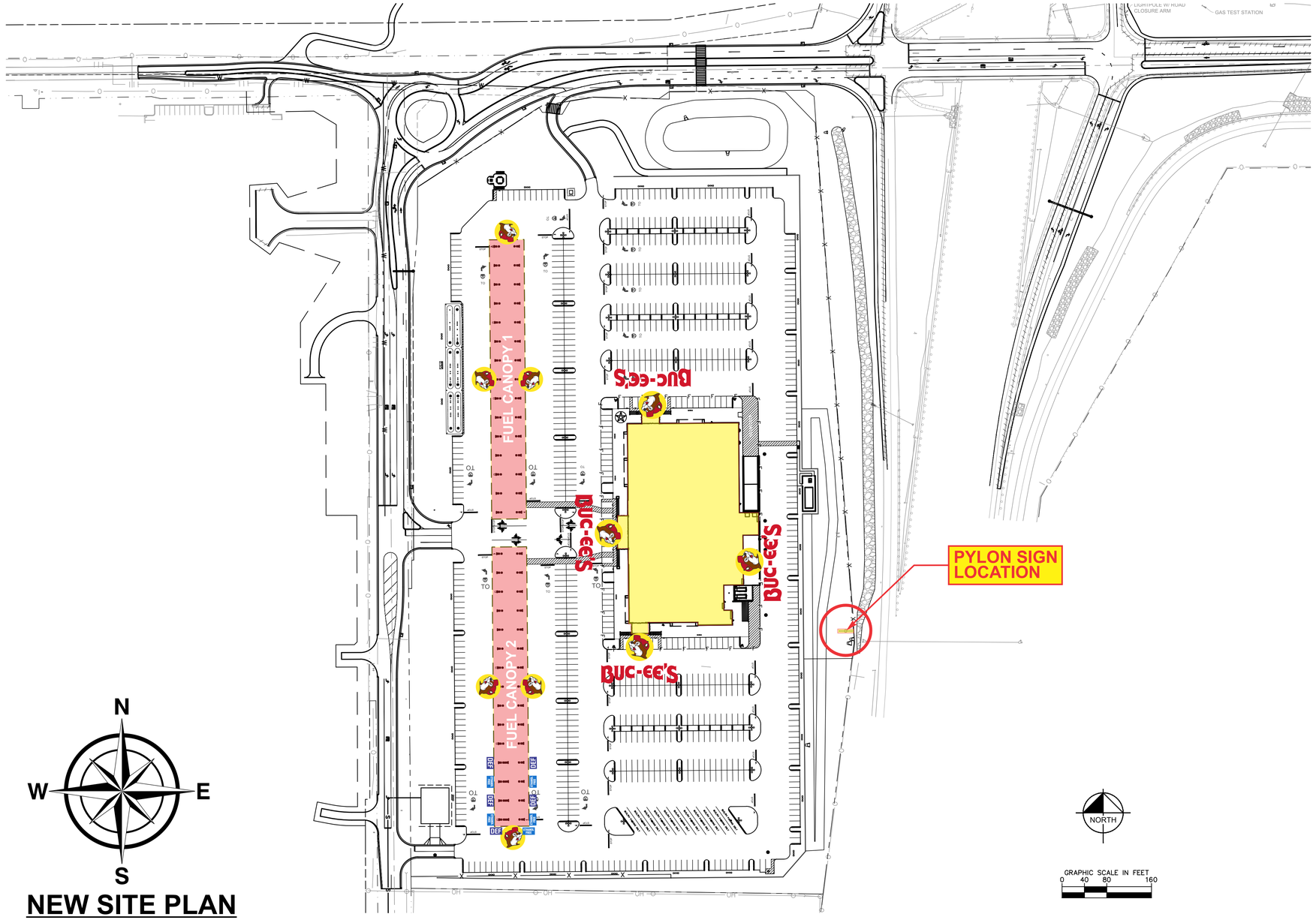
Buc-ee's
I-25 & Palmer Divide Rd
Palmer Lake , CO

Project ID#:	**137204**
Project Mgr:	Brenda Beams
Designer:	JR
Created on:	07/10/2024

REVISION

R3	06/19/25	JR - Updated with new site plan provided / updated fuel canopies
R4	06/20/25	JR - Rotate logo aerial plan
R5	06/23/25	JR - Update fuel canopies
R6	06/23/25	JR - Added coming soon pylon banner
R7	06/30/25	JR - Updated site plan page 1 & 2 w/ new pylon location
R8	07/09/25	JR - Updated site plan page 1 & 2

Aerial
SG-01



NEW SITE PLAN

SCALE: 1/8"=12'-0"

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I-25 & Palmer Divide Rd
Palmer Lake , CO

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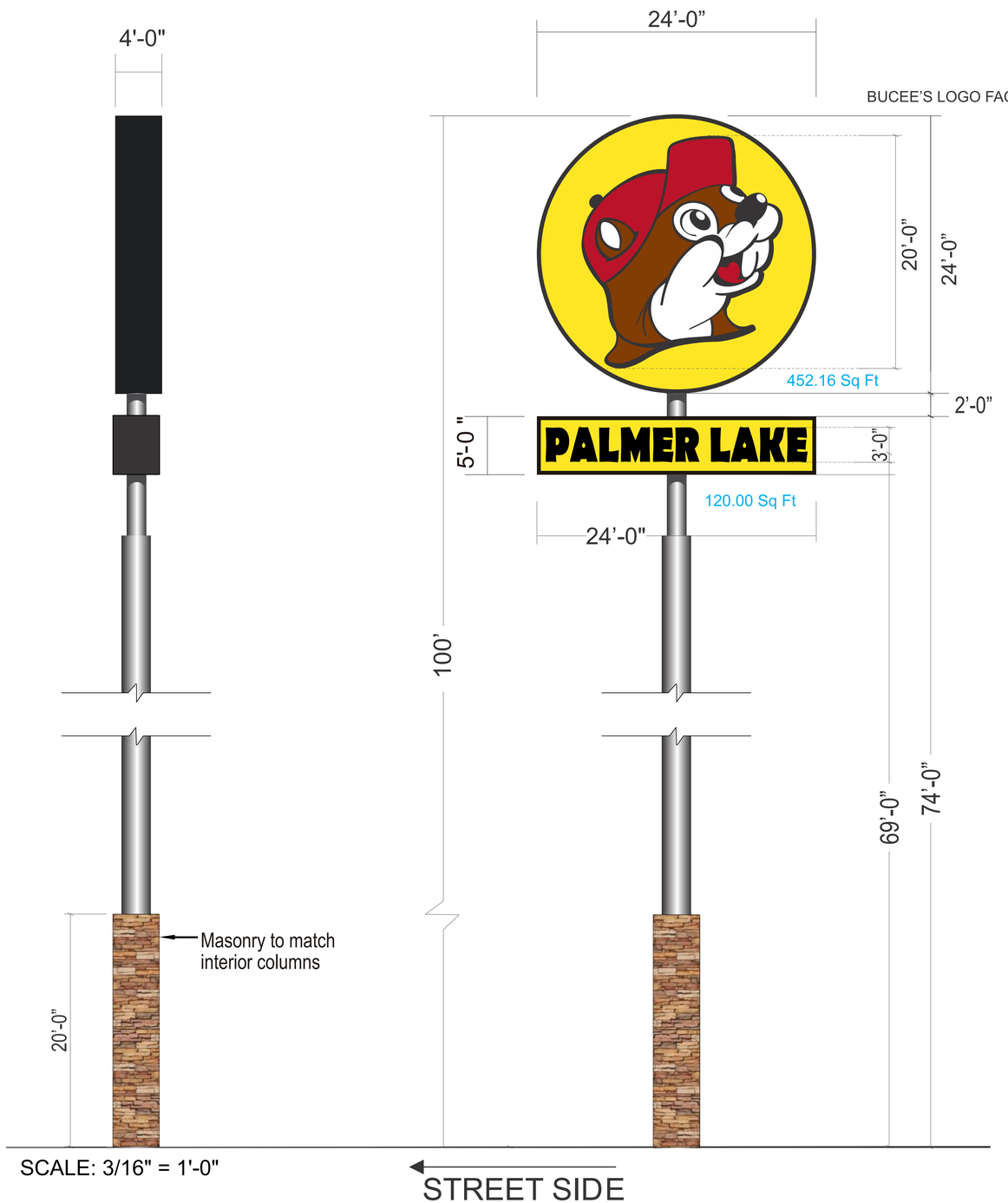
R7	06/30/25	JR - Updated site plan page 1 & 2 w/ new pylon location
R8	07/09/25	JR - Updated site plan page 1 & 2

Site Plan
SG-02

572.16 SQ. FT.

24’ LOGO &
5’-0” x 24’-0” NAME CABINET
100’ OAH



NOTE:
BEAVER LOGO
ON PYLON SIGN
FACES TOWARDS
BUILDING
"as directed by GC on date of installation"

OPPOSITE VIEW
LOGO FACES LEFT

NOTE:
BEAVER LOGO
ON PYLON SIGN
FACES TOWARDS
BUILDING
"as directed by GC on date of installation"

LOGO COLOR SPECS

- ARLON 33 RED • PMS 485c
- ARLON 63 RUST • PMS 483c
- ARLON 15 YELLOW • PMS 109c
- BLACK
- WHITE

NOTE:
The orientation notation (Placed on all sign construction plans) needs to be *"as directed by GC on date of installation"* and the GC needs to take resposibility for checking with us on how we want the orientation to be.

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Buc-ee's
I-25 & Palmer Divide Rd
Palmer Lake , CO

Project ID#: **137204**
Project Mgr: Brenda Beams
Designer: JR
Created on: 07/10/2024

REVISION

R3	06/19/25	JR - Updated with new site plan provided / updated fuel canopies
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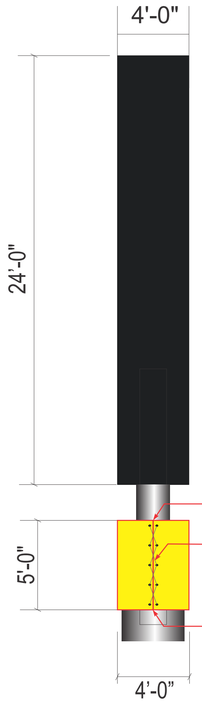
R6	06/23/25	JR - Added coming soon pylon banner
R7	06/30/25	JR - Updated site plan page 1 & 2 w/ new pylon location
R8	07/09/25	JR - Updated site plan page 1 & 2

Pylon Sign
SG-03

24’ LOGO &
5'-0" X 24’-0" NAME CABINET
100’ OAH

FACE VIEW
SCALE: 1/4" = 1'-0"

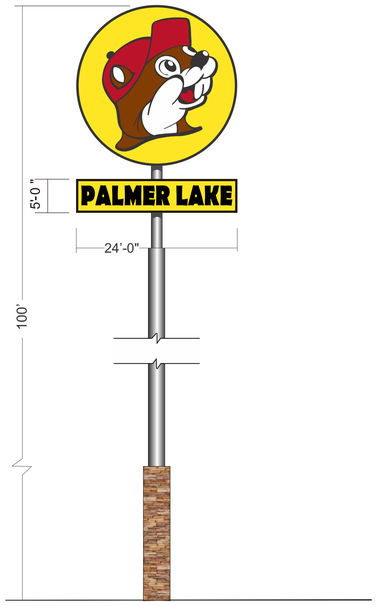
OPPOSITE VIEW
SCALE: 1/4" = 1'-0"



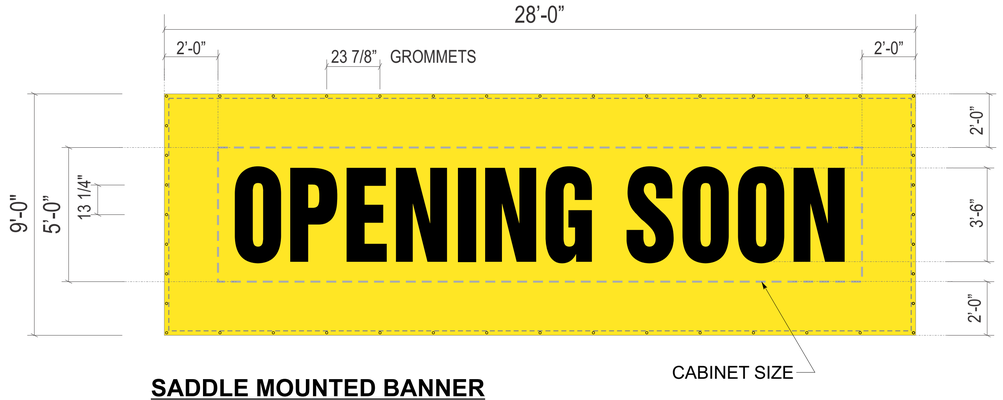
BANNER TO SADDLE ON TOP OF SIGN AND FIT AROUND POLE WITH ROPE TO SECURE BANNER

ROPE LACED ON TOP SIDES AND BOTTOM OF CABINET

END VIEW
SCALE: 1/4" = 1'-0"



ELEVATION VIEW
SCALE: 3/32" = 1'-0"



SADDLE MOUNTED BANNER
SCALE: 3/8" = 1'-0"

MFG AND INSTALL TWO (2) FLEX MATERIAL BANNERS HEMMED WITH GROMMETS TO SADDLE OVER TOP OF CABINET AND WRAPPED AROUND BOTH SIDES LACE TIED AROUND POLE WITH ROPE ON TOP, BOTTOM AND SIDES

- ARLON 15 YELLOW • PMS 109c
- ARLON 22 BLACK

APEX SIGN GROUP

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I-25 & Palmer Divide Rd
Palmer Lake , CO

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Designer: JR
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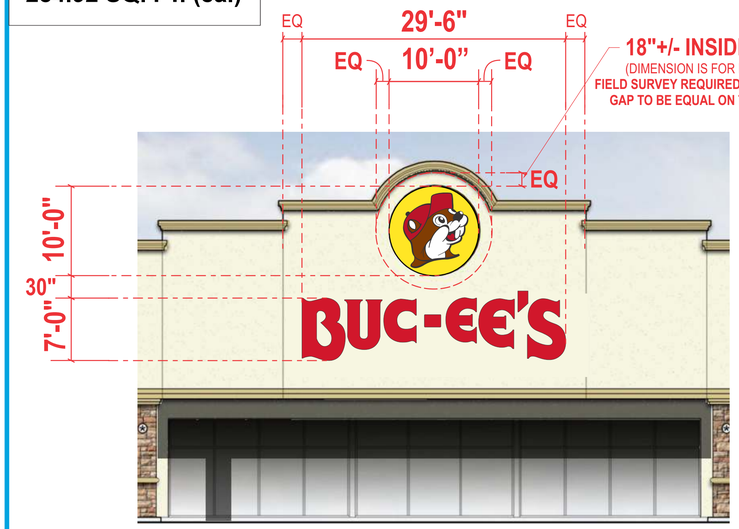
R7	06/30/25	JR - Updated site plan page 1 & 2 w/ new pylon location
R8	07/09/25	JR - Updated site plan page 1 & 2

Pylon Banner
SG-04

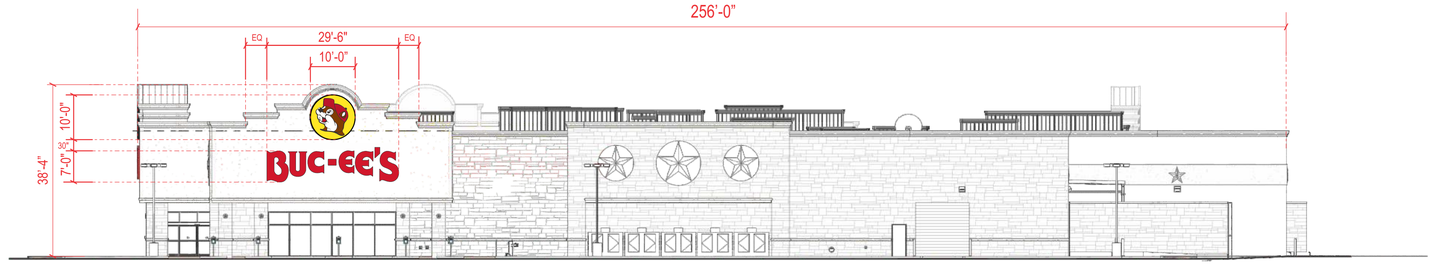
284.92 SQ. FT. (ea.)



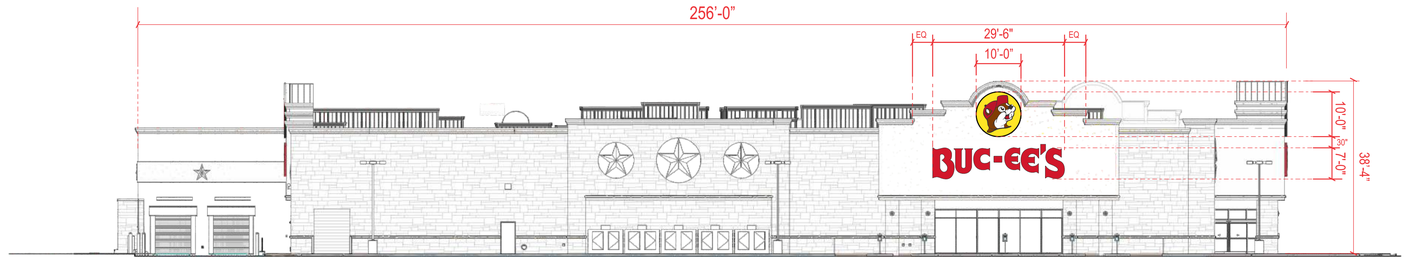
BUILDING LOGO DETAIL (TYP.)

SCALE: 1/8"=1'-0"

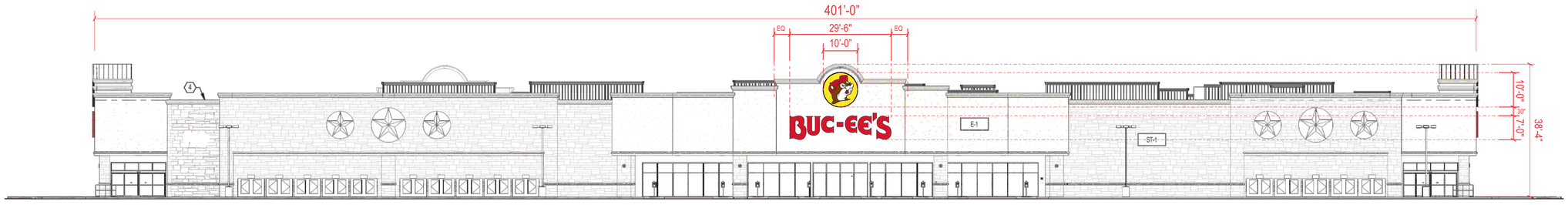
NOTE: 18" IS FOR REFERENCE *ONLY*. LOGO IS TO BE PLACED AS PRESENTED IN DRAWING.
THE GAP BETWEEN BOTH LEFT AND RIGHT IS TO BE EQUAL DISTANCE FROM THE TOP.
SAME AS LEFT AND RIGHT SIDE. THE AREA AROUND THE LOGO TO BE EQUAL AROUND THE ARCH.



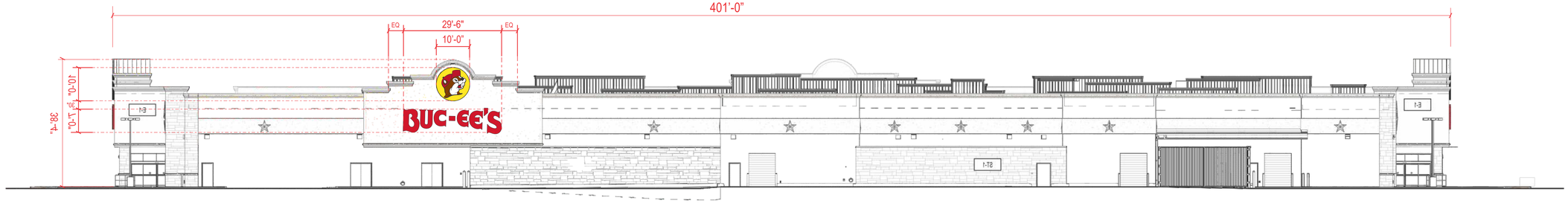
2 EXTERIOR ELEVATION - CONVENIENCE ENTRANCE / SOUTH 1/16" = 1'-0"



3 EXTERIOR ELEVATION - MERCHANDISE ENTRANCE / NORTH 1/16" = 1'-0"



1 EXTERIOR ELEVATION - MAIN ENTRANCE / WEST 1/16" = 1'-0"



4 EXTERIOR ELEVATION - RECEIVING / EAST 1/16" = 1'-0"

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Palmer Lake , CO

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Project Mgr: Brenda Beams
Designer: JR
Created on: 07/10/2024

REVISION

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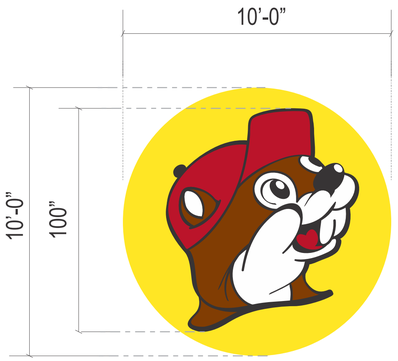
R6 06/23/25 JR - Added coming soon pylon banner
R7 06/30/25 JR - Updated site plan page 1 & 2 w/ new pylon location
R8 07/09/25 JR - Updated site plan page 1 & 2

Building Elevations
SG-05

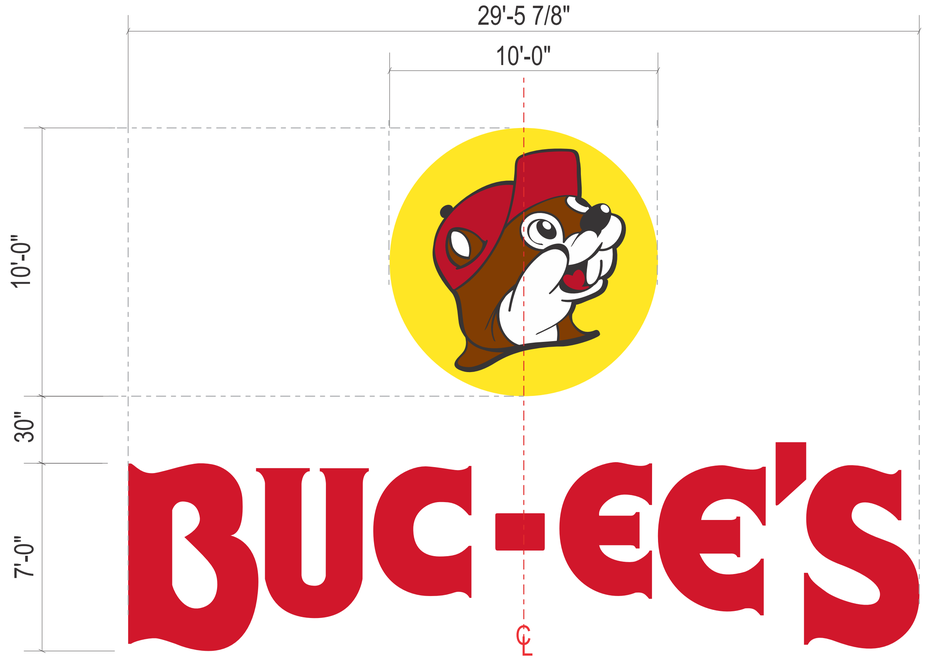
284.92 SQ. FT.

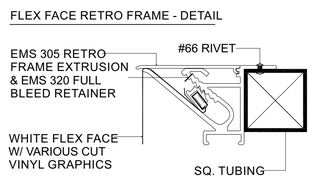
SCALE: 3/8” = 1’-0”

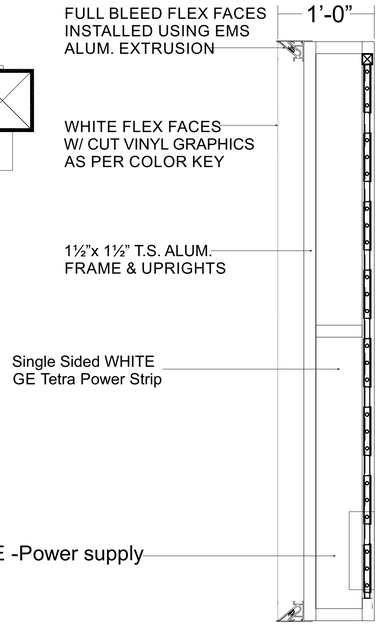


MFG. & INSTALL
THREE (3) RIGHT FACING LOGOS
TO BE INSTALLED ON THE
FRONT, LEFT & REAR ELEVATIONS

MFG. & INSTALL
ONE (1) LEFT FACING LOGO
TO BE INSTALLED ON THE
RIGHT ELEVATION







10’-0” LOGO CABINET DETAIL - NTS

ELECTRICAL REQUIREMENTS
10’ Single Face Cabinet
(1) 120 volt circuit
(1) @ 2.13 amps per cabinet

7’ Set of Channel letters
(1) 120 volt circuit
(1) @ 5 amps per set of letters

Electrical Detail:

White LEDs
(X) 60w Power Supplies
Total Amps: X.XX
(1) 20 amp 120V Circuit Req.

UL LISTED

General Notes:

This sign is to be installed in accordance with the requirements of Article 600 of the National Electrical Code.

- Grounded and bonded per NEC 600.7/NEC 250
- Existing branch circuit in compliance with NEC 600.5, not to exceed 20 amps
- Sign is to be UL listed per NEC 600.3
- UL disconnect switch per NEC 600.6- required per sign component before leaving manufacturer. For multiple signs, a disconnect is permitted but not required for each section
- The location of the disconnect switch after installation shall comply with artilcle 600.6 (A) (1) per NEC

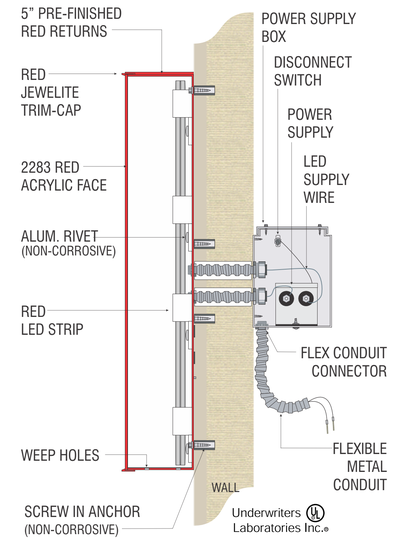
MFG. & INSTALL:
FOUR (4) SETS OF INTERN. ILLUM. S/F LOGO CABINETS w/ FLEX FACES
AND FOUR (4) SETS OF INTERN. ILLUM. LED CHANNEL LETTERS w/ RED FACES
TO BE INSTALLED ON NORTH, SOUTH, EAST & WEST ELEVATIONS

LOGO CABINET:
FACE: FULL BLEED WHITE FLEX FACE w/ CUT VINYL GRAPHICS
TO MATCH COLOR KEY
RETURNS: ALUMINUM 12" DEEP PAINTED BLACK
BACK: INTERIOR PAINTED WHITE - OUTSIDE PAINTED BLACK
ILLUMINATION: GE TETRA MAX POWER STIP
INSTALLATION: FLUSH MOUNT TO WALL FASCIA

CHANNEL LETTERS:
FACES: 2283 RED ACRYLIC
RETURNS: ALUMINUM 5" DEEP PREIFINISHED RED
BACKS: INTERIOR PAINTED WHITE - OUTSIDE PAINTED RED
ILLUMINATION: RED LED LIGHTING
INSTALLATION: FLUSH MOUNT TO WALL FASCIA

LOGO COLOR SPECS
- ARLON 33 RED • PMS 485c
- ARLON 63 RUST • PMS 483c
- ARLON 15 YELLOW • PMS 109c
- ARLON 22 BLACK
- WHITE

LETTER COLOR SPECS
- 2283 RED ACRYLIC
- 2" RED TRIMCAPS
- 5" PRE-FINISHED RED RETURNS



CHANNEL LETTERS FLUSH MOUNTED W/ REMOTE POWER SUPPLY(S)

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I-25 & Palmer Divide Rd
Palmer Lake , CO

Project ID#: **137204**
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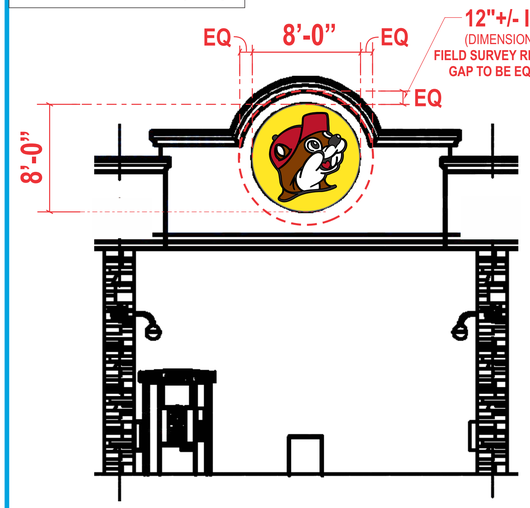
Designer: JR
Created on: 07/10/2024

REVISION
R3 06/19/25 JR - Updated with new site plan provided / updated fuel canopies
R4 06/20/25 JR - Rotate logo aerial plan
R5 06/23/25 JR - Update fuel canopies
R6 06/23/25 JR - Added coming soon pylon banner
R7 06/30/25 JR - Updated site plan page 1 & 2 w/ new pylon location
R8 07/09/25 JR - Updated site plan page 1 & 2

Channel Letters
SG-06

FUEL CANOPY 1

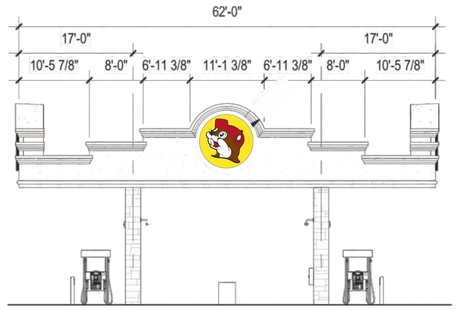
LOGO:
50.24 SQ. FT. (ea.)



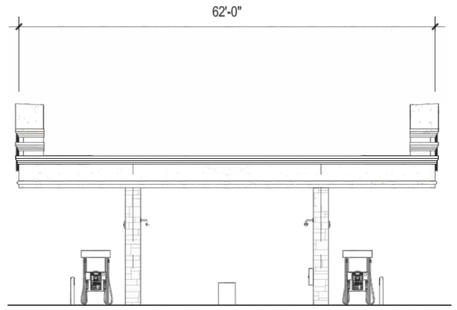
CANOPY LOGO DETAIL (TYP.)

SCALE: 3/16"=1'-0"

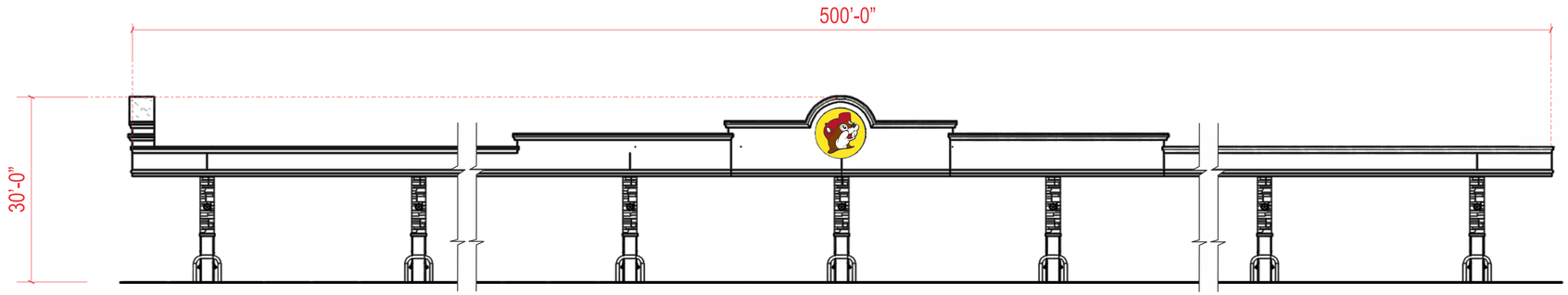
NOTE: 12" IS FOR REFERENCE *ONLY*. LOGO IS TO BE PLACED AS PRESENTED IN DRAWING. THE GAP BETWEEN BOTH LEFT AND RIGHT IS TO BE EQUAL DISTANCE FROM THE TOP. SAME AS LEFT AND RIGHT SIDE. THE AREA AROUND THE LOGO TO BE EQUAL AROUND THE ARCH.



4	FUEL CANOPY 1 -NORTH ELEVATION	3/32” = 1'-0"

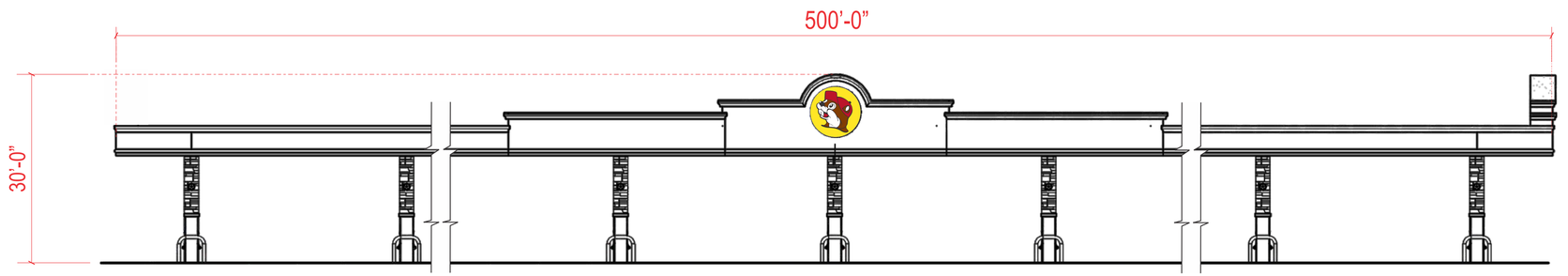


3	FUEL CANOPY 1 - SOUTH ELEVATION	3/32” = 1'-0"



2	FUEL CANOPY 1 - WEST ELEVATION	3/32” = 1'-0"

14 (BAYS x 34') +(2 OVERHANGS x 12') = 500’



1	FUEL CANOPY 1 - EAST ELEVATION	3/32” = 1'-0"

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Palmer Lake , CO

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Designer: JR
Created on: 07/10/2024

REVISION

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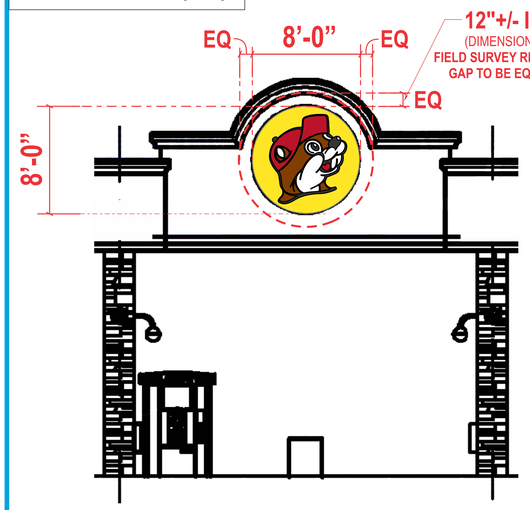
R7 06/30/25 JR - Updated site plan page 1 & 2 w/ new pylon location
R8 07/09/25 JR - Updated site plan page 1 & 2

Fuel Canopy 1
SG-07

FUEL CANOPY 2

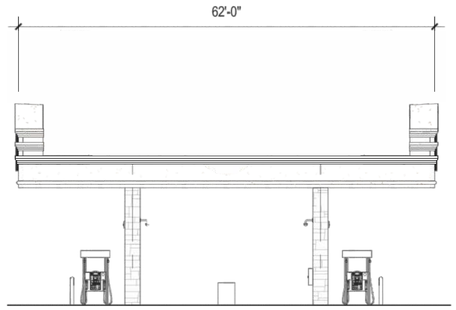
LOGO:
50.24 SQ. FT. (ea.)



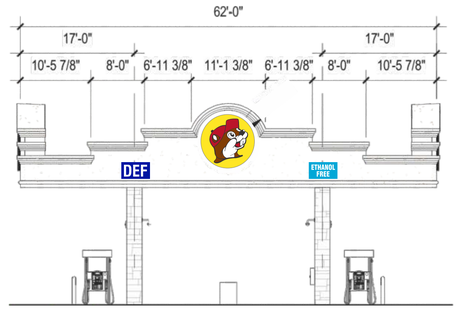
CANOPY LOGO DETAIL (TYP.)

SCALE: 3/16"=1'-0"

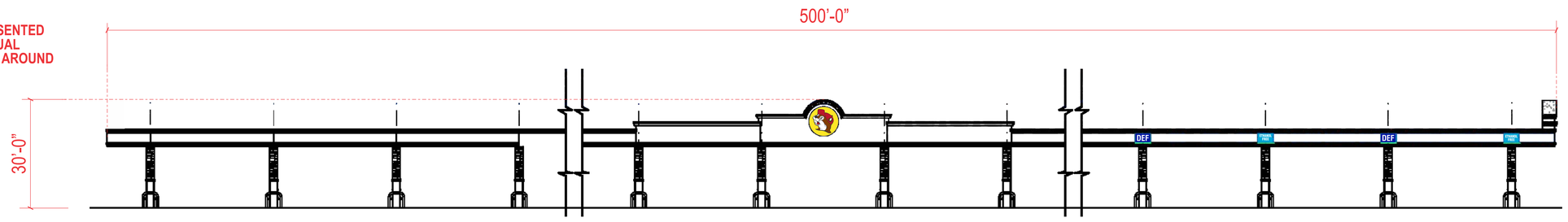
NOTE: 12" IS FOR REFERENCE *ONLY*. LOGO IS TO BE PLACED AS PRESENTED IN DRAWING. THE GAP BETWEEN BOTH LEFT AND RIGHT IS TO BE EQUAL DISTANCE FROM THE TOP. SAME AS LEFT AND RIGHT SIDE. THE AREA AROUND THE LOGO TO BE EQUAL AROUND THE ARCH.



4	FUEL CANOPY 2 -NORTH ELEVATION	3/32” = 1'-0"

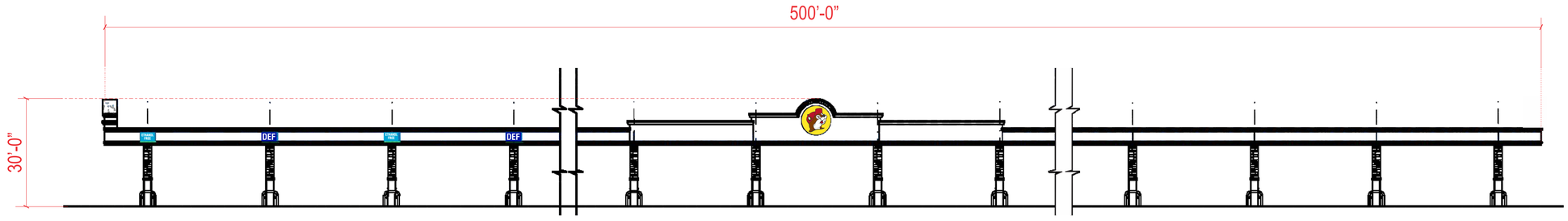


3	FUEL CANOPY 2 - SOUTH ELEVATION	3/32” = 1'-0"



1	FUEL CANOPY 2 - WEST ELEVATION	1/16” = 1’ - 0”

14 (BAYS x 34') +(2 OVERHANGS x 12') = 500’



2	FUEL CANOPY 2 - EAST ELEVATION	1/16” = 1’ - 0”

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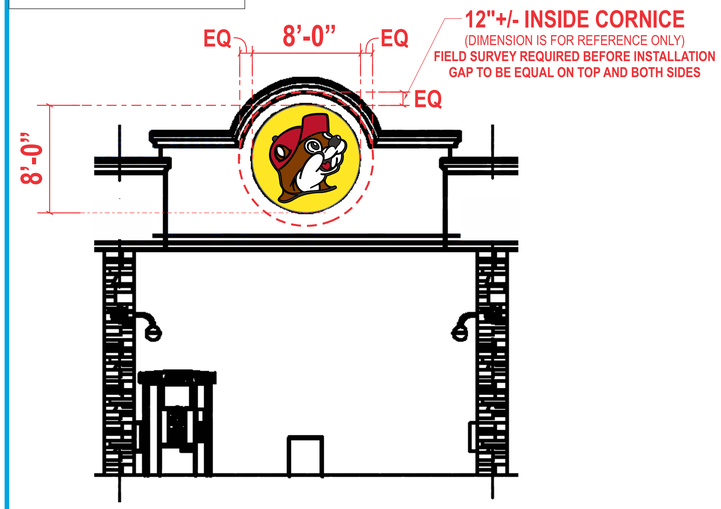
R8	07/09/25	JR - Updated site plan page 1 & 2

Fuel Canopy 2
SG-08

LOGO:
50.24 SQ. FT. (ea.)



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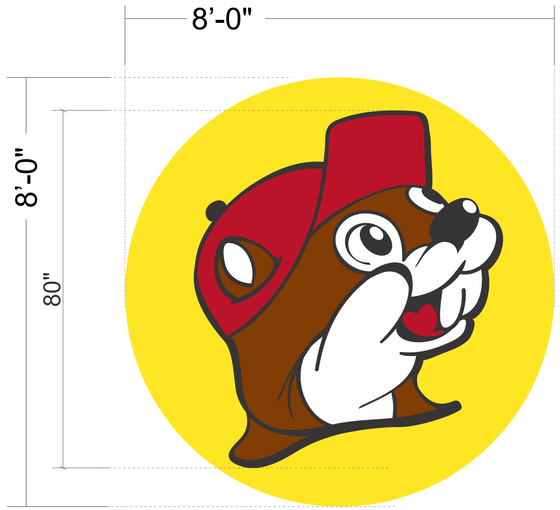
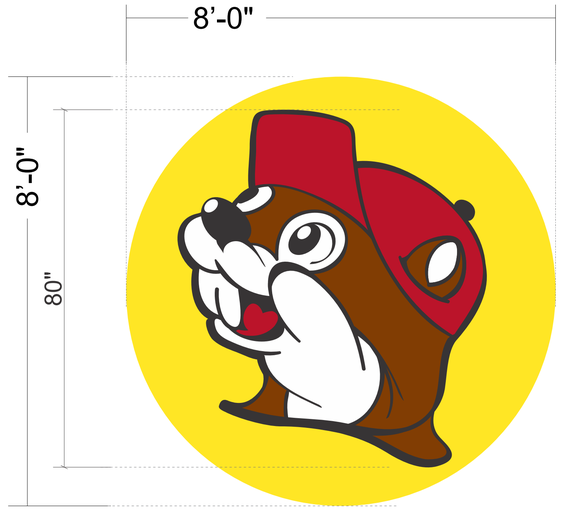
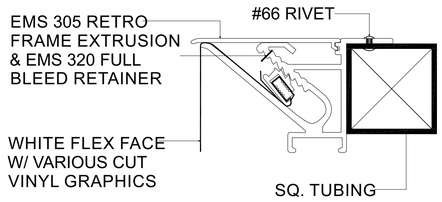


MFG. THREE (3) RIGHT FACING LOGOS



MFG. THREE (3) LEFT FACING LOGO

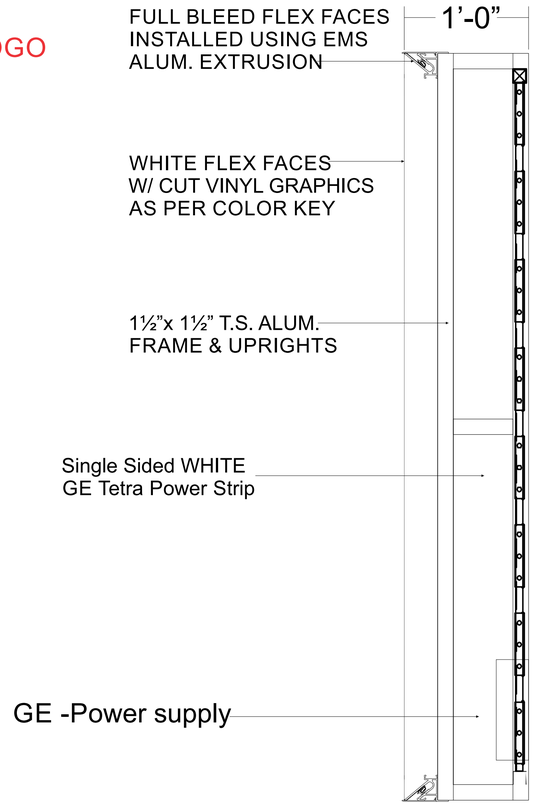
FLEX FACE RETRO FRAME - DETAIL



- **MFG. & INSTALL:**
  SIX (6) INTERN. ILLUM. CABINETS W/ FLEX FACES.
  THREE (3) W/ LOGOS FACING RIGHT - THREE (3) FACING LEFT
  TO BE INSTALLED FLUSH ONTO GAS STATION CANOPY
- **FACES: FULL BLEED WHITE FLEX FACE W/ CUT VINYL GRAPHICS AS PER COLOR KEY**
- **RETURNS: ALUM., 12” DEEP PTD. BLACK**
- **BACKS: ALUM. PTD. BLACK**
- **ILLUMINATION: GE Tetra Max Power Strips**
- **INSTALLATION: FLUSH MOUNT TO WALL FASCIA**
  (GAS STATION CANOPY)

COLOR SPECS

- ARLON 33 RED • PMS 485c
- ARLON 63 RUST • PMS 483c
- ARLON 15 YELLOW • PMS 109c
- ARLON 22 BLACK
- WHITE



8’-0” LOGO CABINET DETAIL - NTS

Electrical Detail:

White LEDs
(X) 60w Power Supplies
Total Amps: X.XX
(1) 20 amp 120V Circuit Req.

ELECTRICAL REQUIREMENTS
8’ Single Face Cabinet
(1) 120 volt circuit
(1) @ 2.13 amps per cabinet

UL LISTED

General Notes:

This sign is to be installed in accordance with the requirements of Article 600 of the National Electrical Code.

- Grounded and bonded per NEC 600.7/NEC 250
- Existing branch circuit in compliance with NEC 600.5, not to exceed 20 amps
- Sign is to be UL listed per NEC 600.3
- UL disconnect switch per NEC 600.6- required per sign component before leaving manufacturer. For multiple signs, a disconnect is permitted but not required for each section
- The location of the disconnect switch after installation shall comply with artilcle 600.6 (A) (1) per NEC

Apex SIGN GROUP

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Palmer Lake , CO

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Designer: JR
Created on: 07/10/2024

REVISION

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Canopy Logo
SG-09

11.78 SQ. FEET

SCALE: 3" = 1'-0"

QTY: FIVE (5)

ETHANOL FREE SIGN

- **MFG. & INSTALL:**
  FIVE (5) ETHANOL FREE SIGNS
  NON-ILLUMINATED .125" ALUM. PANEL PTD BLUE
  W/ WHITE VINYL LETTERING APPLIED
  INSTALL FLUSH ON EXISTING GAS CANOPY

COLOR SPECS

- PROCESS CYAN
- WHITE

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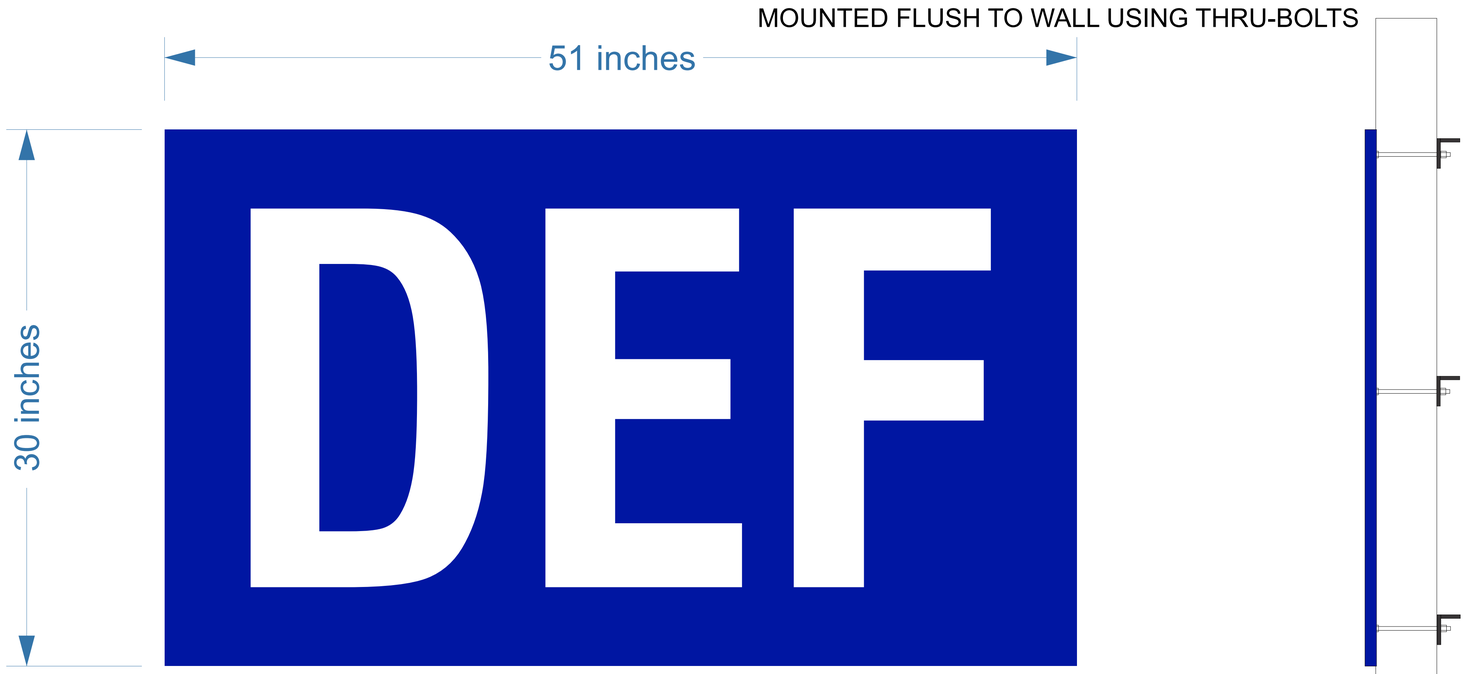
Ethanol Free
SG-10

11.78 SQ. FEET

SCALE: 3" = 1'-0"

QTY: FIVE (5)



DEF SIGN

- **MFG. & INSTALL:**
  FIVE (5) DEF SIGNS
  NON-ILLUMINATED .125" ALUM. PANEL PTD BLUE
  W/ WHITE VINYL LETTERING APPLIED
  INSTALL FLUSH ON EXISTING GAS CANOPY

COLOR SPECS

- PMS 072 BLUE
- WHITE

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DEF Panels
G-11

24.5 SQ./FT. (BUC-EE'S)	9.0 SQ./FT. (EACH LOGO)

Sign Layout Detail

Scale: 1" = 1'-0"

200% SPACING

- **MFG. & INSTALL:**
  ONE (1) SET OF 28" INTERN. ILLUM. RED LED CHANNEL LETTERS, "BUC-EE'S" TO BE INSTALLED IN THE STORE INTERIOR

- FACES: 2283 RED ACRYLIC
- TRIMCAP: 1""RED JEWELITE
- RETURNS: 5""DEEP ALUM. PRE-FINSHED RED
- BACKS: ALUM. PTD. RED
- LIGHTING: RED LED
- INSTALL: FLUSH MOUNTED ON WALL FASCIA

COLOR SPECS

- 2283 RED ACRYLIC
- 2" RED TRIM-CAP
- 5" PRE-FINSHED RED RETURNS

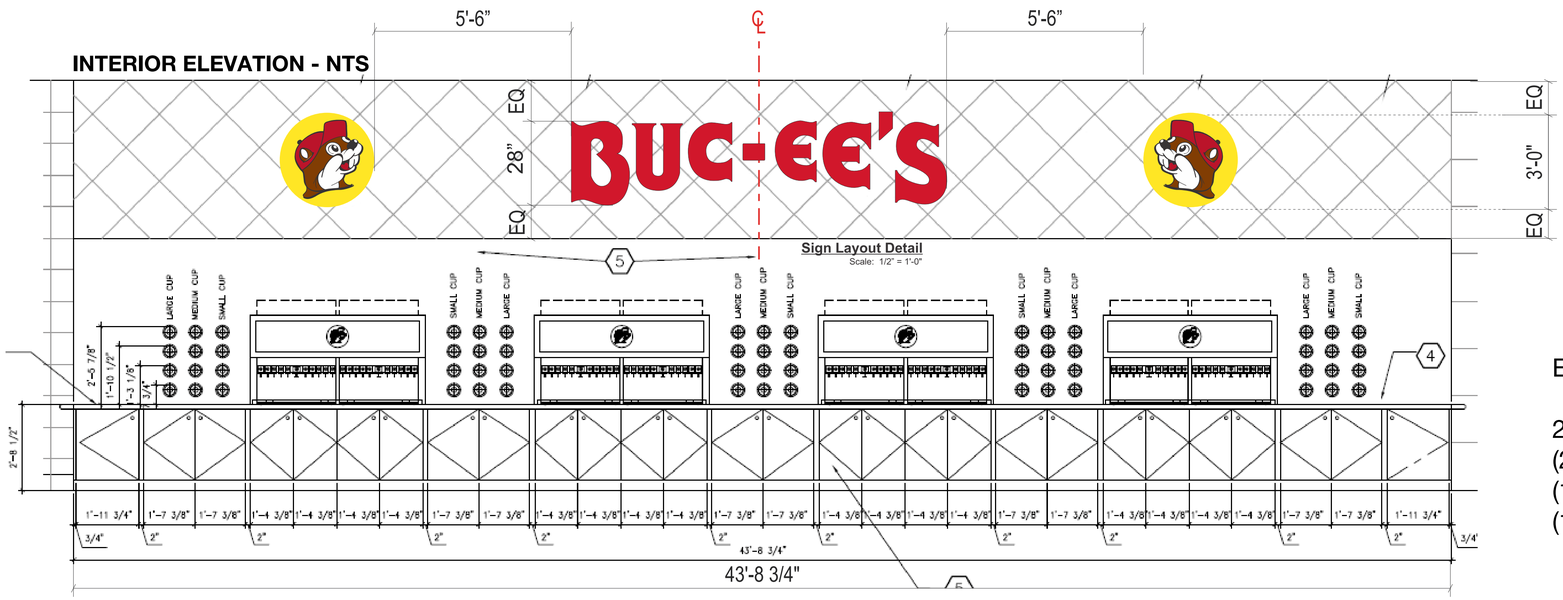
- **MFG. & INSTALL:**
  TWO (2) INTERN. ILLUM. LOGO CABINETS W/ WHITE FLAT ACRYLIC FACES OVERLAID W/ CUT VINYL GRAPHICS AS PER COLOR KEY INSTALLED IN THE STORE INTERIOR

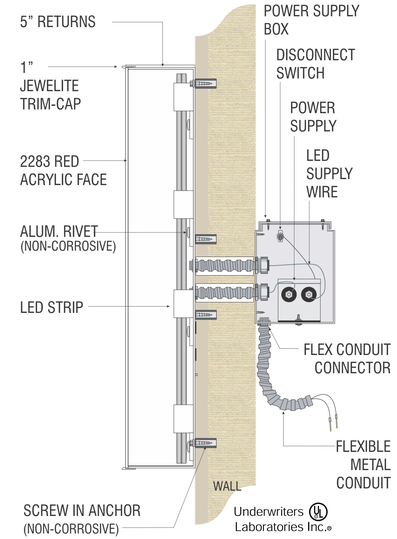
- FACES: 7328 WHITE ACRYLIC
- TRIMCAP: 1" BLACK JEWELITE
- RETURNS: 5" DEEP ALUM. PRE-FINSHED BLACK
- BACKS: ALUM. PTD. BLACK
- LIGHTING: WHITE LED
- INSTALL: FLUSH MOUNTED ON WALL FASCIA

COLOR SPECS

- ARLON 33 RED • PMS 485c
- ARLON 63 RUST • PMS 483c
- ARLON 15 YELLOW • PMS 109c
- BLACK
- WHITE

INTERIOR ELEVATION - NTS





CHANNEL LETTERS FLUSH MOUNTED W/ REMOTE POWER SUPPLY(S)

ELECTRICAL REQUIREMENTS

28'' Set of Channel letters
(2) 3' Logos
(1) 120 volt circuit
(1) @ 4 amps total

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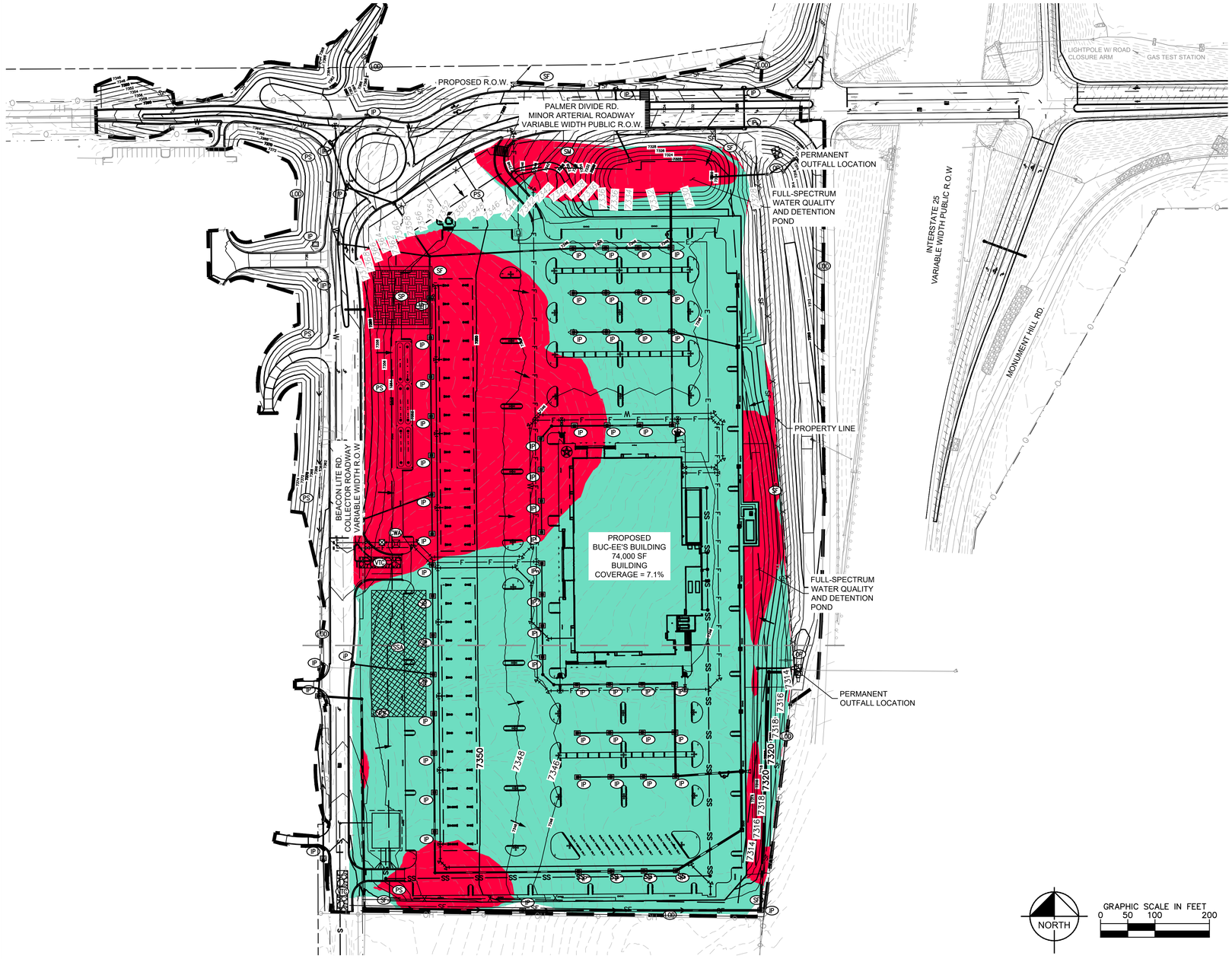
DEF Panels
G-11

BUC-EE'S PALMER LAKE
STORMWATER MANAGEMENT PLAN (SWMP)

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH,
RANGE 67 WEST OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO



LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- GRADING LIMITS
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- XXXX PROPOSED MAJOR CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- XXXX% EXISTING SLOPE
- XXXX% PROPOSED SLOPE
- SF SILT FENCE
- LOD LIMITS OF DISTURBANCE
- OP OUTFALL PROTECTION
- IP INLET PROTECTION
- SM SEEDING AND MULCHING
- SSA STABILIZED STAGING AREA
- SP STOCKPILE
- VTC VEHICLE TRACKING CONTROL
- CWA CONCRETE WASHOUT AREA
- FILL (287,045 CY)
- CUT (63,155 CY)

ABBREVIATIONS

R.O.W. RIGHT OF WAY

NOTES:

1. STRUCTURAL AND NON-STRUCTURAL CONTROL MEASURES SHOWN FOR SWMP REFERENCE ONLY. REFER TO INITIAL, INTERIM, AND FINAL EROSION CONTROL PLAN FOR PHASING.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
STORMWATER MANAGEMENT PLAN

SHEET
SWMP

C:\ACD\ACDDocs\Vinley-Horn\Buc-ees Palmer Lake\Project Files\CAD\PlanSheet\SWMP\SWMP Mstr--190304002.dwg
THIS DOCUMENT TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

PLANNED DEVELOPMENT PLAN WRITTEN PLAN

ARTICLE 1: DEFINITIONS

ARTICLE 2: INFORMATION AND PROJECT OVERVIEW (17.72)

Exhibits

2.1. Evidence of Ownership: Reviewed and accepted by the TOPL, see **Addendum 1**.
2.2. Title Commitment: Reviewed and accepted by the TOPL, see **Addendum 2**.
2.3. Statement of Planning Objectives using Rezoning Criteria (17.14.010) and PD Conditions and Standards (17.72.050)
2.4. Proposed Development Phasing (17.72.040)
2.5. General physical and environmental conditions of the site. (17.12.040, 17.72.050,17.72.130, 17.72.140): The Ecological Assessment has been reviewed and accepted by TOPL, see **Addendum 3**.
2.6. A statement of the proposed method for controlling architecture (17.72.130 and 17.76)
2.7. Generalized drainage plan
2.8. Water and sewer demand for projected uses.
2.9. Water Supply
2.10. Traffic Impact Analysis. Reviewed by the TOPL and all referral agencies, see **Addendum 4**. Further platting and construction-related issues will be resolved during the submission of the Preliminary plat and Final Plat. Once approved, final construction documents will follow.
2.11. Statement regarding how development will be served and fiscal impacts. Fiscal Impact Analysis was completed by TOPL consultant, see **Addendum 5**.
2.12. Maintenance Provisions and Plan (17.72.080)

ARTICLE 3: PLANNED DEVELOPMENT DISTRICT ENTITLEMENTS BY PLANNING AREA

3.1 Minor Modification to Planning Area Boundaries.
3.2 Transfer of Density among Planning Areas

ARTICLE 4: PLANNED DEVELOPMENT PLAN ZONE DISTRICTS (17.72.020)

4.1 Uses Within Zone District (17.72.060)
4.1.1 Principal Uses
4.1.2 Accessory Uses
4.1.3 Conditional Uses
4.1.4 Temporary Uses

4.2 Zone District Created

4.3 Development Standards

4.4 Compliance with the Stormwater Quality Control Ordinance (AKA 17.68. Hillside Overlay District)

ARTICLE 5: DIMENSIONAL STANDARDS (17.72.050)

- Height
- Setbacks (17.72.070)
- Buffering, screening per PD Code (see 17.72.070)
- Loading

ARTICLE 6: SUBSTANTIVE LAND USE PROVISIONS AND STANDARDS

- Drainage
- Lighting Standards and lighting plan
- Minimum and Maximum Parking Requirements
- Development in Phases
- Signs
- Landscaping
- Stormwater management (MS 4 and Hillside Overlay, see 17.68, per Mark's comments)
- Wildlife Enhancement, Mitigation, and Management Commitments: Reviewed and accepted by TOPL, see **Addendum 3.**
- Fire Protection

ARTICLE 7: WATER AND WASTEWATER

Water Resource Report was completed by TOPL consultant, see **Addendum 6**.

ARTICLE 8: PARKS, OPEN SPACE, TRAILS, COMMON RECREATIONAL AMENITIES, AND FACILITIES (17.72.170)

- Recreational Facilities and Amenities
- Negotiated Open Space

ARTICLE 9: ENGINEERING DESIGN STANDARDS

- Road standards
- Ownership and Maintenance of Roads

ARTICLE 10: GENERAL PROVISIONS

- Recording
- Assignment
- Vested Property Rights (Sections 24-68-101, et seq., C.R.S., “the Vested Rights Statute,” and Town Code)

ARTICLE 1: DEFINITIONS

Words used in this Planned Development may be defined in the Palmer Lake Code unless they are specifically defined in this Planned Development. Words defined within this Planned Development shall have the specific meaning assigned, unless the context clearly indicates another meaning.

- **Allowed Sign** - a sign that is neither prohibited nor exempt
- **Banner** - A temporary sign composed of logo, design, or text on a flexible lightweight fabric, plastic, or similar material
- **Building Directory Sign** - a sign that serves as a common or collective identification of multiple businesses on the same property and is attached to a building
- **Canopy** - an overhead roof cover or structure that may or may not be attached to the building and contains posts or other ground support
- **Canopy Sign** - a sign attached to a canopy
- **Travel Center** - a commercial facility that provides fuel, food, and other services for motorists. Trucks are only permitted in association with deliveries for the property owner (e.g. fueling, food deliveries). This term shall not include truck stop.
- **Fueling Station**- a place that sells and dispenses fuels for vehicles, such as gasoline, diesel, and other liquids and gases. This term also includes alternative fueling, such as an electric vehicle charging station.
- **Directional Sign** - signs for traffic or pedestrian movement on or adjacent to the property. Logos or text are allowed only as required for the directional message
- **Electronic Sign** - any sign that uses solid, electronic technology such as incandescent lamps, LEDs, LCDs, or some other electronic means of changing copy to produce bright displays that typically involve moving copy, animation, or other graphics
- **Exempt Sign** - a sign that does not require a sign permit
- **Freestanding Sign** - a self-supporting sign, not attached to the building and permanently anchored to the ground
- **Height, Maximum-** The vertical distance measured from the average elevation of the finished grade adjoining the structure to the average elevation of the roofline and eaves.
- **Holiday Decorations** - temporary displays of non-commercial materials that celebrate holidays. They can include lights, wreaths, garlands, and other items.
- **Lot Coverage** - The percentage of the lot, parcel, or tract area that may be covered by structures. The calculation shall not include any areas covered by parking areas, platforms, landings, or ramps if such improvements do not exceed 18 inches in height as measured from the top-most finished surface of the

improvements to any adjacent point of the finished grade. Landscaping soft-scape, hard-scape, and artwork areas are excluded from the calculated coverage area. The calculation shall also not include open and unenclosed patios if such patios do not exceed 18 inches in height as measured from the top-most finished surface of the patio to any adjacent point of the finished grade. Patios, including patios that are less than 18 inches in height, which have a roof or other overhead cover and/or patios which incorporate a wall or walls as a method of partially or fully enclosing the patio shall be included in the calculation of maximum lot coverage.

- **Outdoor Sales** - The sale and display of goods and services in a public space (e.g. barbeque, ice vending, clothes, patio furniture, art, etc.). Outdoor sales shall not be considered the same as outside storage. Outside storage does not need to be screened from view.
- **Outside Storage** - the act of storing goods, equipment, or vehicles that are not available for sale outside of a building.
- **Public Art** - art that is created for the general public and displayed for viewing free of charge. It can be a sculpture, mural, performance, or other artwork that is accessible to everyone.
- **Plaque** - a permanent building component cut into or attached to the building designating names of buildings, occupants, dates, or other entities involved in the building creation
- **Prohibited Sign** - a sign not permitted within the corporate limits of Palmer Lake
- **Sign** - Any object, device, vehicle, trailer, display or structure, or part thereof, situated outdoors or indoors, which is used to identify, display, direct or attract attention to an object, person, institution, organization, business, product, service, event or location by any means, including words, letters, figures, design, symbols, fixtures, colors, illumination or projected images having the capacity of being visible from any public area, except any display on a vehicle using the roadway. Structures or other physical improvements resembling the construction of a sign that are not used to advertise the name of a product, service, or business shall not be considered a sign (e.g. holiday decorations, landscape features, public art, sculptures, etc.).
- **Sign Area** - The total area of the face, plate, and frame, as well as the display surfaces but not including the structure or bracing of the sign. When the sign consists only of letters, logos, designs, or figures engraved, painted, or projected or fixed on a wall or freestanding, or when a sign is of an irregular shape, the total area of the sign shall be the smallest area enclosed by a single right angle figure surrounding all of the fixed lettering, designs and irregular shape. On double-faced signs where the sign faces are placed back to back, only 1 face is

counted in computing the sign area; for signs with more than 2 faces, the area of all faces shall be counted.

- **Temporary Sign** - a sign that is only allowed for a defined temporary period of time and is exempt from permitting but must meet registry and sign type standards. Designed to be used for a temporary period of time, not permanent in nature
- **TOPL**- Town of Palmer Lake
- **Types of Façade**
    - All cementitious materials to include but not limited to concrete, stucco, natural stone and manmade stone
    - Exterior Insulation and Finish System (EIFS)
    - All metallic materials to include but not limited to steel, aluminum, tin, copper, and galvanized materials
- **Wall Sign** - a sign attached to, painted on, or erected against the exterior of a building or structure
- **Window/Door Sign** - a sign applied to or attached to glazing or located in close proximity to the glazing on the interior, which can be seen through the window from the building exterior

ARTICLE 2: INFORMATION AND PROJECT OVERVIEW (17.72)

Exhibits

2.1 Evidence of Ownership

The Evidence of Ownership has been reviewed and accepted by the TOPL. See Addendum 1.

2.2 Title Commitment

The Title Commitment has been reviewed and accepted by the TOPL. See Addendum 2.

2.3 Statement of Planning Objectives using Rezoning Criteria (17.14.010) and PD Conditions and Standards (17.72.050)

Vertex Consulting Services, LLC
5825 Delmonico Drive, Suite 320
Colorado Springs, CO 80919

Buc-ee's Family Travel Center

Planned Development Plan

Town of Palmer Lake, Colorado

Letter of Intent

August 11, 2025

CSMS Management, LLC
11200 W. Broadway Street, Suite 2332
Pearland, TX 77584

OWNER: Monument Ridge West, LLC
5055 List Drive
Colorado Springs, CO 80919

APPLICANT: CSMS Management, LLC
11200 W. Broadway Street, Suite 2332
Pearland, TX 77584

PLANNER: Vertex Consulting Services, LLC
5825 Delmonico Drive, Suite 320
Colorado Springs, CO 80919
303-906-8800

PROPERTY LOCATION: At the southwest corner of the Interstate 25 and County Line Road interchange.

TAX SCHEDULE NOS: 7102200014 and 7102200015

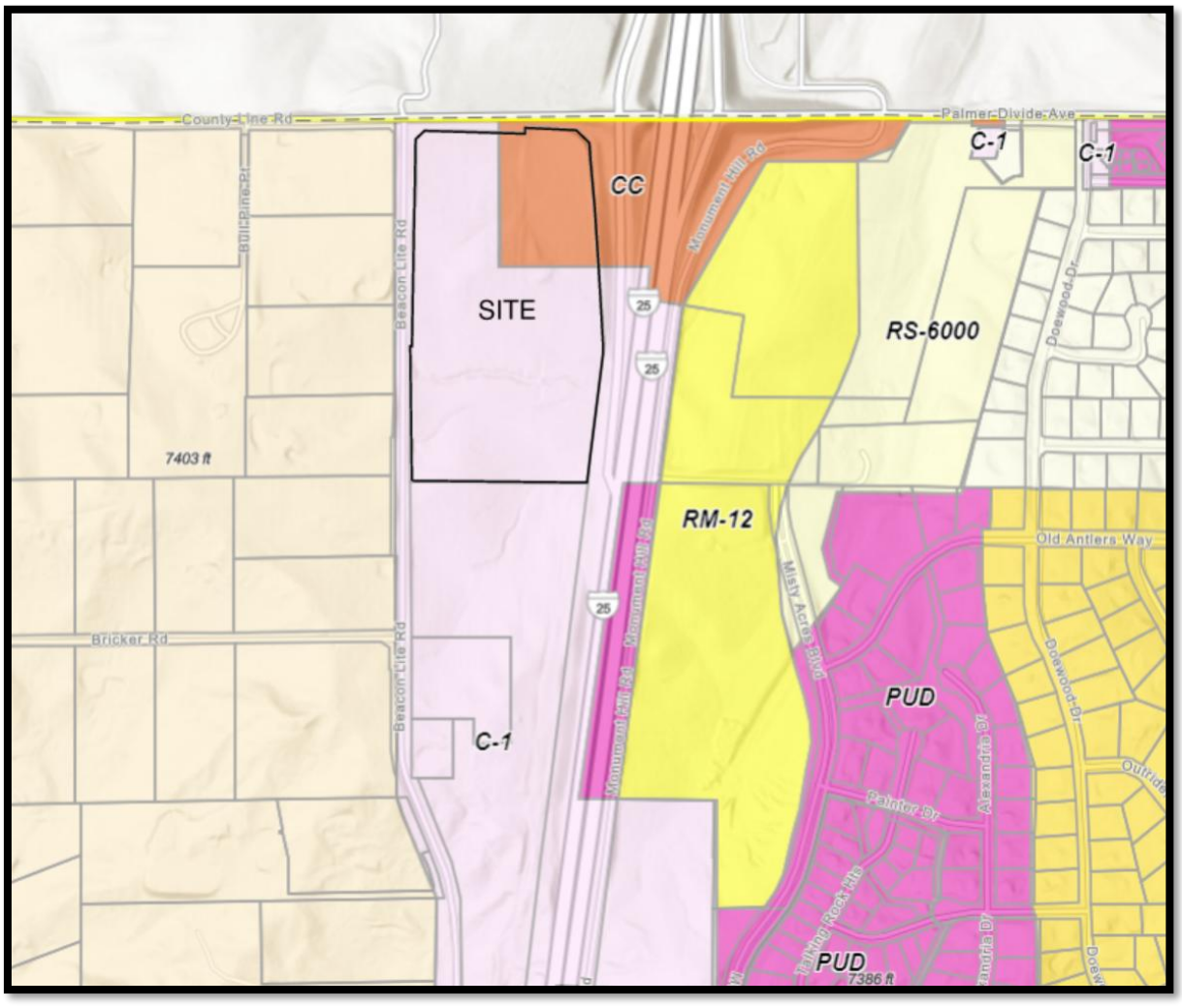
Project Description

CSMS Management, LLC, is requesting approval of a Planned Development Plan (PDP) and PD (Planned Development District) zoning for the approximately 24.77-acre vacant property located at the southwest corner of the Interstate 25 and County Line Road interchange. The property is currently split-zoned CC (Commercial Community) and C-1 (Commercial -Obsolete) within unincorporated El Paso County but is proposed to be annexed into the incorporated boundaries of the Town of Palmer Lake pursuant to Colorado Revised Statutes (CRS). The proposed annexation includes a "flagpole" series of annexations from the current Town of Palmer Lake boundary east along the County Line Road right-of-way to the subject property. An annexation agreement between the Town of Palmer Lake and the applicant has been required by the Town in association with annexation of the property.

The PDP submitted with this application proposes to zone the property for a Buc-ee's Family Travel Center. The PDP generally includes a 74,000 square-foot structure at a maximum building height of 40 feet, 120 vehicle fueling stations (60 total fuel pumps) and associated canopies, a minimum of 25-foot building setbacks from all property lines, and 820 onsite parking spaces. Full ingress and egress to the travel center will be via two new locations along Beacon Lite Road within portions of the roadway that are also proposed for annexation into the Town of Palmer Lake. An additional right-out only egress is proposed at the north end of the property allowing traffic to exit the site directly onto County Line Road. Stormwater generated from the site is proposed to be collected and

managed through construction and ongoing maintenance of two onsite detention ponds, one located at the far north end of the property adjacent to County Line road and the other located along the eastern portion of the property adjacent to the Interstate 25 right-of-way. The stormwater infrastructure also includes oil-water separator for any runoff from the fueling stations. The oil-water separator is above and beyond the Town stormwater requirements, but is being proposed by the applicant in an effort to mitigate all potential impacts.

Current El Paso County Zoning



Concurrent Applications

The applicant is also submitting a Sketch Plan and a Sketch Development Plan applications concurrent with this PDP application. All three applications are required under the Town's current regulations for approval and development of the proposed travel center.

Vicinity Map

Please see below for the project vicinity map.

Review Criteria

Title 17 of the Town of Palmer Lake's Code of Ordinances outlines the criteria for approval of a PD rezoning. The following is an analysis of the project's compliance with those criteria:

17.72.50 Conditions and Standards

PD shall be subject to the following performance criteria:

1) ***One or more of the following shall be achieved to approve a Planned Development:***
    a. ***The encouragement of innovations in residential, commercial, and limited industrial development through greater variety in the type, design, and***

layout of buildings that the Town's existing zone districts cannot accommodate and by the conservation and more efficient provision of open space ancillary to the associated development.

b. A better distribution of induced traffic on streets and highways.

c. Conservation of the value of the land.

d. Preservation of the site's natural features.

The proposed commercial use will be unique to the Town of Palmer Lake and to the region as a whole since it will be the first family-oriented travel center of its kind in the area. The use will generate additional traffic in the area; however, the traffic impacts will be largely mitigated due to the property being located directly adjacent to Interstate 25, which is capable of handling the additional traffic coming into and leaving the site (See addendum 4 for the Traffic Studies). One of the innovative ways that traffic is managed so effectively at other Buc-ee's Family Travel Centers is via the layout of the site and multiple access points. The siting of the building and the other onsite improvements are laid out in a manner that allows for increased driver visibility and improved internal circulation, both of which work in tandem to allow vehicles to safely and efficiently move through the property, which ultimately helps ensure that traffic does not back up into the public roadways or otherwise overburden the surrounding transportation network.

Development of the site as a Buc-ee's Family Travel Center will result in the extension of municipal-level services to the property. The introduction of such services will likely result in an increase in land values for the subject property as well as any neighboring properties capable of being served by the newly extended infrastructure. In addition, the physical improvements to the site and to the transportation network in the area will not only enhance the value of the subject property but may also allow for additional investment to occur in the general area without the burden of financing subsequent capacity improvements.

The entire perimeter of the property, except for the three access locations, features non-irrigated native grass open space, including those areas identified for stormwater detention ponds. The sketch plan strategically locates the detention ponds on the east side of the property adjacent to the Interstate 25 right-of-way in order to adequately handle anticipated stormwater flows and to provide an additional nature buffer between the proposed travel center building and the highway. Along the west side of the property, adjacent to Beacon Lite Road, are additional areas of non-irrigated native grass open space.

It is also important to note that the footprint of the proposed travel center

building is depicted as being offset further to the eastern portion of the property away from Beacon Lite Road, which effectively provides an increased buffer between the building and the properties located along the west side of Beacon Lite Road. More specifically, the building is proposed to be setback from the western property line by approximately 400 feet, which is far in excess of the 25-foot setback. Even the fueling canopies, which are proposed to be located between the travel center building and the western property line, are proposed to be set back from the western property line approximately 150 feet, which is 125 feet more than the standard 25-foot setback. The increased setbacks of all structures from the western property line allows the use to be more visible and more consistent with similar land uses commonly found along the highly traveled Interstate 25 and it ensure that use is more visually compatible with the variety of existing land uses to the west (e.g., church , large lot residential, contractor's yard).

2) ***The design and construction of the PD shall include adequate, safe, and convenient arrangements for pedestrian and vehicular circulation, off-street parking, and loading spaces. Loading spaces are required for both non-residential development and residential development in compliance with the PPRBD-adopted building codes and the town's adopted parking and loading requirements, as amended.***

The proposed travel center lot will have full ingress and egress via two new locations along Beacon Lite Road within portions of the roadway that are also proposed for annexation into the Town of Palmer Lake. An additional right-out only egress is proposed at the north end of the property allowing traffic to exit the site directly onto County Line Road.

Chapter 17 of the Town of Palmer Lake Municipal Code requires retail and service stores to provide one parking space per 150 square feet of gross floor area. Based upon this standard, the proposed 74,000 square foot retail travel center would be required to provide 515 parking spaces. Instead, the proposed PDP plan provides for 820 onsite parking spaces arranged along three sides of the travel center building. The layout of the parking throughout the site will allow for dispersed vehicular and pedestrian traffic in and around the site.

Section 17.84.030 of the Town's Municipal Code states the following:

> "In all nonresidential districts, adequate loading, maneuvering or unloading areas shall be provided completely off the public ways and so that all vehicles need not back onto any public way."

The proposed PDP design guidelines go beyond the Town's Code language so as to require two loading areas per 74,000 square feet of building, with each loading area being a minimum of 600 square feet. The approximately 3,000 square foot loading area has been depicted on the PDP along the east side of the building, which allows for all loading and maneuvering to occur onsite without any potential conflicts with public ways.

Pedestrian paths have been depicted on the PDP in order to help ensure safe and efficient pedestrian movement into and out of the travel center and throughout the overall site. Sidewalks are not being proposed along Beacon Lite Road and County Line Road because the El Paso County construction drawings for the planned improvement of Beacon Lite Road does not include construction of a sidewalk; therefore, onsite construction of a sidewalk would result in a disconnected sidewalk that essentially would lead to nowhere. Similarly, there is no existing sidewalk along County Line road that sidewalk from the travel center site could be extended towards; therefore, it is not practical to construct such sidewalk.

3) The density and/or intensity of development shall be based on the capacity of the land proposed for development to support the PD as well as the impact of the proposed development on town services and facilities and on neighboring properties that reasonably could be impacted by the proposed development. The capacity of the land shall be determined based on the size, topography, and geological and environmental limitations of the land proposed for development.

The PDP site is bordered on three sides by existing roadways, including I-25 to the east, County Line Road to the north, and Beacon Lite Road to the west. To the south is vacant land currently zoned for commercial development within unincorporated El Paso County. This means that the only neighbor which shares a property line with the site is to the south and that property is already zoned for commercial development. The design of the site allows for minimal impacts, if any, to adjacent properties. First, the PDP provides for two full movement accesses into the site and an additional egress onto County Line Road at the north end of the property thereby enhancing the flow of vehicular traffic into and out of the site.

Second, siting of the travel center building in a location that is offset from the center of the site and more towards the eastern part of the site will help mitigate any potential visual impacts to the adjacent properties to the west while also providing an open space and parking lot buffer between the building and those

neighboring properties. The estimated distance between the travel center building and the nearest building on any property west of Beacon Lite Road is in excess of 700 feet, which equates to a distance similar to the length of two football fields.

Third, there are no identified geological or environmental limitations present on the property that may otherwise require preservation, which can affect the buildability of sites having such limitations (e.g., wetlands, floodplains, etc.). In addition, the current topography is not a factor that will limit buildability of the site. Grading plans and a preliminary drainage report have been submitted in support of this application. These documents demonstrate that construction can be readily accomplished. To do so, a continuous retaining wall will be required along a portion of the southern and northern sides of the property and along the majority of the eastern side of the property. The wall is necessary due to the extensive variation of existing slopes on the property and in order to bring the buildable area of the site to an elevation that is compatible with the existing elevation of Beacon Lite Road. This will allow for safe and efficient access into the site, extension of utilities into and throughout the site, and for responsible management of developed drainage flows via appropriately designed and constructed stormwater improvements.

Finally, as discussed below, the proposed 74,000 square-foot travel center footprint will only cover approximately 7% of the overall 24.77-acre site, which will limit the visual impacts of the development and allow for broader visibility across the property.

4) ***While there may be no fixed dimensional requirements, the planning commission may recommend to the board of trustees and the board of trustees may require and approve setbacks, lot widths, and space between buildings as necessary to provide adequate access and to aid in fire protection, ensure proper ventilation, light, air, and snow melt between buildings, and to ensure that the PD is compatible with other developments in the area.***

No additional dimensional standards have been requested by Town staff in addition to those proposed in the PD guidelines and the PD plan and as summarized below. Design and construction of a 74,000 square-foot travel center structure, which equates to 1.77 acres, will be a relatively small physical presence on the site at approximately 7% of the overall 24.77-acre property. Even with addition of the proposed fueling island canopies adequate light and air will be preserved. The site will be maintained by the Buc-ee's travel center staff, which

will ensure that snow removal is performed in appropriate manner in order to help prevent any safety hazards associated with the potential for ice buildup.

Fire protection access into the site will be provided via the two full movement access points along Beacon Lite Road and throughout the site via the internal drive aisles.

5) ***Open space for the PD developments shall be planned to produce maximum usefulness to the users of the development and general public for purposes of recreation, preservation of scenic views, and to maintain the character of the areas as outlined in the adopted Community Master Plan. All areas designated as common or public open space pursuant to the requirements of this Chapter and the Subdivision regulations shall be accessible by proper physical and legal access ways.***

The entire perimeter of the property, except for the three access locations, feature non-irrigated native planting open space areas, including those areas identified for stormwater detention ponds. The sketch plan strategically locates the detention ponds on the east side of the property adjacent to the Interstate 25 right-of-way in order to adequately handle anticipated stormwater flows and to provide an additional nature buffer between the proposed travel center building and the highway. Along the west side of the property, adjacent to Beacon Lite Road, are additional areas of non-irrigated native planted open space. Each of these areas offer a unique space on the property where customers can enjoy the beautiful scenery and environment surrounding the property while taking a break from their travels.

The applicant is proposing to provide open space throughout the travel center site in an amount that is sufficient to meet the Town's open space requirement. In addition, the associated annexation agreement identifies that the applicant agrees to pay $150,000 to the Town to support public uses or capital improvements within the Town. The provision of open space and payment of $150,000 will satisfy both the Planned Development and Subdivision open space requirements.

6) ***All dimensional standards shall be established and documented on an approved written and graphic PD plan.***

Dimension standards have been proposed with the written PD and the associated graphical PD plan. The proposed dimensional standards are as follows:

- Minimum lot size: 23 acres
- Maximum height
  - Principal structure: 40 feet
- Setbacks requirements *
  - Front: 25 feet
  - Side: 25 feet
  - Rear: 25 feet
- Lot Coverage: 80 percent

**NOTE: the written PD identifies permitted encroachments.*

7) The developer shall provide within the PD central water and sewer facilities as required by the Planning Commission, Board of Trustees, the Palmer Lake codified water requirements, Palmer Lake Sanitation District, Colorado Department of Public Health and Environment, and El Paso County Public Health.

Extension of central water and sewer facilities will be constructed to service the proposed travel center. The development acknowledges that all water and sewer improvements will need to comply with the requirements of the Town of Palmer Lake, Monument Sanitation District, El Paso County Public Health, and Colorado Department of Public Health and Environment.

The associated annexation agreement places the financial burden of developing two new groundwater wells on the developer of the travel center even though the second well (known as Well A-3) is not needed by the Town to provide water supply service to existing customers and the proposed development. The Town has adequate water supplies to serve the travel center without developing and producing water supplies from the second well. Nevertheless, the developer has committed to funding development of both wells in addition to funding a 12-inch water line along Palmer Divide Road (County Line Road) to serve the travel center site.

The site is already located within the service area of the Monument Sanitation District. The developer is coordinating with the District to plan for, design, and construct a wastewater main along Beacon Lite Road to the site to provide wastewater treatment service to the site. The developer will be financially responsible for extending the main needed to serve the site.

8) Clustered development is allowed and encouraged to promote maximum open space, economy of development, and variety in the type, design, and layout of buildings. In a multi-lot PD, the averaging of lot areas shall be permitted to

provide flexibility in design and to relate lot size to topography, but each lot shall contain an acceptable building site. The clustering of development with usable common open areas shall be permitted to encourage provision for and access to common open areas and to save street and utility construction and maintenance costs.

The proposed PDP does not include multiple lots and therefore clustering of development is not practical. A single principal use is being requested for the proposed lot. Integration of perimeter open space areas and building setbacks allow for the use to be constructed more towards the center of the property, thereby clustering the vertical presence of the use within the overall site.

9) The PD shall provide pedestrian ways adequate in terms of safety, separation, convenience, and access to points of destination.

As discussed above, pedestrian paths have been depicted on the PDP in order to help ensure safe and efficient pedestrian movement into and throughout the overall site. Sidewalks are not being proposed along Beacon Lite Road and County Line Road for the reasons stated above.

10) The PD shall provide parking areas in conformance with the minimum site development standards of this Title in terms of the number of spaces for each use, location, dimensions, circulation, landscaping, safety, convenience, separation, and screening.

The layout and design of the proposed travel center will conform to, and in some cases exceed, the minimum site development standards for the Town of Palmer Lake, as depicted in the PDP.

The Board of Trustees anticipates the adoption of a revised Chapter 17 Articles 1-6 on August 14, 2025. Below is a summary of the landscaping that would be required pursuant to the proposed to be adopted regulations:

- Buffer along the western property line 15 feet wide with 1 tree per 15 feet (83 trees)
- Buffer along the perimeter of the parking lot of 1 tree per 10 feet (250 trees)

Total: 333 Plantings

The preliminary landscape plan depicts a total of 208 trees and 578 shrubs. The

totals greatly exceed what would be required by the to be adopted Town Code.

11) The PD shall strive for preservation of the natural features on the site in accordance with the adopted Community Master Plan, as may be amended.

The Ecological Assessment prepared by ECOS Ecosystem Services, LLC, identified that there are no significant natural features that should be preserved with development of the site. In addition, the report has been reviewed and discussed with Colorado Parks and Wildlife as well as the Environmental Manager of the Colorado Department of Transportation Region 2 Office, and both entities have concurred with the conclusions of Ecological Assessment.

The applicant acknowledges that the nativity of the site and existing vegetation has inherent value as does every site before it is developed into a home, park, or commercial area. While the ponderosa pine forest and grassland on this site does provide habitat for common wildlife, this plant community is not endangered. It does not support threatened, endangered, or species of special concern and therefore it is not considered significant relative to other habitat types such as streams, wetlands, or riparian areas. Town's Community Master Plan does not include any specific recommendations for the site.

12) The maximum height of buildings may be increased above the maximum permitted for like buildings in other zoning districts in relation to the following characteristics of the proposed building:

- ***a. Its geographic location.***
- ***b. The probable effect on surrounding slopes and terrain.***
- ***c. Unreasonable adverse visual effects on adjacent sites or other areas in the vicinity.***
- ***d. Potential problems for adjacent sites caused by shadows, loss of air circulation, or loss of view often achieved through the addition of overlay view corridors and other legally viable means.***
- ***e. Influence on the general vicinity, with regard to vistas and open space.***
- ***f. Uses within the proposed building.***
- ***g. Fire protection needs.***

The conventional commercial zoning districts in the Town of Palmer Lake allow for a maximum building height of 30 feet. The proposed PDP includes a request for a maximum building height of 40 feet to allow for the Buc-ee's Family Travel Center building to be constructed consistent with other similarly-

sized Buc-ee's Travel Centers recently built in other locations. The 10 feet of requested additional building height will not have a negative effect on or as a result of the surrounding slopes and terrain since the typical passerby on Interstate 25 is traveling at a speed around 75 MPH and at an elevation that is approximately 40 feet below the planned grade of property, both of which will have the effect of limiting visibility of the proposed use. Once the site is brought up to grade to allow for development, the visibility of the site from I-25 will be further limited.

With that being said, any structure erected on the property will most likely be visible to some degree from the interstate. Similarly, views by passersby along County Line Road will not be negatively inhibited by the additional 10 feet of building height since most travelers along the east-west oriented roadway are not generally looking to the south but rather are focused on their approach to I-25 as they travel east and on potential oncoming traffic as they travel west away from the interstate.

Any potential visibility of the proposed travel center should not be considered unreasonable by any objective standard given the fact that the site has been zoned for commercial uses in El Paso County for decades. Under the current County commercial zoning, structures could be constructed up to 40 feet in the CC (Commercial Community) zoned area and up to 30 feet in the C-1 (Commercial) zoned area. If the site were developed under the current County zoning, then potential visual impacts could actually be increased given the likelihood for construction of numerous commercial structures ranging from 30 to 40 feet in height as opposed to the construction of a single centrally sited travel center building and fueling station canopies. The maximum building height of 40 feet will not adversely impact the provision of adequate natural light within the site and to adjacent properties. The layout and design of the site, including the siting and elevation of proposed structures, will allow for sufficient air flow to and from adjacent properties as well as throughout the property. In addition, there are no above ground walls or solid, opaque fences being proposed, other than the required retaining walls near the Interstate 25 corridor, that would impact the natural flow of air in and around the site.

Combination of the increased building setbacks along the western, southern, and northern property lines, along with the proposed perimeter landscaping around the proposed travel center will help establish an appropriate spatial and aesthetic transition from the highly traveled Interstate 25 corridor and from adjacent properties. In addition to an increased setback, the proposed

travel center will also include a landscaping buffer along the southern property line. Increased setbacks and landscape buffers are not typically provided between a proposed commercial development and an adjacent commercially zoned property, which is the case with respect to the property located to the south of the travel center property which is currently zoned as C-1 (Commercial) by El Paso County. In fact, the El Paso County Land Development Code only requires internal landscaping for new commercial developments, it does not include a requirement for a landscape buffer between commercial land uses on adjacent properties.

2.4 Proposed Development Phasing (17.72.040)

The targeted start date for on and off site improvements is Dec. of 2025 with construction being complete by December of 2026.

2.5 Any general physical and environmental conditions of the site, including exhibits (17.12.040, 17.72.050,17.72.130, 17.72.140)

The Ecological Assessment has been reviewed and approved by the TOPL. See Addendum 3. The pages that follow are exhibits that demonstrate general site conditions.

Figure 1

USGS Site Location Map

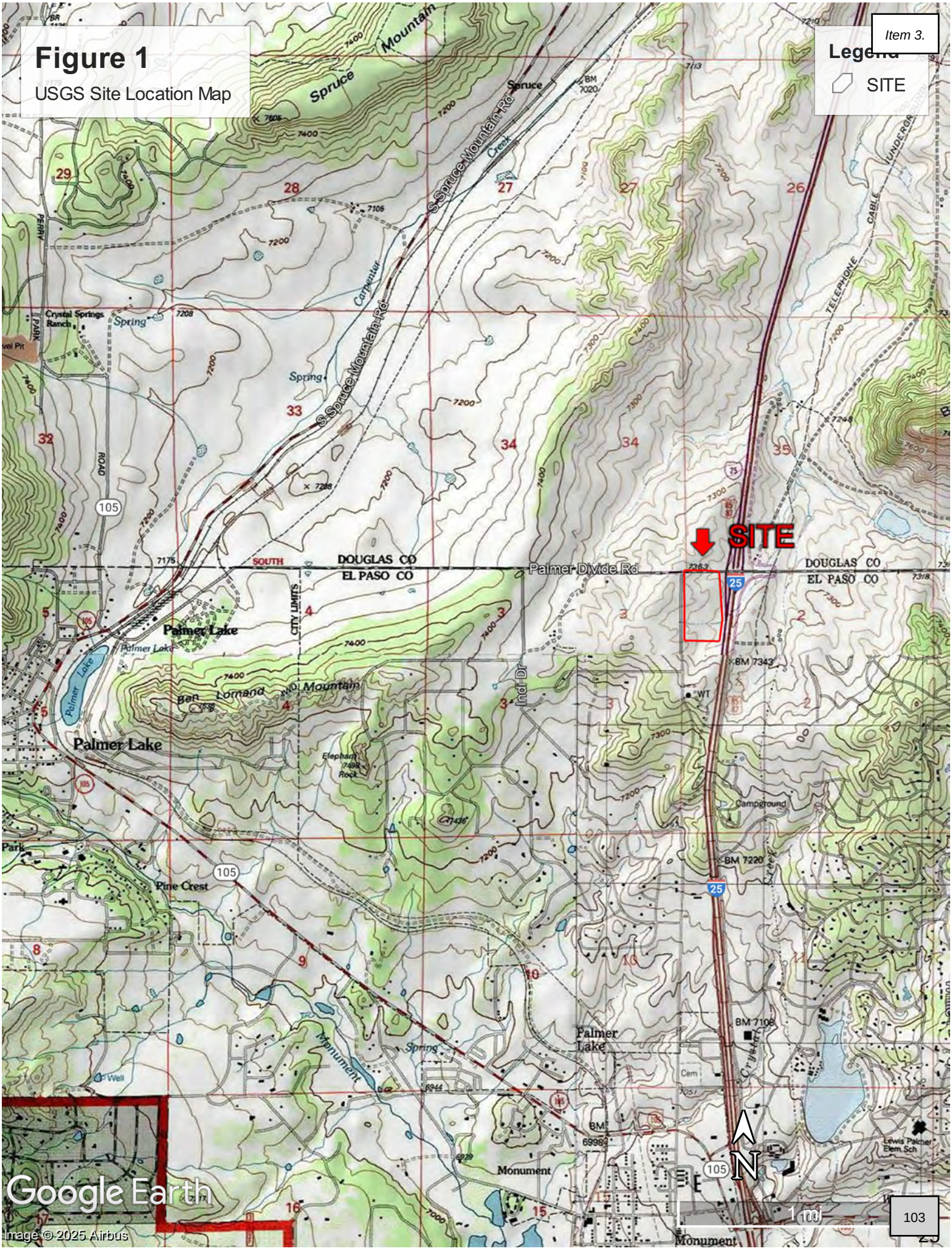


Figure 2

Existing Conditions Aerial Photo

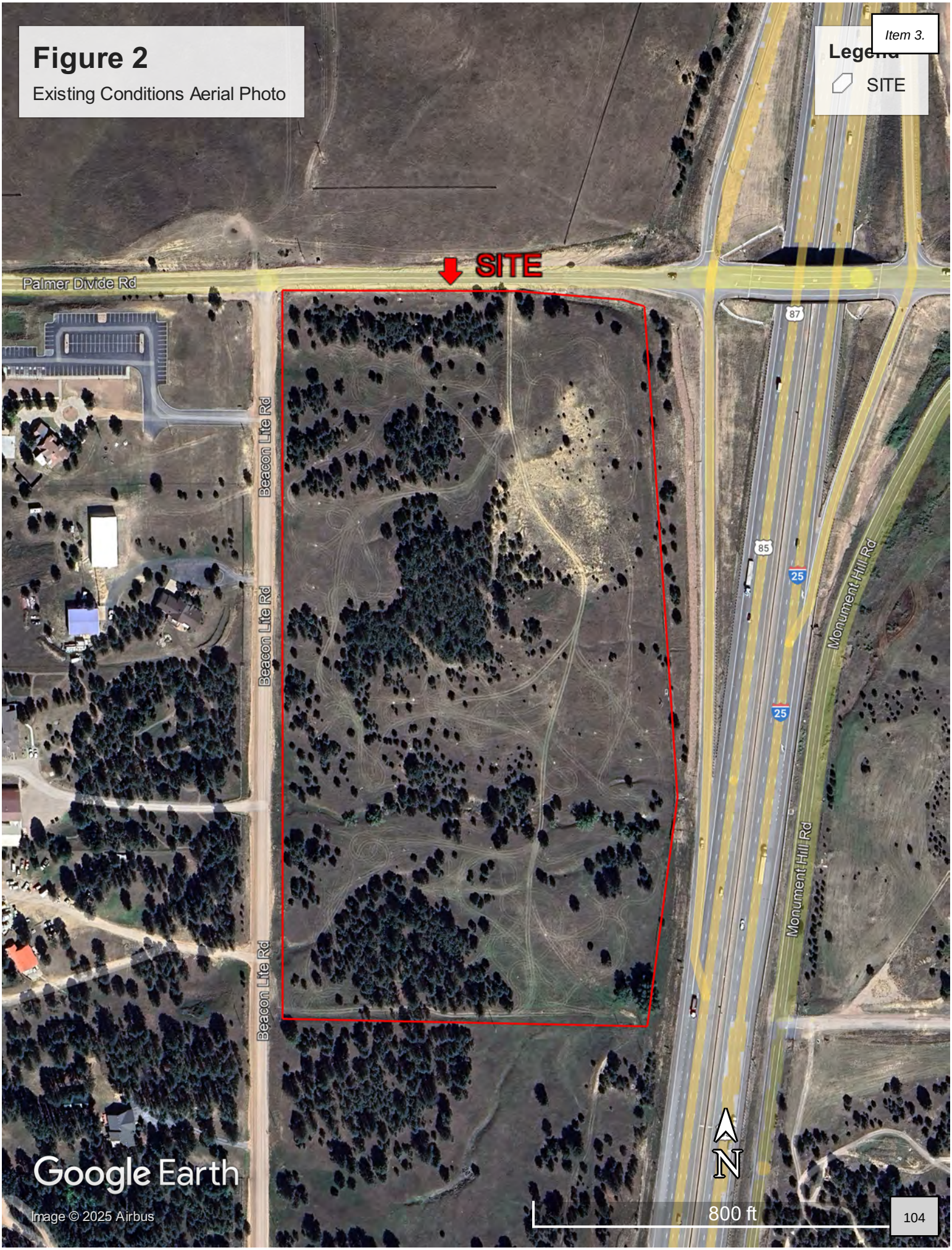


Figure 3

Ecoregion Map

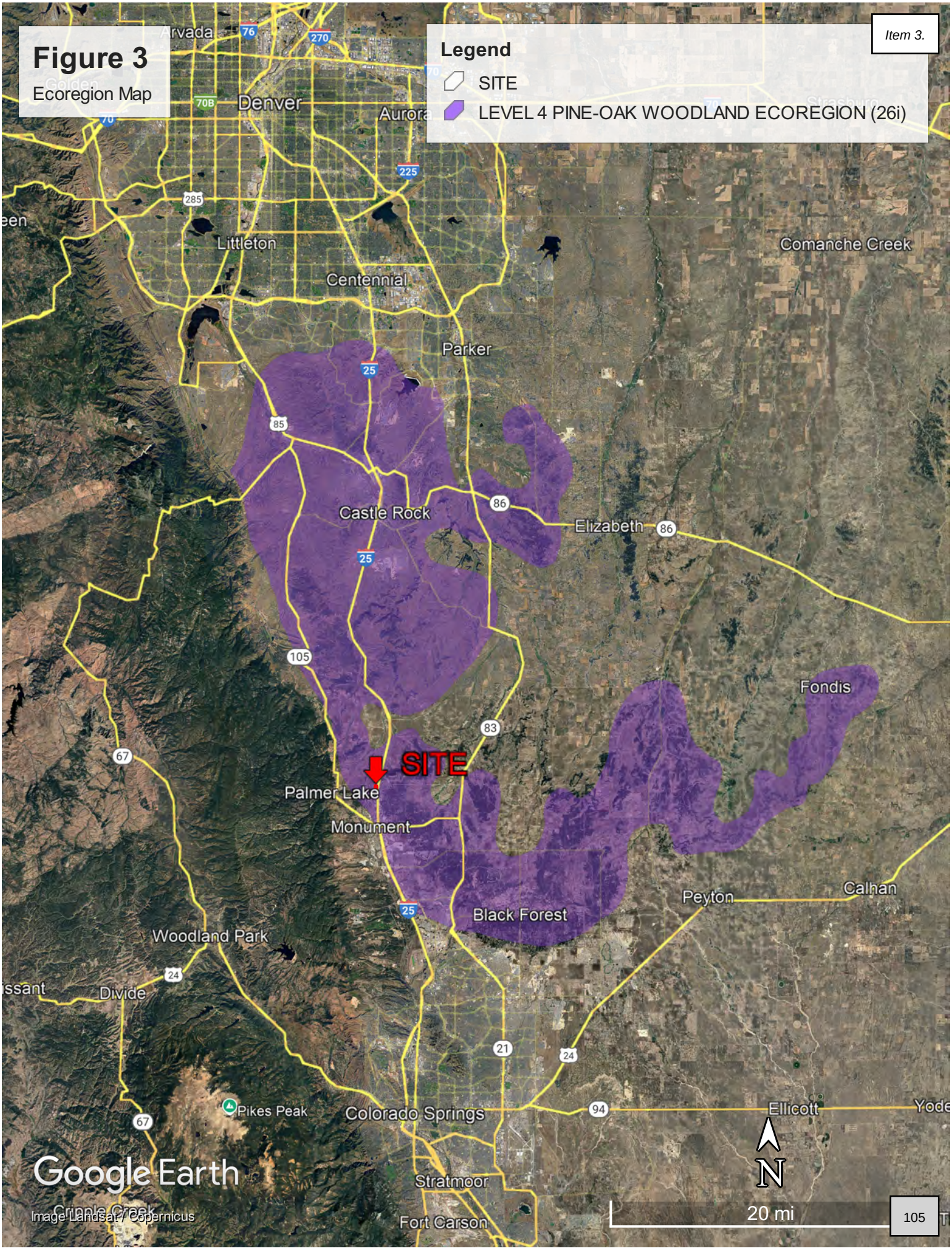


Figure 4

Vegetation Community Map

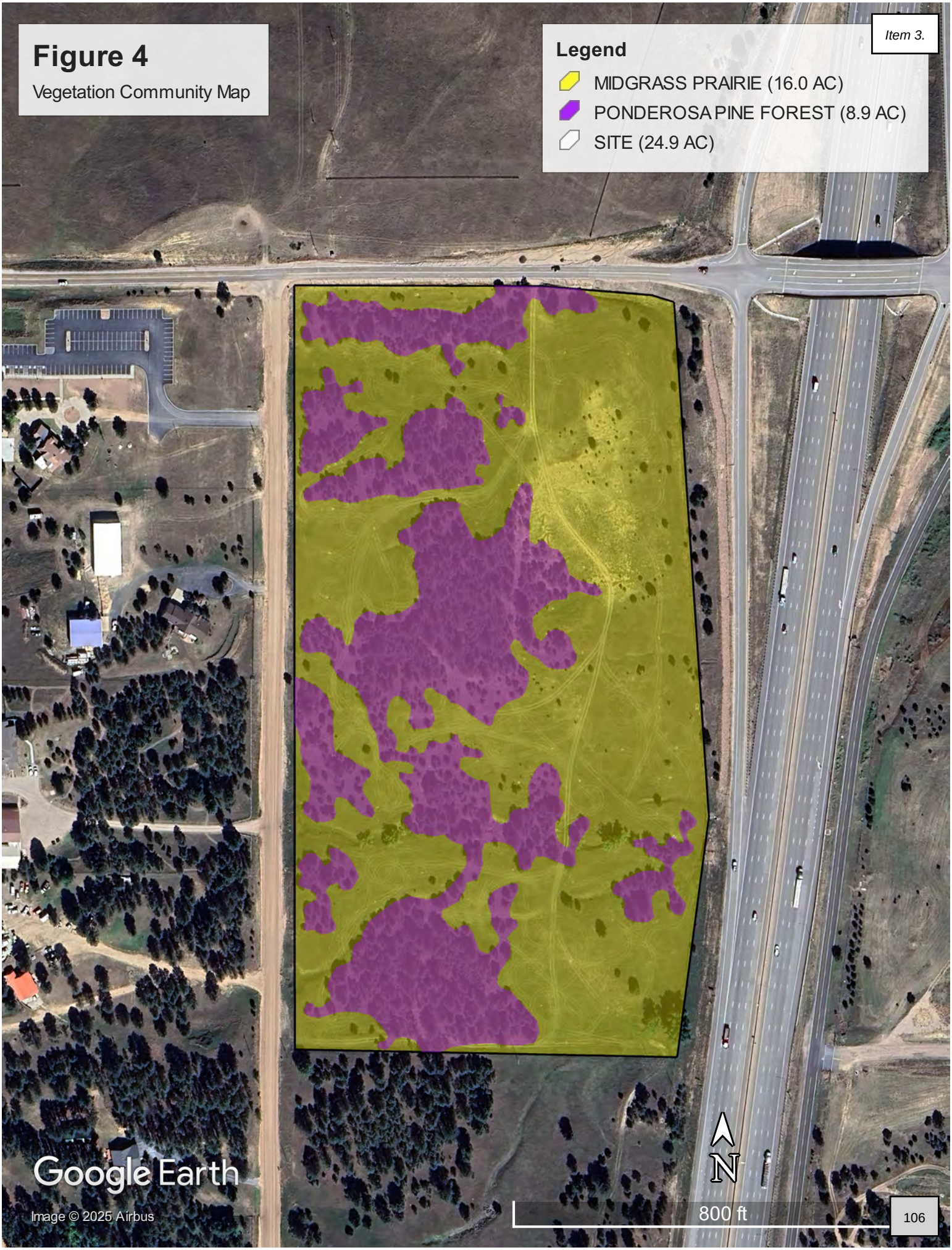
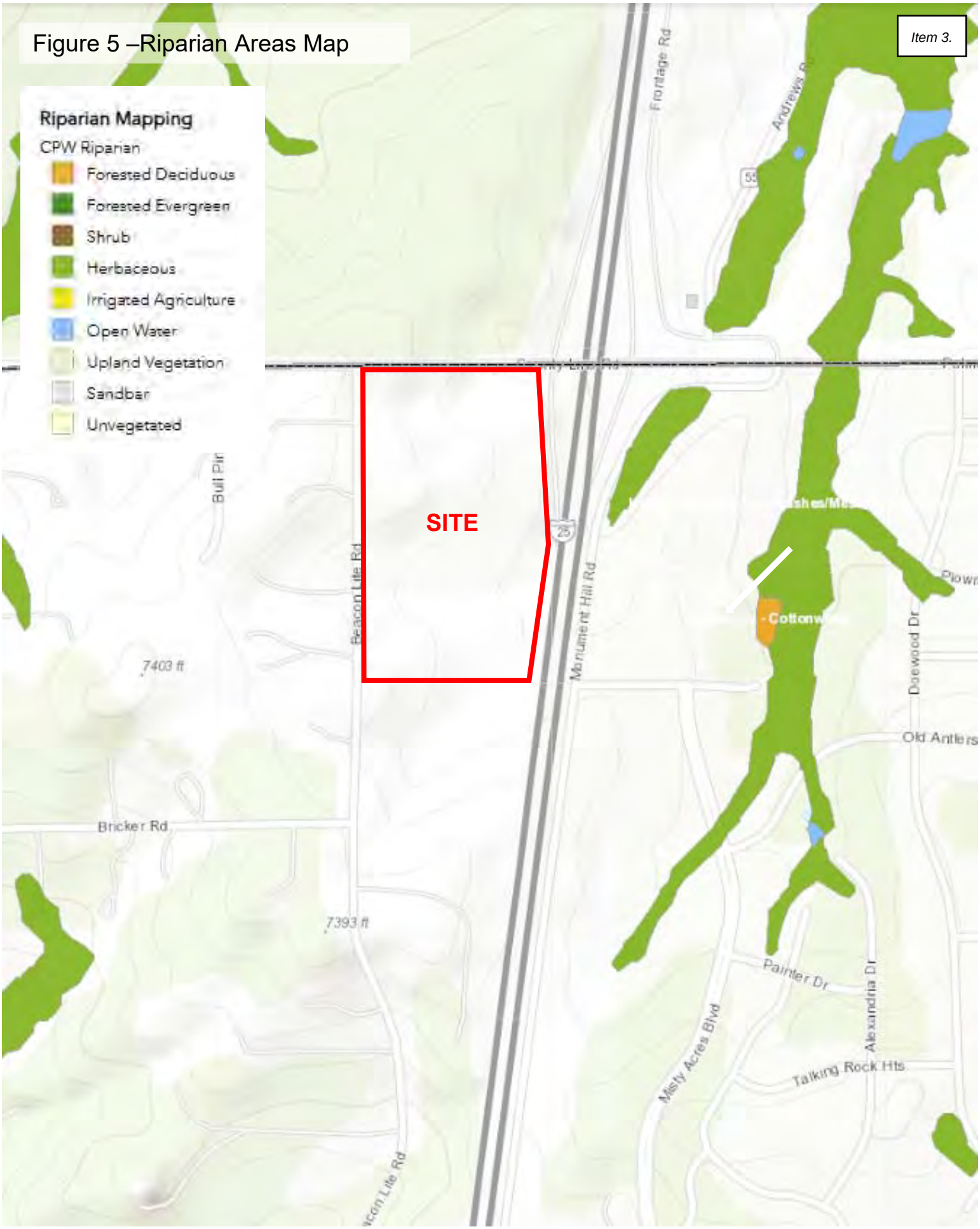
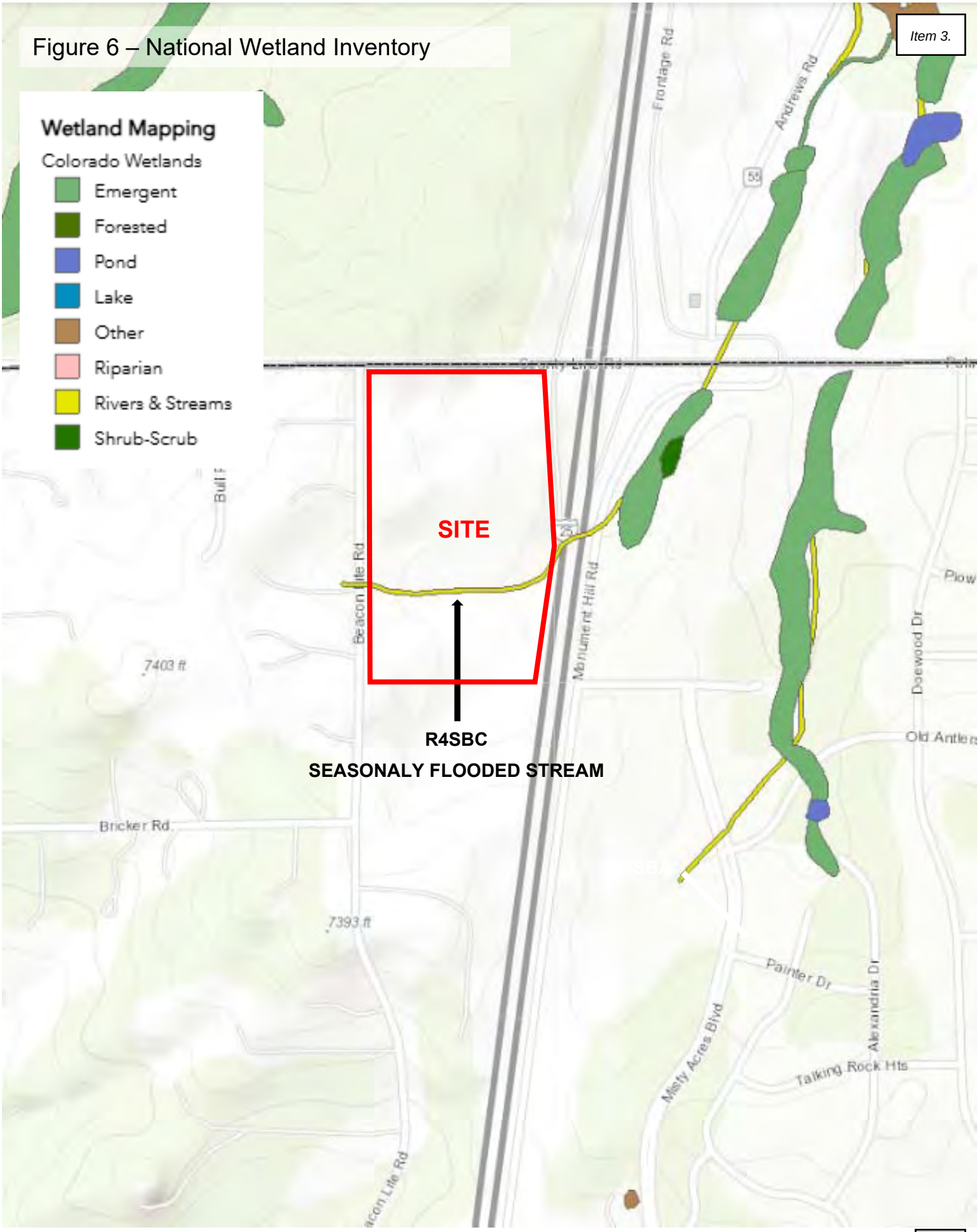


Figure 5 –Riparian Areas Map

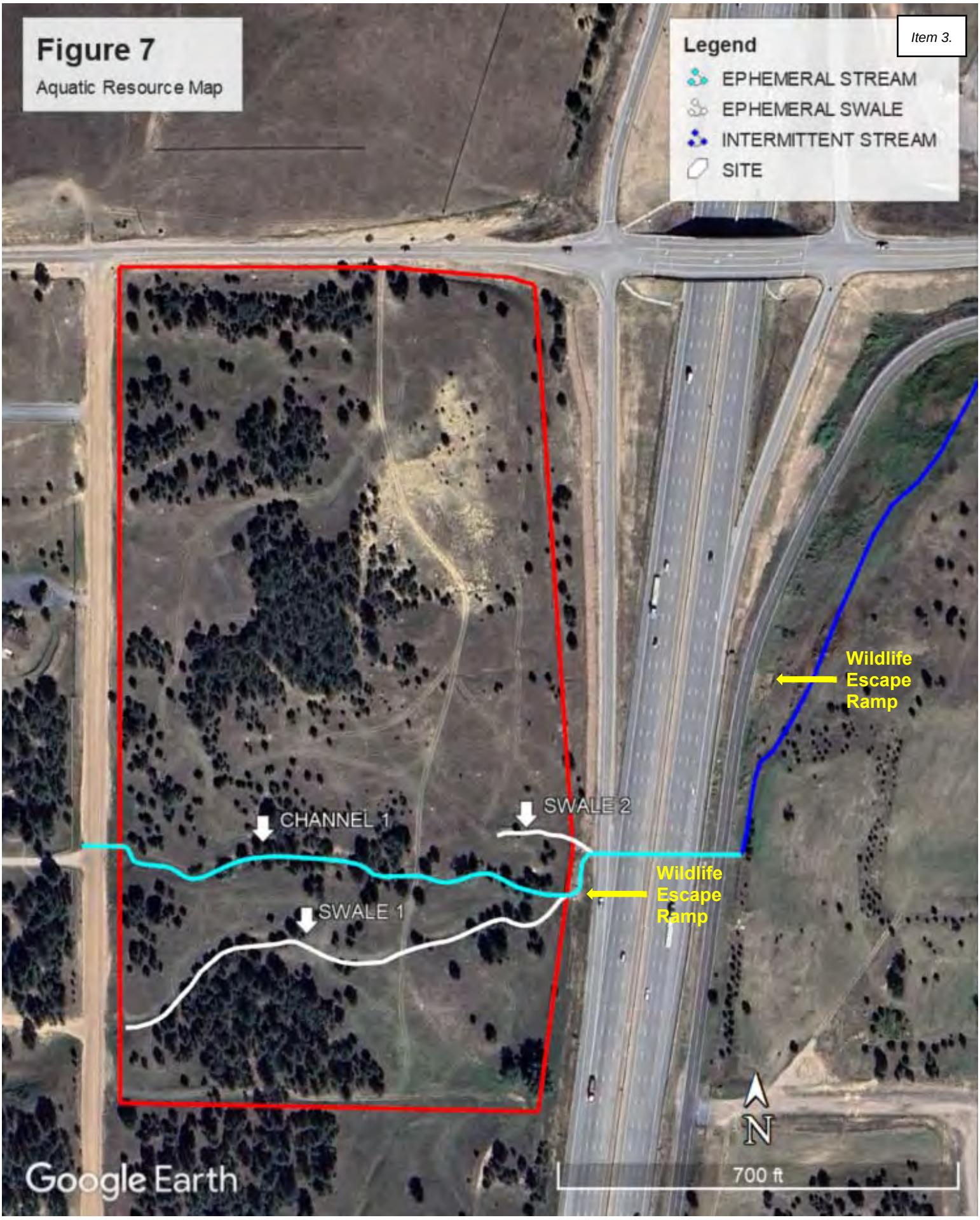


Source: Colorado Natural Heritage Program (CNHP) Wetland Mapper

Figure 6 – National Wetland Inventory



Source: CNHP Wetland Mapper / USFWS National Wetland Inventory (NWI)

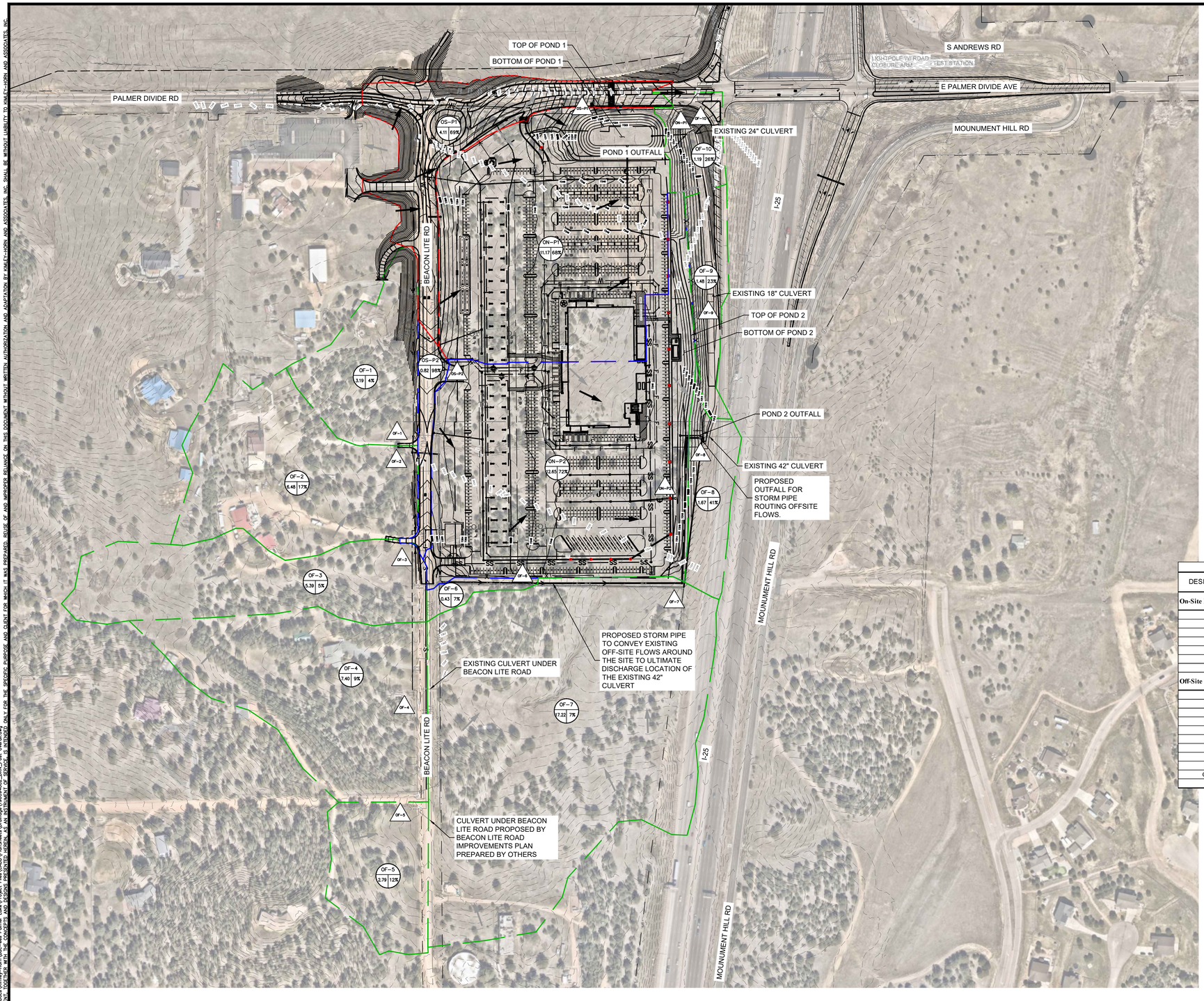


Source: Google Earth Aerial Imagery, 9/17/2024. Ecosystem Services, LLC Field Assessment, 3/24/2025

2.6 A statement of the proposed method for controlling architecture (17.72.130 and 17.76)

Architecture will be controlled by the property owner and will comply with the finally approved Development Plan, applicable Palmer Lake Regulations, and applicable building code regulations.

2.7 Generalized drainage plan



LEGEND

- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DRAINAGE BASIN BOUNDARY - POND 1
- DRAINAGE BASIN BOUNDARY - POND 2
- DRAINAGE BASIN BOUNDARY - OFFSITE
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING FIBER LINE
- EXISTING OVERHEAD ELECTRIC
- PROPOSED WATER LINE
- PROPOSED ELECTRIC LINE
- PROPOSED FIRE LINE
- A = BASIN DESIGNATION
  B = AREA IN ACRES
  C = IMPERVIOUSNESS
- DESIGN POINT DESIGNATION
- EXISTING FLOW ARROW
- PROPOSED FLOW ARROW
- TYPE C INLET
- FLARED END SECTION

RATIONAL CALCULATIONS SUMMARY

DESIGN POINT	TRIBUTARY BASINS	TRIBUTARY AREA (AC)	IMPERVIOUSNESS %	PEAK FLOWS (CFS) Q5	PEAK FLOWS (CFS) Q100
On-Site Basins					
P1	ON-P1	11.17	68%	21.07	55.90
P2	ON-P2	12.65	72%	25.99	67.17
P1	OS-P1	4.11	69%	8.11	21.29
P2	OS-P2	0.82	98%	2.60	5.95
POND 1		**15.28**	**68%**	**29.19**	**77.20**
POND 2		**13.47**	**74%**	**28.59**	**73.12**
TOTAL		**28.75**	**71%**	**57.77**	**150.32**
Off-Site Basins					
OFF-1	OFF-1	3.19	7%	0.51	5.49
OFF-2	OFF-2	6.48	17%	2.07	12.96
OFF-3	OFF-3	5.39	5%	0.60	8.02
OFF-4	OFF-4	7.40	9%	1.47	14.52
OFF-5	OFF-5	2.79	12%	0.73	6.10
OFF-6	OFF-6	0.48	6%	0.07	0.93
OFF-7	OFF-7	17.22	7%	2.82	29.67
OFF-8	OFF-8	1.67	41%	1.91	6.43
OFF-9	OFF-9	1.48	23%	0.88	4.13
OFF-10	OFF-10	1.19	26%	0.78	3.38
TOTAL		**47.28**	**11%**	**11.84**	**91.63**

NORTH

GRAPHIC SCALE IN FEET
0 75 150 300

NO.	DATE	BY	REVISION
1	07/08/2025	KEW	REVISION 1
	04/24/2025	KEW	1ST SUBMITTAL

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
POST OVERALL DRAINAGE MAP

SHEET
2

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THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

2.8 Water and sewer demand for projected uses

Water will be provided by the Town of Palmer Lake. The anticipated water demand for the proposed development has been analyzed in the “Preliminary Engineering Report, Town of Palmer Lake, Water Systems Improvements for Proposed Buc’ees Travel Center” prepared by GMS, Inc. Consulting Engineers (Addendum 6).

Wastewater will be provided by the Monument Sanitation District. The property is located within the boundaries of the Monument Sanitation District, therefore, the District is obligated to provide sanitary sewer service pursuant to Statute. The specific terms for extending sanitary sewer lines to the property will be negotiated with the Monument Sanitation District.

The anticipated water and sewer demands are:

WATER DEMAND	37,300 GPD
SEWER DEMAND	51-93 GPM

NOTE: Anticipated water and sewer demand has been calculated utilizing the Monument Sanitation District standards.

2.9 Water Supply

Water will be provided by the Town of Palmer Lake. The Town retained a third party, GMS Inc. Consulting Engineers, to prepare a water resources report which will analyze the existing Town water supply and infrastructure and if any necessary improvement are required in order for the Town to supply water to the proposed development (Addendum 6). The specific terms and obligations for connecting to Town water are included in the negotiated Annexation Agreement.

2.10 Traffic Impact Analysis

The Town has retained Stolfus Engineering to prepare a Traffic Impact Analysis. A separate Traffic Impact Analysis has been prepared by Kimley Horn. Both reports have been reviewed and adopted by the TOPL and referral agencies. See addendum 4.

Further platting and construction-related issues will be resolved during the submission of the Preliminary Plat and Final Plat. Once approved, construction documents will follow.

2.11 Statement regarding how development will be served and fiscal impacts

Mountain View Electric Association will provide electricity to the site. Black Hills Energy will provide natural gas service. Monument Sanitation District will provide sanitary sewer service. Water will be provided by the Town of Palmer Lake.

Emergency response will be provided by Tri-Lakes Monument Fire District, Palmer Lake Fire, and Palmer Lake Police.

The Town of Palmer Lake retained Economic & Planning Systems, Inc. for preparation of a fiscal impact analysis. The fiscal impact analysis is included as Addendum 5.

2.12 Maintenance Provisions and Plan (17.72.080)

All maintenance shall be the responsibility of the sole private property owner.

ARTICLE 3: PLANNED DEVELOPMENT DISTRICT ENTITLEMENTS BY PLANNING AREA

The Planned Development District proposes one planning area and will not include multiple planning areas. The zone designation is intended to create dimensional standards, site design standards (landscaping, parking, signs etc.) different than adopted in the Town's Land Use regulations, as outlined below.

3.1 Minor Modification to Planning Area Boundaries.

The precise building, parking, access, and landscaping locations and design shall be established by Final Development Plans. Minor modifications by the Developer/Owner or his/her designee from the boundaries shown on the map may occur in connection with an application for a Final Development Plan, without requiring any amendment to this Planned Development Plan, provided that the total impervious acreage is not increased or decreased by more than 10%. If such change is made, the Property Owner or his/her designee shall submit to the Town Administrator or his/her designee a revised Entitlement Map indicating which area(s) have increased in size and which area(s) have decreased in size. The Town Administrator or his/her designee shall cause such revised Entitlements Map to be recorded promptly in the real property records of El Paso County, Colorado.

3.2 Transfer of Density among Planning Areas

This section is not applicable, as only one planning area is proposed.

ARTICLE 4: PLANNED DEVELOPMENT PLAN ZONE DISTRICTS (17.72.020)

4.1 Uses Within Zone District (17.72.060)

4.1.1 Principal Uses (permitted by right)
- Travel center

4.1.2 Accessory Uses (permitted by right)
- Fueling stations
- Air water services
- EV charger
- Outdoor sales
  - Need not be screened from view

4.1.3 Conditional Uses (requiring approval)

No conditional uses are permitted.

4.1.4 Temporary Uses

Temporary uses allowed under Town Code are permitted.

4.2 Zone District Created

Only one zone district area is being created.

4.3 Development Standards

In accordance with Town of Palmer Lake Zoning Ordinance Chapter 17.72 and C.R.S Section 24-67-101 et seq., as amended, this Planned Development District accommodates an innovative pattern of development permitting development standards, dimensional requirements and/or uses that may be different from or modifications of requirements otherwise applicable by reason of any zoning or subdivision regulation. In the event of any conflict between the Town Zoning Ordinance or Subdivision Regulations and the final, approved Planned Development Plan (PDP) and Final Development Plan (FDP), the development standards, dimensional requirements, uses and/or other standards and requirements shall be allowed as set forth in the PDP and FDP.

Application of Density and Dimensional Standards

- Measuring Setbacks
  - Setbacks are measured from the property line, unless noted otherwise.
- Accessory Structure Not Located in Easement
  - An accessory structure shall not be located within an easement, unless express permission from the beneficiary of the easement is provided.

- Minimum Lot Size: 23 acres
- Maximum Lot Coverage: 80 percent
- Encroachments

  The following may encroach into the setback requirement:
  - Utility buildings or facilities owned by a governmental, quasi-governmental or public entity
  - Lift station
  - Open and unenclosed patios, decks, platforms, landings or ramps
  - Structures under 120 SF
  - Utility distribution lines and related equipment commonly located along property lines.
  - Mailboxes
  - Signs or entryway features
  - Public art
  - Landscaping features

- Stormwater and water quality features
- Retaining walls
- Bike parking and plaza
- Fencing
- Lights

4.4 Compliance with the Stormwater Quality Control Ordinance (AKA 17.68. Hillside Overlay District)

The Development shall be in full compliance with Town Municipal Code Section 17.68. Hillside Overlay District.

ARTICLE 5: DIMENSIONAL STANDARDS (17.72.050)

In accordance with Town of Palmer Lake Zoning Ordinance Chapter 17.72 and C.R.S Section 24-67-101 et seq., as amended, this Planned Development District accommodates an innovative pattern of development permitting development standards, dimensional requirements and/or uses that may be different from or modifications of requirements otherwise applicable by reason of any zoning or subdivision regulation. In the event of any conflict between the Town Zoning Ordinance or Subdivision Regulations and the final, approved Planned Development Plan (PDP) and Final Development Plan (FDP), the development standards, dimensional requirements, uses and/or other standards and requirements shall be allowed as set forth in the PDP and FDP.

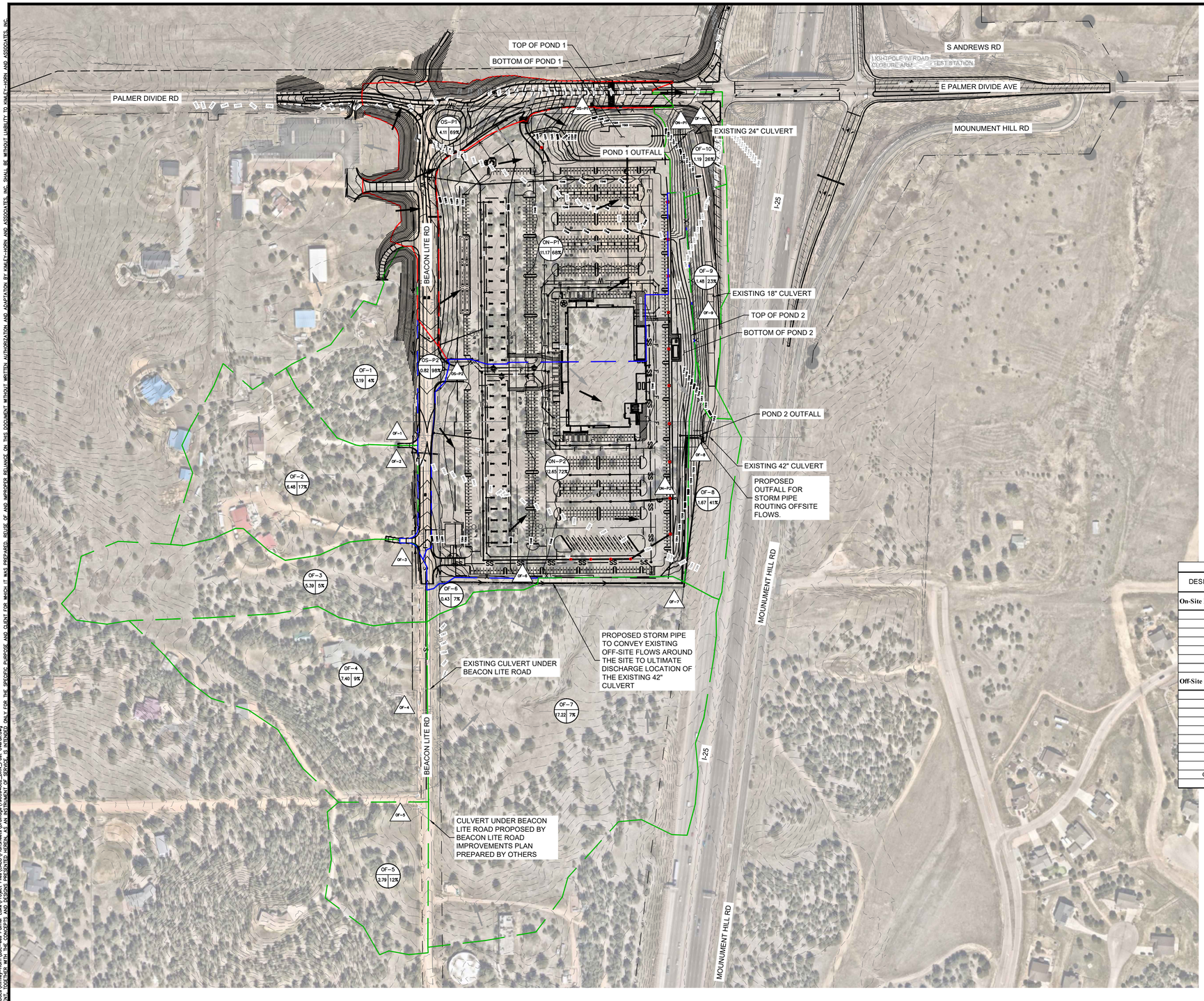
- Maximum Height: 40 feet
- Setbacks (17.72.070)
  - Structure Setback Requirements
    - Front: 25 feet
    - Side: 25 feet
    - Rear: 25 feet
    - Any permitted encroachments (e.g. structures under 120 SF)
    - Note: Items included under 4.3 “Encroachments” above are not subject to structure setback requirements.
- Buffering, screening per PD Code (see 17.72.070)
  - A landscape setback
    - North: 50 feet
    - South: 25 feet
    - East: 50 feet
    - West: 50 feet
  - Encroachments

    The following may encroach into the landscape setback requirement:

        - Utility buildings or facilities owned by a governmental, quasi-governmental or public entity
        - Lift station
        - Open and unenclosed patios, decks, platforms, landings or ramps
        - Structures under 120 SF
        - Utility distribution lines and related equipment commonly located along property lines.
        - Mailboxes
        - Signs or entryway features
        - Public art
        - Landscaping features
        - Stormwater and water quality features
        - Retaining walls
        - Bike parking and plaza
        - Fencing
        - Lights
- Loading
    - Two (2) off-street loading/unloading areas are required per 74,000-square feet of retail building. Each loading/unloading area is to be a minimum of 600-square feet (12 feet by 50 feet) in size.

ARTICLE 6: SUBSTANTIVE LAND USE PROVISIONS AND STANDARDS

Drainage Map



LEGEND

- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- DRAINAGE BASIN BOUNDARY - POND 1
- DRAINAGE BASIN BOUNDARY - POND 2
- DRAINAGE BASIN BOUNDARY - OFFSITE
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING FIBER LINE
- EXISTING OVERHEAD ELECTRIC
- PROPOSED WATER LINE
- PROPOSED ELECTRIC LINE
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0 75 150 300

NO.	REVISION	BY	DATE
1	1ST SUBMITTAL	KEW	04/24/2025
2	REVISION 1	KEW	07/08/2025

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
POST OVERALL DRAINAGE MAP

SHEET
2

C:\ACV\ACDocs\Kimley-Horn\Buc-ees Palmer Lake\Project Files\CADD\PlanSheets\Drainage\V1960400Z_DRN_Post_Overall.dwg
THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

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6.1 Lighting Standards

Unless exempt, the lighting provisions shall apply to all exterior light fixtures.

- Prohibited Lighting
  Unless exempted, the following are prohibited:
  - The lighting of any light fixtures that do not meet the lighting standards set forth.
  - Searchlights.
  - Laser Lights.
  - Lights not approved in any town-approved lighting plan.
- Exemptions
  The lighting standards shall not apply to the following:
  - Emergency lighting.
  - Holiday lighting.
  - Lighting of national, state, or local flags .
  - Lighting of signs in accordance with the requirements of Palmer Lake.

<u>Lighting Standards</u>

- Light fixtures must be full cut off, shielded, and downcast fixtures.
- Light from any property shall not cause light trespass into residential properties. Light illuminance levels at the property line shall be 0.0 foot-candles except for entry and exit locations where lighting levels shall not exceed 7 foot candles.
- No prohibited bulbs as defined in this chapter may be lit.
- Yellow light sources such as high-pressure sodium, phosphor-converted amber light emitting diode, low-pressure sodium, narrow-band amber bulbs are required.
- <u>Site Light Illuminance Levels</u>

- Fuel Canopy light levels under the canopy shall have a maximum level of illuminance of forty (40).
- Drive Aisle light levels shall range from two (2) minimum to eighteen (18) maximum illuminance.

- Security Lighting
  Security lighting must be directed downward toward designated areas and use the lowest possible illumination to effectively allow surveillance. The use of motion sensors, timers, photocells or other means to activate lighting during times when it is needed is encouraged to conserve energy and provide safety and promote compatibility between different land uses.

6.2 Parking Requirements

- Parking Ratio: 1 parking stall per every 100-square feet of travel center building (minimum)
- Parking Space Dimensions: minimum parking stall size is nine-feet (9') wide by nineteen-feet (19') long
- ADA Requirements: Must meet minimum state and federal requirements
- Loading Requirements: Two (2) off-street loading/unloading areas are required per 74,000-square feet of retail building. Each loading/unloading area is to be a minimum of 600-square feet (12 feet by 50 feet) in size.
- Drive Aisle Width: minimum of 26 feet
- Bicycle Parking: minimum of 10 bike stalls

6.3 Development in Phases

The proposed development is not phased and will be constructed in one single phase.

6.4 Signage

<u>General Provisions and Restrictions</u>

- Compliance required
  It is unlawful to display, construct, erect, alter, use, or maintain any sign, except in conformance with the provisions of this title. It is unlawful to alter, maintain, enlarge, use, or display any such sign erected or constructed before the enactment of this chapter, except in conformance with the provisions herein set forth.
- Sign permit required
  All non-exempt signs must receive a sign permit.
- Owner consent
  No sign shall be placed on private property without the written consent of the property owner or the owner's authorized agent. This applies to permitted signs as well as temporary and exempt signs.
- Sign installation
  All signs shall be structurally sound and designed to resist any and all code-specified gravity and lateral loads. Sign structures and sign faces shall be installed in compliance with all building and electrical codes.
- Signs along Interstate 25
  It is the responsibility of the property owner and applicant to determine the CDOT regulations as they apply to the property and ensure compliance with those regulations.
- Sign maintenance

The owner of the sign and the owner of the premises on which the sign is located shall be jointly liable to maintain the sign, including any illumination. Signs shall be kept painted, in good repair, and in compliance with all building and electrical codes including supporting structures. Banners shall not be torn. Repairs to signs shall be of an equal or better quality of materials and design as the original sign. The town may inspect any sign and order the painting, repair, alteration, or removal of a hazardous sign. Except in cases of health or safety hazards, which shall be addressed immediately, the sign owner and/or owner of the premises shall have 30 days to comply with the maintenance orders or the sign shall be removed at the owner's expense. Should the owner fail to remedy a health or safety hazard, the town may, in its sole discretion, abate the health or safety hazard and bill the owner of the sign and/or the owner of the premises for such abatement.

Prohibited Signs

The following signs are prohibited:

- Animated signs.
- Flashing signs.
- Searchlights and revolving beacons.
- Any sign that is erected in such a location as to cause visual obstruction or interference with motor vehicle traffic, pedestrian traffic, or traffic-control devices, including any sign that obstructs clear vision in any direction from any street intersection or driveway.
- Any sign located in such a way as to substantially deny an adjoining property owner's visual access to an existing sign.
- Any sign with light sources that are not shielded such that the bulbs, floodlights, or tubes are visible off the property on which the sign is located.
- Any projected image sign emitting a sound or virtually projected image onto a surface.
- Any sign which interferes with the free passage from or obstructs any fire escape, downspout, window, door, stairway, ladder, or opening intended as a means of ingress or egress or window or opening providing light or air.
- Unsafe signs as defined as any sign or sign structure which:
    - Is structurally unsafe.
    - Constitutes a hazard to safety or health because of inadequate maintenance or dilapidation.
    - Is not kept in good repair.
    - Is not designed or constructed in a professional manner.
    - Is capable of causing electrical shocks to persons likely to come in contact with it.

    - Presents a danger to the health, safety, or welfare of the town or its citizens.
    - Obstructs a driver's view or line of sight; or on public right-of-way without proper authorization from the Town of Palmer Lake or CDOT.
- Exterior neon signs.
- Signs using reflective surfaces are prohibited except for official government or traffic signs.

Exempt Signs

- Flags of any state, nation, or government including service flags, if the latter is flown in conjunction with any of the preceding flags.
- Official Town of Palmer Lake, El Paso County, State of Colorado, or federal government/traffic signs.
- Signs not legible or visible from a public right-of-way or adjacent property.
- Commemorative plaques.
- Displayed merchandise shall not be considered a sign.
- Street numbers.
- Informational signs indicating as a courtesy (e.g. "credit cards accepted," hours, open/closed, retail vehicle fuel price, or similar.)
- Building directory signs.
- Public notices or signs related to an emergency or hazard.
- Temporary signs.

Sign Permit Required

No sign, except for those exempt signs which do not require a sign permit, shall be erected, re-erected, relocated, replaced, expanded or altered, without first securing a sign permit from Palmer Lake.

Sign Illumination

Unless otherwise specified by these regulations, all permanent signs may be illuminated consistent with the exterior lighting standards of the Planned Development and the approved lighting plan.

General Design Standards

Signs shall be designed and constructed in keeping with industry standards by a licensed sign company. Signs shall be located and sized to be viewed by motorists and not impair visibility for traffic movement and shall not impede drainage or snow storage.

Sign Measurement and Sign Orientation

Sign measure shall be based on the designed shape and provided with the sign application. The orientation of the signage shall be based on sign type and is specified for each below.

Freestanding / Pylon Sign

- Setback: Signage shall be placed as graphically depicted in the Planned Development Plan.
- Height: Overall height shall not exceed one-hundred feet (100-ft)
- Sign area: Maximum sign area is 575-sf. Sign shall consist of one (1) twenty-four foot (24') diameter circular logo and one (1) five-foot (5') by twenty-four foot (24') rectangular city name cabinet.
- Number allowed: one (1)

Directional Signage

All direction signage shall confirm with Manual on Uniform Traffic Control Devices (MUTCD) and Colorado Department of Transportation standards.

Wall Signage

Wall Signage shall be surface mounted and not protrude more than twelve inches (12") off the finished wall façade.

- Maximum wall sign square footage for each building is one and a half square feet (1.5-sqft) per linear foot of exterior wall elevation.
- All signage shall be placed so that it does not interfere with pedestrian and vehicular sightlines.

Canopy Signs

- Canopy Logo/Trademark Signage shall consist of one (1) fifty-two square feet (52-sqft) logo sign for each side of each fuel canopy.
- Canopy Specialty Fuel Signage may be used to identify fuel bays that offer specialty fuels and dispensed products such as ethanol free, diesel emission fluid (DEF), etc. This type of signage must be surface mounted to the canopy and be no larger than twelve square feet (12 sqft).

Window/Door Signage

Window/door signage shall be prohibited, save and except any notices required by law.

6.5 Landscaping, Buffering, Screening Per PD Code (see 17.72.070)

Landscaping / Irrigation Parking Lot Interior Landscaping

- One parking lot island is required per 15 parking spaces not located immediately adjacent to the building. One parking lot island is required per 18 parking spaces for parking provided immediately adjacent to the building. Parking lot islands include peninsulas on the edge of the parking lot.
- Parking lot islands will have a minimum width of 6 feet.
- A minimum of one tree shall be located at each parking lot island (excluding parking spaces directly adjacent to the building, see below).
- Trees and parking lot light poles may share the same island. The electrical engineer and landscape architect will coordinate the layout of trees and light poles to meet safety standards and maximize light coverage with tree canopies.
- Parking lot islands adjacent to the building are not required to be softscape.
- Parking lot islands adjacent to the building may prioritize hardscapes over plant materials to better facilitate pedestrian circulation and to minimize interference with utilities and building / fueling operations.
- Parking lot islands will utilize aggregate as ground cover when possible. This is to reduce the dependence on irrigation. Parking lot islands may be enhanced with plant material when it is determined by the developer that sight lines are not blocked and that maintenance and water use is not unnecessarily increased.
- Flagstone may be used as informal walkways within parking lot islands to reduce damage to plant material and irrigation.

Parking Lot Perimeter Landscaping

Interstate 25 Frontage

- Trees will be located along the perimeter of parking lot at a rate of 4 trees per 20 spaces.
- Shrubs will be located along the perimeter of the parking lots to help reduce the glare from headlights toward adjacent streets and abutting properties.
    - 10 shrubs will be provided for every 10 parking spaces on the perimeter of the parking lot.
    - Mounding may be used in place of shrubs. Mounding will be positioned and sized appropriately by the civil engineer and landscape architect based upon screening needs as well as drainage.
- The landscape architect will use best practices to locate, group and space parking lot perimeter trees and shrubs.

County Line / Palmer Divide Road / Beacon Lite Road

The following requirements apply to frontages and abutting properties for County Line, Palmer Divide, and Beacon Lite roadways:

- Trees will be located along the perimeter of parking lots at a rate of 4 trees per 20 spaces.
- Shrubs will be located along the perimeter of the parking lots to help reduce the glare from headlights toward adjacent streets and abutting properties.
    - 10 shrubs will be provided for every 10 parking spaces on the perimeter of the parking lot.
    - Mounding may be used in place of shrubs. Mounding will be positioned and sized appropriately by the civil engineer and landscape architect based upon screening needs as well as drainage.
    - 6’ tall decorative fences or walls may be used in place of shrubs.
- The landscape architect will use best practices to locate, group and space parking lot perimeter trees and shrubs.

<u>Landscape Buffers</u>

- Landscape Setback
    - A landscape setback
        - North: 50 feet
        - South: 25 feet
        - East: 50 feet
        - West: 50 feet
    - Encroachments

      The following may encroach into the landscape setback requirement:
        - Utility buildings or facilities owned by a governmental, quasi-governmental or public entity
        - Lift station
        - Open and unenclosed patios, decks, platforms, landings or ramps
        - Structures under 120 SF
        - Utility distribution lines and related equipment commonly located along property lines.
        - Mailboxes
        - Signs or entryway features
        - Public art
        - Landscaping features

- Stormwater and water quality features
- Retaining walls
- Bike parking and plaza
- Fencing
- Lights

Foundation Plantings

- No foundation plantings will be required.
- Areas adjacent to the building will be reserved for hardscapes to better facilitate pedestrian circulation and to minimize interference with utilities and building / fueling operations.

Turf Grass

- A manicured sod (native or adaptive) may be used in the areas near where pedestrians are typically found and interact with the site. Sod will also be used on slopes that exceed 1:5, such as the sides of storm water ponds.
- Native grasses or wildflowers (prairie aesthetic) may be used in areas further away from where pedestrians are typically found and interact with the site.
    - Native grasses and wildflowers may be installed by spreading seed (hydro mulch or broadcast seeding) or installing sod.
    - Because grass and wildflowers that are intended to create a prairie aesthetic typically need little to no irrigation after establishment, above ground temporary irrigation may be used in these areas.

Existing Plant Materials

Any existing plant materials that are preserved may be used and count toward any of the required plant materials.

Plant Sizes (minimum allowable)

- Shade trees (deciduous): 3.5” minimum caliper
- Evergreen (coniferous):6’ height
- Shrubs: 3 gallon container stock or B&B equivalent
- Ground covers: 1 gallon container stock or B&B equivalent

Miscellaneous Items

- If during the planning/design process a conflict occurs between proposed landscaping and proposed utilities, the utilities will prevail.
- Mulches for plants may be inorganic or organic natural materials.

Allowable Plant Materials

The landscape architect will use best practices and professional judgment to decide the most appropriate plant materials for the project. Factors that will be used to determine the most appropriate plants are:

- Native or adaptive plants to Palmer Lake Colorado and the surrounding area and ecosystems.
- Xeriscaping principles
- Sun exposure
- Drought tolerance
- Design characteristics
- Maintenance requirements
- Height and spread
- Diversity
- Soil conditions
- Drainage patterns

Irrigation

Irrigation will be designed to be a below grade, automatic, highly efficient system. Techniques and equipment to be used are:

- Smart controllers
- Drip irrigation
- Flow sensors
- Pressure regulation
- Hydro zoning

Temporary above ground irrigation may be used in areas that are planted with native grasses and/or wildflowers and intended to have a prairie aesthetic.

- Temporary irrigation will be supplied from a temporary meter on a fire hydrant and will be removed after establishment is completed.

6.6 *Fencing, Walls, Hedges*

No Obstruction of View of Vehicle Operators

No fence, wall, or hedge may obstruct the view of vehicle operators entering or leaving any parking area, service drive, driveway, road, alley, or other thoroughfare. Fences, walls and hedges are subject to the sight distance.

Measuring the Height of a Fence

The height of fences, walls, and hedges shall be measured from the final grade of the lot, parcel, or tract at the location of the fence, wall, or hedge to the top of the fence, wall, or hedge. The top of a fence, wall, or hedge is the highest component of the fence, wall, or hedge, not including columns or posts. The depth of drainage channels under a fence, wall, or hedge shall not be included in the height measurement. The height of a fence, wall, or hedge built on berms or retaining walls shall include the height of the berm or wall.

Fencing Maintenance

Fences, walls or hedges shall be maintained in good structural or living condition. The owner is responsible for the repair or removal of a fence, wall or hedge, which constitutes a safety hazard, by reason of inadequate maintenance, dilapidation, obsolescence or abandonment, or which constitutes a zoning violation.

Height and Location Standards

The following requirements are applicable to all fences and walls except agricultural fences:

- Building Permit Required for Fences and Walls Over 7 feet in Height. A fence or wall over 7 feet in height requires a building permit from the Building Department.
- Building Permit Required for Retaining Walls. A building permit is required for a retaining wall that retains a surcharge or exceeding 4 Feet High.
- Fences and Walls Not to Disrupt Drainage. The fence and wall shall not be established where it would impede the drainage established by an approved drainage plan.
- Fences and Walls Not to Disrupt Use of Easement. The fence or wall shall not be established within an easement in a manner where the use of the easement is unnecessarily impeded
- Opaque Fence Height Limited in Sight Triangle. An opaque fence, wall or hedge shall not exceed 30 inches in height when located within a sight distance triangle

6.7 Stormwater management (MS 4 and Hillside Overlay see 17.68)

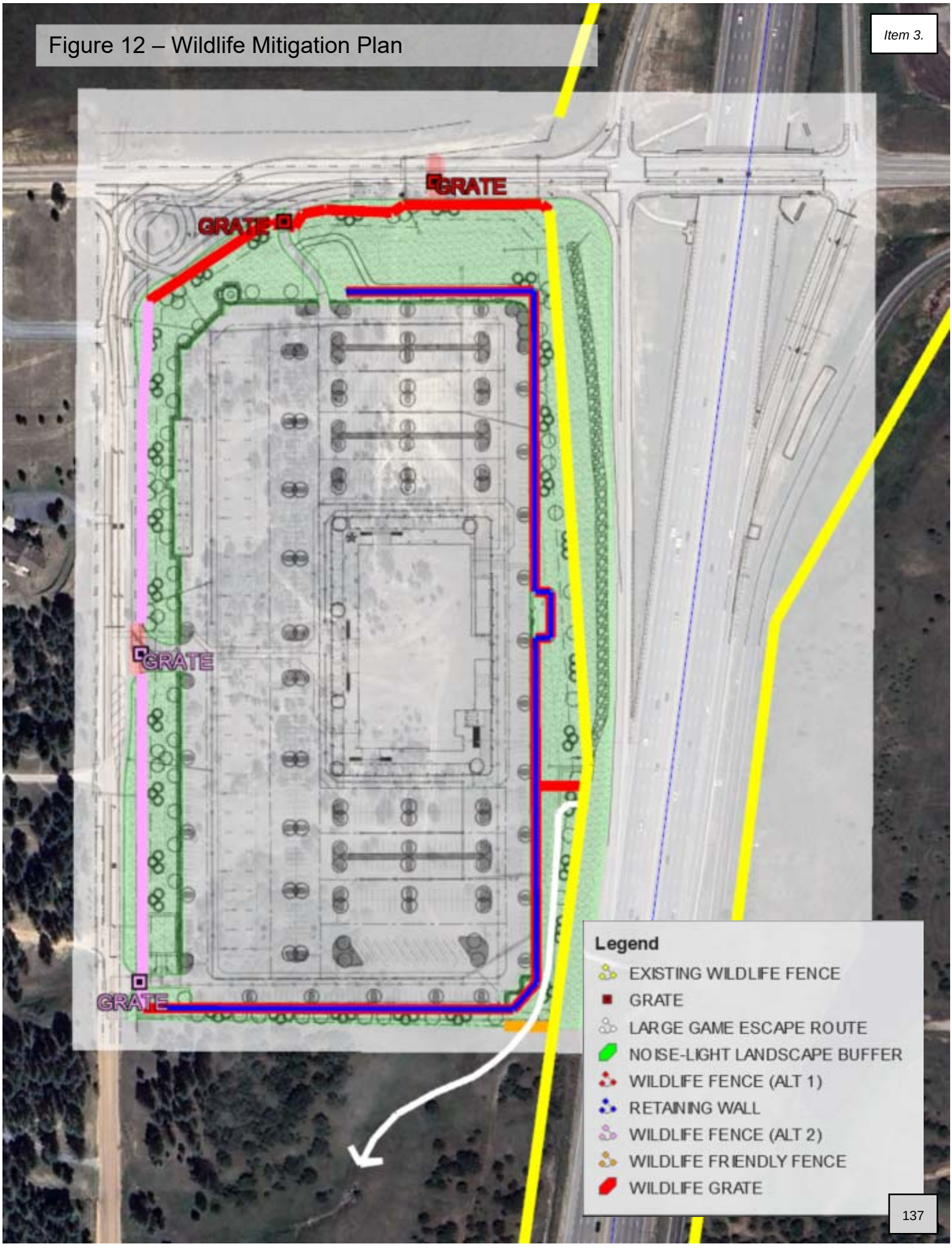
The development shall comply with the Hillside Overlay and the Town's MS4 Permit.

6.8 Wildlife Enhancement, Mitigation, and Management Commitments

The Ecological Assessment prepared by ECOS Ecosystem Services, LLC, identified that there are no significant natural features or sensitive habitat the needs to be preserved pursuant to US Fish and Wildlife or the Colorado Division of Wildlife standards. In addition, the report has been reviewed and discussed with Colorado Parks and Wildlife as well as the Environmental Manager of the Colorado Department of Transportation Region 2 Office, and both entities have concurred with the conclusions of Ecological Assessment. The Ecological Assessment has been included as Addendum 3. The Wildlife Mitigation Plan has been included an exhibit below.

Wildlife Mitigation Plan

Figure 12 – Wildlife Mitigation Plan



6.9 Fire Protection

Fire Protection will be provided by Monument Fire and Palmer Lake Fire. The property will not be disconnected from Monument Fire and will receive dual service from both Monument Fire and Palmer Lake Fire. Mills will be paid to both Fire Protection agencies.

ARTICLE 7.0: WATER AND WASTEWATER

Water will be provided by the Town of Palmer Lake. The Town retained a third party, GMS Inc. Consulting Engineers, to prepare a water resources report which will analyze the existing Town water supply and infrastructure and if any necessary improvement are required in order for the Town to supply water to the proposed development. The specific terms and obligations for connecting to Town water are included in the negotiated Annexation Agreement. The GMS Inc. Report has been included as addendum 6.

Wastewater will be provided by the Monument Sanitation District. The property is located within the boundaries of the Monument Sanitation District, therefore, the District is obligated to provide sanitary sewer service pursuant to Statute. The specific terms for extending sanitary sewer lines to the property will be negotiated with the Monument Sanitation District.

ARTICLE 8: PARKS, OPEN SPACE, TRAILS (17.72.170)

In accordance with Town of Palmer Lake Zoning Ordinance Chapter 17.72 and C.R.S Section 24-67-101 et seq., as amended, this Planned Development District accommodates an innovative pattern of development permitting development standards, dimensional requirements and/or uses that may be different from or modifications of requirements otherwise applicable by reason of any zoning or subdivision regulation. In the event of any conflict between the Town Zoning Ordinance or Subdivision Regulations and the final, approved Planned Development Plan (PDP) and Final Development Plan (FDP), the development standards, dimensional requirements, uses and/or other standards and requirements shall be allowed as set forth in the PDP and FDP.

The Planned Development Plan depicts open space throughout the travel center site in an amount that is sufficient to meet the Town’s open space requirement. In addition,

the associated annexation agreement identifies that the applicant agrees to also pay fees to the Town to support public uses or capital improvements within the Town. The land provided and the fees paid will satisfy both the Planned Development and Subdivision open space requirements.

ARTICLE 9: ENGINEERING ROADWAY DESIGN STANDARDS

There are no roadways included internal to the Development. The internal driveways and parking lots will be owned and maintained by the property owner. Improvements to Beacon Lite Road and County Line Road are necessary to mitigate traffic impacts. These improvements will be constructed with the development pursuant to the Town Code, El Paso County Engineering Criteria Manual, and Colorado Department of Transportation standards, as applicable.

ARTICLE 10: GENERAL PROVISIONS

Recording

The Planned Development Written Plan and Map shall be recorded with the El Paso County Clerk and Recorder following the approval of the Board of Trustees at a public hearing.

Vested Property Rights (Sections 24-68-101, et seq., C.R.S., “the Vested Rights Statute,” and Town Code)

The Planned Development establishes a vested property right pursuant to Section 24-68-101, et seq., C.R.S.

BUC-EE'S PALMER LAKE
SKETCH PLAN

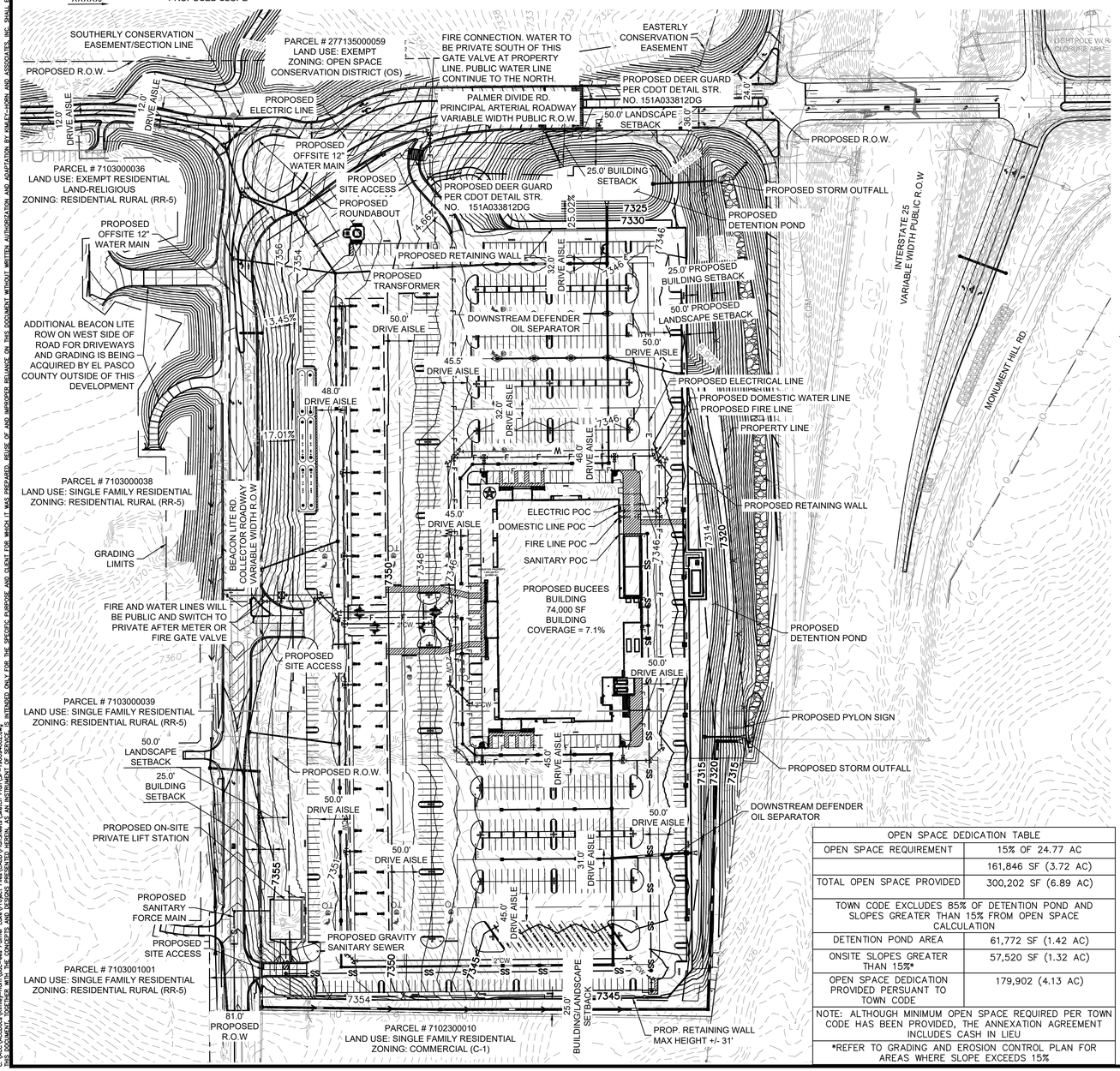
LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO

LEGEND

- PROPERTY LINE
- PROPOSED R.O.W
- GRADING LIMITS
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- XXXX PROPOSED MAJOR CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- XXXX% EXISTING SLOPE
- XXXX% PROPOSED SLOPE

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

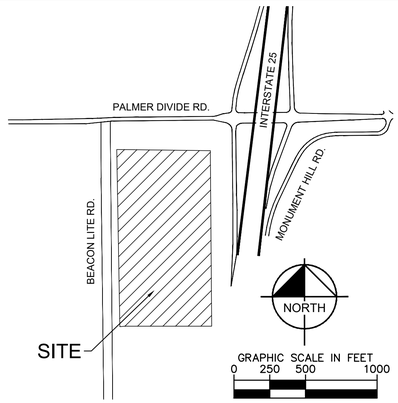


LAND USE TABLE		
APPROXIMATE TOTAL BUILDING SQUARE FOOTAGE	75,500 (74,000 SF TRAVEL CENTER + 1,500 SF GENERATOR ENCLOSURE)	
BUILDING LOT COVERAGE %	7%	
PROPOSED MAX. BUILDING HEIGHT (FT)	40	
TOTAL ACERAGE	24.77 AC	
PROPOSED IMPERVIOUSNESS	71%	
LAND USE	TRAVEL CENTER	
EXISTING ZONING	C-1, CC	
PROPOSED ZONING	PD	
LOTS	1	
PARKING SPACES	PROPOSED	REQUIRED
TOTAL PARKING SPACES	820	504
STANDARD PARKING SPACES (10' X 20' MINIMUM)	797	
ADA PARKING SPACES	23	15
LOADING SPACES (12' X 50' MINIMUM)	2	2
BUS/RV PARKING SPACES	11	
BICYCLE SPACES	10	
PARKING RATIO (SPACES / 1,000 SF TRAVEL CENTER)	11.2	10
WATER DEMAND	37,300 GPD	
SEWER DEMAND	51-93 GPM	

ABBREVIATIONS

R.O.W. RIGHT OF WAY

OPEN SPACE DEDICATION TABLE	
OPEN SPACE REQUIREMENT	15% OF 24.77 AC
	161,846 SF (3.72 AC)
TOTAL OPEN SPACE PROVIDED	300,202 SF (6.89 AC)
TOWN CODE EXCLUDES 85% OF DETENTION POND AND SLOPES GREATER THAN 15% FROM OPEN SPACE CALCULATION	
DETENTION POND AREA	61,772 SF (1.42 AC)
ONSITE SLOPES GREATER THAN 15%*	57,520 SF (1.32 AC)
OPEN SPACE DEDICATION PROVIDED PERSUANT TO TOWN CODE	179,902 (4.13 AC)
NOTE: ALTHOUGH MINIMUM OPEN SPACE REQUIRED PER TOWN CODE HAS BEEN PROVIDED, THE ANNEXATION AGREEMENT INCLUDES CASH IN LIEU	
*REFER TO GRADING AND EROSION CONTROL PLAN FOR AREAS WHERE SLOPE EXCEEDS 15%	



VICINITY MAP

CONTACT INFORMATION

OWNER
MONUMENT RIDGE WEST, LLC
5055 LIST DRIVE
COLORADO SPRINGS, CO 80191

APPLICANT
CSMS MANAGEMENT, LLC
SCOTT RATCLIFF, P.E.
11200 W BROADWAY, STE 2332
PEARLAND, TX 77584
TEL: 979.529.2704

CIVIL ENGINEER
KIMLEY-HORN & ASSOCIATES
KYLE WATSON, P.E.
6200 S. SYRACUSE WAY, SUITE 300
GREENWOOD VILLAGE, CO 80111
TEL: 303.228.2300

LEGAL DESCRIPTION

A PARCEL OF LAND BEING A PORTION OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222106819, IN THE EL PASO COUNTY OFFICE OF THE CLERK AND RECORDER, SITUATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 2, AS MONUMENTED BY A NO. 6 REBAR WITH

3.25" ALUMINUM CAP STAMPED, "LS 17496", IN MONUMENT BOX;

THENCE COINCIDENT WITH THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 2, SOUTH 00°29'49" EAST, A DISTANCE OF 30.00 FEET TO THE WESTERLY EXTENSION OF THE NORTH LINE OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222083003, SAID WESTERLY EXTENSION ALSO BEING THE NORTHERLY LINE OF THAT PROPERTY DESCRIBED AT RECEPTION NO. 222106819;

THENCE COINCIDENT WITH SAID WESTERLY EXTENSIONS AND SAID NORTH LINES, NORTH 89°22'36" EAST, A DISTANCE OF 394.91 FEET TO THE NORTHEAST CORNER OF SAID DEED RECORDED AT RECEPTION NO. 222083003 AND THE NORTHWEST CORNER OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222082953, IN SAID RECORDS;

THENCE COINCIDENT WITH THE NORTH LINE OF LAST SAID SPECIAL WARRANTY DEED, CONTINUING NORTH 89°22'36" EAST, A DISTANCE OF 109.52 FEET TO THE NORTHEAST CORNER OF SAID DEED AND THE **POINT OF BEGINNING**;

THENCE CONTINUING COINCIDENT WITH THE NORTH LINE OF SAID RECEPTION NO. 222106819, NORTH 89°22'36" EAST, A DISTANCE OF 111.41 FEET TO THE WESTERLY MOST NORTHEAST CORNER OF SAID RECEPTION NO. 222106819, ALSO BEING WESTERLY RIGHT-OF-WAY OF INTERSTATE-25;

THENCE COINCIDENT WITH THE EASTERLY LINE OF SAID RECEPTION NO. 222106819 AND SAID WESTERLY RIGHT-OF-WAY THE FOLLOWING FOUR (4) COURSES:

1) SOUTH 83°59'37" EAST, A DISTANCE OF 96.54 FEET;
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3) SOUTH 04°18'32" EAST, A DISTANCE OF 929.95 FEET;
4) SOUTH 07°01'30" WEST, A DISTANCE OF 457.05 FEET;

THENCE NORTH 89°11'43" WEST, A DISTANCE OF 736.97 FEET TO THE EAST RIGHT-OF-WAY LINE OF BEACON LITE ROAD AS DESCRIBED IN BOOK 571, PAGE 55;

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4) NORTH 00°08'41" WEST, A DISTANCE OF 203.28 FEET;
5) NORTH 44°02'37" EAST, A DISTANCE OF 49.33 FEET, TO THE WESTERLY EXTENSION OF THE SOUTH LINE OF SAID RECEPTION NO. 222082953;
6) COINCIDENT WITH SAID WESTERLY EXTENSION, SOUTH 88°38'48" EAST, A DISTANCE OF 416.66 FEET TO THE SOUTHEAST CORNER OF SAID RECEPTION NO. 222082953;
7) NORTH 00°07'32" EAST, A DISTANCE OF 21.93 FEET TO THE **POINT OF BEGINNING**.

LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF EL PASO NOVEMBER 20, 2024 AT RECEPTION NO. 224092706.

NOTES:

1. CASH IN LIEU OF LAND DEDICATION FOR PARKS AND OPEN SPACE WILL BE PAID PER THE ANNEXATION AGREEMENT.
2. PROJECT IS NOT A PHASED DEVELOPMENT.
3. REFER TO THE GENERAL DEVELOPMENT GUIDELINES FOR WRITTEN GUIDELINES.
4. AN ECOLOGICAL ASSESSMENT REPORT PREPARED BY ECOS ECOSYSTEM SERVICES LLC, PROJECT NUMBER 2025-3-1 WAS PREPARED AND SUBMITTED IN SUPPORT OF THE APPLICATION. THE CONCLUSION OF THE REPORT WAS THAT THERE ARE NO SIGNIFICANT NATURAL FEATURES OR SENSITIVE HABITAT THAT NEEDS TO BE PRESERVED PURSUANT TO US FISH AND WILDLIFE OR THE COLORADO DIVISION OF WILDLIFE STANDARDS. ALL PROPOSED VEGETATION WILL BE NATIVE SPECIES WHICH WILL ENHANCE THE SITE AND PROVIDE HABITAT FOR ANIMAL SPECIES FOUND IN THE AREA.
   - 4.1. CONDUCT PRECONSTRUCTION SURVEYS TO IDENTIFY THE PRESENCE OF ANY ACTIVE GOLDEN EAGLE, MIGRATORY BIRD, OR RAPTOR NESTS.
   - 4.2. IF ACTIVE NESTS ARE IDENTIFIED, AVOID ALL CONSTRUCTION ACTIVITIES DURING THE NON-MIGRATORY BIRD BREEDING SEASON, WHICH EXTENDS FROM MARCH 15 THROUGH AUGUST 31.
   - 4.3. CONSULT WITH THE U.S. FISH AND WILDLIFE SERVICE (USFWS) TO ENSURE FULL COMPLIANCE WITH THE MIGRATORY BIRD TREATY ACT AND THE BALD AND GOLDEN EAGLE PROTECTION ACT.
   - 4.4. FOR RAPTORS, FOLLOW COLORADO PARKS AND WILDLIFE'S (CPW) RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS FOR COLORADO RAPTORS, WHICH INCLUDE PRECONSTRUCTION SURVEYS, APPROPRIATE SPATIAL BUFFERS, AND SEASONAL RESTRICTIONS TO PROTECT SENSITIVE SPECIES.
   - 4.5. IF A NEST IS DISCOVERED DURING CONSTRUCTION, ALL WORK SHOULD CEASE IMMEDIATELY. CPW AND USFWS SHOULD BE CONTACTED FOR FURTHER GUIDANCE BEFORE ANY ACTIVITY RESUMES.
5. THE PROJECT IS OUTSIDE OF ANY MAPPED FEMA SPECIAL FLOOD HAZARD AREAS (I.E. FLOOD-PLAINS). THE SITE IS LOCATED WITHIN FLOOD ZONE X.
6. PROPOSED BUILDING SETBACKS AND SETBACK EXCEPTIONS WILL BE PER THE WRITTEN PD.

NO.	BY	DATE
1	KEW	07/08/2025
REVISION 1	KEW	04/24/2025
1ST SUBMITTAL	KEW	04/24/2025
REVISION	BY	DATE

Kimley»Horn

© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
SKETCH PLAN

SHEET
1

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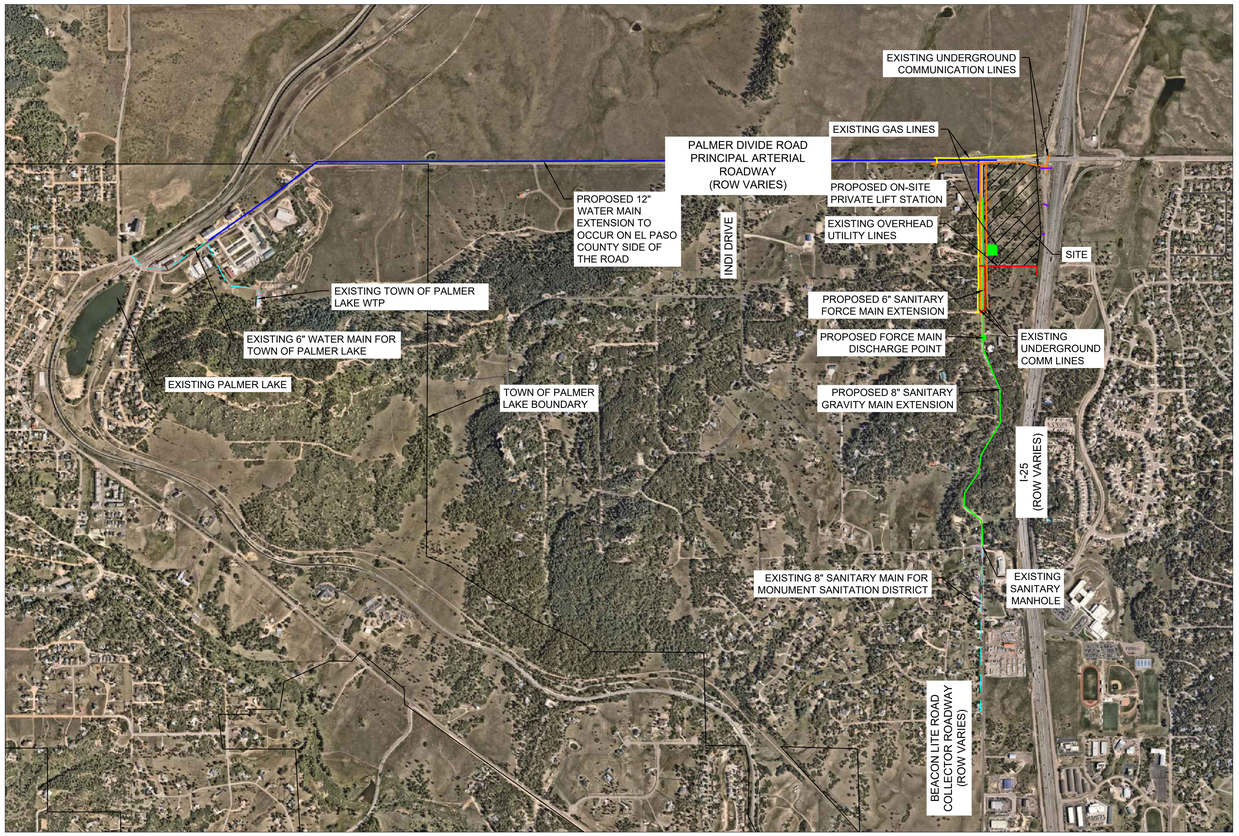
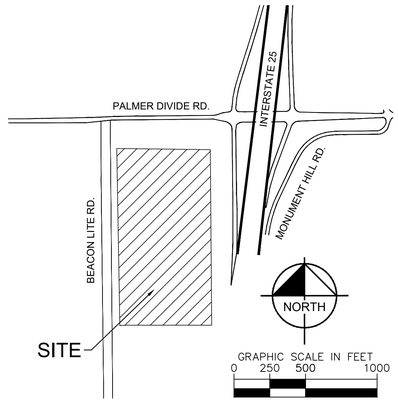
BUC-EE'S PALMER LAKE
SKETCH PLAN

LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO





LEGEND

- PROPOSED SANITARY MAIN
- PROPOSED WATER MAIN
- EXISTING OVERHEAD UTILITY
- EXISTING UNDERGROUND COMMUNICATION
- EXISTING STORM
- EXISTING GAS

CONTACT INFORMATION

OWNER	APPLICANT	CIVIL ENGINEER
MONUMENT RIDGE WEST, LLC	CSMS MANAGEMENT, LLC	KIMLEY-HORN & ASSOCIATES
5055 LIST DRIVE	SCOTT RATCLIFF, P.E.	KYLE WATSON, P.E.
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ABBREVIATIONS

R.O.W. RIGHT OF WAY

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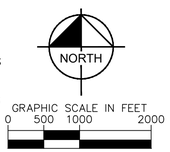
LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF EL PASO NOVEMBER 20, 2024 AT RECEPTION NO. 224092706.

SUMMARY STATEMENT:

THE PROJECT STATEMENT SUBMITTED IN SUPPORT OF THE SKETCH PLAN APPLICATION ANALYZES THE COMPLIANCE OF THE PROJECT WITH MANY OF THE GOALS AND OBJECTIVES INCLUDED IN THE TOWN'S COMMUNITY MASTER PLAN, ASSOCIATED PARKS PLAN, AND ADOPTED THREE-MILE PLAN. THE ANALYSIS IS NOT INTENDED TO BE ALL ENCOMPASSING BUT RATHER IS INTENDED TO ADDRESS THE MOST APPLICABLE COMPONENTS OF THE RESPECTIVE DOCUMENTS IN AN EFFORT TO ADDRESS OVERALL CONFORMANCE OF THE PROJECT WITH EACH DOCUMENT. IT SHOULD BE NOTED THAT THE TOWN'S COMMUNITY MASTER PLAN (2022) WAS WRITTEN AT A TIME WHEN NO PORTION OF THE TOWN FRONTED THE INTERSTATE 25 CORRIDOR. THIS IS SIGNIFICANT DUE TO THE FACT THAT LOCAL LAND USE AUTHORITIES TYPICALLY PLAN FOR GROWTH AND DEVELOPMENT ALONG INTERSTATE HIGHWAYS VERY DIFFERENTLY THAN FOR SMALL DOWNTOWN AREAS. HIGH-TRAFFIC GENERATING LAND USES TYPICALLY CHOOSE TO LOCATE ADJACENT TO INTERSTATES, SUCH AS ALONG THE I-25 CORRIDOR. FOR THESE REASONS, IT IS RECOMMENDED THAT SOME OF THE "SMALL TOWN-ORIENTED" GOALS AND OBJECTIVES INCLUDED IN THE TOWN'S COMMUNITY MASTER PLAN AND ASSOCIATED PARKS PLAN AND ADOPTED THREE-MILE PLAN MAY NOT BE REASONABLY APPLICABLE TO THE PROPOSED DEVELOPMENT GIVEN THAT THE PROPERTY IS LOCATED OVER TWO (2) MILES FROM THE TOWN'S COMMERCIAL DOWNTOWN CENTER AND IS IMMEDIATELY ADJACENT TO INTERSTATE 25, WHICH RESULTS IN THE PROPERTY BEING SOMETHING THAT IS BOTH NEW AND UNIQUE TO THE TOWN OF PALMER LAKE.



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Kimley»Horn

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6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

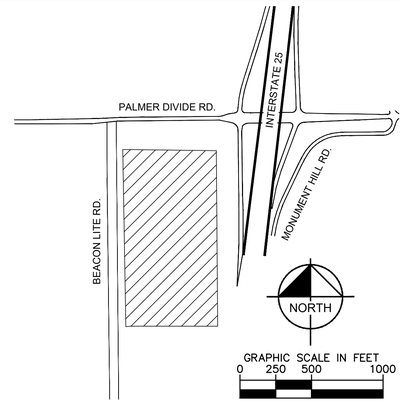
BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
SKETCH PLAN

SHEET
2

BUC-EE'S PALMER LAKE
SKETCH PLAN
LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M. COUNTY OF EL PASO, STATE OF COLORADO

LEGEND

- PROPERTY LINE
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- XXXX% EXISTING SLOPE
- EXISTING VEGETATION EDGE
- EXISTING SWALE



VICINITY MAP

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COLORADO SPRINGS, CO 80191	11200 W BROADWAY, STE 2332	6200 S. SYRACUSE WAY, SUITE 300
	PEARLAND, TX 77584	GREENWOOD VILLAGE, CO 80111
	TEL: 979.529.2704	TEL: 303.228.2300

ABBREVIATIONS

R.O.W. RIGHT OF WAY

LEGAL DESCRIPTION

A PARCEL OF LAND BEING A PORTION OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222106819, IN THE EL PASO COUNTY OFFICE OF THE CLERK AND RECORDER, SITUATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 2, AS MONUMENTED BY A NO. 6 REBAR WITH

3.25" ALUMINUM CAP STAMPED, "LS 17496", IN MONUMENT BOX;

THENCE COINCIDENT WITH THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 2, SOUTH 00°29'49" EAST, A DISTANCE OF 30.00 FEET TO THE WESTERLY EXTENSION OF THE NORTH LINE OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222083003, SAID WESTERLY EXTENSION ALSO BEING THE NORTHERLY LINE OF THAT PROPERTY DESCRIBED AT RECEPTION NO. 222106819;

THENCE COINCIDENT WITH SAID WESTERLY EXTENSIONS AND SAID NORTH LINES, NORTH 89°22'36" EAST, A DISTANCE OF 394.91 FEET TO THE NORTHEAST CORNER OF SAID DEED RECORDED AT RECEPTION NO. 222083003 AND THE NORTHWEST CORNER OF THAT PROPERTY DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 222082953, IN SAID RECORDS;

THENCE COINCIDENT WITH THE NORTH LINE OF LAST SAID SPECIAL WARRANTY DEED, CONTINUING NORTH 89°22'36" EAST, A DISTANCE OF 109.52 FEET TO THE NORTHEAST CORNER OF SAID DEED AND THE **POINT OF BEGINNING**;

THENCE CONTINUING COINCIDENT WITH THE NORTH LINE OF SAID RECEPTION NO. 222106819, NORTH 89°22'36" EAST, A DISTANCE OF 111.41 FEET TO THE WESTERLY MOST NORTHEAST CORNER OF SAID RECEPTION NO. 222106819, ALSO BEING WESTERLY RIGHT-OF-WAY OF INTERSTATE-25;

THENCE COINCIDENT WITH THE EASTERLY LINE OF SAID RECEPTION NO. 222106819 AND SAID WESTERLY RIGHT-OF-WAY THE FOLLOWING FOUR (4) COURSES:

1) SOUTH 83°59'37" EAST, A DISTANCE OF 96.54 FEET;
2) SOUTH 44°10'02" EAST, A DISTANCE OF 76.80 FEET ;
3) SOUTH 04°18'32" EAST, A DISTANCE OF 929.95 FEET;
4) SOUTH 07°01'30" WEST, A DISTANCE OF 457.05 FEET;

THENCE NORTH 89°11'43" WEST, A DISTANCE OF 736.97 FEET TO THE EAST RIGHT-OF-WAY LINE OF BEACON LITE ROAD AS DESCRIBED IN BOOK 571, PAGE 55;

THENCE COINCIDENT WITH SAID EAST RIGHT-OF-WAY LINE, NORTH 00°29'49" WEST, A DISTANCE OF 835.22 FEET THE SOUTHWEST CORNER OF SAID RECEPTION NO. 222083003;

THENCE COINCIDENT WITH THE SOUTHERLY AND EASTERLY LINES OF SAID RECEPTION NO. 222083003 THE FOLLOWING SIX (6) COURSES:

1) NORTH 89°51'19" EAST, A DISTANCE OF 7.75 FEET;
2) NORTH 00°08'41" WEST, A DISTANCE OF 188.22 FEET;
3) NORTH 04°08'13" EAST, A DISTANCE OF 160.73 FEET;
4) NORTH 00°08'41" WEST, A DISTANCE OF 203.28 FEET;
5) NORTH 44°02'37" EAST, A DISTANCE OF 49.33 FEET, TO THE WESTERLY EXTENSION OF THE SOUTH LINE OF SAID RECEPTION NO. 222082953;
6) COINCIDENT WITH SAID WESTERLY EXTENSION, SOUTH 88°38'48" EAST, A DISTANCE OF 416.66 FEET TO THE SOUTHEAST CORNER OF SAID RECEPTION NO. 222082953;
7) NORTH 00°07'32" EAST, A DISTANCE OF 21.93 FEET TO THE **POINT OF BEGINNING**.

LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF EL PASO NOVEMBER 20, 2024 AT RECEPTION NO. 224092706.

NOTES:

1. ANY AREAS WITH SLOPE GREATER THAN 15% ARE LOCATED OUTSIDE OF THE PARKING LOT AND ARE TO TIE INTO EXISTING GRADES OR FOR STORMWATER DETENTION. REFER TO THE GRADING SHEETS FOR FULL SLOPE DETAILS.
2. PROJECT IS NOT A PHASED DEVELOPMENT.
3. AN ECOLOGICAL ASSESSMENT REPORT PREPARED BY ECOS ECOSYSTEM SERVICES LLC, DATED MARCH 31, 2025 WAS PREPARED AND SUBMITTED IN SUPPORT OF THE APPLICATION. THE CONCLUSION OF THE REPORT WAS THAT THERE ARE NO SIGNIFICANT NATURAL FEATURES OR SENSITIVE HABITAT THAT NEEDS TO BE PRESERVED PURSUANT TO US FISH AND WILDLIFE OR THE COLORADO DIVISION OF WILDLIFE STANDARDS. ALL PROPOSED VEGETATION WILL BE NATIVE SPECIES WHICH WILL ENHANCE THE SITE AND PROVIDE HABITAT FOR ANIMAL SPECIES FOUND IN THE AREA.
4. THE PROJECT IS OUTSIDE OF ANY MAPPED FEMA SPECIAL FLOOD HAZARD AREAS (I.E. FLOOD-PLAINS). THE SITE IS LOCATED WITHIN FLOOD ZONE X.

NO.	REVISION	BY	DATE
1	1ST SUBMITTAL	KEW	04/24/2025
2	REVISION 1	KEW	07/08/2025

Kimley»Horn
© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO
SKETCH PLAN
EXISTING CONDITIONS

SHEET
3

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

C:\VCD\ACCDocs\Kimley-Horn\Buc-ees Palmer Lake\Project Files\CAD\ProjSheet\Sketch Plan\SP_EX_COND_-_19509402.dwg

Addendum 1

2.1 Evidence of Ownership

222106819 8/11/2022 1:59 PM
PGS 2 $18.00 DF $2
Electronically Recorded Official Records El Paso County
Chuck Broerman, Clerk and Recorder
TD1000 Y

Land Title GUARANTEE COMPANY

State Documentary Fee
Date: August 11, 2022
$277.78

Special Warranty Deed

(Pursuant to C.R.S. 38-30-113(1)(b))

Grantor(s), **INTERSTATE 25 PROPERTIES, LTD., A COLORADO LIMITED PARTNERSHIP,** , whose street address is **COUNTY LINE ROAD & BEASON LITE ROAD (PARCEL A ACQUISITION PARCEL 25.20 ACRES) , COLORADO SPRINGS, CO 80132**, City or Town of **COLORADO SPRINGS**, County of **El Paso** and State of **Colorado** , for the consideration of (**$2,777,777.00**) ***Two Million Seven Hundred Seventy Seven Thousand Seven Hundred Seventy Seven and 00/100 *** dollars, in hand paid, hereby sell(s) and convey(s) to **MONUMENT RIDGE WEST, LLC, A COLORADO LIMITED LIABILITY COMPANY,** whose street address is **5055 LIST DRIVE, COLORADO SPRINGS, CO 80919**, City or Town of **COLORADO SPRINGS**, County of **El Paso** and State of **Colorado**, the following real property in the County of **El Paso** and State of Colorado, to wit:

See attached "Exhibit A"

also known by street and number as: **COUNTY LINE ROAD & BEASON LITE ROAD (PARCEL A ACQUISITION PARCEL 25.20 ACRES) COLORADO SPRINGS, CO 80132**

with all its appurtenances and warrant(s) the title to the same against all persons claiming under me(us), subject to Statutory Exceptions.

Signed this day of **August 11, 2022**.

INTERSTATE 25 PROPERTIES, LTD., A COLORADO LIMITED PARTNERSHIP

By: Robert S Ferguson
ROBERT S. FERGUSON, GENERAL PARTNER

State of **Colorado**)
)ss.
County of **EL PASO**)

The foregoing instrument was acknowledged before me on this day of **August 11th, 2022** by **ROBERT S. FERGUSON AS GENERAL PARTNER OF INTERSTATE 25 PROPERTIES, LTD., A COLORADO LIMITED PARTNERSHIP**

Witness my hand and official seal

My Commission expires: 3/15/24

A Cooper
Notary Public

AMANDA COOPER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 19964004057
My Commission Expires March 15, 2024

When recorded return to: **MONUMENT RIDGE WEST, LLC, A COLORADO LIMITED LIABILITY COMPANY, 5055 LIST DRIVE, COLORADO SPRINGS, CO 80919**

Exhibit A

PARCEL A:

THAT PORTION OF THE WEST HALF OF THE NORTHWEST QUARTER OF SECTION 2 LYING WEST OF INTERSTATE HIGHWAY NO. 25 IN TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE 6TH P.M., ALL MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY LINE OF SAID SECTION 2 THAT IS 30 FEET SOUTH OF THE NORTHWEST CORNER OF SAID SECTION 2;

THENCE ON A LINE THAT IS PARALLEL TO AND 30 FEET SOUTH OF THE NORTH LINE OF SAID SECTION 2, NORTH 89°12' EAST 584.4 FEET (NORTH 89°14'16" EAST, 615.88 FEET RECORD);

THENCE SOUTH 84°20' EAST (SOUTH 83°37'13" EAST RECORD) ALONG THE RIGHT OF WAY OF INTERSTATE HIGHWAY NO. 25, 132.10 FEET (96.56 FEET RECORD);

THENCE CONTINUE ON SAID RIGHT OF WAY LINE SOUTH 44°27'30" EAST, 76.8 FEET (SOUTH 43°49'07" EAST, 76.72 FEET RECORD);

THENCE ALONG SAID RIGHT OF WAY LINE SOUTH 4°36' EAST, 930.13 FEET (SOUTH 03°54'06" EAST, 930.13 FEET MEASURED);

THENCE CONTINUING ALONG SAID RIGHT OF WAY SOUTH 6°42' WEST, 457.05 FEET (SOUTH 7°23'54" WEST, 547.05 MEASURED), TO THE SOUTH LINE OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 2;

THENCE ALONG SAID SOUTH LINE, NORTH 89°30' WEST, 766.91 FEET (SOUTH 88°46'17" WEST, 766.91 FEET MEASURED) TO THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 2;

THENCE NORTH (NORTH 00°06'22" WEST, 1428.85 FEET RECORD) ALONG THE WEST LINE OF THE NORTH WEST QUARTER OF SECTION 2 TO THE POINT OF BEGINNING AND EXCEPTING ANY PORTION LYING WITHIN THE COUNTY ROAD KNOWN AS BEACON LITE ROAD, COUNTY OF EL PASO, STATE OF COLORADO;

LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF EL PASO JUNE 16, 2022 UNDER RECEPTION NO. 222083003.

NOTE: (SURVEY MEASURED CALLS AND RECORD CALLS ARE BOTH SHOWN WITH SURVEY CALLS PARENTHETICALLY DISPLAYED)

DESCRIPTION PREPARED BY:
BEAR CREEK SURVEYING INC.
P.O. BOX 2015, BAYFIELD, COLORADO 8112
(970) 8845069

THE BOUNDARY DEFINED FOR PARCEL A IN EXHIBIT A OF THE WARRANTY DEED DOES NOT MATCH THE BOUNDARY DEFINED IN THE LEGAL DESCRIPTION DOCUMENT OF OTHER SUBMITTALS FOR THIS PROJECT. THE REASON FOR THE DISCREPANCY IS THE VESTING DEED FOR SUBJECT PROPERTY DO NOT CONTAIN A RIGHT-OF-WAY EXCEPTION. THE DESCRIPTION OBTAINED IN THE TITLE COMMITMENT MATCHES PLANS. THE TITLE WAS UPDATED AND PROVIDED TO KIMLEY-HORN ON 3/7/2025. SEE THE FOLLOWING PAGES FOR THESE EXCEPTIONS.

222083003 6/16/2022 3:41 PM
PGS 4 $0.00 DF $0.00
Electronically Recorded Official Records El Paso County CO
Chuck Broerman, Clerk and Recorder
TD1000 Y

SPECIAL WARRANTY DEED

FOL894L7

THIS DEED, made this 16 day of JUNE, 2022, between **INTERSTATE 25 PROPERTIES, LTD.,** a Limited Partnership, whose mailing address is 970 Corral Valley Road, Colorado Springs, Colorado 80929 ("Grantor"), and **EL PASO COUNTY BY AND THROUGH THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO**, whose street address is 200 S. Cascade Avenue, Colorado Springs, Colorado 80903 ("Grantee" or "County").

WITNESSETH, that Grantor, for and in consideration of the sum of THIRTY FIVE THOUSAND TWO HUNDRED FOURTEEN DOLLARS and NO CENTS ($35,214.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm, unto Grantee, and Grantee's heirs, successors and assigns forever, all the real property, together with all improvements, if any, situate, lying and being in the County of El Paso, State of Colorado described as follows:

See Exhibits A and B for RW-7,
attached hereto and incorporated herein by reference

TOGETHER WITH all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever of Grantor, either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances;

TO HAVE AND TO HOLD the said premises above bargained and described with the appurtenances, unto Grantee, and Grantee's heirs, successors and assigns forever. Grantor, for Grantor and Grantor's heirs, successors and assigns, does covenant and agree that Grantor shall and will WARRANT AND FOREVER DEFEND the above bargained premises in the quiet and peaceable possession of Grantee, and Grantee's heirs, successors and assigns, against all and every person or persons claiming the whole or any part thereof, by, through or under Grantor and hereby warrants that the Property is free and clear of any lien or encumbrances, of whatever kind or nature soever, including taxes for 2021 and 2022 tax proration, except any easements, rights-of-way, and restrictions of record and taxes for subsequent years.

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Signature Page Follows

Beacon Lite Road and County Line Road Improvements, RW-7
Reference: BoCC resolution #_____

IN WITNESS WHEREOF, Grantor has executed this deed on the date set forth above.

GRANTOR: Interstate 25 Properties, LTD., a Limited Partnership

By: Robert Ferguson

Name: Robert Ferguson Title: General Partner

STATE OF Colorado)
) SS.
COUNTY OF El Paso)

The foregoing instrument was acknowledged before me this 4th day of March, 2022, by Robert Ferguson as General Partner of Interstate 25 Properties, LTD., a Limited Partnership.

Witness my hand and official seal.

JEFFERY L. PERRET
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084022973
MY COMMISSION EXPIRES AUGUST 6, 2024

Notary Public

My commission expires: 08-06-2024.

Beacon Lite Road and County Line Road Improvements, RW-7
Reference: BoCC resolution #_____

EXHIBIT "A"
RIGHT-OF-WAY PARCEL NUMBER: RW-7
EL PASO COUNTY PROJECT NO. 128558

DATE: JANUARY 3, 2022

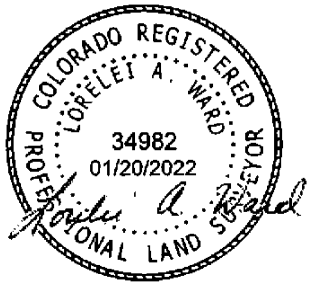
A Right-of-Way parcel located within a parcel of land as described by Quit Claim Deed, Reception Number 001696697, in the El Paso County Clerk and Recorder's office and located in the Northwest 1/4 of Section 2, Township 11 South, Range 67 West of the 6th Principal Meridian, County of El Paso, State of Colorado, described as follows:

COMMENCING at the Northwest corner of Section 2, (a 3 inch aluminum cap stamped PLS 17496) Township 11 South, Range 67 West of the 6th Principal Meridian, El Paso County, Colorado; Thence S45°29'03"E, a distance of 42.14 feet to the northwest corner of said property, also to the **POINT OF BEGINNING;**

1. Thence N89°07'53"E along the south right-of-way line of County Line Road, a distance of 362.93 feet; more or less, to a point on the east property line;
2. Thence S00°04'29"E along said property line, a distance of 18.15 feet;
3. Thence N88°53'31"W, a distance of 307.11 feet;
4. Thence S42°19'34"W, a distance of 48.48 feet;
5. Thence S00°15'23"W, a distance of 203.28 feet;
6. Thence S04°32'17"W, a distance of 160.73 feet;
7. Thence S00°15'23"W, a distance of 188.22 feet
8. Thence N89°44'37"W, a distance of 7.75 feet to a point on the east right-of-way line of Beacon Lite Road, also being the west property line of said parcel;
9. Thence N00°05'45"W along the east right-of-way line of Beacon Lite Road, a distance of 594.25 feet, more or less, to the **POINT OF BEGINNING**;

Containing an area of 14,373 square feet or 0.330 acres, more or less.

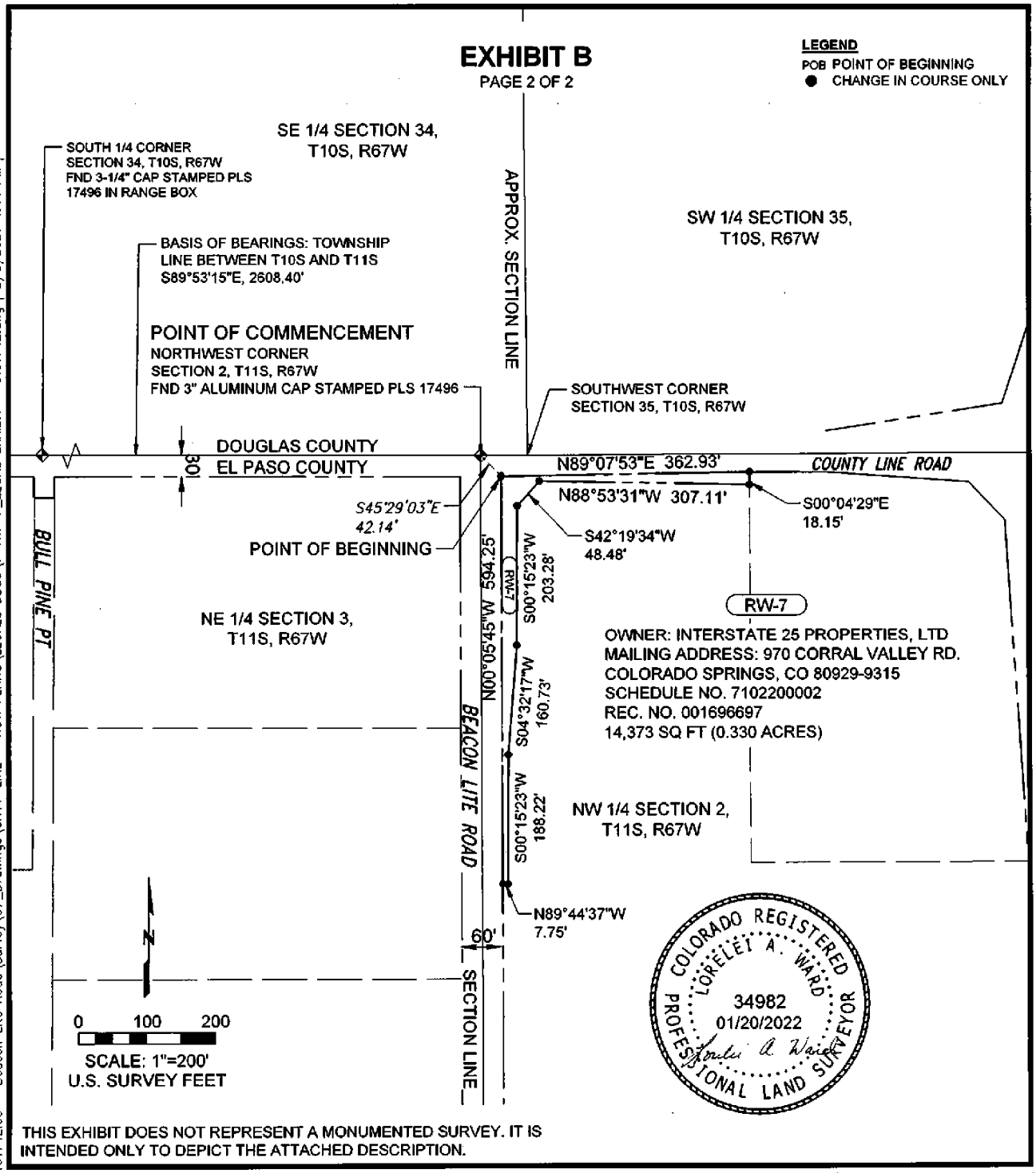
Basis of Bearings: The Township line between Township 10 South and Township 11 South, all in Range 67 West of the 6th Principal Meridian, El Paso County, Colorado from the South 1/4 corner of Section 34, Township 10 South (monumented by a 3-1/4" cap stamped LS 17496 in monument box) to the Northwest corner of Section 2, Township 11 South (monumented by a 3" aluminum cap stamped PLS 17496) bears S89°53'15"E, a distance of 2608.40 feet.



Lorelei A. Ward, Colorado PLS 34982
for and on behalf of Farnsworth Group, Inc.
4755 Forge Road, Suite 150
Colorado Springs, CO 80907
(719) 590-9194

EXHIBIT B

PAGE 2 OF 2



THIS EXHIBIT DOES NOT REPRESENT A MONUMENTED SURVEY. IT IS INTENDED ONLY TO DEPICT THE ATTACHED DESCRIPTION.

Farnsworth GROUP
4755 FORGE ROAD, SUITE 150
COLORADO SPRINGS, COLORADO 80907
(719) 590-9194 / info@f-w.com

EL PASO COUNTY
BEACON LITE/COUNTY LINE ROAD
EL PASO COUNTY PROJECT NO. 128558
RW-7 RIGHT-OF-WAY PARCEL
NW 1/4 SECTION 2, T 11 S, R 67 W OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO

PROJECT NO.:	0191742.00
DRAWN:	CDO
REVIEWED:	LAW
DATE:	1-3-2022

2 OF 2

dolson | J:\2019\0191742.00 - Beacon Lite Road\Survey\07_Drawings\CNTY-LINE - ROW PLANS\LEGALS DESC\7-RW-7_LEGAL EXHIBIT - 0191742.dwg | 2/8/2021 4:14 PM |

222082953 6/16/2022 2:44 PM
PGS 4 $0.00 DF $0.00
Electronically Recorded Official Records El Paso County CO
Chuck Broerman, Clerk and Recorder
TD1000 Y

SPECIAL WARRANTY DEED

F0689469

FNTC

THIS DEED, made this 16 day of JUNE, 2022, between **INTERSTATE 25 PROPERTIES, LTD.,** a Limited Partnership, whose mailing address is 970 Corral Valley Road, Colorado Springs, Colorado 80929 ("Grantor"), and **EL PASO COUNTY BY AND THROUGH THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO**, whose street address is 200 S. Cascade Avenue, Colorado Springs, Colorado 80903 ("Grantee" or "County").

WITNESSETH, that Grantor, for and in consideration of the sum of ELEVEN THOUSAND SEVEN HUNDRED TWENTY TWO DOLLARS and NO CENTS ($11,722.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm, unto Grantee, and Grantee's heirs, successors and assigns forever, all the real property, together with all improvements, if any, situate, lying and being in the County of El Paso, State of Colorado described as follows:

See Exhibits A and B for RW-7A,
attached hereto and incorporated herein by reference

TOGETHER WITH all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever of Grantor, either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances;

TO HAVE AND TO HOLD the said premises above bargained and described with the appurtenances, unto Grantee, and Grantee's heirs, successors and assigns forever. Grantor, for Grantor and Grantor's heirs, successors and assigns, does covenant and agree that Grantor shall and will WARRANT AND FOREVER DEFEND the above bargained premises in the quiet and peaceable possession of Grantee, and Grantee's heirs, successors and assigns, against all and every person or persons claiming the whole or any part thereof, by, through or under Grantor and hereby warrants that the Property is free and clear of any lien or encumbrances, of whatever kind or nature soever, including taxes for 2021 and 2022 tax proration, except any easements, rights-of-way, and restrictions of record and taxes for subsequent years.

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Signature Page Follows

IN WITNESS WHEREOF, Grantor has executed this deed on the date set forth above.

GRANTOR: Interstate 25 Properties, LTD., a Limited Partnership

By: Robert Ferguson

Name: Robert Ferguson Title: General Partner

STATE OF Colorado)
) SS.
COUNTY OF El Paso)

The foregoing instrument was acknowledged before me this 4th day of March, 2022, by Robert Ferguson as General Partner of Interstate 25 Properties, LTD., a Limited Partnership.

Witness my hand and official seal.

JEFFERY L. PERRET
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084022973
MY COMMISSION EXPIRES AUGUST 6, 2024

Notary Public

My commission expires: 08-06-2024

EXHIBIT "A"
RIGHT-OF-WAY PARCEL NUMBER: RW-7A
EL PASO COUNTY PROJECT NO. 128558

DATE: JANUARY 3, 2022

A Right-of-Way parcel located within a parcel of land as described by Quit Claim Deed, Reception Number 001696697, in the El Paso County Clerk and Recorder's office and located in the Northwest 1/4 of Section 2, Township 11 South, Range 67 West of the 6th Principal Meridian, County of El Paso, State of Colorado, described as follows:

COMMENCING at the Northwest corner of Section 2, Township 11 South, Range 67 West of the 6th Principal Meridian, El Paso County, Colorado; Thence S86°29'54"E, a distance of 393.67 feet to the west property line, also being the **POINT OF BEGINNING;**

1. Thence N89°55'31"E along the south right-of-way line of County Line Road, a distance of 109.52 feet;
2. Thence S00°04'29"E, a distance of 20.42 feet;
3. Thence N88°53'31"W, a distance of 109.55 feet more or less, to the west property line;
4. Thence N00°04'29"W along said property line, a distance of 18.15 feet, to the south right-of-way line of County Line Road and the **POINT OF BEGINNING;**

Containing an area of 2,112 square feet or 0.048 acres, more or less.

Basis of Bearings: The Township line between Township 10 South and Township 11 South, all in Range 67 West of the 6th Principal Meridian, El Paso County, Colorado from the South 1/4 corner of Section 34, Township 10 South (monumented by a 3-1/4" cap stamped LS 17496 in monument box) to the Northwest corner of Section 2, Township 11 South (monumented by a 3" aluminum cap stamped PLS 17496) bears S89°53'15"E, a distance of 2608.40 feet.

Lorelei A. Ward, Colorado PLS 34982
for and on behalf of Farnsworth Group, Inc.
4755 Forge Road, Suite 150
Colorado Springs, CO 80907
(719) 590-9194

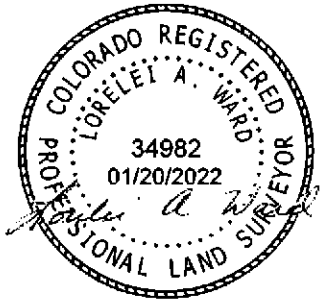
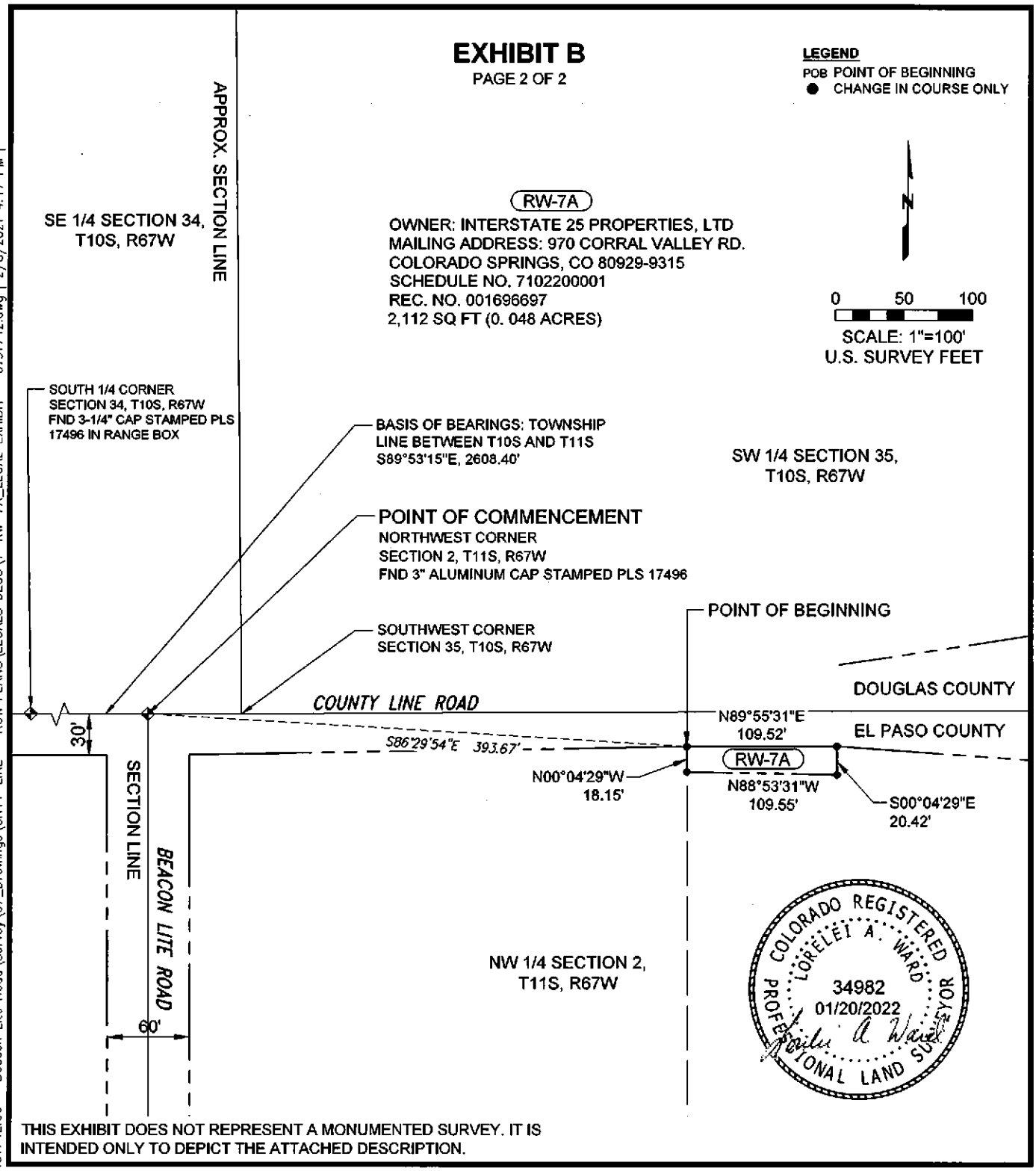


EXHIBIT B

PAGE 2 OF 2

LEGEND
POB POINT OF BEGINNING
● CHANGE IN COURSE ONLY



THIS EXHIBIT DOES NOT REPRESENT A MONUMENTED SURVEY. IT IS INTENDED ONLY TO DEPICT THE ATTACHED DESCRIPTION.

Farnsworth GROUP
4755 FORGE ROAD, SUITE 150
COLORADO SPRINGS, COLORADO 80907
(719) 590-9194 / info@f-w.com

EL PASO COUNTY
BEACON LITE/COUNTY LINE ROAD
EL PASO COUNTY PROJECT NO. 128558
RW-7A RIGHT-OF-WAY PARCEL
NW 1/4 SECTION 2, T 11 S, R 67 W OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO

PROJECT NO.:	0191742.00
DRAWN:	CDO
REVIEWED:	LAW
DATE:	1-3-2022

2 OF 2

dolson | J:\2019\0191742.00 - Beacon Lite Road\Survey\07_Drawings\CNTY-LINE - ROW PLANS\LEGALS DESC\7-RW-7A_LEGAL EXHIBIT - 0191742.dwg | 2/8/2021 4:17 PM |

224092706 11/20/2024 2:27 PM
PGS 4 $0.00 DF $0.00
Electronically Recorded Official Records El Paso County CO
Steve Schleiker, Clerk and Recorder
TD1000 Y

SPECIAL WARRANTY DEED

370-F11486-22

FNTC

THIS DEED, made this 20 day of Nov., 2024, between **MONUMENT RIDGE WEST, LLC, A COLORADO LIMITED LIABILITY COMPANY**, whose mailing address is 5055 List Drive, Colorado Springs, CO 80919 ("Grantor"), and **EL PASO COUNTY BY AND THROUGH THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO**, whose street address is 200 S. Cascade Avenue, Colorado Springs, CO 80903 ("Grantee" or "County").

WITNESSETH, that Grantor, for and in consideration of the sum of FIVE THOUSAND FOUR HUNDRED THREE DOLLARS and No Cents ($5,403.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm, unto Grantee, and Grantee's heirs, successors and assigns forever, all the real property, together with all improvements, if any, situate, lying and being in the County of El Paso, State of Colorado described as follows:

See Exhibits A and B for RW-118,
attached hereto and incorporated herein by reference

TOGETHER WITH all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever of Grantor, either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances;

TO HAVE AND TO HOLD the said premises above bargained and described with the appurtenances, unto Grantee, and Grantee's heirs, successors and assigns forever. Grantor, for Grantor and Grantor's heirs, successors and assigns, does covenant and agree that Grantor shall and will WARRANT AND FOREVER DEFEND the above bargained premises in the quiet and peaceable possession of Grantee, and Grantee's heirs, successors and assigns, against all and every person or persons claiming the whole or any part thereof, by, through or under Grantor and hereby warrants that the Property is free and clear of any lien or encumbrances, of whatever kind or nature soever, including taxes for 2021 and 2022 tax proration, except any easements, rights-of-way, and restrictions of record and taxes for subsequent years.

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Signature Page Follows

IN WITNESS WHEREOF, Grantor has executed this deed on the date set forth above.

GRANTOR: Monument Ridge West, LLC, a Colorado limited liability company

By: Maria Larsen

Name: Maria Larsen , Title: Manager

STATE OF Colorado)
) SS.
COUNTY OF El Paso)

The foregoing instrument was acknowledged before me this 6 day of September 2023, by Maria Larsen as Manager of Monument Ridge West, LLC, a Colorado limited liability company.

Witness my hand and official seal.

JORDAN SADLER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20234009734
MY COMMISSION EXPIRES MARCH 13, 2027

Jordan Sadler
Notary Public

My commission expires: March 13, 2027

EXHIBIT "A"
RIGHT-OF-WAY PARCEL NUMBER: RW-118
EL PASO COUNTY PROJECT NO. 128558

DATE: DECEMBER 09, 2022

A Right-of-Way parcel located within a parcel of land as described by Warranty Deed, Reception Number 222106819, in the El Paso County Clerk and Recorder's office and located in the Northwest 1/4 of Section 2, Township 11 South, Range 67 West of the 6th Principal Meridian, County of El Paso, State of Colorado, described as follows:

COMMENCING at the East 1/4 corner of Section 3, Township 11 South, Range 67 West of the 6th Principal Meridian, El Paso County, Colorado; Thence N 00°50'09" E, a distance of 1844.95 feet, toa point on the east right-of-way line of Beacon Lite Road, said point also being the **POINT OF BEGINNING;**

1. Thence N 00°05'45" W, along said east right-of-way line, a distance of 298.57 feet;
2. Thence S 89°47'07" E, a distance of 7.75 feet;
3. Thence S 00°15'23" W, a distance of 298.57 feet;
4. Thence N 89°44'37" W, a distance of 5.91 feet to the **POINT OF BEGINNING;**

Containing an area of 2,039 square feet or 0.047 acres, more or less.

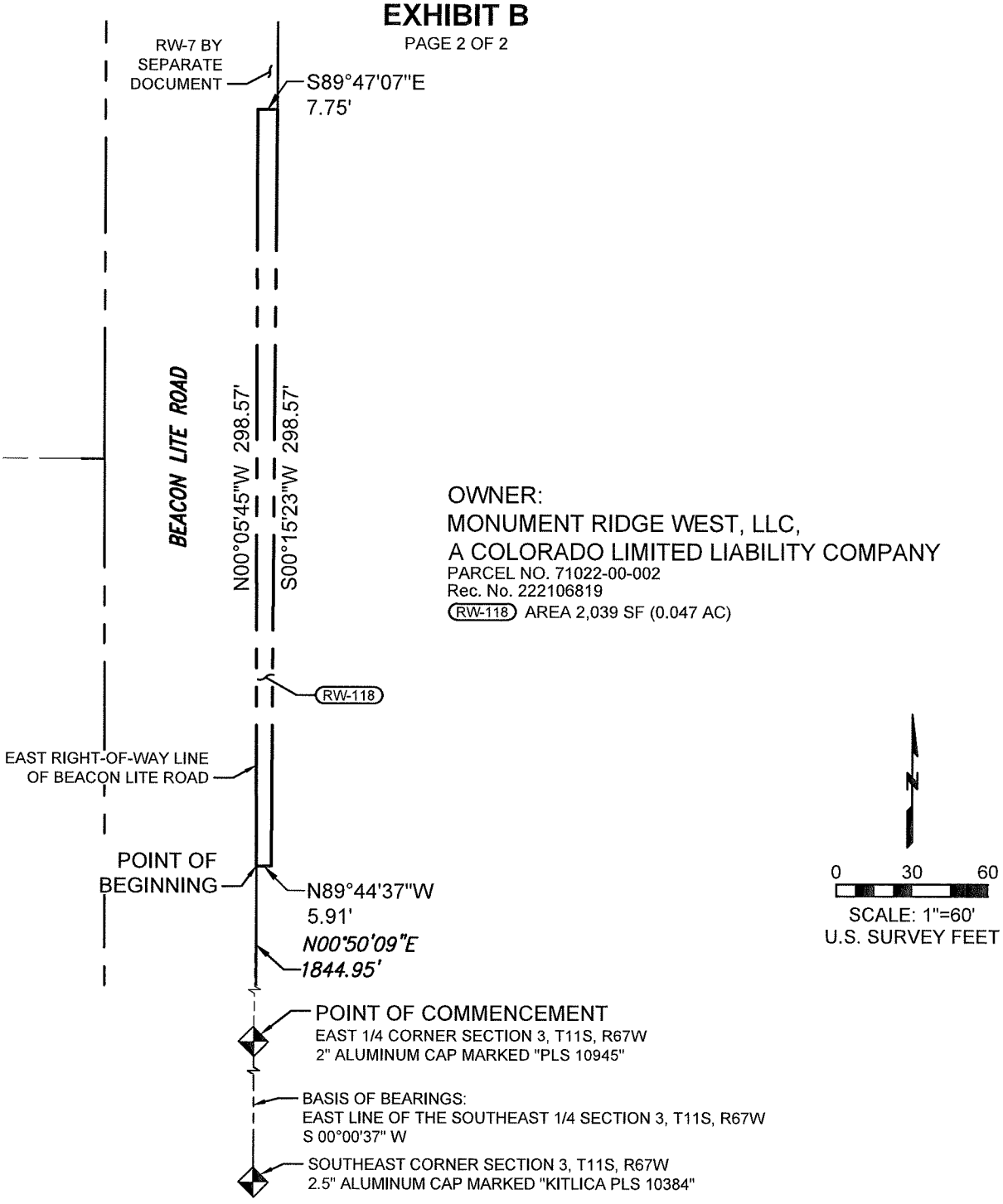
Basis of Bearings: The East line of the Southeast 1/4 of Section 3, Township 11 South, Range 67 West, of the 6th P.M., El Paso County, Colorado from the East 1/4 corner of Section 3, Township 11 South, Range 67 West, of the 6th P.M. (monumented by a 2" aluminum cap stamped "PLS 10945" in monument box) to the Southeast corner of Section 3, Township 11 South, Range 67 West, of the 6th P.M. (monumented by a 2 1/2" aluminum cap stamped "PLS 10384") bears S 00°00'37" W, a distance of 2632.76 feet.

Prepared for and on behalf of
El Paso County, Colorado.
Lorelei A. Ward, PLS 34982
5775 Mark Dabling Boulevard, Suite 190
Colorado Springs, CO 80919
(719) 590-9194

ILLUSTRATION FOR

EXHIBIT B

PAGE 2 OF 2



OWNER:
MONUMENT RIDGE WEST, LLC,
A COLORADO LIMITED LIABILITY COMPANY
PARCEL NO. 71022-00-002
Rec. No. 222106819
(RW-118) AREA 2,039 SF (0.047 AC)

THIS EXHIBIT DOES NOT REPRESENT A MONUMENTED SURVEY. IT IS INTENDED ONLY TO DEPICT THE ATTACHED DESCRIPTION.

Farnsworth GROUP
5775 MARK DABLING BLVD., SUITE 190
COLORADO SPRINGS, COLORADO 80919
(719) 590-9194 / info@f-w.com

EL PASO COUNTY
BEACON LITE/COUNTY LINE ROAD
EL PASO COUNTY PROJECT NO. 128558
RW-118 - ROADWAY RIGHT-OF-WAY PARCEL
NW 1/4 SECTION 2, T 11 S, R 67 W OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO

PROJECT NO.:	0191742.00
DRAWN:	MDG
REVIEWED:	LAW
DATE:	12-09-2022

2 OF 2

| ssilva | J:\2019\0191742.00 - Beacon Lite Road\Survey\07_Drawings\2 PHASE - BEACON LITE ROW PLANS\BL - LEGALS\118_RW-118_LEGAL EXHIBIT.dwg | 12/9/2022 12:17 PM |

Addendum 2

2.2 Title Commitment

Mulliken
Weiner
Berg &
Jolivet

Alamo Corporate Center
102 South Tejon Street, Suite 900
Colorado Springs, Colorado 80903-2238
Telephone (719) 635-8750
Facsimile (719) 635-8706

www.mullikenlaw.com

Steven K. Mulliken
Murray I. Weiner
Karl A. Berg, Jr.
Trevor J. Young
Sara M. Frear
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Erin M. Leach
Joshua J. Wolff
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Olivia M. Urso
Elizabeth A. Ary
Alexander R. Weed

Janet K. Williams
Of Counsel

Caroleen F. Jolivet
Retired

SFrear@mullikenlaw.com

April 24, 2025

Mr. Mike Davenport
Community Matters Institute

Re: Buc-ee's Annexation and Development Applications – Completeness Review Memo dated April 22, 2025

Dear Mr. Davenport:

I am writing in response to your memorandum referenced above, in particular the comment under the Sketch Development Plan Application section related to the title commitment. Please accept this letter as confirmation that I have reviewed the title commitment prepared by Fidelity National Title, File Number 100-00503372-201-T21, Amendment No. 1 submitted with the Sketch Development Plan Application. My review of the title exceptions disclosed no recorded documents that would prevent or bar the annexation, zoning and/or development of the subject parcel as a Buc-ee's travel center.

Any questions or further concerns regarding the title commitment may be directed to the undersigned.

Sincerely,

Sara M. Frear

SMF:kwf
cc: Ms. Barb Cole
Ms. Dawn Collins
Mr. Scott Krob
Mr. Mark Morton
Ms. Nina Ruiz

Fidelity National Title
NATIONAL COMMERCIAL SERVICES

8055 E. Tufts Ave, #900
Denver, CO 80237
Phone: (303) 291-9977

DATE: October 28, 2024
FILE NUMBER: 100-00503372-201-T21, Amendment No. 1
PROPERTY ADDRESS: Vacant Land, Colorado Springs, CO
BUYER/BORROWER: CSMS Management, LLC, a Delaware limited liability company
OWNER(S): Monument Ridge West, LLC, a Colorado limited liability company
YOUR REFERENCE NUMBER: 3711002257
ASSESSOR PARCEL NUMBER: 7102200014; 7102200015

PLEASE TAKE NOTE OF THE FOLLOWING REVISED TERMS CONTAINED HEREIN:

WIRED FUNDS ARE REQUIRED ON ALL CASH PURCHASE TRANSACTIONS. FOR WIRING INSTRUCTIONS, PLEASE CONTACT YOUR ESCROW OFFICE AS NOTED ON THE TRANSMITTAL PAGE OF THIS COMMITMENT.

TO:	**Escrow Officer**	**ATTN:**	Title Only 201
		PHONE:	(303) 291-9977
		FAX:	**(303) 633-7720**
		E-MAIL:	
	Escrow Assistant	**ATTN:**	
		PHONE:	
		E-MAIL:	
	Title Officer	**ATTN:**	Noreen Behringer
		PHONE:	(303) 889-8094
		E-MAIL:	nbehringer@fnf.com
	Sales Executive	**ATTN:**	Natl Import
		E-MAIL:	

TO:	**Chicago Title** **845 Texas Avenue** **Suite 2910** **Houston, TX 77002**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Ria Van Dright** **(713) 238-9163** **(000) 000-0000** **ria.vandright@fnf.com**
TO:	**Chicago Title** **845 Texas Avenue** **Suite 2910** **Houston, TX 77002**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Derek Hartfiel** **(000) 000-0000** **(000) 000-0000** **Derek.Hartfiel@fnf.com**
TO:	**Fidelity National Title Insurance, NCS Div (DTC)** **8055 E. Tufts Ave** **#900** **Denver, CO 80237**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Title Only 201** **(303) 291-9977** **(303) 633-7720**

END OF TRANSMITTAL

Chicago Title Insurance Company

COMMITMENT FOR TITLE INSURANCE

Issued by

Chicago Title Insurance Company

NOTICE

IMPORTANT—READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I—Requirements; Schedule B, Part II—Exceptions; and the Commitment Conditions, Chicago Title Insurance Company, a Florida (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Amount of Insurance and the name of the Proposed Insured.

If all of the Schedule B, Part I—Requirements have not been met within 180 days after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

COMMITMENT CONDITIONS

1. DEFINITIONS
   a. "Discriminatory Covenant": Any covenant, condition, restriction, or limitation that is unenforceable under applicable law because it illegally discriminates against a class of individuals based on personal characteristics such as race, color, religion, sex, sexual orientation, gender identity, familial status, disability, national origin, or other legally protected class.
   b. "Knowledge" or "Known": Actual knowledge or actual notice, but not constructive notice imparted by the Public Records.
   c. "Land": The land described in Item 5 of Schedule A and improvements located on that land that by law constitute real property. The term "Land" does not include any property beyond that described in Schedule A, nor any right, title, interest, estate, or easement in any abutting street, road, avenue, alley, lane, right-of-way, body of water, or waterway, but does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.

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d. "Mortgage": A mortgage, deed of trust, trust deed, security deed, or other real property security instrument, including one evidenced by electronic means authorized by law.
e. "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
f. "Proposed Amount of Insurance": Each dollar amount specified in Schedule A as the Proposed Amount of Insurance of each Policy to be issued pursuant to this Commitment.
g. "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
h. "Public Records": The recording or filing system established under state statutes in effect at the Commitment Date under which a document must be recorded or filed to impart constructive notice of matters relating to the Title to a purchaser for value without Knowledge. The term "Public Records" does not include any other recording or filing system, including any pertaining to environmental protection, planning, permitting, zoning, licensing, building, health, public safety, or national security matters.
i. "State": The state or commonwealth of the United States within whose exterior boundaries the Land is located. The term "State" also includes the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and Guam.
j. "Title": The estate or interest in the Land identified in Item 3 of Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:
a. the Notice;
b. the Commitment to Issue Policy;
c. the Commitment Conditions;
d. Schedule A;
e. Schedule B, Part I—Requirements; and
f. Schedule B, Part II—Exceptions; and
g. a counter-signature by the Company or its issuing agent that may be in electronic form.

4. COMPANY'S RIGHT TO AMEND
The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company is not liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY
a. The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
i. comply with the Schedule B, Part I—Requirements;
ii. eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
iii. acquire the Title or create the Mortgage covered by this Commitment.
b. The Company is not liable under Commitment Condition 5.a. if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
c. The Company is only liable under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.

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d. The Company's liability does not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Condition 5.a. or the Proposed Amount of Insurance.
e. The Company is not liable for the content of the Transaction Identification Data, if any.
f. The Company is not obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
g. The Company's liability is further limited by the terms and provisions of the Policy to be issued to the Proposed Insured.

6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT
a. Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
b. Any claim must be based in contract and is restricted to the terms and provisions of this Commitment.
c. This Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
d. The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
e. Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
f. When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT IS ISSUED BY AN ISSUING AGENT
The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

8. PROFORMA POLICY
The Company may provide, at the request of a Proposed Insured, a proforma policy illustrating the coverage that the Company may provide. A proforma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. CLAIMS PROCEDURES
This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. This Commitment Condition does not modify the limitations of liability in Commitment Conditions 5 and 6.

10. CLASS ACTION
ALL CLAIMS AND DISPUTES ARISING OUT OF OR RELATING TO THIS COMMITMENT, INCLUDING ANY SERVICE OR OTHER MATTER IN CONNECTION WITH ISSUING THIS COMMITMENT, ANY BREACH OF A COMMITMENT PROVISION, OR ANY OTHER CLAIM OR DISPUTE ARISING OUT OF OR RELATING TO THE TRANSACTION GIVING RISE TO THIS COMMITMENT, MUST BE BROUGHT IN AN INDIVIDUAL CAPACITY. NO PARTY MAY SERVE AS PLAINTIFF, CLASS MEMBER, OR PARTICIPANT IN ANY CLASS OR REPRESENTATIVE PROCEEDING. ANY POLICY ISSUED PURSUANT TO THIS COMMITMENT WILL CONTAIN A CLASS ACTION CONDITION.

11. ARBITRATION
The Policy contains an arbitration clause. All arbitrable matters when the Proposed Amount of Insurance is $2,000,000 or less may be arbitrated at the election of either the Company or the Proposed Insured as

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the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at http://www.alta.org/arbitration.

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Transaction Identification Data, for which the Company assumes no liability as set forth in Commitment Condition 5.e.:

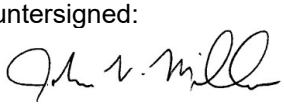
Issuing Agent: Fidelity National Title Insurance Co., National Commercial Services
Issuing Office: 8055 E Tufts Ave, Suite 900, Denver, CO 80237
Loan ID Number:
Issuing Office File Number: 00503372-201-T21-NB
Property Address: Vacant Land, Colorado Springs, CO
Revision Number: Amendment No. 1, Amendment Date: October 28, 2024

SCHEDULE A

AMERICAN LAND TITLE ASSOCIATION COMMITMENT

1. Commitment Date: **October 22, 2024**
2. Policy to be issued:
   (a) **ALTA Standard Owner's Policy (7-1-21)**
   Proposed Insured: **CSMS Management, LLC, a Delaware limited liability company**
   Proposed Amount of Insurance: **$7,100,000.00**
   The estate or interest to be insured: **FEE SIMPLE**
   (b) **None**
   Proposed Insured:
   Proposed Amount of Insurance: **$0.00**
   The estate or interest to be insured: **FEE SIMPLE**
   (c) **None**
   Proposed Insured:
   Proposed Amount of Insurance: **$0.00**
   The estate or interest to be insured:
3. The estate or interest in the Land at the Commitment Date is:
   FEE SIMPLE
4. The Title is, at the Commitment Date, vested in:
   Monument Ridge West, LLC, a Colorado limited liability company
5. The Land is described as follows:
   See Exhibit A attached hereto and made a part hereof.

Countersigned:

By: 
John Miller
Authorized Signature

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SCHEDULE A
(Continued)

PREMIUMS:

Owners Policy	6,003.00
Deletion of 1 - 3 upon requirements met and amendment of 4 or del as to sellers acts only - provided there is no recent, ongoing, or anticipated construction on the land.	95.00
Search & Exam	550.00
Tax Certificate	36.00
ALTA 9.1-06 - Covenants, Conditions and Restrictions - Unimproved Land - Owner's Policy	2,000.00
ALTA 17-06 (CLTA 103.11) - Access and Entry	1,000.00
ALTA 18.1-06 - Multiple Tax Parcel	250.00
ALTA 35.3-06 - Minerals and Other Subsurface Substances - Land Under Development	2,401.00

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EXHIBIT A
LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN COLORADO SPRINGS, IN THE COUNTY OF EL PASO, STATE OF COLORADO, AND IS DESCRIBED AS FOLLOWS:

That portion of the West half of the Northwest Quarter of Section 2 lying West of Interstate Highway No. 25 in Township 11 South, Range 67 West of the 6th p.m., all more particularly described as follows:

Beginning at a point on the Westerly line of said Section 2 that is 30 feet South of the Northwest corner of said section 2;

Thence on a line that is parallel to and 30 feet South of the North line of said section 2, North 89°12' East 584.4 feet (North 89°14'16" East, 615.88 feet record):

Thence South 84°20' East (South 83°37'13" East record) along the right of way of Interstate Highway No. 25, 132.10 feet (96.56 feet record);

Thence continue on said right of way line South 44°27'30" East, 76.8 feet (South 43°49'07" East, 76.72 feet record);

Thence along said right of way line South 4°36' East, 930.13 feet (South 03°54'06" East, 930.13 Feet measured);

Thence continuing along said right of way South 6°42' West, 457.05 feet (South 7°23'54" West, 547.05 measured), to the South line of the Northwest Quarter of the Northwest Quarter of said Section 2;

Thence along said South line, North 89°30' West, 766.91 feet (South 88°46'17" West, 766.91 Feet measured) to the Southwest corner of said Northwest Quarter of the Northwest Quarter of said Section 2;

Thence North (North 00°06'22" West, 1428.85 feet record) along the West line of the North West Quarter of Section 2 to the Point of Beginning and excepting any portion lying Within the County Road known as Beacon Lite Road, county of El Paso, State of Colorado;

Less and except that portion conveyed to the County of El Paso June 16, 2022 under Reception No. 222083003.

For Informational Purposes Only
TAX. I.D.: 7102200014 & 7102200015

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SCHEDULE B – PART I
REQUIREMENTS

a. Pay the agreed amounts for the interest in the land and/or for the mortgage to be insured.

b. Pay us the premiums, fees and charges for the policy.

c. Obtain a certificate of taxes due from the county treasurer or the county treasurer's authorized agent.

d. Furnish for recordation a full release of deed of trust:

Amount:	$2,500,000.00
Dated:	August 11, 2022
Trustor/Grantor	Monument Ridge West, LLC, a Colorado limited liability company
Trustee:	Public Trustee of El Paso County, Colorado
Beneficiary:	5Star Bank
Recording Date:	August 11, 2022
Recording No.:	Reception No. 222106820

e. The Company will require the following documents for review prior to the issuance of any title insurance predicated upon a conveyance or encumbrance from the entity named below:

Limited Liability Company: Monument Ridge West, LLC, a Colorado limited liability company

a) A copy of its operating agreement, if any, and any and all amendments, supplements and/or modifications thereto, certified by the appropriate manager or member

b) A current dated certificate of good standing from the proper governmental authority of the state in which the entity was created,

c) Recordation of a Statement of Authority

d) Copies of resolution(s), agreements and/or other documentation necessary to establish the authority of parties executing on behalf of entities disclosed as part of an organizational structure managing said Limited Liability Company

f. Recordation of a Statement of Authority for CSMS Management, LLC, a Delaware limited liability company

g. Deed sufficient to convey the fee simple estate or interest in the Land described or referred to herein, to the Proposed Insured Purchaser.

h. The Company will require a survey of the subject Land, which is in compliance with minimum technical standards, prepared by a duly registered and licensed surveyor. If the owner of the Land the subject of this transaction is in possession of a survey, the Company will require that said survey be submitted for review and approval; otherwise, a new survey, satisfactory to the Company, must be submitted to the Company for examination. In order to prevent delays, please furnish the survey at least 10 days prior to the close of this transaction.

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SCHEDULE B
PART I – REQUIREMENTS
(Continued)

If an existing survey is to be relied upon, an affidavit from the seller(s)/mortgagor(s) must be furnished to the Company stating that no improvements have been made on the Land the subject of this transaction or adjacent thereto subsequent to the survey presented to the Company.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

NOTE: Chicago Title Insurance Company should be added to the certification on survey prior to finalizing and providing a signed version.

i. The Company will require that an Owner's Affidavit be completed by the party(s) named below before the issuance of any policy of title insurance.

Party(s): Monument Ridge West, LLC, a Colorado limited liability company

The Company reserves the right to add additional items or make further requirements after review of the requested Affidavit.

j. Provide a full set of the architect approved "plans" as to the project in order to determine the company's ability to issue the requested ALTA 35.3 and ALTA 17 endorsements.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

Note: Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

END OF SCHEDULE B – Part I

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SCHEDULE B – PART II
EXCEPTIONS

Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This Commitment and the Policy treat any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document will be excepted from coverage.

The Policy will not insure against loss or damage resulting from the terms and conditions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any facts, rights, interests or claims that are not shown by the Public Records but which could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

2. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

3. Any encroachments, encumbrances, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by Public Records.

4. Any lien or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the effective date hereof but prior to the date the proposed Insured acquires of record for the value the estate or interest or mortgage thereon covered by this Commitment.

   NOTE: Upon all requirements being met and provided the seller confirms no agreements or aspects of recent, ongoing or anticipated construction on the land and an Owners Policy only to be issued, standard exceptions 1-5 will be deleted on final policy when issued.

6. Water rights, claims of title to water, whether or not these matters are shown by the Public Records.

7. All taxes and assessments, now or heretofore assessed, due or payable.

   NOTE: Upon all taxes paid current or confirmed current, with escrow at closing, the above exception will be amended to read as follows also provided closing occurs prior to January 1, 2025:

   "Taxes and assessments for the year 2024 and subsequent years, a lien not yet due or payable."

8. Any existing leases or tenancies, and any and all parties claiming by, through or under said leases.

   NOTE: Upon confirmation of "no leases" on the land, with closing, the above exception will be deleted from final policy when issued.

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EXCEPTIONS
(Continued)

9. Reservations contained in the Patent:

From:	The United States of America
To:	John D. Nees
Recording Date:	March 1, 1883
Recording No.:	COCOAA No. 071617, BLM Records

Which among other things recites as follows:

A right of way thereon for ditches or reservoirs constructed by the authority of the United States of America.

The right of the proprietor of a vein or lode to extract and remove his ore therefrom should the same be found to penetrate or intersect the premises hereby granted as provided by law.

10. Any interest which may have been acquired by the public in and to the 30 feet of subject property adjacent to section lines by reason of a Resolution of Board of County Commissioners dated and recorded June 20, 1917, in Book 571 at Page 55 which Provided for public roads 60 feet in width being 30 feet on either side of section lines on the public domain

11. Terms, conditions, provisions, agreements, reservations and obligations contained in the Deed as set forth below:

Recording Date:	September 7, 1948
Recording No.:	Book 1185 Page 446

12. ~~Terms, conditions, provisions, agreements and obligations contained in the Notice as set forth below:~~

~~Recording Date:~~	~~August 31, 1954~~
~~Recording No.:~~	~~Book 1450 Page 70~~

NOTE: Intentionally omitted based on content of document.

13. Terms, conditions, provisions, agreements and obligations contained in the Notice as set forth below:

Recording Date:	December 10, 1954
Recording No.:	Book 1469 Page 102

14. Terms, conditions, provisions, agreements and obligations contained in the Notice as set forth below:

Recording Date:	December 22, 1960
Recording No.:	Book 1837 Page 219

15. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	Mountain View Electric Association, Inc.
Purpose:	Electric Transmission and Distribution Lines
Recording Date:	May 27, 1963

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EXCEPTIONS
(Continued)

Recording No.: Book 1959 Page 92

16. Terms, conditions, provisions, agreements and obligations contained in the Notice as set forth below:

Recording Date: August 9, 1965
Recording No.: Book 2087 Page 257

17. Terms, conditions, provisions, agreements and obligations contained in the District Court Rule and Order as set forth below:

Recording Date: April 24, 1967
Recording No.: Book 2177 Page 289

18. Terms, conditions, provisions, agreements and obligations contained in the Notice as set forth below:

Recording Date: December 5, 1969
Recording No.: Book 2321 Page 881

19. Any taxes or assessments by reason of the inclusion of the Land in the Tri-Lakes Fire Protection District:

Recording Date: July 18, 1977
Recording No.: Book 2941 Page 577

Notice of Organization:
Recording Date: July 18, 1977
Recording No.: Reception No. 341358

20. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Mountain View Electric Association, Inc.
Purpose: Electric Transmission and Distribution Lines
Recording Date: June 19, 1978
Recording No.: Book 3050 Page 975

21. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Mountain View Electric Association, Inc.
Purpose: Electric Transmission and Distribution Lines
Recording Date: December 21, 1981
Recording No.: Book 3514 Page 411

22. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Mountain View Electric Association, Inc.
Purpose: Electric Transmission and Distribution Lines
Recording Date: February 13, 1989
Recording No.: Book 5604 Page 362

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EXCEPTIONS
(Continued)

23. ~~Terms, conditions, provisions, agreements and obligations contained in the Notice as set forth below:~~

~~Recording Date: December 5, 1989~~
~~Recording No.: Book 2321 Page 881~~

NOTE: Intentionally omitted, duplicate to exception 18.

24. ~~Terms, conditions, provisions, agreements and obligations contained in the Co-Location Document as set forth below:~~

~~Recording Date: November 8, 1994~~
~~Recording No.: Book 6559 Page 1475~~

NOTE: Intentionally omitted based on survey review.

25. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 94-347, Land Use -147 as set forth below:

Recording Date: February 14, 1995
Recording No.: Book 6603 Page 1131

26. ~~Terms, conditions, provisions, burdens and obligations as set forth in El Paso County Board of County Commissioners Resolution No. 94-229:~~

~~Recording Date: July 3, 1995 in~~
~~Recording No.: Book 6676 Page 441~~

NOTE: Intentionally omitted based on survey review.

27. ~~Terms, conditions, provisions, burdens and obligations as set forth in EL PASO COUNTY BOARD OF COUNTY COMMISSIONERS RESOLUTION NO. 94-348:~~

~~Recording Date: July 21, 1995~~
~~Recording No. Book 6688 Page 766~~

NOTE: Intentionally omitted based on survey review.

28. ~~An unrecorded lease with certain terms, covenants, conditions and provisions set forth therein as disclosed by the document:~~

~~Entitled: Short Form of Lease~~
~~Lessor: Interstate 25 Properties, Ltd., a Colorado limited partnership~~
~~Lessee: OneComm Corporation, N.A., a Delaware corporation~~
~~Recording Date: May 23, 1995~~
~~Recording No.: Book 6652 Page 745~~

~~Amended Memorandum of Lease:~~
~~Recording Date: April 21, 2008~~

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EXCEPTIONS
(Continued)

~~Recording No.: Reception No. 208044753~~

NOTE: Intentionally omitted based on survey review.

29. ~~An unrecorded lease with certain terms, covenants, conditions and provisions set forth therein as disclosed by the document:~~

~~Entitled: Memorandum of Lease~~
~~Lessor: Interstate 25 Properties, Ltd., a Colorado limited partnership~~
~~Lessee: Western PCS III License Corporation~~
~~Recording Date: December 23, 1996~~
~~Recording No.: Reception No. 96157445~~

~~Fourth Amendment to Site Lease With Option:~~
~~Recording Date: February 16, 2011~~
~~Recording No.: Reception No. 211017311~~

~~Short Form Amendment to Site Lease With Option and Right of First Refusal:~~
~~Recording Date: August 21, 2013~~
~~Recording No.: Reception No. 213107440~~

NOTE: Intentionally omitted based on survey review.

30. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 99-399 as set forth below:

Recording Date: October 20, 1999
Recording No.: Reception No. 99163142

31. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 00-72 as set forth below:

Recording Date: March 20, 2000
Recording No.: Reception No. 200028818

32. Any taxes or assessments by reason of the inclusion of the Land in the Tri-Lakes park and Recreation District:

Recording Date: March 23, 2001
Recording No.: Reception No. 201034896

33. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 01-267 (Amended) as set forth below:

Recording Date: July 31, 2001
Recording No.: Reception No. 201108508 and re-recorded September 4, 2001 at Reception No. 201128884

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EXCEPTIONS
(Continued)

34. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 01-321 as set forth below:

Recording Date: September 21, 2001
Recording No.: Reception No. 201138044

35. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 02-394 as set forth below:

Recording Date: November 7, 2002
Recording No.: Reception No. 202195447 and re-recorded January 23, 2003 at Reception No. 203015803

36. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 02-334 as set forth below:

Recording Date: February 19, 2003
Recording No.: Reception No. 203036123

37. An unrecorded lease with certain terms, covenants, conditions and provisions set forth therein as disclosed by the document:

Entitled: Memorandum of Site Agreement
Lessor: Tower Asset Sub, Inc., a Delaware corporation
Lessee: AT&T Wireless PCS, LLC, a Delaware limited liability company
Recording Date: October 29, 2003
Recording No.: Reception No. 203254810

38. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 03-264 as set forth below:

Recording Date: December 16, 2003
Recording No.: Reception No. 203288087

39. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 06-287 as set forth below:

Recording Date: August 11, 2006
Recording No.: Reception No. 206118779

40. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 07-312 (Amended) as set forth below:

Recording Date: July 31, 2007
Recording No.: Reception No. 207101123 and re-recorded August 29, 2007 at Reception No. 207113049

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EXCEPTIONS
(Continued)

41. Terms, conditions, provisions, agreements and obligations contained in the Resolution 07-318 (Amended) as set forth below:

Recording Date: August 6, 2007
Recording No.: Reception No. 207103126 and re-recorded August 29, 2007 at Reception No. 207113050

42. An unrecorded lease with certain terms, covenants, conditions and provisions set forth therein as disclosed by the document:

Entitled: Memorandum of Lease
Lessor: Interstate 25 Properties, Ltd., a Colorado limited partnership
Lessee: SpectraSite Communications, LLC, a Delaware limited liability company
Recording Date: December 17, 2013
Recording No.: Reception No. 213148243

Resolution and Consent Affidavit:
Recording Date: December 17, 2013
Recording No.: Reception No. 213148244

43. ~~Terms, conditions, provisions, burdens and obligations as set forth in Resolution No. 22-108:~~

~~Recording Date: March 29, 2022~~
~~Recording No.: Reception No. 222044117~~

NOTE: Intentionally omitted based on survey review.

44. Terms, conditions, provisions, burdens and obligations as set forth in Memorandum And Agreement:

Recording Date: March 29, 2022
Recording No.: Reception No. 222044118

45. Terms, conditions, provisions, burdens and obligations as set forth in Resolution No. 22-109:

Recording Date: March 29, 2022
Recording No.: Reception No. 222044119

46. Terms, conditions, provisions, burdens and obligations as set forth in Memorandum and Agreement:

Recording Date: March 29, 2022
Recording No.: Reception No. 222044120

47. Terms, conditions, provisions, burdens and obligations as set forth in special Warranty Deed:

Recording Date: June 16, 2022
Recording No.: Reception no. 222083003

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EXCEPTIONS
(Continued)

48. Terms, conditions, provisions, agreements and obligations contained in the Order of Inclusion as set forth below:

Recording Date: January 3, 2023
Recording No.: Reception No. 223000104

49. Terms, conditions, provisions, agreements and obligations contained in the Resolution No. 23-379 as set forth below:

Recording Date: November 8, 2023
Recording No.: Reception No. 223093087

50. Terms, conditions, provisions, agreements and obligations contained in the Memorandum of Agreement as set forth below:

Recording Date: November 8, 2023
Recording No.: Reception No. 2230093088

51. The following matters as shown on survey prepared by Kimley Horn, Job No. 196094002, dated June 14, 2024 and last amended _____:
(a) Any interest and/or use and maintenance in that certain dirt drive that traverses on and off the land, as shown thereon.
(b) The fact the fence lines do not correspond with the lot lines, as shown thereon.
(c) Telecom Lines along the west and north boundaries, as shown thereon, and not lying with in a found recorded easement(s).
(d) Underground Gas Line Terminus unknown as noted thereon and evidenced to the west of the property line.

END OF SCHEDULE B – PART II

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DISCLOSURE STATEMENT

- Pursuant to Section 38-35-125 of Colorado Revised Statutes and Colorado Division of Insurance Regulation 8-1-2 (Section 5), if the parties to the subject transaction request us to provide escrow-settlement and disbursement services to facilitate the closing of the transaction, then all funds submitted for disbursement must be available for immediate withdrawal.
- Colorado Division of Insurance Regulation 8-1-2, Section 5, Paragraph H, requires that "Every title insurance company shall be responsible to the proposed insured(s) subject to the terms and conditions of the title insurance commitment, other than the effective date of the title insurance commitment, for all matters which appear of record prior to the time of recording whenever the title insurance company, or its agent, conducts the closing and settlement service that is in conjunction with its issuance of an owners policy of title insurance and is responsible for the recording and filing of legal documents resulting from the transaction which was closed". Provided that Fidelity National Title Insurance Co., National Commercial Services conducts the closing of the insured transaction and is responsible for recording the legal documents from the transaction, exception No. 5 in Schedule B-2 will not appear in the Owner's Title Policy and Lender's Title Policy when issued.
- Colorado Division of Insurance Regulation 8-1-2, Paragraph M of Section 5, requires that prospective insured(s) of a single family residence be notified in writing that the standard exception from coverage for unfiled Mechanics or Materialmans Liens may or may not be deleted upon the satisfaction of the requirement(s) pertinent to the transaction. These requirements will be addressed upon receipt of a written request to provide said coverage, or if the Purchase and Sale Agreement/Contract is provided to the Company then the necessary requirements will be reflected on the commitment.
- Colorado Division of Insurance Regulation 8-1-3, Paragraph C. 11.f. of Section 5 - requires a title insurance company to make the following notice to the consumer: “A closing protection letter is available to be issued to lenders, buyers and sellers.”
- If the sales price of the subject property exceeds $100,000.00 the seller shall be required to comply with the Disclosure of Withholding Provisions of C.R.S. 39-22-604.5 (Nonresident Withholding).
- Section 39-14-102 of Colorado Revised Statutes requires that a Real Property Transfer Declaration accompany any conveyance document presented for recordation in the State of Colorado. Said Declaration shall be completed and signed by either the grantor or grantee.
- Recording statutes contained in Section 30-10-406(3)(a) of the Colorado Revised Statutes require that all documents received for recording or filing in the clerk and recorder's office shall contain a top margin of at least one inch and a left, right, and bottom margin of at least one-half of an inch. The clerk and recorder may refuse to record or file a document that does not conform to requirements of this paragraph.
- Section 38-35-109 (2) of the Colorado Revised Statutes, requires that a notation of the purchasers legal address, (not necessarily the same as the property address) be included on the face of the deed to be recorded.
- Regulations of County Clerk and Recorder's offices require that all documents submitted for recording must contain a return address on the front page of every document being recorded.
- Pursuant to Section 10-11-122 of the Colorado Revised Statutes, the Company is required to disclose the following information:
    - The subject property may be located in a special taxing district.
    - A Certificate of Taxes Due listing each taxing jurisdiction shall be obtained from the County Treasurer or the County Treasurer's authorized agent.
    - Information regarding special districts and the boundaries of such districts may be obtained from the Board of County Commissioners, the County Clerk and Recorder or the County Assessor.
- Pursuant to Section 10-11-123 of the Colorado Revised Statutes, when it is determined that a mineral estate has been severed from the surface estate, the Company is required to disclose the following information: that there is recorded evidence that a mineral estate has been severed, leased, or otherwise conveyed from the surface estate and that there is a substantial likelihood that a third party holds some or all interest in oil, gas, other minerals, or geothermal energy in the property; and that such mineral estate may include the right to enter and use the property without the surface owner's permission.

Note: Notwithstanding anything to the contrary in this Commitment, if the policy to be issued is other than an ALTA Owner's Policy (6/17/06), the policy may not contain an arbitration clause, or the terms of the arbitration clause may be different from those set forth in this Commitment. If the policy does contain an arbitration clause, and the Amount of Insurance is less than the amount, if any, set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties.

Wire Fraud Alert

This Notice is not intended to provide legal or professional advice. If you have any questions, please consult with a lawyer.

All parties to a real estate transaction are targets for wire fraud and many have lost hundreds of thousands of dollars because they simply relied on the wire instructions received via email, without further verification. **If funds are to be wired in conjunction with this real estate transaction, we strongly recommend verbal verification of wire instructions through a known, trusted phone number prior to sending funds.**

In addition, the following non-exclusive self-protection strategies are recommended to minimize exposure to possible wire fraud.

- **NEVER RELY** on emails purporting to change wire instructions. Parties to a transaction rarely change wire instructions in the course of a transaction.
- **ALWAYS VERIFY** wire instructions, specifically the ABA routing number and account number, by calling the party who sent the instructions to you. DO NOT use the phone number provided in the email containing the instructions, use phone numbers you have called before or can otherwise verify. **Obtain the phone number of relevant parties to the transaction as soon as an escrow account is opened**. DO NOT send an email to verify as the email address may be incorrect or the email may be intercepted by the fraudster.
- **USE COMPLEX EMAIL PASSWORDS** that employ a combination of mixed case, numbers, and symbols. Make your passwords greater than eight (8) characters. Also, change your password often and do NOT reuse the same password for other online accounts.
- **USE MULTI-FACTOR AUTHENTICATION** for email accounts. Your email provider or IT staff may have specific instructions on how to implement this feature.

For more information on wire-fraud scams or to report an incident, please refer to the following links:

Federal Bureau of Investigation:
http://www.fbi.gov

Internet Crime Complaint Center:
http://www.ic3.gov

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Effective December 1, 2023

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- contact information (*e.g.*, name, address, phone number, email address);
- demographic information (*e.g.*, date of birth, gender, marital status);
- identity information (*e.g.* Social Security Number, driver's license, passport, or other government ID number);
- financial account information (*e.g.* loan or bank account information); and
- other personal information necessary to provide products or services to you.

We may collect Personal Information about you from:

- information we receive from you or your agent;
- information about your transactions with FNF, our affiliates, or others; and
- information we receive from consumer reporting agencies and/or governmental entities, either directly from these entities or through others.

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FNF automatically collects the following types of Browsing Information when you access an FNF website, online service, or application (each an "FNF Website") from your Internet browser, computer, and/or device:

- Internet Protocol (IP) address and operating system;
- browser version, language, and type;
- domain name system requests; and
- browsing history on the FNF Website, such as date and time of your visit to the FNF Website and visits to the pages within the FNF Website.

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- To provide reviews and testimonials about our services, with your consent.

When Information Is Disclosed

We may disclose your Personal Information and Browsing Information in the following circumstances:

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- to affiliated or nonaffiliated service providers who provide or perform services or functions on our behalf and who agree to use the information only to provide such services or functions;

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- to law enforcement or authorities in connection with an investigation, or in response to a subpoena or court order; or
- in the good-faith belief that such disclosure is necessary to comply with legal process or applicable laws, or to protect the rights, property, or safety of FNF, its customers, or the public.

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Attn: Chief Privacy Officer

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Ecological Assessment Report
for
Buc-ee's Travel Center
Palmer Lake Site
El Paso County, Colorado

July 11, 2025

Prepared for:

Prepared by:

Nina Ruiz
Vertex Consulting Services
5825 Delmonico Dr. Suite 320
Colorado Springs, CO 80919

1455 Washburn Street
Erie, Colorado 80516
(p): 970-812-3267

Project Number: 2025-3-1

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PURPOSE 1
1.2 SITE LOCATION 1
1.3 PROJECT DESCRIPTION 2
2.0 METHODOLOGY 6
3.0 ENVIRONMENTAL SETTING 7
4.0 FINDINGS, IMPACTS & MITIGATION 8
4.1 TOPOGRAPHY / NATURAL LANDFORM 8
4.2 SOILS 8
4.3 VEGETATION 9
4.4 WETLAND HABITAT AND WATERS 15
4.5 COMMON WILDLIFE 19
4.6 THREATENED AND ENDANGERED SPECIES 40
4.7 RAPTORS AND MIGRATORY BIRDS 46
6.0 REGULATIONS AND REGULATORY COMPLIANCE 46
6.1 CLEAN WATER ACT 46
6.2 ENDANGERED SPECIES ACT 46
6.3 MIGRATORY BIRD TREATY ACT & BALD AND GOLDEN EAGLE PROTECTION ACT 47
6.4 COLORADO NONGAME SPECIES CONSERVATION ACT 47
6.5 COLORADO DEPARTMENT OF AGRICULTURE NOXIOUS WEED ACT 48
6.6 OTHER LOCAL AND STATE REGULATIONS 48
7.0 SUMMARY AND CONCLUSIONS 49
8.0 REFERENCES 52

LIST OF FIGURES

Figure 1. USGS Site Location Map 3
Figure 2. Existing Conditions Aerial Photo 4
Figure 3. Ecoregion Map 5
Figure 4. Vegetation Community Map 12
Figure 5. Riparian Areas Map 13
Figure 6. National Wetland Inventory Map 14
Figure 7. Aquatic Resources Map 18
Figure 8. CDOT Wildlife Conflict Mitigation Areas 35
Figure 9. Douglas County Wildlife Resources Map 36
Figure 10. El Paso County Open Space Composite Analysis 37
Figure 11. CNHP Landscape Disturbance Index 38
Figure 12. Wildlife Mitigation Plan 39
Figure 13. PMJM Habitat Map 45

LIST OF APPENDICES

APPENDIX A – USFWS IPAC TRUST RESOURCES REPORT
APPENDIX B – USDA CUSTOM SOIL REPORT
APPENDIX C – PHOTO LOCATION MAP AND REPRESENTATIVE PHOTOS
APPENDIX D – ELK AND MULE DEER HABITAT MAPS
APPENDIX E - CPW HIGH PRIORITY HABITAT
APPENDIX F - HISTORIC AERIAL IMAGERY
APPENDIX G - PROFESSIONAL QUALIFICATIONS

LIST OF ACROYNMS AND ABBREVIATIONS

AMSL	Above Mean Sea Level
PBA	Programmatic Biological Assessment
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
CDA	Colorado Department of Agriculture
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CNHP	Colorado Natural Heritage Program
CPW	Colorado Parks and Wildlife
CWA	Clean Water Act
DCOS	Douglas County Open Space
ECMC	Colorado Energy and Carbon Management Commission
ECOS	Ecosystem Services, LLC
EPC	El Paso County
EPCP	El Paso County Parks
ESA	Endangered Species Act
HPH	High Priority Habitat
JD	Jurisdictional Determination under the Clean Water Act
LEDPA	Least Environmentally Damaging and Practicable Alternative
MBTA	Migratory Bird Treaty Act
MP	Mile Post
Non-JD	Non- jurisdictional Determination under the Clean Water Act
NRCS	Natural Resource Conservation Service
NTCHS	Technical Committee for Hydric Soils
NWI	National Wetland Inventory
NWMP	Noxious Weed Management Plan
OHWM	Ordinary High Water Mark
PCA	CNHP Potential Conservation Area
PMJM	Preble's meadow jumping mouse
Project	Buc-ee’s Palmer Lake Project
Report	Ecological Assessment Report
Site	Buc-ee’s Project site
T&E Species	Threatened and Endangered species
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Vertex	Vertex Consulting Services
WOSOC	Waters of the State of Colorado
WOTUS	Waters of the Unites States
WQCD	Water Quality Control Division
WCV	Wildlife-Vehicle Collisions

1.0 INTRODUCTION

Ecosystem Services, LLC (ECOS) was retained by Vertex Consulting Services (Vertex) to perform an ecological assessment (EA) for the 24.77-acre Buc-ee's Palmer Lake Site (Site) development project (Project) and to prepare this Ecological Assessment Report (Report). ECOS professional qualifications are provided in Appendix G.

The contact information for the Vertex and ECOS representatives for this Report is provided below:

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1.1 Purpose

The purpose of the EA is to compare background information with present-day conditions, describe the physical/ecological characteristics and conditions of the Site, identify potential environmental opportunities and constraints associated with the Project, and determine the presence/absence and approximate extent of the following features:

- Topography / Natural Landforms;
- Vegetation Communities;
- Riparian Areas;
- Wetland Habitat and Waters Resources (i.e., lakes, ponds, streams)
- Wildlife Habitat:
    - Federal listed Threatened and endangered Species;
    - Migratory Birds and Raptors; and other
    - Significant wildlife.

1.2 Site Location

The Site is located on the northern margin of the Black Forest on Monument Hill due east of the Town of Palmer Lake, Colorado between I-25 and Beacon Lite Road to the east and west. Palmer Divide Road bounds the Site to the north. The Site is specifically located within the northwest quarter of Section 2, Township 11 South, Range 67 West of the 6th P.M., El Paso County, Colorado (El Paso County Parcel 222106819). The center of the Site is located at approximately Latitude 39.127687° north, Longitude -104.866275° west at an elevation of approximately 7,360 feet above mean sea level. Refer to Figure 1, USGS Site Location Map and Figure 2, Existing Conditions Aerial Photo.

1.3 Project Description

The Applicant is seeking concurrent approvals for annexation, sketch plan, and development plans (Plans) for a Buc-ee's commercial travel center. The Plans propose clearing and grading of the 24.77-acre Site to accommodate one building, fueling stations, parking, stormwater detention facilities and appurtenant utilities. Please refer to the Development Plans provided by the Applicant and the development application under separate cover for specific details and descriptions of the Project discussed herein.

Figure 1

USGS Site Location Map

Figure 1

USGS Site Location Map

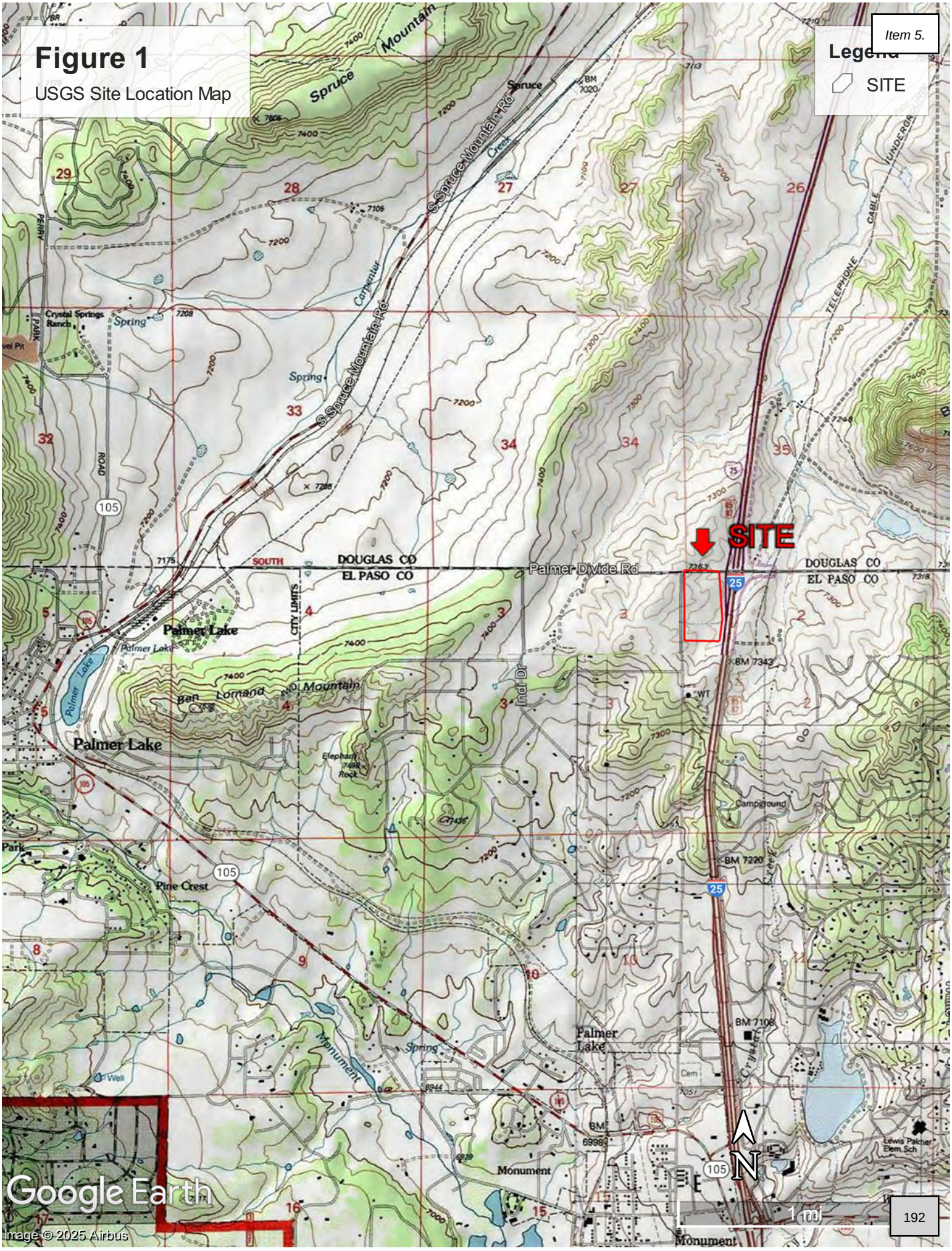


Figure 2
Existing Conditions Aerial Photo

Figure 2

Existing Conditions Aerial Photo

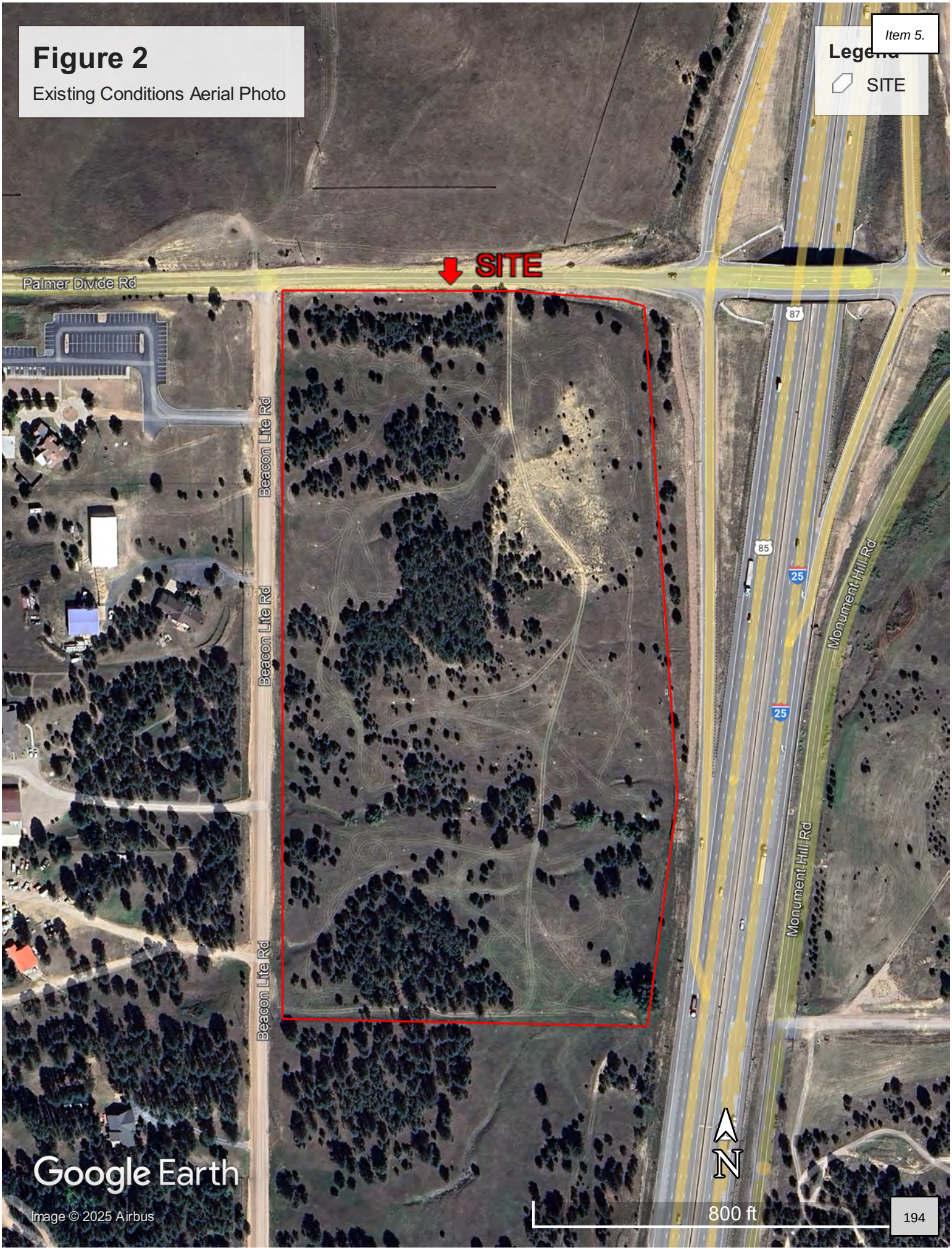
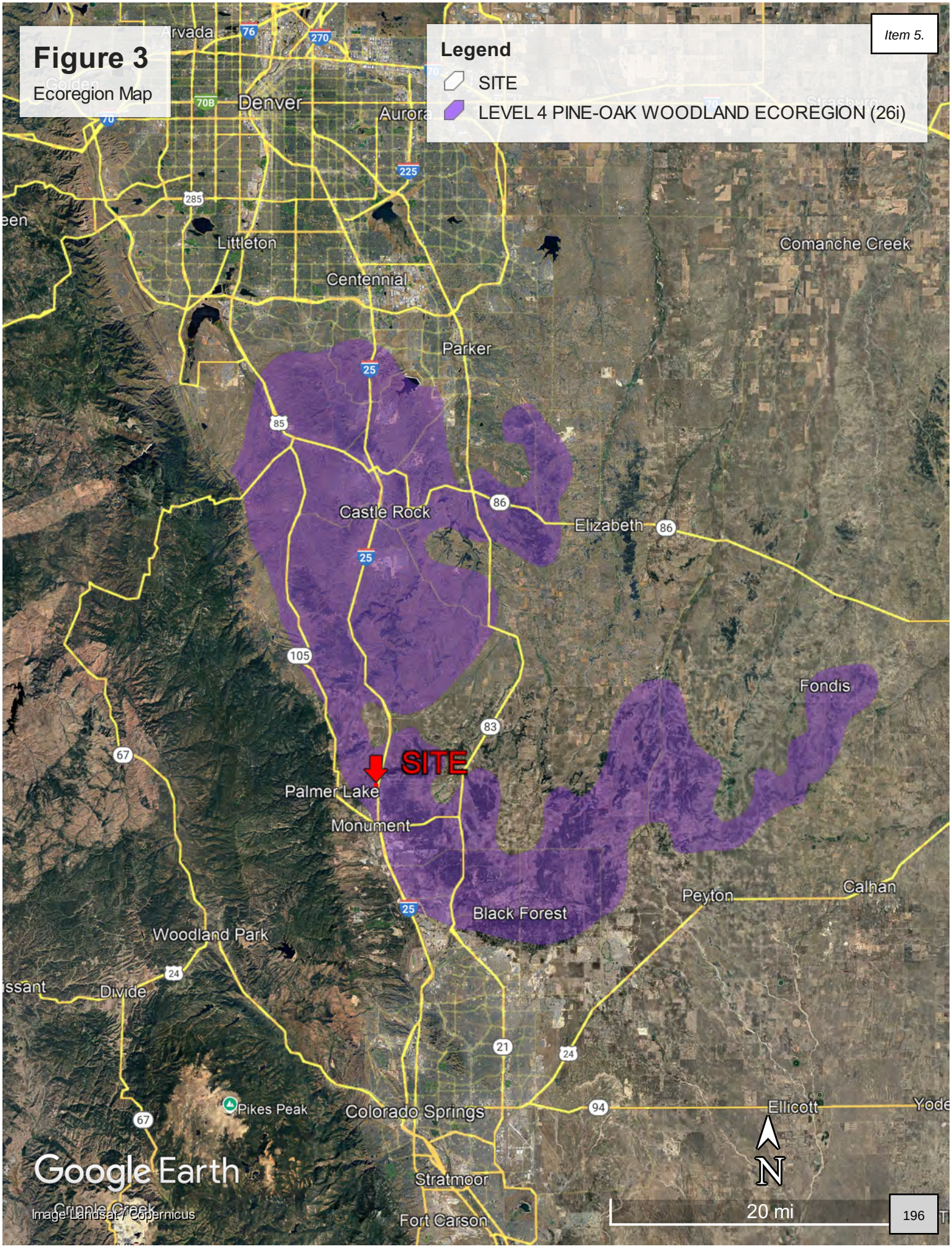


Figure 3

Ecoregion Map

Figure 3

Ecoregion Map



2.0 METHODOLOGY

ECOS performed an office-level assessment in which available databases, resources, literature and field guides on local flora and fauna were reviewed to gather background information on the environmental setting of the Site. We consulted several organizations, agencies, and their databases, including:

- Colorado Department of Transportation (CDOT) I-25 South Gap Environmental Assessment, including Programmatic Biological (PBA) and Wildlife Movement Technical Memorandum;
- CDOT I-25 South Gap Wildlife Monitoring Year 3 Progress Report
- Colorado Natural Heritage Program (CNHP) Wetland and Riparian Areas;
- Colorado Energy and Carbon Management Commission (ECMC) Online GIS;
- Colorado Parks and Wildlife (CPW);
- Google Earth current and historic aerial imagery;
- Survey of Critical Biological Resources, El Paso County, Colorado;
- Survey of Critical Wetlands and Riparian Areas in El Paso and Pueblo Counties, Colorado;
- U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetlands Delineation Manual;
- USACE 2008 Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast;
- U.S. Department of Agriculture (USDA) PLANTS Database;
- U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey;
- U.S. Fish and Wildlife Service (USFWS) Region 6 data;
- USFWS Information, Planning, and Conservation (IPaC) database;
- USFWS National Wetland Inventory (NWI);
- U.S. Geological Survey (USGS); and
- Site-specific background data and plans provided by the Vertex and their consulting Team, including topographic base mapping, site development plans, and other data pertinent to the assessment.

Following the collection and review of existing data and background information, ECOS conducted a field assessment of the Site on March 25, 2025. The purpose of the assessment was to compare background information with present-day conditions and determine the presence/absence and approximate extent of the following features:

- Topography / Natural Landforms;
- Vegetation Communities;
- Riparian Areas;

- Wetlands and waters resources (i.e., lakes, ponds, streams) regulated under the Federal Clean Water Act (CWA) and State of Colorado Water Quality Control Act; and
- Wildlife habitat, including:
  - Federal listed Threatened and endangered Species habitat regulated under the Endangered Species Act;
  - Migratory birds and raptors regulated under the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BEGPA); and other
  - Significant habitat.

During the office and on-site assessment ECOS mapped the above features (if present) using a Global Positioning System (GPS) and Google Earth aerial imagery. ECOS utilized GPS in the field to document the boundaries/locations of significant natural features as deemed necessary. Representative photographs were taken to assist in describing and documenting Site conditions (Appendix C)

3.0 ENVIRONMENTAL SETTING

The Site is located in the Southwestern Tablelands Level 3 Ecological Region (26) which is primarily comprised of sub-humid grassland and semiarid rangeland (Chapman et al, 2006). More specifically, the Site is located within the Pine-Oak Woodlands Level 4 Ecological Sub-region (26i) which is a dissected plain with dense oakbrush and deciduous oak woodlands combined with ponderosa pine woodlands. The southern portion of the Ecoregion is known locally as the Black Forest. Although woodlands dominate, the region is a mosaic of woodlands and grasslands. It is somewhat more dissected than the surrounding Foothill Grasslands (26j) ecoregion. Soils are formed from weathered sandstone and shale with some outwash on uplands. Land use is woodland, wildlife habitat, rural residential, and some rangeland. Areas of the region are rapidly urbanizing. Refer to Figure 3, Ecoregion Map.

The Site is not located within a Colorado Natural Heritage Program (CNHP) Potential Conservation Area (PCA), nor has it been identified as Critical Wetland or Riparian Area according to the CNHP database (CNHP, 2025), or the Survey of Critical Wetlands and Riparian Areas in El Paso County (CNHP, 2001). The Black Forest is unique in that it is the only place in Colorado where montane forest grows east of the Front Range and foothills. On vegetation maps, satellite images, and even from the summit of Pikes Peak, this extension of forest into the plains is very conspicuous. The flora and structure of this forest resembles that of the Black Hills in South Dakota and contains many interesting disjunct species. Many of the plant species here are considered "woodland prairie relicts" which were once more common in Colorado and have diminished here due to climatic change. The Black Forest offers these species as refuge in which they can persist, widely disjunct from other populations of the same species. Long-term separation of populations of this sort can lead to allopatric speciation (the formation of new species via geographic isolation from parent populations), and for this and other reasons these disjunct populations are interesting and worthy

of conservation attention. The Richardson alum-root (Heucheria richardsonii), prairie goldenrod (Unamia alba), birdfoot violet (Viola pedatifida), and Selkirk's violet (V. selkirkii) found in this ecoregion are all common elsewhere but rare in Colorado. Although no occurrences are present in this site, the gay feather (Liatris ligulistylis) is another species that is found in the Black Forest that falls into this category. It prefers open meadows in the Black Forest and appears to have diminished greatly there due to fire suppression and ecosystem transformation.

The Site is located in the headwaters of the Bald Mountain (HUC 14) watershed, within the larger Carpenter Creek (HUC 12), East Plum Creek (HUC 10) and the Upper South Platte River (HUC 8) watersheds.

No Critical Habitat of T&E Species, Wildlife Refuges or Hatcheries are present in the vicinity of the Site according to the USFWS IPaC Trust Resources Report in Appendix A (USFWS, 2025a).

4.0 FINDINGS, IMPACTS & MITIGATION

4.1 Topography / Natural Landform

The topography/natural landform of the Site is gently rolling/hilly, trending from west to east toward I-25 with elevations ranging roughly between 7,368 and 7,312 feet AMSL. One (1) grass-lined ephemeral channel (Channel 1) drains from west to east through the southern portion of the Site. One short and one long grass-lined ephemeral swale (Swales 1 and 2) are confluent with Channel 1 at the eastern Site boundary where combined they enter a 24” culvert and flow under I-25 into an unnamed, headwater tributary to Carpenter Creek. The tributary downstream of the Site is a relatively permanent, intermittent channel with abutting wetlands.

4.2 Soils

ECOS utilized the USDA, Natural Resource Conservation Service (NRCS) Web Soil Survey (USDA, NRCS, 202) to determine the types of soils present and if hydric soils are present within the Site, as this data assists in informing the presence/absence of potential wetland habitat regulated under the Clean Water Act (CWA). Please refer to the Custom Soil Report for the Site in Appendix B.

Pursuant to the Custom Soil Resource Report, 83% of the Site is comprised of 69 – Peyton-Pring Complex sandy loam-gravelly sandy loams, 8 to 15 percent slopes. Seventeen (17%) of the Site along the western edge are comprised of 92 -Tomah-Crowfoot loamy sands, 3 to 8 percent slopes. These soils are well drained and the depth to water table is more than 80 inches. The frequency of flooding and ponding is none.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS, 1994) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are either saturated or

inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in *Field Indicators of Hydric Soils in the United States* (USDA, NRCS, 2010). On a scale of 1-100% the Peyton-Pring and Tomah-Crowfoot soils have a rating of 1-5%. Neither of these soil types is rated as hydric.

4.3 Vegetation

4.3.1 Office Assessment Findings

NRCS Soil Survey Data associates soil types with ecological site descriptions of plant communities within Major Land Resources Areas (MLRA's). The Peyton-Pring soils on the Site are mostly closely associated with the Sandy Divide MLRA. NRCS indicates that the plant community reference condition is about 85-90% grasses, 10-15% forbs, and 5-10% shrubs. Mid and tall grasses dominate giving this site a rolling, continuous grassland cover. Tall grasses are scattered throughout the community. Mountain muhly, needle and thread, prairie sandreed, big bluestem, Indiangrass, little bluestem, tall and midgrass dominate the plant community and produce about 55% of the climax vegetation. There are no significant shrubs on this site. Plants such as blue grama, sun sedge, prairie junegrass, western wheatgrass, thickspike wheatgrass, hairy grama, bottlebrush squirreltail, sand dropseed, rose pussytoes, narrowleaf penstemon, Norwegian cinquefoil and woods rose occur in scattered amounts throughout the climax plant community. Minor forbs such as skyrocket gilia, wormwood, Nutall larkspur, Drummond milkvetch, sand lily, sand lupine, silvery lupine, and grassy death camas are also present in the plant community.

CDOT I-25 South Gap Biological Assessment and Wildlife Movement Technical Memorandum documents general habitat types that provide suitable food, water, cover and sanctuary for many different species of wildlife - habitat that were once contiguous before the construction of I-25. These habitat types are documented along the 21-mile swath of I-25 and adjacent lands (study area) between Mile Post (MP) 160 near Monument and MP181 near Castlerock) through Douglas and El Paso Counties known as the Gap. The Buc-ee's Site was included in this analysis as it is adjacent to the Gap, on the west side of I-25 between MP 163.15 and 163.45 (0.3-mile or 1.4% of the length of the west side of the Gap) just south of the El Paso - Douglas County line at Palmer Divide Road.

The major habitat types reported by CDOT include:

- Upland forest habitat is generally present in areas with more topographic relief, particularly near the town of Larkspur and on Monument Hill. Dominant trees include ponderosa pine (Pinus ponderosa) and Gambel oak (Quercus gambelii). Understory plants include smooth brome (Bromus inermis),

witchgrass (Panicum capillare), and crested wheatgrass (Agropyron cristatum).

- Upland grassland habitat is present in areas used for grazing as well as in open space and unmown areas within or near the ROW. The areas have most likely been seeded in the past with desirable pasture grasses. In less disturbed areas, and in areas of the ROW where it appears that plants have been reseeded, native grasses such as blue grama (Bouteloua gracilis), western wheatgrass (Pascopyrum smithii), sideoats grama (Bouteloua curtipendula), and little bluestem are common. However, most upland grassland habitat is dominated by smooth brome, crested wheatgrass, and western wheatgrass. Other herbaceous species such as kochia (Bassia scoparia), common mullein (Verbascum thapsus), knapweed (Centaurea spp.), horseweed (Conyza canadensis), ragweed (Ambrosia spp.), common vervain (Verbena bracteata), prickly lettuce (Lactuca serriola), and common sunflower (Helianthus annuus) are common throughout upland grassland habitat (CDOT, 2018).

CDOT does not show that the following habitats are present on the Site:

- Riparian habitat, including the ephemeral portion of the unnamed tributary to Carpenter Creek that extends into the Site; and
- Wet meadow habitat.

Colorado Natural Heritage Center (CNHP) Colorado Wetland Information Center – Wetlands Mapper (CNHP, 2025) includes the option for illustrating potential riparian habitat based on high altitude aerial photo interpretation mapping produced by Colorado Parks and Wildlife (CPW). CNHP Riparian Area mapping indicates that there are no riparian areas within the Site. Refer to Figure 5, Riparian Areas Map.

4.3.2 Field Assessment Findings

ECOS' onsite assessment is generally consistent with the NRCS and CDOT findings. The following are plant communities and homogeneous species composition actually found on Site:

4.3.2.1 Ponderosa Pine Forest

Approximately 8.9 acres (35%) of the 24.77-acre Site consists of multi-aged, mono-culture of ponderosa pine (*Pinus ponderosa*) forest with an understory mixture of mid-grass species and pine needle duff. No understory shrubs were observed. (See Midgrass prairie section below for species composition). Aerial imagery dating back to 1937 indicates that the site was treeless and used for livestock grazing and hay production. Ponderosa pine succession started in the 1980’s and has become more dense as a result of fire suppression. (See Appendix F)

4.3.2.2 Midgrass Prairie

Approximately 16.0 acres (65%) of the 24.77-acre site consists of midgrass prairie. Plant species composition is somewhat consistent with the USDA reference condition (noted above),but is dominated by a mono-culture of mountain brome (*Bromus montanus*) with scattered blue grama (*Bouteloua gracilis*), prairie junegrass (*Koeleria macrantha*), fringed sage (*Artemisia frigida*), and Wood's rose shrubs (*Rosa woodsii*). The dominance of mountain brome is likely due to agricultural practices to maximize hay forage for cattle. Grasslands are fairly low in diversity, but are in very good condition with only a few, non-problematic occurrences of knapweed (*Centaurea spp.*) and common mullein (*Verbascum Thapsus*), both listed noxious weeds.

4.3.2.3 Riparian Areas

During the field assessment ECOS found that the CNHP data is accurate. The Site and particularly Channel 1 contains only a few individual non-native crack willow (*Salix fragilis*). However, soil moisture levels within the channel bed and banks support only upland midgrass prairie and ponderosa pine species. Robust wetland herbs, shrubs, or trees that are indicative of wetland and riparian areas are absent.

4.3.2.4 Wetlands

No wetlands were found on the Site. Refer to Section 4.4 Wetland Habitat and Waters for more detail.

Figure 4

Vegetation Community Map

Figure 4

Vegetation Community Map

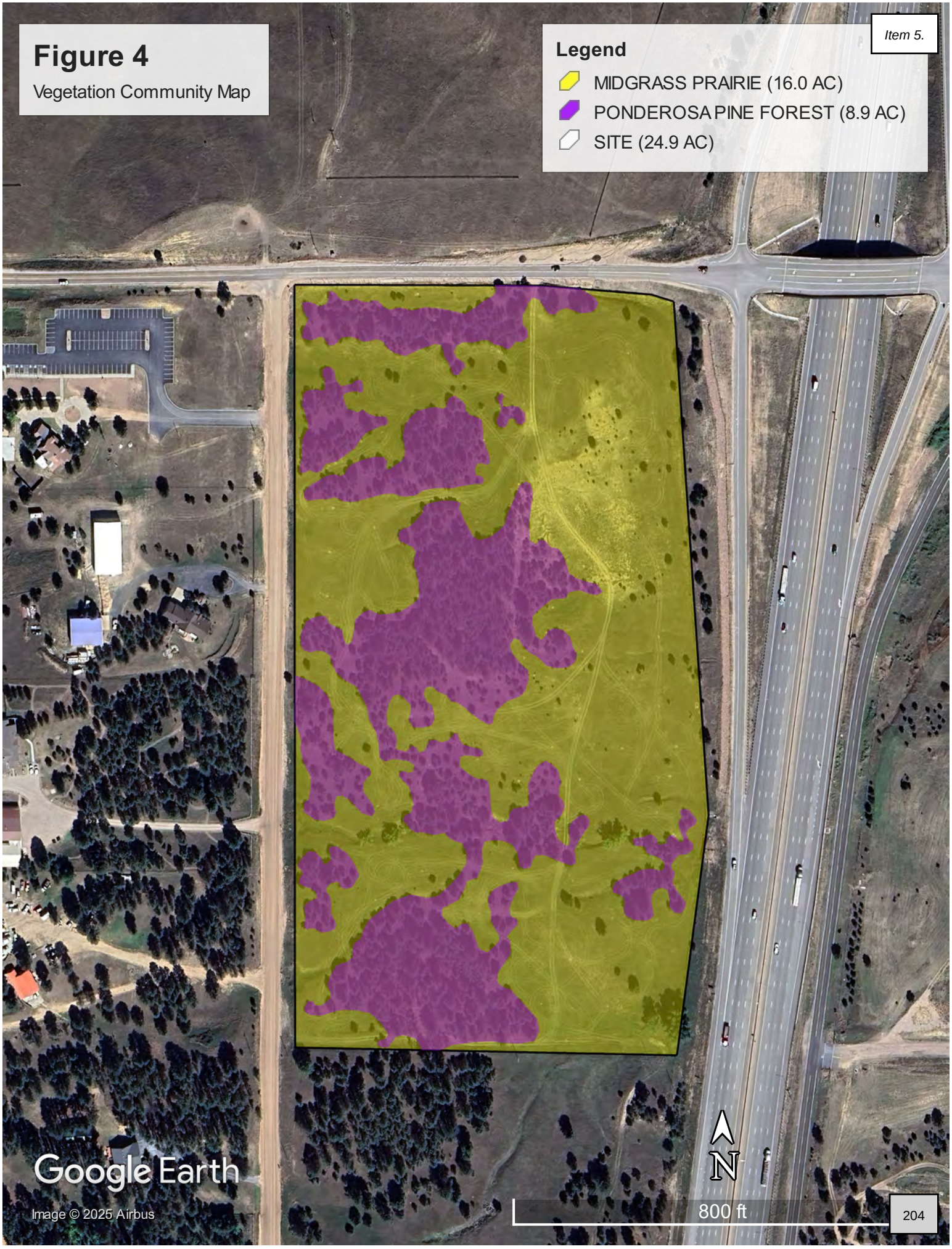
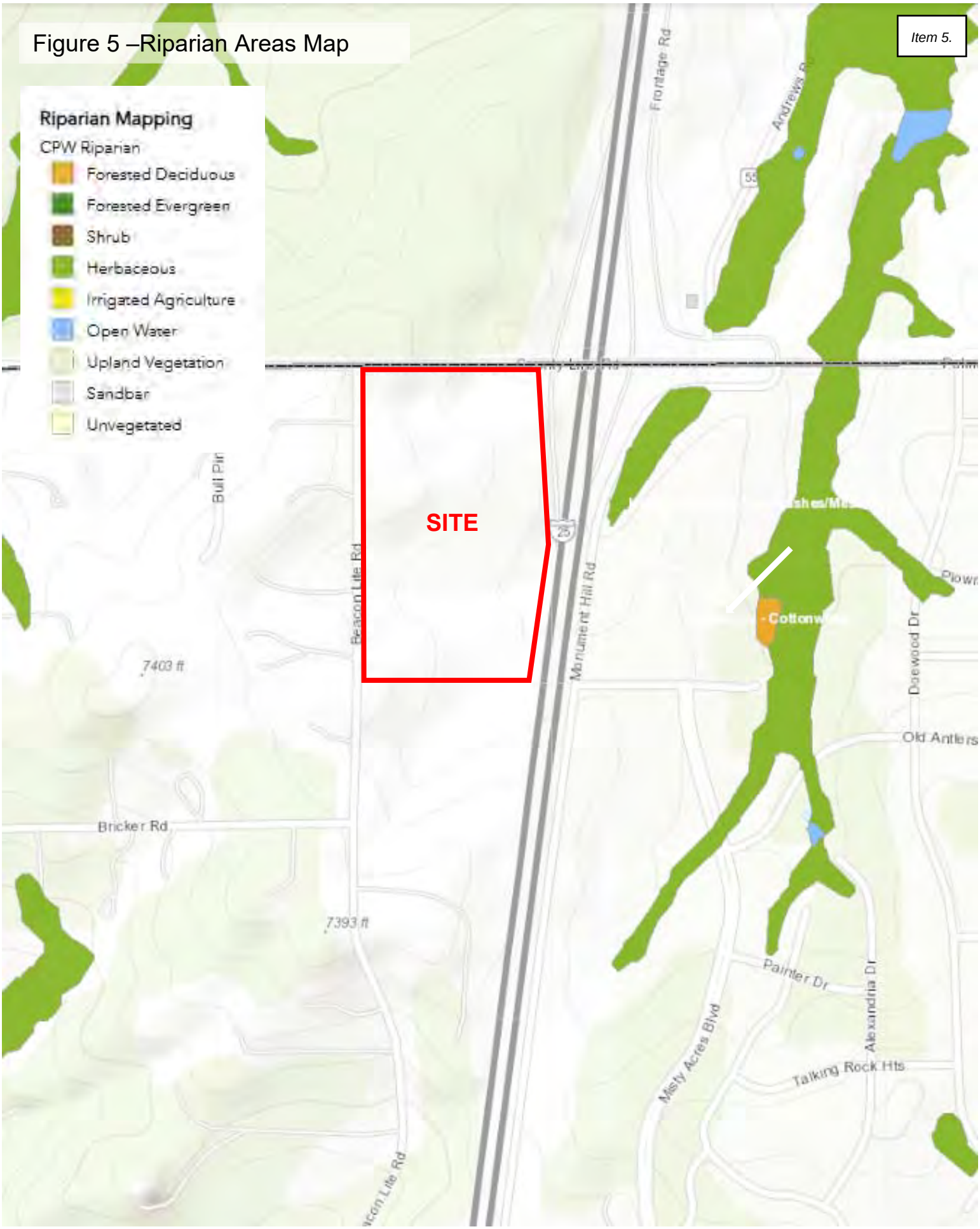


Figure 5

Riparian Areas Map

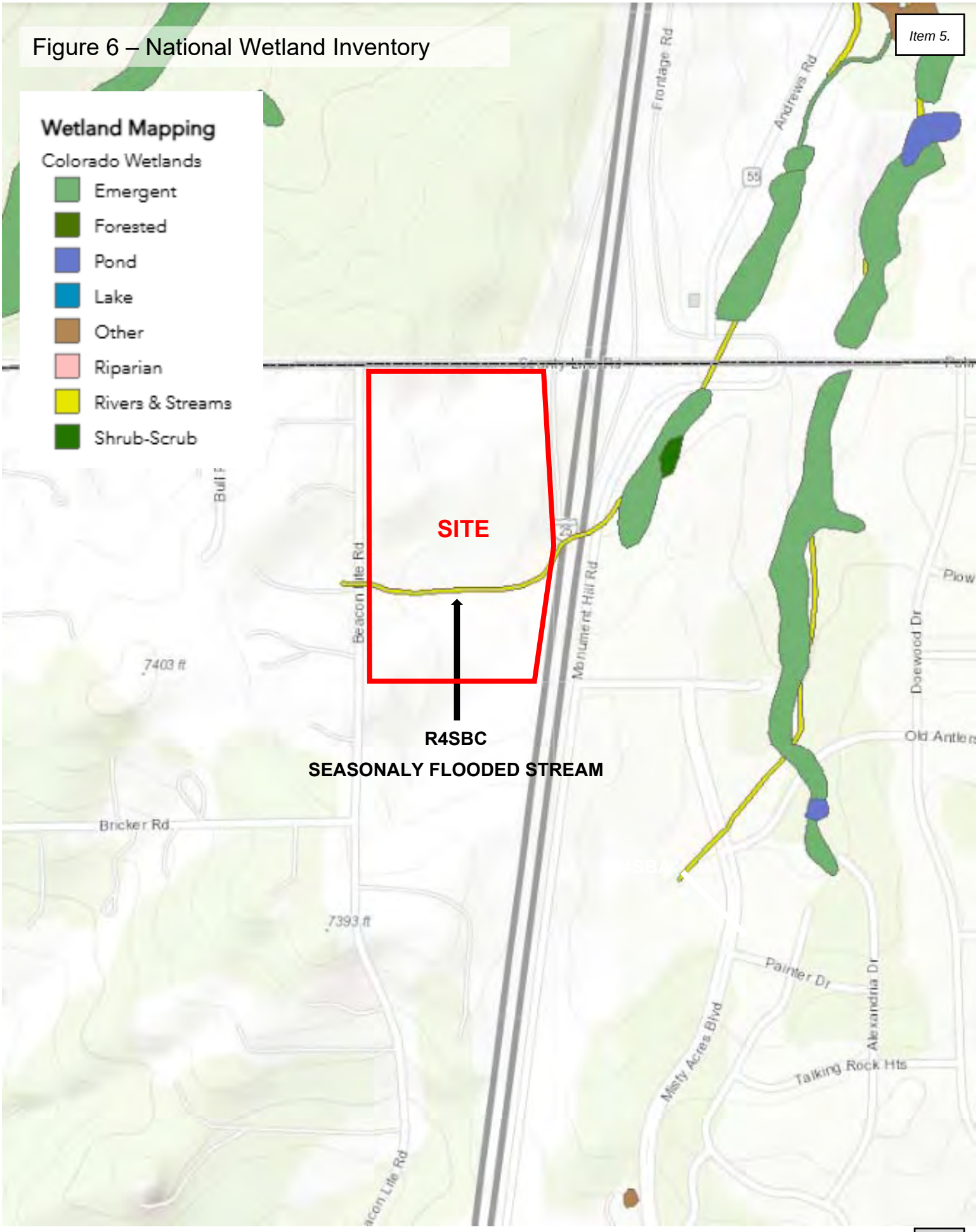
Figure 5 –Riparian Areas Map



Source: Colorado Natural Heritage Program (CNHP) Wetland Mapper

Figure 6
National Wetland Inventory Map

Figure 6 – National Wetland Inventory



Source: CNHP Wetland Mapper / USFWS National Wetland Inventory (NWI)

4.4 Wetland Habitat and Waters

4.4.1 Methodology

ECOS utilized USGS 7.5-minute topographic mapping, historic and current Google Earth aerial photography, and the CNHP National Wetland Inventory (NWI) Wetlands Mapper (CNHP, 2025) to preliminarily identify potential wetland habitat and Waters of the U.S. (WOTUS) and Waters of the State of Colorado (WOSOC) on the Site. Refer to Figure 6, National Wetland Inventory Map.

The mapping data above was proofed during the field assessment to determine the present or absence and reach of potentially jurisdictional WOTUS and WOSOC. Refer to Figure 7, Aquatic Resources Map.

If present, the USACE wetland delineation methodology was employed to document the three field indicators (parameters) of wetland habitat (i.e., wetland hydrology, hydric soils and a predominance of hydrophytic vegetation) as explained in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and supplemented by the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys and Coast Region* (USACE, 2008). Indicators of an Ordinary High Water Mark (OHWM), if present, were assessed using the National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams.

4.4.2 Office Assessment Findings

USGS Mapping: As referenced in Section 4.1 Topography / Natural Landform, the Site slopes and drains east toward I-25. USGS shows one channel, symbolized as an intermittent stream, running west to east across the southern portion of the Site down to an unnamed tributary to Carpenter Creek. The channel on the Site is herein referred to as Channel 1. Refer to Figure 1, USGS Site Location Map.

Google Earth aerial imagery review: ECOS reviewed the Site using the time-lapse function in Google Earth (GE) to get a look back in time. In 1937, prior to the existence of I-25, three multi-fork channels and tributary swales existed on the Site running through the north, south-central, and southern portions of the Site, all draining to wetlands abutting an unnamed tributary to Carpenter Creek. Channel 1 is the main tributary to the unnamed tributary. In 1955 (about the time of the construction of I-25), all three of the channels on the Site collect in a swale along the west edge of I-25 that were then piped under I-25 to the downstream unnamed tributary to Carpenter Creek. By 1993 the northern and southern-most channels and tributary swales are notably absent, indicating they had been manipulated, dried up, and converted to pasture land. Channel 1, the south-central channel, and two upland swales tributary to Channel 1 (i.e., Swales 1 and 2) remain as of the date of this report. Refer to Figure 2, Existing Conditions Aerial Photo and Figure 7, Aquatic Resources Map and Appendix F, Historic Aerial Imagery.

CNHP National Wetland Inventory (NWI) Wetland Mapper: The NWI Wetland Mapper provides high altitude, planning-scale identification of potential waters and wetlands (WOTUS and WOSOC), and indicates that:

- Channel 1 is a Riverine Seasonally Flooded Stream (R4SBC); and
- No wetlands are present on the Site.

Refer to Figure 6, National Wetland Inventory Map.

USDA NRCS Web Soil Survey: The custom soil report generated for the Site via the NRCS Web Soil Survey (USDA NRCS, 2025) does not rate any of the soils present on the Site as hydric (wetland) soil.

State of Colorado CDPHE WQCD House Bill 24-1379 (HB24-1379): Definitions under HB24-2379 exclude certain types of State Waters.

"Not withstanding the definition of "state waters" in section 25-8-103 (19), an authorization is not required for the discharge of dredged or fill material into the following types of waters, and such a discharge is not otherwise prohibited or regulated under this section:

(IX) Swales and erosional features, such as gullies, small washes, and rills, that do not contain wetlands or an ordinary high watermark (OHWM);

Federal and State Definitions of an Ordinary high watermark*" means that line on the shore established by the fluctuations of water and indicated by physical characteristics, such as:*

(i) a clear, natural line impressed on the bank;
(ii) shelving;
(iii) changes in the character of soil;
(iv) destruction of terrestrial vegetation;
(v) the presence of litter and debris; or
(vi) other appropriate means that consider the characteristics of the surrounding area.

4.4.3 Field Assessment Findings

The field assessment followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987), *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys and Coast Region* (USACE, 2008), and the *Ordinary High Water Mark Identification Regulatory Guidance Letter* (USACE, 2005) for federal WOTUS; and Colorado House Bill 24-1379 (HB 24-1379) guidance for Waters of the State of Colorado (WOSC).

The field assessment revealed that Channel 1 and tributary Swales **do not** exhibit the following characteristics:

- a clear, natural line impressed on the bank;
- shelving;
- changes in the character of soil;
- destruction of terrestrial vegetation; or
- the presence of litter and debris; or

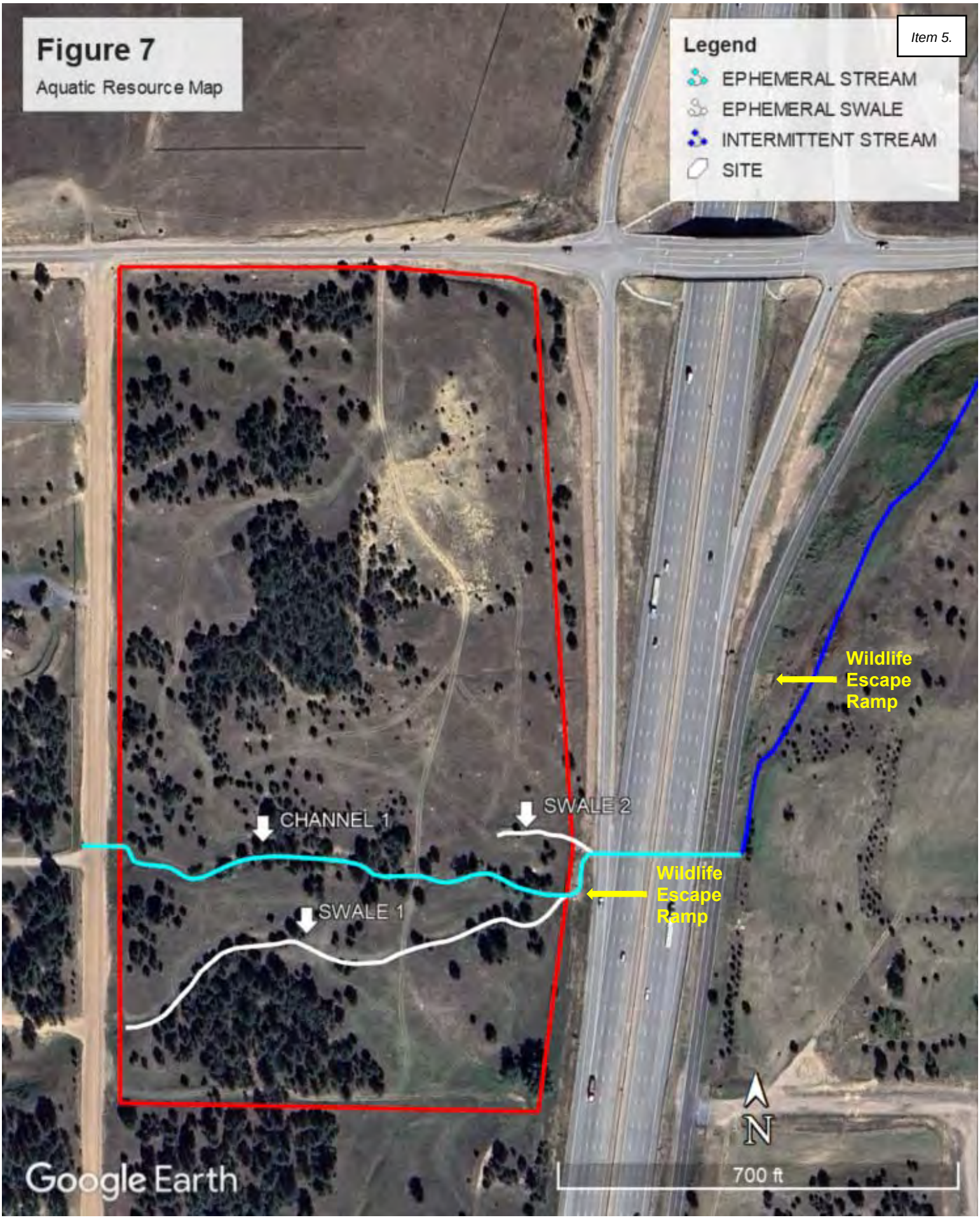
Channel 1 and tributary Swales **do** exhibit the following characteristics:

- a completely grass-lined bed and bank similar to the surrounding area;
- is an ephemeral stream that only flows during and immediately after discrete precipitation events;
- does not meet the Relatively Permanent Standard (RPS) established by the USACE; but
- a surface connection to an intermittent and perennial downstream tributaries via a culvert under I-25.

Based on the characteristic outline above and Federal and State of Colorado rules, definitions, and field guides pertaining to WOTUS and WOSOC as outlined in HB 24-1379, Channel 1 and tributary swales are not federally or state jurisdictional. No wetlands are present on the Site, including within Channel 1 or its tributary swales.

Refer to Figure 7, Aquatic Resources Map below.

FIGURE 7
Aquatic Resources Map



Source: Google Earth Aerial Imagery, 9/17/2024. Ecosystem Services, LLC Field Assessment, 3/24/2025

4.5 Common Wildlife

The purpose of this section is to document potential presence and usage of the site for common wildlife and to ensure that proposed development is reviewed with consideration of the impacts to their habitat.

4.5.1 Office Assessment Findings

4.5.1.1 Landscape Context

The Site is situated at an existing interchange along the I-25 corridor, a high traffic area. Beacon Lite Road, Palmer Divide Road, and I-25 directly abut the Site on three sides. Portions of the existing I-25 corridor are currently lit from MP 161 to 164.3, including the portion adjacent to the Site (MP 163.15 to MP 163.45). The three adjacent roads, and their associated traffic noise and light pollution isolate it from the surrounding landscape and impair its functional value for a broad spectrum of wildlife. Within a regional or landscape context, comparing Douglas County and El Paso County open space distribution and values and CPW wildlife usage patterns against this Site with a high CNHP LDI, it is ECOS opinion that the Site is impaired and has relatively low habitat value except for transient wildlife escaping I-25 as described further below.

Douglas County Open Space, bordering the Site to the North, has fee title or conservations easements on the Greenland, Eagle Mountain, and Spruce Meadows Open Space and has proactively planned for the conservation of a vast amount of open space on the west and east sides of I-25. These planned conservation areas, provide highly suitable, functional, and contiguous open space for wildlife, especially deer and elk (DCOS, 2011) as illustrated on CPW Wildlife Species Mapping (CPW, 2025). These areas have been mapped by Douglas County as the Greenland Habitat Conservation Area, including overland connections and wildlife migration corridors along Carpenter, Cook, and Stone Canyon Creeks. No migrations corridors have been mapped on the Site. The open space immediately north of the Site across Palmer Divide Road, containing open grassland and a perennial creek leading to a Dogleg Wildlife Underpass under I-25 is rated as having moderate and high habitat value, respectively (DCOS, 2012). Refer to Figure 9, Douglas County Wildlife Resources.

Given a lack of previous conservation planning in El Paso County, the moderate to high habitat values present in Douglas County (north of the Site) cannot be extrapolated to open land located south of Palmer Divide Road, nor can the Douglas County conservation goals and directives supplant those in El Paso County's master planning documents described below.

The El Paso County Parks Master Plan includes an Open Space Composite Analysis and a rating of potential open space values such as ecology and wildlife habitat, wildfire hazard, and surface water to name a few. The El Paso County Open Space Composite Analysis shows that the Site and immediate vicinity around the Site is rated as having Lower Attribute Value (EPCP, 2013). Refer to Figure 10, El Paso Open Space Composite Analysis.

CNHP collaborated with the Nature Conservancy to develop a prototype analysis of the status of Colorado's biodiversity, using a scorecard approach. The scorecard evaluated the status of ecological systems, animals, and rare plants under three broad categories: biodiversity status (size, quality and landscape integrity); threat status (both current and potential future impacts); and protection status. The Landscape Disturbance Index (LDI) developed as part of this project to model ecological integrity against the negative effect of anthropogenic disturbance on the quality of habitats for species viability and conservation efforts. The model tests both distance-based and disturbance-density models in relation to ecological indicators. The model included roads, residential and commercial development, agricultural land use, mining, energy development infrastructure, and transmission structures as disturbance sources (CNHP, 2025c).

The LDI for the Site and surrounding lands in El Paso County, particularly the I-25 corridor, is rated as high (CNHP, 2025b). The high LDI rating that overlaps the Site means it is already compromised or impaired and not a candidate or priority for conservation. Refer to Figure 11, CNHP Landscape Disturbance Index Map. This high LDI is due to low biodiversity; high threat status due to the presence of roads, a major highway (I-25), residential development and other current/future anthropogenic impacts; and the lack of protection (e.g., conservation/Open Space).

4.5.1.2 Common Wildlife

Colorado Parks and Wildlife (CPW) Wildlife Mapping shows the following wildlife that potentially use the Site (CPW, 2025a):

Amphibians:

- None

Rodent Overall Range:

- Abert's squirrel
- White-tailed jackrabbit
- Preble's meadow jumping mouse (PMJM)

Bat Overall Range:

- Big brown bat
- Fringed myotis
- Hoary bat
- Little brown bat
- Long-eared myotis
- Long-legged myotis
- Red bat
- Silver-haired bat
- Townsends big-eared bat
- Wester small-footed myotis

Ungulates:

- Elk overall range and highway crossings (migration corridors are located to the north in Douglas County, and summer and winter range located to the west of the Site)
- Mule deer overall range, highway crossings, concentration area, summer range and resident population on the Site.
- White-tailed deer overall range

Refer to Appendix D – Elk and Mule Deer Habitat Maps and Appendix E – CPW High Priority Habitat

Cats:

- Mountain lion overall range and human conflict area

Birds:

- Wild turkey overall and winter range

Reptile Overall Range:

- Bullsnake
- Hernande's short-horned lizard
- Milksnake
- Plains garternsnake
- Prairie lizard
- Plateau fence lizard
- Prairie rattlesnake
- Western rattlesnake
- Six-lined racerunner
- Smooth greensnake
- Terrestrial garternsnake

CPW High Priority Habitat (HPH) Web Mapping and Species of Greatest Conservation Need (SGCN) in the Colorado State Wildlife Action Plan (SWAP) show sensitive habitat and wildlife experiencing population declines, habitat threats, or ecological vulnerabilities. CPW does not show or list any HPH or SGCN on the Site for those species listed for El Paso County, including elk, deer, pronghorn, bats, American bittern, bald eagle, dabbling ducks, least tern, Lewis's woodpecker, long-billed curlew, sandhill crane, short-eared owl, Preble's meadow jumping mouse, Arkansas darter, northern redbelly dace, northern leopard frog, leopard frog, or red-side garter snake (CPW, 2015 and 2025b).

CPW Migration Corridor Study developed for the purpose of collecting migration patterns of large ungulates (i.e., hoofed wildlife like mule deer, elk, bighorn sheep, and pronghorn) to inform development planning and conservation does not have GPS wildlife tracking data for the eastern part of Colorado. CPW reconfirms CDOT studies that state ungulates (as with other large and small fauna) tend to use riparian areas (stream corridors) where cover and water are present when moving between seasonal summer and winter ranges (CPW, 2020 and 2024). No riparian corridors fitting this definition exist on the Site.

Colorado Department of Transportation I-25 South Gap Wildlife Movement Technical Memorandum, Programmatic Biological Assessment (PBA), Wildlife Study - Year 3 Progress Report (CDOT Studies) documents wildlife movement and patterns for the 3 years following construction, along the 21-mile swath of I-25 and adjacent lands between Mile Post (MP) 160 near Monument and MP181 near Castlerock) through Douglas and El Paso Counties known as the Gap. The Buc-ee's Site was included in this analysis as it is adjacent to the Gap, on the west side of I-25 between MP 163.15 and 163.45 (0.30-mile or 1.4% of the length of the west side of the Gap) just south of the El Paso - Douglas County line at Palmer Divide Road. The CDOT Studies that comprise the Year 3 Progress Report provide wildlife movement, migration corridor, overland connection data, but no specific global position system (GPS) or telemetry tracking data in El Paso County to determine movement patterns on or through the Site with any certainty (CDOT, 2018 and 2025a).

CDOT Studies do not identify High Priority Habitat (HPH) in El Paso County that has significant ecological or conservation value, but do generally report that ungulates and other large mammals are known to occur throughout the Gap, including Rocky Mountain bighorn sheep (Ovis canadensis), Rocky Mountain elk (Cervus canadensis), pronghorn (Antilocapra americana), mule deer (Odocoileus hemionus), white-tailed deer (Odocoileus virginianus), black bears (Ursus americanus), and mountain lions (Puma concolor). Moose (Alces alces) have been known to venture into the I-25 corridor although they do not typically reside in this area. Other mammals known to occur throughout the area include coyotes (Canis latrans), red foxes (Vulpes vulpes), raccoons (Procyon lotor), North American beavers (Castor canadensis), and the Preble's meadow jumping mouse (Zapus hudsonius preblei) (CDOT, 2018).

Most of the large mammal species known to occur within the corridor are believed to be local populations. Wildlife movements occur throughout the corridor and across I-25. Factors that drive wildlife to cross I-25 are likely diversity in habitats (i.e., other sources of sanctuary, food, and water) and for mating and/or rearing purposes (CDOT, 2018).

Most species that reside along the corridor typically concentrate their movements along drainage systems and/or forested habitats. These areas typically provide wildlife with food and/or water, as well as better cover and sanctuary from predators. These species typically are more active during twilight (i.e., dawn and dusk) and nighttime hours making it difficult for drivers, traveling at high speeds, to see wildlife on or near the roadway (CDOT, 2018).

Smaller concrete box culverts (i.e., CBCs) within the corridor may provide passage for bears and medium-to-small sized mammals (e.g., coyotes, rabbits, mice). Although bears are large mammals, they are known to use smaller structures for passage, as they are accustomed to using small, tight spaces during hibernation. Without an effective system that combines the use of functional crossing structures with wildlife fencing, these CBCs, and crossing structures in general, will not be as effective as they could be with the use of wildlife fencing (CDOT, 2018).

CDOT has collected valuable data on Wildlife Vehicle Collision (WVC) and monitoring cameras of wildlife underpasses and overpasses that more specifically document species that may utilize the Site on a transient basis (CDOT, 2018).

Wildlife underpass cameras monitored by CDOT after completion of the Gap Project detected large fauna, including mule deer, elk, moose, white-tailed deer, black bear, bobcat, coyote, and fox; Small fauna included badger, beaver, porcupine, racoon, cottontail rabbit, striped skunk, ground squirrel, squirrel (fox), pocket gopher, mink, weasel, vole, shrew species, woodrat, deer mouse, other mouse species, turkey, mallard ducks, bull frog, bull snake, and lizard species. The following specific wildlife camera monitoring data document what species are present and where:

- Between MP 164.1 and 167.7 near the Dog-leg Culvert Underpass (MP 164.1) fewer numbers of the following species were detected north of the Site within Douglas County Open Space: Deer (22); Elk (13); Coyote (2); Racoon (3); and Unknown species (2).
- At Mile Post (MP) 163.1, a camera closest to the Site the following species of wildlife were detected: Deer (56); Elk (1); Coyote (20); and Racoon (2).
- Between MP 162.6 and 160.6 near the Monument Hill Underpass (MP 162.5): greater numbers of the following species were reported to the south of the Site: Deer (108); Elk (1); Bear (3); Coyote (2); Racoon (46); Rabbit (1); and Squirrel (1) (CDOT, 2018).

The camera monitoring data at MP 163.1 nearest to the Site indicates that mule deer and coyote are the primary large fauna species using the Site with occasional visitation by elk and racoon. The north-south wildlife dispersal and travel patterns in the space between the Dog-leg and Monument Hill Underpasses are unknown, but the data indicates that east to west wildlife movement under I-25 decreases in a northerly direction at the Dog-leg Underpass and increases in a southerly direction where a major riparian travel corridor is present at the Monument Hill Underpass (CDOT, 2018).

CDOT’s WVC pre-mitigation data shows that one of the highest incidents of WVC's occurred at MP 162 prior to the GAP Project (CPW, 2020). To reduce WVCs and roadkill, CDOT successfully implemented a number of wildlife impact minimization and mitigation measures, including the installation of wildlife underpasses and overpasses (crossings), wildlife exclusion fences, escape ramps/jump-outs, and deer guards at strategic locations to facilitate and funnel the safe passage of wildlife under and/or over I-25.

The following describe the mitigation measures implemented by CDOT that have relevance to the proposed Project Site:

Wildlife Underpasses and Overpasses

CDOT 3-year monitoring results indicate a renewed ability for wildlife both large and small to safely traverse I-25. Additionally, the restoration of safe wildlife movements across the interstate corresponded with a 78% decrease in wildlife WVCs. Mule deer use of the crossing structures varied by location, but the total number of successful mule deer passages increased at three of the five new crossing structures. Success rates for mule deer crossing in 2023 was 86% or greater at each crossing location, for a combined success rate of 92% (CDOT, 2025a).

The following underpasses and overpasses located immediately north and south of the Site at riparian travel corridors contribute to the success of CDOT's mitigation efforts and relieve wildlife crossing pressure at the proposed Project Site (located between MP 163.15 and 163.45) where pre- and post-construction WVC crash counts went from 1.5 to 0 (CDOT, 2025a):

- MP 162.5 (Monument Hill Underpass)
- MP 164.1 (Dog-leg Culvert Underpass);

Wildlife Exclusion Fences

In addition to wildlife underpasses and overpasses, CDOT has installed 8-foot-high wildlife exclusion fencing on both the east and west sides of I-25 extending from the southern end of the I-25 South Gap Project near MP 161 to approximately 1 mile north of MP 174. This type of fencing serves to guide/funnel wildlife to stream corridors, large culverts, wildlife underpasses and overpasses built elsewhere along I-25 to minimize WVC's, mitigate habitat fragmentation, and facilitate east-west migration of wildlife, especially large game moving between their summer and winter, concentration, and birthing areas. The CDOT Studies indicate that WVC's and mortalities have been mitigated but not completely eliminated for wildlife that get trapped on I-25 between the wildlife fencing (CDOT, 2025). Please refer to Figure 8, CDOT Wildlife Conflict Mitigation Areas for locations of existing wildlife underpasses, culverts, and fences relative to the Site.

Wildlife Friendly Fences

Wildlife friendly fencing, as discussed in Fencing with Wildlife in Mind (CWP, 2021) is recommended where applicable, to inhibit cattle from entering wildlife underpasses but allow wildlife to access underpasses and overpasses to travel and migrate within their range. Wildlife friendly fences consist of the following elements:

- Fencing wire placed on the side of the fence posts where the domestic animals are located;
- Smooth wire or rounded rail for the top, smooth wire on the bottom;
- Height of top rail or wire should be 42" or less;
- At least 12" between the top two wires;
- At least 16" between the bottom wire or rail and the ground;
- Posts at minimum 16â€™ intervals;

- Gates, drop-downs, removable fence sections or other passages where animals concentrate and cross;
- Using a rail, high-visibility wire, flagging or other visual markers for the top (CPW, 2021).

Escape Ramps (Jump-outs)

The CDOT PBA recommends wildlife escape ramps or jump-outs approximately every 0.25 mile within the CDOT right of way (ROW) where wildlife fencing is used (CDOT, 2018). An interview with CDOT indicates 3 jump-outs per mile is a general rule of thumb based on site characteristics, topography, presence or absence of riparian areas, and adjacent land use (CDOT, 2025b).

Deer Guards

Deer guards (similar to cattle guards) have also been installed by CDOT in many locations along I-25 where there are unavoidable gaps in the wildlife exclusion fence. Deer guards are intended to discourage wildlife from entering the non-habitat side of the wildlife fence into interstate and/or interstate frontage roads. These gaps also include emergency access points, on-ramps and other roads where applicable.

4.5.2 Field Assessment Findings

4.5.2.1 Common Wildlife Habitat and Impact Mitigation

Two common vegetation/habitat types occur within the Site: ponderosa pine forest and midgrass prairie. Both of these habitats are homogenous and lacking in plant diversity. The Site does not support perennial aquatic, wetland or riparian habitat.

The Ponderosa pine forest provides cover for migratory birds, small mammals, and larger mammals that may occasionally utilize or travel through the site. Seasonal, transient birds such as Magpie, Stellar’s jay, mountain chickadees, and flickers observed, but no nests were found in forested areas during the field assessment. No cracks, crevices, caves, or tree-roosting habitat were observed that may provide habitat for bats. No raptors or raptor nests were observed on the Site or within the vicinity of the Site. Shrubs that provide food and cover for wildlife are absent from the forested understory.

Midgrass prairie on the Site provides good habitat for small rodents such as voles and mice, and ground nesting birds that may seasonally nest and feed on seeds and insects. Grasslands provides grazing and foraging habitat for large wildlife such as deer and elk as well as hunting habitat for predators such as coyote, fox, mountain lion, and numerous reptiles. However, only small burrows for rodents such as vole and ground squirrel were observed. No large burrows were observed that may be utilized by badgers, fox or coyote. No bear or bear scat was observed. Elk and/or deer scat was observed periodically in the drainage swales, but no persistent or worn game trails were observed.

Aquatic, wetland, and riparian is not present on the Site that provide a critical source of water, food, and travel corridors needed by all types of wildlife,

including requisite habitat for amphibians, beaver, muskrat, mink, etc. The drainages/swales on site are dry and ephemeral.

Beacon Lite Road, Palmer Divide Road, and I-25 are directly abutting the Site on three sides. These roads isolate it from the surrounding landscape and impair its functional value for a broad spectrum of wildlife (as noted above). No State-listed species of special concern (i.e., significant wildlife) have been documented to exist or were observed during the field assessment.

In the absence of CPW wildlife tracking data or long-term surveys for ungulates, it is ECOS opinion that the Site supports few resident wildlife because of existing adjacent rural residential development, chronic traffic, noise, and light (overhead and headlights) generated from I-25 and adjacent development that disturb and interrupt both daytime and nocturnal behavior; and that the Site is primarily used by transient wildlife moving through the Site in pursuit of more suitable open space and habitat to the north or south (as documented by CPW and CDOT below).

4.5.2.2 Vegetation, Site Reclamation, and Invasive Species Control

The nativity of the Site and existing ponderosa pine forest and grassland plant community have inherent value as does every site before it is developed into a home, park, or commercial area. However, the Site is lacking in both animal and plant diversity. Past ground clearance and disturbance activities have rendered a homogeneous vegetation community consisting of a monoculture of ponderosa pine, smooth brome, blue grama and a few ruderal weeds.

While the habitat on the Site is suitable for some common wildlife species, the plant and animal community are not particularly significant. The Site does not support threatened, endangered, or rare species of special concern and therefore it is not considered significant relative to other habitat types such as streams, wetlands, riparian, or pristine areas of the Black Forest. Elk, deer, moose, bear, mountain lion, and many other game and non-game species managed by CPW are important but are common wildlife that are not imperiled and can be hunted and sometimes exterminated without concern for extinction or significance.

The Town Community Master Plan shows the Buc-ee’s Site has been planned for retail/commercial use due to its location and ideal access to existing major roads and the interstate highway and its adjacency to existing residential land. Retail development, like residential development is inherently not sensitive to the surrounding landscape and results in complete conversion or alteration of natural vegetation within a site. The retail site development requirements of a Buc-ee’s Travel Center is no different and will require that the entire site must be cleared for grading and earthwork operations and therefore, no existing vegetation will be preserved.

The timing, storage logistics, cost, and likelihood of successfully harvesting and transplanting existing ponderosa pine, especially mature pine, make vegetation salvage implausible. Buc-ee’s has committed to purchase, install, and seed

waterwise, nursery grown native trees, shrubs and grasses in landscape areas in respect to the nativity and character of the region to provide habitat for bird life to mitigate for some of the loss of forested areas. Wetland species will be incorporated into the seed mix in the bottoms of the proposed stormwater quality detention ponds as a secondary natural passive treatment system to filtrate and improve water quality before discharge into downstream waters. Wetland vegetation will work in combination with the installation of Stormceptors, hydrodynamic separators used and maintained as primary treatment systems to remove pollutants from stormwater and snowmelt runoff to protect downstream waterways from hazardous material spills and stormwater pollution, including suspended sediment, free oils, and other pollutants that attach to particles.

Soil disturbance during construction can introduce invasive species, degrade habitat quality, reduce forage availability for wildlife, and increase fire risk. Effective reclamation is essential for both soil stabilization and long-term ecological recovery (CPW, 2025c). CPW recommends and Buc-ee's has agreed to:

- Minimize the area disturbed at any one time and implement phased reclamation, as feasible, so that temporary disturbance areas are restored as work is completed.
- Develop and implement a site-specific landscape and reclamation plan.
- Prioritize seeding and planting of native vegetation to the extent feasible.
- Seed all topsoil stockpiles that will be exposed for more than 45 days to reduce erosion and prevent colonization by invasive or state-listed noxious weeds.
- Implement a Weed Management Plan to monitor and control invasive species throughout the construction and reclamation phases (CPW, 2025c).

Native, organic topsoil on the site will be stripped, stockpiled and reused in landscape and native revegetation areas to reclaim natural soil micro-biota and restore native grassland habitat where feasible.

4.5.2.3 Wildlife Movement and Impact Mitigation

Notwithstanding the inherent value of the existing Site to transient wildlife that may travel along the I-25 corridor, the Project will attract additional traffic and produce light and noise that can disrupt wildlife movement and behavior in the local area. However, these impacts cannot be viewed in isolation, as the existing anthropogenic impacts at this Site caused by I-25 and adjacent residential development are already high, particularly as compared to the Open Space and Conservation lands to the north in Douglas County. As such, Buc-ee's will implement mitigation measures to avoid, minimize, and mitigate wildlife conflicts associated with impacts that already exist at the I-25/Palmer Divide Road interchange as well as those that may result from site development. The following describes key concerns and mitigation of said impacts.

Wildlife movement through the Site are important concerns to CDOT, CPW and the public. CPW reports that forested patches and open grassland on the Site

provide random/dispersed overland north-south travel connections (not defined travel corridors) through Site parallel to I-25 for large transient fauna such as those documented in the CDOT Studies (primarily mule deer, bear, and coyote with occasional visitation by elk). Although not specifically documented on the Site, small fauna including badger, cottontail rabbit, porcupine, raccoon, squirrel, turkey, striped skunk; and smaller fauna including deer mouse, other mouse species, ground squirrel, lizard, mink, pocket gopher, shrew species, vole and vole species, weasel, and woodrat may also utilize forested habitat and grassland for foraging and cover (CDOT, 2018 and 2025a). The portion of Ponderosa pine forest that follows the east-west ephemeral channels on the Site from Beacon Lite Road to the I-25 roadside ditch and 24-inch culvert is likely used by large and small fauna alike for travel cover. These species have been documented by CDOT in the area and are known to utilize the Dogleg and Monument Hill wildlife underpasses at known “pinch points” located approximately 0.70-miles north and 0.60-miles south of the Site, respectively (CDOT, 2018 and 2025a).

Wildlife exclusion fences, wildlife friendly fences, escape ramps (jump-outs), and wildlife guards are important mitigation measures recommended by CDOT and CPW to protect wildlife and the public from WVC’s and negative encounters. The following describes existing wildlife mitigation measures that are currently in place and those that Buc-ee’s has committed to install. Please refer Figure 8, CDOT Wildlife Conflict Mitigation Areas for locations of existing wildlife, underpasses, escape ramps (jump-outs), culverts, guard and fences relative to the Site; and the proposed Site Plans for the location and configuration of existing and the following proposed wildlife mitigation measures.

Wildlife Exclusion Fences: Wildlife exclusion fence is present along the east boundary of the Site. This segment of fence should be protected and retained. Additional wildlife exclusion fencing is recommended on the northern and southern boundary of the Site to completely exclude and prevent large game wildlife conflicts on the Buc-ee's Site and encourage them to utilize alternative overland and riparian travel corridors and habitat further to the west to access Douglas County and El Paso County Open Space and utilize established underpasses to the north and south. No wildlife exclusion fencing has been installed along the southern boundary of Douglas County Open Space to the north of Palmer Divide Road, but it would be advisable to do so in order to make the whole mitigation system of fences and deer guards more effective and decrease WVCs.

Natural and historic east to west travel through the Site that may have existed along Channel 1 prior to the construction of I-25 were severed in 1955 for all wildlife except for the smallest that are capable of squeezing through the wildlife exclusion fence and using the small culvert. Post construction of the Site, small fauna moving along the exclusion fence (on the habitat side or interstate side) will still have functional access to the existing 24-inch culvert under I-25 as a mini-wildlife underpass.

Wildlife Friendly Fences: Barbed-wire fence is present along the north, south and western edges of the Site, likely installed to contain cattle on the property during previous ownership. It is recommended that wildlife friendly fencing be installed to facilitate safe wildlife passage, and wildlife friendly gates where necessary to allow CPW and/or CDOT to access the adjacent wildlife escape ramp.

Escape Ramps (Jump-outs: An existing wildlife jump-out for large game is located on the west side of I-25 along the eastern boundary of the Site (at MP 163.2) near the intersection of Channel 1 and I-25 at the 24-inch culvert. A corresponding jump-out is located on the west side of I-25 (at MP 163.2). Both jump-outs correspond and are roughly in line with the tributary to Carpenter Creek, a riparian travel corridor likely utilized by wildlife as a visual cue to escape the highway. Jump-outs are intended to allow wildlife trapped between the fences within the Interstate corridor with a means to escape traffic. Wildlife ramps are designed to discourage wildlife from entering the highway corridor into traffic and are not intended as a means for travel and migration across the interstate. Please refer to the Site Plans, Figure 7, Aquatic Resources Map, and Figure 8, CDOT Wildlife Conflict Mitigation Areas for locations of existing wildlife escape ramps (jump-outs) relative to the Site and note that the jump-outs near the Site in El Paso County were not identified in the CDOT I-25 South Gap Wildlife Study. It is recommended that this jump-out should be protected and retained and integrated with a southern wildlife exclusion fence to guide wildlife to the south around the Site to more hospitable overland travel/connection corridors to the west.

Wildlife Guards: Wildlife or deer guards or grates (like cattle guards) are a mitigation measure typically installed in roadways/driveways where there is a gap in wildlife fencing to discourage movement beyond the fence line into traffic. A deer guard has been installed in-line with the wildlife exclusion fence on Palmer Divide Road east of I-25 just east of Andrews/Monument Hill Road. A deer guard has not been installed on Palmer Divide Road on the west side of I-25. A deer grate will be installed here as well as at the Buc-ee's north exit onto Palmer Divide Road to prevent or minimize wildlife from entering the Site.

The physical wildlife movement mitigation measures described above are illustrated in Figure 12 - Wildlife Mitigation Plan.

4.5.2.3 Noise, Light, and Food Waste Impact and Mitigation

Buc-ee's acknowledges that additional noise and light will occur as a result of Site development, but it must be acknowledged that this is not a pristine Site and the baseline levels of noise and light are already significant given the adjacency to I-25, Beacon Light Road and County Line Road (refer to Section 4.5.11 Landscape Context above). In addition, post-construction avoidance of the Site by transient wildlife due to noise and light may assist in the avoidance of negative wildlife interactions with humans, including WVCs and those associated with food waste. Modifications to Site lighting are proposed to address the potential effects upon the use of the existing wildlife escape ramp. Regardless, Buc-ee's is committed to implementing mitigation measures as recommended by CPW to

minimize impacts to wildlife to the extent feasible and encourage their use of more suitable habitat away from the Site and I-25.

CPW recommends the following measures intended to minimize habitat fragmentation, reduce disruption to wildlife behavior, and support long-term ecosystem function throughout the project lifecycle (CPW, 2025c).

Noise:

Noise associated with large commercial development poses significant potential for wildlife disturbance throughout both construction and operational phases. Elevated and continuous sound levels can displace wildlife from critical habitats, alter behavioral patterns, and contribute to long-term functional habitat loss. These impacts are particularly concerning in winter ranges, parturition areas, and movement corridors (CPW, 2025c).

As a high traffic volume development, the proposed project will inherently generate noise from increased vehicular traffic, engine idling, fueling activities, and the operation of mechanical systems, including refrigeration, ventilation, and air conditioning units. Such chronic anthropogenic noise has been documented to adversely affect wildlife by disrupting behavior, increasing stress, and causing displacement from critical habitat. Specifically, for big game species, continuous noise can fragment habitats and alter established movement corridors, potentially impacting seasonal migrations and critical wintering or calving grounds. Raptors and migratory birds are similarly vulnerable, as consistent noise can mask critical auditory cues required for communication, navigation, and effective foraging, resulting in decreased nesting success and habitat avoidance. Additionally, bats, which are highly sensitive to both noise and associated artificial lighting, may experience disruptions in roosting and feeding patterns, further diminishing local biodiversity values (CWP, 2025c).

CPW recommends the following noise mitigation measures:

- Time high-noise construction activities outside of critical winter and breeding seasons.
- Incorporate sound-dampening design features into facilities, including acoustic shielding, mufflers on equipment, and vegetation buffers where feasible.
- Install perimeter sound walls or acoustic barriers along property boundaries to reduce noise propagation into adjacent wildlife habitats. Northern and Southern development perimeters are strongly advised, as identified in the Big Game section above, to limit disruption of wildlife use of wildlife crossing structures along I-25.
- Use of vegetated earthen berms as natural acoustic buffers, providing dual benefits of noise attenuation and visual screening through the establishment of native vegetation.
- Incorporate native evergreen and dense shrub plantings within landscaped buffer zones to enhance year-round acoustic and habitat benefits.

- To the extent feasible, limit operational noise during nighttime hours, such as reducing delivery activities, vehicle idling, and mechanical equipment operations when wildlife activity is typically heightened (CPW, 2025c).

CDOT I-25 South Gap Noise Report Technical Memorandum states that 2017 existing noise levels of cars, medium trucks, and heavy trucks travelling at 75 miles per hour (mph) on I-25 range from 58 to 77 decibels (dBA). A study of decibel levels at the Buc-ee's I-25 Johnstown site, Colorado is being conducted to compare noise generated from a Bucee's site with ambient and interstate traffic noise so that pre- and post-construction noise may be clearly understood. The noise level generated from the Site is expected to be lower and not impact wildlife or residences any more than what is already occurring along I-25. Regardless of the noise study results, Buc-ee's is prepared to implement all of the above recommendations, including the planting of dense, evergreen landscaping to minimize noise from escaping into adjacent habitat.

There are no known seasonal migration corridors, critical wintering, calving, or breeding grounds, or nesting raptors known to occur on the Site. It is recommended and Buc-ee's has committed to:

- Develop a construction schedule that avoids or minimizes high-noise construction activities outside of critical breeding and nesting season for resident species that may be present on the Site at the time of construction.
- Incorporate, native trees, shrubs, and grasses within landscape buffers and stormwater quality ponds along the periphery of the Site (especially the north and south perimeters) to dampen sound and reduce noise propagation into adjacent wildlife habitats. Native evergreens with dense sound absorbing needles will be a staple of the landscape plans to attenuate noise and provide a visual screen that forms an acoustic buffer. Vegetated berms will be incorporated where feasible.

Light:

CDOT I-25 South Gap Visual Impact Assessment Technical Memorandum states that existing tall highway lighting will be replaced with energy-efficient LEDs with a spectrum set to 4000 Kelvin from the southern terminus through the top Monument Hill just past County Line Road north of the proposed Buc-ee's Site. This segment of the interstate is in fact lined on both sides by 60-foot tall, evenly spaced lights (every 240 feet) with shielded light fixtures that are directed down at the roadway. This lighting extends approximately 0.30 miles north of the Buc-ee's Site to 1.2 miles south of the Site and beyond, including additional lighting at the County Line Road / I-25 interchange.

Large commercial developments of this nature typically employ extensive lighting to ensure operational safety, visibility, and security. Such lighting can significantly disrupt nocturnal wildlife activity, alter animal behavior, and negatively impact habitat utilization patterns. Artificial lighting at night has been documented to adversely affect migratory birds, raptors, bats, and other nocturnal species,

potentially causing disorientation, collisions, habitat avoidance, and increased predation risk (CPW, 2025c).

Furthermore, visual disturbances from expansive built structures and extensive paved surfaces can result in avoidance behaviors by wildlife, further fragmenting available habitat and disrupting critical movement corridors (CPW, 2025c).

To address and mitigate these potential light and visual impacts on wildlife, CPW recommends the following strategies:

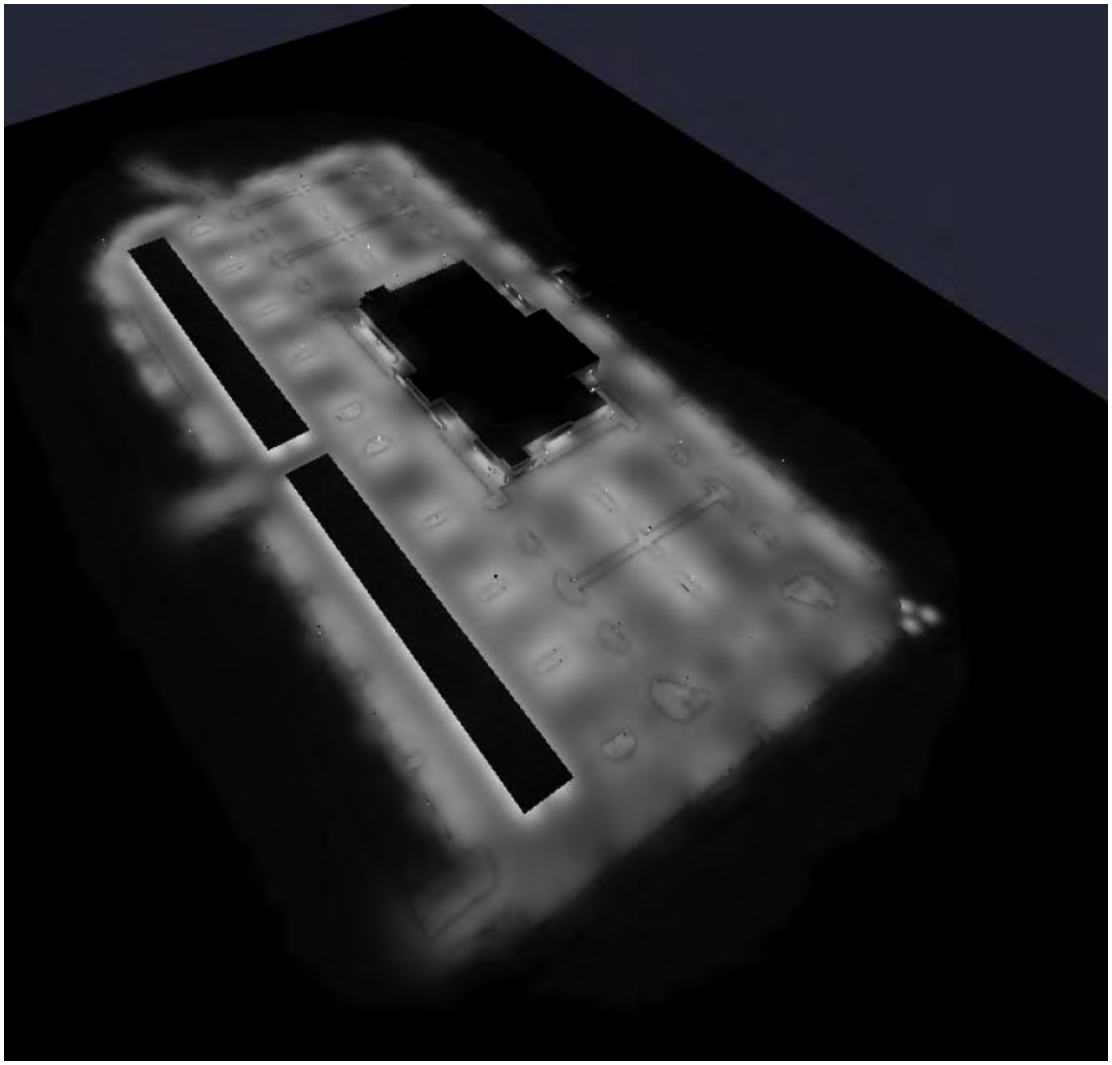
- Install down-shielded fixtures to focus light downward and minimize horizontal light spill.
- Use warm-colored lighting (2200 to 2700 Kelvin) with longer wavelengths, which reduce disruption to wildlife sensory systems. These guidelines are supported by the U.S. Fish and Wildlife Service and the American Bird Conservancy.
- Dim or deactivate lighting when not in use, particularly during nighttime hours and outside of operational periods.
- Implement motion-sensing lighting systems to minimize continuous illumination, thus reducing prolonged disturbances to wildlife (CPW, 2025c).

Buc-ee's safety protocols and liability obligations require exterior lighting that maximize customer safety at all times. Buc-ee's has committed to utilize their existing wildlife friendly specifications to mitigate light disturbances, including:

- installation of fixtures specified in the lighting plan that are fully shielded, full cut-off, downward directed, mounted as low as practical, and produce no more than 0.04 foot-candles at the property line;
- warm-colored (yellow) lighting (3,000 Kelvin) that produces longer wavelengths (>560nm) to minimize the possible effects of skyglow and reduce disruption to wildlife sensory systems; and
- down-lighting that will not escape the Site boundary. Refer to lighting model shown below.

The noise and light wildlife mitigation measures described above are illustrated in Figure 12 - Wildlife Mitigation Plan.

Buc-ee's Downlighting Model



Trash and Food Waste: CPW reports that black bears are known to inhabit the project site and adjacent properties as evidenced by CPW and CDOT observations regarding human-bear conflicts and roadkill data. The proposed development raises specific considerations regarding potential impacts on bears, particularly related to waste management and food attractants. Improperly managed trash receptacles, bins, and storage areas at such high-traffic commercial facilities can become strong attractants for bears, leading to increased bear-human conflicts, habituation, and potential threats to both human safety and wildlife health. Bears attracted to readily available food sources, including garbage, frequently become habituated to human presence, increasing risks of property damage, vehicle collisions, and management actions, including lethal removal of problem bears (CPW, 2025c).

To proactively address and mitigate these potential impacts on bears, CPW recommends and Buc-ee's has committed to the following strategies during construction and general operation of the development:

- Install bear-resistant trash receptacles throughout the facility, particularly in parking areas, fueling zones, and near food service locations.
- Ensure regular trash removal schedules to prevent accumulation and potential attraction.
- Secure storage for waste bins and dumpsters in bear-resistant enclosures or fenced areas.
- Deploy signage and visitor education programs to inform customers and employees about proper waste disposal practices and bear awareness.
- Ensure waste storage and food-related operations are located in centralized portions of the development, away from habitat edges, to minimize bear attractants near natural habitats (CPW, 2025c).

It is recommended that Buc-ee's implement all of the above recommendations.

4.5.2.4 Native Bats and Impact Mitigation

In Colorado, native bat species use buildings, caves, mines, trees, concrete culverts, and other structures for maternity roosts, night roosts, and hibernacula as well as for transition roosts. They may also utilize existing swallow nests for these purposes. Roosting bats are sensitive to disturbance and could leave roost sites following human visitation. Protection of roosting bats from human disturbance, especially at significant winter hibernation sites and summer maternity sites, is important for the conservation of native bat species (CPW, 2025c).

To avoid or minimize impacts to native bat species, CPW recommends and Buc-ee's has committed to the following:

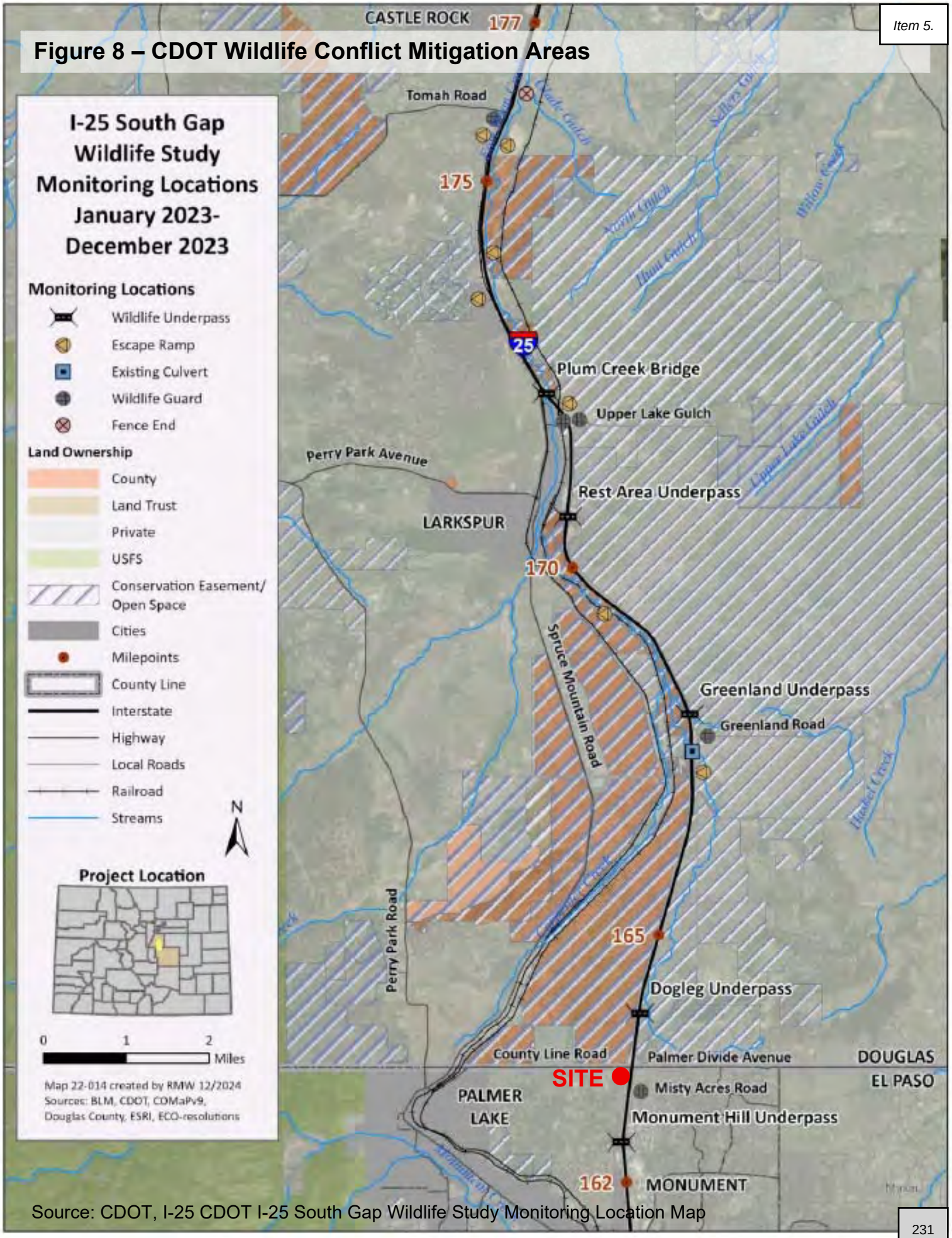
- Conduct a visual bat survey in crevices, cracks, and seams of any existing structures or natural features approximately 3 feet tall or wide before performing maintenance. CPW is happy to provide additional information regarding completion of visual bat surveys in the event that maintenance will be performed on existing structures or natural features where bat use is suspected.
- Because bats may also roost in old swallow nests, it's important to check for bats before washing off any nests from existing structures or natural features. CPW recommends completing the visual bat surveys before washing off nests from existing structures or natural features or leaving swallow nests in place.

Bats and bat habitat were not observed on the Site. However, post-development, bats may develop habitat in cracks, crevices, and seams in and around built structures. The above CPW recommendations are intended as mitigation measures after construction (CPW, 2025d). It is recommended and Buc-ee's has committed to implement all of the above recommendations.

FIGURE 8

CDOT Wildlife Conflict Mitigation Areas

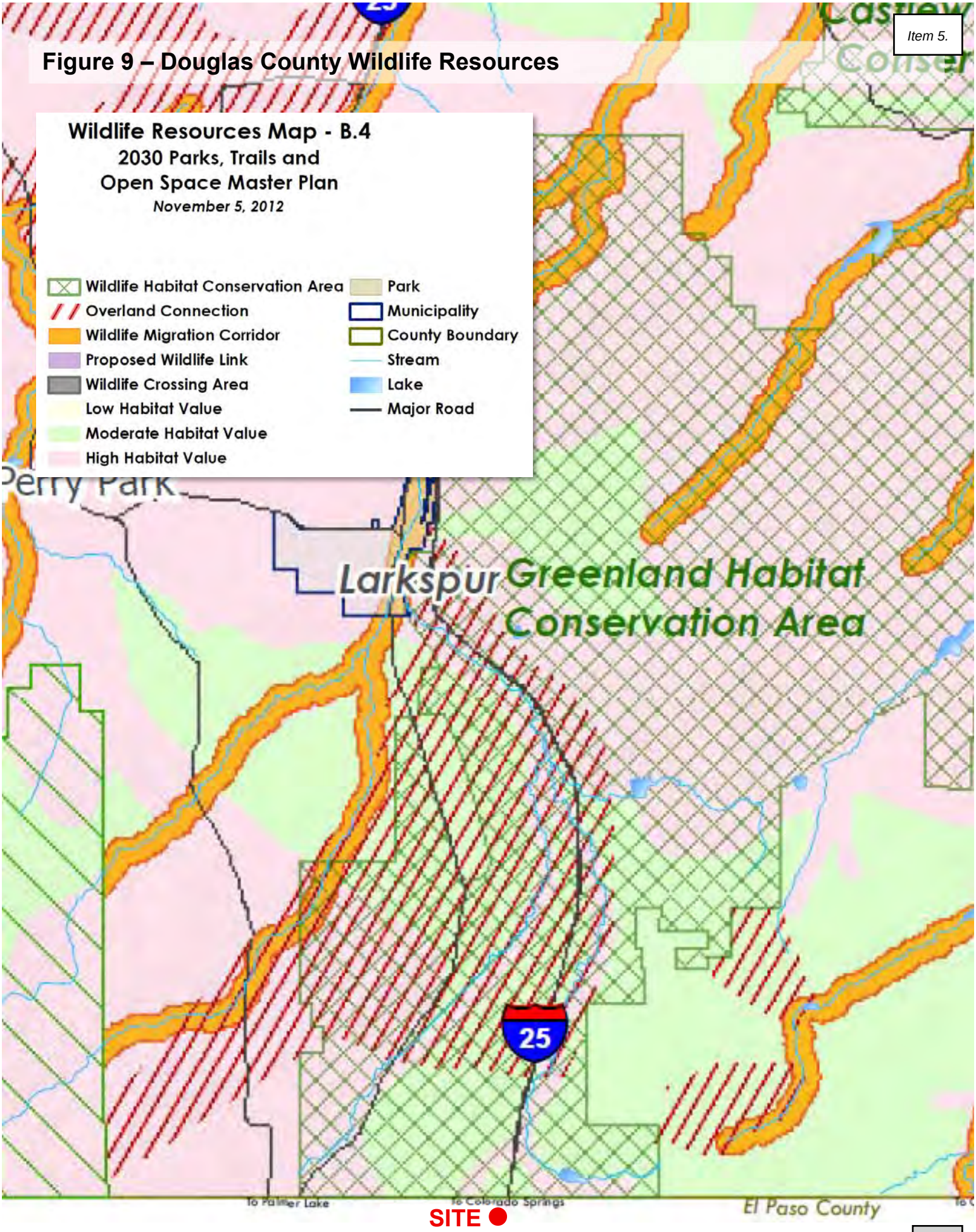
Figure 8 – CDOT Wildlife Conflict Mitigation Areas



Source: CDOT, I-25 CDOT I-25 South Gap Wildlife Study Monitoring Location Map

FIGURE 9
Douglas County Wildlife Resources

Figure 9 – Douglas County Wildlife Resources

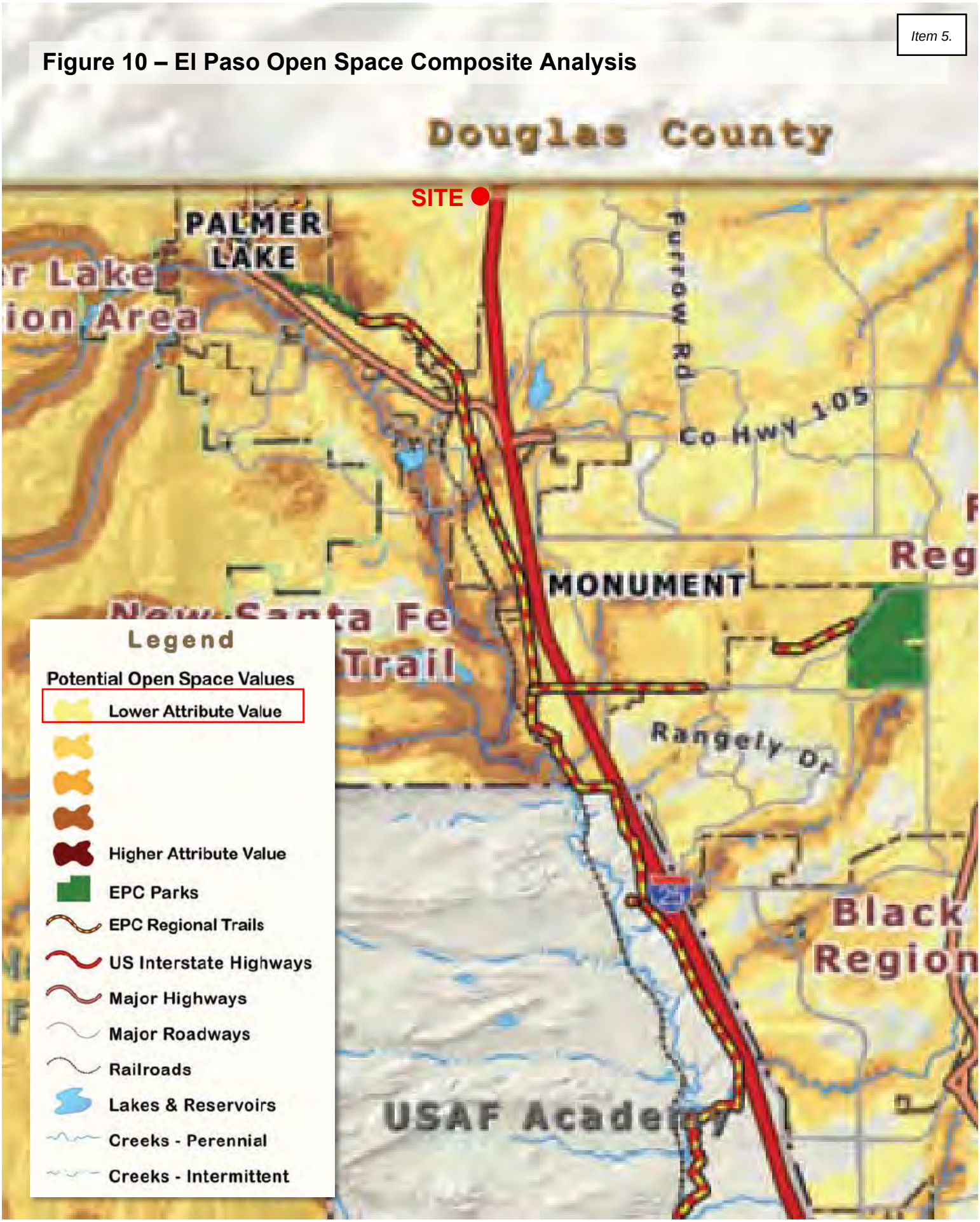


SITE ●

Source: Douglas Cunty 2030 Parks, Trails and Open Space Master Plan, 2012

FIGURE 10
El Paso Open Space Composite Analysis

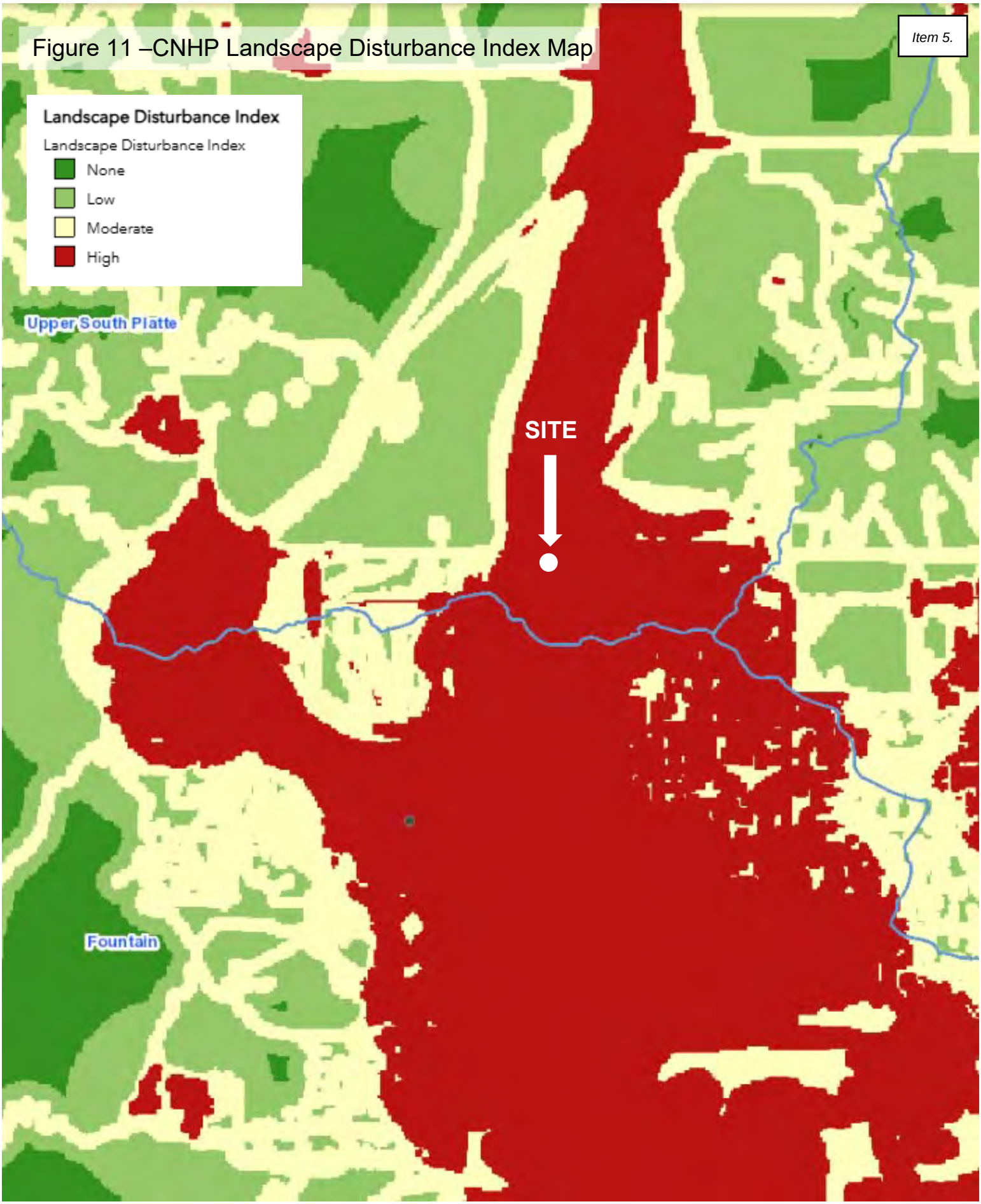
Figure 10 – El Paso Open Space Composite Analysis



Source: El Paso County Parks Master Plan, 2013

FIGURE 11
CNHP Landscape Disturbance Index Map

Figure 11 –CNHP Landscape Disturbance Index Map

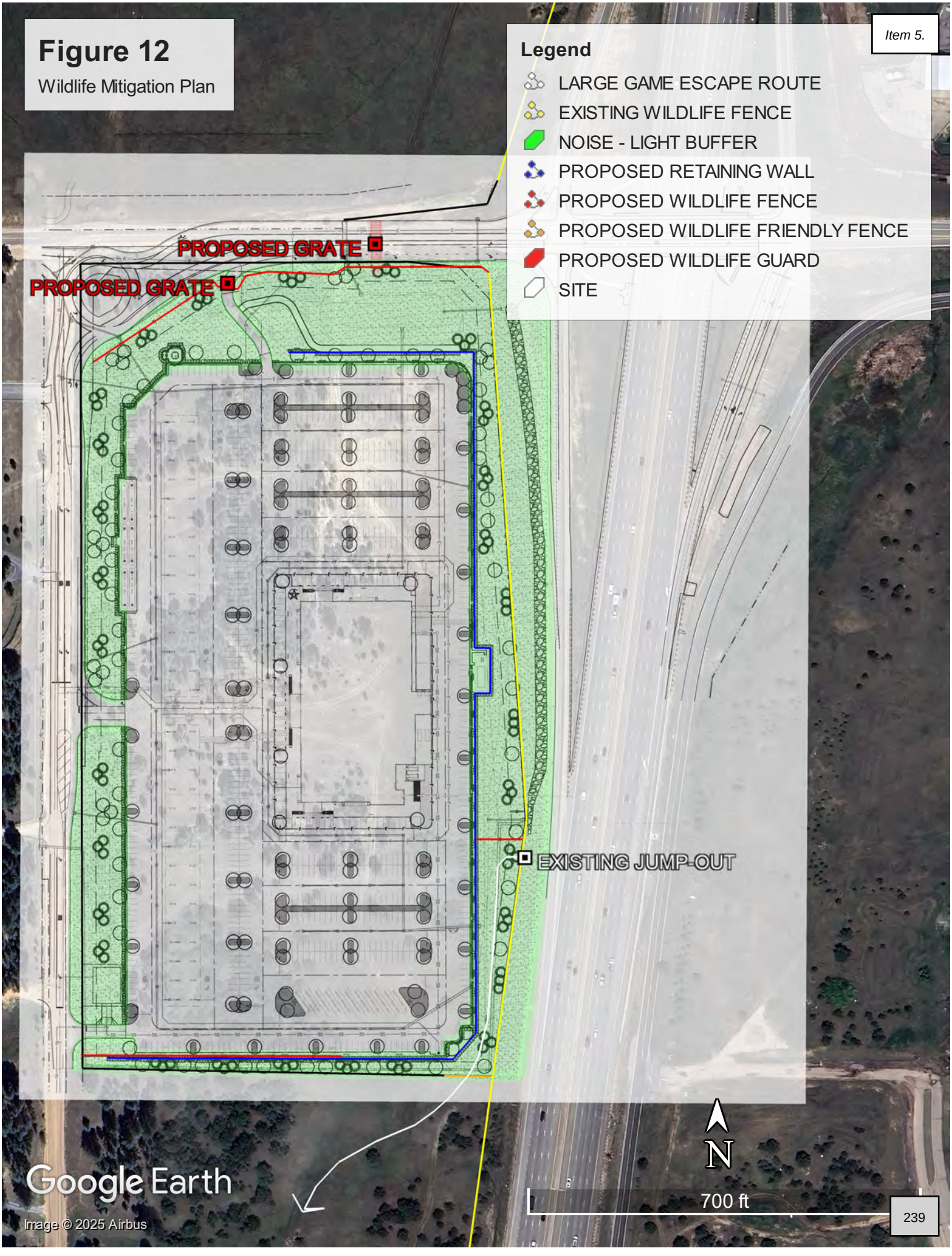


Source: CNHP Landscape Disturbance Index

FIGURE 12
Wildlife Mitigation Plan

Figure 12

Wildlife Mitigation Plan



4.6 Threatened and Endangered Species

The purpose of this section is to document potential presence and usage of the site for Threatened and Endangered Species (T&E Species) and to ensure that proposed development is reviewed with consideration of the impacts to their habitat.

A number of species that occur in El Paso County are listed as T&E Species by the USFWS under the Endangered Species Act (ESA). ECOS compiled the data regarding T&E Species for the Site in Table 1 below based on the Site-specific, USFWS IPaC Trust Resources Report (USFWS, 2025a) that we ran for the Project (Appendix A) and our onsite assessment. ECOS has provided our professional opinion regarding the probability that these species may occur within the Site and their probability of being impacted by the Project.

The likelihood that the Project would impact any of the species listed below is none. Most do not or are not expected to occur in the project area and no downstream impacts are expected. The USFWS IPaC Trust resource Report (Appendix A) states that The Site contains no Critical Habitat for T&E Species, Wildlife Refuges or Hatcheries according to the USFWS IPaC (USFWS, 2025a)

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TABLE 1 - FEDERAL LISTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT

Species	Status	Habitat Requirements and Presence	Probability of Impact by Project
MAMMALS			
Preble's meadow jumping mouse (*Zapus hudsonius preblei*)	Threatened	Inhabits well-developed riparian habitat with adjacent, relatively undisturbed grassland communities, and a nearby water source. Well-developed riparian habitat includes a dense combination of grasses, forbs and shrubs; a taller shrub and tree canopy may be present. Has been found to regularly use uplands with grasses and shrubs at least as far out as 100 meters beyond the 100-year floodplain.	None. 1) the site does not contain wetland/riparian habitat or a nearby water source, or hibernaculum within side drainages and ponderosa pine in adjacent uplands; 2) nearest trapped-found site is 1.7 miles away in a different drainage system; and 3) nearest USFWS Critical Habitat is 2.25-miles south in a different drainage system.
BIRDS			

TABLE 1 - FEDERAL LISTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	**Status**	**Habitat Requirements and Presence**	**Probability of Impact by Project**
Eastern Black Rail (*Laterallus jamaicensis ssp. Jamaicensis*)	Threatened	Habitat includes tidally or non-tidally influenced marshes which range in salinity from salt to brackish to fresh. It requires dense overhead perennial herbaceous cover with underlying soils that are moist to saturated (occasionally dry) interspersed with or adjacent to very shallow water (typically ≤ 3 cm). Eastern black rails depend on this dense cover throughout their life cycle and is their primary strategy to avoid predation.	None. No wetland habitat is present.
Piping plover (*Charadrius melodus*)	Threatened	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed project will not affect any of the listed river basins.
Whooping crane (*Grus americana)*	Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed project will not affect any of the listed river basins.
FISH			
Pallid sturgeon (*Scaphirhynchus albus*)	Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed project will not affect any of the listed river basins.
INSECTS			

TABLE 1 - FEDERAL LISTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	**Status**	**Habitat Requirements and Presence**	**Probability of Impact by Project**
Monarch butterfly (*Danaus plexippus*)	Proposed Threatened	Multigenerational migrant that breeds throughout North America and overwinters in dense congregations in Mexican montane fir forests. The larval hostplant is milkweed (*Asclepias* spp.). Habitat includes areas with nectar for feeding and/or milkweed for laying eggs, especially grasslands and wetlands. Breeding habitat threats are widespread native grassland loss and herbicide use. In Colorado, they are present in low numbers from May to September.	None. Riparian habitat and milkweed is not present.
Suckley's Cuckoo Bumble Bee (Bombus suckleyi)	Proposed Threatened	Multigenerational migrant that breeds throughout North America and overwinters in dense congregations in Mexican montane fir forests. The larval hostplant is milkweed (*Asclepias* spp.). Habitat includes areas with nectar for feeding and/or milkweed for laying eggs, especially grasslands and wetlands. Breeding habitat threats are widespread native grassland loss and herbicide use. In Colorado, they are present in low numbers from May to September.	None. Riparian habitat and milkweed is not present.
PLANTS			

TABLE 1 - FEDERAL LISTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	**Status**	**Habitat Requirements and Presence**	**Probability of Impact by Project**
Ute ladies'-tresses orchid (*Spiranthes diluvialis*)	Threatened	Primarily occurs along seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels or valleys, and lakeshores. May also occur along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside borrow pits, reservoirs, and other human-modified wetlands.	None. Wetland habitat will not be impacted. The Site elevation ranges from 7,020 to 6,920 feet AMSL, which is higher than the 6,500-foot upper elevation limit documented for the species and recommended for conducting surveys by the USFWS.
Western prairie fringed orchid (*Platanthera praeclara*)	Threatened	Occurs in tallgrass prairie in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and Oklahoma. Upstream depletions to the Platte River system in Colorado and Wyoming may affect the species in Nebraska.	None. The proposed Project will not alter or deplete flows to the South Platte.

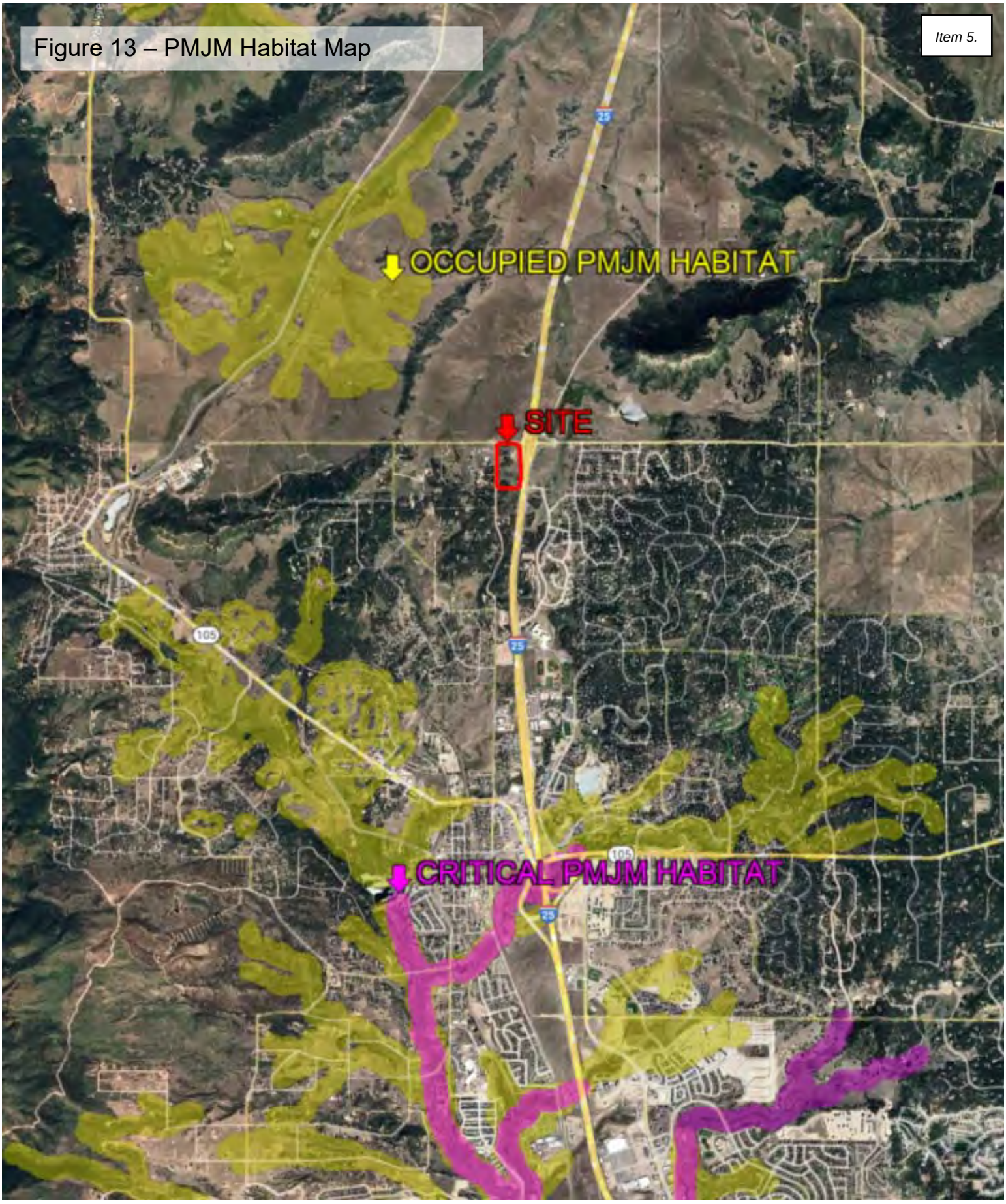
4.6.1 Preliminary Effects Determination

The USFWS IPaC Trust Resource Report (Appendix A) states that there is no Critical Habitat for T&E species in the Site. Based on the review of USFWS IPaC Trust Resources Report for the Project and our onsite assessment, it is ECOS' professional opinion that the likelihood that the Project would impact any of the species listed above in Table 1 is none. Most are not expected to occur in the Project area or on the Site; nor will they be affected by the indirect effects of the project as no downstream impacts to drainage basins supporting these T&E species are expected to affect them in offsite habitat. Therefore, ECOS' has preliminarily determined that the Project would have No Effect on any of the species listed above in Table 1.

PMJM: Preble's meadow jumping mouse (PMJM) is a common concern in El Paso and Douglas County and within their range along the Front Range of the Rockies. As noted in Table 1 above, the Site does not support the constituent elements and habitat requirements of PMJM. The site is not located within, adjacent, and is not connected to Occupied designated Critical Habitat. Refer to representative photos in Appendix C that demonstrate the Site does not support PMJM habitat and Figure 13, PMJM Habitat Map showing the proximity of the Site to PMJM Occupied and Critical Habitat.

FIGURE 13
PMJM Habitat Map

Figure 13 – PMJM Habitat Map



Source: CPW Occupied Habitat Mapping, 10/12/2002 and USFWS, Center for Native Ecosystems, 12/2007

4.7 Raptors and Migratory Birds

Raptors and most birds are protected by the Colorado Nongame Wildlife Regulations, as well as by the federal Migratory Bird Treaty Act. Additionally, eagles are protected by the Bald and Golden Eagle Protection Act (BGEPA).

4.7.1 Office Assessment Findings

ECOS utilized the Colorado Energy and Carbon Management Commission (ECMC) Online GIS data (ECMC, 2025) to screen the Site for potential raptor nests. No raptor nests have been mapped within one mile of the Site (ECMC, 2025). The closest nests site, an active prairie falcon nest is located 3.5 miles to the southwest of the Site.

The USFWS IPaC data (Appendix A) does not have data available at this time regarding the presence of migratory birds or Bald and Golden Eagles on the Site.

4.7.2 Field Assessment Findings

The ponderosa pine forest and midgrass prairie provides foraging habitat for transient migratory birds, including Magpie, Stellar's jay, mountain chickadees, and flickers that were directly observed on the Site. No nest sites or prairie dog burrows for raptors, including burrowing owl were found during the Site visit.

6.0 REGULATIONS AND REGULATORY COMPLIANCE

6.1 Clean Water Act

Section 404 of the Clean Water Act (CWA) and Colorado HB 24-1379, administered by the USACE and State of Colorado Water Quality Control Division (WQCD), prohibit the discharge of dredged or fill material into federal or state jurisdictional waters and wetland habitat without a valid 404 permit or HB 24-1379 authorization. ECOS identified one ephemeral channel (Channel 1) and two ephemeral swales (Swales 1 and 2) that are tributaries to Channel 1. During precipitation events, Channel 1 is an ephemeral tributary to Carpenter Creek, which is tributary to East Plum Creek and then the South Platte River.

Based on the physical and flow characteristics discussed above; the absence of wetlands on the Site; no ordinary high water marks or indicators; and Federal and State of Colorado rules, definitions, and guidance documents pertaining to WOTUS and WOSOC, Channel 1 and tributary swales are not relatively permanent or jurisdictional waters and therefore Federal or State CWA Permits and Notifications are not required for any proposed impacts. Water quality concerns to downstream receiving waters are addressed separately in other Project documents.

6.2 Endangered Species Act

The Endangered Species Act (ESA), administered by the USFWS, protects federally listed plant and animal species with the goal of ensuring their long-term

survival and recovery. The ESA prohibits the “taking" of a listed species, which includes adverse modification of critical or occupied habitat, harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting them, or attempting to do so without a valid permit.

The Site is not located within any Critical Habitat for T&E Species, Wildlife Refuges or Hatcheries according to the USFWS IPaC Trust Resources Report (USFWS, 2025a), nor does it exhibit any of the requisite or suitable habitat components to support T&E species listed for the area, including Preble’s meadow jumping mouse. As such, requests for concurrence with this report, clearance letters, or consultation with the USFWS under the ESA is not required.

Please note the following standard response from the USFWS in regard to ESA concurrence or clearance: *“If you (the project proponent) have determined that your project will have no effect to listed species or their habitat, or if suitable habitat for a listed species does not occur within your project area, you may not receive any further response or notification from us, as neither section 7 of the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C 1531 et seq.), nor implementing regulations under section 7 of the ESA, require us to review or concur with projects where “no effect” determinations have been made”.* This means that the USFWS may or may not comment or concur with ECOS’ effects determination as documentation of ESA compliance, regardless of the Project being constructed, funded or permitted by a federal agency or requests for ESA concurrence by local jurisdictions, counties, or FEMA.

6.3 Migratory Bird Treaty Act & Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act – Both Acts protect migratory birds, nests, and nesting activities that could be disrupted or destroyed during construction activities such as clearing vegetation, moving earth, and demolishing bridges. The USFWS administers these requirements in collaboration with CPW.

No raptor nests have been mapped within one mile of the Site (ECMC, 2025) and no migratory bird nests were observed within the Site. The closest active raptor nest to the Site is a prairie falcon nest 3.5-miles to the southwest of the Site (ECMC, 2025). Activities on the Site will not have any bearing on the viability of that nest. Given the seasonal and transitory nature of migratory birds and raptors, ECOS recommends a nesting bird survey immediately prior to any construction activity to identify any new nests within the Site that could potentially be occupied with eggs or chicks at the proposed time of construction. Construction activities should be restricted during the breeding, egg laying, and fledging season near any active or occupied raptor or migratory bird nests unless a Take Permit is obtained through consultation with the USFWS.

6.4 Colorado Nongame Species Conservation Act

The Colorado Nongame, Endangered, and Threatened Species Conservation Act (Conservation Act), administered by Colorado Parks and Wildlife (CPW), prohibits actions that "take" endangered, threatened species, or State-listed

species of special concern in danger of extinction or likely to become endangered. A take includes harming, harassing, possessing, transportation, exportation, sale, or shipment of listed species without a permit from CPW. The Conservation Act is a state-level regulation aimed at protecting and conserving "significant" wildlife habitat and species that are not commonly hunted, fished, or trapped (CPW, 2009). Hunted, fished, or trapped species are typical referred to as common or game species.

The data presented herein indicates that no significant non-game species or habitat are present or utilize the Site that are protected under the Conservation Act or warrant special protection or permits. Notwithstanding, as responsible stewards, CPW and CDOT recommendations to avoid, minimize, and mitigate project impacts to common game species should be implemented where feasible. The full body of CPW and CDOT recommendations can be found in their Project review comments.

6.5 Colorado Department of Agriculture Noxious Weed Act

The Colorado Department of Agriculture (CDA) Noxious Weed Act (NWA) of 2003 defines and prioritizes management objectives for state-designated noxious weeds. The NWA requires all landowners in Colorado, both public and private, to manage noxious weeds on their property. The Act mandates that State-listed noxious weeds (List A, B and C) are to be controlled within certain thresholds to prevent their spread and minimize their negative impacts on native plant communities, agricultural lands, and property values (CDA, 2003).

The El Paso County Noxious Weed Management Plan (NWMP) outlines best management practices (BMPs) for managing noxious weeds in El Paso County. The EPC NWMP encourages the use of integrated methods to control noxious weeds, which may include mechanical, biological, and chemical control techniques, as well as cultural practices like establishing healthy native vegetation (EPC, 2014).

Some noxious weeds exist on the Site now. Recruitment of weeds (common and noxious) is inevitable after earthwork and ground disturbance activities if the soil is not conditioned, revegetated, and managed. It is recommended that Buc-ee's retain a qualified weed management specialist certified to apply chemical herbicides to identify and control any common or noxious weeds that emerge on the Site after landscaping and site revegetation/reclamation has been conducted. Only native trees, shrubs and grasses are recommended for landscaped and reclaimed areas.

6.6 Other Local and State Regulations

This report is focused on ecological assets and associated recommendations to maintain regulatory compliance with applicable laws. Construction related permit activities such as stormwater discharge permits, grading, erosion and sediment control plans, water quality, passive treatment systems, stormwater management plans, etc. that will assist in avoiding potential impacts to downstream receiving waters and aquatic species fall under the purview of the project engineer and as

such are addressed in other Project documents. Construction related regulations, requirements, and recommendations will be provided by the project engineer either in their reports or construction documents when appropriate.

7.0 SUMMARY and CONCLUSIONS

Based on the information presented in this Environmental Assessment, it is ECOS' professional opinion that the Site is suitable for the proposed Project for the following reasons:

1) Location:

The Site is situated just south of the El Paso - Douglas County line along the south side of Palmer Divide Road, with Beacon Lite Road along the west and I 25 to the east.

2) Environmental Setting:

The Site is not located within a CNHP Potential Conservation Area. No Critical Habitat for Federally-listed T&E Species, Wildlife Refuges or Hatcheries are present in the Site or vicinity of the Site. The El Paso County Open Space Composite Analysis shows that the Site and immediate vicinity around the Site is rated as having Lower Attribute Value. The CNHP Landscape Disturbance Index (LDI) for the Site and surrounding lands in El Paso County, particularly the I-25 corridor is rated as high due to low biodiversity; high disturbance status due to the presence of roads, a major highway (I-25), residential development, other current/future anthropogenic impacts. The high CNHP LDI rating for the Site means it is already compromised or impaired and not a candidate or priority for conservation.

3) Vegetation:

Sixty-five (65%) of the Site consists of a mono-culture of mountain brome, with scattered remnants of a few midgrass prairie species and some Wood/s rose. This low diversity grass cover is likely due to agricultural practices to maximize hay forage for cattle. Thirty-five (35%) of the Site consists of multi-aged, mono-culture of ponderosa pine with no understory shrubs. Aerial imagery dating back to 1937 indicates that the site was treeless and used for livestock grazing and hay production. Ponderosa pine succession started in the 1980's. In short, the vegetation cover on the site is of low diversity due to anthropogenic disturbances. Previously disturbed ponderosa pine and grassland on this Site are not rare or particularly significant habitats.

4) Wetland Habitat, Riparian Habitat and Waters:

No wetland habitat, riparian habitat or waters are present on the Site.

5) Common Wildlife Habitat:

CPW does not show or list any High Priority Habitat (HPH) or Species of Greatest Conservation Need on the Site for those species listed for El Paso County. Elk, deer, bear, and many other species listed by CPW are common wildlife, many of which are game species that are not imperiled and can be hunted without concern for extinction or significance. Beacon Lite Road, Palmer

Divide Road, and I-25 directly abut the Site on three sides. These roads isolate it from the surrounding landscape and impair its functional value for a broad spectrum of wildlife, including common game species.

Douglas County conservation easements protect the land north of the Site across Palmer Divide Road. These lands provide moderate to high habitat values for wildlife. However, given a lack of previous conservation planning in El Paso County, the moderate to high habitat values present in Douglas County cannot be extrapolated to open land located south of Palmer Divide Road, nor can the Douglas County conservation goals and directives supplant those in El Paso County.

Within a regional or landscape context, comparing Douglas County and El Paso County open space distribution and values, CPW wildlife usage patterns, and a high CNHP LDI, it is ECOS opinion that the Site is impaired and has relatively low habitat value except for transient wildlife escaping I-25.

6) Regulations and Regulatory Compliance:

There is no nexus associated with the proposed Project that would require Federal or State environmental regulatory review, permitting, or consultation under the following laws and regulations:

a. Clean Water Act – No federal regulated Waters of the U.S, including wetland habitat, are present on the Site.
b. Endangered Species Act – No Threatened and Endangered Species are present on the Site of in the vicinity.
c. Migratory Bird Treaty Act & Bald and Golden Eagle Protection Act – No Raptors or Migratory Birds are present in the Site and this will be verified during a pre-construction survey.
d. Colorado Nongame Species Conservation Act –
    - no significant non-game species or habitat are present or utilize the Site that are protected under the Conservation Act or warrant special protection or permits. Notwithstanding, as responsible stewards, CPW and CDOT recommendations to avoid, minimize, and mitigate project impacts to common game species should be implemented where feasible.
    - Native bats are not present on the Site and this will be verified during a pre-construction survey.

e. Colorado Department of Agriculture Noxious Weed Act - Some noxious weeds exist on the Site now. Buc-ee's will retain a qualified weed management specialist certified to apply chemical herbicides to identify and control any common or noxious weeds that emerge on the Site after landscaping and site revegetation/reclamation has been conducted.
f. Local Regulations - The Town Community Master Plan indicates the Buc-ee's Site has been planned for retail/commercial development due to its adjacency to two existing major roads, I-25, an I-25 interchange, and residential development that already compromise the ecological value of

the Site for wildlife. The master planning process acknowledges that retail development is not necessarily sensitive, compatible, or consistent with conservation values of other jurisdictions.

7) Impacts and Mitigation:

The proposed Project will attract additional traffic, and produce light and noise that can disrupt wildlife movement and behavior in the local area. Wildlife movement through the Site are important concerns to CDOT, CPW, and the public. These concerns and impacts will be addressed by Buc-ee's but cannot be viewed in isolation or falsely raise their overall level of importance and scrutiny by the public. The existing anthropogenic impacts at this Site are already high particularly when compared to the conservation lands to the north in Douglas County. However, given a lack of previous conservation planning in El Paso County, the moderate to high habitat values present in Douglas County (north of the Site) cannot be extrapolated to open land located south of Palmer Divide Road, nor can the Douglas County conservation goals and directives supplant those in El Paso County or the Town of Palmer Lake.

The Site is immediately adjacent to the 21-mile swath of I-25 and adjacent lands (between MP 160 near Monument and MP181 near Castlerock) through Douglas and El Paso Counties, known as the Gap. The Buc-ee's Site was included in this analysis as it is located on the west side of I-25 between MP 163.15 and 163.45. The Site represents 0.3-mile or 1.4% of the length of the west side of the Gap and is benefitting from the success of the Wildlife Mitigation Measures installed during the Gap project by CDOT and CPW to protect wildlife and the public from WVC's and negative encounters.

To mitigate impacts to wildlife, Buc-ee's will implement measures recommended by CPW that discourage large game from entering and moving through the site to avoid conflicts on Site and at the I-25/Palmer Divide Road interchange by guiding them around and to more suitable habitat and travel corridors away further west of I-25. Trees, shrubs and grasses that are native to Colorado will be used in landscape areas in respect to the nativity, wildlife, and character of the natural landscape and to provide habitat for bird life and mitigate for noise, human activity, and light that may emanate from the Site.

Buc-ee's will also be implementing noise, light, and food waste mitigation measures as recommended by CPW and outlined in this EA. These are intended to avoid human-wildlife conflicts on the Site and reduce disruption to wildlife behavior in adjacent open space to support long-term ecosystem function in the broader landscape.

Water quality concerns to downstream receiving waters are addressed separately in other Project documents.

8.0 REFERENCES

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Appendix A

USFWS IPaC Trust Resource Report

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

El Paso County, Colorado

Local office

Colorado Ecological Services Field Office

(303) 236-4773
(303) 236-4005

MAILING ADDRESS
Denver Federal Center
P.O. Box 25486
Denver, CO 80225-0486

PHYSICAL ADDRESS
1 Denver Federal Center
Bldg 53 Room Fw100}
Denver, CO 80225-0001

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Preble's Meadow Jumping Mouse Zapus hudsonius preblei Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4090	Threatened

Birds

NAME	STATUS
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover Charadrius melodus This species only needs to be considered if the following condition applies: • Project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Whooping Crane Grus americana There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

Fishes

NAME	STATUS

NOT FOR CONSULTATION

Pallid Sturgeon Scaphirhynchus albus Wherever found This species only needs to be considered if the following condition applies: • Water use or contamination may adversely affect the species. Within the Platte River basin, depletions may adversely affect the species. These affects must be considered even outside occupied range. See local FWS office for more information. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7162	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's Cuckoo Bumble Bee Bombus suckleyi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10885	Proposed Endangered

Flowering Plants

NAME	STATUS
Ute Ladies'-tresses Spiranthes diluvialis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2159	Threatened
Western Prairie Fringed Orchid Platanthera praeclara Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1669	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

NOT FOR CONSULTATION

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Broad-tailed Hummingbird Selasphorus platycercus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 25 to Aug 21
Ferruginous Hawk Buteo regalis This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6038	Breeds Mar 15 to Aug 15
Northern Harrier Circus hudsonius This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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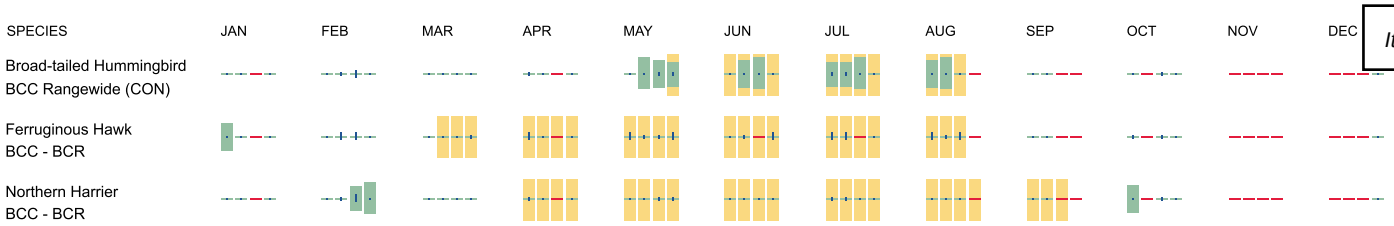


Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

NOT FOR CONSULTATION

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and s options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my sp location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
R4SBC

NOT FOR CONSULTATION

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

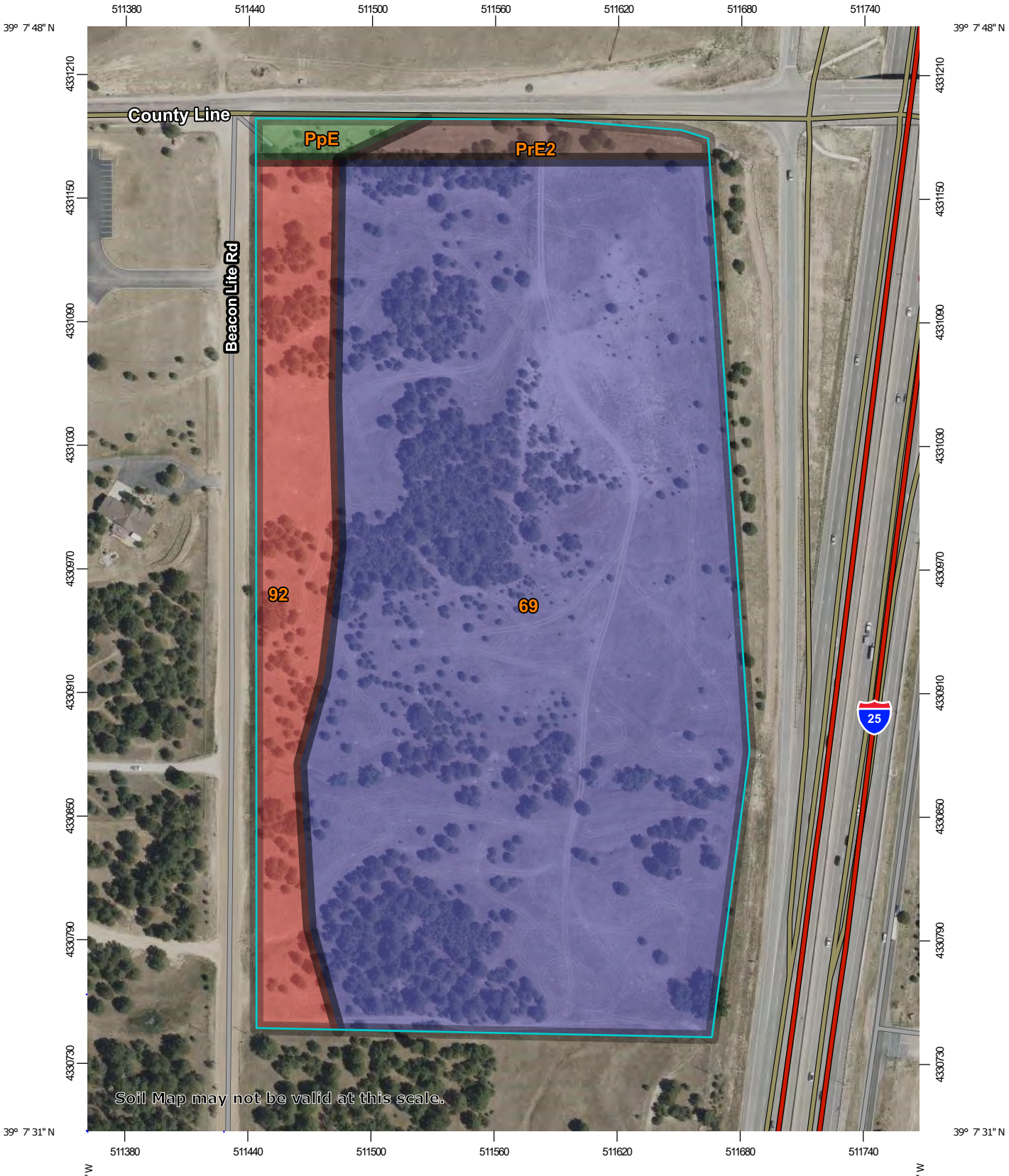
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix B

USDA Custom Soil Resource Report

Map Unit Name—Castle Rock Area, Colorado, and El Paso County Area, Colorado
(BUCEES_SITE BNDRY_ROUGH)



Map Scale: 1:2,610 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Peyton-Pring complex, 8 to 15 percent slopes
- Peyton-Pring-Crowfoot complex, 3 to 15 percent slopes, eroded
- Peyton-Pring-Crowfoot sandy loams, 5 to 25 percent slopes
- Tomah-Crowfoot loamy sands, 3 to 8 percent slopes
- Not rated or not available

Soil Rating Lines

- Peyton-Pring complex, 8 to 15 percent slopes
- Peyton-Pring-Crowfoot complex, 3 to 15 percent slopes, eroded
- Peyton-Pring-Crowfoot sandy loams, 5 to 25 percent slopes
- Tomah-Crowfoot loamy sands, 3 to 8 percent slopes
- Not rated or not available

Soil Rating Points

- Peyton-Pring complex, 8 to 15 percent slopes
- Peyton-Pring-Crowfoot complex, 3 to 15 percent slopes, eroded
- Peyton-Pring-Crowfoot sandy loams, 5 to 25 percent slopes
- Tomah-Crowfoot loamy sands, 3 to 8 percent slopes
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Castle Rock Area, Colorado
Survey Area Data: Version 17, Aug 29, 2024

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 23, 2024—Aug 4, 2024

Map Unit Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PpE	Peyton-Pring-Crowfoot sandy loams, 5 to 25 percent slopes	Peyton-Pring-Crowfoot sandy loams, 5 to 25 percent slopes	0.3	1.2%
PrE2	Peyton-Pring-Crowfoot complex, 3 to 15 percent slopes, eroded	Peyton-Pring-Crowfoot complex, 3 to 15 percent slopes, eroded	0.7	2.8%
Subtotals for Soil Survey Area			**1.0**	**4.0%**
Totals for Area of Interest			**25.3**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
69	Peyton-Pring complex, 8 to 15 percent slopes	Peyton-Pring complex, 8 to 15 percent slopes	20.7	81.8%
92	Tomah-Crowfoot loamy sands, 3 to 8 percent slopes	Tomah-Crowfoot loamy sands, 3 to 8 percent slopes	3.6	14.2%
Subtotals for Soil Survey Area			**24.3**	**96.0%**
Totals for Area of Interest			**25.3**	**100.0%**

Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Rating Options

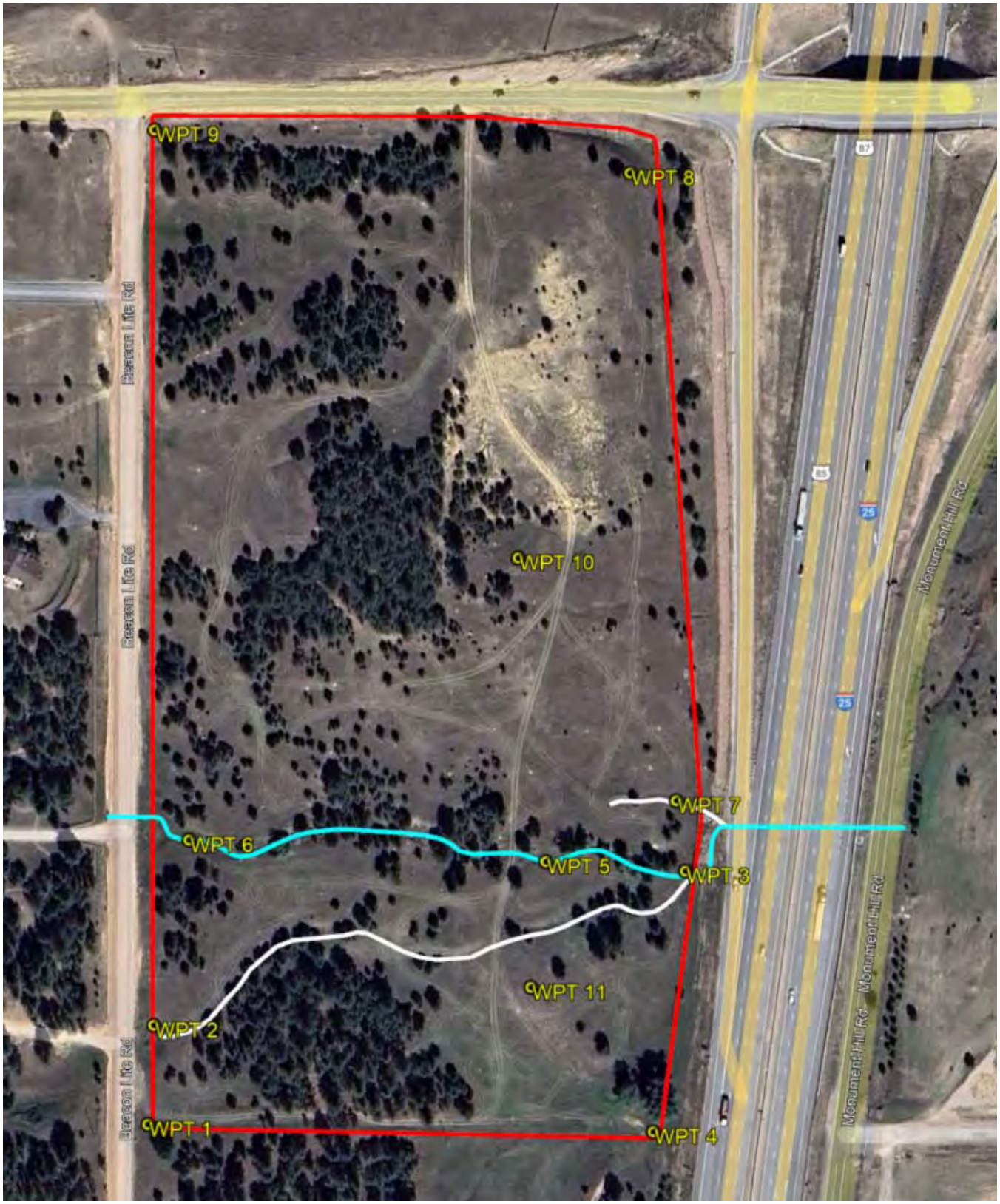
Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Appendix C

Photo Location Map and Representative Photos

Photo Location Map



Representative Photos

WTP 1: View north of ponderosa pine forest and midgrass prairie from southwest corner of the Site.

WTP 1: View east of ponderosa pine forest and midgrass prairie from southwest corner of the Site.

WTP 2: View east of upstream portion of Swale 1 from Beacon Lite Road.

WTP 3: View south of downstream portion of Swale 1 near I-25.

WTP 3: View west of downstream portion of Channel 1 near I-25.

WTP 3: View northeast of wildlife fence and ramp adjacent to I-25.

WTP 4: View west of midgrass prairie meadow and ponderosa pine forest from southeast corner of the Site near I-25.

WTP 4: View north of midgrass prairie meadow and ponderosa pine forest from southeast corner of the Site near I-25.

WTP 5: View of downstream portion of Channel 1 below old ranch road (two-track).

WTP 5: View upstream of Channel 1 downstream of old ranch road (two-track) and culvert.

WTP 6: View downstream of Channel 1 near Beacon Lite Road.

WTP 6: View upstream of Channel 1 toward Beacon Lite Road.

WTP 7: View downstream of confluence of Channel 1, Swale 1 and Swale 2 towards I-25, 24-onche culvert, wildlife fence and ramp.

WTP 7: View west of Swale 2 from I-25 Site boundary near I-25.

WTP 8: View south of midgrass prairie (ponderosa savannah) and I-25 corridor from northeast corner of the Site.

WTP 8: View southwest of midgrass prairie (ponderosa savannah) and I-25 corridor from northeast corner of the Site.

WTP 8: View west of midgrass prairie (ponderosa savannah) and Palmer Divide Road from northeast corner of the Site.

WTP 9: View east of midgrass prairie and ponderosa pine forest from northwest corner of the Site at Palmer Divide Road and Beacon Lite Road intersection.

WTP 9: View south of midgrass prairie and ponderosa pine forest from northwest corner of the Site at Palmer Divide Road and Beacon Lite Road intersection.

WTP 10: View north of midgrass prairie and ponderosa pine forest from center of the Site.

WTP 10: View northeast of midgrass prairie and ponderosa pine forest from center of the Site.

WTP 10: View east of midgrass prairie and ponderosa pine forest and I-25 from center of the Site.

WTP 10: View southeast of midgrass prairie and ponderosa pine forest and I-25 from center of the Site.

WTP 10: View south of midgrass prairie and ponderosa pine forest from center of the Site.

WTP 10: View south of midgrass prairie and ponderosa pine forest from center of the Site.

WTP 11: View east of midgrass prairie and ponderosa pine forest and I-25 from south-central portion of the Site.

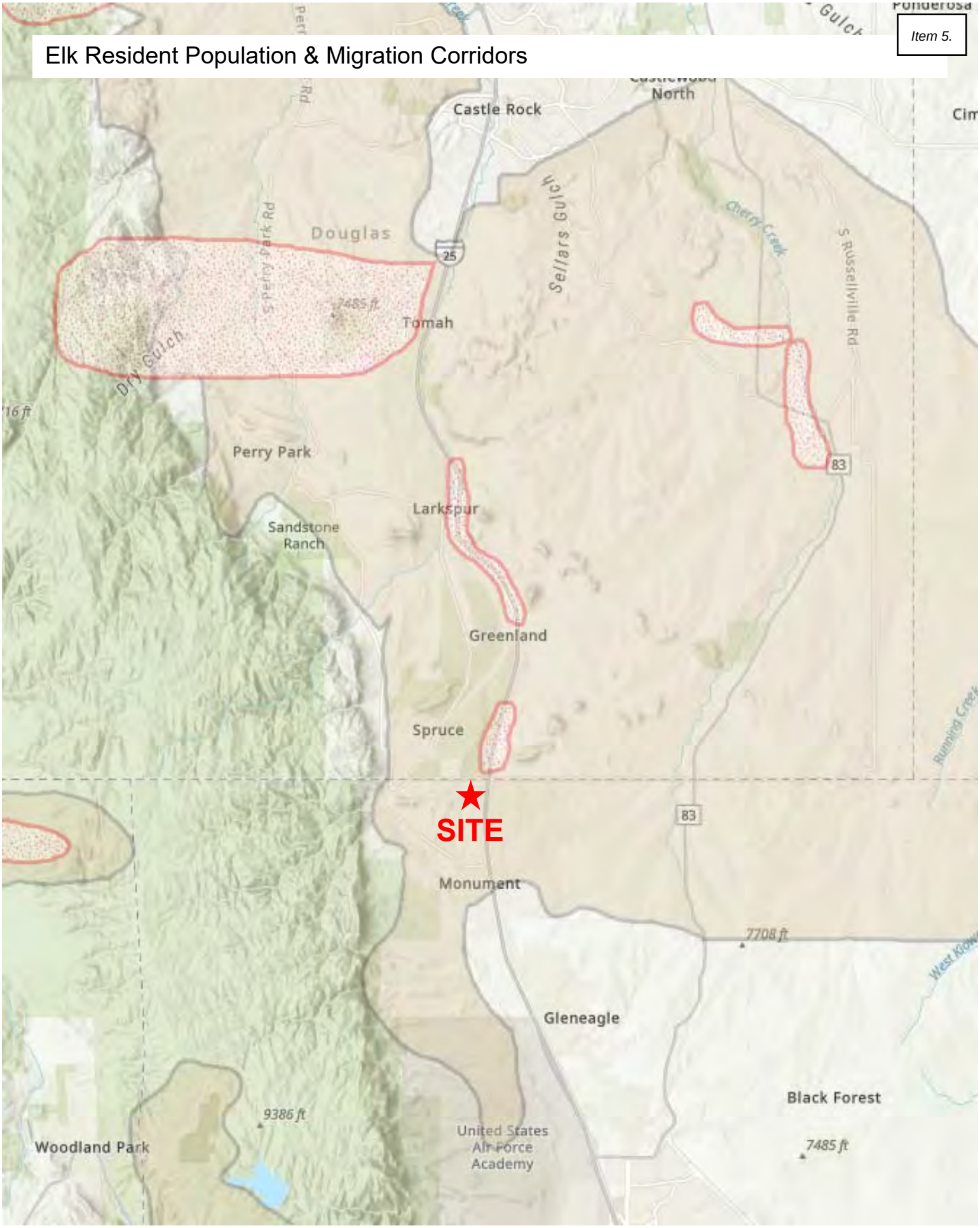
WTP 11: View southeast of midgrass prairie and ponderosa pine forest and I-25 from south-central portion of the Site.

WTP 11: View south of midgrass prairie and ponderosa pine forest beyond southern site boundary.

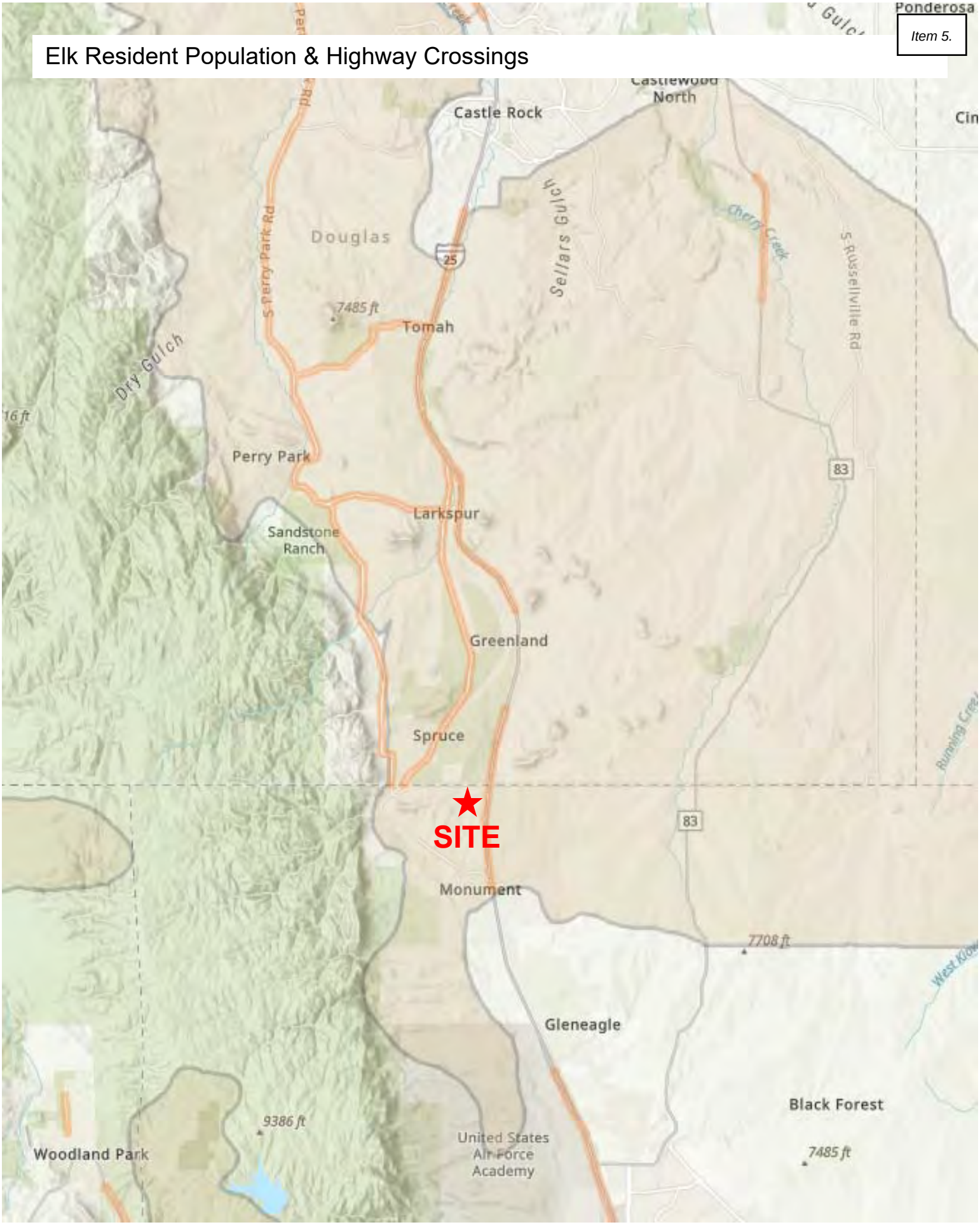
Appendix D

Elk and Mule Deer Habitat Maps

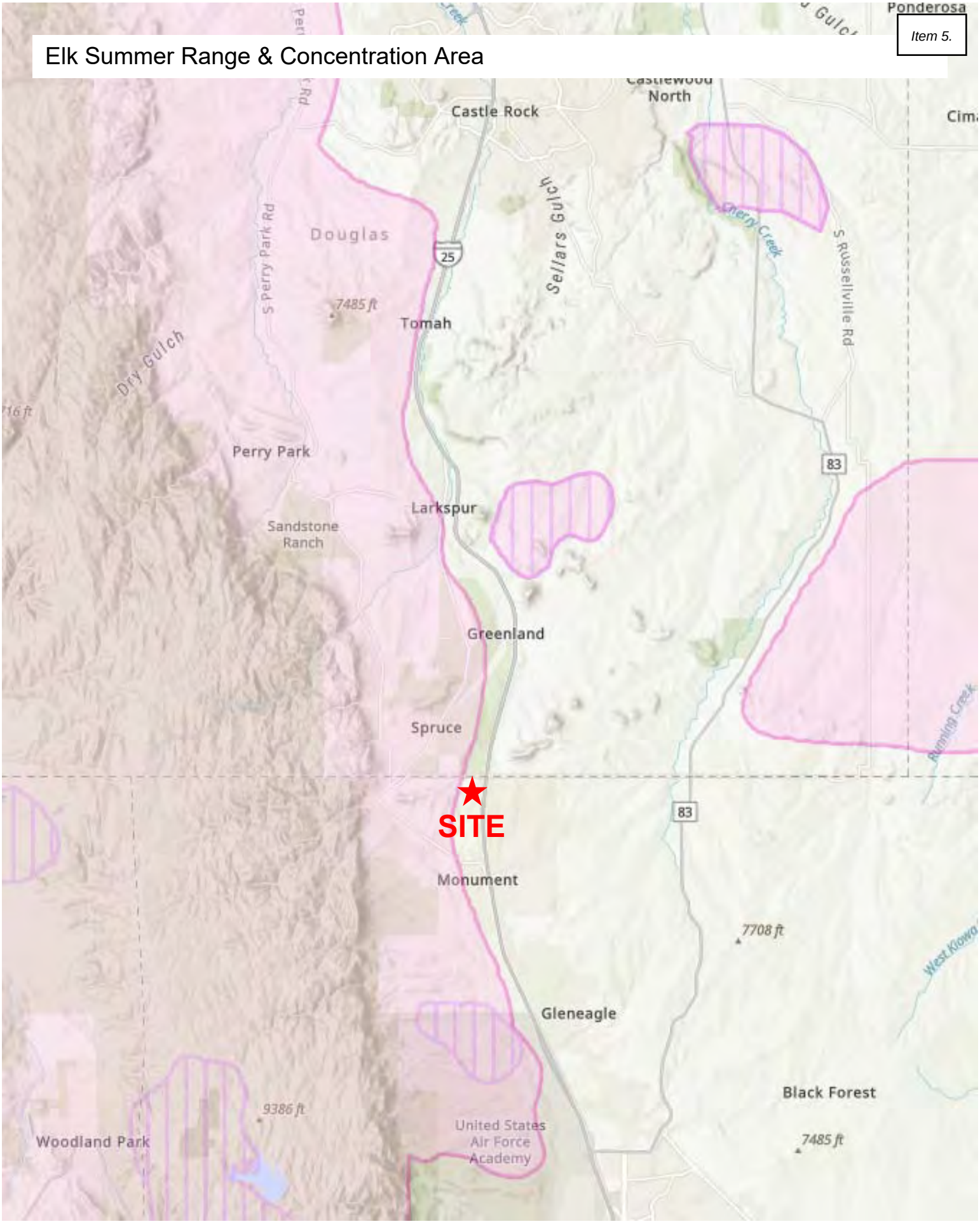
Elk Resident Population & Migration Corridors



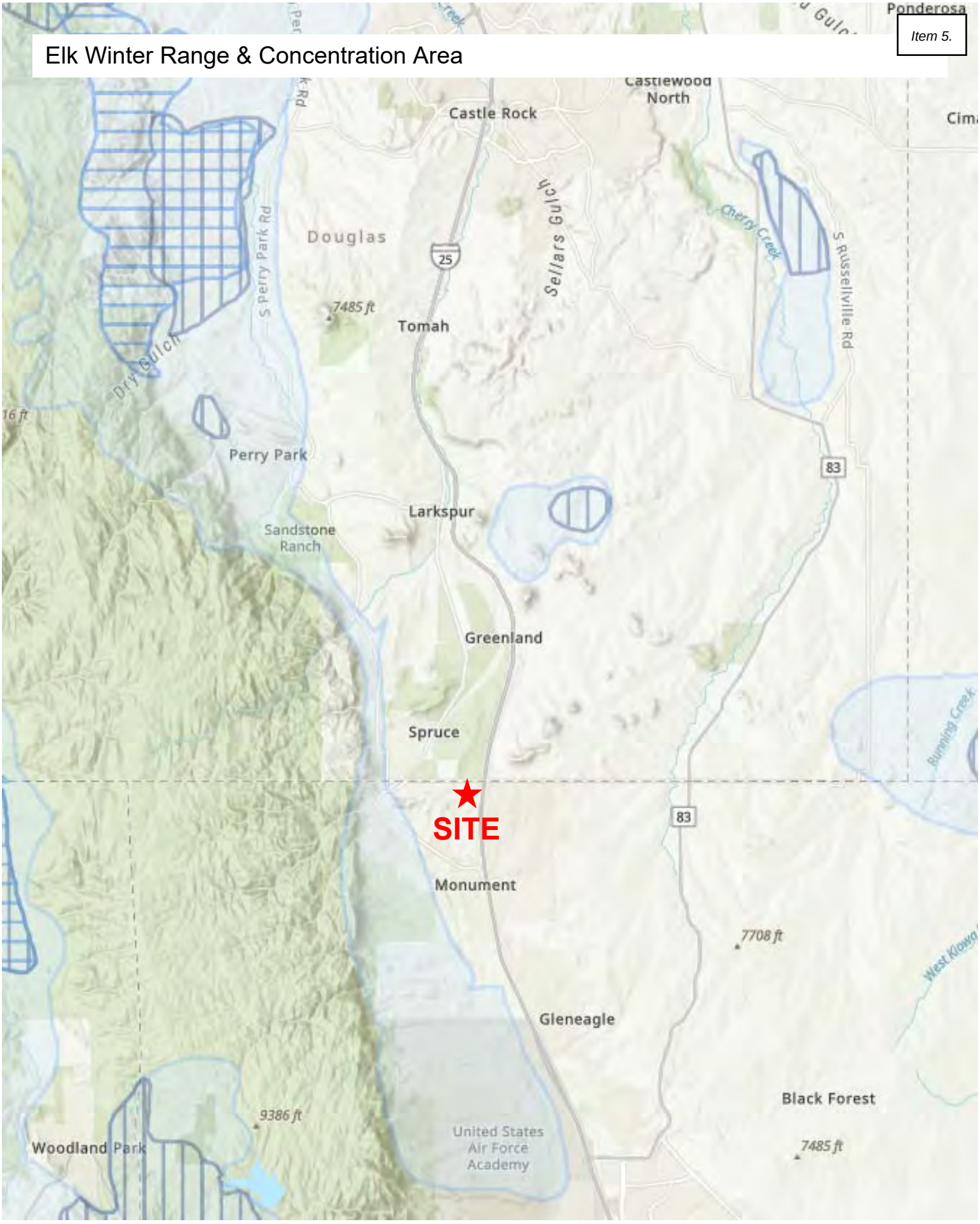
Elk Resident Population & Highway Crossings



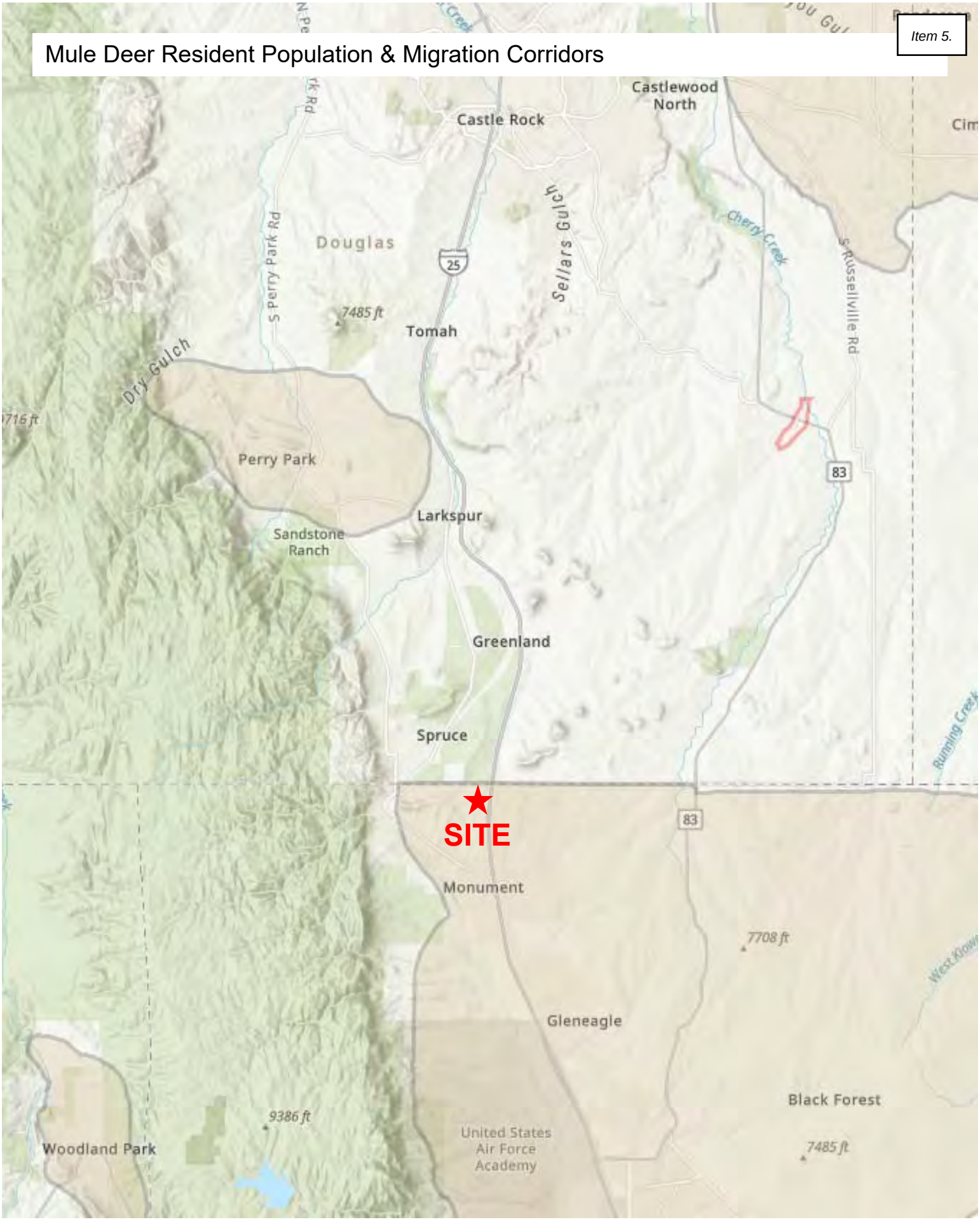
Elk Summer Range & Concentration Area



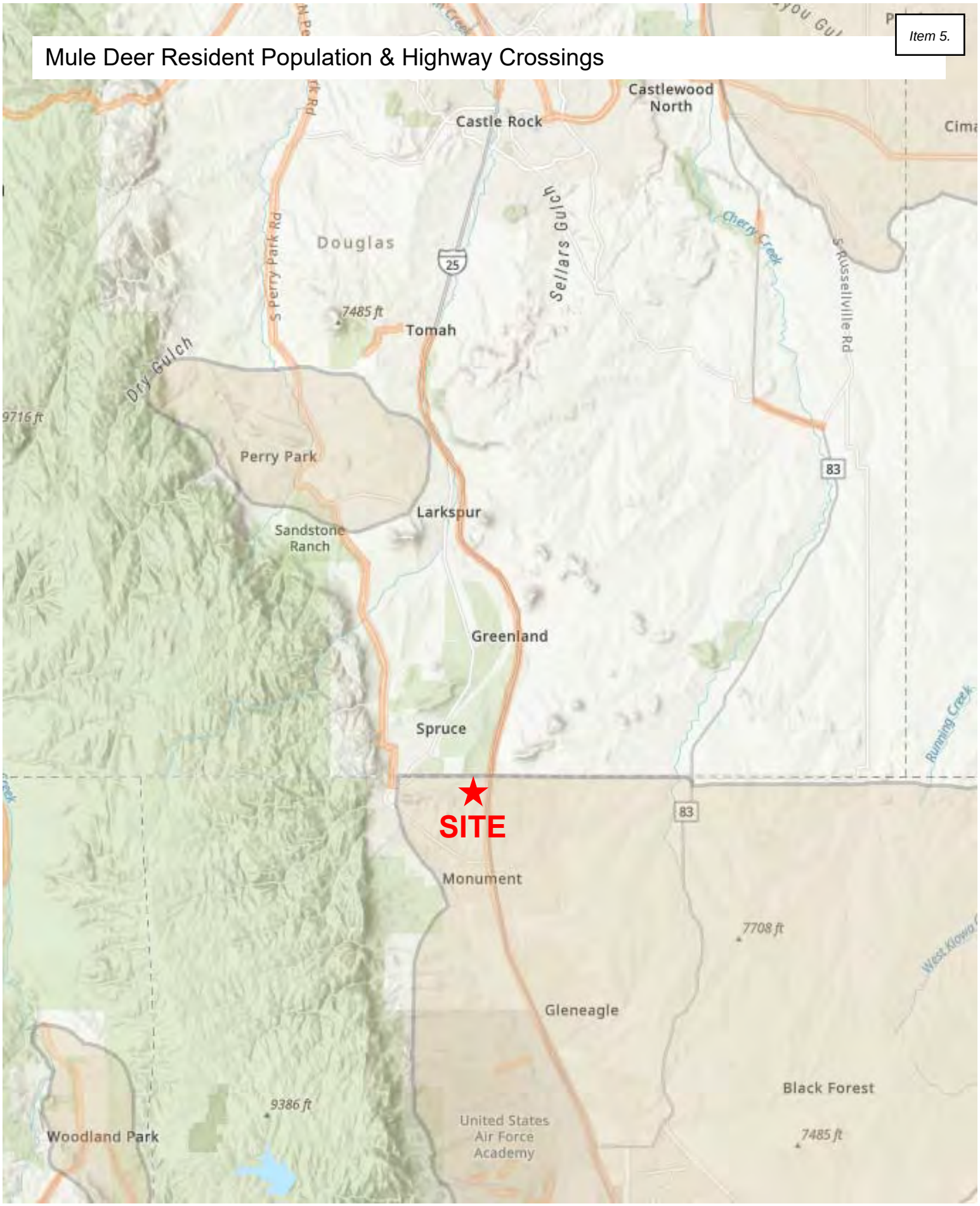
Elk Winter Range & Concentration Area



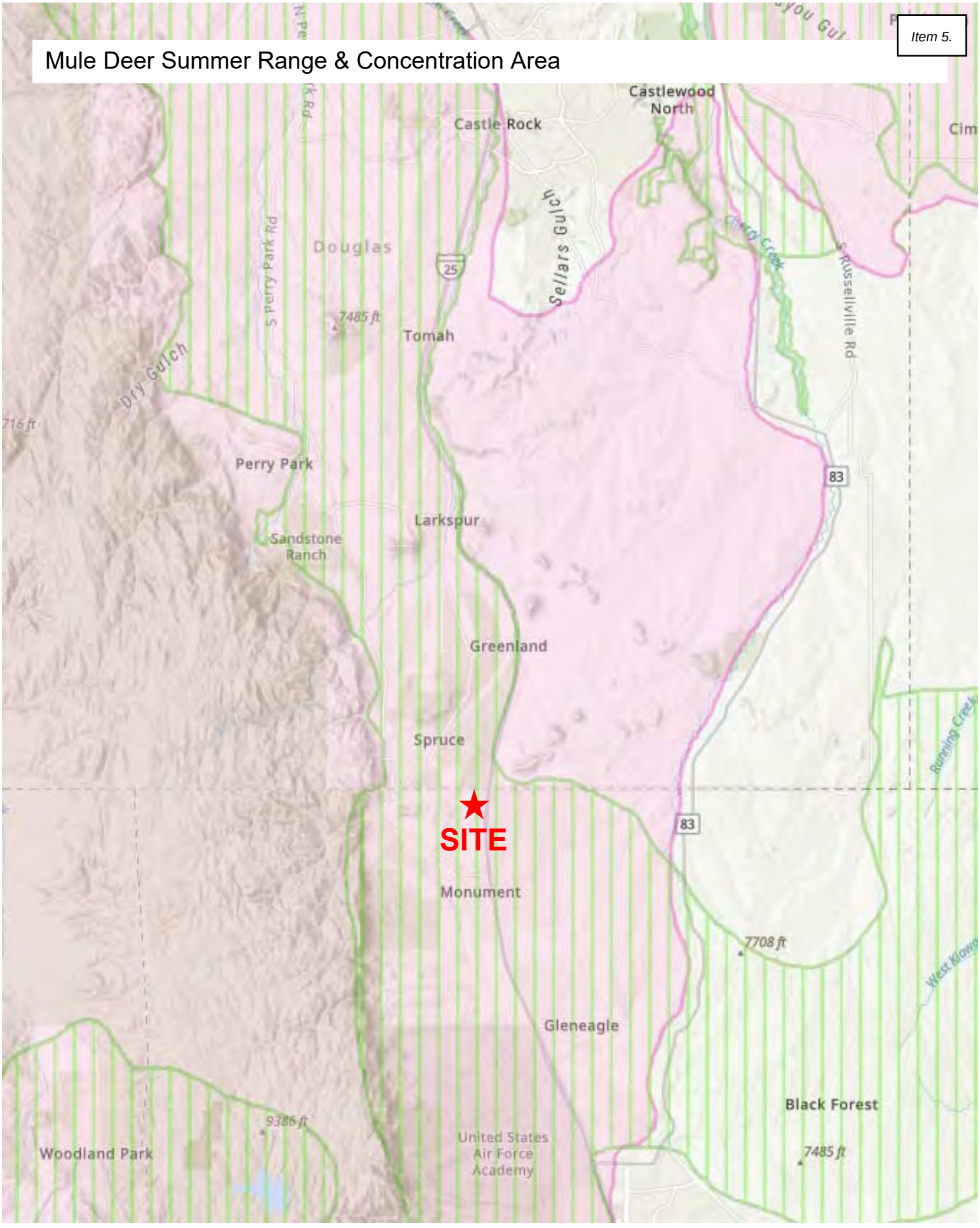
Mule Deer Resident Population & Migration Corridors



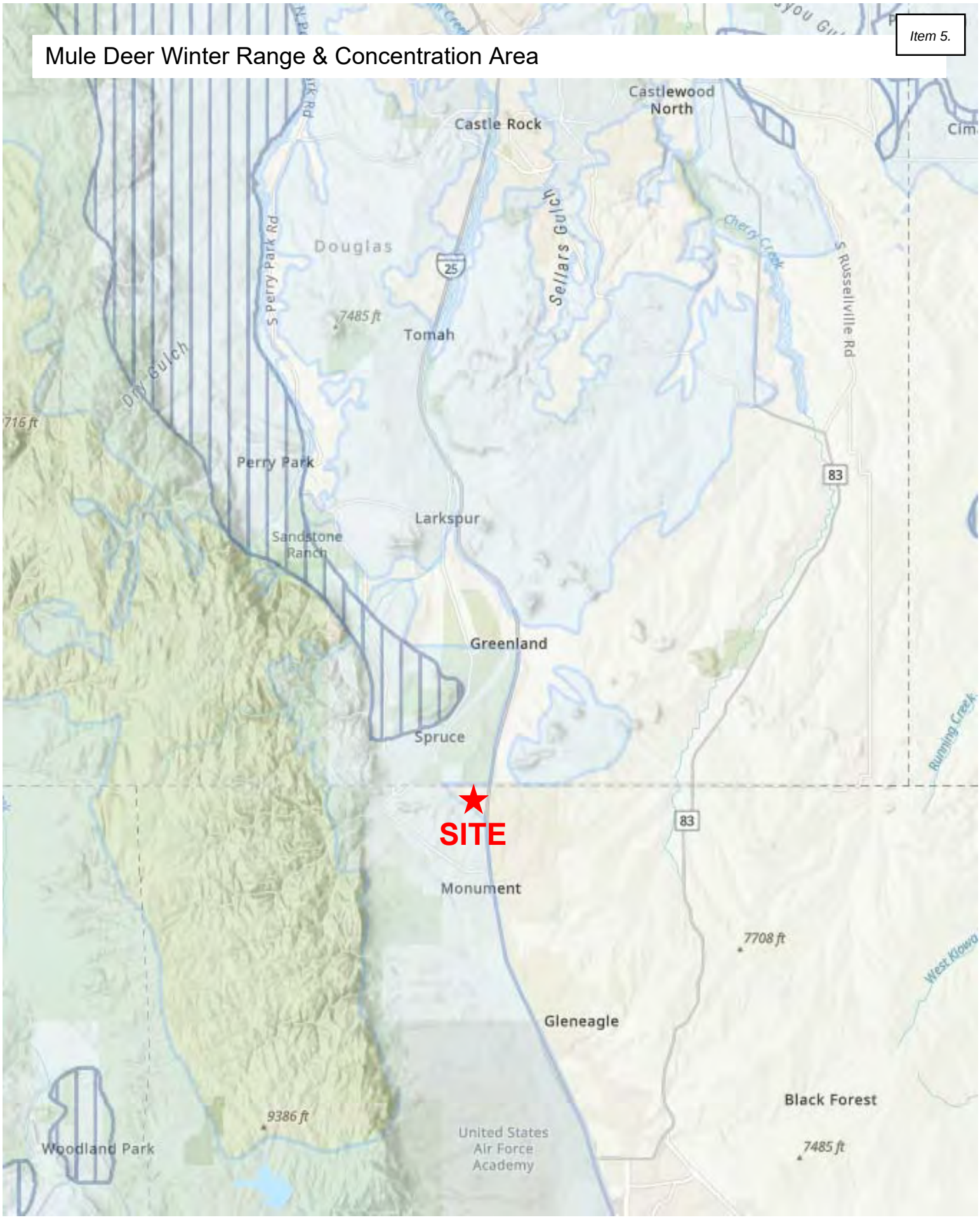
Mule Deer Resident Population & Highway Crossings



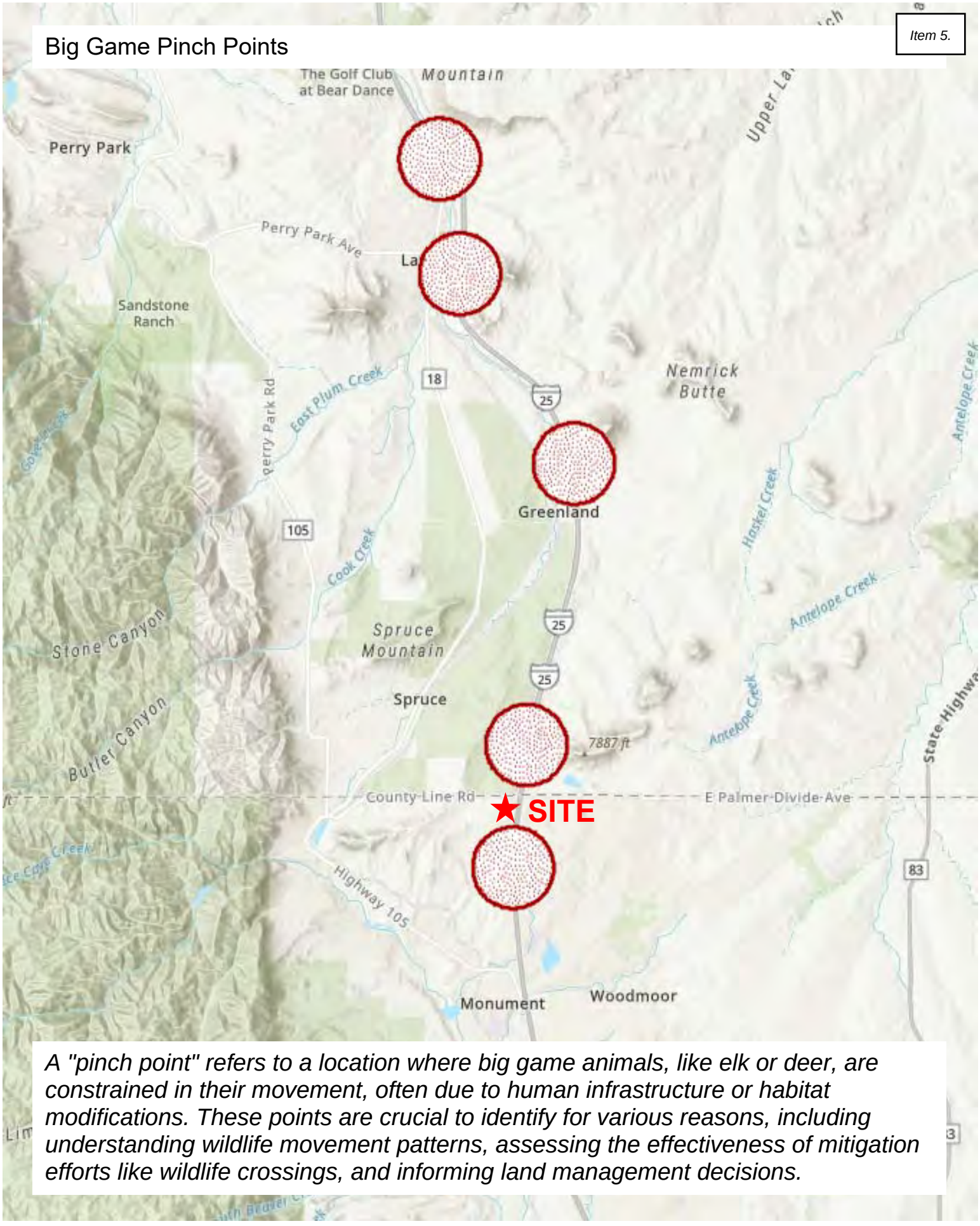
Mule Deer Summer Range & Concentration Area



Mule Deer Winter Range & Concentration Area



Big Game Pinch Points



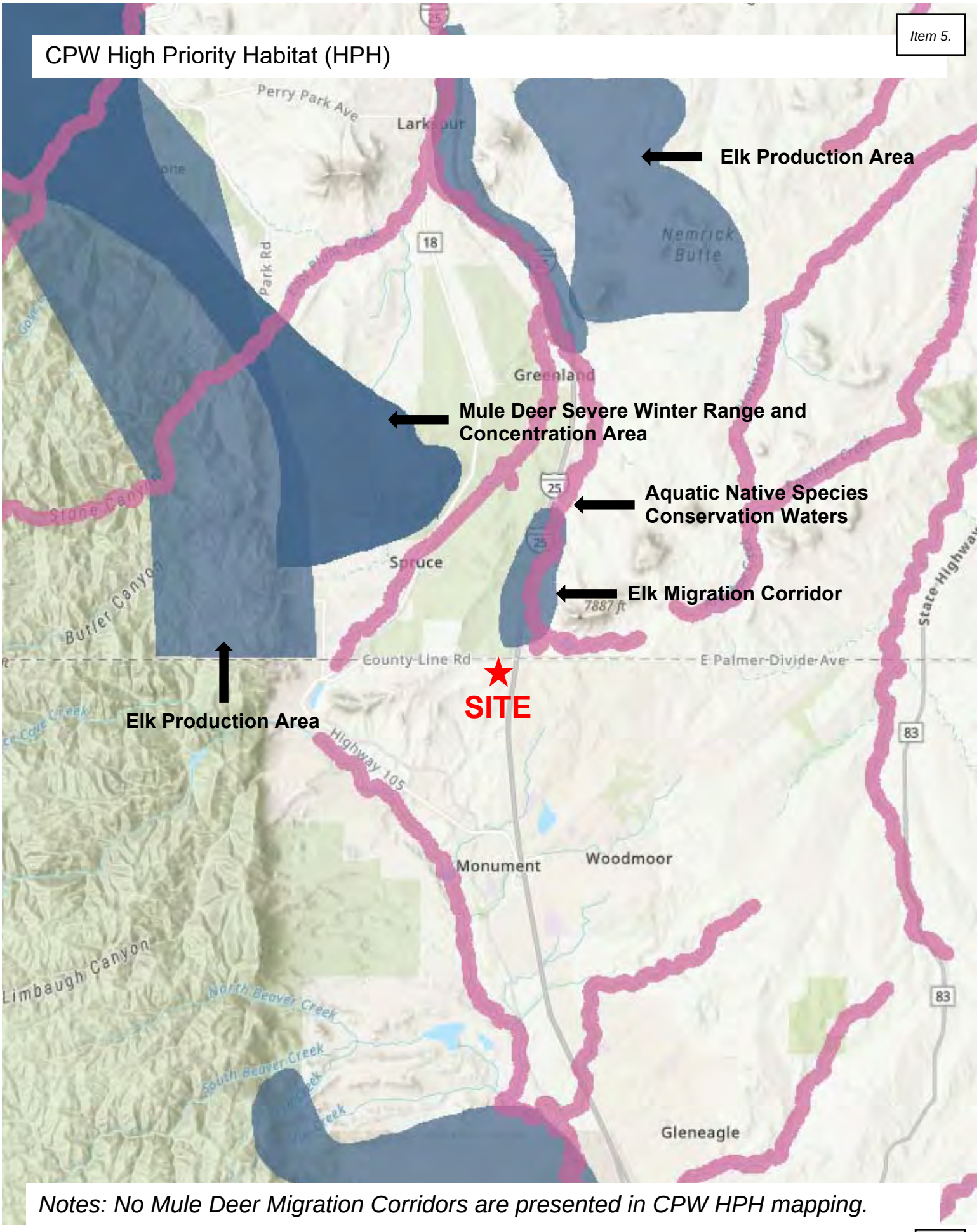
A "pinch point" refers to a location where big game animals, like elk or deer, are constrained in their movement, often due to human infrastructure or habitat modifications. These points are crucial to identify for various reasons, including understanding wildlife movement patterns, assessing the effectiveness of mitigation efforts like wildlife crossings, and informing land management decisions.

Source: CPW – Wildlife Species Map Application, accessed 6/3/25

Appendix E

CPW High Priority Habitat

CPW High Priority Habitat (HPH)



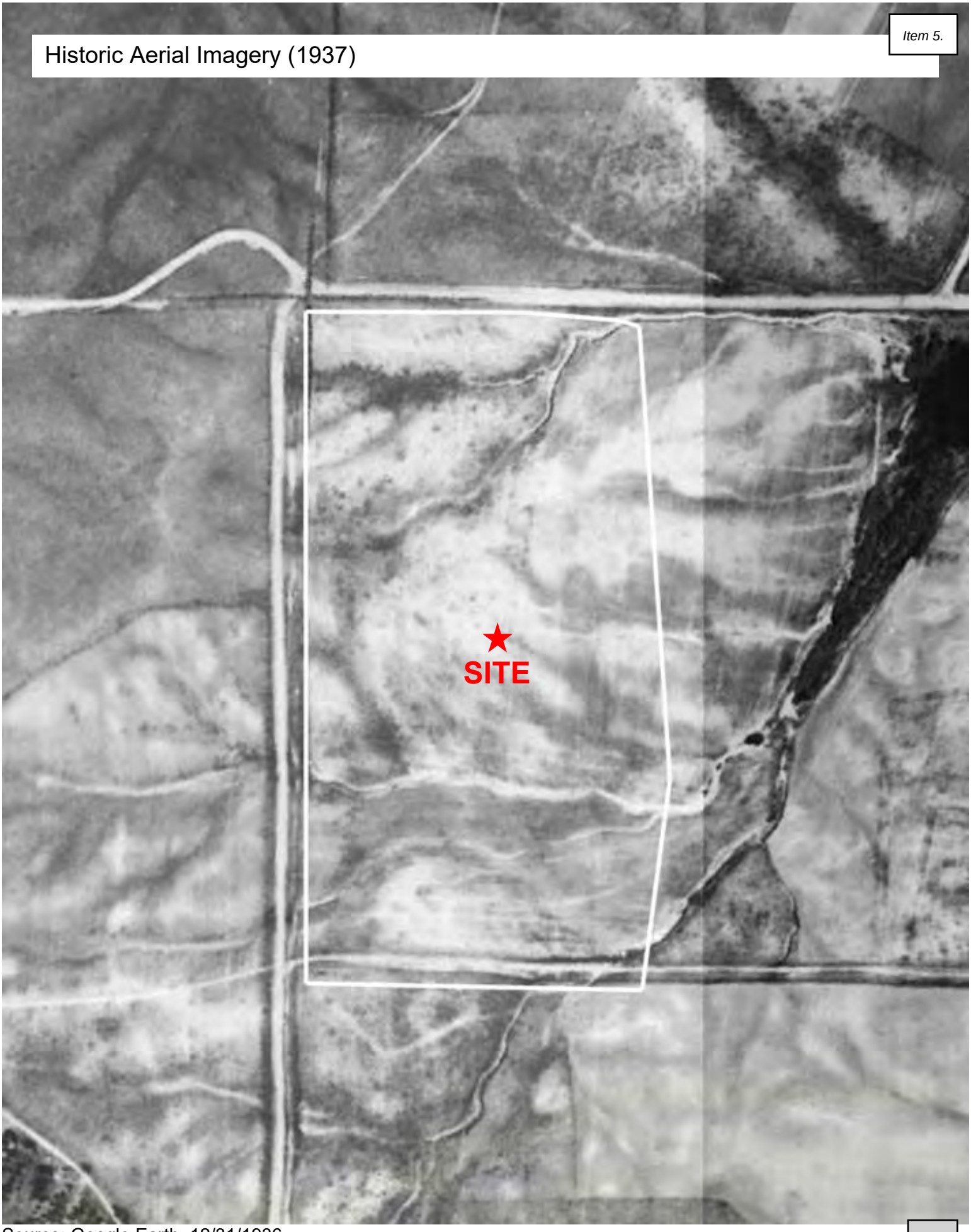
Notes: No Mule Deer Migration Corridors are presented in CPW HPH mapping.

Source: Colorado Parks and Wildlife (CPW) High Priority Habitat (HPH) Web Map Application

Appendix F

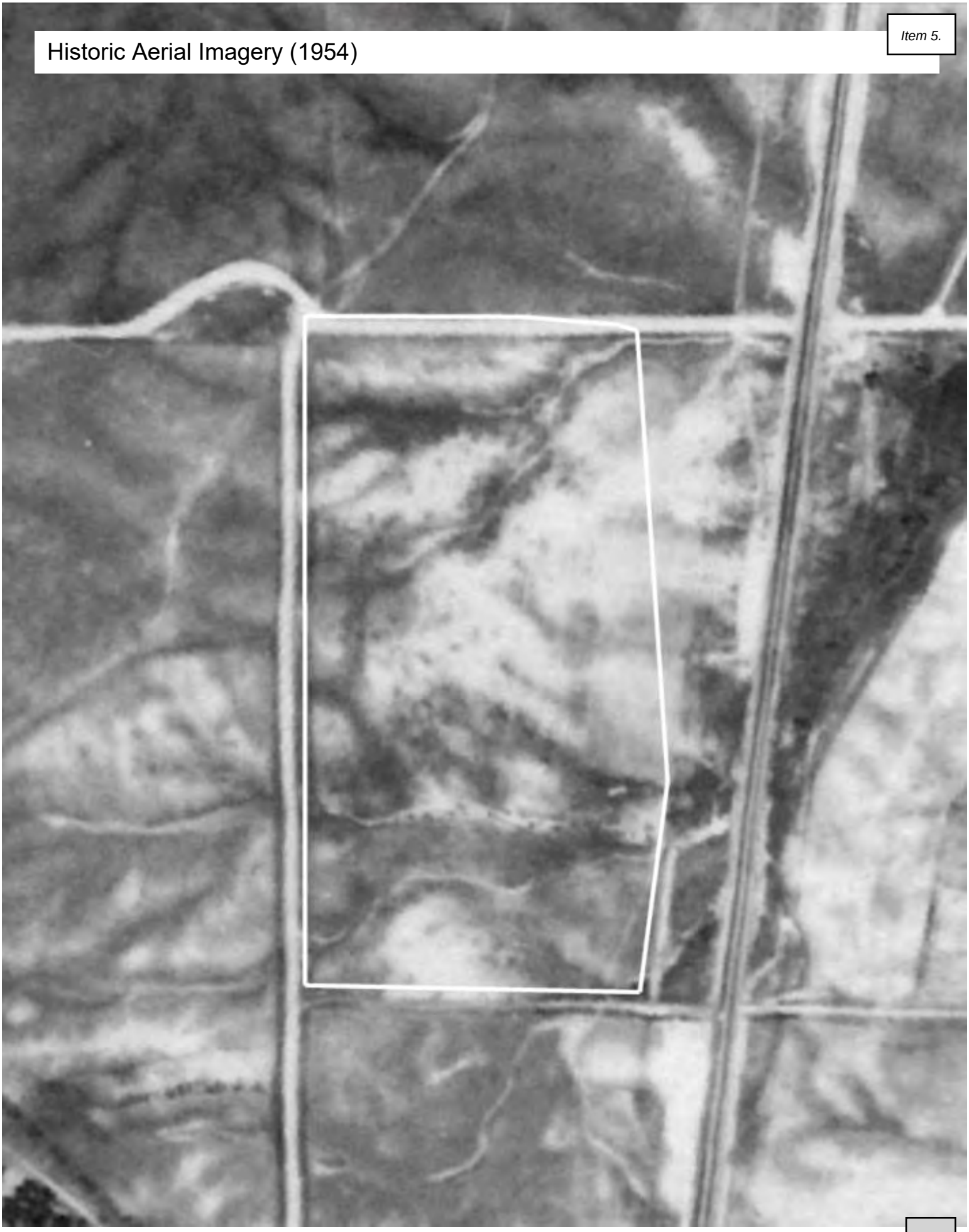
Historic Aerial Imagery

Historic Aerial Imagery (1937)



Source: Google Earth, 12/31/1936

Historic Aerial Imagery (1954)



Source: Google Earth, 12/31/1954

Historic Aerial Imagery (1993)

Source: Google Earth, 6/26/1993

Historic Aerial Imagery (1999)

Source: Google Earth, 9/29/1999

Historic Aerial Imagery (2005)

Source: Google Earth, 6/16/2005

Historic Aerial Imagery (2010)

Source: Google Earth, 10/7/2010

Historic Aerial Imagery (2015)

Source: Google Earth, 11/2/2015

Historic Aerial Imagery (2020)

Source: Google Earth, 5/5/2020

Source: Google Earth, 5/29/2025

Appendix G

Professional Qualifications

RESUME

Jon Dauzvardis, M.L.A, P.W.S.

Owner/Managing Partner
Senior Restoration Ecologist
Senior Wetland Ecologist
Landscape Architect

AREAS OF EXPERTISE:

- Vegetation Inventories and Mapping
- Habitat Assessment, Functional Assessment and Wetland Delineation
- Aquatic, Wetland, and Riparian Restoration Ecology, Planning and Design
- Landscape Ecology, Planning and Landscape Architecture
- Conservation and Resource Mitigation Bank Support Services
- Grant Funding Support for Conservation and Restoration Projects
- Open Space and Trail Planning, Design and Habitat Management
- Construction Oversight & Best Management Practices
- AutoCAD, Mapping, Presentation Graphics

EDUCATION:

- Master of Landscape Architecture, Texas A&M University, College Station, Texas, 1995
- Bachelor of Science, Environmental Design, University of Missouri, Columbia, 1991
- Architecture Study, Harvard University Graduate School of Design, Cambridge, Massachusetts, 1989

EMPLOYMENT HISTORY:

- 2008-Present, Owner/Manager and Senior Restoration Ecologist, Ecosystem Services, LLC, Erie Colorado
- 2000 – 2011, Senior Restoration Ecologist, Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1997 – 2000, Restoration Ecologist, Construction Supervisor, Aquatic and Wetland Company, Boulder, Colorado
- 1996-1997, Landscape Architect, Design Studios West, Denver, Colorado
- 1995-1996, Landscape Architect, Wenk Associates, Denver, Colorado
- 1994-1995, Graduate Researcher, ALCOA – Texas A&M University, College Station, Texas
- 1994, Johnson County Parks and Recreation Department, Shawnee Mission, Kansas
- 1992-1994, Grounds Maintenance Superintendent, Brazos County, Texas

CONTINUING EDUCATION:

- Stream Functions Pyramid Workshop, Denver, CO - 2014
- Colorado Natural Heritage Program, Wetland Plant Identification - 2014
- Colorado Natural Heritage Program, Ecological Integrity Assessment for Colorado Wetlands - 2013
- FACWet – Functional Assessment of Colorado Wetlands - 2010, 2012 and 2013
- ESRI, ARC View Geographic Information System (GIS) Training, 1996
- Bicycle Planning and Facilities Training, 1994
- AutoCAD Drafting and Design, Self-taught, 1991

CERTIFICATIONS:

- Professional Wetland Scientist Certification (# 1699), Society of Wetland Scientists Certification Program, 2004

1455 Washburn Street Erie, CO 80516 (p): 970-812-3267 (e): jon@ecologicalbenefits.c

EXPERIENCE SUMMARY:

Mr. Dauzvardis is a founder and managing partner of Ecosystem Services, LLC (ECOS), an ecological planning and design business dedicated to the restoration, enhancement and creation of aquatic, wetland and riparian habitat. Jon is a certified Professional Wetland Scientist with 30 years of experience working as a landscape architect and restoration ecologist in Colorado, Wyoming, Texas, Kansas and the Intermountain West. Jon's academic and professional work history in home design and construction, community planning, architecture, landscape architecture, ecological planning and restoration is unique and makes him a valuable and multi-faceted asset to his company, clients and their projects. His diverse knowledge and skills in landscape planning, habitat design, graphic communications, bioengineering, and hands-on experience demonstrate that he can easily negotiate between art and science, man-made and natural systems, generalities, and detail from concept to construction to monitoring to maintenance. Jon takes a practical and realistic approach to problem solving, concentrating on broad scale ecological master planning simultaneously with fine scale design. Jon's specialty is in restoring and enriching habitat structure, stability, and health and how to manage and maintain landscapes and natural systems so that they function, change, and respond positively over time. Jon's strengths are rooted in his understanding of natural and landscape processes; finding design solutions that integrate the needs of people, wildlife, and visual quality; sustaining ecosystem goods, services, and nature-based recreation. The formation of ECOS and Jon's experience has culminated in the completion of over a thousand projects that have resulted in the conservation of hundreds of miles and acres of stream, riparian, and wetland habitat – habitat that provides essential ecosystem services and ecological benefits for all those that inhabit the communities we serve.

RELEVANT PROJECT EXPERIENCE:

Mr. Dauzvardis has been an essential team lead and player in hundreds of habitat assessment; permitting efforts; master plans; and aquatic, wetland, riparian, and upland habitat design and mitigation projects. The following is a sampling of select projects that Jon has successfully completed and clientele that he is currently involved with:

Habitat Assessment, Permitting and Regulatory Compliance

Mr. Dauzvardis routinely performs ecological site and resource impacts assessments, jurisdictional waters and wetland determinations and functional assessments to assist clients in site planning, design, and preparation of Clean Water Act (CWA), Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and Bald and Golden Eagle Protection Act (BGEPA) permits where assessment methods established by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and Colorado Department of Transportation among others are required to assess habitat elements for threatened and endangered plants and animals, wetlands, migratory birds, raptors and other wildlife. During permitting processes, Jon stresses habitat impact avoidance and minimization to maximize a site's ecosystem services, values and benefits and to minimize regulatory constraints, timing and costs. Jon has conducted a 100's of site assessments, habitat delineations, and prepared permits covering 1000's of acres throughout the Inter Mountain West, including but not limited to the following notable projects and clientele across many market sectors:

- **Silver Charm Fire Habitat Impact Assessment, Colorado Springs, CO** – ecos performed an impact assessment of PMJM habitat on Black Squirrel Creek that was burned by the Silver Charm Wildfire to facilitate an insurance claim and reparations for multiple years of damaged habitat mitigation and conservation efforts. Ecos mapped the entire perimeter of the Burn Area using mobile GIS/GPS software, gathered geo-referenced photographs and inventoried the mortality of the lost vegetation that was planted for mitigation to meet the life requisites of PMJM. Said information and mapping was assembled in a technical memorandum and coordinated with the USFWS to resolve the loss and prepare a game plan moving forward to ensure our client could take credit for the mitigation to meet ESA Permit requirements.

- **Sand Creek, Black Squirrel Creek, and Kettle Creek Channel Stability Analysis, Colorado Sprin CO** – ecos developed a channel stability analysis protocol that uses the latest scientific research on the behavior of riparian and wetland vegetation under various flood regimes to assist developers in Colorado Springs with floodplain and habitat conservation planning, bed and bank stabilization, and in-channel structure design where needed. The protocol relies on detailed mapping of vegetation classes, utilizes Manning's N coefficients of vegetation, substrate/soil characteristics, surface irregularities and obstructions, channel planform, variations in shape and size of the channel cross-section, and modelled velocity and shear stress to determine the permissible tolerances of existing and proposed vegetation to flood stress. This protocol was developed in response to local codes and ordinances that proposed whole-sale destruction and "stabilization" of riparian and wetland habitat with antiquated stabilization techniques and is now being used by the City and the engineering community to help conserve riparian corridors and habitat occupied by Preble's Meadow Jumping Mouse protected under the ESA.
- **Banning Lewis Ranch, Colorado Springs, CO –** ecos was retained by Norwood Homes to perform an ecological assessment, delineation and mapping of waters and wetlands, including Sand Creek, Jimmy Camp Creek and its tributaries; and provide CWA, ESA, MBTA and BEGPA regulatory guidance for the Banning Lewis Ranch (BLR), an 18,000-acre site that will eventually double the size of Colorado Springs. Part of Jon's work on the project included recommendations on how to buffer and plan for the conservation of pristine prairie, wildlife and sensitive, highly erodible sand-dominated creek systems to maximize their ecological benefits and economic value for our client and future landowners under a regime of increasing urbanization to meet the demands of population growth.
- **Bellvue, Gold Hill and Terry Ranch Pipeline Projects, Larimer County, CO** – ecos was retained by the City of Greeley as Best Management Practices (BMP) Facilitators to provide pre-construction ecological assessment, documentation, upland and wetland site restoration design and post-construction oversight of pipeline reclamation processes. Essential responsibilities include meeting with landowners prior to construction to facilitate project understanding and post-construction outcomes; to document landowner needs and wants relative to project goals and land use; and to document and monitor pre- and post-construction reclamation and maintenance requirements.
- **Appraisal Support Documentation Report for the 1st Bank Parcel, Colorado Springs, CO** - ecos was retained by 1st Bank Holding Company to perform a Preble's meadow jumping mouse (PMJM) habitat assessment, mitigation cost analysis, and conceptual lot layout for the approximate 9.4-acre Parcel located adjacent to the Northgate Open Space along Smith Creek. Jon was responsible for preparing the lot layout, existing habitat aerial photo interpretation/delineation, proposed conceptual mitigation, and quantification of impacts and associated mitigation to ascertain appraisal value of the site if it were to be developed.
- **Encana Oil and Gas (USA), Denver Julesburg Basin, CO** – Encana hired ecos to assess their ecological constraints, recommend means and methods to avoid, minimize and permit impacts; and to mitigate, restore and prepare ecological management plans for their drilling and pipeline operations in the Denver Julesburg basin. Jon's role on the team is to perform site assessments, research background data, and prepare assessment reports and mapping data that can be utilized by Encana's project managers and geographic information systems (GIS) department to proactively track ecological resources before issues arise. In addition to client consultation, Jon is responsible for tracking drill site schedules, constraints, restoration and management efforts in a data base and reporting said information to Encana's project manager on a regular basis.
- **Tollgate Creek Riparian and Wetland Habitat Assessment, Aurora, CO** – Jon performed high level aerial photo interpretation and delineation of riparian and wetland habitat along Toll Gate Creek and East Toll Gate Creek from confluence with Sand Creek upstream to East Hampden Avenue. The delineation was performed in Google Earth and imported into AutoCAD by digitizing riparian and wetland habitat zones. Once complete, the data was turned over to the project engineer to incorporate into a Drainage Master Plan for the Urban Drainage and Flood Control District (UDFCD).
- **Eagle River Meadows Ecological Inventory and Strategic Wetland Action Plan, Edwards, CO** – Mr. Dauzvardis delineated, assessed, and provided an analysis of potential adverse effects to wetlands within a complex site adjacent to the Eagle River. Jon also developed a strategic process and decision making tool to determine avoidance, minimization, low impact development (LID), and mitigation measures in support of a County Sketch Plan application for a Multi-use Health Care Community.

- **Mesa County Colorado Riverfront Trail, Grand Junction, CO** – Jon performed wetland delineation jurisdictional determination, Section 404 Permitting; and prepared wetland mitigation plans to construct approximately two miles of regional trail along the north side of the Colorado River between the James M. Robb and the Colorado River State Park at Corn Lake.
- **ARCO Upper Clark Fork River Basin Superfund Site Functional Wetland Assessment, MT** – Between 2000 and 2008, Jon managed the assessment team and performed extensive wetland delineation, GPS surveying, functional assessments, and impact mapping and analysis covering a 200 square mile Superfund Site affected by historic mining practices. Assessments we done in preparation for soil remediation of heavy metals, capping of tailings ponds, sediment and dam removal, and implementation of compensatory wetland mitigation plans required under a consent decree. Assessment areas included the Anaconda Smelter, Old Works, Opportunity Ponds, and Milltown Reservoir.
- **Jefferson County Highways & Transportation Department Gunbarrel Bridge Replacement, Oxyoke, CO** – Jon consulted with the USACE, USFWS, CDOT, and the FHWA to document regulatory requirements. Produced a CDOT Wetland Finding Report, Biological Assessment, Preble's meadow jumping mouse and wetland mitigation plans, and helped acquire a Section 404 Permit and Biological Opinion.
- **Pole Canyon Wind Farm, Babcock and Brown, Huerfano County,** CO – Assessed and prepared critical issues analysis and County 1041 Permit application for a 125-megawatt wind farm and associated transmission lines located on a 5,800-acre site. The project included detailed site assessments to document the presence or absence of potential development constraints and site-specific ecological conditions as well as preparation of permit maps, plot plans, and environmental analyses, alternatives analysis, and mitigation measures.
- **Dalton Property Wetland Assessment, Longmont, CO** – Provided site assessment, regulatory analyses, and developed a restoration plan for critical riparian and wetland habitat along Left Hand Creek in Boulder County, CO.
- **Colowyo Coal Mine Wetland Delineation, Meeker,** CO – Delineated 1.5 miles of jurisdictional waters and wetlands in preparation for wetland mitigation design along West New Goodspring Creek.
- **Lafarge Northbank Resources Gravel Pit Wetland Assessment, Rifle, CO** – Delineated and acquired a jurisdictional determination from the USACE for complex tailwater and riparian wetlands along the Colorado River. Prepared gravel pit reclamation plans aimed at providing suitable shallow-water lake edge wetlands to serve as compensatory wetland mitigation.
- **Jefferson County Highways & Transportation Department Highway 73 Expansion, Conifer,** CO – Performed presence/absence study, habitat assessment and documentation of wetlands, Migratory Birds, State Species of Concern, and federally listed T&E Species including Bald eagle, Preble's meadow jumping mouse, the Pawnee montane skipper butterfly and Colorado butterfly plant along a one-mile corridor of highway.
- **Flying Horse Ranch and the Club at Flying Horse Golf Course, Colorado Springs, CO** – Conducted an assessment of wetland habitat, impact avoidance and minimization and Section 404 of the Clean Water Act permitting for a 1500-acre mixed use development and Weiskopf golf course design being implemented by Neiber Golf.
- **C-Lazy-U Nature Conservancy Conservation Easements, Granby, CO** – Prepared ranch-wide resource mapping and documentation of ecological opportunities and constraints of terrestrial, aquatic, riparian, wetland, and threatened and endangered species habitat to facilitate the acquisition of Nature Conservancy conservation easements for majority and minority ranch owners, including Mr. Don Bailey.
- **Village at Avon, Avon, CO** – Delineated wetlands and prepared a Section 404 Permit for the town center expansion and low-density ranchette development.
- **Counties, Municipalities, Metro Districts and Quasi-Public Institutions**: City of Greeley (On-call Services), Town of Lyons (On-call Services), Town of Monument Triview Metro District (On-call Services), Colorado Springs Utilities (On-call Services), Town of Woodland Park (On-call Services), Town of Monument, City of Louisville, City of Westminster, Jefferson County, Todd Creek Village Metro District, Boulder Community Hospital, City of Fort Collins, and the Three-lakes Water and Sanitation District.

- **Residential Developers and Realtors**: Thompson Thrift, Olive Real Estate Group, La Plata Commun Classic Communities, Vintage Communities, Oakwood Homes, Titan Development, 4 Site Investments, Windsor Ridge Homes, Nor'wood, Stratus Companies, Woodbury Corporation, Koelbel and Company, Proterra Properties, Denver Transit Oriented Development Fund, Windsor Ridge Homes, Clearwater Communities, Schuck Corporation, Equinox Land Group, DR Horton, Melody Homes, Standard Pacific Homes, Gateway American Properties, Zephyr Real Estate Company, Lowell Development Partners, Palmer-McAlister, Stoll Properties, The Bernardi Group, Colorado Commercial Builders, Terra Visions, Smith Creek Holdings, Picolan, Realty Development Services, and Northgate Properties.
- **Commercial and Industrial Developers**: Goodwill, Community Banks of Colorado, First Bank, Atira Group, Leadership Circle, Ridgeway Valley Enterprises, Morley Companies, HF Holdings, Regency Centers, Miller-Weingarten, Gulf Coast Commercial Development, Traer Creek, Mountain Property Associates, Morley Golf, and Executive Consulting, Inc.
- **Planners, Landscape Architects, Architects and Engineers**: Tait and Associates, William Guman and Associates, HR Green, Classic Consulting Engineers, JVA, Otak, CDM Smith, Burns McDonnell, Tetra Tech, Beyers Group, Engineering Analytics, NES Incorporated, URS Corporation, Lynker Technologies, J3 Engineering, DHM Design, Del-Mont Consultants, JW Nakai and Associates, Nolte and Associates, JR Engineering, Hyrdosphere, Executive Consulting Engineers, Muller Engineering, and Farnsworth Group.
- **Educational Institutions**: Mackintosh Academy, Colorado Mountain College - Steamboat Springs, The Classical Academy – Colorado Springs, and Coal Ridge High School – Rifle.
- **Wind Energy Developers**: Cedar Creek Windfarm – Weld County, CO, Wheatland Windfarm – Platte County, WY, Silver Mountain Windfarm – Huerfano County, CO, Pole Canyon Windfarm, Huerfano County, CO.
- **Attorneys**: Vranesh and Raisch, Johnson and Repucci, and Otis, Bedingfield & Peters.

Ecological Master Planning

- **Jackson Creek Land Company PMJM and Wetland Mitigation, Colorado Springs, CO** – ecos has been performing Preble's meadow jumping mouse (PMJM) habitat biological assessments, conservation, mitigation planning and design throughout its range since it was listed under the Endangered Species Act (ESA) in 1995. Among numerous other private land developers in the Colorado Springs areas, ecos is currently assisting the Jackson Creek Land Company and Triview Metropolitan District with the implementation of physical habitat conservation and mitigation measures, including shortgrass prairie, upland hibernaculum, and riparian habitat restoration. Jon is responsible for mapping, design assessment and restoration plan preparation.
- **Park Creek Mitigation Bank, Fort Collins, CO –** ecos was retained by Burns and McDonnell to assess, map, and prepare preliminary mitigation design of aquatic, wetland, riparian and terrestrial habitat in support of a mitigation banking prospectus. Upon completion and acceptance of the prospectus by the USACE, ecos has been tasked to manage the baseline assessment of the site, including groundwater testing, topographic surveys, and hydrology; prepare a detailed habitat design for inclusion in mitigation banking instrument; as well as coordinate design-build process with a selected nursery and contractor. Jon has been responsible for the mapping and preparation of design documents and will co-manage construction and long-term monitoring to help our client meet their performance criteria and sell bank credits.
- **Front Range Umbrella Mitigation Bank, CO –** ecos was retained by Restoration Systems, a nationally renowned wetland mitigation banking firm, to help identify and prepare conceptual design plans for mitigation banking sites to establish the Front Range Umbrella Mitigation Bank. The purpose of the Bank is to provide compensatory mitigation credits for unavoidable, permitted impacts to aquatic, wetland, riparian, upland, wildlife, and threatened and endangered species habitat regulated under the Clean Water and Endangered Species Acts; and to restore, enhance and preserve valuable natural resource functions at degraded mitigation sites within multiple watersheds along Colorado's Front Range. Currently, the Bank is developing banks sites that serve the Cache la Poudre, St. Vrain, Upper South Platte, Fountain and Upper Arkansas watersheds. Jon's primary role on the team is to perform functional habitat assessments; prepare mapping and graphics of baseline and future conditions; grading and plant community design based on hydrologic, hydraulic, and geomorphic modelling and engineering; and communicate with landowners and stakeholders regarding the process, technicalities, and outcomes.

- **Sand Creek Channel Improvements Stability Analysis at Indigo Ranch, Colorado Springs, CO -** was retained to perform an analysis of channel stability under proposed development conditions for a 1.17 mile reach of Sand Creek. Ecos utilized existing vegetation composition data, density and height within the Project reach as a basis; and compared the 10-year and 100-year storm event modelling data (specifically flow velocity, flow depth and shear stress) to reference literature to provide a professional opinion regarding the future stability of the channel under developed conditions. The analysis of channel stability for the proposed Project assumes a bioengineering and biotechnical approach that preserves and enhances the existing vegetation, as well as substrate cohesion and stability, within the channel and its streambanks. The Stability Analysis will likely serve as a benchmark study for the City of Colorado Springs to use to preserve other naturally stable channels.
- **Brush Creek Ranch Stewardship Plan, Saratoga, WY** – Brush Creek Ranch Stewardship Plan, Fishery Enhancement and Bank Stabilization, Saratoga, WY – Mr. Dauzvardis managed the organization, generation and graphic design of the Ranch Stewardship Plan. Jon assessed and prepared stewardship goals, objectives, and implementation action items, including ranch-wide master planning of the trail and recreational systems and design of the Brush Creek riparian corridor trail. Trail and recreation planning and design focused on universal access, habitat sensitivity, environmental education, wildlife observation opportunities and unique landscape experiences. Simultaneously with the master plan, Jon developed revegetation plans to support geomorphic stream alterations and bank stabilization to enhance the creek fishery. Jon was responsible for the design and supervised construction of a cold-water pond to be used by novice anglers to learn the art and experience the pleasure of catching trout.
- **Town of Erie, Comprehensive Plan, Parks Recreation Open Space and Trails Master Plan, and Natural Areas Inventory, Erie, CO -** As a former 8-year Member, Chair, and Vice Chair of the Town Erie Open Space and Trails Advisory Board (OSTAB) and an Erie resident and small business owner, Jon has an intimate knowledge of Erie's political and physical landscape and public processes. During his tenure on OSTAB, Jon actively participated in the writing and development of the Town's guiding documents. Jon authored the Open Space Chapter of the Comprehensive Plan which eventually was codified in the Town's Unified Development Code (UDC). Jon was the key commenter on the content, analysis and synthesis of the Open Space and Trail Chapters and Mapping that was adopted with the Town's first Parks Recreation Open Space and Trails Master Plan (PROST). Jon guided the process used in the development of the Erie Natural Areas Inventory (ENAI) to identify and design a habitat condition, quality and restoration rating and ranking system of significant natural areas throughout the Town's 49-square mile planning area.
- **Uncompahgre River Corridor Master Plan, Montrose, CO** – Jon was responsible for the development of an ecological master plan focusing on the Uncompahgre River as a natural asset for eco-tourism and the generation of riverfront economic development. Mr. Dauzvardis was responsible for assessing the character, condition and quality of aquatic, wetland and riparian habitat; and developing a rating, ranking, land acquisition prioritization system, and associated mapping aimed at the preservation and integration of open space and habitat within the City's parks, recreation and trail system.
- **Ruby Pipeline Wetland, Riparian and Waterbody Mitigation and Restoration Plan, WY, UT, NV and OR** – Jon was responsible for assisting with the generation of a Comprehensive Wetland Mitigation Plan outlining Clean Water Act regulatory guidelines, requirements, and processes. Jon developed an eco-region specific restoration plan for a 675-mile natural gas pipeline specifying the basis of design, construction, revegetation, maintenance, performance criteria, and monitoring means and methods for restoring approximately 460 acres of temporarily impacted riparian and wetland habitat.
- **Dry Creek Regional Urbanization Area, Weld County, CO** – Mr. Dauzvardis performed an ecological inventory and prepared the assessment report for a 6,000-acre Regional Urbanization Area (RUA); and a1000-acre multi-use site development in un-incorporated Weld County. Subsequent phases included establishing ecological policy, goals, and objectives for the study area that will assist the County in the refining their first ever Comprehensive Plan.
- **City of Broomfield I-25 Subarea Environmental Guidelines, Broomfield, CO** – Jon drafted development sensitivity design and ecological sustainability standards.
- **Estes Park Comprehensive Land Use Plan, Estes Park, Larimer County, CO** – Teamed with town planning staff in producing a county-wide land use plan using GIS as a public involvement/participation tool.

- **San Miguel River Park Corridor Master Plan, Telluride, CO** – Prepared park, trail, wetland and ripa corridor master plan and design for the San Miguel River Park Corridor. Jon prepared illustrative plan graphics that assisted the Town in applying for and winning approximately $500,000 in Natural Resource Damage Assessment Fund money from the State of Colorado, which was used for final design and implementation.
- **South Platte River Wildlife and Recreation Corridor Plan, Denver, CO** – Designed the Zuni Riverfront Park and planned the wildlife and recreation corridor between I-25 and 8th Street near Mile High Stadium. Prepared, steered and presented graphics that the City and County of Denver Mayor's Commission (Wellington Webb) and the Urban Drainage and Flood Control District used to help sell the project to the public and federal funding sources in Washington D.C.
- **Historic Arkansas River Walk, Pueblo, CO** – Coordinated and steered the design and presentation of riparian, aquatic, and palustrine wetlands in the HARP Natural Area. Designed environmental Education Park to include outdoor classroom, access, and multi-thematic interpretive nodes.
- **Pueblo Natural Resources and Environmental Education Council Plan, Pueblo, CO** – Designed the identity and jointly produced strategic natural resource based environmental education plan for Pueblo County (PNREEC). The plan helped build consensus among multiple private and governmental agencies and stakeholders on funding, conservation, restoration, and enhancement priorities throughout the County.
- **Aluminum Company of America (ALCOA) Huisache Cove Master and Design Plan Master of Landscape Architecture Thesis, Port Lavaca, TX** – Served as environmental consultant in researching and generating wildlife habitat restoration plan and multi-functional landfill cap redesign incorporating coastal prairie, lacustrine, palustrine, estuarine wetlands, passive recreation, bird watching and ecological interpretation facilities on an industrial superfund clean-up site.

Aquatic, Wetland, Riparian and Upland Habitat Design:

- **Vermillion Creek, Maybell, CO -** In collaboration with attorneys, water resource engineers and geomorphologists, ecos designed for the restoration of over 9 acres of wetland and 1.5 miles of Vermillion Creek upstream of Browns Park National Wildlife Refuge to help settle a lawsuit between a private ranch and Federal agencies. The design and construction includes the excavation of a wide, inset and sinuous floodplain and a series of Beaver Dams Analogs (BDAs) to encourage natural channel evolution, improve channel roughness, capture sediment, and create a complex of open water, herbaceous and willow dominated wetlands to meet the life requisites and aid in the reintroduction/repopulation of beaver in this portion of the watershed. A robust monitoring of stream evolution, wetland hydrology, soil and vegetation and an adaptive management program to meet negotiated performance criteria will ensue after construction utilizing Functional Assessment of Colorado Wetlands (FACWet) metrics.
- **The Farm PMJM and Wetland Mitigation, Colorado Springs, CO** – As part of ESA Section 7 and CWA Section 404 consultation with the USACE and USFWS dating back to 2005, Jon prepared permit and mitigation construction documents, specifications and is currently performing on-going construction observation functions and impact-mitigation accounting aimed at preserving, conserving, restoring, enhancing and creating critical wetland, riparian and upland habitat occupied by Preble's meadow jumping mouse (PMJM), a Federally protected threatened species. Out of a total of 475 acres, The Farm project at full build-out is expected to develop 341.5 acres of residential and commercial uses and conserve 133.5 acres of PMJM habitat that will continue to provide open space and recreational values for wildlife and the residential community.
- **Saint Vrain Creek Reach 3 Phase 2 Flood Recovery and Restoration, Boulder County,** CO - ecos is part of the multi-disciplinary team assisting Boulder County Parks & Open Space (BCPOS) with a multi-facetted and resilient design for the creation of flood overflow areas occupied by Preble's Meadow Jumping Mouse (PMJM), restoration of creek-side riparian and wetland habitat, and rehabilitation of a diversion structure that enables the City of Longmont to divert its allocated water and facilitates upstream and downstream passage of warm and cold water fish. Jon performed impact assessment for PMJM and wetlands for CWA and ESA permitting, generated vegetation community and wildlife habitat restoration design, specifications, cost estimates and will be conducting construction oversight of restoration activities in the spring of 2020.

- **Big Thompson River Flood Recovery and Restoration, Loveland,** CO - ecos recently completed assessment, restoration design, and construction of the Big Thompson River between Rossum and Wilson Drives for the Big Thompson Watershed Coalition (BTWC) in partnership with the City of Loveland and Loveland Ready-mix. As with all the flood recovery projects ecos has worked on, Jon produced 30%, 60% and 100% design plans, construction cost estimates, and specifications guiding soil development/enrichment; upland, riparian, and wetland seeding and planting; and numerous bioengineering techniques aimed at restoring the river and making it more resilient to future flood events.
- **Saint Vrain Creek Reach 3 Phase 1 Flood Recovery and Restoration, Boulder County,** CO - ecos is part of the multi-disciplinary team assisting Boulder County Parks & Open Space (BCPOS) with resilient design for the restoration of Reach 3 of the Saint Vrain Creek (from Highway 36 downstream to Hygiene Road) that was damaged by the 2013 floods. Jon's role in the project includes: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. in-stream features, vegetation, wildlife habitat); identify and locate significant habitat features within the areas of proposed construction; identify potential sources of native plant materials for restoration; and identify areas of opportunity within the reach that require native vegetation, wetland, PMJM, leopard frog and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design; 3) permitting and compliance under the CWA, ESA and NHPA; and 4) construction oversight of restoration construction activities. This project was completed in the summer of 2018.
- **Bohn Park Flood Recovery and Restoration, Town of Lyons, CO** – ecos is part of the Design Team assisting the Town with the restoration, enhancement and stabilization of Bohn Park which was damaged by the 2013 floods. Ecos role is to assess, design, and prepare design-bid-build specifications for the natural restoration of the vegetation communities and habitat along South St. Vrain Creek that have been incorporated in to the landscape architecture of Bohn Park, the Towns largest and most used recreational asset. This project was completed in the spring of 2018.
- **Fourmile Creek Flood Recovery and Restoration, Boulder County, CO** – ecos was part of the Fourmile Watershed Coalition design-build team tasked with restoring flood-damaged properties that were prioritized in the watershed master plan. Jon generated seeding and planting plans, performance notes, cost estimates, and co-managed construction oversight in collaboration with the executive director of the Watershed Coalition. This project was completed in the summer of 2017.
- **James Creek Post-flood Restoration, Lefthand Watershed Oversight Group (LWOG), Jamestown,** CO – ecos was part of the LWOG Team responsible for preparing the 30-60% design package for James Creek Reach 16 as identified in the Lefthand Creek Watershed Master Plan. ecos performed pre- and post-flood plant community assessment; developed revegetation goals and objectives, the basis of design, monitoring protocols, and revegetation plans according to Colorado Department of Local Affairs, Community Development Block Grant – Disaster Recovery 30% Guidelines. Specific resources and issues of concern addressed by ecos, included federal and state listed candidate, threatened and endangered species, wildlife species of concern (including raptors), fisheries and fish passage, native plant communities, and management of noxious weeds.
- **Saint Vrain Creek Flood Recovery and Restoration, Town of Lyons,** CO – ecos is part of a design-build team tasked with restoring the St. Vrain Creek corridor in the Town of Lyons that was damaged during the September 2013 flood event. The goal of the project is to work with the Town and affected land-owners to create a more resilient floodplain and natural channel condition that will help alleviate future threats to the community, reestablish floodplain connectivity, stabilize banks, and restore aquatic, wetland and riparian habitat that was wiped out during the flood. Mr. Dauzvardis is responsible for developing the plant communities and revegetation strategies needed to restore aquatic and riparian structure and functions within the corridor that support fish, wildlife, recreation, and help the Town regain the ecological benefits and economic value they receive from outdoor enthusiasts. This project was completed in the summer of 2016.
- **Plum Creek Mitigation Bank, Sedalia, CO** – ecos was retained by Restoration Systems to investigate and prepare conceptual design plans for the Plum Creek Mitigation Bank Site to satisfy the mitigation needs of the Chatfield Reservoir Mitigation Company (CRMC). The purpose of the Site is to provide compensatory mitigation credits for unavoidable, permitted impacts to wetland, PMJM and bird (target resources) habitat regulated under the CWA and ESA; and to restore, enhance and preserve natural resource functions. Jon has guided agency and CRMC staff on tours of the Site; performed plant

community mapping, baseline EFU assessment for PMJM, and FACWet assessment of wetlands. Jo responsible for mapping, interpretation, and quantification of historic and existing habitat on the site. Jon prepared Conceptual Design Plans for resource mitigation including channel geomorphology, PMJM and wetland habitat setting the stage for post-mitigation calculations of EFU's.

- **Bellvue Raw Water Ponds Riverbank Restoration, Bellvue, CO** – The 2013 flood on the Poudre River altered the course of the river and severely eroded a bank nearly causing a breach of the City of Greeley's raw water ponds – their main municipal water supply. The goal of the project was to protect the ponds and create riparian habitat for the Preble's meadow jumping mouse, a federally listed threatened and endangered species. Jon was responsible for preparing bioengineering design plans and specifications that include soil/cobble encapsulated lifts, stream barbs to deflect flows away from the bank, and harder, biotechnical design of soil/riprap and stream bed scour protection measures to prevent erosion and further undermining and sloughing of the bank. Design plans included specification of native plant materials and various techniques to restore cottonwood forest and willow habitat to further stabilize the bank.
- **Poudre River Pipeline Crossing at Kodak, Windsor,** CO – Jon's role on the ecos team was to assess restoration potential, techniques, and prepare design plans and performance specifications to reclaim a pipeline corridor across the lower Poudre River where the City of Greely had to replace 3 major water supply lines. Flooding on the Poudre River in 2013 and 2014 temporarily suspended construction of the pipeline. Jon will oversee site stabilization and restoration measures once all 3 pipelines have been installed.
- **Lions Park Poudre River Restoration Plan, Laporte,** CO – Jon's role on the ecos team was to assess habitat conditions; gather, compile and analyze field survey data; and to prepare the mapping and mitigation design plans for the Lions Park PMJM habitat and the Poudre River Bank Stabilization Plans. Jon simultaneously designed and executed the technical drawings for the structural components of the habitat, ensuring that the proposed riparian plant community, habitat structures (brush piles), and bioengineered streambank stabilization measures will create the conditions that alleviate the current habitat fragmentation; support the life requisites of the PMJM; and enhance the overall health of the Poudre River fishery.
- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** – Jon designed, managed and led the construction of the Preble's Meadow Jumping Mouse Habitat (PMJM) enhancement project along the St. Vrain River. Jon worked in coordination with the project sponsor and Director of the Town of Lyons, Parks, Recreation and Cultural Events Department to implement required mitigation within a passive greenway park along the St. Vrain. Jon's role included riparian/PMJM mitigation site identification and habitat assessment; and design; and implementation of riverbank stabilization and riparian habitat enhancement measures.
- **Brantner Gulch Urban Stream Restoration, Thornton, CO** – In collaboration with water resource and civil engineers, ecos assisted the Woodbury Corporation with planning a mixed use residential community that respects the distinctive character of the existing high plains ecosystem, including the preservation of open space and the restoration of a degrading creek system characterized by significant erosion, channel incision, bank sloughing, sediment loss and resulting in the loss of aquatic, wetland and riparian and habitat. Restoration design and the CWA Section 404 Permit required for this project included stabilization of the natural form, function and resiliency of Brantner Gulch, Lakeview and Plains Tributaries utilizing a natural channel design, biotechnical bank stabilization measures and specification of upland, riparian and wetland plant communities to meet Mile High Flood District (MHFD) urban drainage criteria.
- **Brush Creek Fishery Enhancement Plan, Saratoga, WY** – Prepared access, staging and design plans, details and performed on-site construction oversight of instream and riparian habitat enhancements and bioengineered bank stabilization along a 3-mile reach of Brush Creek. The purpose of the project is to enhance fish, bird and wildlife habitat and use these resources to facilitate education and improve the recreational experience of Ranch guests. Access routes were planned so that they can be easily converted to trails to avoid repetitive impacts to high quality habitat and productive pastures.
- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** – Jon is the lead Landscape Architect for the restoration and enhancement of Preble's Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River. Jon and ecos are working in coordination with the Town of Lyons, Parks, Recreation and Cultural Events team to implement this restoration project within a passive park area along the St. Vrain. Jon's tasks include riparian/PMJM habitat assessment; PMJM site location and habitat design; and implementation of riverbank stabilization and riparian habitat enhancement measures.

- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY -** ecos performed assessment and design of the Elk Hollow Creek Project, which included instream and riparian habitat improvements aimed at increasing bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach. Instream improvements included drop structures, plunge pools, deep pools, riffles and spawning habitat. Bank improvements included seeding and planting plans for native wetland and riparian species. Jon was the lead on the generation of design-build plans and provided construction oversight of instream structure and native plant installation.
- **Brush Creek Ranch Pond Creation Plan, Saratoga, WY** – Prepared below grade pond excavation, grading, drainage and revegetation plan for a 0.30-acre fishing pond, followed by on-site field layout and surveying, wetland sod transplanting, submerged aquatic habitat and construction support of heavy equipment operators. The pond was designed to be a self-sustaining, cold water fishery that supports all components of the aquatic food-chain and incorporates all necessary life requisites for trout; and provide fishing opportunities during high water in Brush Creek.
- **Edwards Eagle River Restoration Project, Edwards, CO** – Assessment, planning, native plant community design and construction oversight of aquatic, wetland, riparian habitat along 1.5 mile reach and 168-acres of floodplain along the Eagle River utilizing indigenous materials and methods that naturally integrate habitat structure in the landscape context. Planning and design included trails, boat launch, boardwalks, overlooks, and interpretive sign systems and thematic content.
- **Boone Property, Boulder Creek Fishery Enhancement Project, Boulder, CO** – Performed site assessment and identified instream and overhead cover habitat to enhance fish habitat along a short reach of Boulder Creek adjacent to City of Boulder, Eldorado Canyon Open Space.
- **C-Lazy-U Ranch Willow Creek Fishery Enhancement Plan, Granby, CO** – Assessed and prepared design plans for 2 miles of instream and overhead cover habitat aimed at enhancing water quality through increased bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach influenced ongoing ranching activities. Bank-side improvements include detailed seeding and planting plans indicating site-specific plant and seed locations, life zones, and species palettes according to hydrologic, soil, and aspect conditions.
- **Colowyo Coal Mine Wetland Creation Plan, Meeker, CO** – Performed wetland mitigation site feasibility assessment and design of 2.2-acres of created wetland benches along a 1.5-mile reach of the West New Goodspring Creek.
- **Uncompahgre River Wetland Creation and Streambank Stabilization, Montrose, CO** – Mr. Dauzvardis developed a Clean Water Act Individual Section 404, alternatives analysis and mitigation plans that successfully defrayed public descent and offset unavoidable impacts related to the River Landing Retail Development Project. Once approved by the USACE, the project turned a degraded, gravel-mined portion of the floodplain into functional and aesthetic riparian habitat that is now enjoyed by the public via a segment of trail that Mr. Dauzvardis designed. Two acres of riparian and “backwater” wetland habitat were strategically created along the Uncompahgre River to ensure reliable hydrologic connectivity and support of the designed wetland plant community. Nearly 350 lineal feet of severely degraded stream bank was stabilized using a naturalized bio-engineering approach that incorporated soil, native seed, erosion control blanket, shrubs, trees, and strategically located river boulders and logs to restore the riparian habitat, create fish habitat and redirect scouring flows away from the once barren bank.
- **River Point at Sheridan Brownfield Redevelopment, Sheridan, CO** – Designed and oversaw the construction of a “bio-engineered” and “bio-technical” vegetative landfill cap system and water quality swale that drains to the South Platte River. Jon was responsible for integrating the swale in to the River Point at Sheridan commercial redevelopment and the City of Englewood Golf Course renewal – renamed to the Broken Tee Golf Course.
- **Broken Tee Golf Course Flood Protection, City of Englewood, CO –** Oversaw the construction of a biotechnical subsurface stabilization and flood protection system (under-armor) designed to ensure that the woodland golf course tees, fairways and greens in the South Platte River floodplain are not compromised by flood scour. Designed and implemented bioengineered bank stabilization and under-armor on Bear Creek that was essential for protecting tees and greens. Jon was responsible for disproving the jurisdictional status of artificially supported wetlands via a groundwater monitoring system.

- **Lafarge Northbank Resources Gravel Pit Wetland Design, Rifle, CO** – Jon asses DMG requireme and prepared gravel pit reclamation plans aimed at providing suitable shallow-water wetlands and islands within the pit closure area to serve as compensatory mitigation for wetland impacts associated with mine operations adjacent to the Colorado River.
- **Leach Creek Stream Enhancement, Grand Junction, CO** – Designed stream corridor enhancements for a ½-mile section of Leach Creek that was channelized and used as an irrigation canal. Enhancements were designed to restore natural channel form and function, improve the aquatic environment, and provide mitigation for jurisdictional impacts permitted under the Nationwide Permit program. This project is being used as a model and replicated along other reaches of Leach Creek
- **Castro Property Wetlands and Wildlife Ponds, Beulah, CO** – Performed the site assessment, feasibility analysis, water resource and minor dam design, native plant design, landscape architecture, and supported the water rights application needed to create shallow water wetland habitat for amphibians, waterfowl, migrating bird and ungulates, and deep water habitat for trout at a sub-alpine elevation of 9000 feet. Project included development of a spring, creation of a creek and a mechanical water circulation and aeration system to support the aquatic, wetland, and riparian ecosystem. Organized, supervised and participated in a volunteer planting effort.
- **Jefferson County Gunbarrel Bridge Replacement, Oxyoke, CO** – Developed construction plans and specifications and oversaw construction of wetland and Preble's mouse habitat mitigation to enhance weedy and degraded wetland and Preble's mouse habitat along Gunbarrel Creek, a tributary to the upper South Platte River near Deckers, CO.
- **Coal Creek Bank Stabilization, Erie, CO** – Assessed, permitted, designed and performed construction oversight of bio-engineered/bio-technical bank stabilization and wetland creation associated with the Vista Parkway bridge crossing over Coal Creek in Erie, CO. The project involved pulling back vertical banks and restoring native wetland, riparian, and short grass prairie habitat.
- **Spring Creek Wetland Mitigation, Colorado Springs, CO** – Generated wetland and creek creation plans that integrated required mitigation into a high density, "new urban" development. The design emphasized re-utilization of urban storm water to sustain wetlands, use of indigenous plants, construction materials, and natural geomorphic relationships.
- **Sulphur Gulch, Parker, CO** – Developed a naturalized sculpted concrete drop structure design, planting and bio-engineering plans for a highly visible, urbanizing reach of a sandy creek through the center of the Town of Parker.
- **Skylark Creek Restoration Plan, Kremmling, CO** – Designed and performed construction oversight of aquatic, wetland and riparian plant community, and trail system along a historic side channel of the Upper Colorado River on a private fishing ranch.
- **ARCO Opportunity Ponds Wetland Mitigation Design, Anaconda, MT –** Jon generated the design of a 908-acre complex of wetlands and terrestrial habitat required to meet the Consent Decree and the functional assessment criteria established during the wetland assessment process mentioned previously. The design is currently being implemented. Once complete, the grading, drainage, hydrology, and revegetation strategy used to create wetlands from massive soil borrow pits will potentially be the largest inland, freshwater wetland mitigation project in the United States.
- **Northgate Boulevard Realignment, Colorado Springs, CO** – Coordinated and prepared ESA Section 7 and CWA Section 404 consultation documents as required by the USFWS and USACE, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse.
- **Northgate PMJM and Wetland Mitigation Plan, Colorado Springs, CO** – Mr. Dauzvardis was an instrumental member of multidisciplinary team responsible for delineating wetlands, preparing ESA Section 7 and CWA Section 404 assessment, impact analysis and consultation documents as required by the USFWS and USACE. As the lead designer, Jon was responsible for the design of over 80 acres of wetland, riparian, and grassland habitat utilized as primary and secondary habitat for Preble's Meadow Jumping Mouse, a Federally-listed threatened species. Jon prepared mitigation construction documents, specifications, onsite layout of plant communities and supervised construction for this precedent setting mitigation plan designed to offset impacts to critical habitat over a 1200-acre site.

- **Martin County Coal Corporation, Inez, KY** – Mr. Dauzvardis bioengineered and performed on-the-g triage of two stream corridors, consisting of 26 miles, impacted by a coal slurry spill that originated from a mountaintop mine reservoir used to hold liquefied coal dust. Jon identified and documented critically imperiled stream banks and human settlements, and then designed, coordinated, led and supervised local crews during the implementation of specified floodplain, bioengineered bank stabilization, and reforestation efforts.
- **Uncompahgre River Restoration and Park Corridor, Ouray, CO** – Jon designed and performed construction oversight of the restoration and reclamation of one mile of upland, riparian and wetland habitat left barren by historic placer mining. The major challenge presented by this project was a lack of soil, organic matter and nutrients to sustain vegetation. This constraint was addressed by amending the soil with humate and planting and seeding riparian vegetation to initiate natural succession and bioaccumulation of matter, assisted by an irrigation system that injected organic fertilizer and microbes (mycorrhizea) in to the substrate.
- **Burlington Mine Remediation, Jamestown, CO** – Preparation and management of specification package, best management practices (BMPs), and revegetation design for mine waste capping and closure.
- **Powder River Coal Company – Porcupine Creek Restoration, Douglas, WY** – Designed and supervised the construction of this post mine wetland/creek restoration project. Following the pit closure, reclamation specialists reestablished the original location and geomorphic relationships of the creek using historic aerial photography using a trapezoidal channel cross-section design. Jon adapted the design creating grading and wetland planting plans that mimic the landform, natural lateral and longitudinal channel tilt, and plant communities that are indigenous to ephemeral creeks in the shortgrass prairie landscapes of eastern Wyoming.
- **Sand Creek Corridor Habitat Enhancement at Bluff Lake, Denver, CO** – Prepared plant community, bioengineering and bank stabilization design. Prepared visualization graphics to present and receive design approval.
- **Intrawest Resort Development, West Ten Mile Creek, Copper Mountain Village, CO** – Prepared vegetation community and concept design of village base streamside recreational amenities.

Construction and Plant Installation:

- **St. Vrain Creek Riparian Corridor Enhancement, Lyons, CO –** Jon managed construction and implementation of the restoration and enhancement of 0.60-acre of riparian Preble's Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River.
- **Standley Lake Protection Project, Westminster, CO** – Designed and supervised construction of a 0.50-acre created emergent wetland to fulfill final mitigation requirements of the USACE and bring closure to the City's drinking water protection project.
- **Caribou Peat Bog Restoration, Nederland, CO** –Prepared native plant community design, planting cost estimate, and on-the-ground oversight of volunteers to restore a high-altitude peat bog disturbed by an illegal four-wheel drive "mudfest".
- **Department of Energy (DOE) Wetland Mitigation Bank, Westminster, CO** – Construction supervision of grading and planting plans of a 12-acre wetland mitigation bank design for the Department of Energy.
- **ARCO Lower Area One and Butte Reduction Works, Butte, MT** – Performed construction observation and supervision of temporary labor crews to plant a passive treatment wetland designed to absorb heavy metals from groundwater.
- **Colorado Department of Transportation Mitigation Bank, Limon, CO** – Performed in-field planting design and supervised local labor to complete a 10-acre wetland mitigation bank designed by CDOT to offset future wetland impacts in the transportation region.
- **Irvine Ranch Water District – San Joaquin Wetland Treatment System, Irvine, CA** – Planting superintendent of a wetland designed to be a used as tertiary wastewater treatment facility and waterfowl refuge.

PRESENTATIONS & INSTRUCTION:

Dauzvardis, Jonathan B. 2019. Future City Innovation Project - Designing Water Efficient Cities in the Future. Classroom instruction with Middle-school Students. Peak to Peak Charter School. November 20, 2019. Lafayette, Colorado.

Dauzvardis, Jonathan B. 2019. Water Innovation Education Project – Designing Wetlands for School-yard Habitat Education Center. Classroom instruction with Elementary Students. Peak to Peak Charter School. January 23, 2019. Lafayette, Colorado.

Dauzvardis, Jonathan B. 2008. Preserving the Ecological Services of Willow Cuttings. Research presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference. October 2, 2008. Vail, Colorado.

Dauzvardis, Jonathan B. 2006. Water Pollution and Wetland Plant Tolerance to Various Ph Levels. Classroom instruction with Elementary Students. Flagstaff Academy Charter School. February 2, 2006. Longmont, Colorado.

Dauzvardis, Jonathan B. 2006. Soil Erosion and Habitat Destruction. Classroom instruction with Elementary Students. Flagstaff Academy Charter School. January 26, 2006. Longmont, Colorado.

Dauzvardis, Jonathan B. 2004. Wetland and Wildlife Habitat Restoration, Opportunity Ponds, Anaconda, Montana. Poster Presentation at Ecological Restoration Conference. October 2003. Orlando, Florida.

Dauzvardis, Jonathan B. 2003. Application of Landscape Ecology Principles to Mine Remediation and Wetland Creation: An Ecological Restoration Seminar using a Case Study of the Opportunity Ponds Wetlands Plan, Anaconda, Montana. Presented at the University of Colorado, Denver. November 2003. Denver, Colorado.

Dauzvardis, Jonathan B. 2000. Endangered Species Act Issues: Incorporating the ESA into Mitigation Projects. Presented at the Continuing Legal Education (CLE, International) Colorado Wetlands Conference. September 18, 2000. Denver, Colorado.

AWARDS:

- Colorado Landscape Contractors Award, Sand Creek Enhancement Project – 2000
- Colorado Landscape Contractors Award, Skylark Creek Restoration Project – 1998
- Colorado American Society of Landscape Architects, Research, and Communications – 1997
- Texas American Society of Landscape Architects Honor Award – 1995
- Texas A&M Landscape Architecture Faculty Award – 1995

PROFESSIONAL ASSOCIATIONS:

- Town of Erie, Colorado Open Space and Trails Advisory Board (OSTAB) - As a former member and chair of the Town of Erie Open Space and Trails Advisory Board (OSTAB), Mr. Dauzvardis routinely collaborated with Town Administrator, Community Planning, Public Works, and Parks and Recreation Directors and Staff, and advised the Board of Trustees on all matters related to the goals, objectives, prioritization, acquisition, conservation, and the management of open space and trails throughout a 49-square mile planning area. Jon's 8-year experience on the OSTAB translates to an intimate knowledge of public processes.
- Society of Wetland Scientists (SWS)

ecosystem services LLC

RESUME

Grant E. Gurnée, P.W.S.

Owner/Managing Partner
Senior Restoration Ecologist
Professional Wetland Scientist
Fisheries and Wildlife Biologist

AREAS OF EXPERTISE:

- Project Management for Complex, Natural Resource & Land Use Projects
- Habitat Assessment, Functional Assessment, Delineation, Planning, Permitting, Restoration Design, Construction Oversight & Monitoring for:
  - Streams, Rivers and other Aquatic Habitat
  - Wetland, Riparian and Upland Habitat
  - Fish and Wildlife Habitat
  - Threatened & Endangered (T&E) Species, Special Status Species, and Species of Concern
  - Nesting Birds & Raptors
- Natural Resource & Land Use Regulatory Compliance, Public Presentations, Hearings and Expert Witness Services
- Grant Funding Support for Conservation and Restoration Projects

EDUCATION:

- MCRP, Environmental Planning and Law Program, Rutgers University, 1989-1994
- Bachelor of Science, Biology, Richard Stockton College of N.J., 1984

EMPLOYMENT HISTORY:

- 2008-Present: Owner, Managing Partner and Senior Restoration Ecologist
  Ecosystem Services, LLC, Erie, Colorado
- 1999-2011: Ecological Restoration Group Manager
  Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1994-1999: Vice President and Consulting Division Manager
  Aquatic and Wetland Company, Boulder, Colorado
- 1987-1994: Ecological Assessment Group Manager
  Killam Associates, Millburn, New Jersey
- 1989 – 1994: Owner and Ecologist, Westhill Environmental, Colonia, NJ
- 1986-1987: Project Manager, Connolly Environmental, Denville, New Jersey
- 1985-1986: Biological Technician/Team Lead, EA Engineering Science and Technology, Forked River Field Station, New Jersey

CONTINUING EDUCATION:

- Colorado Stream Restoration Network, Stream Restoration Body of Knowledge Seminars – 2014 to 2019
- Stream Functions Pyramid Workshop, Denver, CO - 2014
- Colorado Natural Heritage Program, Wetland Plant Identification - 2014
- Colorado Natural Heritage Program, Ecological Integrity Assessment for Colorado Wetlands - 2013
- FACWet – Functional Assessment of Colorado Wetlands - 2010, 2012 and 2013
- Continuing Education in Coastal and Wetland Ecology, Rutgers University, 1985 – 1994

CERTIFICATIONS:

- Professional Wetland Scientist, Certification (#559), Society of Wetland Scientists Certification Program, 1995
- Certified Wetland Delineator, Army Corps of Engineers Wetland Delineator Certification Program, 1993

- Wetland Mitigation Planning and Design Certification, Environmental Concern, Sparks, MD, 1992
- Certified Ornithologist, Marine Biologist, Aquatic Biologist and Ecologist for the preparation and certification of Environmentally Sensitive Areas Protection Plans, N.J. Dept. of Environmental Protection and Energy, 1988
- Wetland Delineation and Regulatory Certification, National Wetland Science Training Institute, 1988

PROTECTED SPECIES SURVEYS AND HABITAT ASSESSMENTS:

- Bald Eagle, Golden Eagle, Burrowing Owl, raptor and nest surveys and monitoring
- Ute-ladies' tresses orchid and Colorado butterfly plant
- Preble's meadow jumping mouse
- Swift fox and bobcat
- Boreal toad
- Pine Barrens and grey tree frogs
- Freshwater, estuarine and marine surveys for native fish
- Western Tiger Salamander
- Terrestrial and sea turtles

EXPERIENCE SUMMARY:

Mr. Gurnée is a founder and managing partner of Ecosystem Services, LLC (ecos), a design-build, ecological planning and design firm that is the culmination of his life's work and passion for restoring and conserving the natural world. Grant is a certified Professional Wetland Scientist with 40 years of experience in wetland ecology, restoration ecology, wildlife and fisheries biology, environmental planning, and regulatory compliance. Prior to ecos Grant established the Ecological Restoration Group at Walsh Environmental and was the Vice President in charge of the Consulting & Design Division for Aquatic and Wetland Company, the first design-build-grow firm in Colorado. Mr. Gurnée utilizes his diverse field assessment and hands-on experience to bring a unique and pragmatic, big-picture perspective to projects from conceptual planning through implementation. Grant's environmental planning and law education combined with his regulatory compliance experience make him one of the leading experts in the Intermountain West in Clean Water Act and Endangered Species Act issues. He enjoys teaching and furthering the science and art that comprise the field of restoration ecology. As such, Grant has published and presented papers and technical manuals, and lectured nationally and internationally at educational programs that further the understanding of aquatic, wetland, riparian and Threatened and Endangered (T&E) species habitat assessment and restoration. Mr. Gurnée has also been called upon to provide expert reports, expert witness testimony and liaison representation in complex regulatory compliance matters.

RELEVANT PROJECT EXPERIENCE:

The following is a sampling of select projects and clientele that Grant has successfully completed or is currently involved in:

Protected Species Surveys and Habitat Assessments

- **Golden Eagle Monitoring at Meadow Park in Lyons, CO** - ecos was retained by the Town of Lyons (Town) to perform the monthly monitoring of the Golden Eagle (*Aquila chrysaetos*) nest sites at Meadow Park, to prepare monthly Monitoring Summary Memorandum following each event, and to prepare and submit annual reporting to the U.S. Fish and Wildlife Service (USFWS) associated with the *Lyons Federal Fish and Wildlife Permit #MB82833B-0, Eagle Take Associated With But Not The Purpose Of An Activity* (Take Permit).
- **Nesting Birds, Raptors and Burrowing Owls** – Grant has completed over 100 pre-construction nesting surveys and numerous monitoring studies for raptors and burrowing owls. His projects include pipeline rights-of-way, housing and commercial development projects, stream and river restoration projects, wind and solar farm projects, and oil and gas projects along the Front Range of Colorado, as well as projects in the Pine Barrens of southern New Jersey. His avian experience includes golden eagle nest monitoring; barred owl roost and nest monitoring, and call playback inventory; and multi-species raptor surveys.
- **Native Plants** - Grant has completed numerous pre-construction and monitoring surveys for Ute ladies' tresses orchid and Colorado butterfly plant since 1994. His projects include pipeline rights-of way, mined

land reclamation projects, housing and commercial development projects, stream and river restoration projects, wind and solar farm projects, and oil and gas projects along the Front Range of Colorado.

- **Threatened, Endangered and Candidate Species** – Grant trained with the leading expert, Robert Stoecker, PhD, in 1994 and 1995 to gain an understanding of the (then) soon to be listed, Preble's meadow jumping mouse, a threatened species; and since that time, he has completed numerous surveys, habitat assessments, and ESA consultations. He has also performed night-time Swift fox surveys at windfarm sites in southern CO and Boreal toad surveys in northern CO. Prior to relocating to CO Grant performed numerous surveys in N.J., including bobcat surveys to assist in protecting the Pyramid Rock Natural Area; Pine Barrens and gray tree frog surveys, and native Pine Barrens fish surveys with his mentor, Dr. Rudy Arndt; and Eastern box turtle surveys. He also assessed migration routes and alternative mitigation measures for sea turtles that were being impacted by the Garden State Parkway in southern New Jersey.

Habitat Assessment, Permitting and Regulatory Compliance

- **Sand Creek, Black Squirrel Creek, and Kettle Creek Channel Stability Analysis, Colorado Springs, CO** – ecos developed a channel stability analysis protocol that uses the latest scientific research on the behavior of riparian and wetland vegetation under various flood regimes to assist developers in Colorado Springs with floodplain and habitat conservation planning, bed and bank stabilization, and in-channel structure design where needed. The protocol relies on detailed mapping of vegetation classes, utilizes Manning's N coefficients of vegetation, substrate/soil characteristics, surface irregularities and obstructions, channel planform, variations in shape and size of the channel cross-section, and modelled velocity and shear stress to determine the permissible tolerances of existing and proposed vegetation to flood stress. This protocol was developed in response to local codes and ordinances that proposed whole-sale destruction and "stabilization" of riparian and wetland habitat with antiquated stabilization techniques and is now being used by the engineering community to help conserve riparian corridors and habitat occupied by Preble's Meadow Jumping Mouse protected under the ESA.
- **4 Way Ranch Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by 4 Way Ranch to perform a natural resource assessment for their Phase 2 development, and to prepare a Natural Features Wetland, Wildfire, Noxious Weeds & Wildlife Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and WOUS; Noxious Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds.
- **Banning Lewis Ranch, Colorado Springs, CO** – ecos was hired by Norwood Homes to perform a PHA for the Banning Lewis Ranch (BLR), an 18,000-acre property within El Paso County, Colorado that will double the size of Colorado Springs once it is developed. The PHA included an assessment and mapping of vegetation, noxious weeds, Federal and State Listed Candidate, T&E Species, Wildlife Species of Concern (including Raptors), Waters of the U.S. and Wetland Habitat, Floodplains, and Cultural, Archeological and Paleontological Resources. The PHA Report summarizes ecos' Site assessment findings and includes the mapping of all ecological constraints and cultural resources, a preliminary jurisdictional status determination of all potential wetland habitat and WOUS under the CWA, a summary of ecological opportunities and constraints, and provides regulatory guidance to assist in planning and implementing the future development of the BLR. Norwood and their planning team, in association with ecos, are currently uploading and interpreting all of the ecos Site assessment mapping into their base GIS layers to inform future site planning and recommend proactive measures to conserve wildlife and wetland habitat, pristine prairie and ephemeral creeks, floodplains, and significant cultural resources.
- **Clean Water Act Jurisdictional Assessment of El Guique Mine in Estaca, New Mexico –** Ecos assisted Espanola Transit Mix, LLC (ETM) in their assessment at the El Guique Mine in Estaca, New Mexico (Site) by determining the potential jurisdictional status of onsite drainages and other waters under the CWA. We reviewed available background information and base mapping to gain a better understanding of the Site and the adjacent offsite area and prepared an overlay of potential WOUS on Google Earth aerial Imagery for mark-up and notation in the field. Ecos then conducted a field assessment to review Site conditions, and potential offsite, downstream connections to WOUS, and particularly the presence of a Significant Nexus to the Rio Grande, a TNW. We drafted a Technical Memorandum summarizing the

methodology employed, the results of the field assessment, the rationale under the CWA for all areas deemed to be excluded or non-jurisdictional and illustrated the locations of potential jurisdictional and non-jurisdictional features identified in the field on Google Earth aerial imagery.

- **Bellvue Pipeline Project, BMP Facilitator, Larimer County, CO** – ecos was retained by the City of Greeley as Best Management Practices (BMP) Facilitators to provide pre-construction documentation post-construction oversight of pipeline reclamation processes. Essential responsibilities include meeting with landowners prior to construction to facilitate project understanding and post-construction outcomes; to document landowner needs and wants relative to project goals and land use; to document and monitor pre- and post-construction reclamation and maintenance requirements; and to ensure the contractors maintain compliance with all state and federal laws, county regulations, and Greeley construction and restoration specifications.
- **Encana Oil and Gas (USA), Denver Julesburg Basin, CO** – Encana hired ecos to assess their ecological constraints, recommend means and methods to avoid, minimize and permit unavoidable impacts; and to mitigate, restore and prepare ecological management plans for their drilling and pipeline operations in the Denver Julesburg basin. Grant's role on the team is to perform site assessments, research background data, and prepare assessment reports and mapping data that can be utilized by Encana's project managers to proactively track ecological resources before issues arise. In addition to client consultation, Ecos is responsible for tracking drill site schedules, constraints, restoration and management efforts in a data base and reporting said information to Encana's project manager on a regular basis.
- **Georgetown Lake, Georgetown, CO** –ecos was hired to perform an onsite assessment of ecological resources and prepare a summary report to describe the physical/ecological characteristics of the Project area and evaluate the potential effects of the construction of a loop trail project on environmental issues and species of concern to support a GOCO grant application. Items evaluated and documented, include site location/ownership, general site characteristics, current land use, proposed impacts, possible effects on Federal– and State-listed T&E animal and plant species, unique or important wildlife, water quality, water bodies, wetlands, and floodplains, stormwater runoff, sedimentation, soil erosion, and invasive species. The assessment report also included mitigation measures, project benefits, and environmental compliance recommendations under applicable regulatory programs.
- **Site Assessments for General Vegetation Cover and T&E Species Presence/Absence** – ecos was retained by JADE Consulting, LLC to perform the assessment of two future development sites located in Lafayette and Yuma, Colorado. We performed a desk-top assessment to identify existing site characteristics and screen the potential presence/absence of federally-listed T&E species and followed up with onsite assessments to verify our preliminary findings. Our findings and recommendations were summarized in a Technical Memorandum in which we determined that no further assessment or regulatory compliance actions are required.
- **The Cove Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by Lake Woodmoor Development, Inc.to perform a natural resource assessment for The Cove development, and to prepare a Natural Features Wetland, Wildfire, Noxious Weeds & Wildlife Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and Waters of the U.S.; Noxious Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds.
- **Jurisdictional Determination Request for Banning Lewis Ranch, Villages 1 and 2 Residential Development, El Paso County, CO** - ecos was retained by Oakwood Homes, LLC to review a 2014 Jurisdictional Boundary Delineation and determine if a portion of the wetlands and waters within the site could be deemed non-jurisdictional under the Clean Water Act (CWA) based on their "isolated" status. Following data review, ecos arranged a field assessment with the U.S. Army Corps of Engineers (Corps) to review site conditions, and potential offsite, downstream connections to waters of the U.S. (WOUS), and particularly the presence of a Significant Nexus to Traditional Navigable Waters TNW). Ecos and the Corps agreed that several of the intermittent drainages on the suite are not jurisdictional under the CWA, as they are not: 1) a TNW or wetland adjacent to a TNW; 2) a Relatively Permanent Water (RPW) or a wetland directly abutting an RPW with perennial or seasonal flow; 3) a tributary to a TNW; or 4) a direct tributary to

a downstream WOUS as the feature loses it bed and banks. The Corps submitted ecos' findings to the U.S. Environmental Protection Agency (EPA) and they concurred and issued an Approved Jurisdictional Determination stating that the drainages were indeed "isolated" features exempt from the CWA.

- **Bellvue Pipeline Project, CWA and ESA Regulatory Negotiation, Larimer County, CO** – ecos assisted the City of Greeley from 2011 through 2014 in their negotiations with the Corps to facilitate review and verification of the Project under CWA, Nationwide Permit12 (NP12) in 2014. Grant aided the City during Corps meetings, field visits and teleconferences; in coordinating with the Corps and the technical experts on the Corps Common Technical Platform (CTP) team; and in utilizing the CTP Poudre watershed data to assess the probability of Project-specific impacts. Grant also provided regulatory and technical support to the City for the CWA, Pre-Construction Notification (PCN) Supplement for the Project from 2014 through the USACE's 2017 issuance of the "removal of capacity conditions for the Northern and Fort Collins segments" placed on the 2014 NP12. His tasks included performing Impact Avoidance Evaluations, providing historical context and data from the initial work performed for the City on this Project, assisting a Team of multi-disciplinary professionals in the preparation of Impact Assessment Reports, meeting with the City to discuss overall regulatory strategy, assisting with the preparation of the cover letter to transmit the PCN Supplement to the USACE, and assisting with discussions and presentations to the USACE during their review and processing of a Minimal Effects Determination for the Project.
  Mr. Gurnée also assisted Greeley in their negotiations with the FWS to facilitate review and consultation for the Northern Segment of the Project under Section 7 of the ESA. Grant led the field assessment with FWS, identification and prioritization of potential PMJM habitat mitigation sites, development of a conceptual design for the selected PMJM habitat mitigation sites, and preparation of the Biological Assessment Addendum and Habitat Mitigation Plan. Grant also aided the City during agency review and approval of the FWS Biological Opinion by utilizing his relationships with the FWS, and extensive experience of ESA regulations, policies and precedents.
- **Appraisal Support Documentation Report for the 1st Bank Parcel, Colorado Springs, CO** - ecos was retained by 1st Bank Holding Company to perform a Preble's meadow jumping mouse (PMJM) habitat assessment, mitigation cost analysis and conceptual lot layout for the approximate 9.4-acre 1st Bank Parcel (Site) situated south of the Gleneagle residential development and north of the current Northgate Open Space along Smith Creek in Colorado Springs, Colorado.
- **South Boulder Canon Ditch Maintenance, CWA Exemption Determination, Erie, CO** – ecos assisted the Town of Erie in exempting their proposed ditch maintenance project by performing an assessment of site conditions, submitting the assessment report to the Corps, and verifying that said project is exempt pursuant to Section 404(f) of the CWA.
- **Endangered Species Act (ESA) Compliance Documentation for the Pinon Lake tributary CLOMR Application, Forest Lakes Filing 2B in El Paso County, Colorado** – ecos performed an assessment to document the absence of federally-listed T&E species and their habitat and prepared a report for FEMA that documents that the proposed CLOMR action will not result in a "take" of T&E species.
- **Gleneagle Infill Development Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by G & S Development, Inc. to perform a natural resource assessment for the proposed Gleneagle Infill Development at the former Gleneagle Golf Course, and to prepare a Natural Features and Wetland Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and Waters of the U.S.; Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds. As part of the Project, ecos obtained an Approved Jurisdictional Determination from the Corps.
- **North Fork at Briargate Habitat Evaluation and ESA Compliance, Colorado Springs, CO** - ecos performed a habitat evaluation on behalf of High Valley Land Co., Inc. and La Plata Communities to support informal consultation with the U.S. Fish and Wildlife Service (FWS) under the ESA for potential effects to the Federally-listed, threatened PMJM from the proposed North Fork development, Filings 3 through 7 at Briargate.
- **C Lazy U Preserves Natural Resource Inventory and Conservation Easement Documentation, Grand County, CO** – ecos is assisting the C Lazy U Preserves in assessing and documenting the conservation

values of the 980-acre site known as C Lazy U Preserves near Granby, CO such that the site may be protected under Conservation Easements (CE's) held by The Nature Conservancy. The purpose of the CE's is the long-term preservation of the scenic, open space, agricultural, significant natural habitat, native vegetation, rare plant communities, riparian, and wetland values of the Property. ecos staff completed the Easement Documentation Reports Phase 1 of the CE's in 2006, Phase 2 in 2007, and Phase 3 in 2015.

- **Seaman Water Management Project, Riparian-Wetland Technical Support -** Mr. Gurnée supported Greeley in the NEPA EIS process by reviewing riparian and wetland technical reports prepared by the Corps CTP team, and providing comments to assist the City in their formal review and response to the Corps. He also provided technical and regulatory support for CWA and ESA (PMJM habitat) assessment, consultation, and compensatory mitigation planning and design.
- **City of Louisville, City of Westminster, Jefferson County and Town of Monument** – ecos performed numerous wetland habitat, wildlife, MBTA and T&E species habitat ecological assessments, wetland delineations, and Clean Water Act Section 404 and Endangered Species Act Section 7 Permits and mitigation plans for counties, municipalities and quasi- municipalities, including Highway 42 and 96th Street realignment, Jim Baker Reservoir, Standley Lake Protection Project, Triview Metro District Preble's and wetland habitat mitigation planning.
- **ARCO Clark Fork River Basin Anaconda Smelter Superfund Site, Anaconda, MT** – Grant and his Team performed wetland delineation, functional assessments, and impact analysis over a 200 square mile area affected by historic mining practices and current remedial actions required by an EPA consent decree.
- **ARCO Clark Fork River Basin Milltown Reservoir Superfund Site, Missoula, MT** – Mr. Gurnée and his Team performed wetland delineation, functional assessments, and impact analysis of proposed remedial actions that will remove metal laden sediments from the site prior to dam removal.
- **C-Lazy-U and Horn Ranch Environmental Assessments, Granby, CO** – Mr. Gurnée and his Team performed an assessment of ecological opportunities and constraints in the aquatic, riparian, wetland and threatened and endangered species habitat along the Colorado River for the development and enhancement of fishing/resort ranch amenities.
- **Village at Avon, Avon, CO** – Grant and his Team performed a wetland delineation and prepared CWA Section 404 permitting for the town center expansion and low-density ranchette development.

Mitigation and Habitat Restoration

- **Park Creek Mitigation Bank, Fort Collins, CO –** ecos was retained by Burns and McDonnell to assess, map, and prepare preliminary mitigation design of aquatic, wetland, riparian and terrestrial habitat in support of a mitigation banking prospectus. Upon completion and acceptance of the prospectus by the USACE, ecos has been tasked to manage the baseline assessment of the site, including groundwater testing, topographic surveys, and hydrology; prepare a detailed habitat design for inclusion in mitigation banking instrument; as well as coordinate design-build process with a selected nursery and contractor.
- **Front Range Mitigation and Habitat Conservation Bank –** ecos is assisting Restoration Systems, LLC (RS), the Bank Sponsor, with the assessment, planning and design of the Front Range Umbrella Bank for Aquatic Resource Mitigation & Habitat Conservation (Bank). This "umbrella" Bank is intended to provide habitat mitigation for projects along the entire Front Range of Colorado. The **ecos**/RS Team is in the process of securing viable sites in the major watersheds along the Front Range; and recently submitted the Draft Prospectus for the establishment of the Bank to the U.S. Army Corps of Engineers, Albuquerque District, Southern Colorado Regulatory Office and Omaha District, Denver Regulatory Office.
- **Lions Park Poudre River CWA and ESA Mitigation Site** - ecos assisted Greeley in developing and constructing an advance river and wetland mitigation site at Lions Park in LaPorte, Colorado that may be used for future CWA impacts in the Poudre River watershed. We also prepared a conceptual design for Preble's meadow jumping mouse habitat that will be used to support ESA consultation. ecos assessed the site, prepared the designs, and coordinated review with Greeley, Colorado Department of Parks and Wildlife, Larimer County Parks and Open Lands and Larimer County Engineering Department. The mitigation site provides compensatory mitigation for impacts to wetland and waters of the U.S. under the CWA and will also provide compensation for PMJM habitat under the ESA. This mitigation project entails development of mitigation measures including bioengineered streambank stabilization, fishery habitat enhancement, riparian and wetland habitat restoration and PMJM habitat enhancement.
- **Bellvue Transmission Line Project, Preliminary Compensatory Mitigation Plan (PCMP) -** Mr. Gurnée was the Project Manager for the preparation of the Preliminary Compensatory Mitigation Plan (PCMP) for

the Bellvue Transmission Line Project. Built upon preferred strategies in the 2008 Corps Compensato Mitigation Rules, the PCMP leverages a broad strategy to ensure mitigation success and employs a watershed approach to select and prioritize compensatory mitigation (CM) measures that will best mitigate adverse environmental effects. It is intended to support a Corps determination of minimal adverse effect and allow verification of the Northern Segment of the Project under Nationwide Permit 12. Grant led the Team during the watershed assessment of the Poudre River, identification and prioritization of potential CM and preservation sites, development of a Pilot Watershed Plan, and conceptual design of priority CM sites. The PCMP has been submitted to the Corps for review and approval.

- **Flatirons Parcel Riparian and Wetland Habitat Restoration Project** – Grant assisted Greeley in developing a multiple use project at the Flatirons Parcel, a gravel quarry site in Greeley, Colorado. The site is being decommissioned over the next decade and offers great potential to create a system of ponds connected via a naturalized stream that discharges into the Poudre. The concept design incorporates recreation opportunities that are tied into the Poudre River Trail, a passive park, and the development of wetland, riparian and wildlife habitat.
- **Ruby Pipeline Wetland, Riparian and Waterbody Mitigation and Restoration Plan, WY, UT, NV AND OR -** Mr. Gurnée was the lead restoration ecologist and wetland scientist for the 675-mile, Ruby Pipeline; a natural gas pipeline traversing four states. He was the lead for the preparation of Wetland Mitigation, Riparian and Waterbody Restoration Plans under the CWA, BLM regulations and state equivalent programs. The plans included regulatory guidelines, requirements, and processes; and ecoregion specific restoration plans. The plans detailed specifications for the basis of design, construction, and revegetation; outlined performance criteria, maintenance and monitoring methods for the restoration of approximately 460 acres of temporary wetland impacts.
- **River Point, Sheridan, CO -** Mr. Gurnée was the project manager and lead restoration ecologist for the team that assessed, permitted and designed the natural and aesthetic features of this Brownfields project. The project included a naturalized water quality swale and riverfront improvements which complement the aesthetics and ecology of the South Platte River corridor. The swale was designed to mimic the form and function of a tributary stream, providing passive water treatment with native wetland and riparian vegetation, as well as flood attenuation with instream structures and grade control. The project utilized natural, “bio-engineering” and “bio-technical” techniques to repair and maintain channel and stream bank stability, and native vegetation to enhance and restore habitat. This project also addressed the interface of proposed restaurants, a regional greenway trail, and the river through planning and design of nature trails, interpretive nodes and overlooks/access features that will function to both stabilize banks and help connect people with the river.
- **Caribou Peat Bog Restoration, Nederland, CO –** Grant performed the impact assessment, prepared native plant community design, planting cost estimate, and on-the-ground oversight of restoration volunteers to restore a high-altitude peat bog disturbed by an illegal off-road-vehicle “mudfest”.
- **Opportunity Ponds Operational Unit, Anaconda, MT -** Mr. Gurnée was the project manager and lead restoration ecologist providing technical support to Atlantic Richfield/British Petroleum at a Superfund site in the Upper Clark Fork River basin in Montana between 1995 and 2008. Services included wetland delineation and functional assessment of over 3,000 acres of wetland, stream and pond habitat; design of stream and wetland habitat mitigation projects; and permitting/compliance services. The largest project within the Superfund site was the Opportunity Ponds, a 908-acre wetland, stream and wildlife habitat creation project. The project will result in the largest freshwater mitigation project in the U.S; and is intended to mitigate for historic wetland/waters impacts from Anaconda Mining Company operations and current impacts resulting from remedial actions associated with the Superfund cleanup process.
- **The Club at Flying Horse Golf Course, Colorado Springs, CO –** On behalf of Classic Communities, Grant and his Team assessed wetland habitat, recommended impact avoidance and minimization measures, and prepared the Section 404, CWA permit for a 1500-acre mixed use development and Weiskopf golf course. The project aesthetic and mitigation measures included the design of native prairie roughs, meandering stream channels and native wetland meadows within the golf course. Extra wetland mitigation was created to serve as a private mitigation bank for the client.
- **Maloit Park, Minturn, CO -** Grant was the project manager and restoration ecologist for the Maloit Park Restoration Project, which was necessitated by the accidental release of mine slurry that contaminated the soils and vegetation of critical wetland habitat at the confluence of Cross Creek and the Eagle River. The project included the assessment of the site, the collection of native wetland seed (that was adapted to site

conditions); the selection of appropriate replacement soil; the design of the restoration grading and pla plans; and oversight during the soil replacement, grading and planting phases. Mr. Gurnée also provided follow-up monitoring and reporting to ensure the successful establishment of the wetland habitat.

- **Department of Energy, Private Mitigation Bank, Westminster, CO -** Mr. Gurnée provided the project assessment, design, permitting, mitigation banking instrument negotiation with the Corps and EPA, and construction supervision of a 12-acre wetland mitigation bank for the Department of Energy in Westminster, CO. The project provides compensatory mitigation for impacts associated with the Rocky Flats clean-up and remediation project. It should be noted that this was the first private mitigation bank negotiated in Colorado, and as such it assisted in setting the precedent for future negotiations.
- **Saudi Arabia Coastal Wetland Restoration -** Mr. Gurnée assisted in the restoration planning for 67 square kilometers (41 square miles) of high salt marsh (sabhka) impacted by Gulf War oil spills.

Aquatic, Wetland, and Riparian Habitat Design

- **The Farm PMJM and Wetland Mitigation, Colorado Springs, CO** – As part of ESA Section 7 and CWA Section 404 consultation with the USACE and USFWS dating back to 2005, ecos prepared permit and mitigation construction documents, specifications and is currently performing on-going construction observation functions aimed at preserving, conserving, restoring, enhancing and creating critical wetland, riparian and upland habitat occupied by Preble's meadow jumping mouse (PMJM), a Federally protected threatened species. Out of a total of 475 acres, The Farm project at full build-out is expected to develop 341.5 acres of residential and commercial uses and conserve 133.5 acres of PMJM habitat that will continue to provide open space and recreational values for wildlife and the residential community.
- **Saint Vrain Creek Reach 3 Phase 2 Flood Recovery and Restoration, Boulder County, CO** - ecos is part of the Design Team assisting Boulder County Parks & Open Space (BCPOS) with the restoration, repair and enhancement of the Phase 2 reach of the Saint Vrain Creek in rural Boulder County, which was damaged by the 2013 floods. Our role on the project includes: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. stream/in-stream features, vegetation, wildlife habitat); identifying and locating significant habitat features within the areas of proposed construction; identifying potential sources of native plant materials for restoration; and identifying areas of opportunity within the breach repair work areas for native vegetation, wetland, PMJM, and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design and fish passage design parameters; 3) permitting and compliance under the CWA and ESA; 4) construction oversight for restoration construction; and 5) monitoring and reporting project success/establishment to BCPOS, stakeholders, the Corps, FWS and the State of Colorado Department of Local Affairs (DOLA) under the (the Grant funding agency under the Community Development Block Grant Disaster Recovery (CDBGDR) Resilience Planning Program grant.
- **Saint Vrain Creek Reach 3 Flood Recovery and Restoration, Boulder County, CO** - ecos was part of the Design Team assisting BCPOS with the restoration, repair and enhancement of the reach of the Saint Vrain Creek from Highway 36 downstream to Hygiene Road in rural Boulder County, which was damaged by the 2013 floods. Our role on the project included: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. stream/in-stream features, vegetation, wildlife habitat); identifying and locating significant habitat features within the areas of proposed construction; identify potential sources of native plant materials for restoration; and identify areas of opportunity within the breach repair work areas for native vegetation, wetland, PMJM, leopard frog and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design and fish passage design parameters; 3) permitting and compliance under the CWA, ESA and NHPA; 4) construction oversight for restoration construction; and 5) monitoring and reporting project success/establishment to BCPOS, stakeholders, the Corps, FWS and the State of Colorado DOLA under the CDBGDR Resilience Planning Program grant.
- **Bohn Park Flood Recovery Design, Town of Lyons, CO** – ecos is part of the Design Team assisting the Town with the restoration, repair and enhancement of Bohn Park in Lyons, which was damaged by the 2013 floods. Ecos roles is to assess and design the natural restoration of the vegetation communities and habitat along St. Vrain Creek and riparian corridor; and to support the project design by acquiring permits/approvals and maintaining regulatory compliance under the CWA, ESA and National Historic

Preservation Act (NHPA). The final design will address goals and priorities associated with the Parks Recovery Planning Process, FEMA Project Worksheets and Project Scopes, the Lyons Recovery Action Plan (LRAP), associated Program Development Guides (PDG's), existing Town master plans, comprehensive plans and other relevant documentation and studies.

- **James Creek Post-Flood Restoration, Lefthand Watershed Oversight Group (LWOG), Jamestown, CO** – ecos was part of the LWOG and Boulder County Department of Transportation Team responsible for preparing the 30-60% design package for James Creek Reach 16 as identified in the Left Hand Creek Watershed Master Plan. ecos performed pre- and post-flood plant community assessment; developed revegetation goals and objectives, the basis of design, monitoring protocols, and revegetation plans in accordance with Colorado Department of Local Affairs (DOLA), Community Development Block Grant – Disaster Recovery (CDBG-DR) 30% Guidelines. Specific resources and issues of concern addressed by ecos, included federal and state listed candidate, threatened and endangered species, wildlife species of concern (including raptors), fisheries and fish passage, native plant communities, and management of noxious weeds, all in concert with geomorphic, hydrology and hydraulic analysis and design prepared by other team members.
- **Saint Vrain Creek Restoration and Floodplain Resiliency Plan, Lyons, CO** – ecos is part of the design-build team intent on restoring the St. Vrain Creek corridor in the Town of Lyons that was damaged during the September 2013 flood event. The goal of the project is to create a more resilient floodplain and natural channel condition that will alleviate future threats to the community, reestablish floodplain connectivity, stabilize banks, and restore aquatic, wetland and riparian habitat that was wiped out during the flood. Grant is responsible for CWA, ESA, Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act permitting; as well as developing the plant communities and revegetation strategies needed to restore aquatic and riparian structure and functions within the corridor that support fish, wildlife, recreation, and help the town regain the ecological benefits and economic value they receive from outdoor enthusiasts.
- **Bellvue Raw Water Ponds Riverbank Restoration, Bellvue, CO –** The 2013 flood on the Poudre River altered the course of the river and severely eroded a bank nearly causing a breach of the City of Greeley's raw water ponds – their main municipal water supply. The goal of the project was to stabilize the bank to protect the ponds and to create riparian habitat for the Preble's meadow jumping mouse, a federally listed threatened and endangered species. Jon was responsible for preparing bioengineering design plans and specifications that include soil/cobble encapsulated lifts, stream barbs to deflect flows away from the bank, and harder, biotechnical design of soil/riprap and stream bed scour protection measures to prevent erosion and further undermining and sloughing of the bank. Design plans included specification of native plant materials and various techniques to restore cottonwood forest and willow habitat to further stabilize the bank.
- **Poudre River Pipeline Crossing at Kodak, Windsor, CO –** ecos role on the project was to assess restoration potential, techniques, and prepare design plans and performance specifications to reclaim a pipeline corridor across the lower Poudre River where the City of Greely had to replace 3 major water supply lines. ecos also provided oversight during the construction of site and riverbank stabilization and restoration measures following installation of the pipelines.
- **Lions Park Poudre River Restoration Plan, Laporte, CO –** ecos role on the project was to assess habitat conditions; gather, compile and analyze field survey data; and to prepare the mapping and mitigation design plans for the Lions Park PMJM habitat and the Poudre River Bank Stabilization Plans. We designed and executed the technical drawings for the structural components of the habitat, ensuring that the proposed riparian plant community, habitat structures (brush piles), and bioengineered streambank stabilization measures will create the conditions that alleviate the current habitat fragmentation; support the life requisites of the PMJM; and enhance the overall health of the Poudre River fishery.
- **C Lazy U Ranch, Willow Creek Fishery Enhancement Plan, Granby, CO -** Mr. Gurnée was the lead fisheries biologist and wetland ecologist for the assessment and design of this project. The project entailed 2 miles of instream and riparian cover habitat aimed at enhancing water quality through increased bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach given existing land-use constraints, and ongoing ranching activities. Bank-side improvements included wetland mitigation design to support ranch impacts, detailed seeding and planting plans indicating site-specific plant and seed locations, life zones, and species palettes according to hydrologic, soil, and aspect conditions. Grant was the regulatory lead, consulting with the Corps under Section 404 of the CWA.

- **Edwards Eagle River Restoration Project, Edwards, CO –** Grant was the senior wetland ecologist fisheries biologist for the Edwards Eagle River Restoration Project (Project); which is roughly 1.5 miles long covering an area of 168 acres of floodplain along the Eagle River in the heart of the Edwards community. The project utilized indigenous materials and methods to naturally integrate habitat structure in the landscape context. He provided grant funding support; stream, riparian, wetland and fisheries habitat assessment, planning and design; and construction oversight services to the Eagle River Watershed Council for the Project. He assisted the ERWC in facilitating the public process associated with developing stakeholder support and gaining funding through the Eagle Mine Natural Resources Damage Fund. The Project was awarded over $2,000,000 in grant funding; $1,400,000 of which was from the Eagle Mine NRDF. The total project cost is projected at $4,300,000.
- **Gypsum Creek Fisheries Enhancement, Gypsum, CO -** Mr. Gurnée was the lead fisheries biologist and restoration ecologist for the instream and riparian habitat assessment, design, permitting and implementation of habitat improvements along Gypsum Creek. Project treatments included both instream and bankside treatments. Instream treatments served to improve deep-water habitat, create flow separation or concentration zones, increase low flow sinuosity, provide instream cover, improve adult fish habitat, create nursery areas, and enhance spawning opportunities. Bankside treatments for aquatic habitat improvements included creation or enhancement of overhead cover; provision of protective cover; and enhancing shading, cooling, and nutrient cycling functions. Bank protection treatments served to correct localized bank instabilities and reduce bank erosion and the potential for sediment deposition downstream. The Colorado Division of Wildlife (CDOW) commented that, “The Gypsum Creek project was implemented in such a low impact manner that you cannot tell that construction had occurred in the area.”
- **Cache La Poudre River Removal Action, Fort Collins, CO -** On behalf of the City of Fort Collins, Mr. Gurnée led negotiations between the EPA, stakeholders and the City regarding riverine, riparian and wetland regulatory and restoration design standards during the removal and remediation of a contaminated reach of the Poudre River. He also provided design review and revision, as well as construction oversight to ensure successful implementation of the instream and streambank restoration along the 0.50 mile, highly visible reach of the river near downtown Fort Collins.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY -** ecos performed the assessment and design of the Elk Hollow Creek Project, which included instream and riparian habitat improvements aimed at increasing bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach. Instream improvements included drop structures, plunge pools, deep pools, riffles and spawning habitat. Bank improvements included seeding and planting plans for native wetland and riparian species. Grant was the regulatory lead, consulting with the Corps under Section 404 of the CWA and the Wyoming Department of Fish and Game. ecos also provided construction oversight and native plant installation services to ensure the successful implementation of the Project.
- **Brush Creek Fishery Enhancement Plans, Saratoga, WY –** Grant assisted in the preparation of access and staging plans, design plans and details, and performed on-site construction oversight of instream and riparian habitat enhancements and bioengineered bank stabilization for a 3-mile reach of Brush Creek. The purpose of the project is to enhance fish, bird and wildlife habitat and use these resources to facilitate education and improve the recreational experience of Ranch guests.
- **Brush Creek Ranch Pond Creation Plans, Saratoga, WY –** ecos provided design-build services including site optimization selection; excavation, grading, drainage and revegetation plans; and construction oversight for a 0.30-acre fishing pond. The pond design included an innovative undercut bank design incorporating a framework of trees supporting transplanted, native sod; which provided excellent fish habitat.
- **Boulder Creek Fishery Enhancement and Pond Creation Project, Boulder, CO -** Grant was the lead fisheries biologist and restoration ecologist for this project along a private reach of South Boulder Creek adjacent to City of Boulder, Eldorado Canyon Open Space. His tasks included instream and riparian habitat assessment, design of instream and pond fishery habitat and riparian enhancement measures and permitting and consultation. Grant was also the regulatory lead, consulting with the FWS regarding PMJM habitat and with the Corps under Section 404 of the CWA.
- **Stream and Floodplain Restoration at A.T. Massey Coal Mining Facility, KY -** Grant was the Project Manager, fisheries biologist and restoration ecologist for the technical team tasked with assessment and restoration of 26 miles of stream corridor following the accidental release of 250 million gallons of coal slurry into two separate drainages in eastern Kentucky. He was the first ecologist to respond after the spill

to ensure that fisheries, stream and riparian habitat restoration objectives were incorporated into the selected cleanup measures. As such, Grant devised a "triage" categorization and remediation system for all affected reaches that minimized impacts to sensitive aquatic and riparian habitat based on the site-specific level of cleanup and remediation required. In addition to instream and bank restoration and stabilization, comprehensive riparian corridor restoration was a major component of the project. Grant was the regulatory and permitting lead and coordinated permits and approval with EPA, Corps and State agencies.

- **Roaring Fork Golf and Fishing Club, Basalt, CO -** Mr. Gurnée was the lead fisheries biologist and restoration ecologist for the assessment, design, permitting and construction supervision of a native trout stream (1 mile) with associated wetland complexes (3 acres). The trout stream was created as an amenity and functional fly-fishing challenge for this fishing component of the Roaring Fork Club; and the associated wetland and riparian habitat were created to naturalize the stream and provide compensatory mitigation for impacts associated with the development of the club facilities. Grant was the regulatory and permitting lead and coordinated permits and approval with Corps and CDOW.
- **Spring Creek Wetland Mitigation, Colorado Springs, CO** – Grant and his team generated wetland and creek creation plans that integrated required mitigation into a high density, "new urban" development. The design emphasized re-utilization of urban storm water to sustain wetlands, use of indigenous plants, construction materials, and natural geomorphic relationships.
- **Tobacco Island Project, Kansas City, MO -** Grant was the lead fisheries biologist and restoration ecologist on a multi-disciplinary Team for the Corps, Tobacco Island Project - a portion of the Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project. Project tasks included assessment and conceptual design of measures aimed at reconnecting floodplain and riparian habitat to a reach of the Missouri River near Kansas City. He prepared preliminary designs of channel and backwater wetlands; provided regulatory analysis under Section 404 of the CWA; and assisted in the preparation of an Environmental Impact Statement.
- **San Miguel River Corridor Restoration Plan -** Mr. Gurnée was the lead restoration ecologist, planner and designer for phase 1 of the San Miguel River Corridor Restoration Plan, which included a 1-mile reach through Town. He and his team assisted the Town of Telluride in applying for and winning approximately $500,000 in Natural Resource Damage Assessment Fund money from the State of Colorado. The money, along with other funding, was utilized for final design and construction of the project which included instream habitat, streambank restoration, riparian and wetland restoration, trails and parks. Grant was responsible for leading all public meetings, regulatory negotiation and permitting; assisted the Town with grant funding; and provided construction oversight services.
- **High Altitude Stream Restoration at Copper Mountain Resort, CO -** Grant was the lead ecologist for the restoration of an alpine stream and enhancement of associated wetland and riparian habitat situated within tundra habitat atop Union Peak at Copper Mountain Resort. Grant performed the assessment, design, permitting, and construction oversight for one of the highest altitude stream restoration and wetland mitigation projects in Colorado (approximately 11,500 feet above sea level). Innovative bioengineering and construction techniques were designed and adapted to this sensitive environment to minimize construction-related impacts and maximize environmental benefits.

Threatened & Endangered Species Consultation & Habitat Restoration

- **Jackson Creek Land Company PMJM and Wetland Mitigation, Colorado Springs, CO –** ecos has been performing PMJM habitat biological assessments, conservation, mitigation planning and design throughout its range since 1994. Among numerous other private land developers in the Colorado Springs areas, ecos is currently assisting the Jackson Creek Land Company and Triview Metropolitan District with the implementation of physical habitat preservation and mitigation measures, including shortgrass prairie, upland hibernaculum, and riparian habitat restoration. We are also assisting the client with construction oversight and maintaining regulatory compliance during the implementation of the phased mitigation plans.
- **The Farm (formerly Allison Valley Ranch), Colorado Springs, CO –** Mr. Gurnée performed the habitat assessment and mapping; and prepared ESA, Section 7 and CWA, Section 404 consultation documents as required by the FWS and Corps, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse. Ecos is currently assisting the owner with construction oversight for habitat restoration and native planting.

- **Advance Mitigation for PMJM Habitat** – ecos is assisting a private client in identifying, assessing, prioritizing and designing advance mitigation sites for PMJM habitat in the North Fork and main stem of the Cache la Poudre River.
- **TriView Metropolitan District ESA and CWA Permit Resolution, Monument, CO -** Mr. Gurnée represented the TriView Metropolitan District (TriView) and Phoenix Bell as the lead consultant to resolve outstanding compliance issues related to a joint ESA, Section 7 Consultation and CWA, Section 404 Permit. Grant lead negotiations amongst the various landowners, TriView and the Town to resolve compliance issues related to PMJM and wetland habitat, such that development may proceed in this core area of the town. Upon resolution and agreement of the stakeholders, he led the negotiations with the FWS and Corps to formally amend the Biological Opinion and 404 Permit. Once the approvals were amended, Grant lead the planning and design of PMJM and wetland habitat to meet mitigation requirements under the ESA and CWA.
- **Bernardi Residential Property, Eldorado Canyon, Boulder, CO –** ecos consulted with the Corps and FWS to document and fulfill regulatory requirements for a residential home construction project in PMJM, wetland and riparian habitat. Mr. Gurnée coordinated with the FWS and Corps and obtained approvals under ESA, Section 7 and CWA, Section 404. He prepared all consultation documents, including the Biological Assessment, mitigation plan, and construction documents and specifications. Grant is leading the on-site layout of plant communities and construction supervision, aimed at restoring wetland and riparian habitat occupied by the PMJM.
- **Northgate Boulevard Realignment, Colorado Springs, CO –** Mr. Gurnée performed the habitat assessment and mapping; and coordinated and prepared ESA, Section 7 and CWA, Section 404 consultation documents as required by the FWS and Corps, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse.
- **Jefferson County Highways and Transportation Department Gunbarrel Bridge Replacement, Oxyoke, CO -** ecos staff consulted with the Corps, FWS, CDOT, and the FHWA to document regulatory requirements for a bridge replacement project in PMJM, wetland and riparian habitat. He and his Team produced a CDOT Wetland Finding Report, Biological Assessment, acquired a Section 404 Permit and Biological Opinion (Section 7 of the ESA), and then implemented habitat mitigation improvements at the site.
- **Northgate Project, Colorado Springs, CO -** As project manager, Mr. Gurnée led the team in the assessment, permitting and regulatory negotiation (Section 404 of the CWA and Section 7 of the ESA) for the project which included the planning, design and construction supervision of a precedent setting, "joint" mitigation plan for 60 acres of wetland, riparian and PMJM habitat.

Ecological Master Planning

- **Sundance Trail Guest Ranch, Larimer County,** CO – ecos is currently assisting a local guest ranch in the assessment of natural resources and site features, and the development of site plans to balance natural habitat and aesthetic values with the expansion of guest facilities and services.
- **Sand Creek Channel Improvements Stability Analysis at Indigo Ranch, Colorado Springs, CO** - ecos was retained to perform an analysis of channel stability under proposed development conditions for a 1.17-mile reach of Sand Creek. Ecos utilized existing vegetation composition data, density and height within the Project reach as a basis; and compared the 10-year and 100-year storm event modelling data (specifically flow velocity, flow depth and shear stress) to reference literature to provide a professional opinion regarding the future stability of the channel under developed conditions. The analysis of channel stability for the proposed Project assumes a bioengineering and biotechnical approach that preserves and enhances the existing vegetation, as well as substrate cohesion and stability, within the channel and its streambanks. The Stability Analysis will likely serve as a benchmark study for the City of Colorado Springs to use to preserve other naturally stable channels.
- **Uncompahgre River Corridor Master Plan, Montrose, CO –** Grant and his Team assessed the character, condition and quality of aquatic, wetland and riparian habitat along a 10-mile rural and urban corridor of the Uncompahgre River through the City of Montrose. Habitats were then rated, ranked, prioritized and master planned for their preservation potential and integration in to the parks, recreation and trail system. The master plans form the foundation for the City to focus environmental stewardship, tourism

and generate riverfront economic development with a focus on the river – the major asset of the Community.

- **Brush Creek Stewardship and Enhancement Plan, Saratoga, WY –** Mr. Gurnée managed the assessment of a 12,000-acre, private ranch near Saratoga, Wyoming and the preparation of the Ranch Stewardship Plan (Plan). The Plan includes land and resource stewardship goals, objectives, and implementation action items; including ranch-wide master planning of the trail and recreational systems, design of the Brush Creek riparian corridor trail, and restoration/fisheries habitat enhancement of Brush Creek. Trail and recreation planning and design focused on universal access, habitat sensitivity, environmental education, and wildlife observation opportunities and unique landscape experiences.

Renewable Energy Projects

- **Silver Mountain Windfarm and Transmission Line, Huerfano County, CO -** Mr. Gurnée was the Project Manager for the land use permitting and environmental assessment of the Silver Mountain Windfarm and Transmission Line project on behalf of Renewable Energy Systems (RES), Americas. Ecos assisted RES in the preparation and submittal of their preliminary 1041 permit application; and performed detailed site assessments to document potential site development constraints and site-specific environmental/ecological conditions. Grant has represented RES at the Huerfano County pre-application conference, an onsite meeting with CDOW, and informal consultation with USFWS.
- **Flat Land Solar Project, Huerfano County, CO -** Grant was the Project Manager for the permitting and environmental assessment of the Flat Land Solar (FLS) project. Ecos assisted FLS in the preparation of their preliminary 1041 permit application; and performed detailed site assessments to document potential site development constraints and site-specific environmental/ecological conditions.
- **Haynes Creek Solar Project, Pueblo County, CO -** Mr. Gurnée was the project manager for the Critical Issues Analysis for the Haynes Creek Solar project on behalf of enXco. Ecos performed desktop level analyses and a preliminary site assessment to document potential site development constraints, site-specific environmental/ecological conditions; and detail regulatory compliance issues (federal, state and local).
- **Cucharas Windfarm Project, Huerfano and Las Animas Counties, CO -** Mr. Gurnée was the project manager for the Critical Issues Analysis for the Cucharas Windfarm project on behalf of enXco. His team performed desktop level analyses and a preliminary site assessment to document potential site development constraints, site-specific environmental/ecological conditions; and detail regulatory compliance issues (federal, state and local).
- **Wheatland Windfarm, Wheatland, WY -** Mr. Gurnée was the project manager for the Critical Issues Analysis for the Wheatland Windfarm on behalf of enXco. Ecos performed desktop level analyses and a preliminary site assessment to document potential site development constraints, site-specific environmental/ecological conditions; and detail regulatory compliance issues (federal, state and local).
- **Pole Canyon Windfarm and Transmission Line Projects, Huerfano and Pueblo Counties, CO -** Grant was the Project Manager for the proposed 20,000-acre, 300-MW windfarm; and the 42-mile transmission line. He provided comprehensive client representation for all public, regulatory agency, state and county processes. The windfarm includes 125 wind turbine generators, five 60-meter wind-monitoring towers, internal access roads, improvements to county roads, two substations and an electrical collection system, and an operations and maintenance facility. The transmission line will extend from the windfarm in Huerfano County to the Comanche Power Plant in Pueblo County.

  Ecos performed detailed site assessments to document potential site development constraints and site-specific environmental/ecological conditions including: wetlands/waters of the US, T&E species listed by USFWS and the CDOW, habitat and avian species covered by the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act, and historic and culturally significant resources. The detailed field surveys included preliminary site characterization studies, wetland delineations, land use impact studies, habitat assessments, and avian and bat data analyses and surveys to evaluate the potential impacts of proposed wind farm and transmission line development on raptors and bats.

  Ecos prepared the preliminary and final land use permits (1041 applications) for Huerfano County; and the 1041 permit application for Pueblo County; and supported the applicant during the three public presentations and two hearings. The client received approval of their 1041 permit applications for the wind energy facility and 17 miles

transmission line from Huerfano County Board of Commissioners in August 2008; and for the remaining miles of transmission line from the Pueblo County Board of commissioners in September 2008.

Ecos successfully completed the jurisdictional determination with the U.S. Army Corps of Engineers and formal consultations with the USFWS and CDOW. He and his team completed the detailed environmental assessment (NEPA EA) of the transmission line corridor including management of the Cultural resources sub-consultant.

- **Alta Windpower Development, LLC, Kern County, CA -** Grant was the lead Restoration Ecologist for the preparation of the Draft Biological Sampling Plan (Draft Plan) that was prepared on behalf of Alta Windpower Development, LLC (Alta). The intent of the Draft Plan was to provide the basis for an efficient and scientific approach to the characterization of biological resources that could be affected by construction, operation, and maintenance of future wind energy projects in Kern County, California. The Draft Plan described the regulatory framework under which the future projects would be evaluated; defined the biological resources to be characterized pursuant to Federal, State, and local regulations; and identified the agency-prescribed protocols by which the biological assessments would be implemented. The Draft Plan was prepared such that it would be consistent with the West Mojave Plan, a habitat conservation plan (HCP) and an amendment to the California Desert Conservation Area Plan covering over nine million acres in five counties (Inyo, Kern, Los Angeles, San Bernardino, and Riverside).
- **Cedar Creek Windfarm, Weld County, CO -** Mr. Gurnée was the project manager for the permitting and environmental assessment of BP Alternative Energy (formerly Greenlight Energy) 300 MW Cedar Creek windfarm and associated transmission line in Weld County, Colorado. Grant and Jon conducted wetland and riparian area surveys over the proposed windfarm and transmission line site (including several river crossings), and assisted in meetings with federal, state, and county regulatory agencies.
- **Sunrise Eagle Flats Windfarm, Huerfano County, CO -** Mr. Gurnée was the project manager for the Sunrise Eagle Flats windfarm project. He provided a full-range of environmental services to Sunrise Enterprise Renewable Energy Development, LLC for Phase 1 of a proposed 40-megawatt wind farm in Huerfano County, Colorado. He and Jon conducted all necessary field surveys including preliminary site characterization studies, wetland delineations, land-use impact studies, habitat assessments and avian and bat surveys including a bat fall migration survey using active monitoring methods with AnaBat acoustic detectors. Baseline data was analyzed, along with other available studies and data, to evaluate the potential impacts on bats from proposed wind farm development.

Environmental Assessment and Impact Studies

- **NEPA EA for Eagle County Airport Runway Expansion, Eagle County, CO -** Grant was project manager and senior ecologist for an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for a proposed 1000-foot runway expansion and ILS installation at the Eagle County Airport, west of Vail, Colorado. Critical issues addressed included noise, ecological, and public opinion considerations. Grant conducted the work under FAA guidance requirements for EAs.
- **NEPA EA for the Avon Interstate 70 Interchange -** Mr. Gurnée was project manager and senior ecologist for this NEPA EA. He performed environmental assessment and data compilation work for construction of a new CDOT interchange and associated development on Interstate 70. This included evaluating T&E Species; a wetlands inventory; a cultural/archeological resources survey; noise and air pollution modeling and studies; and reviewing soils, meteorology, geologic hazards, and other impacts.
- **Raritan River Wetland Inundation Impact Study, N.J. -** Grant's work on the preparation and processing of the first Individual Permit under the New Jersey Freshwater Wetlands Protection Act of 1987 included a precedent setting wetland inundation study. This study shaped the N.J. Department of Environmental Protection's policy regarding the need to assess hydrologic impacts during wetland permit reviews.

Construction Oversight and Plant Installation

- **St. Vrain Creek Reach 3 Flood Recovery and Restoration, Lyons, CO –** Ecos performed construction lay-out and observation during the implementation of the restoration and enhancement of 0.60-acre of riparian Preble's Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River.
- **2013 Flood and 2014 Runoff Events, Damage Restoration, Cache la Poudre River, CO** - ecos performed the construction oversight of 3 flood and runoff damage restoration projects along the Cache la

Poudre River for the City of Greeley, including the Bellvue Treatment Plant Raw Water Ponds Restora the Kodak Pipeline Crossing Restoration and the Watson Lake Pipeline Crossing Restoration.

- **Lions Park CWA and ESA Mitigation Site** - ecos performed the construction oversight for an advance river and wetland mitigation site at Lions Park in LaPorte, Colorado.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY -** ecos performed the construction oversight for the Elk Hollow Creek Project.
- **Brush Creek Ranch Fishery Enhancement Plans, Saratoga, WY –** Mr. Gurnée assisted in the construction oversight for a 3-mile reach of Brush Creek to improve fisheries and outdoor recreation experiences for guests of the Ranch.
- **C Lazy U Ranch, Willow Creek Fishery Enhancement Plan, Granby, CO -** Grant assisted in the construction oversight for this fishery habitat, channel stabilization and streambank restoration project.
- **Standley Lake Protection Project, Westminster, CO –** Mr. Gurnée performed construction oversight of a 12-acre created emergent wetland that he and his Team designed to fulfill CWA mitigation requirements and bring closure to the City's drinking water protection project.
- **Caribou Peat Bog Restoration, Nederland, CO –** Grant prepared native plant community design, planting cost estimate, and on-the-ground oversight of volunteers to restore a high-altitude peat bog disturbed by an illegal four-wheel drive "mudfest".
- **Department of Energy Wetland Mitigation Bank, Westminster, CO –** Mr. Gurnée provided construction supervision of the grading and planting of a 12-acre wetland mitigation bank that he and his Team designed for the Department of Energy.
- **ARCO Lower Area One and Butte Reduction Works, Butte, MT –** Grant performed construction observation and supervision of temporary labor crews to plant a passive treatment wetland designed to absorb heavy metals from groundwater.

Natural Treatment System Design

- **Natural Treatment Wetlands, Butte, MT -** Mr. Gurnée and his Team performed the assessment and design of the ARCO Lower Area One and Butte Reduction Works passive treatment wetlands. These natural treatment systems were situated within two units of a reclaimed superfund site to treat heavy metals in surface and groundwater.
- **Natural Treatment Wetlands, Avondale, AZ –** Grant and his Team performed the assessment and design of a constructed wetland system to treat surface water and inject/recharge the municipal well system for the City of Avondale, AZ. This system successfully alleviated a well moratorium necessitated by a contaminated groundwater aquifer.

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Hoag, Chris, Hollis Allen, Craig Fischenich and Grant Gurnée. Assistant instructor for a Bioengineering Workshop sponsored by the U.S. Army Corps of Engineers Waterways Experiment Station and the U.S. Department of Agriculture – Aberdeen Plant Materials Center. September 1998. Carson City, Nevada.

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Gurnée, Grant E. 1994. How to Recognize and Deal with Wetland Regulation Issues. Presented at the Continuing Legal Education (CLE) International, 3rd Annual Western Agricultural and Rural Law Roundup. June 23-25, 1994. Fort Collins, Colorado.

AWARDS:

- Colorado Landscape Contractors Award, Sand Creek Enhancement Project – 2000

PROFESSIONAL ASSOCIATIONS:

- Association of State Wetland Managers (ASWM)
- Society of Wetland Scientists (SWS)
- Environmental Concern (EC)

Addendum 4

2.10 Traffic Impact Analysis

The Town has retained Stolfus Engineering to prepare a Traffic Impact Analysis. A separate Traffic Impact Analysis has been prepared by Kimley Horn. Both reports are attached hereto.

Traffic Impact Study

Travel Center Palmer Lake

El Paso County, Colorado

Kimley»Horn

T R A F F I C I M P A C T S T U D Y

Travel Center Palmer Lake

Palmer Lake, Colorado

Prepared for
Ratcliff Engineering Services, LLC
P.O. Box 2272
Friendswood, Texas 77549

Prepared by
Kimley-Horn and Associates, Inc.
2 North Nevada Avenue
Suite 900
Colorado Springs, Colorado 80903
(719) 453-0180

July 2025

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

TABLE OF CONTENTS

TABLE OF CONTENTS i
LIST OF TABLES ii
LIST OF FIGURES iii
1.0 EXECUTIVE SUMMARY 1
2.0 INTRODUCTION 5
3.0 EXISTING AND FUTURE CONDITIONS 7
3.1 Existing Study Area 7
3.2 Existing and Future Roadway Network 7
3.3 Existing Traffic Volumes 13
3.4 Unspecified Development Traffic Growth 13
4.0 PROJECT TRAFFIC CHARACTERISTICS 18
4.1 Trip Generation 18
4.2 Trip Distribution 19
4.3 Traffic Assignment 20
4.4 Total (Background Plus Project) Traffic 20
5.0 TRAFFIC OPERATIONS ANALYSIS 26
5.1 Analysis Methodology 26
5.2 Key Intersection Operational Analysis 27
5.3 Palmer Lake Turn Lane Requirement Analysis 33
5.4 Vehicle Queuing Analysis 35
5.5 Access Spacing Requirements and Internal Roadway Classifications 36
5.6 Sight Distance Evaluation 37
5.7 Improvement Summary 38
6.0 CONCLUSIONS AND RECOMMENDATIONS 41

APPENDICES

Appendix A – Conceptual Site Plan
Appendix B – Intersection Count Sheets
Appendix C – Future Traffic Projections
Appendix D – Trip Generation Worksheets
Appendix E – Intersection Analysis Worksheets
Appendix F – Signal Warrant Analysis Worksheet
Appendix G – Queue Analysis Worksheets
Appendix H – Cap-X and ICAT Worksheets and MIMR Excerpts

LIST OF TABLES

Table 1 – Travel Center Palmer Lake Traffic Generation 19
Table 2 – Level of Service Definitions 26
Table 3 – County Line Road & Beacon Lite Road LOS Results 28
Table 4 – County Line Road & I-25 Southbound Ramp LOS Results 29
Table 5 – County Line Road & I-25 Northbound Ramp LOS Results.....30
Table 6 – County Line Road & Monument Hill Road LOS Results.....31
Table 7 – Project Access Level of Service Results.....32
Table 8 – Turn Lane Queuing Analysis Results.....35

LIST OF FIGURES

Figure 1 – Vicinity Map....6
Figure 2 – Existing Geometry and Control....12
Figure 3 – 2024 Existing Traffic Volumes....14
Figure 4 – 2028 Background Intersection Geometry and Configuration....15
Figure 5 – 2028 Background Traffic Volumes....16
Figure 6 – 2045 Background Traffic Volumes....17
Figure 7 – New Project Trip Distribution....21
Figure 8 – Diverted Project Trip Distribution....22
Figure 9 – Project Traffic Assignment....23
Figure 10 – 2028 Total Traffic Volumes....24
Figure 11 – 2045 Total Traffic Volumes....25
Figure 12 – 2028 Recommended Geometry and Control....39
Figure 13 – 2045 Recommended Geometry and Control....40

1.0 EXECUTIVE SUMMARY

Travel Center Palmer Lake is proposed to be located on the southeast corner of the County Line Road (Palmer Divide Road) and Beacon Lite Road intersection in Palmer Lake, Colorado. The travel center project is proposed to contain a gas station with 120 fueling positions and an approximate 74,000 square foot convenience store. It is expected that the project will be completed in the next several years. Therefore, analysis was conducted for the 2028 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study in accordance with Palmer Lake and State of Colorado Department of Transportation (CDOT) standards and requirements:

- County Line Road and Beacon Lite Road (#1)
- I-25 Southbound Ramp and County Line Road (#2)
- I-25 Northbound Ramp and County Line Road (#3)
- County Line Road and Monument Hill Road (#4)

Of note, the Town of Palmer Lake adopts El Paso County Engineering Criteria Manual (ECM) standards.

In addition, the two (2) proposed full movement accesses along Beacon Lite Road and the right-out only access along County Line Road will be included in the evaluation.

Regional access to the site will be provided by Interstate 25 (I-25) and Highway 105. Primary access will be provided by County Line Road. Direct access will be provided by two full movement accesses along Beacon Lite Road and a right-out only access along County Line Road.

Travel Center Palmer Lake is anticipated to generate a total of approximately 22,150 daily weekday trips with 1,236 of these trips occurring during the morning peak and 1,679 trips occurring during the afternoon peak hour. Accounting for diverted link trips, expected net new trips (non-diverted link trips) to the surrounding street network results in approximately 3,322 new

weekday daily trips, of which 185 and 252 new trips are anticipated during the weekday morning and afternoon peak hours, respectively.

Based on the analysis presented in this report, Kimley-Horn believes Travel Center Palmer Lake will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

2028 Recommendations

- With construction of the project, the I-25 and County Line Road interchange ramp terminals will need to be converted to a signal. Traffic signals are the preferred intersection control recommended by this study. In order to utilize the existing bridge deck (approximately 72 feet), a traditional diamond interchange can provide two westbound through lanes, a westbound left turn lane, an eastbound left turn lane, and a single eastbound through lane between the two ramps at 12 feet per lane. Additionally, the northbound off-ramp is recommended to provide three approach lanes including a separate left turn lane, a shared left turn/through lane, and right turn lane while the southbound off-ramp is recommended to provide two approach lanes including a lane shared for all movements and a separate right turn lane. The left turn lanes onto the I-25 on-ramps will each provide a spillback lane for additional queues.

- The County Line Road and Beacon Lite Road (#1) intersection is recommended to be realigned by converting the major through movements to the existing east (County Line Road) and south (Beacon Lite Road) legs of this intersection while the west leg of County Line Road will intersect into the new roadway alignment. This will convert a high volume of northbound right turn movements and westbound left turn movements into the major through movements. This realigned intersection will either need to be signalized or provide roundabout control. As a signal, the west leg minor approach is recommended to provide a separate left and right turn lane while the major approaches would provide two northbound and southbound through lanes, a separate northbound left turn lane, and a separate right turn lane. However, as a roundabout, the northbound/southbound realigned roadway is recommended to provide two approach lanes, and the eastbound approach is recommended to provide a single lane for shared movements.

- Two full movement project accesses are being proposed along Beacon Lite Road while one right-out only access is proposed along County Line Road. The following summarizes the recommendations of the three proposed project accesses:
  - A right-out only access along County Line Road (#5) is recommended to provide a R1-1 "STOP" sign on the northbound approach with a R3-1 No Left Turn sign below the R1-1 sign. The exiting approach of this access should also be oriented to only allow exiting right turn movements.
  - The north access (#6) along Beacon Lite Road should be signalized as a T-intersection. Dual southbound left turn lanes are identified by the project team to be provided due to the high volume of entering left turn movements. The inside left turn lane is recommended to provide a length of 325 feet plus a 160-foot taper while the outside left turn lane will be continuous drop lane from the inside through lane. The westbound approach will provide separate left and right turn lanes with the right turn movement operating under free-flowing conditions.
  - A full movement access (#7) is proposed at the south end of the site along Beacon Lite Road. The intersection can operate with stop control on the westbound approach. A southbound left turn lane is recommended to be installed to provide a length of 305 feet plus a 160-foot taper.

- The church on the southwest corner of the County Line Road and Beacon Lite Road intersection currently has one full movement access along Beacon Lite Road and no other points of access. This access to the church along Beacon Lite Road is proposed to be restricted to right-in/right-out movements due to the proximity to the future realigned intersection of County Line Road and Beacon Lite Road. Therefore, the project team will coordinate with the church and the Town of Palmer Lake regarding the possibility of incorporating a second point of access along County Line Road or Bull Pine Point for the church.

- Additionally, site generated traffic associated with the Monument Ridge East development located on the southeast corner of County Line Road and Monument Hill Road intersection were added directly to the study intersections. With the development of the Monument Ridge

East site, Monument Hill Road will be realigned and provide separate eastbound left and right turn lanes, a separate westbound left turn lane, and a separate northbound right turn lane.

2045 Recommendations

- As identified in other traffic studies, the County Line Road and Monument Hill Road intersection is expected to be signalized in the long-term horizon.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the Palmer Lake, CDOT, and the Manual on Uniform Traffic Control Devices (MUTCD) – 11th Edition, 2023.

2.0 INTRODUCTION

Kimley-Horn has prepared this report to document the results of a Traffic Impact Study for a travel center proposed to be located on the southeast corner of the County Line Road (Palmer Divide Road) and Beacon Lite Road intersection in Palmer Lake, Colorado. A vicinity map illustrating the project development location is shown in **Figure 1**. The travel center project is proposed to contain a gas station with 120 fueling positions and an approximate 74,000 square foot convenience store. A conceptual site plan is included in **Appendix A**. It is expected that the project will be completed in the next several years; therefore, analysis was conducted for the 2028 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study in accordance with Palmer Lake and CDOT standards and requirements:

- County Line Road and Beacon Lite Road (#1)
- I-25 Southbound Ramp and County Line Road (#2)
- I-25 Northbound Ramp and County Line Road (#3)
- County Line Road and Monument Hill Road (#4)

Of note, the Town of Palmer Lake has adopted El Paso County Engineering Criteria Manual (ECM) standards.

In addition, the two (2) proposed full movement accesses along Beacon Lite Road and the right-out only access along County Line Road will be included in the evaluation.

Regional access to the site will be provided by Interstate 25 (I-25) and Highway 105. Primary access will be provided by County Line Road. Direct access will be provided by two full movement accesses along Beacon Lite Road and a right-out only access along County Line Road.

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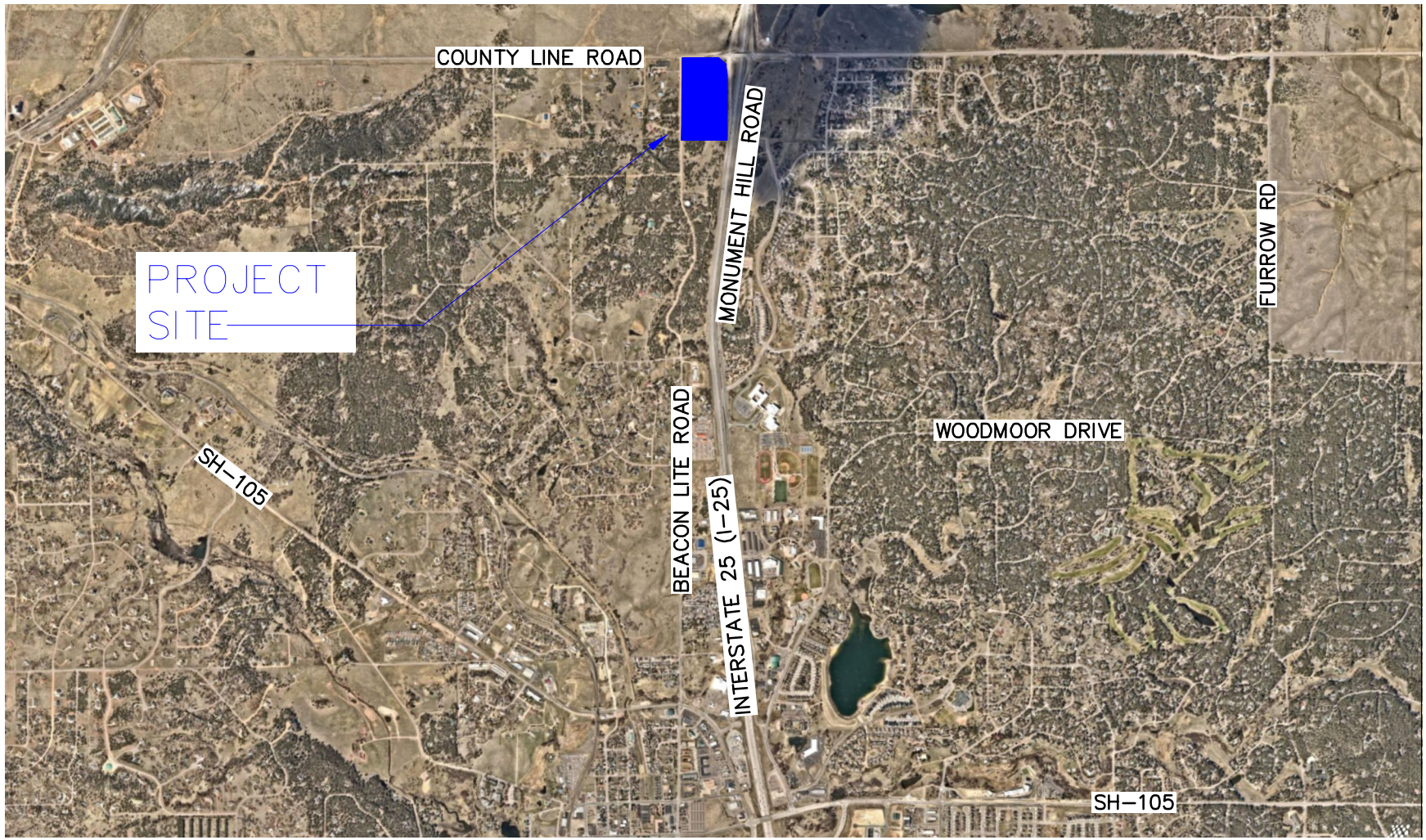

FIGURE 1
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
VICINITY MAP

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is currently vacant. Directly to the east is Interstate 25 and to the west are single ranch style family homes and Tri-Lakes Church. The Town of Palmer Lake is located to the west and to the southwest. North of the site is open space with minimal development for more than six (6) miles. The extended area to the east contains single family residences.

3.2 Existing and Future Roadway Network

County Line Road extends in the east/west direction as a two-lane roadway. The posted speed limit is 35 miles per hour near the study intersections and 45 miles per hour east of Monument Hill Road. Currently there are roadway construction plans for Beacon Lite Road which includes widening County Line Road to a three-section roadway between Beacon Lite Road and the I-25 Southbound Off-Ramp.

Beacon Lite Road extends northbound and southbound with one through lane in each direction. The roadway is not paved and has a posted speed limit of 35 miles per hour. As mentioned previously, Beacon Lite Road currently has approved construction plans to pave the roadway to Wakonda Way.

Monument Hill Road is a north-south roadway and provides one through lane in each direction. The Monument Hill Road south of County Line Road serves as a frontage road to I-25. North of County Line Road the roadway name changes to Andrews Road. The posted speed limit along Monument Hill Road is 45 miles per hour and along Andrews Road is 30 miles per hour.

The T-intersection of County Line Road and Beacon Lite Road is unsignalized and operates with stop control on the northbound approach of Beacon Lite Road. All three approaches provide a single lane for shared turning movements. An aerial photo of the existing intersection configuration is below.

County Line Road & Beacon Lite Road

The unsignalized intersection of County Line Road and the I-25 Southbound Ramp operates with stop control on the southbound off-ramp. The eastbound approach of County Line Road provides a single lane for shared through and right turn movements while the westbound approach provides a left turn lane and a through lane. The southbound off-ramp provides a single lane approach. An aerial photo of the existing intersection configuration is below.

County Line Road & I-25 Southbound Ramp

The unsignalized intersection of County Line Road and the I-25 Northbound Ramp operates with stop control on the northbound off-ramp. The eastbound approach of County Line Road provides a left turn lane and a through lane while the westbound approach provides a storage lane for spill back queues at the westbound left southbound on-ramp and a shared through/right turn lane. The northbound off-ramp provides a single lane approach. An aerial photo of the existing intersection configuration is below.

County Line Road & I-25 Northbound Ramp

The unsignalized intersection of County Line Road and Monument Hill Road operates with stop control on the northbound Monument Hill Road approach and the southbound Andrews Road approach. All four approaches provide a single lane for shared turning movements. An aerial photo of the existing intersection configuration is below.

County Line Road & Monument Hill Road

The intersection lane configuration and control for the study area intersections are shown in **Figure 2**.

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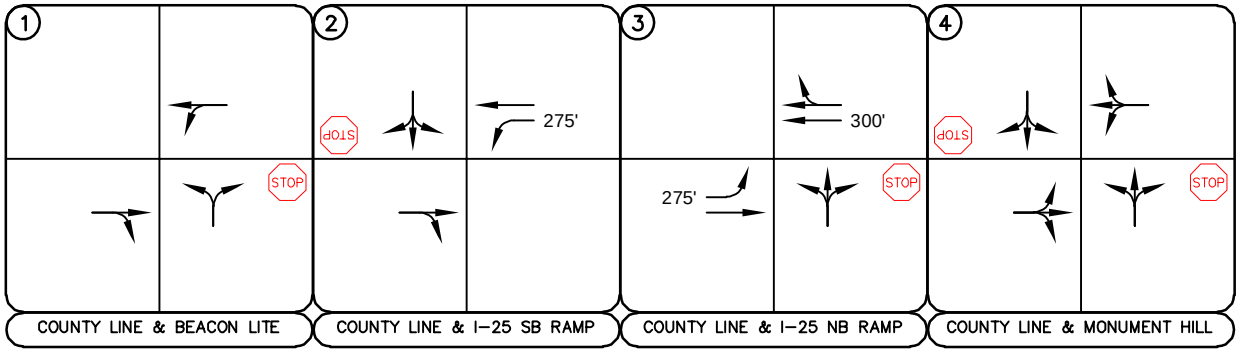

LEGEND
X Study Area Key Intersection
STOP Stop Controlled Approach
SPEED LIMIT XX Roadway Speed Limit
100' Turn Lane Length (feet)

FIGURE 2
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
EXISTING GEOMETRY AND CONTROL

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3.3 Existing Traffic Volumes

Existing turning movement counts were conducted at the study intersections on Wednesday, May 8, 2024 during the weekday morning and afternoon peak hours. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. The existing intersection traffic volumes are shown in **Figure 3** with count sheets provided in **Appendix B**.

3.4 Unspecified Development Traffic Growth

It should be noted that the recently adopted 2024 Major Transportation Corridor Plan (MTCP) only provides wide ranges of ADT projections (i.e. 0 – 10,000 vehicles per day) and does not provide more refined ADT projections (i.e. 10,200 vpd); therefore, traffic volume growth projections cannot be calculated with the 2024 MTCP. As a result, the previous 2016 MTCP was utilized to determine the appropriate traffic volumes projections in the area. According to traffic projections from the El Paso County 2016 Major Transportation Corridor Plan Update traffic model, the area surrounding the site is expected to have an average 25-year growth factor of 1.80. This growth factor equates to an annual growth rate of 2.37 percent. Future traffic volume projections and growth rate calculations are provided in **Appendix C**. This annual growth rate was used to calculate future traffic volumes at study area intersections. This annual growth rate was used to estimate short-term 2028 and long-term 2045 traffic volume projections at the key intersections. As mentioned previously, construction plans and improvements are planned prior to buildout of the proposed site for Beacon Lite Road. Additionally, site generated traffic associated with the Monument Ridge East development located on the southeast corner of County Line Road and Monument Hill Road intersection were added directly to the study intersections. With the development of the Monument Ridge East site, Monument Hill Road will be realigned and provide separate eastbound left and right turn lanes, a separate westbound left turn lane, and a separate northbound right turn lane. Therefore, the future roadway geometry and configuration used in the short-term background horizon is shown in **Figure 4.** The calculated background traffic volumes for 2028 and 2045 are shown in **Figure 5** and **Figure 6,** respectively.

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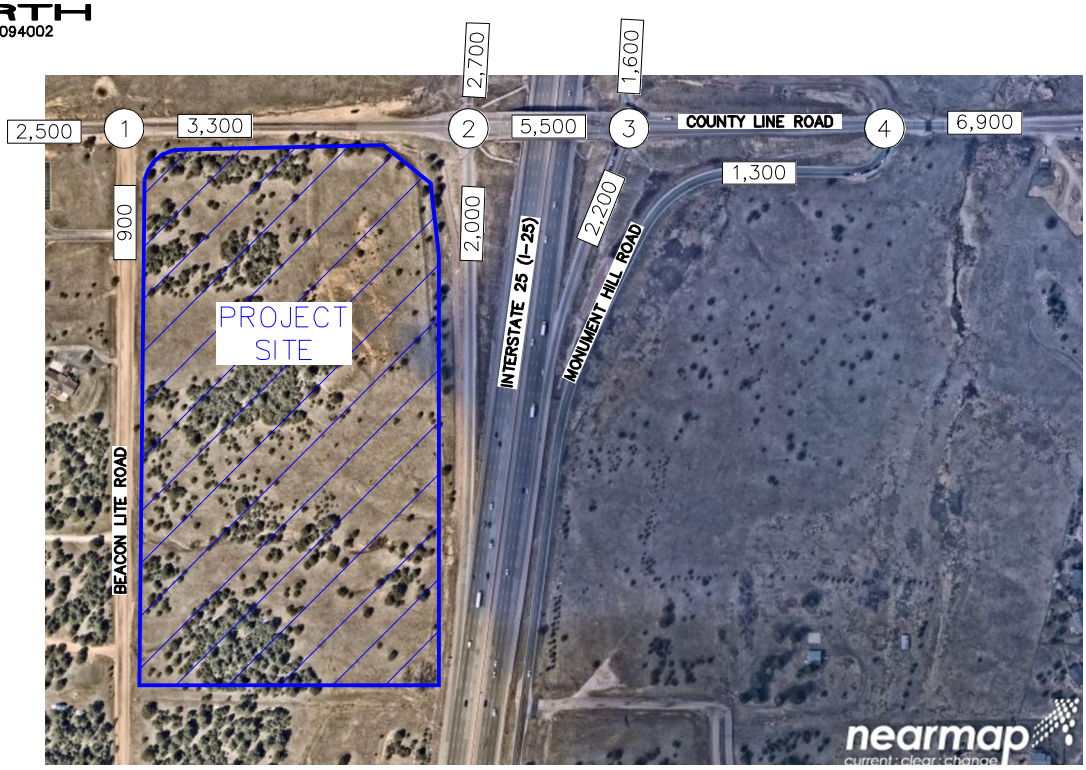

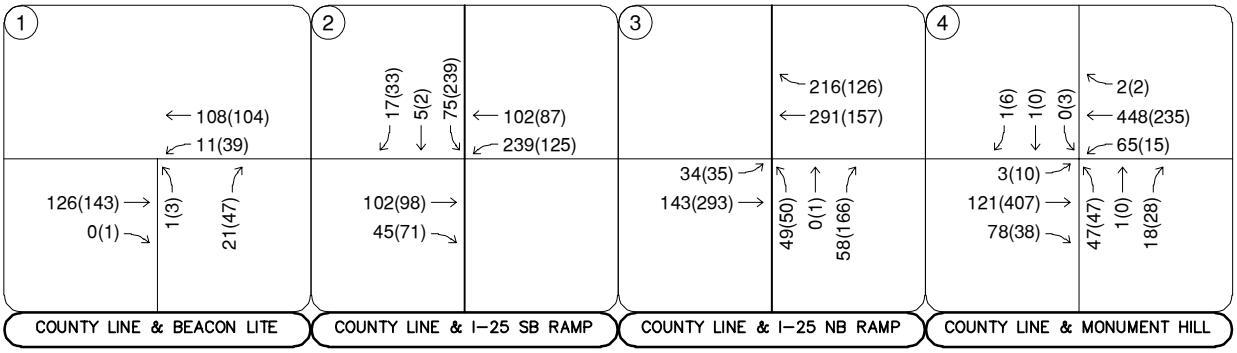

Wed, May 8, 2024
7:15 to 8:15AM
(4:00 to 5:00PM)

Wed, May 8, 2024
7:15 to 8:15AM
(4:30 to 5:30PM)

Wed, May 8, 2024
7:15 to 8:15AM
(4:00 to 5:00PM)

Wed, May 8, 2024
7:00 to 8:00AM
(4:00 to 5:00PM)

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

FIGURE 3
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2024 EXISTING TRAFFIC VOLUMES

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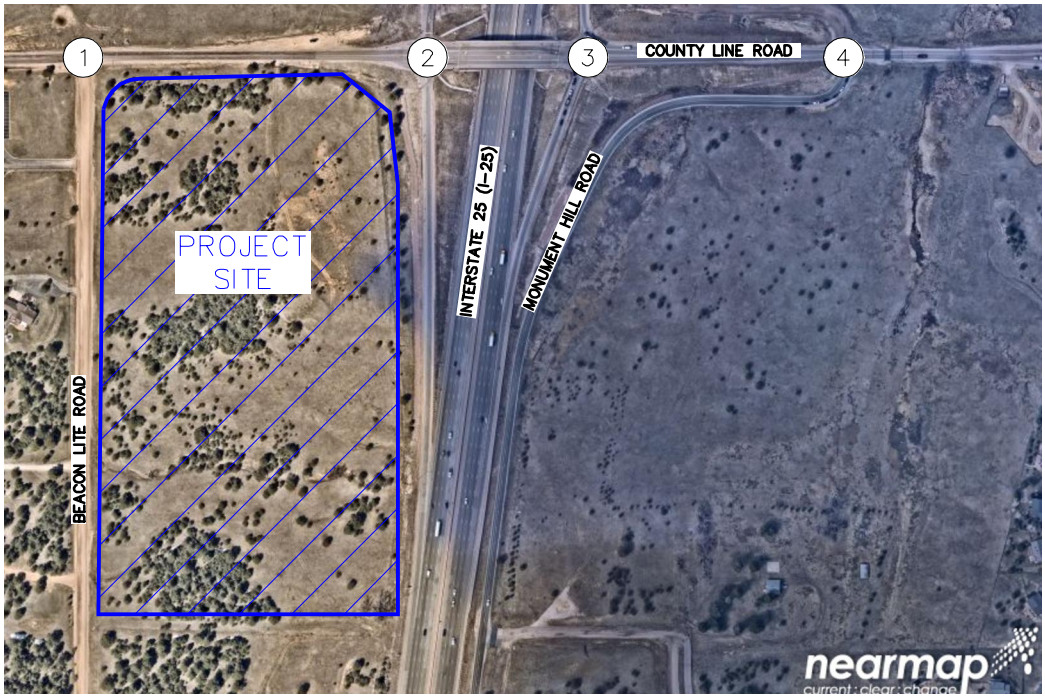

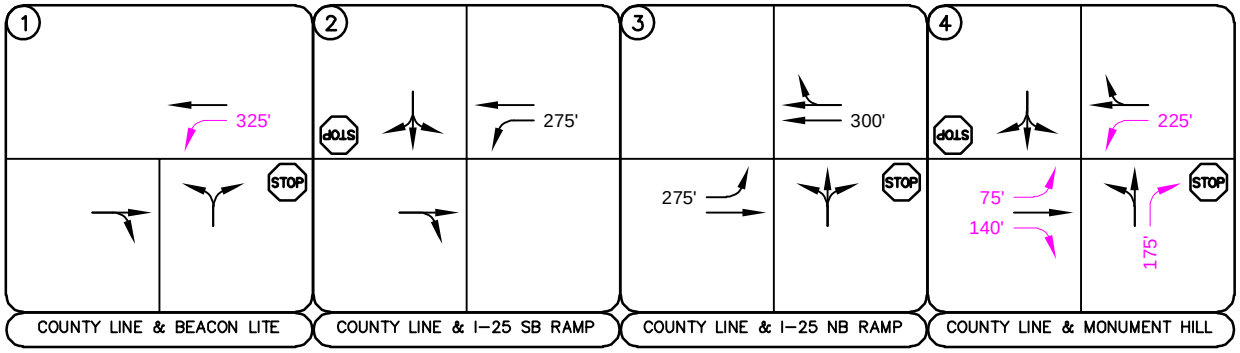

LEGEND

- X — Study Area Key Intersection
- Signalized Intersection
- STOP — Stop Controlled Approach
- Committed Improvement
- 100' — Turn Lane Length (feet)

FIGURE 4
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2028 BACKGROUND
GEOMETRY AND CONTROL

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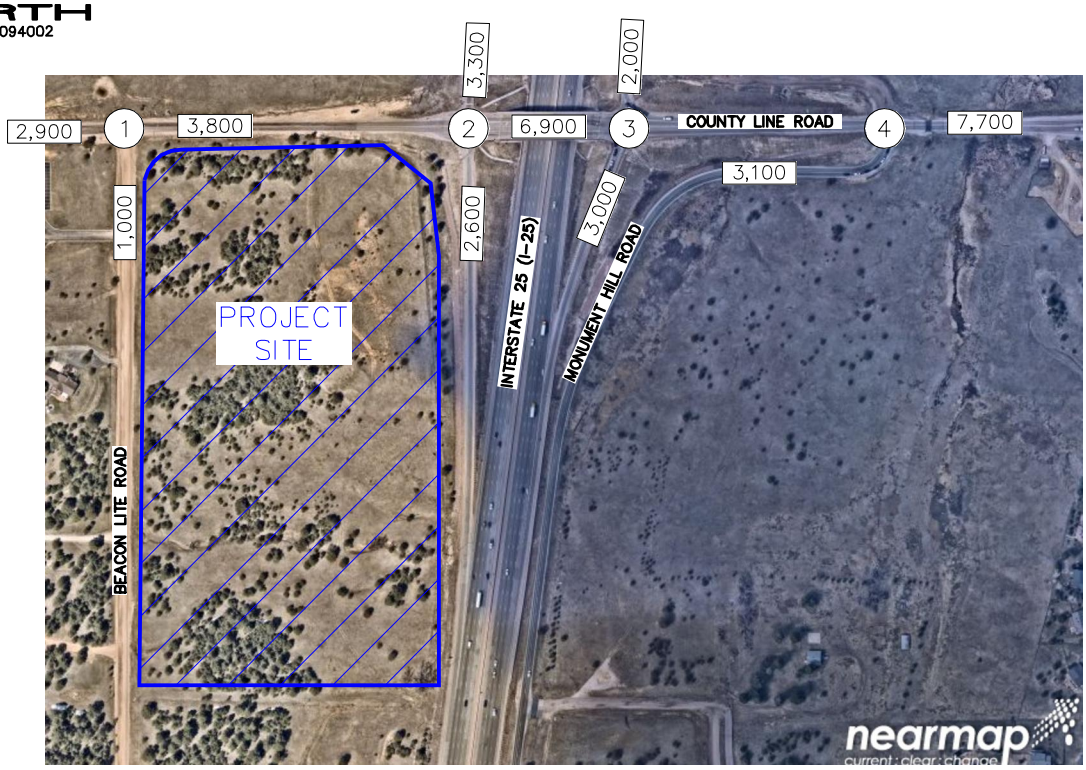

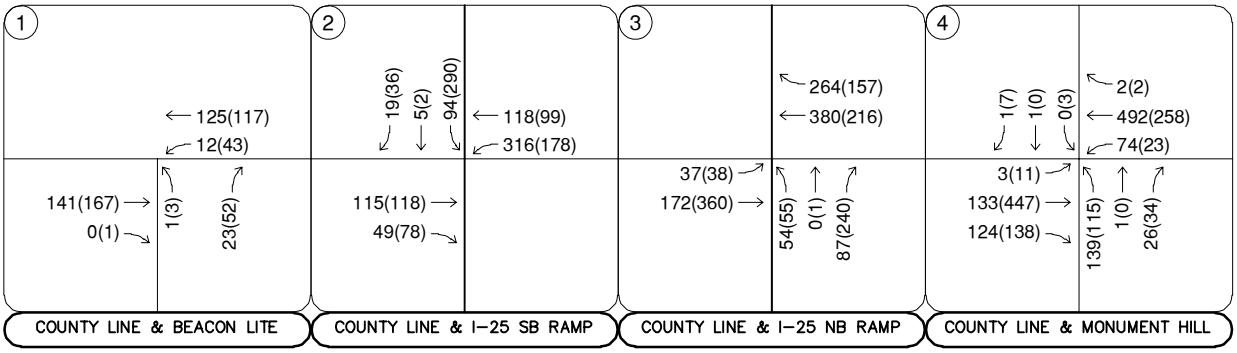

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

FIGURE 5
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2028 BACKGROUND TRAFFIC VOLUMES

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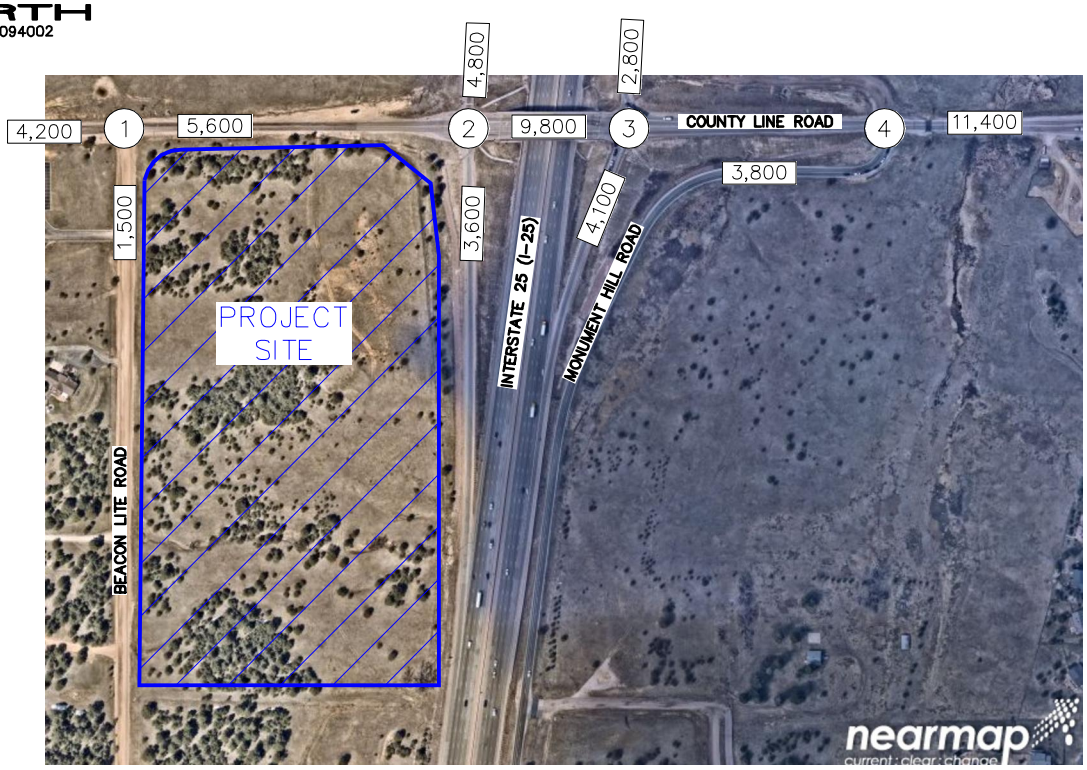

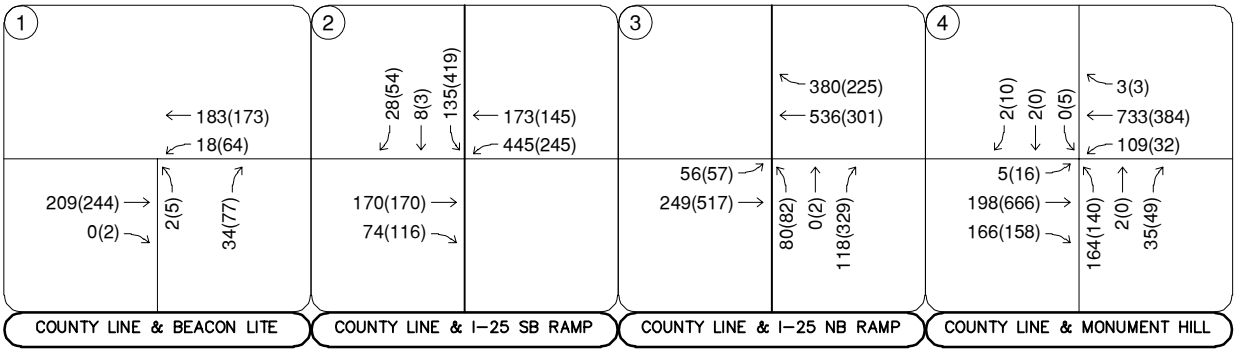

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

FIGURE 6
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2045 BACKGROUND TRAFFIC VOLUMES

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4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, trip generation estimates were developed using trip information from other travel center sites operated by the same ownership as this site. Data collected at 15 sites over two-years old were used in developing average trips rates and to estimate trips for this site. It is understood that the travel center may have abnormal traffic influxes within the first two years but after two-years, the trips to the site will normalize. It is important to note that due to the total number of fueling positions for this development, ITE data was not used for project trip generation estimates. The average number of fueling positions for the applicable use with ITE Trip Generation is 14 fueling positions which is well under the proposed 120 fueling positions for this travel center.

Since the project is a travel center adjacent to an interstate freeway, diverted link trips are expected with the proposed development. These diverted link trips are vehicles already on the roadway network that divert their route to stop at the proposed development while in route to another destination. Diverted trip rates were obtained from user specific data. A diverted link rate of 85 percent was applied for the morning peak hour and the afternoon peak hour for the proposed travel center.

Travel Center Palmer Lake is anticipated to generate a total of approximately 22,150 daily weekday trips with 1,236 of these trips occurring during the morning peak and 1,679 trips occurring during the afternoon peak hour. Accounting for diverted trips, expected net new trips (non diverted trips) to the surrounding street network results in approximately 3,322 new weekday daily trips, of which 185 and 252 new trips are anticipated during the weekday morning and

[1] Institute of Transportation Engineers, *Trip Generation Manual*, Eleventh Edition, Washington DC, 2021.

afternoon peak hours, respectively. **Table 1** summarizes the estimated trip generation for the site. The trip generation worksheets are included in **Appendix D**.

Table 1 – Travel Center Palmer Lake Traffic Generation

Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
New Trips (Non-Diverted Link Trips)	3,322	96	89	185	126	126	252
Diverted Link Trips	18,828	547	504	1,051	714	713	1,427
Total Project Trips	**22,150**	**643**	**593**	**1,236**	**840**	**839**	**1,679**

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The new project trip distribution for the proposed development trips which accounts for 15 percent of the overall trips is illustrated in **Figure 7** while the diverted trip distribution which accounts for 85 percent of the overall trips is illustrated in **Figure 8.** User specific sales transactions indicate that more than 85 percent of customers are not located local to these travel center sites which indicates a high percentage of diverted link trips from the freeway interchanges. The following summarizes the trip distributions for the development separated by new trips NT, diverted link trips (DL), and the weighted average [WA] based on 85 percent being diverted link trips and 15 percent being new trips:

- North Interstate 25: 25% NT (50% DL) [46.25% WA]
- South Interstate 25: 30% NT (50% DL) [47% WA]
- West County Line Road: 20% NT (0% DL) [3% WA]
- East County Line Road: 5% NT (0% DL) [0.75% WA]
- South Beacon Lite: 10% NT (0% DL) [1.5% WA]
- South Monument Hill Road: 10% NT (0% DL) [1.5% WA]

4.3 Traffic Assignment

Traffic assignment was obtained by applying the distributions from **Figure 7** and **Figure 8** to the estimated traffic generation of the project shown in **Table 1**. The total traffic assignment is shown in **Figure 9.** Of note, the County Line Road and Beacon Lite Road intersection is proposed to be realigned as part of project development with the east leg of County Line Road and the south leg of Beacon Lite Road aligning as the major through movements while the west leg of County Line Road will intersect into the new roadway alignment. This will convert a high volume of northbound right turn movements and westbound left turn movements into the major through movements. Therefore, the realignment volumes are provided in Figure 9 for reference.

4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2028 buildout horizon and long-term 2045 twenty-year planning horizon. These total traffic volumes for the study area are illustrated for the 2028 and 2045 horizon years in **Figures 10** and **11**, respectively.

FIGURE 7
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
NEW PROJECT TRIP DISTRIBUTION
(15% OF OVERALL TRIPS)

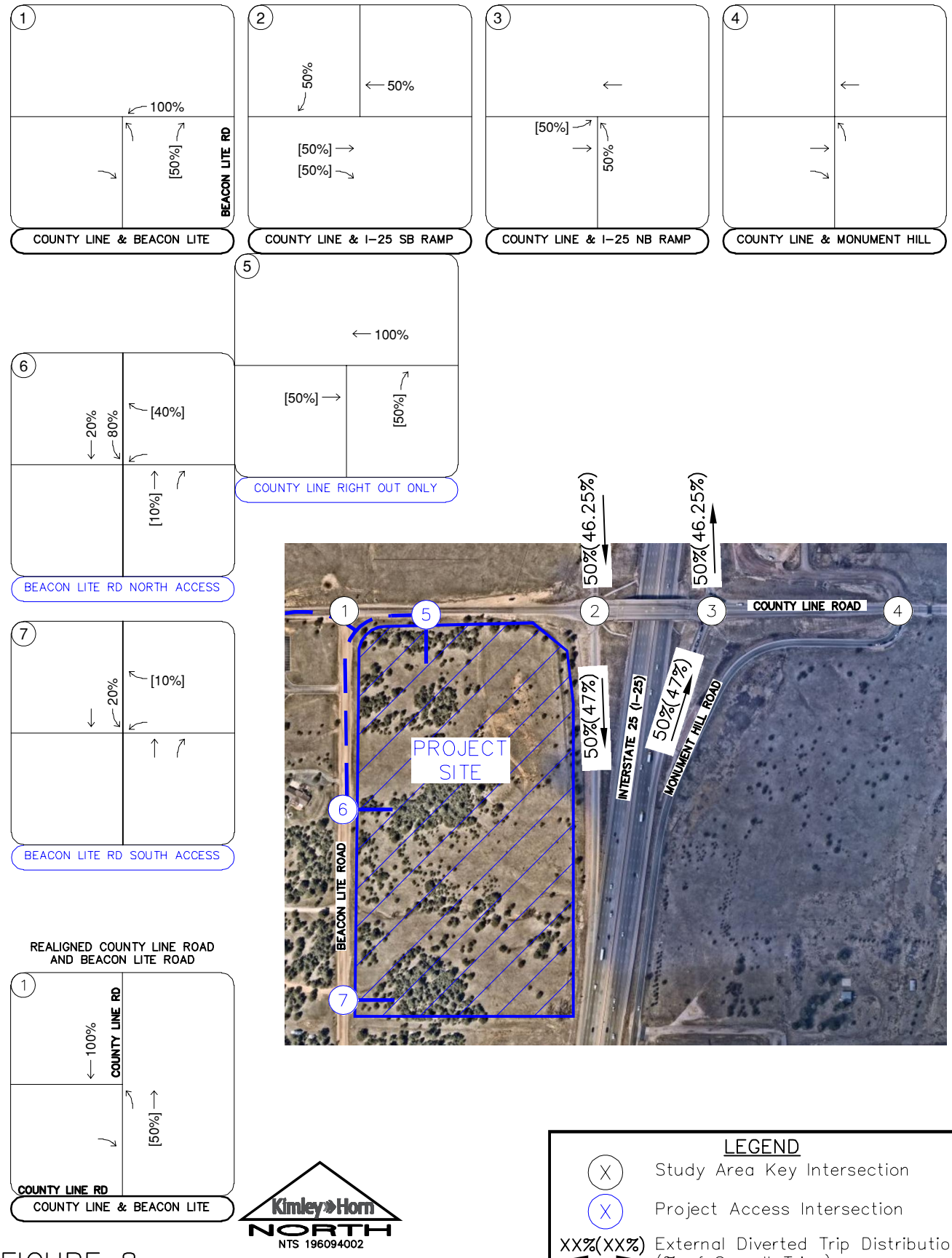


FIGURE 8
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
DIVERTED LINK PROJECT TRIP DISTRIBUTION
(85% OF OVERALL TRIPS)

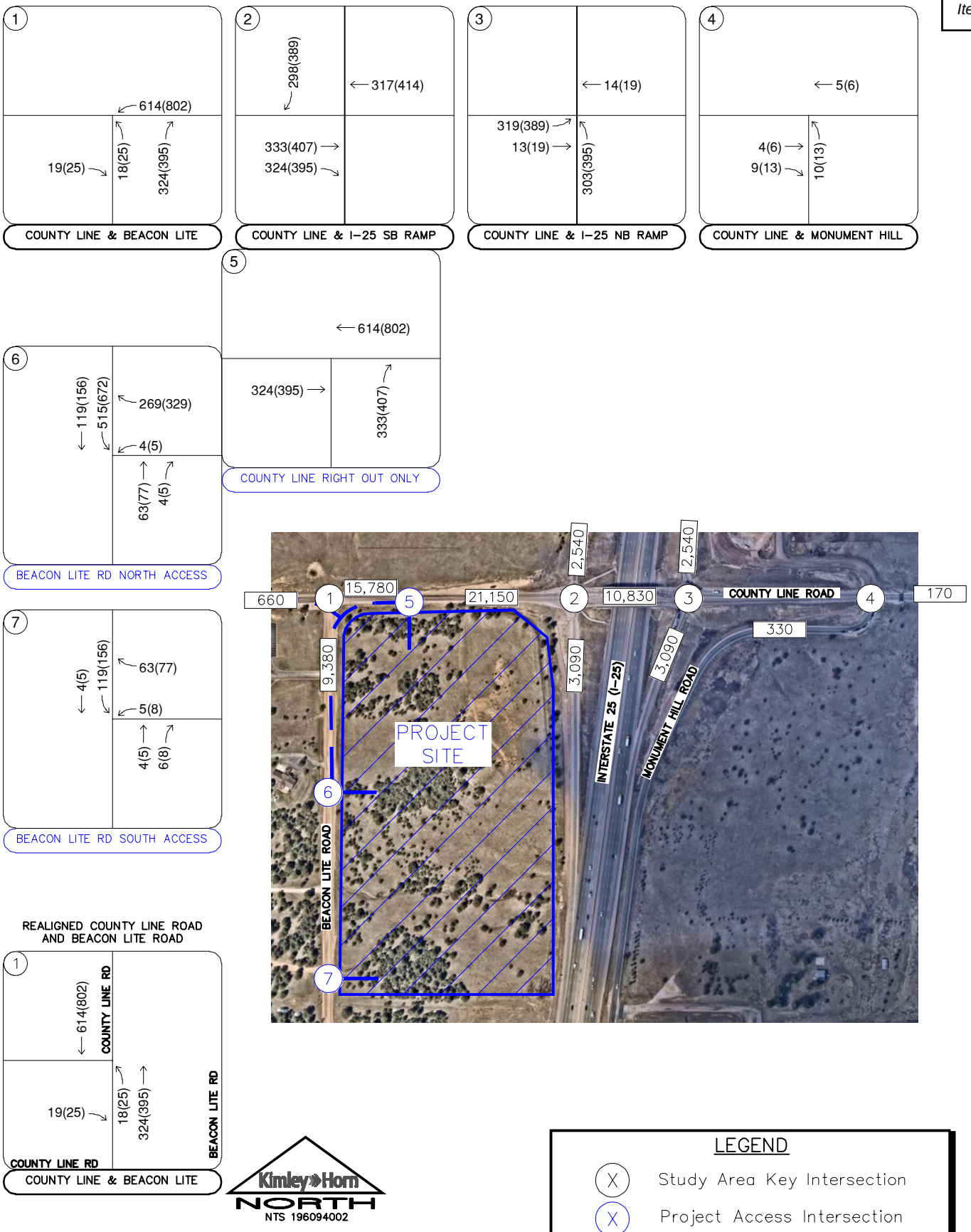
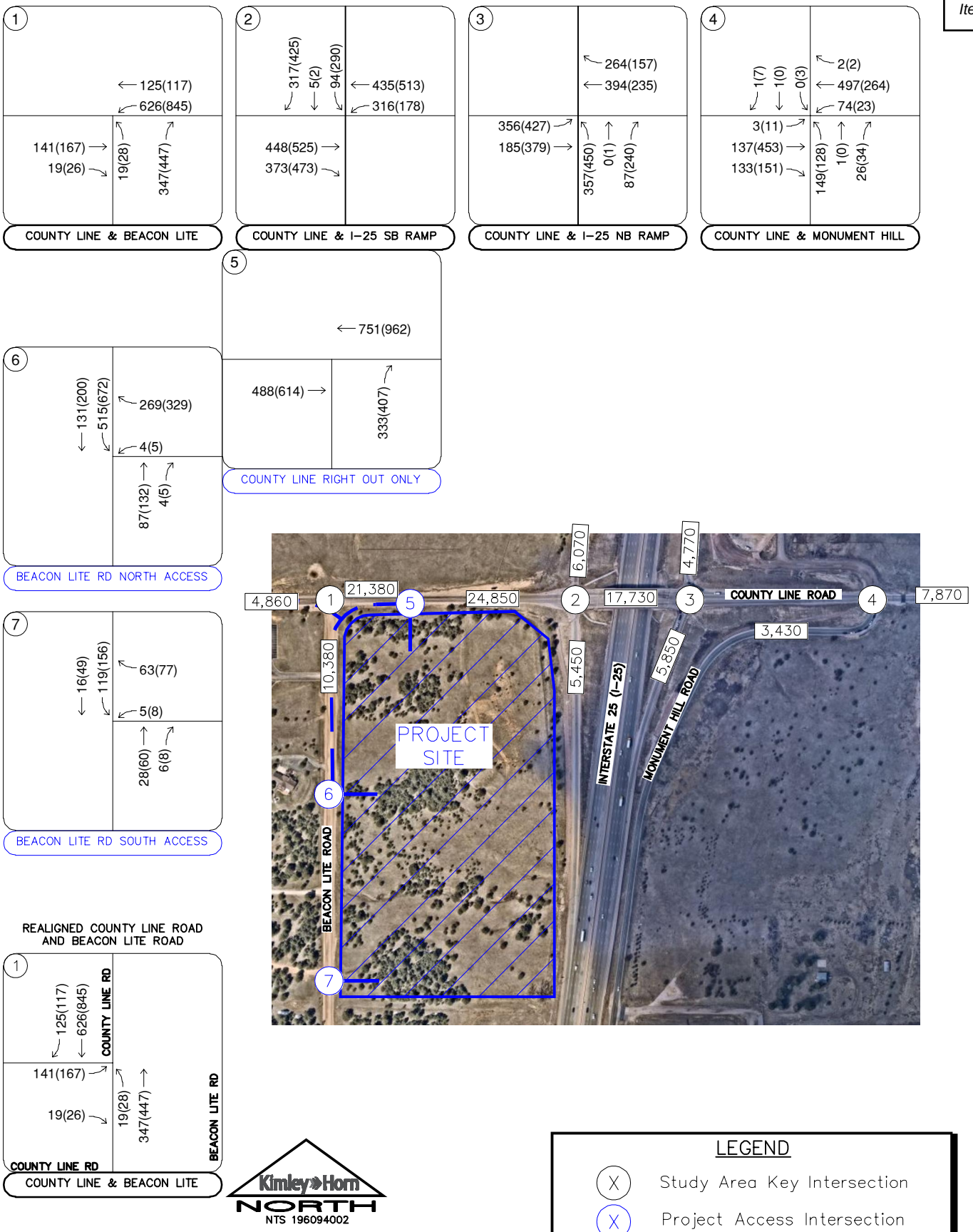


FIGURE 9
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
PROJECT TRAFFIC ASSIGNMENT



LEGEND

- (X) Study Area Key Intersection
- (X) Project Access Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

FIGURE 10
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2028 TOTAL TRAFFIC VOLUMES

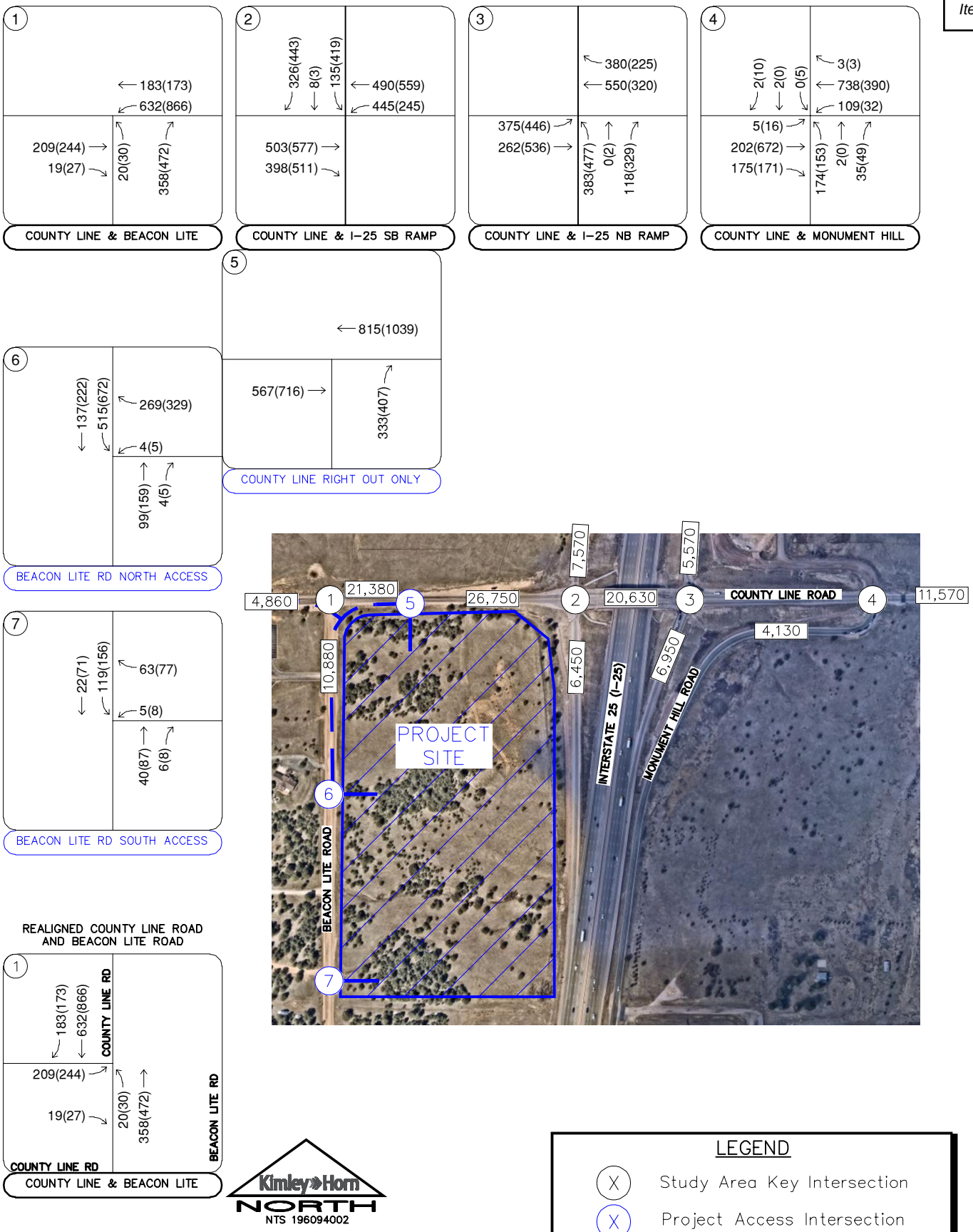


FIGURE 11
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2045 TOTAL TRAFFIC VOLUMES

5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2028 and 2045 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the *Highway Capacity Manual (HCM)*[2].

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). Based on Palmer Lake standards, the threshold for acceptable LOS is not less than LOS D during the peak hours. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for signalized, roundabout, and all-way stop controlled intersections are defined for each approach and for the overall intersection.

[2] Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the operational level of service at the key intersections for the study area are provided in **Appendix E**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2.** Existing peak hour factors were utilized in the existing and 2028 horizon analysis years while the Palmer Lake standard of 0.95 was used for the long-term 2045 horizon analysis. The existing heavy vehicle percentages obtained from the turning movement counts were also used in each horizon year. Synchro traffic analysis software was used to analyze the signalized and unsignalized key intersections for HCM level of service.

Prior to the intersection operational analysis for the I-25 interchange at County Line Road, the Federal Highway Administration (FHWA) Capacity Analysis for Planning of Junctions (CAP-X) 2018 tool was used to determine the optimal (based on volume over capacity only) operational interchange configuration. The CAP-X outputs identified the partial cloverleafs, diverging diamond, diamond, and single point interchanges as potential configurations for this interchange. Additionally, a Colorado Intersection Control Assessment Tool (ICAT) analysis was completed for the southbound and northbound ramp intersections. The CAP-X analysis does not consider existing constraints at the interchange as part of its evaluation. The partial cloverleaf and diverging diamond interchange configurations considered by the CAP-X analysis would require acquisition of significant area of Right of Way and require construction of large retaining walls and/or significant roadway embankment. The highest-ranking interchange configuration, from the CAP-X analysis, that is feasible to construct is the diamond interchange. Additionally, a Minor Interchange Modification Request Memorandum (MIMR) was prepared for CDOT on May 28, 2025 to provide a more comprehensive analysis of the standard diamond interchange, roundabout interchange, and diverging diamond interchange using PTV Vissim microsimulation software. From review of the MIMR, the standard diamond interchange with improvements was accepted by CDOT on July 1, 2025. The Cap-X and excerpts from the MIMR are included in **Appendix H** for reference.

County Line Road and Beacon Lite Road

The T-intersection of County Line Road and Beacon Lite Road is unsignalized and operates with stop control on the northbound approach of Beacon Lite Road. The intersection movements operate acceptably at LOS A during both peak hours under existing conditions. However, as mentioned previously, a westbound left turn lane is part of the improvement plans for Beacon Lite Road. Therefore, the background conditions and the short-term 2028 total conditions was analyzed with the planned improvement. With project traffic, the intersection configuration is not

expected to operate acceptably as a T-intersection under stop control. Therefore, the project is recommending realigning the roadway for the east leg of County Line Road and the south leg of Beacon Lite Road to be the major roadway and the west leg of County Line Road to be the minor roadway. The realigned intersection is recommended to be signalized in order for acceptable intersection operations. With traffic projections, this intersection meets the MUTCD Four Hour Warrant for signalization. The signal warrant analysis worksheet is included in **Appendix F**. Therefore, with signalization, two through lanes are recommended in each direction for the realigned major roadway while separate left and right turn lanes are recommended on the County Line Road minor eastbound approach. Further, a northbound to westbound left turn lane and southbound to westbound right turn lane are recommended at this intersection. With this configuration, the intersection is anticipated to operate at LOS A during both peak hours with signalization. However, a two-lane entry roundabout configuration can also operate acceptably with the project traffic and realignment of the intersection. **Table 3** provides the results of the LOS analysis conducted at this intersection.

Table 3 – County Line Road & Beacon Lite Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Northbound Approach	9.1	A	9.4	A
Westbound Left	7.5	A	7.6	A
2028 Background #				
Northbound Approach	9.3	A	9.6	A
Westbound Left	7.6	A	7.7	A
2028 Background Plus Project #				
Northbound Approach	52.9	F	>300	F
Westbound Left	10.3	B	12.7	B
2028 Background Plus Project *Signalized (Realigned)*	6.5	A	6.3	A
2028 Background Plus Project *Roundabout (Realigned)*	5.6	A	7.0	A
2045 Background #				
Northbound Approach	9.9	A	10.5	B
Westbound Left	7.8	A	7.9	A
2028 Background Plus Project *Signalized (Realigned)*	9.0	A	8.0	A
2028 Background Plus Project *Roundabout (Realigned)*	6.3	A	8.2	A

= Includes WB Left Turn Lane Part of Beacon Lite Road Improvement Plans
Realigned: Signalized with Two NB/SB Through Lanes, Separate EB Left and Right Turn Lanes
Realigned Two by One Roundabout

County Line Road and I-25 Southbound Ramp

The unsignalized intersection of County Line Road and the I-25 Southbound Ramp operates with stop control on the southbound off-ramp. The intersection movements operate acceptably at LOS C or better during both peak hours under existing conditions. With project traffic the intersection the stop control will operate with long vehicle delays. Based on the Minor Interchange Modification

Request (MIMR), a standard diamond interchange configuration with improvements has been accepted by CDOT as the appropriate interchange mitigation.

The standard diamond intersection assumed an eastbound right turn lane, a through lane, and a lane for spill back storage for the downstream eastbound left turn lane, a westbound left turn lane, and two westbound through lanes. The southbound approach was studied as a shared left/through/right and a separate right turn lane. The MUTCD Four Hour Signal Warrant Analysis was completed and identified all four hours meet the volumes to warrant a signal. The signal warrant analysis is provided in **Appendix F.** With signal control and recommended lane configuration, the intersection is expected to operate acceptably with LOS B during both peak hours through the long-term 2045 horizon. **Table 4** provides the results of the LOS analysis conducted at this intersection.

Table 4 – County Line Road & I-25 Southbound Ramp LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Westbound Left	8.1	A	7.8	A
Southbound Approach	21.6	C	19.8	C
2028 Background				
Westbound Left	8.3	A	8.0	A
Southbound Approach	40.8	E	43.4	E
2028 Background Plus Project				
Westbound Left	14.0	B	12.4	B
Southbound Approach	>300	F	>300	F
2028 Background Plus Project *Signalized*	18.8	B	20.5	C
2045 Background				
Northbound Left	9.5	A	8.6	A
Westbound Approach	>300	F	>300	F
2045 Background Plus Project *Signalized*	19.7	B	22.1	C

Signalized with Two EB and WB Through Lanes, Separate EB Right and WB Left Turn Lane, and Separate SB Right Turn Lane

County Line Road and I-25 Northbound Ramp

The unsignalized intersection of County Line Road and the I-25 Northbound Ramp operates with stop control on the northbound off-ramp. The intersection movements operate acceptably at LOS B or better during both peak hours under existing conditions. With project traffic, the northbound approach is anticipated to operate with long vehicle delays. Therefore, similar to the southbound interchange, this intersection is recommended to provide signal control by the buildout horizon based on the results of the MIMR.

The diamond intersection configuration includes an eastbound left turn lane, an eastbound through lane, a spill back westbound through lane, westbound through, a shared westbound through/right turn lane, a separate northbound left, a shared northbound left/through, and a separate northbound right turn lane. The MUTCD Four Hour Signal Warrant Analysis was completed and identified all four hours meet the volumes to warrant a signal. The signal warrant analysis is provided in **Appendix F.** The signalized intersection is anticipated to operate with LOS D or better in 2028 and 2045. **Table 5** provides the results of the LOS analysis conducted at this intersection.

Table 5 – County Line Road & I-25 Northbound Ramp LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Northbound Approach	11.3	B	13.2	B
Eastbound Left	8.8	A	7.9	A
2028 Background				
Northbound Approach	12.2	B	17.1	C
Eastbound Left	9.4	A	8.2	A
2028 Background Plus Project				
Northbound Approach	>300	F	>300	F
Eastbound Left	13.2	B	10.2	A
2028 Background Plus Project *Signalized*	24.3	C	22.0	C
2045 Background				
Northbound Approach	17.8	C	59.5	F
Eastbound Left	11.1	B	8.8	A
2045 Background Plus Project *Signalized*	29.3	C	26.3	C

Signalized with One EB and Two WB Through Lanes, a Separate EB Left, and a Separate NB Left, Shared NB Left/Through, and Separate NB Right

County Line Road and Monument Hill Road

The intersection of County Line Road and Monument Hill Road operates with stop control on the northbound and southbound approaches of this intersection. The intersection movements operate acceptably at LOS C or better during both peak hours under existing conditions. However, with the proposed development on the southeast corner of County Line Road and Monument Hill Road, Monument Ridge East, a separate eastbound left and right turn lane, a separate westbound left turn lane, and a separate northbound right turn lane is planned to be constructed. With project traffic and the background lane geometry, all movements are anticipated to continue operating at an acceptable level of service through the short-term horizon. However, if 2045 volumes are realized, the shared northbound left/through may operate with unacceptable delays. Therefore, as identified in the Monument Ridge East Traffic Study, the intersection has been recommended to signal control. With signalization, the intersection is anticipated to operate at LOS A during both peak hours. Therefore, the project traffic does not necessitate additional changes to the intersection recommendations identified in the Monument Ridge East traffic study. **Table 6** provides the results of the LOS analysis conducted at this intersection.

Table 6 – County Line Road & Monument Hill Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2024 Existing				
Northbound Approach	21.3	C	17.3	C
Eastbound Left	8.6	A	7.8	A
Westbound Left	7.9	A	8.4	A
Southbound Approach	15.9	C	12.4	B
2028 Background #				
Northbound Left/Through	30.3	D	18.5	C
Northbound Right	9.2	A	11.6	B
Eastbound Left	8.7	A	7.8	A
Westbound Left	8.1	A	8.9	A
Southbound Approach	14.8	B	11.7	B
2028 Background Plus Project #				
Northbound Left/Through	33.0	D	19.5	C
Northbound Right	9.2	A	11.7	B
Eastbound Left	8.8	A	7.9	A
Westbound Left	8.1	A	9.0	A
Southbound Approach	14.9	B	11.8	B
2045 Background #				
Northbound Left/Through	168.1	F	35.7	E
Northbound Right	9.8	A	14.7	B
Eastbound Left	9.8	A	8.2	A
Westbound Left	8.6	A	10.0	A
Southbound Approach	20.6	C	15.2	C
2045 Background Plus Project #$	8.9	A	8.5	A

= Includes background study improvements: Separate EBL, EBR, WBL, and NBR; $=Signalized

Project Accesses

With completion of the Travel Center Palmer Lake project, an outbound only access along County Line Road and two full movement access along Beacon Lite Road will be constructed. The Palmer Divide right-out only access is recommended to provide a R1-1 “STOP” sign and a R3-1 No Left Turn sign on the exiting approach while the exiting approach should also be oriented to only allow right-turn movements. Of note, the heavy inbound traffic projected for the site is recommended to provide dual southbound left turn lanes into the project site at the Beacon Lite Road North Access. The westbound right movement of this north access along Beacon Lite Road will operate with free flow movements by providing a westbound to northbound acceleration lane. Therefore, to accommodate dual southbound left turn lanes, the intersection will need to be signalized. Of note, the traffic volumes are not anticipated to warrant signalization, but signal control could be provided if supported by the Town of Palmer Lake due to the high volume of southbound left turn movements and dual left turn lanes should not be implemented with stop control. The southern access is recommended to operate with stop control on the westbound approach, exiting the site. The westbound approach of this southern access operates acceptably with a shared left/right turn lane and should operate under stop control with a R1-1 “STOP” sign installed on the exiting approach. A southbound left turn lane is recommended to be provided for entering the site at the south access. **Table 7** provides the results of the level of service for the project access intersections. As shown in the table, the project access intersections are anticipated to have all movements operating with acceptable LOS C or better during the peak hours in both the buildout year 2028 and the 2045 long-term horizons.

Table 7 – Project Access Level of Service Results

Intersection	2028 Total				2045 Total			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS
County Line Rd RO Access								
Northbound Approach	14.6	A	20.7	C	15.9	C	24.5	C
Beacon Lite North Access	1.4	A	1.5	A	1.4	A	1.6	A
Beacon Lite South Access								
Westbound Approach	8.9	A	9.4	A	9.0	A	9.6	B
Southbound Left	7.5	A	7.7	A	7.5	A	7.7	A

5.3 Palmer Lake Turn Lane Requirement Analysis

The Town of Palmer Lake defaults to El Paso County Engineering Criteria Manual (ECM) to determine if left and right turn lanes are warranted along Beacon Lite Road at the project accesses. County Line Road is classified as a minor arterial roadway while Beacon Lite Road is a collector roadway. According to ECM guidelines for minor arterial and lower classification roadways, a left turn lane is required for any access with a projected peak hour left turning volume of 25 vehicles per hour or greater, a right turn lane is required for any access with a projected peak hour right turning volume of 50 vehicles per hour or greater, and a right turn acceleration lane is generally not required. Based on the Beacon Lite Road providing a posted speed limit of 35 miles per hour, the turn lane requirements for a design speed of 40 miles per hour are as follows:

Beacon Lite Road North Access (#6)

- A southbound left turn lane **is** warranted based on projected 2028 background plus project traffic volumes being 672 southbound left turns during the peak hour and the threshold being 25 vph. With 672 southbound left turn movements projected, southbound dual left turn lanes are recommended at the north access along Beacon Lite Road. Based on the 40 mile per hour design speed, the left turn lane length requirements are 490 feet of lane length per lane (335 feet of storage per lane plus 155 feet of deceleration per lane) plus a 160-foot taper. It is recommended that the inside left turn lane provide 325 feet of length plus a 160-foot taper while the outside left turn be a continuous lane extending lane from the proposed roundabout at the County Line Road and Beacon Lite Road intersection which would drop as a forced left turn lane. Therefore, the 980 feet of left turn lane length would be accommodated by 325 feet from the inside lane and 655 feet from the continuous left turn lane extending from the proposed roundabout to the north. Of note, the 95th percentile vehicle queues are calculated with 175 feet per lane and the vehicles will not be traveling 40 miles per hour when exiting the proposed roundabout to the north; therefore, the required turn lane length requirements which are being accommodated should be conservative.
- A northbound right turn lane **is not** warranted based on projected 2028 background plus project traffic volumes being five (5) northbound right turns during the peak hour and the threshold being 50 vph.

Beacon Lite Road South Access (#7)

- A southbound left turn lane **is** warranted based on projected 2028 background plus project traffic volumes being 156 southbound left turns during the peak hour and the threshold being 25 vph. Based on the 40 mile per hour design speed, the length requirements are 150 feet of storage plus 155 feet of deceleration plus a 160-foot taper. Therefore, the southbound left turn lane is recommended to provide at least 305 feet of length plus a 160-foot taper.
- A northbound right turn lane **is not** warranted based on projected 2028 background plus project traffic volumes being eight (8) northbound right turns during the peak hour and the threshold being 50 vph.

5.4 Vehicle Queuing Analysis

A vehicle queuing analysis was conducted for the study area intersections. The queuing analysis was performed using Synchro presenting the results of the 95th percentile queue lengths. Results are shown in the following **Table 8** with calculations provided within the level of service operational sheets of **Appendix E** for unsignalized intersections and **Appendix G** for signalized intersections. Of note, the minimum reported queue length is reported as 25 feet.

Table 8 – Turn Lane Queuing Analysis Results

Intersection Turn Lane	Existing Turn Lane Length	2028 Calculated Queue	2028 Recommended Length	2045 Calculated Queue	2045 Recommended Length
County Line & Beacon Lite (#1)					
Signalized					
Eastbound Left	DNE	155’	**C**	207’	**C**
Eastbound Right	DNE	25’	**155’+160’T**	25’	**155’+160’T**
Northbound Left	DNE	25’	**155’+160’T**	25’	**155’+160’T**
Southbound Right	DNE	25’	**155’+160’T**	25’	**155’+160’T**
County Line & I-25 SB (#2)					
Signalized					
Eastbound Right	DNE	25’	**C**	25’	**C**
Westbound Left	275’	179’	275’+**300’**	275’	275’+**300’**
County Line & I-25 NB (#3)					
Signalized					
Eastbound Left	275’	232’	275’+**C**	308’	**275’+C**
Northbound Left	DNE	175’	**C**	186’	**C**
Northbound Right	DNE	49’	**300’**	56’	**300’**
County Line & Monument Hill (#4)					
Eastbound Left	DNE	25’	**75’**	25’	**75’**
Eastbound Right	DNE	25’	**140’**	25’	**140’**
Westbound Left	DNE	25’	**225’**	42’	**225’**
Northbound Right	DNE	25’	**175’**	25’	**175’**
Beacon Lite North Access (#6)					
Westbound Left	DNE	25’	**C**	25’	**C**
Westbound Right	DNE	25’	**C**	25’	**C**
Southbound Left	DNE	161’ DL	**330’+160’T/C**	157’ DL	**330’+160’T/C**
Beacon Lite South Access (#7)					
Southbound Left	DNE	25’	**255’+160’T**	25’	**255’+160’T**

DNE = Does Not Exist; C = Continuous; DL = Dual Left Turn Lanes; T = Taper; **Blue** Text = Recommendation; * = contained by external spillback lane

The vehicle queues are all anticipated to remain within the existing or recommended turn lane lengths through 2045. Of note, the eastbound left turn lane at the I-25 North Ramp intersection provides an additional eastbound through lane for spillback queue. Likewise, the westbound left turn lane at the I-25 South Ramp intersection will provide an additional 300 feet of length for spillback queue.

5.5 Access Spacing Requirements and Internal Roadway Classifications

According to El Paso County 2024 Major Transportation Corridors Plan Update, County Line Road is classified as a minor arterial roadway and Beacon Lite Road is classified as a collector roadway. The following identifies the intersection spacing requirements for the access intersections associated with the project:

County Line Road Right-Out Only Access

The proposed right-out is located approximately 500 feet west of the I-25 Southbound Ramp intersection (measured right-of-way line to centerline). Coordination with CDOT and the Town of Palmer Lake is underway to allow a right-out only driveway access to County Line Road.

Beacon Lite North Access (Full)

The proposed full movement North Access is located approximately 740 feet south of County Line Road and Beacon Lite Road intersection (measured centerline to centerline). According to the El Paso County Engineering Criteria Manual Table 2-35 and a posted limit of 35 mph, access for a four-lane roadway should be located a minimum of 420 feet south of County Line Road. Therefore, the proposed access location meets spacing requirements. Of note, coordination with the Town of Palmer Lake is ongoing.

Beacon Lite South Access (Full)

The proposed full movement South Access is located approximately 550 feet south of the north access intersection (measured centerline to centerline) and 750 feet north of Bricker Road. According to the El Paso County Engineering Criteria Manual and posted speed limit of 35 mph, access spacing off a two-lane roadway should provide a minimum of 350 feet south of the north access. Therefore, the proposed access location meets El Paso County's spacing requirements. Of note, coordination with the Town of Palmer Lake is ongoing.

County Line Road is a four-lane urban principal arterial roadway between the north access and the I-25 Southbound Ramp with an ADT of 24,850. County Line Road west of Beacon Lite Road and east of I-25 Northbound Ramp meets the ADT threshold of 20,000 vehicles per day for a two-lane rural minor arterial roadway. Likewise, Beacon Lite Road meets the average daily traffic threshold volumes of 10,000 vehicles per hour south of the project's north access as a collector with 2,790 daily vehicles.

5.6 Sight Distance Evaluation

It is recommended that sight triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. Landscaping and objects within sight triangles must not obstruct drivers' views of the adjacent travel lanes. El Paso County Engineering Criteria Manual (ECM) design intersection sight distances for left turn and right turning from stop were evaluated at the unsignalized project accesses along County Line Road and Beacon Lite Road. The following identifies sight distance requirements for the access intersections associated with the project:

County Line Road Right-Out Only Access

Based on ECM Table 2-35: Entering Sight Distance with a speed of 35 mph, the sight distance for a vehicle turning right from stop is 525 feet for a single unit truck design vehicle. Therefore, all obstructions for right turning vehicles from stop should be clear to the left within the triangle created with a vertex point located 10 feet from the edge of the major road traveled way and a line-of-sight distance of 525 feet located in the middle of the eastbound through lane along County Line Road. Therefore, it is believed that the proposed access along County Line Road is appropriately located to provide necessary sight distances.

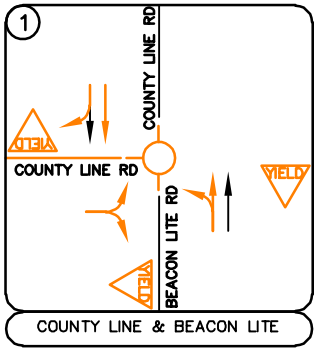
Beacon Lite Road South Access

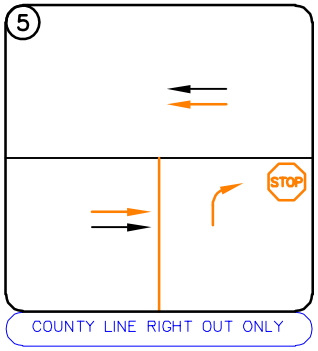
With El Paso County standards and a roadway speed of 35 miles per hour along Beacon Lite Road (consistent with ECM Table 2-35, speed limit of 35 mph), the entering sight distance for a vehicle turning left and right from stop is 525 feet for a single unit truck design vehicle. Therefore, all obstructions for left turning vehicles from stop should be clear to the right within the triangle created with a vertex point located 10 feet from the edge of the major road traveled way and a line-of-sight distance of 525 feet located in the middle of the southbound through lane along Beacon Lite Road. Likewise, all obstructions for right turning vehicles from stop should be clear to the left within the triangle created with a vertex point located 10 feet from the edge of the major road traveled way and a line-of-sight distance of 525 feet located in the middle of the northbound through lane along Beacon Lite Road. Therefore, it is believed that the proposed access along Beacon Lite Road is appropriately located to provide necessary sight distances.

5.7 Improvement Summary

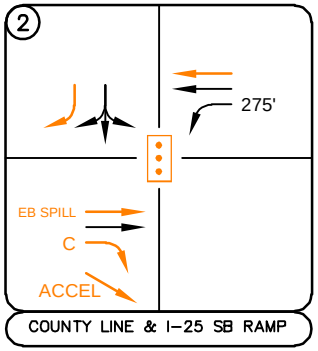
Based on the results of the intersection operational and vehicle queuing analysis, the key intersections recommended improvements and control for the 2028 horizon are shown in **Figure 12** while the key intersections recommended improvements and control for the 2045 horizon are shown in **Figure 13**.

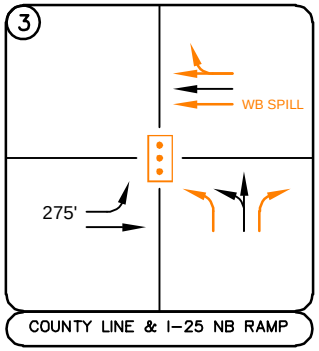
ROUNDABOUT

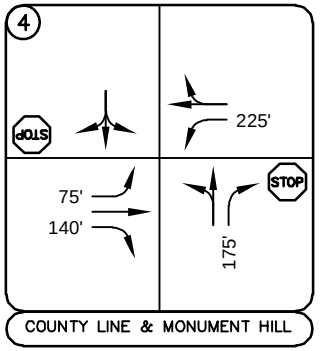


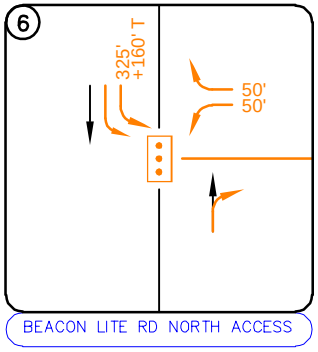


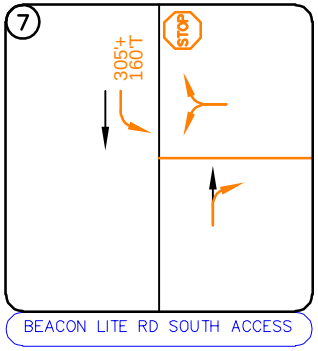
TRADITIONAL INTERCHANGE

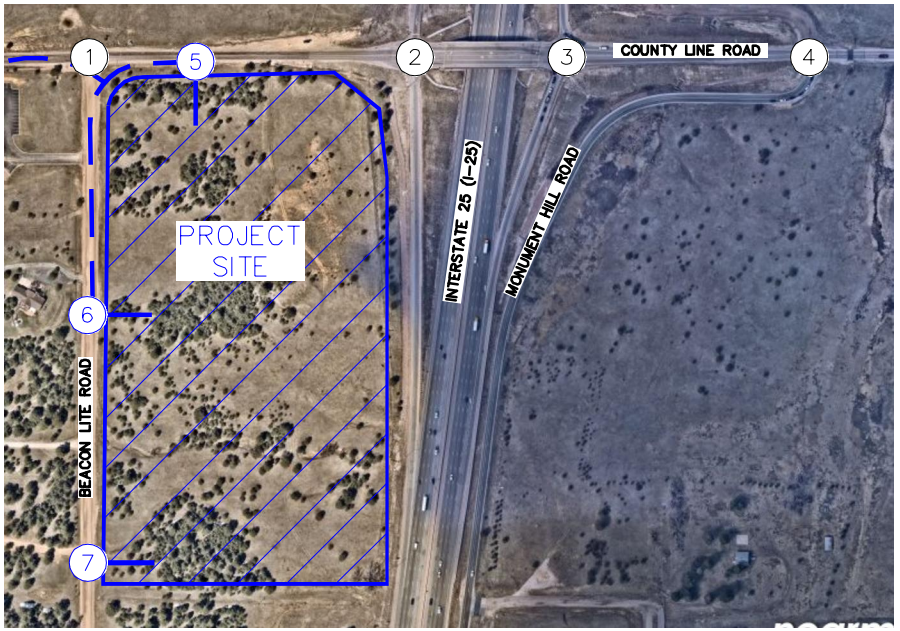




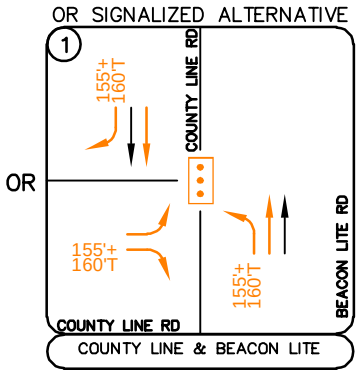








OR SIGNALIZED ALTERNATIVE



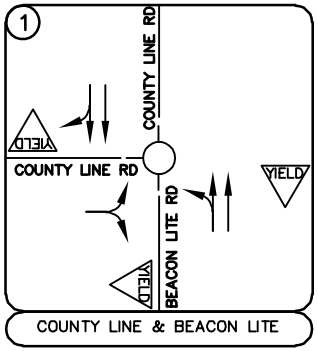
LEGEND

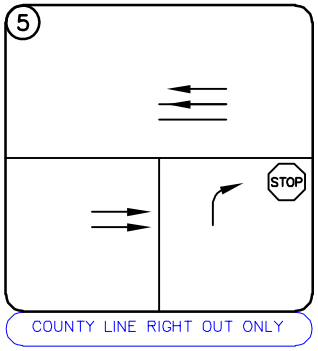
- X — Study Area Key Intersection
- X — Project Access Intersection
- Roundabout
- YIELD — Yield Controlled Approach
- Signalized Intersection
- STOP — Stop Controlled Approach
- Improvement
- 100' Turn Lane Length (feet)

FIGURE 12
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2028 RECOMMENDED GEOMETRY AND CONTROL

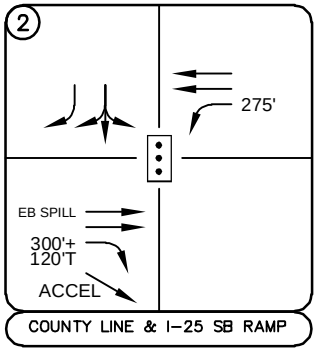
Kimley»Horn NORTH
NTS 196094002

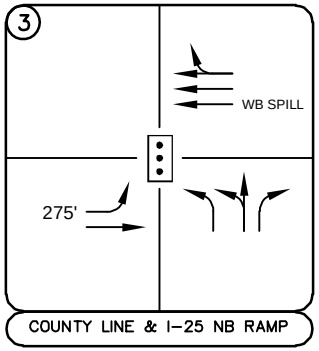
ROUNDABOUT

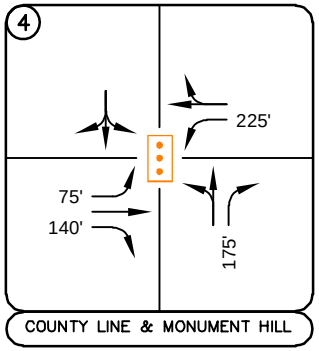


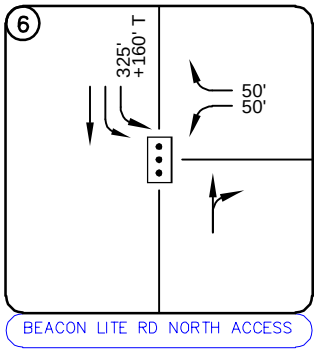


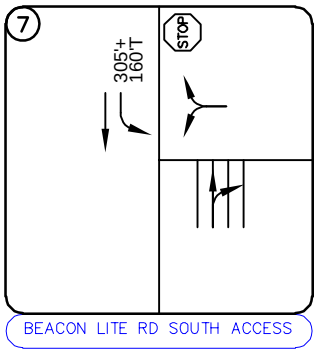
TRADITIONAL INTERCHANGE

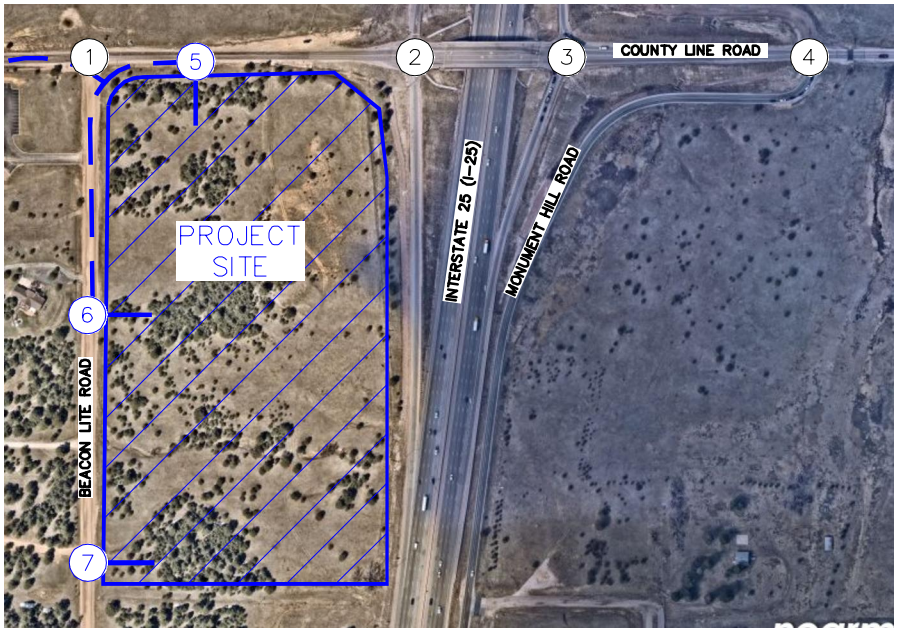




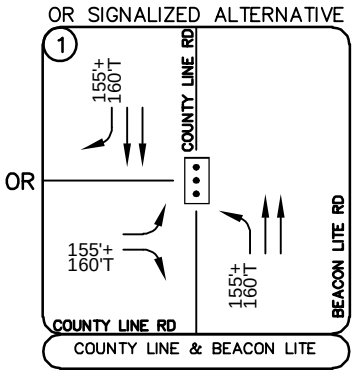








OR SIGNALIZED ALTERNATIVE



LEGEND

- Study Area Key Intersection
- Project Access Intersection
- Roundabout
- Yield Controlled Approach
- Signalized Intersection
- Stop Controlled Approach
- Improvement
- 100' Turn Lane Length (feet)

FIGURE 13
TRAVEL CENTER PALMER LAKE
PALMER LAKE, COLORADO
2045 RECOMMENDED GEOMETRY AND CONTROL

Kimley»Horn NORTH
NTS 196094002

Kimley»Horn

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes Travel Center Palmer Lake will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

2028 Recommendations

- With construction of the project, the I-25 and County Line Road interchange ramp terminals will need to be converted to a signal. Traffic signals are the preferred intersection control recommended by this study. In order to utilize the existing bridge deck (approximately 72 feet), a traditional diamond interchange can provide two westbound through lanes, a westbound left turn lane, an eastbound left turn lane, and a single eastbound through lane between the two ramps at 12 feet per lane. Additionally, the northbound off-ramp is recommended to provide three approach lanes including a separate left turn lane, a shared left turn/through lane, and right turn lane while the southbound off-ramp is recommended to provide two approach lanes including a lane shared for all movements and a separate right turn lane. The left turn lanes onto the I-25 on-ramps will each provide a spillback lane for additional queues.

- The County Line Road and Beacon Lite Road (#1) intersection is recommended to be realigned by converting the major through movements to the existing east (County Line Road) and south (Beacon Lite Road) legs of this intersection while the west leg of County Line Road will intersect into the new roadway alignment. This will convert a high volume of northbound right turn movements and westbound left turn movements into the major through movements. This realigned intersection will either need to be signalized or provide roundabout control. As a signal, the west leg minor approach is recommended to provide a separate left and right turn lane while the major approaches would provide two northbound and southbound through lanes, a separate northbound left turn lane, and a separate right turn lane. However, as a roundabout, the northbound/southbound realigned roadway is recommended to provide two approach lanes, and the eastbound approach is recommended to provide a single lane for shared movements.

- Two full movement project accesses are being proposed along Beacon Lite Road while one right-out only access is proposed along County Line Road. The following summarizes the recommendations of the three proposed project accesses:
  - A right-out only access along County Line Road (#5) is recommended to provide a R1-1 "STOP" sign on the northbound approach with a R3-1 No Left Turn sign below the R1-1 sign. The exiting approach of this access should also be oriented to only allow exiting right turn movements.
  - The north access (#6) along Beacon Lite Road should be signalized as a T-intersection. Dual southbound left turn lanes are identified by the project team to be provided due to the high volume of entering left turn movements. The inside left turn lane is recommended to provide a length of 325 feet plus a 160-foot taper while the outside left turn lane will be continuous drop lane from the inside through lane. The westbound approach will provide separate left and right turn lanes with the right turn movement operating under free-flowing conditions.
  - A full movement access (#7) is proposed at the south end of the site along Beacon Lite Road. The intersection can operate with stop control on the westbound approach. A southbound left turn lane is recommended to be installed to provide a length of 305 feet plus a 160-foot taper.

- The church on the southwest corner of the County Line Road and Beacon Lite Road intersection currently has one full movement access along Beacon Lite Road and no other points of access. This access to the church along Beacon Lite Road is proposed to be restricted to right-in/right-out movements due to the proximity to the future realigned intersection of County Line Road and Beacon Lite Road. Therefore, the project team will coordinate with the church and the Town of Palmer Lake regarding the possibility of incorporating a second point of access along County Line Road or Bull Pine Point for the church.

- Additionally, site generated traffic associated with the Monument Ridge East development located on the southeast corner of County Line Road and Monument Hill Road intersection were added directly to the study intersections. With the development of the Monument Ridge East site, Monument Hill Road will be realigned and provide separate eastbound left and right turn lanes, a separate westbound left turn lane, and a separate northbound right turn lane.

2045 Recommendations

- As identified in other traffic studies, the County Line Road and Monument Hill Road intersection is expected to be signalized in the long-term horizon.

General Recommendations

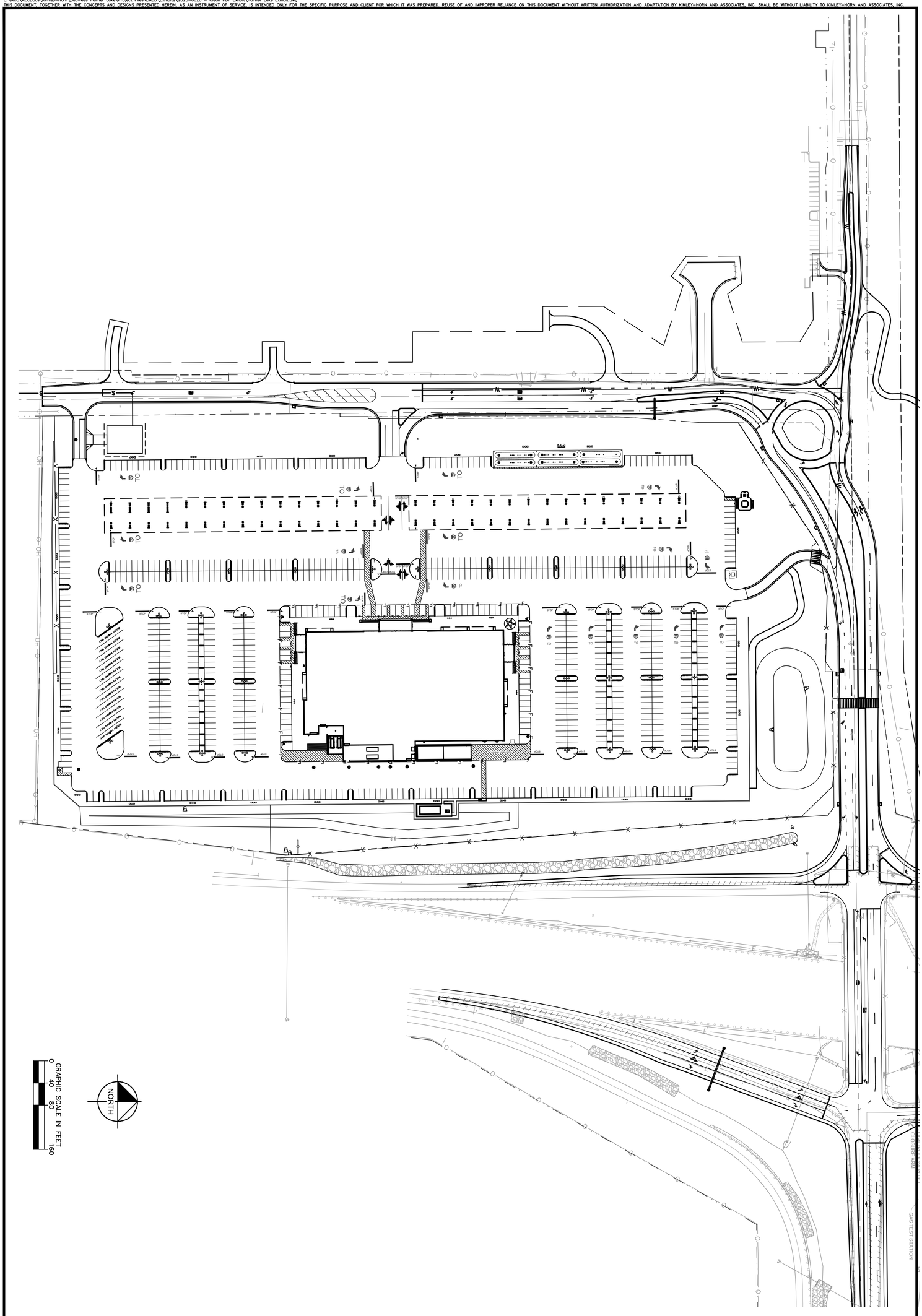
- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the Palmer Lake, CDOT, and the Manual on Uniform Traffic Control Devices (MUTCD) – 11th Edition, 2023.

APPENDICES

APPENDIX A

Conceptual Site Plan

C:\ACC\ACCDocs\Kimley-Horn\Buc-ees Palmer Lake\Project Files\CADD\Exhibits\2025-0626 - Clean PDF Exhibit\Palmer Lake Exhibit.dwg
THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



SHEET

BUC-EE'S PALMER LAKE
PALMER LAKE, COLORADO

DESIGNED BY: KEW
DRAWN BY: CM
CHECKED BY: KEW
DATE: 7/8/2025

Kimley»Horn
©2025 KIMLEY-HORN AND ASSOCIATES, INC.
6200 South Syracuse Way, Suite 300
Greenwood Village, Colorado 80111 (303) 228-2300

NO.	REVISION	BY	DATE
1	REVISION 1	KEW	07/08/2025
	1ST SUBMITTAL	KEW	04/24/2025

APPENDIX B

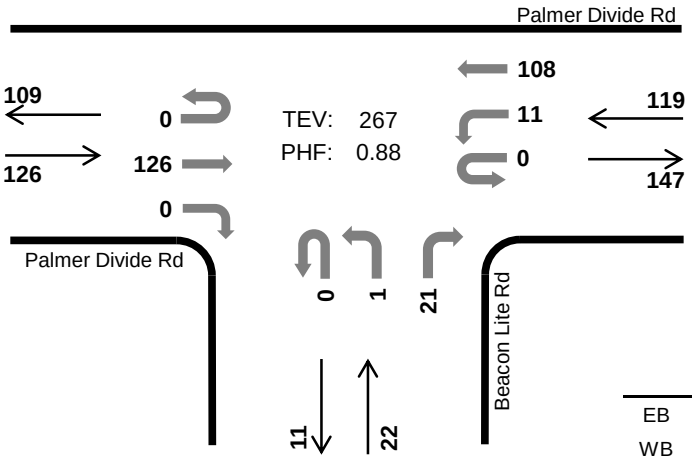
Intersection Count Sheets

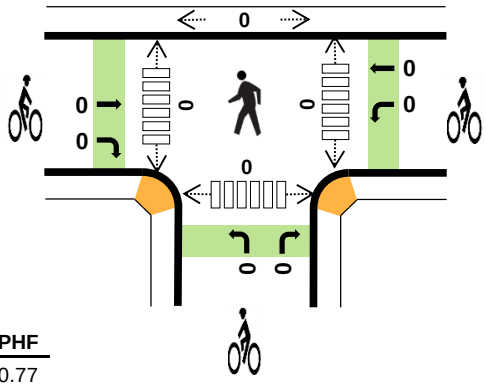
Beacon Lite Rd
Palmer Divide Rd

N

Peak Hour

Date: 05/08/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM





	HV %:	PHF
EB	0.0%	0.77
WB	4.2%	0.68
NB	0.0%	0.50
SB	-	-
TOTAL	1.9%	0.88

Two-Hour Count Summaries

Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				Beacon Lite Rd Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	22	0	0	1	16	0	0	0	0	6	0	0	0	0	45	0
7:15 AM		**0**	**0**	**41**	**0**	**0**	**1**	**20**	**0**	**0**	**1**	**0**	**10**	**0**	**0**	**0**	**0**	**73**	0
7:30 AM		**0**	**0**	**41**	**0**	**0**	**3**	**26**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**76**	0
7:45 AM		**0**	**0**	**23**	**0**	**0**	**4**	**40**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**71**	265
8:00 AM		**0**	**0**	**21**	**0**	**0**	**3**	**22**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**47**	**267**
8:15 AM		0	0	22	1	0	4	25	0	0	0	0	9	0	0	0	0	61	255
8:30 AM		0	0	17	3	0	3	26	0	0	0	0	3	0	0	0	0	52	231
8:45 AM		0	0	29	1	0	5	17	0	0	0	0	12	0	0	0	0	64	224
Count Total		0	0	216	5	0	24	192	0	0	1	0	51	0	0	0	0	489	0
Peak Hour	**All**	**0**	**0**	**126**	**0**	**0**	**11**	**108**	**0**	**0**	**1**	**0**	**21**	**0**	**0**	**0**	**0**	**267**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**
	HV%	**-**	**-**	**0%**	**-**	**-**	**0%**	**5%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	1	1	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	7	6	1	0	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**0**	**5**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

TJ Wethington
720-646-1008

tj.wethington@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**
8:15 AM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	7
8:30 AM	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	3	10
8:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	10
Count Total	0	0	6	1	0	0	6	0	0	0	0	1	0	0	0	0	14	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			Beacon Lite Rd			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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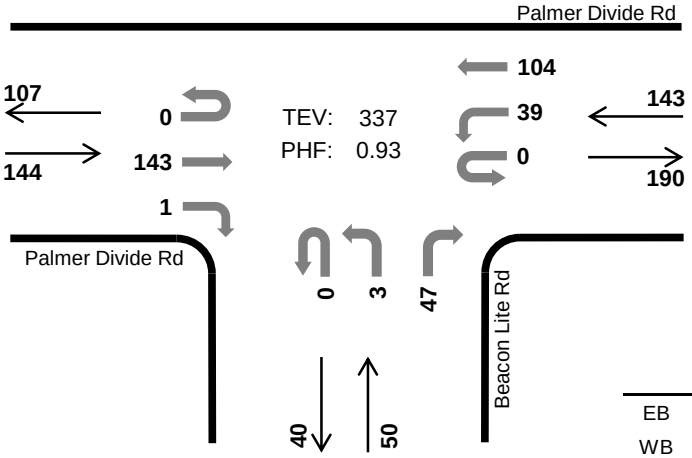
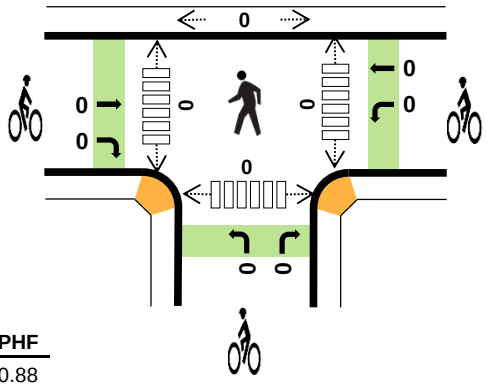
Beacon Lite Rd
Palmer Divide Rd

N

Peak Hour

Date: 05/08/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	4.2%	0.88
WB	1.4%	0.89
NB	4.0%	0.78
SB	-	-
TOTAL	3.0%	0.93

Two-Hour Count Summaries

Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				Beacon Lite Rd Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**0**	**36**	**0**	**0**	**10**	**28**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**87**	0
4:15 PM		**0**	**0**	**35**	**1**	**0**	**13**	**27**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**85**	0
4:30 PM		**0**	**0**	**41**	**0**	**0**	**5**	**29**	**0**	**0**	**1**	**0**	**15**	**0**	**0**	**0**	**0**	**91**	0
4:45 PM		**0**	**0**	**31**	**0**	**0**	**11**	**20**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**0**	**0**	**74**	**337**
5:00 PM		0	0	32	4	0	4	23	0	0	0	0	8	0	0	0	0	71	321
5:15 PM		0	0	31	0	0	9	25	0	0	0	0	3	0	0	0	0	68	304
5:30 PM		0	0	26	0	0	10	18	0	0	1	0	6	0	0	0	0	61	274
5:45 PM		0	0	32	3	0	12	27	0	0	0	0	13	0	0	0	0	87	287
Count Total		0	0	264	8	0	74	197	0	0	4	0	77	0	0	0	0	624	0
Peak Hour	**All**	**0**	**0**	**143**	**1**	**0**	**39**	**104**	**0**	**0**	**3**	**0**	**47**	**0**	**0**	**0**	**0**	**337**	**0**
	HV	**0**	**0**	**5**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	**0**
	HV%	**-**	**-**	**3%**	**100%**	**-**	**3%**	**1%**	**-**	**-**	**0%**	**-**	**4%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**1**	**0**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**4**	**1**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	7	9	2	0	*18*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**6**	**2**	**2**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	0
4:30 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**10**
5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	10
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	9
5:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	6
5:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	8
Count Total	0	0	6	1	0	2	7	0	0	0	0	2	0	0	0	0	18	0
Peak Hour	**0**	**0**	**5**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			Beacon Lite Rd			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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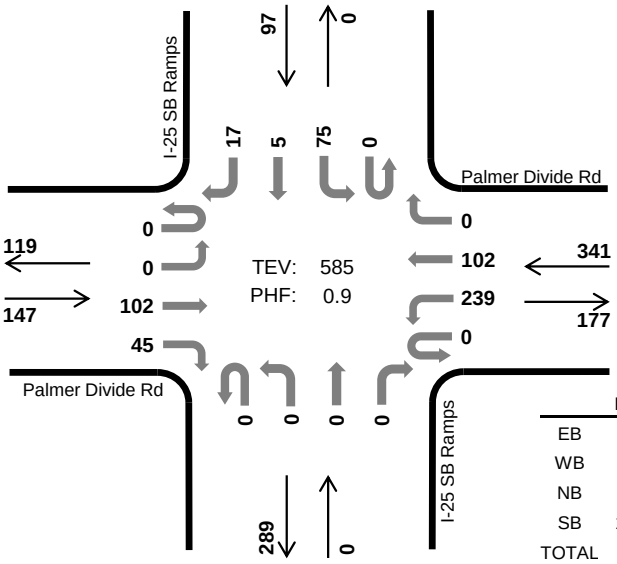
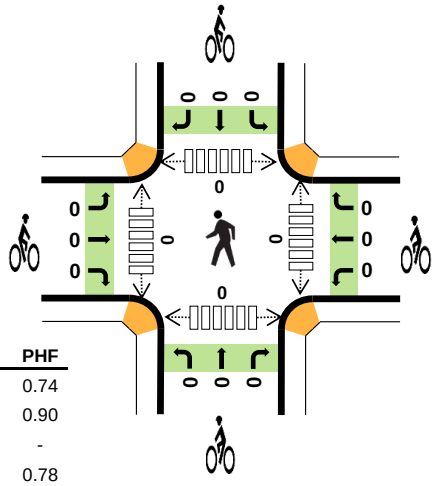
I-25 SB Ramps
Palmer Divide Rd

Peak Hour

Date: 05/08/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM





	HV %:	PHF
EB	0.0%	0.74
WB	0.6%	0.90
NB	-	-
SB	13.4%	0.78
TOTAL	2.6%	0.90

Two-Hour Count Summaries

Interval Start	Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 SB Ramps Northbound				I-25 SB Ramps Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	20	9	0	46	16	0	0	0	0	0	0	20	1	1	113	0
7:15 AM	**0**	**0**	**43**	**7**	**0**	**54**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**2**	**1**	**151**	0
7:30 AM	**0**	**0**	**29**	**19**	**0**	**61**	**28**	**0**	**0**	**0**	**0**	**0**	**0**	**21**	**1**	**3**	**162**	0
7:45 AM	**0**	**0**	**18**	**9**	**0**	**64**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**1**	**11**	**153**	579
8:00 AM	**0**	**0**	**12**	**10**	**0**	**60**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**1**	**2**	**119**	**585**
8:15 AM	0	0	16	14	0	52	21	0	0	0	0	0	0	16	0	8	127	561
8:30 AM	0	0	11	10	0	48	27	0	0	0	0	0	0	11	1	1	109	508
8:45 AM	0	0	28	13	0	27	18	0	0	0	0	0	0	20	2	4	112	467
Count Total	0	0	177	91	0	412	184	0	0	0	0	0	0	142	9	31	1,046	0
Peak Hour All	**0**	**0**	**102**	**45**	**0**	**239**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**75**	**5**	**17**	**585**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**2**	**4**	**15**	**0**
Peak Hour HV%	**-**	**-**	**0%**	**0%**	**-**	**0%**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**9%**	**40%**	**24%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**1**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**1**	**0**	**7**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	2	1	0	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	2	2	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	3	1	0	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	7	6	0	20	*33*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**2**	**0**	**13**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**3**	**8**	14
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**15**
8:15 AM	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	4	17
8:30 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	2	1	0	7	21
8:45 AM	0	0	3	0	0	1	0	0	0	0	0	0	0	2	0	0	6	19
Count Total	0	0	6	1	0	4	2	0	0	0	0	0	0	12	4	4	33	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**2**	**4**	**15**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 SB Ramps			I-25 SB Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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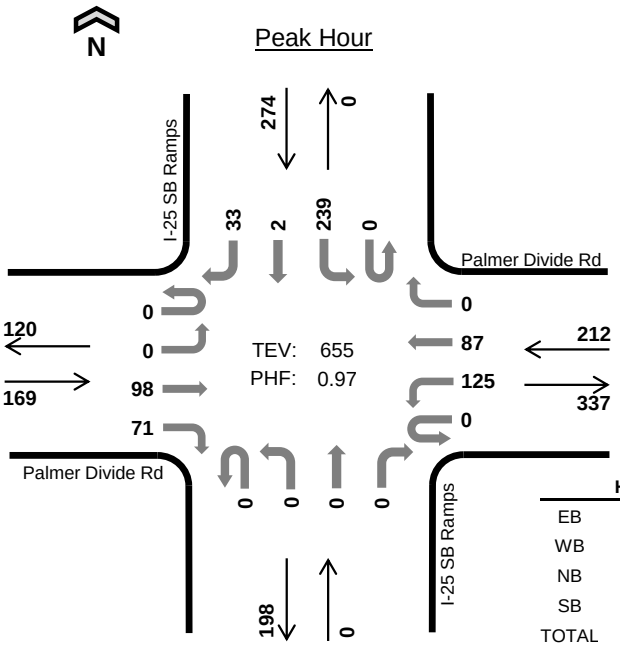
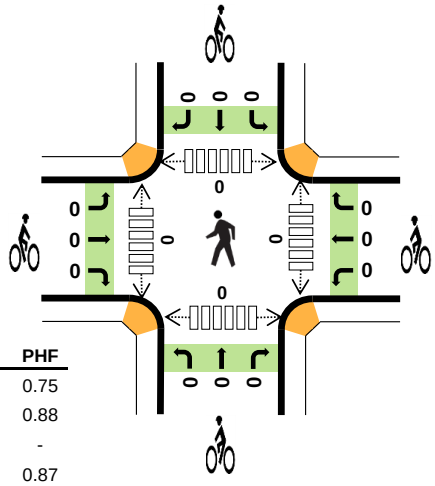
I-25 SB Ramps
Palmer Divide Rd

Date: 05/08/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV %:	PHF
EB	3.0%	0.75
WB	3.3%	0.88
NB	-	-
SB	2.2%	0.87
TOTAL	2.7%	0.97

Two-Hour Count Summaries

Interval Start	Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 SB Ramps Northbound				I-25 SB Ramps Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	32	18	0	23	27	0	0	0	0	0	0	61	2	10	173	0
4:15 PM	0	0	29	17	0	26	36	0	0	0	0	0	0	40	1	8	157	0
4:30 PM	**0**	**0**	**35**	**21**	**0**	**33**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**45**	**1**	**8**	**166**	0
4:45 PM	**0**	**0**	**20**	**20**	**0**	**26**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**63**	**0**	**16**	**158**	654
5:00 PM	**0**	**0**	**28**	**12**	**0**	**39**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**62**	**0**	**6**	**168**	649
5:15 PM	**0**	**0**	**15**	**18**	**0**	**27**	**30**	**0**	**0**	**0**	**0**	**0**	**0**	**69**	**1**	**3**	**163**	**655**
5:30 PM	0	0	15	17	0	34	22	0	0	0	0	0	0	54	3	8	153	642
5:45 PM	0	0	29	16	0	23	31	0	0	0	0	0	0	48	1	10	158	642
Count Total	0	0	203	139	0	231	203	0	0	0	0	0	0	442	9	69	1,296	0
Peak Hour All	**0**	**0**	**98**	**71**	**0**	**125**	**87**	**0**	**0**	**0**	**0**	**0**	**0**	**239**	**2**	**33**	**655**	**0**
Peak Hour HV	**0**	**0**	**5**	**0**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**18**	**0**
Peak Hour HV%	**-**	**-**	**5%**	**0%**	**-**	**5%**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**0%**	**6%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	0	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	1	2	0	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**4**	**0**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**3**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**2**	**0**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	1	5	0	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	3	0	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	8	17	0	11	*36*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**5**	**7**	**0**	**6**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0
4:15 PM	0	0	0	1	0	2	0	0	0	0	0	0	0	1	0	0	4	0
4:30 PM	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**6**	0
4:45 PM	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	15
5:00 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**6**	19
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**18**
5:30 PM	0	0	1	0	0	4	1	0	0	0	0	0	0	0	1	0	7	19
5:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1	5	21
Count Total	0	0	6	2	0	12	5	0	0	0	0	0	0	5	2	4	36	0
Peak Hour	**0**	**0**	**5**	**0**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**18**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 SB Ramps			I-25 SB Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

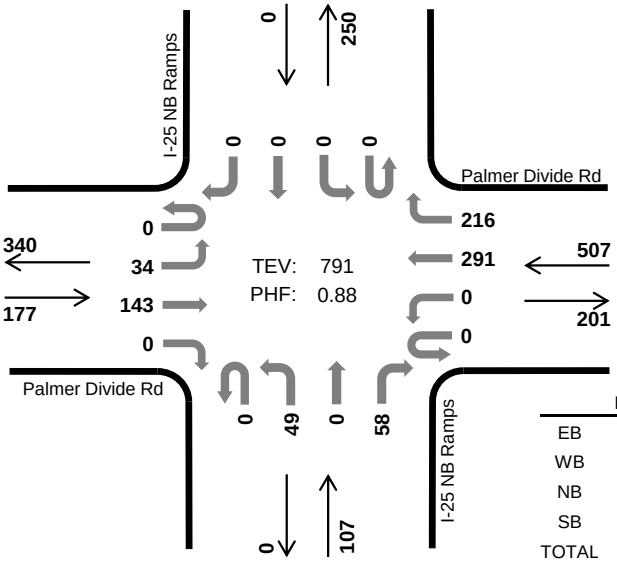
TJ Wethington
720-646-1008

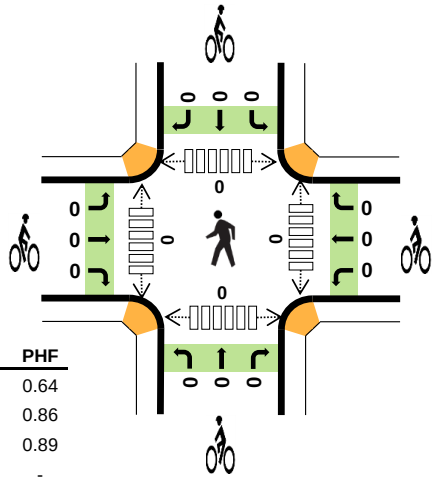
tj.wethington@idaxdata.com

I-25 NB Ramps
Palmer Divide Rd

Peak Hour

Date: 05/08/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM





	HV %:	PHF
EB	4.5%	0.64
WB	1.2%	0.86
NB	3.7%	0.89
SB	-	-
TOTAL	2.3%	0.88

Two-Hour Count Summaries

Interval Start	Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 NB Ramps Northbound				I-25 NB Ramps Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	11	30	0	0	0	59	52	0	3	2	8	0	0	0	0	165	0
7:15 AM	**0**	**11**	**58**	**0**	**0**	**0**	**66**	**57**	**0**	**10**	**0**	**13**	**0**	**0**	**0**	**0**	**215**	0
7:30 AM	**0**	**8**	**42**	**0**	**0**	**0**	**75**	**72**	**0**	**11**	**0**	**17**	**0**	**0**	**0**	**0**	**225**	0
7:45 AM	**0**	**9**	**25**	**0**	**0**	**0**	**78**	**37**	**0**	**15**	**0**	**11**	**0**	**0**	**0**	**0**	**175**	780
8:00 AM	**0**	**6**	**18**	**0**	**0**	**0**	**72**	**50**	**0**	**13**	**0**	**17**	**0**	**0**	**0**	**0**	**176**	**791**
8:15 AM	0	10	22	0	0	0	62	47	0	11	1	13	0	0	0	0	166	742
8:30 AM	0	5	17	0	0	0	58	47	0	16	0	22	0	0	0	0	165	682
8:45 AM	0	14	34	0	0	0	36	32	0	10	2	22	0	0	0	0	150	657
Count Total	0	74	246	0	0	0	506	394	0	89	5	123	0	0	0	0	1,437	0
Peak Hour All	**0**	**34**	**143**	**0**	**0**	**0**	**291**	**216**	**0**	**49**	**0**	**58**	**0**	**0**	**0**	**0**	**791**	**0**
Peak Hour HV	**0**	**0**	**8**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**18**	**0**
Peak Hour HV%	**-**	**0%**	**6%**	**-**	**-**	**-**	**1%**	**2%**	**-**	**0%**	**-**	**7%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	2	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**4**	**4**	**2**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**0**	**1**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	2	3	2	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	4	4	3	0	*11*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	18	14	11	0	*43*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**8**	**6**	**4**	**0**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

TJ Wethington
720-646-1008

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
7:30 AM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	18
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**18**
8:15 AM	0	1	1	0	0	0	0	3	0	0	1	1	0	0	0	0	7	24
8:30 AM	0	1	3	0	0	0	1	3	0	2	0	1	0	0	0	0	11	25
8:45 AM	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	4	25
Count Total	0	4	14	0	0	0	4	10	0	2	1	8	0	0	0	0	43	0
Peak Hour	**0**	**0**	**8**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**18**	**0**

Two-Hour Count Summaries - Bikes

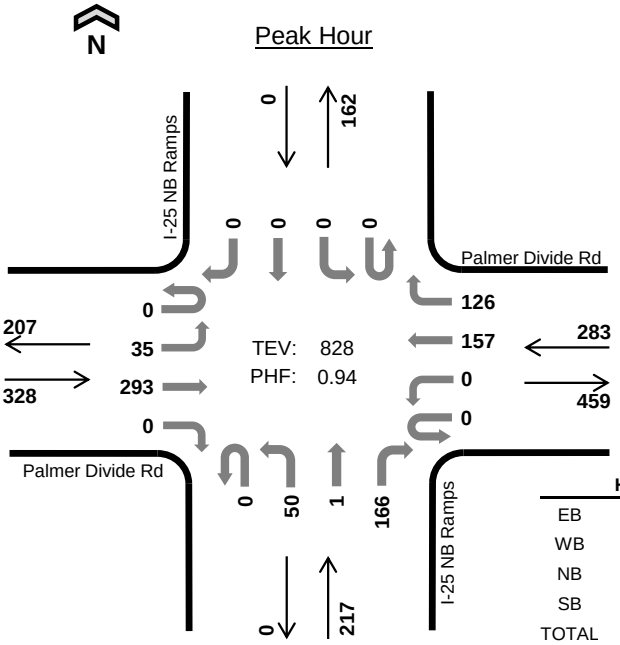
Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 NB Ramps			I-25 NB Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

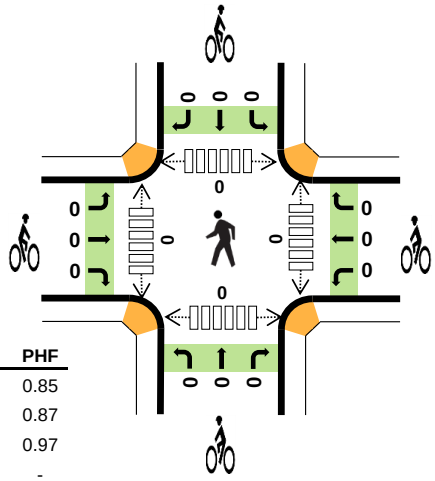
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

TJ Wethington
720-646-1008
tj.wethington@idaxdata.com

I-25 NB Ramps
Palmer Divide Rd

Date: 05/08/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	2.4%	0.85
WB	1.8%	0.87
NB	0.5%	0.97
SB	-	-
TOTAL	1.7%	0.94

Two-Hour Count Summaries

Interval Start	Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 NB Ramps Northbound				I-25 NB Ramps Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**8**	**89**	**0**	**0**	**0**	**40**	**30**	**0**	**12**	**1**	**41**	**0**	**0**	**0**	**0**	**221**	0
4:15 PM	**0**	**9**	**61**	**0**	**0**	**0**	**45**	**36**	**0**	**16**	**0**	**40**	**0**	**0**	**0**	**0**	**207**	0
4:30 PM	**0**	**7**	**70**	**0**	**0**	**0**	**40**	**35**	**0**	**15**	**0**	**37**	**0**	**0**	**0**	**0**	**204**	0
4:45 PM	**0**	**11**	**73**	**0**	**0**	**0**	**32**	**25**	**0**	**7**	**0**	**48**	**0**	**0**	**0**	**0**	**196**	**828**
5:00 PM	0	11	79	0	0	0	52	27	0	10	1	34	0	0	0	0	214	821
5:15 PM	0	5	80	0	0	0	46	20	0	8	1	40	0	0	0	0	200	814
5:30 PM	0	3	63	0	0	0	43	27	0	13	1	32	0	0	0	0	182	792
5:45 PM	0	7	70	0	0	0	40	22	0	15	0	41	0	0	0	0	195	791
Count Total	0	61	585	0	0	0	338	222	0	96	4	313	0	0	0	0	1,619	0
Peak Hour All	**0**	**35**	**293**	**0**	**0**	**0**	**157**	**126**	**0**	**50**	**1**	**166**	**0**	**0**	**0**	**0**	**828**	**0**
Peak Hour HV	**0**	**4**	**4**	**0**	**0**	**0**	**3**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**
Peak Hour HV%	**-**	**11%**	**1%**	**-**	**-**	**-**	**2%**	**2%**	**-**	**2%**	**0%**	**0%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**2**	**3**	**1**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**4**	**0**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	1	6	1	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	2	1	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	1	5	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	11	16	9	0	*36*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**8**	**5**	**1**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

TJ Wethington
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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	0
4:30 PM	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	0
4:45 PM	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**14**
5:00 PM	0	0	1	0	0	0	3	3	0	0	1	0	0	0	0	0	8	22
5:15 PM	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	4	20
5:30 PM	0	0	1	0	0	0	1	0	0	4	1	0	0	0	0	0	7	23
5:45 PM	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	3	22
Count Total	0	4	7	0	0	0	11	5	0	6	3	0	0	0	0	0	36	0
Peak Hour	**0**	**4**	**4**	**0**	**0**	**0**	**3**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			I-25 NB Ramps			I-25 NB Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

TJ Wethington
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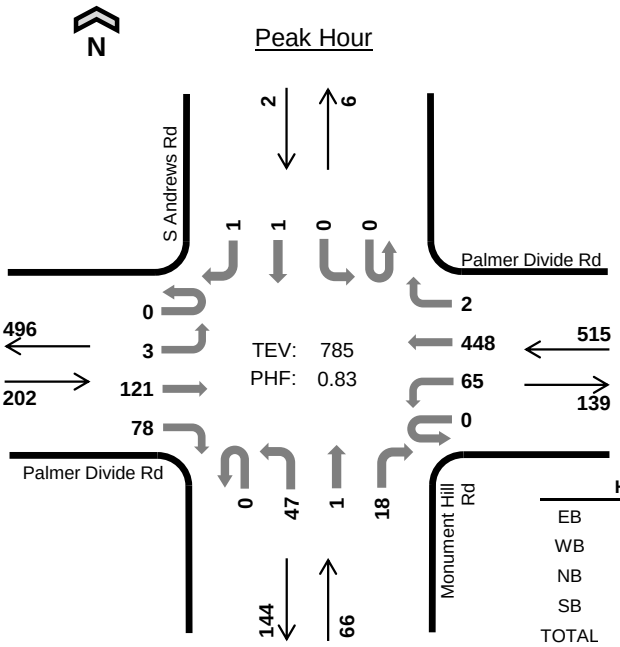
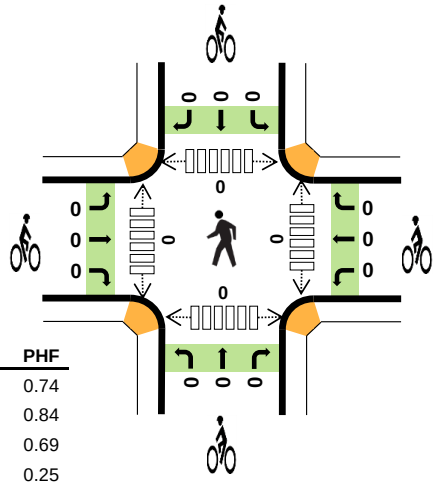
Monument Hill Rd
Palmer Divide Rd

Date: 05/08/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM





	HV %:	PHF
EB	5.4%	0.74
WB	1.2%	0.84
NB	0.0%	0.69
SB	0.0%	0.25
TOTAL	2.2%	0.83

Two-Hour Count Summaries

Interval Start	Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				Monument Hill Rd Northbound				S Andrews Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**19**	**18**	**0**	**14**	**99**	**0**	**0**	**16**	**0**	**1**	**0**	**0**	**0**	**0**	**167**	0
7:15 AM	**0**	**0**	**36**	**32**	**0**	**25**	**111**	**0**	**0**	**10**	**1**	**7**	**0**	**0**	**0**	**0**	**222**	0
7:30 AM	**0**	**1**	**36**	**21**	**0**	**22**	**131**	**1**	**0**	**16**	**0**	**8**	**0**	**0**	**0**	**0**	**236**	0
7:45 AM	**0**	**2**	**30**	**7**	**0**	**4**	**107**	**1**	**0**	**5**	**0**	**2**	**0**	**0**	**1**	**1**	**160**	**785**
8:00 AM	0	0	29	4	0	3	112	0	0	9	0	1	0	1	0	2	161	779
8:15 AM	0	1	28	6	0	2	104	0	0	5	0	2	0	0	0	0	148	705
8:30 AM	0	1	36	4	0	4	94	0	0	8	0	2	0	0	0	1	150	619
8:45 AM	0	1	48	8	0	5	61	0	0	6	0	3	0	0	0	2	134	593
Count Total	0	6	262	100	0	79	819	2	0	75	1	26	0	1	1	6	1,378	0
Peak Hour All	**0**	**3**	**121**	**78**	**0**	**65**	**448**	**2**	**0**	**47**	**1**	**18**	**0**	**0**	**1**	**1**	**785**	**0**
Peak Hour HV	**0**	**0**	**11**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**
Peak Hour HV%	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**1%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**-**	**0%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:15 AM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**6**	**4**	**0**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:00 AM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	4	2	2	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	22	12	2	0	*36*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**11**	**6**	**0**	**0**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:30 AM	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	0
7:45 AM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**17**
8:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	19
8:15 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	23
8:30 AM	0	0	4	0	0	0	2	0	0	2	0	0	0	0	0	0	8	21
8:45 AM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	3	19
Count Total	0	0	21	1	0	0	12	0	0	2	0	0	0	0	0	0	36	0
Peak Hour	**0**	**0**	**11**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**

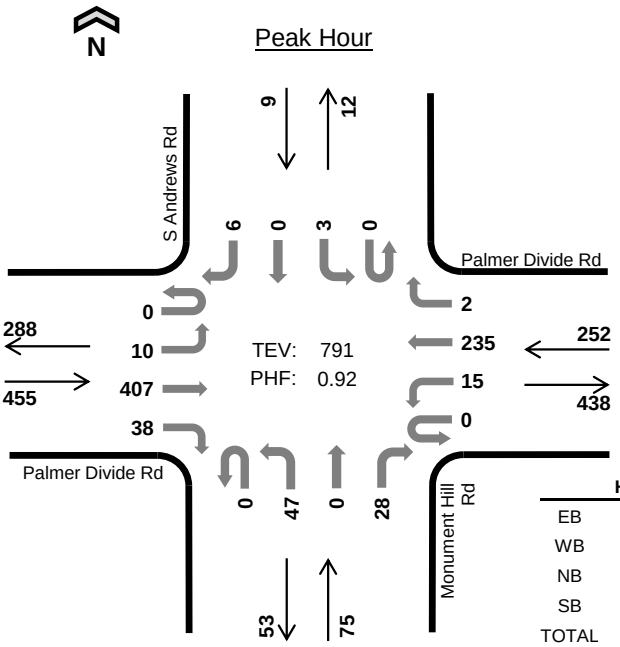
Two-Hour Count Summaries - Bikes

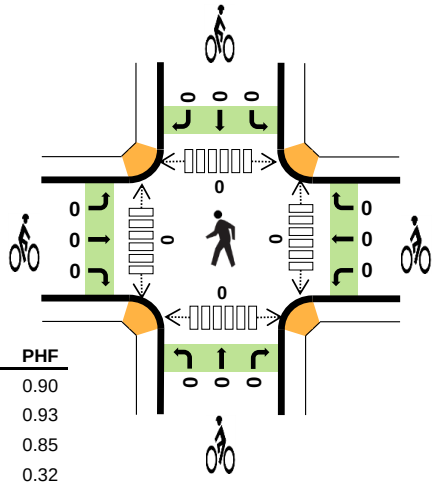
Interval Start	Palmer Divide Rd			Palmer Divide Rd			Monument Hill Rd			S Andrews Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Monument Hill Rd
Palmer Divide Rd

Date: 05/08/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	0.9%	0.90
WB	2.0%	0.93
NB	1.3%	0.85
SB	0.0%	0.32
TOTAL	1.3%	0.92

Two-Hour Count Summaries

Interval Start	Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				Monument Hill Rd Northbound				S Andrews Rd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**113**	**12**	**0**	**3**	**62**	**0**	**0**	**11**	**0**	**10**	**0**	**0**	**0**	**2**	**214**	0
4:15 PM	**0**	**4**	**88**	**9**	**0**	**8**	**60**	**0**	**0**	**17**	**0**	**5**	**0**	**0**	**0**	**0**	**191**	0
4:30 PM	**0**	**1**	**98**	**8**	**0**	**0**	**61**	**2**	**0**	**11**	**0**	**6**	**0**	**0**	**0**	**0**	**187**	0
4:45 PM	**0**	**4**	**108**	**9**	**0**	**4**	**52**	**0**	**0**	**8**	**0**	**7**	**0**	**3**	**0**	**4**	**199**	**791**
5:00 PM	0	2	104	9	0	2	68	0	0	4	0	4	0	1	0	4	198	775
5:15 PM	0	0	109	10	0	3	56	0	0	9	0	4	0	0	0	0	191	775
5:30 PM	0	1	90	7	0	1	59	0	0	8	0	7	0	1	0	1	175	763
5:45 PM	0	1	98	12	0	5	55	0	0	6	0	2	0	0	1	1	181	745
Count Total	0	14	808	76	0	26	473	2	0	74	0	45	0	5	1	12	1,536	0
Peak Hour All	**0**	**10**	**407**	**38**	**0**	**15**	**235**	**2**	**0**	**47**	**0**	**28**	**0**	**3**	**0**	**6**	**791**	**0**
Peak Hour HV	**0**	**0**	**2**	**2**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**5%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**-**	**4%**	**-**	**0%**	**-**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	1	5	1	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	3	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	7	16	3	0	*26*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**4**	**5**	**1**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Monument Hill Rd				S Andrews Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	0
4:30 PM	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	0
4:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**10**
5:00 PM	0	0	1	0	0	0	5	0	0	0	0	1	0	0	0	0	7	16
5:15 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	16
5:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	16
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	16
Count Total	0	0	5	2	0	0	16	0	0	0	0	3	0	0	0	0	26	0
Peak Hour	**0**	**0**	**2**	**2**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Palmer Divide Rd			Palmer Divide Rd			Monument Hill Rd			S Andrews Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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tj.wethington@idaxdata.com

APPENDIX C

Future Traffic Projections

MTCP Traffic Projections: Travel Center Monument

Location	2015	2040	Growth Factor	Annual Growth
Beacon Lite Road	4,900	8,800	1.80	2.37%
Total	4,900	8,800	1.80	2.37%

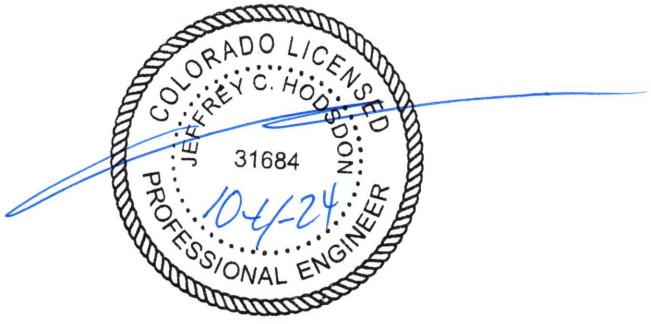
LSC TRANSPORTATION CONSULTANTS, INC.
2504 East Pikes Peak Avenue, Suite 304
Colorado Springs, CO 80909
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: http://www.lsctrans.com

Monument Ridge East
Traffic Impact Study

EPC PCD File Nos. SP 241, P245, P246
(LSC #S234450)
October 4, 2024

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

_____ _____
Date

Monument Ridge East

Traffic Impact Study

Prepared for:
Monument Ridge East, LLC
5050 List Drive
Colorado Springs, CO 80919
<via email>

OCTOBER 4, 2024

LSC Transportation Consultants, Inc.
Prepared by: Jeffrey C. Hodsdon, P.E.

LSC #S234450

PCD File No.: P245

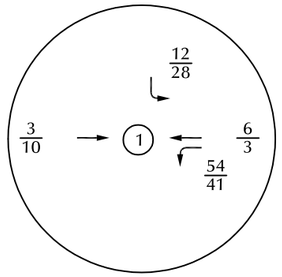
N

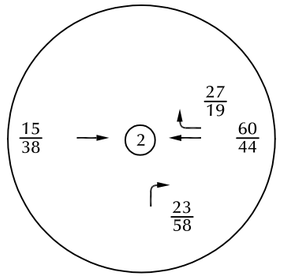
NTS

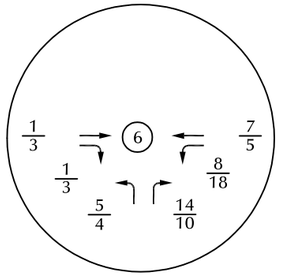
Figure 1

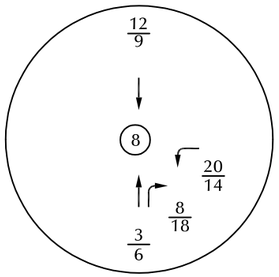
Vicinity

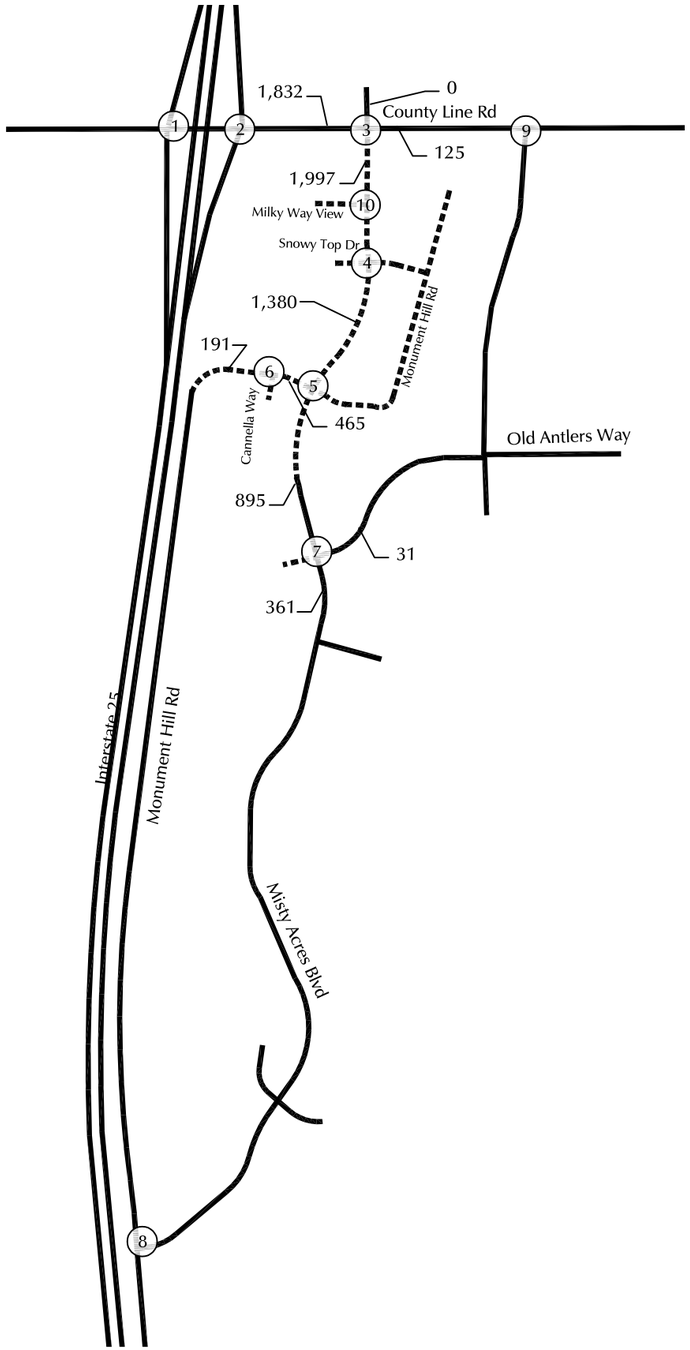
Monument Ridge East (LSC# S234450)

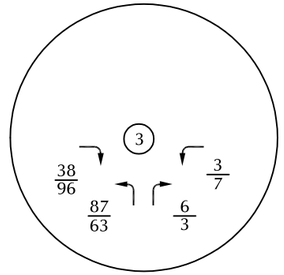


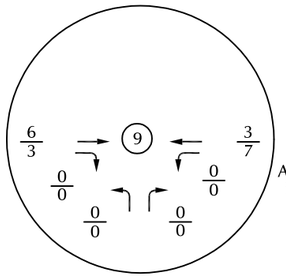


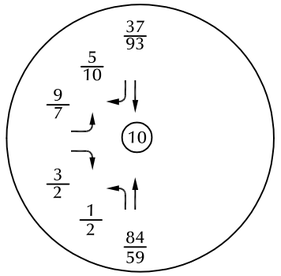


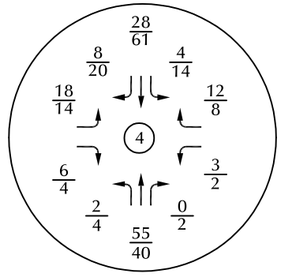


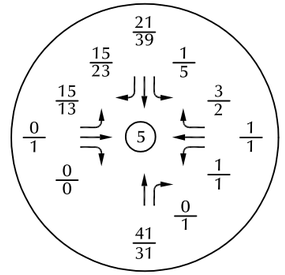


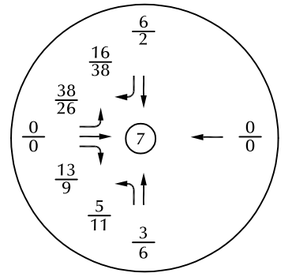












LEGEND:

$\frac{XX}{XX}$ = $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$

X,XXX = Average Daily Traffic (vehicles per day)

Roadways (as shown on Figure 3)

Existing Roadway segments (to remain)

Proposed New Roadway Segments

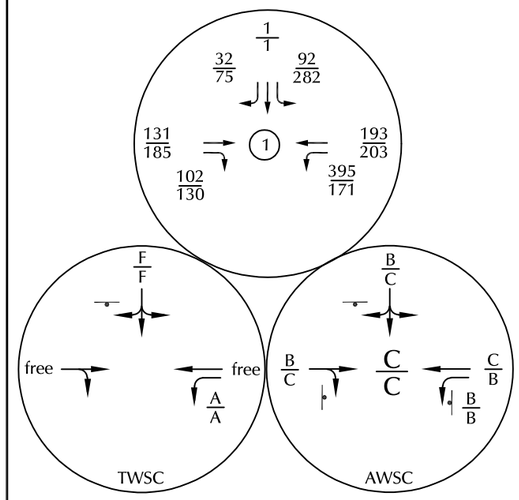
Approximate Scale
Scale: 1"= 3,000'

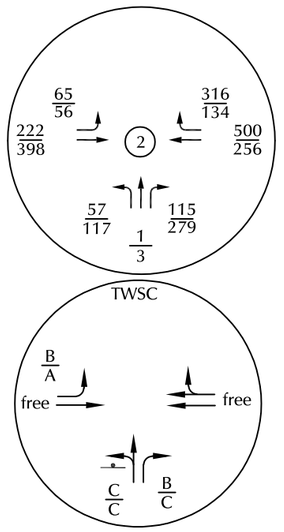
TRANSPORTATION CONSULTANTS, INC.

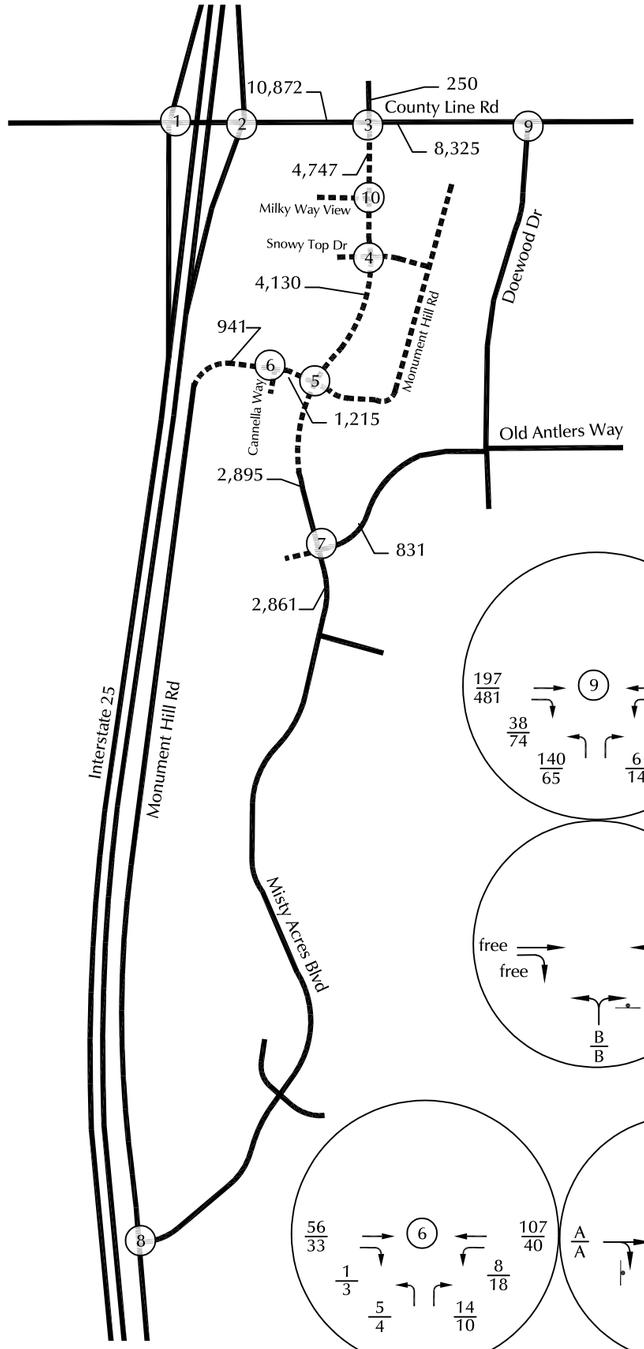
Figure 7

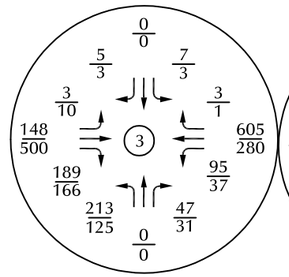
Site-Generated Traffic

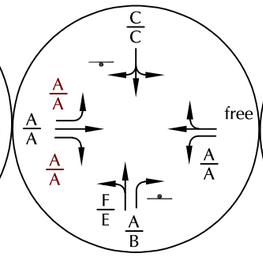
Monument Ridge East (LSC# S234450)

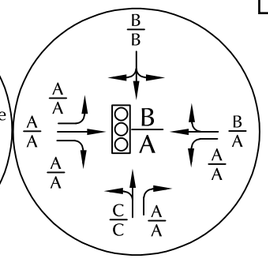


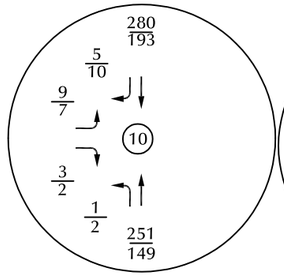


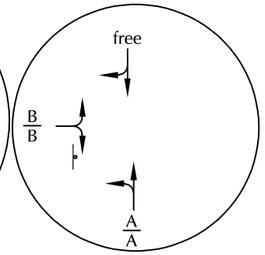


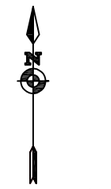




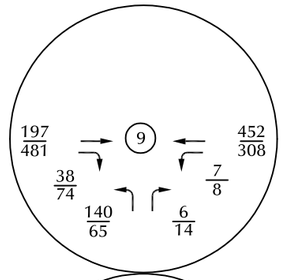


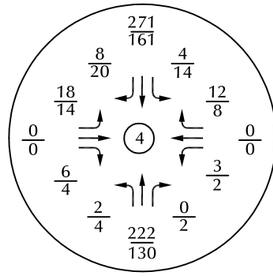


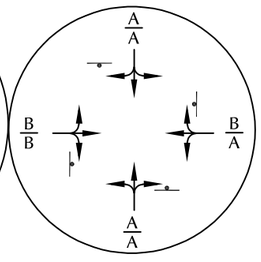


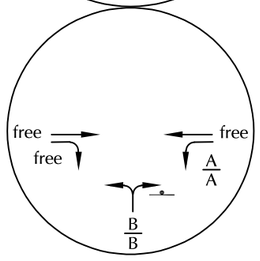


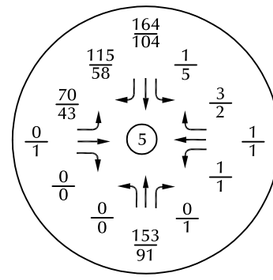
Approximate Scale
Scale: 1"= 3,000'

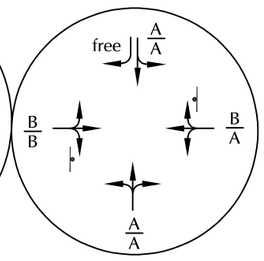


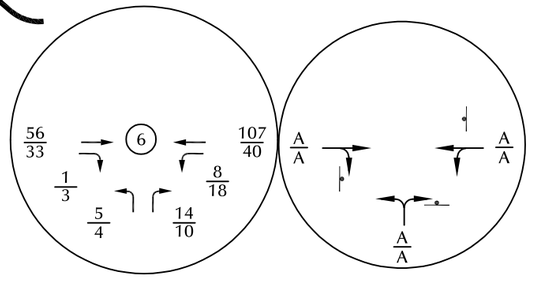


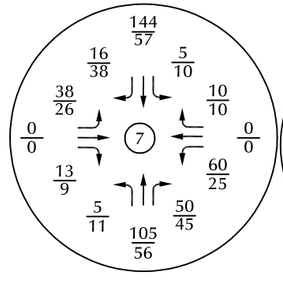


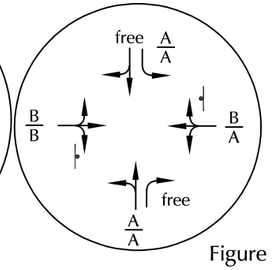


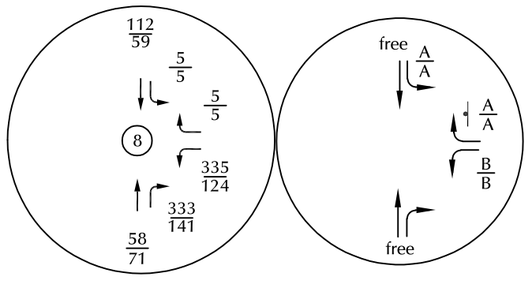












X,XXX = Average Daily Traffic (vehicles per day)

XX / XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X / X = AM Individual Movement Peak-Hour LOS / PM Individual Movement Peak-Hour LOS

X / X = AM Entire Intersection Peak-Hour LOS / PM Entire Intersection Peak-Hour LOS

= Traffic Signal = Stop Sign

Roadways (as shown on Figure 3)

Existing Roadway segments (to remain)

Proposed New Roadway Segments

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 10

2044 Background + Site-Generated Traffic

Note: All turn lane lengths have been adjusted for roadway grade per ECM Table 2-25

1" = 100' scale

Figure 12

Proposed Laneage on County Line Rd

Monument Ridge East (LSC# S2344

1" = 100'
scale

Figure 13

Proposed Laneage on Misty Acres Boulevard

Monument Ridge East (LSC# S2344

APPENDIX D

Trip Generation Worksheets

Site	Freeway AADT	Fuel Pumps	Latitude	Longitude	Open Date	Data Collected (Start) Date	Weekday Daily	Weekday % of AADT	Weekend Daily	Weekday Daily Rate	Weekday AM Rate	Weekday PM Rate	Weekday AM Enter %	Weekday AM Exit %	Weekday PM Enter %	Weekday PM Exit %
Calhoun, GA	66,000	120	34.440722	84.916833		7/16/2022	16,734	25%	24,520	139.45	7.21	9.79	53%	47%	50%	50%
Daytona Beach, FL	78,500	104	29.22379	81.10059		7/16/2023	22,945	29%	26,494	220.62	13.11	15.12	52%	48%	49%	51%
Leeds, AL	70,771	120	33.54452	86.58635		7/29/2022	17,444	25%	20,706	145.37	8.31	10.65	53%	47%	48%	52%
Loxley, AL	48,031	120	30.63444	87.67668		7/29/2022	17,550	37%	24,846	146.25	9.90	10.40	53%	47%	48%	52%
St Augustine, FL	101,500	104	29.98399	81.46386		7/16/2022	15,849	16%	19,351	152.39	9.67	10.65	52%	48%	49%	51%
Warner Robins, GA	75,300	116	32.58446	83.74033		7/16/2022	19,023	25%	25,637	163.99	9.29	11.45	53%	47%	48%	52%
Waller, TX	58,205	80	30.07198	95.93149		12/2/2015	24,314	42%	28,063	303.92	17.15	23.51	49%	51%	49%	51%
Texas City, TX	89,723	56	29.42856	95.06316		12/2/2015	20,364	23%	29,815	363.64	14.33	35.60	50%	50%	50%	50%
Baytown, TX	86,271	96	29.80095	94.99811		12/2/2015	19,095	22%	20,887	198.91	10.57	14.51	50%	50%	50%	50%
Terrell, TX	70,069	84	32.71731	96.31956		12/2/2015	14,789	21%	18,780	176.06	9.13	14.52	52%	48%	51%	49%
Luling, TX	36,657	64	29.65126	97.59244		12/2/2015	11,484	31%	16,625	179.44	11.65	12.79	53%	47%	51%	49%
New Braunfels, TX	99,816	120	29.72654	98.07826		12/2/2015	16,805	17%	26,775	56.87	3.08	4.46	61%	39%	61%	39%
Madisonville, TX	41,055	64	30.96617	95.88165		12/2/2015	16,786	41%	24,889	262.28	14.67	18.60	52%	48%	52%	48%
Fort Worth, TX	68,914	96	33.02445	97.27791		12/2/2015	13,251	19%	16,772	138.03	8.92	9.05	51%	49%	49%	51%
Katy, TX	109,000	124	29.78112	95.8421		12/2/2015	15,068	14%	13,482	121.52	7.47	8.82	49%	51%	47%	53%
All Sites Average	73,321	98					17,433	26%	22509	184.58	10.30	13.99	52%	48%	50%	50%
TX Sites Average	73,301	87					16,884	26%	21788	200.07	10.77	15.76	52%	48%	51%	49%
SE Sites Average	73,350	114					18,258	26%	23592	161.35	9.58	11.34	53%	47%	49%	51%
AL/GA Sites Average	65,026	119					17,688	28%	23,927	148.77	8.68	10.57	53%	47%	49%	52%

Oak Grove Trips	AADT*	Fuel Pumps		Daily	AM Total	PM Total	AM IN	AM OUT	PM IN	PM OUT
All Sites Average	75,000	120	19,500	22,150	1,236	1,679	643	593	840	840
TX Sites Average	75,000	120	19,500	24,008	1,292	1,891				
SE Sites Average	75,000	120	19,500	19,362	1,150	1,361				
AL/GA Sites Rates	40,200	120	11,256	17,852	1,042	1,268				

APPENDIX E

Intersection Analysis Worksheets

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	126	0	11	108	1	21
Future Vol, veh/h	126	0	11	108	1	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	143	0	13	123	1	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	143	0	292	143
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.14	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1427	-	699	905
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	879	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1427	-	692	905
Mov Cap-2 Maneuver	-	-	-	-	692	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1427	-
HCM Lane V/C Ratio	0.028	-	-	0.009	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	143	1	39	104	3	47
Future Vol, veh/h	143	1	39	104	3	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	154	1	42	112	3	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	155	0	351	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1425	-	642	886
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	832	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1425	-	622	886
Mov Cap-2 Maneuver	-	-	-	-	622	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	806	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	864	-	-	1425	-
HCM Lane V/C Ratio	0.062	-	-	0.029	-
HCM Control Delay (s)	9.4	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	141	0	12	125	1	23
Future Vol, veh/h	141	0	12	125	1	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	160	0	14	142	1	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	160	0	330	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	-	-	4.14	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1407	-	665	885
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	860	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1407	-	658	885
Mov Cap-2 Maneuver	-	-	-	-	658	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	851	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	872	-	-	1407	-
HCM Lane V/C Ratio	0.031	-	-	0.01	-
HCM Control Delay (s)	9.3	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	1	43	117	3	52
Future Vol, veh/h	167	1	43	117	3	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	180	1	46	126	3	56

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	181	0	399	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1394	-	603	857
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1394	-	583	857
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	1394	-
HCM Lane V/C Ratio	0.071	-	-	0.033	-
HCM Control Delay (s)	9.6	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	20.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	141	19	626	125	19	347
Future Vol, veh/h	141	19	626	125	19	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	160	22	711	142	22	394

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	182	0	1735	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	1564	-
Critical Hdwy	-	-	4.14	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1381	-	96	873
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	190	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1381	-	47	873
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	92	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.6	52.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	457	-	-	1381	-
HCM Lane V/C Ratio	0.91	-	-	0.515	-
HCM Control Delay (s)	52.9	-	-	10.3	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	10.2	-	-	3.1	-

Intersection	
Int Delay, s/veh	183.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	26	845	117	28	447
Future Vol, veh/h	167	26	845	117	28	447
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	180	28	909	126	30	481

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	208	0	2138	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	1944	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1363	-	53	842
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	121	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1363	-	~ 18	842
Mov Cap-2 Maneuver	-	-	-	-	~ 18	-
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	40	-

Approach	EB	WB	NB
HCM Control Delay, s	0	11.2	$ 606.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	228	-	-	1363	-
HCM Lane V/C Ratio	2.24	-	-	0.667	-
HCM Control Delay (s)	$ 606.1	-	-	12.7	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	40.1	-	-	5.5	-

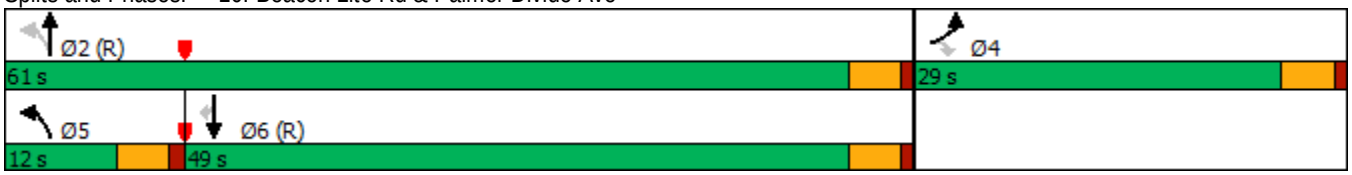
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

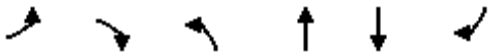
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	141	19	19	347	626	125
Future Volume (vph)	141	19	19	347	626	125
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	29.0	29.0	12.0	61.0	49.0	49.0
Total Split (%)	32.2%	32.2%	13.3%	67.8%	54.4%	54.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	141	19	19	347	626	125
Future Volume (veh/h)	141	19	19	347	626	125
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	160	22	22	394	711	142
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	202	179	583	2796	2495	1113
Arrive On Green	0.11	0.11	0.02	0.79	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	160	22	22	394	711	142
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	7.9	1.1	0.3	2.4	0.0	0.0
Cycle Q Clear(g_c), s	7.9	1.1	0.3	2.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	202	179	583	2796	2495	1113
V/C Ratio(X)	0.79	0.12	0.04	0.14	0.28	0.13
Avail Cap(c_a), veh/h	485	431	690	2796	2495	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	38.9	35.9	2.7	2.3	0.0	0.0
Incr Delay (d2), s/veh	6.9	0.3	0.0	0.1	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.1	0.1	0.5	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.8	36.2	2.7	2.4	0.3	0.2
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	182			416	853	
Approach Delay, s/veh	44.6			2.4	0.3	
Approach LOS	D			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		75.3		14.7	6.6	68.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		56.5		24.5	7.5	44.5
Max Q Clear Time (g_c+I1), s		4.4		9.9	2.3	2.0
Green Ext Time (p_c), s		2.8		0.4	0.0	6.4

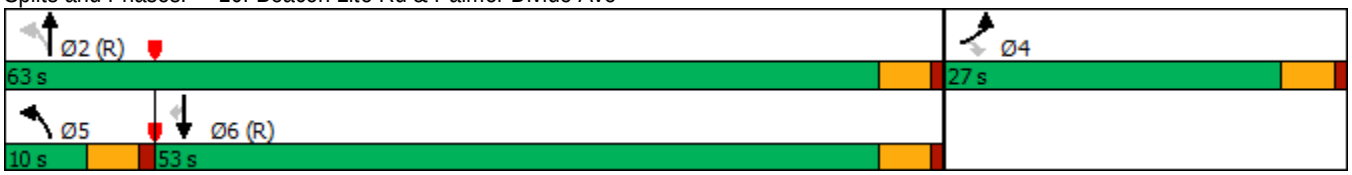
Intersection Summary	
HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

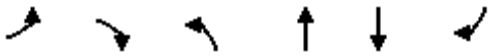
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	167	26	28	447	845	117
Future Volume (vph)	167	26	28	447	845	117
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	27.0	27.0	10.0	63.0	53.0	53.0
Total Split (%)	30.0%	30.0%	11.1%	70.0%	58.9%	58.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	167	26	28	447	845	117
Future Volume (veh/h)	167	26	28	447	845	117
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	190	30	32	508	960	133
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	233	207	490	2734	2409	1074
Arrive On Green	0.13	0.13	0.03	0.77	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	190	30	32	508	960	133
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	9.3	1.5	0.4	3.5	0.0	0.0
Cycle Q Clear(g_c), s	9.3	1.5	0.4	3.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	233	207	490	2734	2409	1074
V/C Ratio(X)	0.82	0.14	0.07	0.19	0.40	0.12
Avail Cap(c_a), veh/h	445	396	544	2734	2409	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	38.1	34.7	3.1	2.8	0.0	0.0
Incr Delay (d2), s/veh	6.9	0.3	0.1	0.1	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	1.4	0.1	0.8	0.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.9	35.0	3.1	2.9	0.5	0.2
LnGrp LOS	D	C	A	A	A	A
Approach Vol, veh/h	220			540	1093	
Approach Delay, s/veh	43.6			3.0	0.5	
Approach LOS	D			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		73.7		16.3	7.3	66.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		58.5		22.5	5.5	48.5
Max Q Clear Time (g_c+I1), s		5.5		11.3	2.4	2.0
Green Ext Time (p_c), s		3.7		0.5	0.0	9.5

Intersection Summary	
HCM 6th Ctrl Delay	6.3
HCM 6th LOS	A

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	182	416	853
Demand Flow Rate, veh/h	185	424	887
Vehicles Circulating, veh/h	739	163	22
Vehicles Exiting, veh/h	170	761	565
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.6	4.6	5.7
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.469	0.531	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	185	199	225	417	470
Cap Entry Lane, veh/h	758	1162	1236	1323	1394
Entry HV Adj Factor	0.984	0.983	0.980	0.961	0.961
Flow Entry, veh/h	182	196	221	401	452
Cap Entry, veh/h	745	1142	1212	1271	1340
V/C Ratio	0.244	0.171	0.182	0.315	0.337
Control Delay, s/veh	7.6	4.7	4.5	5.7	5.7
LOS	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2

Intersection	
Intersection Delay, s/veh	7.0
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	220	540	1093
Demand Flow Rate, veh/h	225	551	1136
Vehicles Circulating, veh/h	998	194	33
Vehicles Exiting, veh/h	171	1029	712
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.4	5.3	6.9
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	225	259	292	534	602
Cap Entry Lane, veh/h	608	1129	1204	1309	1381
Entry HV Adj Factor	0.978	0.980	0.980	0.962	0.962
Flow Entry, veh/h	220	254	286	514	579
Cap Entry, veh/h	594	1106	1180	1259	1328
V/C Ratio	0.370	0.229	0.242	0.408	0.436
Control Delay, s/veh	11.4	5.4	5.2	6.9	7.0
LOS	B	A	A	A	A
95th %tile Queue, veh	2	1	1	2	2

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	0	18	183	2	34
Future Vol, veh/h	209	0	18	183	2	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	238	0	20	208	2	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	238	0	486	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	248	-
Critical Hdwy	-	-	4.14	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.236	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1317	-	540	801
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	793	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1317	-	532	801
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	779	-	-	1317	-
HCM Lane V/C Ratio	0.053	-	-	0.016	-
HCM Control Delay (s)	9.9	-	-	7.8	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	244	2	64	173	5	77
Future Vol, veh/h	244	2	64	173	5	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	262	2	69	186	5	83

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	264	0	587	263
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1300	-	469	771
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1300	-	444	771
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	690	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	10.5
HCM LOS			B

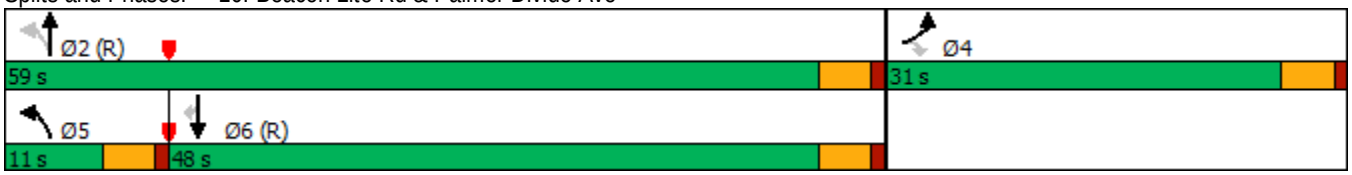
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	738	-	-	1300	-
HCM Lane V/C Ratio	0.119	-	-	0.053	-
HCM Control Delay (s)	10.5	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

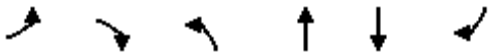
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	209	19	20	358	632	183
Future Volume (vph)	209	19	20	358	632	183
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	31.0	31.0	11.0	59.0	48.0	48.0
Total Split (%)	34.4%	34.4%	12.2%	65.6%	53.3%	53.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	209	19	20	358	632	183
Future Volume (veh/h)	209	19	20	358	632	183
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	238	22	23	407	718	208
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	282	251	526	2635	2333	1041
Arrive On Green	0.16	0.16	0.02	0.50	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	238	22	23	407	718	208
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	11.7	1.1	0.3	5.6	0.0	0.0
Cycle Q Clear(g_c), s	11.7	1.1	0.3	5.6	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	282	251	526	2635	2333	1041
V/C Ratio(X)	0.84	0.09	0.04	0.15	0.31	0.20
Avail Cap(c_a), veh/h	524	467	612	2635	2333	1041
HCM Platoon Ratio	1.00	1.00	0.67	0.67	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	36.8	32.3	3.8	7.3	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.1	0.0	0.1	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	1.0	0.1	1.8	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.5	32.5	3.8	7.4	0.3	0.4
LnGrp LOS	D	C	A	A	A	A
Approach Vol, veh/h	260			430	926	
Approach Delay, s/veh	42.6			7.2	0.4	
Approach LOS	D			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		71.2		18.8	6.7	64.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		54.5		26.5	6.5	43.5
Max Q Clear Time (g_c+I1), s		7.6		13.7	2.3	2.0
Green Ext Time (p_c), s		2.9		0.6	0.0	6.8

Intersection Summary		
HCM 6th Ctrl Delay		9.0
HCM 6th LOS		A

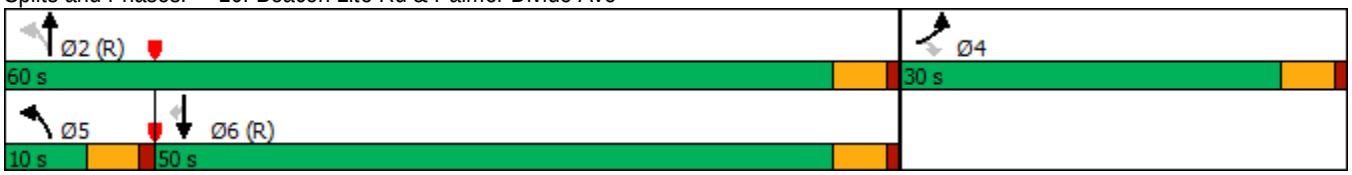
10: Beacon Lite Rd & Palmer Divide Ave

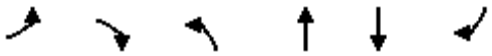
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	244	27	30	472	866	173
Future Volume (vph)	244	27	30	472	866	173
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	30.0	30.0	10.0	60.0	50.0	50.0
Total Split (%)	33.3%	33.3%	11.1%	66.7%	55.6%	55.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: Beacon Lite Rd & Palmer Divide Ave





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	244	27	30	472	866	173
Future Volume (veh/h)	244	27	30	472	866	173
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1841	1841
Adj Flow Rate, veh/h	277	31	34	536	984	197
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	4	4
Cap, veh/h	321	286	439	2557	2230	995
Arrive On Green	0.18	0.18	0.03	0.72	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3589	1560
Grp Volume(v), veh/h	277	31	34	536	984	197
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1749	1560
Q Serve(g_s), s	13.6	1.5	0.5	4.5	0.0	0.0
Cycle Q Clear(g_c), s	13.6	1.5	0.5	4.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	321	286	439	2557	2230	995
V/C Ratio(X)	0.86	0.11	0.08	0.21	0.44	0.20
Avail Cap(c_a), veh/h	505	449	492	2557	2230	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	35.8	30.8	4.4	4.2	0.0	0.0
Incr Delay (d2), s/veh	8.9	0.2	0.1	0.2	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	1.4	0.2	1.3	0.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.7	31.0	4.5	4.4	0.6	0.4
LnGrp LOS	D	C	A	A	A	A
Approach Vol, veh/h	308			570	1181	
Approach Delay, s/veh	43.3			4.4	0.6	
Approach LOS	D			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		69.3		20.7	7.4	61.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		55.5		25.5	5.5	45.5
Max Q Clear Time (g_c+I1), s		6.5		15.6	2.5	2.0
Green Ext Time (p_c), s		3.9		0.7	0.0	10.1

Intersection Summary	
HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A

Intersection	
Intersection Delay, s/veh	6.3
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	260	430	926
Demand Flow Rate, veh/h	265	438	963
Vehicles Circulating, veh/h	747	243	23
Vehicles Exiting, veh/h	239	769	658
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.3	5.1	6.0
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	265	206	232	453	510
Cap Entry Lane, veh/h	753	1079	1155	1322	1393
Entry HV Adj Factor	0.981	0.981	0.982	0.961	0.963
Flow Entry, veh/h	260	202	228	435	491
Cap Entry, veh/h	738	1059	1134	1270	1341
V/C Ratio	0.352	0.191	0.201	0.343	0.366
Control Delay, s/veh	9.3	5.2	5.0	6.0	6.1
LOS	A	A	A	A	A
95th %tile Queue, veh	2	1	1	2	2

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	308	570	1181
Demand Flow Rate, veh/h	315	582	1228
Vehicles Circulating, veh/h	1023	283	35
Vehicles Exiting, veh/h	240	1055	830
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.6	6.0	7.4
Approach LOS	C	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.471	0.529	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	315	274	308	577	651
Cap Entry Lane, veh/h	595	1040	1116	1307	1378
Entry HV Adj Factor	0.978	0.978	0.981	0.962	0.961
Flow Entry, veh/h	308	268	302	555	626
Cap Entry, veh/h	582	1018	1096	1257	1325
V/C Ratio	0.529	0.263	0.276	0.441	0.472
Control Delay, s/veh	15.6	6.1	5.9	7.3	7.5
LOS	C	A	A	A	A
95th %tile Queue, veh	3	1	1	2	3

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	102	45	239	102	0	0	0	0	75	5	17
Future Vol, veh/h	0	102	45	239	102	0	0	0	0	75	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	113	50	266	113	0	0	0	0	83	6	19

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	163	0	0	783	808	113
Stage 1	-	-	-	-	-	-	645	645	-
Stage 2	-	-	-	-	-	-	138	163	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	1416	-	0	347	303	911
Stage 1	0	-	-	-	-	0	502	451	-
Stage 2	0	-	-	-	-	0	862	743	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1416	-	-	282	0	911
Mov Cap-2 Maneuver	-	-	-	-	-	-	282	0	-
Stage 1	-	-	-	-	-	-	502	0	-
Stage 2	-	-	-	-	-	-	700	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.7	21.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1416	-	323
HCM Lane V/C Ratio	-	-	0.188	-	0.334
HCM Control Delay (s)	-	-	8.1	-	21.6
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.7	-	1.4

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	98	71	125	87	0	0	0	0	239	2	33
Future Vol, veh/h	0	98	71	125	87	0	0	0	0	239	2	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	101	73	129	90	0	0	0	0	246	2	34

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	174	0	0	486	522	90
Stage 1	-	-	-	-	-	-	348	348	-
Stage 2	-	-	-	-	-	-	138	174	-
Critical Hdwy	-	-	-	4.13	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1397	-	0	540	459	968
Stage 1	0	-	-	-	-	0	715	634	-
Stage 2	0	-	-	-	-	0	889	755	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1397	-	-	490	0	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	490	0	-
Stage 1	-	-	-	-	-	-	715	0	-
Stage 2	-	-	-	-	-	-	807	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.6	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1397	-	521
HCM Lane V/C Ratio	-	-	0.092	-	0.542
HCM Control Delay (s)	-	-	7.8	-	19.8
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.3	-	3.2

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	115	49	316	118	0	0	0	0	94	5	19
Future Vol, veh/h	0	115	49	316	118	0	0	0	0	94	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	128	54	351	131	0	0	0	0	104	6	21

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	182	0	0	988	1015	131
Stage 1	-	-	-	-	-	-	833	833	-
Stage 2	-	-	-	-	-	-	155	182	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	1393	-	0	262	228	890
Stage 1	0	-	-	-	-	0	409	369	-
Stage 2	0	-	-	-	-	0	847	729	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1393	-	-	196	0	890
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	0	-
Stage 1	-	-	-	-	-	-	409	0	-
Stage 2	-	-	-	-	-	-	634	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.2	40.8
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1393	-	226
HCM Lane V/C Ratio	-	-	0.252	-	0.58
HCM Control Delay (s)	-	-	8.5	-	40.8
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	1	-	3.3

Intersection	
Int Delay, s/veh	19.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	118	78	178	99	0	0	0	0	290	2	36
Future Vol, veh/h	0	118	78	178	99	0	0	0	0	290	2	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	122	80	184	102	0	0	0	0	299	2	37

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	202	0	0	632	672	102
Stage 1	-	-	-	-	-	-	470	470	-
Stage 2	-	-	-	-	-	-	162	202	-
Critical Hdwy	-	-	-	4.13	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1364	-	0	444	377	953
Stage 1	0	-	-	-	-	0	629	560	-
Stage 2	0	-	-	-	-	0	867	734	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1364	-	-	384	0	953
Mov Cap-2 Maneuver	-	-	-	-	-	-	384	0	-
Stage 1	-	-	-	-	-	-	629	0	-
Stage 2	-	-	-	-	-	-	750	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.2	43.4
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1364	-	411
HCM Lane V/C Ratio	-	-	0.135	-	0.823
HCM Control Delay (s)	-	-	8	-	43.4
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	0.5	-	7.6

Intersection	
Int Delay, s/veh	244.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	448	373	316	435	0	0	0	0	94	5	317
Future Vol, veh/h	0	448	373	316	435	0	0	0	0	94	5	317
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	498	414	351	483	0	0	0	0	104	6	352

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	912	0	0	1890	2097	483
Stage 1	-	-	-	-	-	-	1185	1185	-
Stage 2	-	-	-	-	-	-	705	912	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	747	-	0	~ 72	49	562
Stage 1	0	-	-	-	-	0	276	250	-
Stage 2	0	-	-	-	-	0	470	338	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	747	-	-	~ 38	0	562
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 38	0	-
Stage 1	-	-	-	-	-	-	276	0	-
Stage 2	-	-	-	-	-	-	249	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	$ 1158.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	747	-	135
HCM Lane V/C Ratio	-	-	0.47	-	3.424
HCM Control Delay (s)	-	-	14	-	$ 1158.9
HCM Lane LOS	-	-	B	-	F
HCM 95th %tile Q(veh)	-	-	2.5	-	44.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	519.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	525	473	178	513	0	0	0	0	290	2	425
Future Vol, veh/h	0	525	473	178	513	0	0	0	0	290	2	425
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	541	488	184	529	0	0	0	0	299	2	438

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1029	0	0	1682	1926	529
Stage 1	-	-	-	-	-	-	897	897	-
Stage 2	-	-	-	-	-	-	785	1029	-
Critical Hdwy	-	-	-	4.13	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	671	-	0	~ 104	67	550
Stage 1	0	-	-	-	-	0	398	358	-
Stage 2	0	-	-	-	-	0	449	311	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	671	-	-	~ 76	0	550
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 76	0	-
Stage 1	-	-	-	-	-	-	398	0	-
Stage 2	-	-	-	-	-	-	326	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.2	$ 1739.1
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	671	-	156
HCM Lane V/C Ratio	-	-	0.273	-	4.738
HCM Control Delay (s)	-	-	12.4	-	$ 1739.1
HCM Lane LOS	-	-	B	-	F
HCM 95th %tile Q(veh)	-	-	1.1	-	76.5

Notes

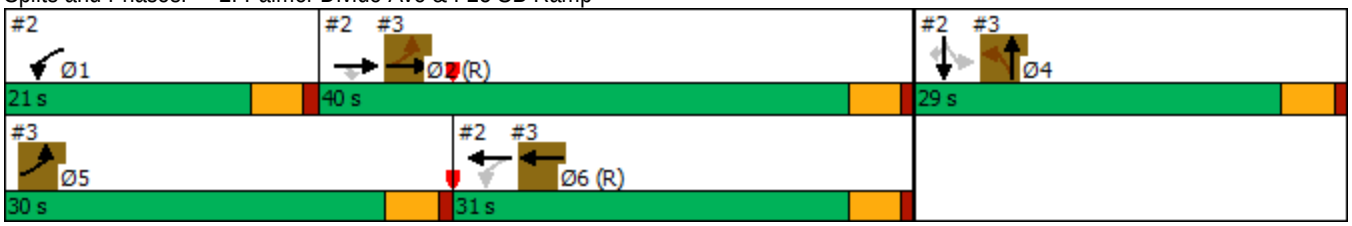
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

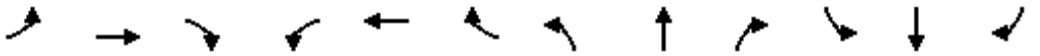
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations							
Traffic Volume (vph)	448	373	316	435	5	317	
Future Volume (vph)	448	373	316	435	5	317	
Turn Type	NA	Perm	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		2	6			4	
Detector Phase	2	2	1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	9.5
Total Split (s)	40.0	40.0	21.0	31.0	29.0	29.0	30.0
Total Split (%)	44.4%	44.4%	23.3%	34.4%	32.2%	32.2%	33%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	448	373	316	435	0	0	0	0	94	5	317
Future Volume (vph)	0	448	373	316	435	0	0	0	0	94	5	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.92	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.98	1.00
Satd. Flow (prot)		3539	1583	1770	3539						1437	1358
Flt Permitted		1.00	1.00	0.47	1.00						0.98	1.00
Satd. Flow (perm)		3539	1583	875	3539						1437	1358
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	498	414	351	483	0	0	0	0	104	6	352
RTOR Reduction (vph)	0	0	237	0	0	0	0	0	0	0	46	164
Lane Group Flow (vph)	0	498	177	351	483	0	0	0	0	0	191	61
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	13%	13%	13%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		38.5	38.5	46.3	32.8						24.5	24.5
Effective Green, g (s)		38.5	38.5	46.3	32.8						24.5	24.5
Actuated g/C Ratio		0.43	0.43	0.51	0.36						0.27	0.27
Clearance Time (s)		4.5	4.5	4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1513	677	584	1289						391	369
v/s Ratio Prot		c0.14		c0.09	0.14							
v/s Ratio Perm			0.11	c0.22							0.13	0.05
v/c Ratio		0.33	0.26	0.60	0.37						0.49	0.17
Uniform Delay, d1		17.1	16.6	13.2	21.1						27.5	25.0
Progression Factor		0.85	0.48	1.18	1.05						1.00	1.00
Incremental Delay, d2		0.6	0.9	1.5	0.7						4.3	1.0
Delay (s)		15.1	8.9	17.1	22.7						31.8	25.9
Level of Service		B	A	B	C						C	C
Approach Delay (s)		12.3			20.3			0.0			28.9	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

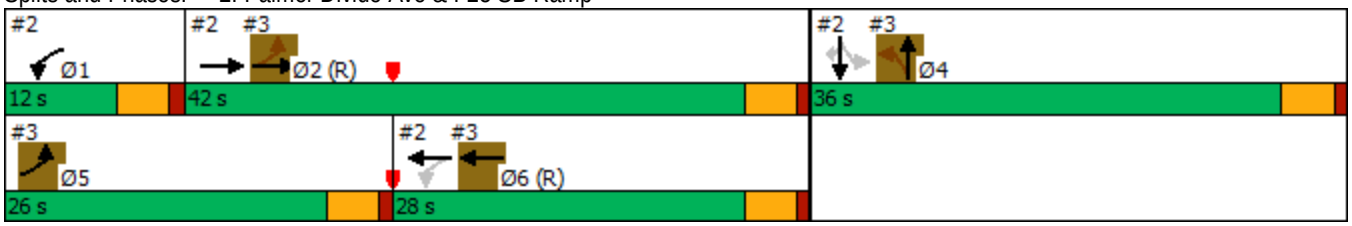
Timings
2: Palmer Divide Ave & I-25 SB Ramp

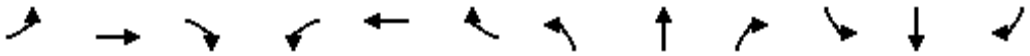
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations							
Traffic Volume (vph)	525	473	178	513	2	425	
Future Volume (vph)	525	473	178	513	2	425	
Turn Type	NA	Free	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		Free	6			4	
Detector Phase	2		1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5	9.5
Total Split (s)	42.0		12.0	28.0	36.0	36.0	26.0
Total Split (%)	46.7%		13.3%	31.1%	40.0%	40.0%	29%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lag		Lead	Lag			Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes
Recall Mode	C-Max		None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	525	473	178	513	0	0	0	0	290	2	425
Future Volume (vph)	0	525	473	178	513	0	0	0	0	290	2	425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.97	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.96	1.00
Satd. Flow (prot)		3505	1568	1752	3505						1648	1504
Flt Permitted		1.00	1.00	0.45	1.00						0.96	1.00
Satd. Flow (perm)		3505	1568	831	3505						1648	1504
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	541	488	184	529	0	0	0	0	299	2	438
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	11	231
Lane Group Flow (vph)	0	541	488	184	529	0	0	0	0	0	373	124
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			Free	6						4		4
Actuated Green, G (s)		37.6	90.0	33.9	26.5						31.5	31.5
Effective Green, g (s)		37.6	90.0	33.9	26.5						31.5	31.5
Actuated g/C Ratio		0.42	1.00	0.38	0.29						0.35	0.35
Clearance Time (s)		4.5		4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1464	1568	388	1032						576	526
v/s Ratio Prot		0.15		0.04	c0.15							
v/s Ratio Perm			c0.31	0.14							0.23	0.08
v/c Ratio		0.37	0.31	0.47	0.51						0.65	0.24
Uniform Delay, d1		18.0	0.0	19.5	26.4						24.6	20.7
Progression Factor		0.81	1.00	1.32	1.24						1.00	1.00
Incremental Delay, d2		0.7	0.5	0.8	1.5						5.5	1.1
Delay (s)		15.3	0.5	26.5	34.3						30.1	21.8
Level of Service		B	A	C	C						C	C
Approach Delay (s)		8.3			32.3			0.0			26.1	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	81.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	170	74	445	173	0	0	0	0	135	8	28
Future Vol, veh/h	0	170	74	445	173	0	0	0	0	135	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	13	13	13
Mvmt Flow	0	189	82	494	192	0	0	0	0	150	9	31

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	271	0	0	1410	1451	192
Stage 1	-	-	-	-	-	-	1180	1180	-
Stage 2	-	-	-	-	-	-	230	271	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.63	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4.117	3.417
Pot Cap-1 Maneuver	0	-	-	1292	-	0	~ 144	124	822
Stage 1	0	-	-	-	-	0	277	252	-
Stage 2	0	-	-	-	-	0	783	666	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1292	-	-	~ 89	0	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 89	0	-
Stage 1	-	-	-	-	-	-	277	0	-
Stage 2	-	-	-	-	-	-	484	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.8	$ 468.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1292	-	105
HCM Lane V/C Ratio	-	-	0.383	-	1.81
HCM Control Delay (s)	-	-	9.5	-	$ 468.6
HCM Lane LOS	-	-	A	-	F
HCM 95th %tile Q(veh)	-	-	1.8	-	15.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	170.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	170	116	245	145	0	0	0	0	419	3	54
Future Vol, veh/h	0	170	116	245	145	0	0	0	0	419	3	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	2	2	2	2	2	2
Mvmt Flow	0	175	120	253	149	0	0	0	0	432	3	56

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	295	0	0	890	950	149
Stage 1	-	-	-	-	-	-	655	655	-
Stage 2	-	-	-	-	-	-	235	295	-
Critical Hdwy	-	-	-	4.13	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1261	-	0	~ 313	260	898
Stage 1	0	-	-	-	-	0	517	463	-
Stage 2	0	-	-	-	-	0	804	669	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1261	-	-	~ 250	0	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 250	0	-
Stage 1	-	-	-	-	-	-	517	0	-
Stage 2	-	-	-	-	-	-	642	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.4	$ 407.7
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1261	-	272
HCM Lane V/C Ratio	-	-	0.2	-	1.804
HCM Control Delay (s)	-	-	8.6	-	$ 407.7
HCM Lane LOS	-	-	A	-	F
HCM 95th %tile Q(veh)	-	-	0.7	-	32.9

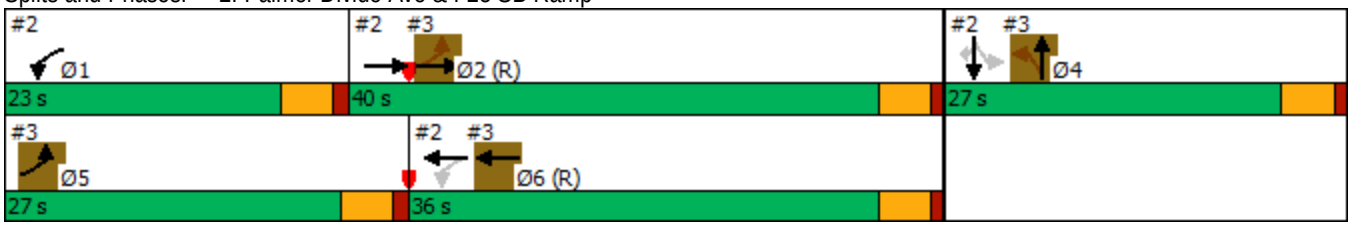
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations							
Traffic Volume (vph)	503	398	445	490	8	326	
Future Volume (vph)	503	398	445	490	8	326	
Turn Type	NA	Free	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		Free	6			4	
Detector Phase	2		1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5	9.5
Total Split (s)	40.0		23.0	36.0	27.0	27.0	27.0
Total Split (%)	44.4%		25.6%	40.0%	30.0%	30.0%	30%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lag		Lead	Lag			Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes
Recall Mode	C-Max		None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	503	398	445	490	0	0	0	0	135	8	326
Future Volume (vph)	0	503	398	445	490	0	0	0	0	135	8	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.97	1.00
Satd. Flow (prot)		3539	1583	1770	3539						1459	1358
Flt Permitted		1.00	1.00	0.41	1.00						0.97	1.00
Satd. Flow (perm)		3539	1583	772	3539						1459	1358
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	559	442	494	544	0	0	0	0	150	9	362
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	28	190
Lane Group Flow (vph)	0	559	442	494	544	0	0	0	0	0	240	63
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	13%	13%	13%
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			Free	6						4		4
Actuated Green, G (s)		37.1	90.0	50.3	33.4						22.5	22.5
Effective Green, g (s)		37.1	90.0	50.3	33.4						22.5	22.5
Actuated g/C Ratio		0.41	1.00	0.56	0.37						0.25	0.25
Clearance Time (s)		4.5		4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1458	1583	618	1313						364	339
v/s Ratio Prot		0.16		c0.15	0.15							
v/s Ratio Perm			c0.28	c0.30							0.16	0.05
v/c Ratio		0.38	0.28	0.80	0.41						0.66	0.19
Uniform Delay, d1		18.5	0.0	12.2	21.0						30.3	26.6
Progression Factor		0.84	1.00	1.49	1.03						1.00	1.00
Incremental Delay, d2		0.8	0.4	4.9	0.6						9.1	1.2
Delay (s)		16.3	0.4	23.1	22.3						39.4	27.8
Level of Service		B	A	C	C						D	C
Approach Delay (s)		9.3			22.7			0.0			33.7	
Approach LOS		A			C			A			C	

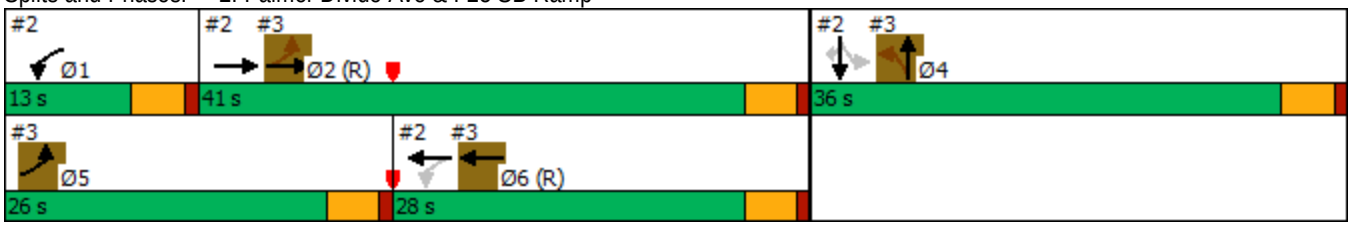
Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

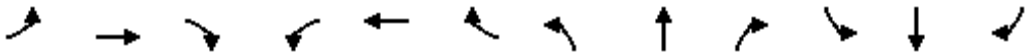
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR	Ø5
Lane Configurations							
Traffic Volume (vph)	577	511	245	559	3	443	
Future Volume (vph)	577	511	245	559	3	443	
Turn Type	NA	Free	pm+pt	NA	NA	Perm	
Protected Phases	2		1	6	4		5
Permitted Phases		Free	6			4	
Detector Phase	2		1	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		9.5	22.5	22.5	22.5	9.5
Total Split (s)	41.0		13.0	28.0	36.0	36.0	26.0
Total Split (%)	45.6%		14.4%	31.1%	40.0%	40.0%	29%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lag		Lead	Lag			Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes
Recall Mode	C-Max		None	C-Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Palmer Divide Ave & I-25 SB Ramp





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	577	511	245	559	0	0	0	0	419	3	443
Future Volume (vph)	0	577	511	245	559	0	0	0	0	419	3	443
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.0	4.5	4.5						4.5	4.5
Lane Util. Factor		0.95	1.00	1.00	0.95						0.95	0.95
Frt		1.00	0.85	1.00	1.00						0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.96	1.00
Satd. Flow (prot)		3505	1568	1752	3505						1669	1504
Flt Permitted		1.00	1.00	0.43	1.00						0.96	1.00
Satd. Flow (perm)		3505	1568	788	3505						1669	1504
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	595	527	253	576	0	0	0	0	432	3	457
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	5	267
Lane Group Flow (vph)	0	595	527	253	576	0	0	0	0	0	476	144
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			Free	6						4		4
Actuated Green, G (s)		36.5	90.0	33.6	25.1						31.5	31.5
Effective Green, g (s)		36.5	90.0	33.6	25.1						31.5	31.5
Actuated g/C Ratio		0.41	1.00	0.37	0.28						0.35	0.35
Clearance Time (s)		4.5		4.5	4.5						4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1421	1568	385	977						584	526
v/s Ratio Prot		0.17		c0.06	0.16							
v/s Ratio Perm			c0.34	c0.18							0.29	0.10
v/c Ratio		0.42	0.34	0.66	0.59						0.82	0.27
Uniform Delay, d1		19.2	0.0	20.7	28.0						26.6	21.0
Progression Factor		0.77	1.00	1.13	1.10						1.00	1.00
Incremental Delay, d2		0.9	0.6	3.0	1.9						11.9	1.3
Delay (s)		15.6	0.6	26.3	32.9						38.5	22.3
Level of Service		B	A	C	C						D	C
Approach Delay (s)		8.5			30.9			0.0			31.1	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	143	0	0	291	216	49	0	58	0	0	0
Future Vol, veh/h	34	143	0	0	291	216	49	0	58	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	39	163	0	0	331	245	56	0	66	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	576	0	-	-	-	0	407	817	163
Stage 1	-	-	-	-	-	-	241	241	-
Stage 2	-	-	-	-	-	-	166	576	-
Critical Hdwy	4.175	-	-	-	-	-	6.66	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	5.46	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	5.56	-
Follow-up Hdwy	2.2475	-	-	-	-	-	3.538	4.038	3.338
Pot Cap-1 Maneuver	978	-	0	0	-	-	581	307	875
Stage 1	-	-	0	0	-	-	793	701	-
Stage 2	-	-	0	0	-	-	842	497	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	978	-	-	-	-	-	558	0	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	558	0	-
Stage 1	-	-	-	-	-	-	761	0	-
Stage 2	-	-	-	-	-	-	842	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	694	978	-	-	-
HCM Lane V/C Ratio	0.175	0.04	-	-	-
HCM Control Delay (s)	11.3	8.8	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0.1	-	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	293	0	0	157	126	50	1	166	0	0	0
Future Vol, veh/h	35	293	0	0	157	126	50	1	166	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	312	0	0	167	134	53	1	177	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	301	0	-	-	-	0	470	687	312
Stage 1	-	-	-	-	-	-	386	386	-
Stage 2	-	-	-	-	-	-	84	301	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1258	-	0	0	-	-	537	369	727
Stage 1	-	-	0	0	-	-	686	609	-
Stage 2	-	-	0	0	-	-	930	664	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1258	-	-	-	-	-	521	0	727
Mov Cap-2 Maneuver	-	-	-	-	-	-	521	0	-
Stage 1	-	-	-	-	-	-	666	0	-
Stage 2	-	-	-	-	-	-	930	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	666	1258	-	-	-
HCM Lane V/C Ratio	0.347	0.03	-	-	-
HCM Control Delay (s)	13.2	7.9	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.5	0.1	-	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	172	0	0	380	264	54	0	87	0	0	0
Future Vol, veh/h	37	172	0	0	380	264	54	0	87	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	42	195	0	0	432	300	61	0	99	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	732	0	-	-	-	0	495	1011	195
Stage 1	-	-	-	-	-	-	279	279	-
Stage 2	-	-	-	-	-	-	216	732	-
Critical Hdwy	4.175	-	-	-	-	-	6.66	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	5.46	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	5.56	-
Follow-up Hdwy	2.2475	-	-	-	-	-	3.538	4.038	3.338
Pot Cap-1 Maneuver	854	-	0	0	-	-	514	236	840
Stage 1	-	-	0	0	-	-	762	675	-
Stage 2	-	-	0	0	-	-	795	422	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	854	-	-	-	-	-	489	0	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	489	0	-
Stage 1	-	-	-	-	-	-	725	0	-
Stage 2	-	-	-	-	-	-	795	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	659	854	-	-	-
HCM Lane V/C Ratio	0.243	0.049	-	-	-
HCM Control Delay (s)	12.2	9.4	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.9	0.2	-	-	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	360	0	0	216	157	55	1	240	0	0	0
Future Vol, veh/h	38	360	0	0	216	157	55	1	240	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	383	0	0	230	167	59	1	255	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	397	0	-	-	-	0	578	860	383
Stage 1	-	-	-	-	-	-	463	463	-
Stage 2	-	-	-	-	-	-	115	397	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1160	-	0	0	-	-	462	293	664
Stage 1	-	-	0	0	-	-	633	563	-
Stage 2	-	-	0	0	-	-	898	603	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1160	-	-	-	-	-	446	0	664
Mov Cap-2 Maneuver	-	-	-	-	-	-	446	0	-
Stage 1	-	-	-	-	-	-	611	0	-
Stage 2	-	-	-	-	-	-	898	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	609	1160	-	-	-
HCM Lane V/C Ratio	0.517	0.035	-	-	-
HCM Control Delay (s)	17.1	8.2	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	3	0.1	-	-	-

Intersection	
Int Delay, s/veh	455.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	356	185	0	0	394	264	357	0	87	0	0	0
Future Vol, veh/h	356	185	0	0	394	264	357	0	87	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	405	210	0	0	448	300	406	0	99	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	748	0	-	-	-	0	1244	1768	210
Stage 1	-	-	-	-	-	-	1020	1020	-
Stage 2	-	-	-	-	-	-	224	748	-
Critical Hdwy	4.175	-	-	-	-	-	6.66	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	5.46	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	5.56	-
Follow-up Hdwy	2.2475	-	-	-	-	-	3.538	4.038	3.338
Pot Cap-1 Maneuver	842	-	0	0	-	-	~ 177	82	824
Stage 1	-	-	0	0	-	-	~ 343	310	-
Stage 2	-	-	0	0	-	-	787	415	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	842	-	-	-	-	-	~ 92	0	824
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 92	0	-
Stage 1	-	-	-	-	-	-	~ 178	0	-
Stage 2	-	-	-	-	-	-	787	0	-

Approach	EB	WB	NB
HCM Control Delay, s	8.7	0	$ 1673.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	111	842	-	-	-
HCM Lane V/C Ratio	4.545	0.48	-	-	-
HCM Control Delay (s)	$ 1673.4	13.2	-	-	-
HCM Lane LOS	F	B	-	-	-
HCM 95th %tile Q(veh)	52.8	2.6	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	907.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	427	379	0	0	235	157	450	1	240	0	0	0
Future Vol, veh/h	427	379	0	0	235	157	450	1	240	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	454	403	0	0	250	167	479	1	255	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	417	0	-	-	-	0	1436	1728	403
Stage 1	-	-	-	-	-	-	1311	1311	-
Stage 2	-	-	-	-	-	-	125	417	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1140	-	0	0	-	-	~ 135	88	647
Stage 1	-	-	0	0	-	-	~ 251	228	-
Stage 2	-	-	0	0	-	-	888	590	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1140	-	-	-	-	-	~ 81	0	647
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 81	0	-
Stage 1	-	-	-	-	-	-	~ 151	0	-
Stage 2	-	-	-	-	-	-	888	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.4	0	$ 2474
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	116	1140	-	-	-
HCM Lane V/C Ratio	6.337	0.398	-	-	-
HCM Control Delay (s)	$ 2474	10.2	-	-	-
HCM Lane LOS	F	B	-	-	-
HCM 95th %tile Q(veh)	80.8	1.9	-	-	-

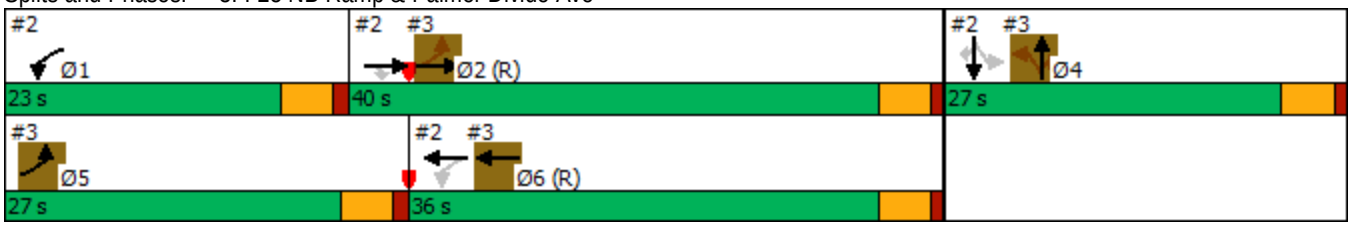
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	Ø1
Lane Configurations							
Traffic Volume (vph)	356	185	394	357	0	87	
Future Volume (vph)	356	185	394	357	0	87	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases	2			4		4	
Detector Phase	5	2	6	4	4	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	27.0	40.0	36.0	27.0	27.0	27.0	23.0
Total Split (%)	30.0%	44.4%	40.0%	30.0%	30.0%	30.0%	26%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Recall Mode	None	C-Max	C-Max	Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	356	185	0	0	394	264	357	0	87	0	0	0
Future Volume (vph)	356	185	0	0	394	264	357	0	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	1.00	1.00			0.91		0.95	0.95	1.00			
Frt	1.00	1.00			0.94		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1719	1810			4779		1649	1649	1553			
Flt Permitted	0.29	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	524	1810			4779		1649	1649	1553			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	405	210	0	0	448	300	406	0	99	0	0	0
RTOR Reduction (vph)	0	0	0	0	120	0	0	0	74	0	0	0
Lane Group Flow (vph)	405	210	0	0	628	0	203	203	25	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2						4		4			
Actuated Green, G (s)	56.7	40.6			37.9		22.5	22.5	22.5			
Effective Green, g (s)	56.7	40.6			37.9		22.5	22.5	22.5			
Actuated g/C Ratio	0.63	0.45			0.42		0.25	0.25	0.25			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	543	816			2012		412	412	388			
v/s Ratio Prot	c0.13	0.12			0.13							
v/s Ratio Perm	c0.34						c0.12	0.12	0.02			
v/c Ratio	0.75	0.26			0.31		0.49	0.49	0.06			
Uniform Delay, d1	8.9	15.3			17.4		28.9	28.9	25.7			
Progression Factor	3.39	0.48			1.00		1.00	1.00	1.00			
Incremental Delay, d2	5.3	0.7			0.4		4.2	4.2	0.3			
Delay (s)	35.5	8.0			17.8		33.0	33.0	26.0			
Level of Service	D	A			B		C	C	C			
Approach Delay (s)		26.1			17.8			31.7			0.0	
Approach LOS		C			B			C			A	

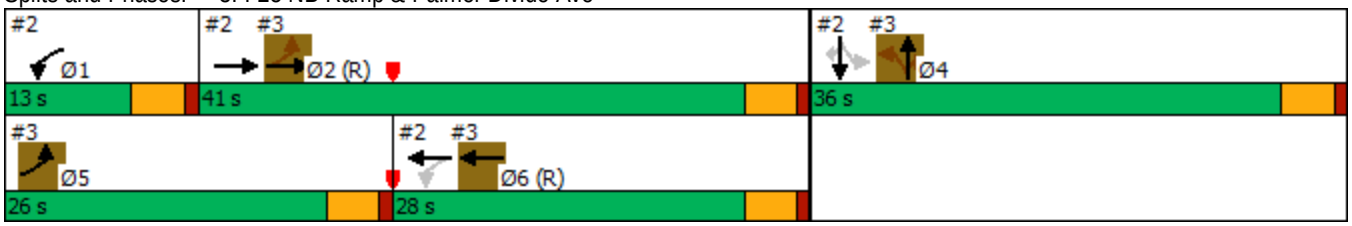
Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

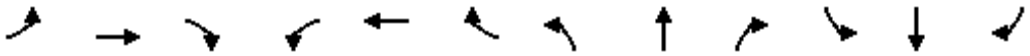
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	Ø1
Lane Configurations							
Traffic Volume (vph)	427	379	235	450	1	240	
Future Volume (vph)	427	379	235	450	1	240	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases	2			4		4	
Detector Phase	5	2	6	4	4	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	26.0	41.0	28.0	36.0	36.0	36.0	13.0
Total Split (%)	28.9%	45.6%	31.1%	40.0%	40.0%	40.0%	14%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Recall Mode	None	C-Max	C-Max	Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	427	379	0	0	235	157	450	1	240	0	0	0
Future Volume (vph)	427	379	0	0	235	157	450	1	240	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	1.00	1.00			0.91		0.95	0.95	1.00			
Frt	1.00	1.00			0.94		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1770	1863			4780		1681	1686	1583			
Flt Permitted	0.40	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	754	1863			4780		1681	1686	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	454	403	0	0	250	167	479	1	255	0	0	0
RTOR Reduction (vph)	0	0	0	0	118	0	0	0	166	0	0	0
Lane Group Flow (vph)	454	403	0	0	299	0	239	241	89	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2						4		4			
Actuated Green, G (s)	49.5	36.8			26.6		31.5	31.5	31.5			
Effective Green, g (s)	49.5	36.8			26.6		31.5	31.5	31.5			
Actuated g/C Ratio	0.55	0.41			0.30		0.35	0.35	0.35			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	622	761			1412		588	590	554			
v/s Ratio Prot	c0.15	0.22			0.06							
v/s Ratio Perm	c0.25						0.14	0.14	0.06			
v/c Ratio	0.73	0.53			0.21		0.41	0.41	0.16			
Uniform Delay, d1	12.6	20.1			23.8		22.2	22.2	20.1			
Progression Factor	1.47	0.75			1.00		1.00	1.00	1.00			
Incremental Delay, d2	3.9	2.4			0.3		2.1	2.1	0.6			
Delay (s)	22.5	17.4			24.2		24.2	24.3	20.8			
Level of Service	C	B			C		C	C	C			
Approach Delay (s)		20.1			24.2			23.0			0.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	249	0	0	536	380	80	0	118	0	0	0
Future Vol, veh/h	56	249	0	0	536	380	80	0	118	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	2	2	2	4	4	4	2	2	2
Mvmt Flow	64	283	0	0	609	432	91	0	134	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1041	0	-	-	-	0	716	1452	283
Stage 1	-	-	-	-	-	-	411	411	-
Stage 2	-	-	-	-	-	-	305	1041	-
Critical Hdwy	4.175	-	-	-	-	-	6.66	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	5.46	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	5.56	-
Follow-up Hdwy	2.2475	-	-	-	-	-	3.538	4.038	3.338
Pot Cap-1 Maneuver	651	-	0	0	-	-	377	128	750
Stage 1	-	-	0	0	-	-	663	590	-
Stage 2	-	-	0	0	-	-	717	303	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	651	-	-	-	-	-	340	0	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	340	0	-
Stage 1	-	-	-	-	-	-	598	0	-
Stage 2	-	-	-	-	-	-	717	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	504	651	-	-	-
HCM Lane V/C Ratio	0.446	0.098	-	-	-
HCM Control Delay (s)	17.8	11.1	-	-	-
HCM Lane LOS	C	B	-	-	-
HCM 95th %tile Q(veh)	2.3	0.3	-	-	-

Intersection	
Int Delay, s/veh	16.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	517	0	0	301	225	82	2	329	0	0	0
Future Vol, veh/h	57	517	0	0	301	225	82	2	329	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	550	0	0	320	239	87	2	350	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	559	0	-	-	-	0	832	1231	550
Stage 1	-	-	-	-	-	-	672	672	-
Stage 2	-	-	-	-	-	-	160	559	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.83	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1010	-	0	0	-	-	323	177	534
Stage 1	-	-	0	0	-	-	506	454	-
Stage 2	-	-	0	0	-	-	853	510	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1010	-	-	-	-	-	304	0	534
Mov Cap-2 Maneuver	-	-	-	-	-	-	304	0	-
Stage 1	-	-	-	-	-	-	476	0	-
Stage 2	-	-	-	-	-	-	853	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0	59.5
HCM LOS			F

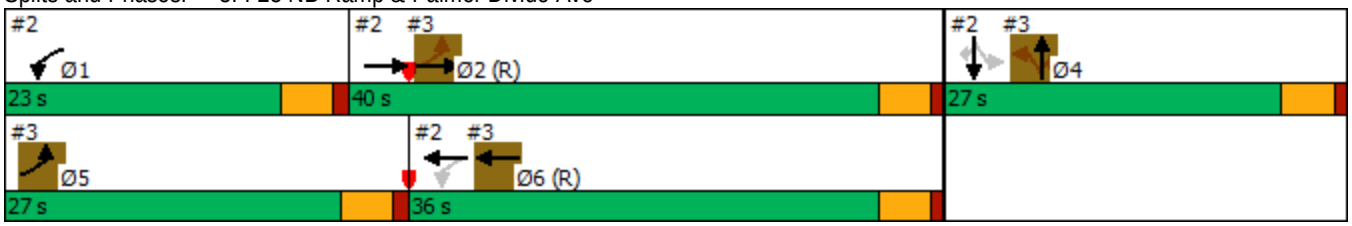
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	464	1010	-	-	-
HCM Lane V/C Ratio	0.947	0.06	-	-	-
HCM Control Delay (s)	59.5	8.8	-	-	-
HCM Lane LOS	F	A	-	-	-
HCM 95th %tile Q(veh)	11.4	0.2	-	-	-

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	Ø1
Lane Configurations							
Traffic Volume (vph)	375	262	550	383	0	118	
Future Volume (vph)	375	262	550	383	0	118	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases	2			4		4	
Detector Phase	5	2	6	4	4	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	27.0	40.0	36.0	27.0	27.0	27.0	23.0
Total Split (%)	30.0%	44.4%	40.0%	30.0%	30.0%	30.0%	26%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Recall Mode	None	C-Max	C-Max	Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	262	0	0	550	380	383	0	118	0	0	0
Future Volume (vph)	375	262	0	0	550	380	383	0	118	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	1.00	1.00			0.91		0.95	0.95	1.00			
Frt	1.00	1.00			0.94		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1719	1810			4774		1649	1649	1553			
Flt Permitted	0.16	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	294	1810			4774		1649	1649	1553			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	426	298	0	0	625	432	435	0	134	0	0	0
RTOR Reduction (vph)	0	0	0	0	132	0	0	0	101	0	0	0
Lane Group Flow (vph)	426	298	0	0	925	0	217	218	34	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2						4		4			
Actuated Green, G (s)	57.0	37.1			34.1		22.5	22.5	22.5			
Effective Green, g (s)	57.0	37.1			34.1		22.5	22.5	22.5			
Actuated g/C Ratio	0.63	0.41			0.38		0.25	0.25	0.25			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	501	746			1808		412	412	388			
v/s Ratio Prot	c0.19	0.16			0.19							
v/s Ratio Perm	c0.35						0.13	0.13	0.02			
v/c Ratio	0.85	0.40			0.51		0.53	0.53	0.09			
Uniform Delay, d1	18.2	18.6			21.5		29.2	29.2	25.9			
Progression Factor	2.36	0.50			1.00		1.00	1.00	1.00			
Incremental Delay, d2	12.0	1.5			1.0		4.8	4.8	0.4			
Delay (s)	55.1	10.8			22.6		33.9	34.0	26.3			
Level of Service	E	B			C		C	C	C			
Approach Delay (s)		36.8			22.6			32.1			0.0	
Approach LOS		D			C			C			A	

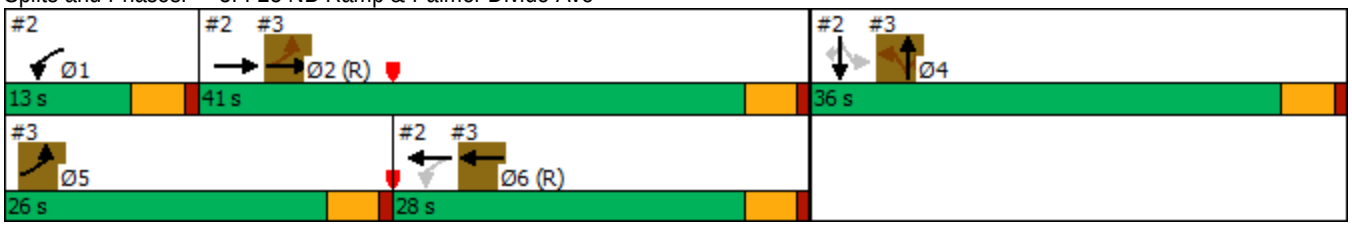
Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	Ø1
Lane Configurations							
Traffic Volume (vph)	446	536	320	477	2	329	
Future Volume (vph)	446	536	320	477	2	329	
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases	2			4		4	
Detector Phase	5	2	6	4	4	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	26.0	41.0	28.0	36.0	36.0	36.0	13.0
Total Split (%)	28.9%	45.6%	31.1%	40.0%	40.0%	40.0%	14%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Recall Mode	None	C-Max	C-Max	Max	Max	Max	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-25 NB Ramp & Palmer Divide Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	536	0	0	320	225	477	2	329	0	0	0
Future Volume (vph)	446	536	0	0	320	225	477	2	329	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	1.00	1.00			0.91		0.95	0.95	1.00			
Frt	1.00	1.00			0.94		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1770	1863			4770		1681	1686	1583			
Flt Permitted	0.30	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	563	1863			4770		1681	1686	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	474	570	0	0	340	239	507	2	350	0	0	0
RTOR Reduction (vph)	0	0	0	0	136	0	0	0	228	0	0	0
Lane Group Flow (vph)	474	570	0	0	443	0	253	256	123	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases	2						4		4			
Actuated Green, G (s)	49.5	36.5			25.6		31.5	31.5	31.5			
Effective Green, g (s)	49.5	36.5			25.6		31.5	31.5	31.5			
Actuated g/C Ratio	0.55	0.41			0.28		0.35	0.35	0.35			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	569	755			1356		588	590	554			
v/s Ratio Prot	c0.18	0.31			0.09							
v/s Ratio Perm	c0.28						0.15	0.15	0.08			
v/c Ratio	0.83	0.75			0.33		0.43	0.43	0.22			
Uniform Delay, d1	13.5	22.9			25.4		22.4	22.4	20.6			
Progression Factor	1.77	0.88			1.00		1.00	1.00	1.00			
Incremental Delay, d2	8.5	5.7			0.6		2.3	2.3	0.9			
Delay (s)	32.3	25.8			26.0		24.7	24.7	21.5			
Level of Service	C	C			C		C	C	C			
Approach Delay (s)		28.8			26.0			23.4			0.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	121	78	65	448	2	47	1	18	0	1	1
Future Vol, veh/h	3	121	78	65	448	2	47	1	18	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	146	94	78	540	2	57	1	22	0	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	542	0	0	240	0	0	899	899	193	910	945	541
Stage 1	-	-	-	-	-	-	201	201	-	697	697	-
Stage 2	-	-	-	-	-	-	698	698	-	213	248	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1012	-	-	1327	-	-	260	279	849	255	262	541
Stage 1	-	-	-	-	-	-	801	735	-	431	443	-
Stage 2	-	-	-	-	-	-	431	442	-	789	701	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1012	-	-	1327	-	-	241	254	849	231	239	541
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	254	-	231	239	-
Stage 1	-	-	-	-	-	-	797	731	-	429	406	-
Stage 2	-	-	-	-	-	-	393	405	-	764	697	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1	21.3	15.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	300	1012	-	-	1327	-	-	332
HCM Lane V/C Ratio	0.265	0.004	-	-	0.059	-	-	0.007
HCM Control Delay (s)	21.3	8.6	0	-	7.9	0	-	15.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	407	38	15	235	2	47	0	28	3	0	6
Future Vol, veh/h	10	407	38	15	235	2	47	0	28	3	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	442	41	16	255	2	51	0	30	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	257	0	0	483	0	0	777	774	463	788	793	256
Stage 1	-	-	-	-	-	-	485	485	-	288	288	-
Stage 2	-	-	-	-	-	-	292	289	-	500	505	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1308	-	-	1080	-	-	314	329	599	309	321	783
Stage 1	-	-	-	-	-	-	563	552	-	720	674	-
Stage 2	-	-	-	-	-	-	716	673	-	553	540	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1308	-	-	1080	-	-	305	319	599	287	312	783
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	319	-	287	312	-
Stage 1	-	-	-	-	-	-	556	545	-	711	663	-
Stage 2	-	-	-	-	-	-	698	662	-	519	534	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	17.3	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	373	1308	-	-	1080	-	-	497
HCM Lane V/C Ratio	0.219	0.008	-	-	0.015	-	-	0.02
HCM Control Delay (s)	17.3	7.8	0	-	8.4	0	-	12.4
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	133	124	74	492	2	139	1	26	0	1	1
Future Vol, veh/h	3	133	124	74	492	2	139	1	26	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	160	149	89	593	2	167	1	31	0	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	595	0	0	309	0	0	941	941	160	1031	1089	594
Stage 1	-	-	-	-	-	-	168	168	-	772	772	-
Stage 2	-	-	-	-	-	-	773	773	-	259	317	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	967	-	-	1252	-	-	243	263	885	211	215	505
Stage 1	-	-	-	-	-	-	834	759	-	392	409	-
Stage 2	-	-	-	-	-	-	392	409	-	746	654	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	967	-	-	1252	-	-	228	243	885	191	199	505
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	318	-	299	292	-
Stage 1	-	-	-	-	-	-	831	756	-	390	380	-
Stage 2	-	-	-	-	-	-	362	380	-	715	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	27	14.8
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	306	885	967	-	-	1252	-	-	370
HCM Lane V/C Ratio	0.551	0.035	0.004	-	-	0.071	-	-	0.007
HCM Control Delay (s)	30.3	9.2	8.7	-	-	8.1	-	-	14.8
HCM Lane LOS	D	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3.1	0.1	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	447	138	23	258	2	115	0	34	3	0	7
Future Vol, veh/h	11	447	138	23	258	2	115	0	34	3	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	486	150	25	280	2	125	0	37	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	282	0	0	636	0	0	845	842	486	935	991	281
Stage 1	-	-	-	-	-	-	510	510	-	331	331	-
Stage 2	-	-	-	-	-	-	335	332	-	604	660	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1280	-	-	947	-	-	283	301	581	246	246	758
Stage 1	-	-	-	-	-	-	546	538	-	682	645	-
Stage 2	-	-	-	-	-	-	679	644	-	485	460	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1280	-	-	947	-	-	273	290	581	224	237	758
Mov Cap-2 Maneuver	-	-	-	-	-	-	391	392	-	331	335	-
Stage 1	-	-	-	-	-	-	541	533	-	676	628	-
Stage 2	-	-	-	-	-	-	654	627	-	450	456	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	16.9	11.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	391	581	1280	-	-	947	-	-	546
HCM Lane V/C Ratio	0.32	0.064	0.009	-	-	0.026	-	-	0.02
HCM Control Delay (s)	18.5	11.6	7.8	-	-	8.9	-	-	11.7
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.4	0.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	137	133	74	497	2	149	1	26	0	1	1
Future Vol, veh/h	3	137	133	74	497	2	149	1	26	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	165	160	89	599	2	180	1	31	0	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	601	0	0	325	0	0	952	952	165	1047	1111	600
Stage 1	-	-	-	-	-	-	173	173	-	778	778	-
Stage 2	-	-	-	-	-	-	779	779	-	269	333	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	962	-	-	1235	-	-	239	259	879	206	209	501
Stage 1	-	-	-	-	-	-	829	756	-	389	407	-
Stage 2	-	-	-	-	-	-	389	406	-	737	644	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	962	-	-	1235	-	-	224	239	879	187	193	501
Mov Cap-2 Maneuver	-	-	-	-	-	-	303	315	-	295	288	-
Stage 1	-	-	-	-	-	-	826	753	-	387	378	-
Stage 2	-	-	-	-	-	-	359	377	-	707	641	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	29.5	14.9
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	303	879	962	-	-	1235	-	-	366
HCM Lane V/C Ratio	0.596	0.036	0.004	-	-	0.072	-	-	0.007
HCM Control Delay (s)	33	9.2	8.8	-	-	8.1	-	-	14.9
HCM Lane LOS	D	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3.6	0.1	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	453	151	23	264	2	128	0	34	3	0	7
Future Vol, veh/h	11	453	151	23	264	2	128	0	34	3	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	492	164	25	287	2	139	0	37	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	289	0	0	656	0	0	858	855	492	955	1018	288
Stage 1	-	-	-	-	-	-	516	516	-	338	338	-
Stage 2	-	-	-	-	-	-	342	339	-	617	680	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1273	-	-	931	-	-	277	296	577	238	237	751
Stage 1	-	-	-	-	-	-	542	534	-	676	641	-
Stage 2	-	-	-	-	-	-	673	640	-	477	451	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1273	-	-	931	-	-	267	285	577	217	228	751
Mov Cap-2 Maneuver	-	-	-	-	-	-	386	388	-	325	327	-
Stage 1	-	-	-	-	-	-	537	529	-	670	624	-
Stage 2	-	-	-	-	-	-	648	623	-	442	447	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	17.9	11.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	386	577	1273	-	-	931	-	-	539
HCM Lane V/C Ratio	0.36	0.064	0.009	-	-	0.027	-	-	0.02
HCM Control Delay (s)	19.5	11.7	7.9	-	-	9	-	-	11.8
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.6	0.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	20.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	198	166	109	733	3	164	2	35	0	2	2
Future Vol, veh/h	5	198	166	109	733	3	164	2	35	0	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	239	200	131	883	4	198	2	42	0	2	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	887	0	0	439	0	0	1400	1400	239	1520	1598	885
Stage 1	-	-	-	-	-	-	251	251	-	1147	1147	-
Stage 2	-	-	-	-	-	-	1149	1149	-	373	451	-
Critical Hdwy	4.15	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	751	-	-	1121	-	-	~ 118	140	800	97	106	344
Stage 1	-	-	-	-	-	-	753	699	-	242	274	-
Stage 2	-	-	-	-	-	-	242	273	-	648	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	751	-	-	1121	-	-	~ 105	123	800	82	93	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 174	198	-	178	180	-
Stage 1	-	-	-	-	-	-	747	693	-	240	242	-
Stage 2	-	-	-	-	-	-	210	241	-	607	566	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	140.5	20.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	174	800	751	-	-	1121	-	-	236
HCM Lane V/C Ratio	1.149	0.053	0.008	-	-	0.117	-	-	0.02
HCM Control Delay (s)	168.1	9.8	9.8	-	-	8.6	-	-	20.6
HCM Lane LOS	F	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	10.4	0.2	0	-	-	0.4	-	-	0.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	666	158	32	384	3	140	0	49	5	0	10
Future Vol, veh/h	16	666	158	32	384	3	140	0	49	5	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	724	172	35	417	3	152	0	53	5	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	420	0	0	896	0	0	1252	1248	724	1360	1419	419
Stage 1	-	-	-	-	-	-	758	758	-	489	489	-
Stage 2	-	-	-	-	-	-	494	490	-	871	930	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1139	-	-	757	-	-	~ 149	173	426	126	137	634
Stage 1	-	-	-	-	-	-	399	415	-	561	549	-
Stage 2	-	-	-	-	-	-	557	549	-	346	346	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1139	-	-	757	-	-	~ 140	163	426	105	129	634
Mov Cap-2 Maneuver	-	-	-	-	-	-	264	280	-	202	229	-
Stage 1	-	-	-	-	-	-	393	409	-	553	524	-
Stage 2	-	-	-	-	-	-	522	524	-	298	341	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.8	30.3	15.2
HCM LOS			D	C

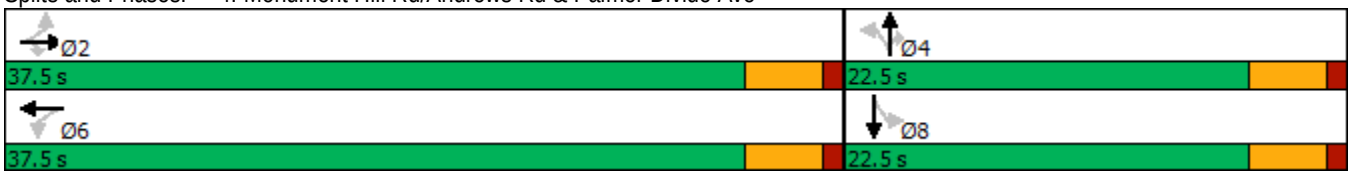
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	264	426	1139	-	-	757	-	-	370
HCM Lane V/C Ratio	0.576	0.125	0.015	-	-	0.046	-	-	0.044
HCM Control Delay (s)	35.7	14.7	8.2	-	-	10	-	-	15.2
HCM Lane LOS	E	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.3	0.4	0	-	-	0.1	-	-	0.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	5	202	175	109	738	174	2	35	2
Future Volume (vph)	5	202	175	109	738	174	2	35	2
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2			6		4		8
Permitted Phases	2		2	6		4		4	
Detector Phase	2	2	2	6	6	4	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.5	37.5	37.5	37.5	37.5	22.5	22.5	22.5	22.5
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None

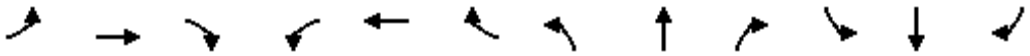
Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 58.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave



HCM 6th Signalized Intersection Summary
4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave

2045 Total AM_Realign
11/14/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	202	175	109	738	3	174	2	35	0	2	2
Future Volume (veh/h)	5	202	175	109	738	3	174	2	35	0	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	220	190	118	802	3	189	2	38	0	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	1180	1000	724	1203	5	386	3	281	0	152	152
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.18	0.18	0.18	0.00	0.18	0.18
Sat Flow, veh/h	660	1826	1547	976	1862	7	1386	15	1585	0	858	858
Grp Volume(v), veh/h	5	220	190	118	0	805	191	0	38	0	0	4
Grp Sat Flow(s),veh/h/ln	660	1826	1547	976	0	1869	1401	0	1585	0	0	1716
Q Serve(g_s), s	0.2	2.5	2.5	2.8	0.0	13.7	6.6	0.0	1.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	13.9	2.5	2.5	5.3	0.0	13.7	6.7	0.0	1.0	0.0	0.0	0.1
Prop In Lane	1.00		1.00	1.00		0.00	0.99		1.00	0.00		0.50
Lane Grp Cap(c), veh/h	391	1180	1000	724	0	1208	389	0	281	0	0	305
V/C Ratio(X)	0.01	0.19	0.19	0.16	0.00	0.67	0.49	0.00	0.14	0.00	0.00	0.01
Avail Cap(c_a), veh/h	391	1180	1000	724	0	1208	637	0	559	0	0	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	3.6	3.6	4.7	0.0	5.6	20.1	0.0	17.7	0.0	0.0	17.3
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.5	0.0	2.9	1.0	0.0	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.6	0.4	0.0	3.0	2.0	0.0	0.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	4.0	4.1	5.2	0.0	8.5	21.0	0.0	17.9	0.0	0.0	17.3
LnGrp LOS	A	A	A	A	A	A	C	A	B	A	A	B
Approach Vol, veh/h		415			923			229			4	
Approach Delay, s/veh		4.1			8.1			20.5			17.3	
Approach LOS		A			A			C			B	

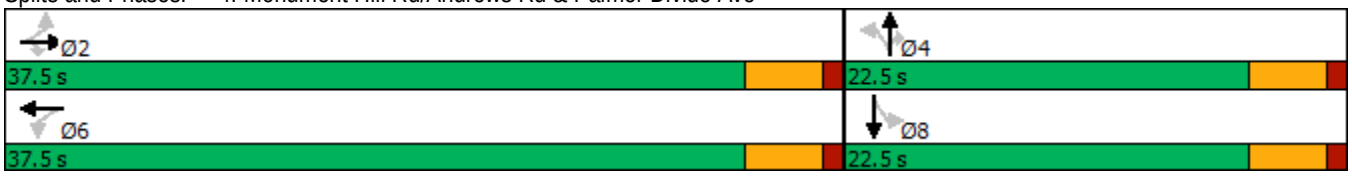
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		13.6		37.5		13.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		15.9		8.7		15.7		2.1				
Green Ext Time (p_c), s		1.8		0.7		5.6		0.0				

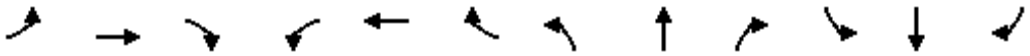
Intersection Summary												
HCM 6th Ctrl Delay			8.9									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	16	672	171	32	390	153	0	49	5	0
Future Volume (vph)	16	672	171	32	390	153	0	49	5	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.5	37.5	37.5	37.5	37.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	None	None	None	None	None	None	None

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 55.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 4: Monument Hill Rd/Andrews Rd & Palmer Divide Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	672	171	32	390	3	153	0	49	5	0	10
Future Volume (veh/h)	16	672	171	32	390	3	153	0	49	5	0	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	730	186	35	424	3	166	0	53	5	0	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	645	1187	1006	384	1178	8	356	0	304	111	37	126
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.19	0.00	0.19	0.19	0.00	0.19
Sat Flow, veh/h	961	1870	1585	610	1855	13	1134	0	1585	104	194	657
Grp Volume(v), veh/h	17	730	186	35	0	427	166	0	53	16	0	0
Grp Sat Flow(s),veh/h/ln	961	1870	1585	610	0	1868	1134	0	1585	955	0	0
Q Serve(g_s), s	0.4	12.1	2.5	1.9	0.0	5.6	0.1	0.0	1.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.0	12.1	2.5	14.0	0.0	5.6	7.8	0.0	1.5	7.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	0.31		0.69
Lane Grp Cap(c), veh/h	645	1187	1006	384	0	1186	356	0	304	274	0	0
V/C Ratio(X)	0.03	0.61	0.18	0.09	0.00	0.36	0.47	0.00	0.17	0.06	0.00	0.00
Avail Cap(c_a), veh/h	645	1187	1006	384	0	1186	573	0	549	506	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	5.7	3.9	9.8	0.0	4.5	20.1	0.0	17.6	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.4	0.4	0.1	0.0	0.2	0.9	0.0	0.3	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.6	0.6	0.2	0.0	1.0	1.8	0.0	0.5	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	8.1	4.3	9.9	0.0	4.7	21.1	0.0	17.8	17.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	B	B	A	A
Approach Vol, veh/h		933			462			219			16	
Approach Delay, s/veh		7.3			5.1			20.3			17.4	
Approach LOS		A			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		14.5		37.5		14.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		14.1		9.8		16.0		9.8				
Green Ext Time (p_c), s		5.9		0.6		2.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			8.5									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	488	0	0	751	0	333
Future Vol, veh/h	488	0	0	751	0	333
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	530	0	0	816	0	362

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	265
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	733
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	733
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	733	-	-
HCM Lane V/C Ratio	0.494	-	-
HCM Control Delay (s)	14.6	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2.8	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	614	0	0	962	0	407
Future Vol, veh/h	614	0	0	962	0	407
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	667	0	0	1046	0	442

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	334
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	662
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	662
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	662	-	-
HCM Lane V/C Ratio	0.668	-	-
HCM Control Delay (s)	20.7	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	5.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	567	0	0	815	0	333
Future Vol, veh/h	567	0	0	815	0	333
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	616	0	0	886	0	362

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	308
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	688
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	688
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	688	-	-
HCM Lane V/C Ratio	0.526	-	-
HCM Control Delay (s)	15.9	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	3.1	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	716	0	0	1039	0	407
Future Vol, veh/h	716	0	0	1039	0	407
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	778	0	0	1129	0	442

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	389
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	610
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	610
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.9
HCM LOS			C

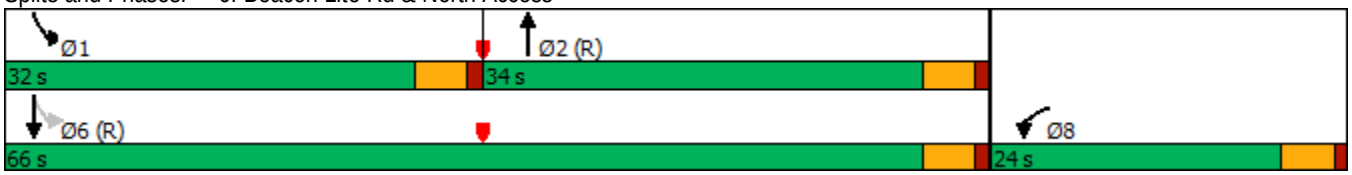
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	610	-	-
HCM Lane V/C Ratio	0.725	-	-
HCM Control Delay (s)	24.9	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	6.1	-	-

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	4	269	87	515	131
Future Volume (vph)	4	269	87	515	131
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	269	87	4	515	131
Future Volume (veh/h)	4	269	87	4	515	131
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	0	95	4	560	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	9		1375	58	2320	1673
Arrive On Green	0.01	0.00	0.77	0.77	0.12	1.00
Sat Flow, veh/h	1781	1585	1782	75	3456	1870
Grp Volume(v), veh/h	4	0	0	99	560	142
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1857	1728	1870
Q Serve(g_s), s	0.2	0.0	0.0	1.2	2.5	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	1.2	2.5	0.0
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	9		0	1433	2320	1673
V/C Ratio(X)	0.42		0.00	0.07	0.24	0.08
Avail Cap(c_a), veh/h	386		0	1433	3125	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.97	0.97
Uniform Delay (d), s/veh	44.6	0.0	0.0	2.5	1.0	0.0
Incr Delay (d2), s/veh	27.6	0.0	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.2	0.0	0.0	2.6	1.0	0.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	4		99			702
Approach Delay, s/veh	72.2		2.6			0.8
Approach LOS	E		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	74.0			85.0	5.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+I1), s	4.5	3.2			2.0	2.2
Green Ext Time (p_c), s	2.0	0.5			0.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.4
HCM 6th LOS	A

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

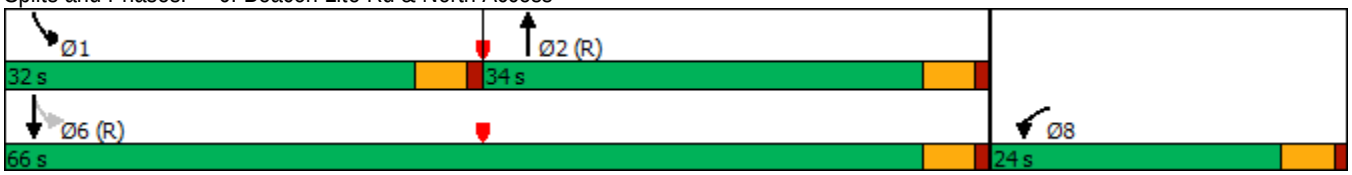
Timings
6: Beacon Lite Rd & North Access

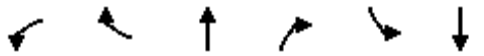
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	5	329	132	672	200
Future Volume (vph)	5	329	132	672	200
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	329	132	5	672	200
Future Volume (veh/h)	5	329	132	5	672	200
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	0	143	5	730	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12		1347	47	2235	1671
Arrive On Green	0.01	0.00	0.75	0.75	0.16	1.00
Sat Flow, veh/h	1781	1585	1796	63	3456	1870
Grp Volume(v), veh/h	5	0	0	148	730	217
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1859	1728	1870
Q Serve(g_s), s	0.3	0.0	0.0	1.9	3.7	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	1.9	3.7	0.0
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	12		0	1394	2235	1671
V/C Ratio(X)	0.43		0.00	0.11	0.33	0.13
Avail Cap(c_a), veh/h	386		0	1394	2967	1671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.92	0.92
Uniform Delay (d), s/veh	44.5	0.0	0.0	3.1	1.1	0.0
Incr Delay (d2), s/veh	23.1	0.0	0.0	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.7	0.0	0.0	3.2	1.2	0.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	5		148			947
Approach Delay, s/veh	67.7		3.2			0.9
Approach LOS	E		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.9	72.0			84.9	5.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+I1), s	5.7	3.9			2.0	2.3
Green Ext Time (p_c), s	2.7	0.7			1.3	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.5
HCM 6th LOS	A

Notes

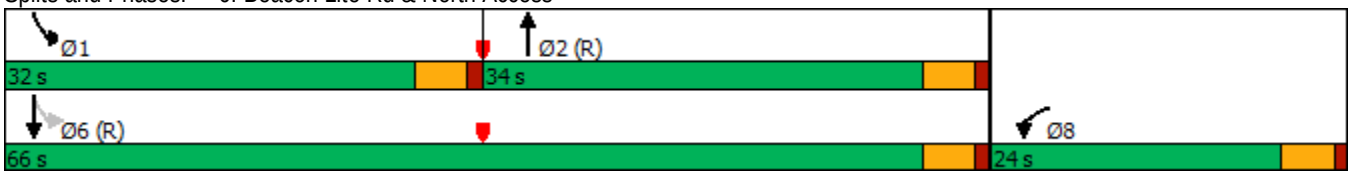
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

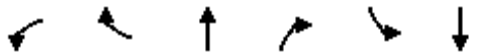
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	4	269	99	515	137
Future Volume (vph)	4	269	99	515	137
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	269	99	4	515	137
Future Volume (veh/h)	4	269	99	4	515	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	0	108	4	560	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	9		1383	51	2293	1673
Arrive On Green	0.01	0.00	0.77	0.77	0.12	1.00
Sat Flow, veh/h	1781	1585	1792	66	3456	1870
Grp Volume(v), veh/h	4	0	0	112	560	149
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1858	1728	1870
Q Serve(g_s), s	0.2	0.0	0.0	1.3	2.5	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	1.3	2.5	0.0
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	9		0	1435	2293	1673
V/C Ratio(X)	0.42		0.00	0.08	0.24	0.09
Avail Cap(c_a), veh/h	386		0	1435	3098	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	44.6	0.0	0.0	2.5	1.0	0.0
Incr Delay (d2), s/veh	27.6	0.0	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.4	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.2	0.0	0.0	2.6	1.0	0.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	4		112			709
Approach Delay, s/veh	72.2		2.6			0.8
Approach LOS	E		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	74.0			85.0	5.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+I1), s	4.5	3.3			2.0	2.2
Green Ext Time (p_c), s	2.0	0.5			0.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.4
HCM 6th LOS	A

Notes

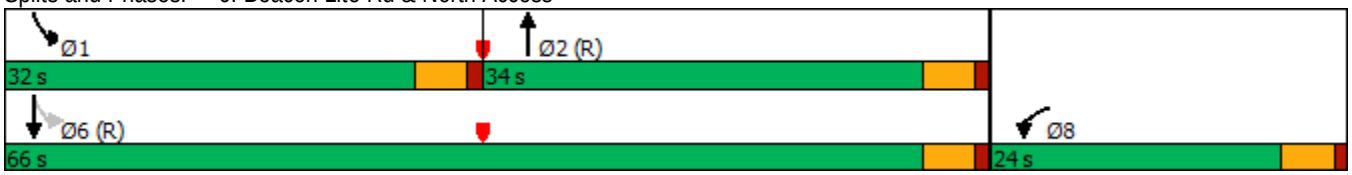
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

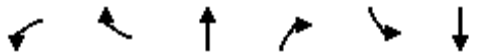
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	5	329	159	672	222
Future Volume (vph)	5	329	159	672	222
Turn Type	Prot	Free	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		Free		6	
Detector Phase	8		2	1	6
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	9.5	22.5
Total Split (s)	24.0		34.0	32.0	66.0
Total Split (%)	26.7%		37.8%	35.6%	73.3%
Yellow Time (s)	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 6: Beacon Lite Rd & North Access





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	329	159	5	672	222
Future Volume (veh/h)	5	329	159	5	672	222
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	0	173	5	730	241
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12		1356	39	2176	1671
Arrive On Green	0.01	0.00	0.75	0.75	0.16	1.00
Sat Flow, veh/h	1781	1585	1809	52	3456	1870
Grp Volume(v), veh/h	5	0	0	178	730	241
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1861	1728	1870
Q Serve(g_s), s	0.3	0.0	0.0	2.4	3.7	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	2.4	3.7	0.0
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	12		0	1396	2176	1671
V/C Ratio(X)	0.43		0.00	0.13	0.34	0.14
Avail Cap(c_a), veh/h	386		0	1396	2909	1671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.89	0.89
Uniform Delay (d), s/veh	44.5	0.0	0.0	3.1	1.1	0.0
Incr Delay (d2), s/veh	23.1	0.0	0.0	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.7	0.0	0.0	3.3	1.2	0.2
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	5		178			971
Approach Delay, s/veh	67.7		3.3			0.9
Approach LOS	E		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.9	72.0			84.9	5.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	29.5			61.5	19.5
Max Q Clear Time (g_c+I1), s	5.7	4.4			2.0	2.3
Green Ext Time (p_c), s	2.7	0.9			1.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.6
HCM 6th LOS	A

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	63	28	6	119	16
Future Vol, veh/h	5	63	28	6	119	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	68	30	7	129	17

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	309	34	0	0	37	0
Stage 1	34	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	683	1039	-	-	1574	-
Stage 1	988	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	627	1039	-	-	1574	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	6.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	991	1574	-
HCM Lane V/C Ratio	-	-	0.075	0.082	-
HCM Control Delay (s)	-	-	8.9	7.5	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	77	60	8	156	49
Future Vol, veh/h	8	77	60	8	156	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	84	65	9	170	53

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	463	70	0	0	74	0
Stage 1	70	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	557	993	-	-	1526	-
Stage 1	953	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	495	993	-	-	1526	-
Mov Cap-2 Maneuver	495	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	5.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	907	1526	-
HCM Lane V/C Ratio	-	-	0.102	0.111	-
HCM Control Delay (s)	-	-	9.4	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.4	-

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	63	40	6	119	22
Future Vol, veh/h	5	63	40	6	119	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	68	43	7	129	24

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	329	47	0	0	50	0
Stage 1	47	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	665	1022	-	-	1557	-
Stage 1	975	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	610	1022	-	-	1557	-
Mov Cap-2 Maneuver	610	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	6.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	974	1557	-
HCM Lane V/C Ratio	-	-	0.076	0.083	-
HCM Control Delay (s)	-	-	9	7.5	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	77	87	8	156	71
Future Vol, veh/h	8	77	87	8	156	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	84	95	9	170	77

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	517	100	0	0	104	0
Stage 1	100	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	518	956	-	-	1488	-
Stage 1	924	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	956	-	-	1488	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	589	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	5.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	868	1488	-
HCM Lane V/C Ratio	-	-	0.106	0.114	-
HCM Control Delay (s)	-	-	9.6	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.4	-

APPENDIX F

Signal Warrant Analysis Worksheets

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **Beacon Lite/County Line** # OF APPROACH LANES: **2**

MINOR STREET: **County Line** # OF APPROACH LANES: **1**

CITY, STATE: **El Paso County, CO**

COMMENTS: 2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	1,117	141	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
08:00 AM TO 09:00 AM	1,005	127	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**		
09:00 AM TO 10:00 AM	0	0														
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM																
04:00 PM TO 05:00 PM	1,164	135	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
05:00 PM TO 06:00 PM	1,293	150	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
06:00 PM TO 07:00 PM																
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	4,579	553	4	1	**1**	4	4	**4**	4	4	**4**	4	4	**4**	**3**	**0**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

11/19/24

Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **Palmer Divide** # OF APPROACH LANES: **2**

MINOR STREET: **I-25 SB** # OF APPROACH LANES: **1**

CITY, STATE: **El Paso County, CO**

COMMENTS: 2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	1,572	99	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
08:00 AM TO 09:00 AM	1,415	90	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
09:00 AM TO 10:00 AM	0	0														
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM																
04:00 PM TO 05:00 PM	1,369	237	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	1,521	263	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:00 PM TO 07:00 PM																
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	5,877	689	4	2	**2**	4	4	**4**	4	2	**2**	4	4	**4**	**4**	**2**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**SATISFIED**	**SATISFIED**

11/19/24
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **Palmer Divide** # OF APPROACH LANES: **2**

MINOR STREET: **I-25 NB** # OF APPROACH LANES: **1**

CITY, STATE: **El Paso County, CO**

COMMENTS: 2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	1,199	357	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:00 AM TO 09:00 AM	1,080	321	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
09:00 AM TO 10:00 AM	0	0														
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM																
04:00 PM TO 05:00 PM	970	365	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	1,078	406	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:00 PM TO 07:00 PM																
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	4,327	1,449	4	4	**4**	4	4	**4**	4	4	**4**	4	4	**4**	**4**	**4**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**SATISFIED**	**SATISFIED**

11/19/24
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **Beacon Lite** # OF APPROACH LANES: **2**

MINOR STREET: **North Access** # OF APPROACH LANES: **1**

CITY, STATE: **El Paso County, CO**

COMMENTS: 2028 Total

*It should be noted that a reduction of 100% was applied for right turns on the minor street approach(s)

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **N**

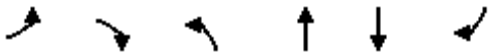
	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	737	4	Y						Y			Y				
08:00 AM TO 09:00 AM	664	4	Y						Y							
09:00 AM TO 10:00 AM	0	0														
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM																
04:00 PM TO 05:00 PM	1,009	5	Y			Y			Y			Y				
05:00 PM TO 06:00 PM	909	5	Y			Y			Y			Y				
06:00 PM TO 07:00 PM																
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	3,319	18	4	0	**0**	2	0	**0**	4	0	**0**	3	0	**0**	**0**	**0**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

11/19/24

Kimley-Horn and Associates

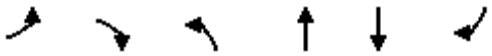
APPENDIX G

Queue Analysis Worksheets



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	160	22	22	394	711	142
v/c Ratio	0.61	0.09	0.04	0.15	0.29	0.13
Control Delay	45.0	13.4	3.6	3.5	5.5	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	13.4	3.6	3.5	5.5	1.8
Queue Length 50th (ft)	86	0	3	28	43	1
Queue Length 95th (ft)	137	19	7	36	107	19
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	481	446	565	2657	2441	1134
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.05	0.04	0.15	0.29	0.13

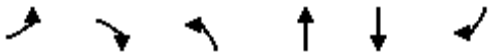
Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	190	30	32	508	960	133
v/c Ratio	0.65	0.10	0.08	0.20	0.42	0.12
Control Delay	45.1	11.4	4.5	4.5	6.3	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	11.4	4.5	4.5	6.3	1.3
Queue Length 50th (ft)	102	0	5	44	76	0
Queue Length 95th (ft)	155	21	12	75	127	m11
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	442	418	414	2599	2300	1073
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.07	0.08	0.20	0.42	0.12

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

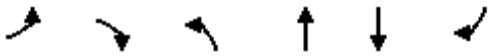


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	238	22	23	407	718	208
v/c Ratio	0.70	0.07	0.05	0.16	0.31	0.19
Control Delay	44.4	11.5	5.0	4.9	7.8	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	11.5	5.0	4.9	7.8	2.0
Queue Length 50th (ft)	127	0	4	35	66	2
Queue Length 95th (ft)	184	17	11	65	122	m23
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	521	481	511	2503	2287	1094
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.05	0.05	0.16	0.31	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2045 Total PM_Realign
10: Beacon Lite Rd & Palmer Divide Ave
11/14/2024



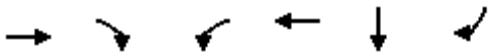
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	277	31	34	536	984	197
v/c Ratio	0.73	0.09	0.09	0.22	0.46	0.19
Control Delay	44.4	9.6	6.0	6.0	6.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	9.6	6.0	6.0	6.9	0.9
Queue Length 50th (ft)	148	0	6	56	80	0
Queue Length 95th (ft)	207	20	17	94	132	m5
Internal Link Dist (ft)	288			381	322	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	501	470	367	2431	2141	1033
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.07	0.09	0.22	0.46	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Palmer Divide Ave & I-25 SB Ramp

2028 Total AM_Realign
11/14/2024

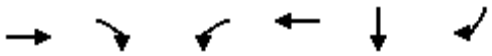


Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	498	414	351	483	237	225
v/c Ratio	0.33	0.45	0.60	0.37	0.54	0.42
Control Delay	15.7	2.6	14.9	24.3	25.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	15.7	2.6	14.9	24.3	26.2	6.5
Queue Length 50th (ft)	96	1	112	89	87	0
Queue Length 95th (ft)	133	20	179	128	166	56
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1513	914	641	1289	437	533
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	13	0	0	0	41	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.45	0.55	0.37	0.60	0.42

Intersection Summary

Queues

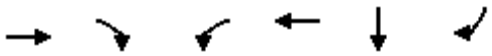
2: Palmer Divide Ave & I-25 SB Ramp



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	541	488	184	529	384	355
v/c Ratio	0.37	0.31	0.47	0.51	0.65	0.47
Control Delay	15.5	0.6	20.6	35.7	29.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	0.6	20.6	35.7	29.8	4.7
Queue Length 50th (ft)	82	0	79	133	183	0
Queue Length 95th (ft)	116	2	m127	171	288	60
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1462	1568	390	1031	588	757
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	24	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.31	0.47	0.51	0.65	0.47

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



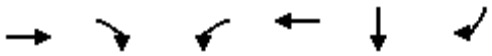
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	559	442	494	544	268	253
v/c Ratio	0.38	0.28	0.80	0.41	0.68	0.48
Control Delay	16.8	0.5	21.9	23.0	36.4	7.1
Queue Delay	0.0	0.0	0.0	0.3	3.6	0.0
Total Delay	16.8	0.5	21.9	23.4	40.0	7.1
Queue Length 50th (ft)	114	0	169	93	125	0
Queue Length 95th (ft)	148	0	m#275	m138	#218	61
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1460	1583	650	1314	392	529
Starvation Cap Reductn	0	0	0	309	0	0
Spillback Cap Reductn	12	0	0	0	62	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.28	0.76	0.54	0.81	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Palmer Divide Ave & I-25 SB Ramp

2045 Total PM_Realign
11/14/2024



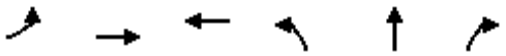
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	595	527	253	576	481	411
v/c Ratio	0.42	0.34	0.66	0.59	0.82	0.52
Control Delay	15.8	0.6	23.0	33.7	39.4	4.9
Queue Delay	0.1	0.0	0.0	0.2	2.0	0.0
Total Delay	15.9	0.6	23.0	34.0	41.4	4.9
Queue Length 50th (ft)	101	0	103	135	255	0
Queue Length 95th (ft)	130	3	m145	171	#430	63
Internal Link Dist (ft)	534			272	268	
Turn Bay Length (ft)						
Base Capacity (vph)	1421	1568	385	978	589	793
Starvation Cap Reductn	0	0	0	71	0	0
Spillback Cap Reductn	136	0	0	0	36	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.34	0.66	0.64	0.87	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues

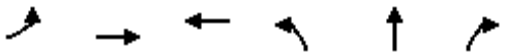
3: I-25 NB Ramp & Palmer Divide Ave



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	405	210	748	203	203	99
v/c Ratio	0.75	0.26	0.35	0.49	0.49	0.21
Control Delay	35.9	8.6	13.7	33.7	33.7	7.2
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	8.6	13.7	33.7	33.7	7.2
Queue Length 50th (ft)	131	29	69	104	104	0
Queue Length 95th (ft)	232	46	112	170	170	36
Internal Link Dist (ft)		272	582		210	
Turn Bay Length (ft)						
Base Capacity (vph)	639	815	2133	412	412	462
Starvation Cap Reductn	24	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.26	0.35	0.49	0.49	0.21

Intersection Summary

Queues
2028 Total PM_Realign
3: I-25 NB Ramp & Palmer Divide Ave
07/01/2025

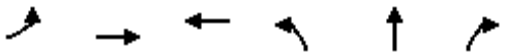


Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	454	403	417	239	241	255
v/c Ratio	0.73	0.53	0.27	0.41	0.41	0.35
Control Delay	25.3	17.9	15.4	24.8	24.8	4.3
Queue Delay	0.1	0.5	0.0	0.0	0.0	0.0
Total Delay	25.4	18.5	15.4	24.8	24.8	4.3
Queue Length 50th (ft)	133	101	39	106	108	0
Queue Length 95th (ft)	227	154	67	175	177	49
Internal Link Dist (ft)		272	582		210	
Turn Bay Length (ft)						
Base Capacity (vph)	657	760	1529	588	590	719
Starvation Cap Reductn	9	110	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.62	0.27	0.41	0.41	0.35

Intersection Summary

Queues

3: I-25 NB Ramp & Palmer Divide Ave



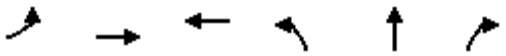
Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	426	298	1057	217	218	134
v/c Ratio	0.85	0.40	0.54	0.53	0.53	0.27
Control Delay	54.2	11.2	18.8	34.6	34.7	6.7
Queue Delay	1.2	0.2	0.0	0.2	0.2	0.0
Total Delay	55.4	11.5	18.8	34.8	34.9	6.7
Queue Length 50th (ft)	207	49	140	112	112	0
Queue Length 95th (ft)	#308	70	178	183	183	41
Internal Link Dist (ft)		272	582		210	
Turn Bay Length (ft)						
Base Capacity (vph)	545	746	1943	412	412	488
Starvation Cap Reductn	29	103	0	0	0	0
Spillback Cap Reductn	0	0	6	15	15	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.46	0.55	0.55	0.55	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

3: I-25 NB Ramp & Palmer Divide Ave



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	474	570	579	253	256	350
v/c Ratio	0.83	0.75	0.39	0.43	0.43	0.45
Control Delay	35.0	26.6	18.4	25.2	25.3	4.4
Queue Delay	0.6	0.9	0.0	0.0	0.0	0.0
Total Delay	35.5	27.5	18.4	25.2	25.3	4.4
Queue Length 50th (ft)	182	165	64	114	115	0
Queue Length 95th (ft)	m#274	m424	97	186	188	56
Internal Link Dist (ft)		272	582		210	
Turn Bay Length (ft)						
Base Capacity (vph)	597	755	1490	588	590	781
Starvation Cap Reductn	16	47	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.81	0.39	0.43	0.43	0.45

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	5	220	190	118	805	191	38	4
v/c Ratio	0.02	0.19	0.18	0.16	0.69	0.64	0.10	0.01
Control Delay	6.0	6.2	1.7	6.5	13.0	29.7	6.8	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	6.2	1.7	6.5	13.0	29.7	6.8	12.8
Queue Length 50th (ft)	1	28	0	14	156	56	0	1
Queue Length 95th (ft)	5	67	22	42	#373	109	18	6
Internal Link Dist (ft)		582			1847	276		26
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	259	1129	1030	721	1160	417	515	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.19	0.18	0.16	0.69	0.46	0.07	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	17	730	186	35	427	166	53	16
v/c Ratio	0.03	0.57	0.16	0.09	0.33	0.56	0.14	0.05
Control Delay	5.5	9.4	1.6	6.3	6.5	26.8	6.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	9.4	1.6	6.3	6.5	26.8	6.5	5.3
Queue Length 50th (ft)	2	121	0	4	56	47	0	0
Queue Length 95th (ft)	10	286	22	17	132	95	21	8
Internal Link Dist (ft)		582			1847	276		26
Turn Bay Length (ft)	150		150					
Base Capacity (vph)	630	1278	1144	379	1277	451	550	512
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.57	0.16	0.09	0.33	0.37	0.10	0.03

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	4	292	99	560	142
v/c Ratio	0.04	0.18	0.07	0.25	0.08
Control Delay	40.0	0.3	3.0	2.3	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.0	2.3	1.5
Queue Length 50th (ft)	2	0	7	0	0
Queue Length 95th (ft)	13	0	34	108	61
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1475	2505	1799
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.07	0.22	0.08

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	5	358	148	730	217
v/c Ratio	0.04	0.23	0.10	0.33	0.12
Control Delay	40.0	0.3	3.4	2.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.4	2.9	1.6
Queue Length 50th (ft)	3	0	11	1	0
Queue Length 95th (ft)	14	0	52	161	87
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1459	2440	1798
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.23	0.10	0.30	0.12

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	4	292	112	560	149
v/c Ratio	0.04	0.18	0.08	0.25	0.08
Control Delay	40.0	0.3	3.0	2.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.0	2.1	1.4
Queue Length 50th (ft)	2	0	8	0	0
Queue Length 95th (ft)	13	0	38	105	58
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1475	2488	1799
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.08	0.23	0.08

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	5	358	178	730	241
v/c Ratio	0.04	0.23	0.12	0.34	0.13
Control Delay	40.0	0.3	3.4	2.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	0.3	3.4	2.7	1.6
Queue Length 50th (ft)	3	0	13	1	0
Queue Length 95th (ft)	14	0	61	157	94
Internal Link Dist (ft)	95		640		381
Turn Bay Length (ft)				200	
Base Capacity (vph)	383	1583	1460	2403	1798
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.23	0.12	0.30	0.13

Intersection Summary

APPENDIX H

Cap-X & ICAT Tool Worksheets

MIMR Excerpts

Capacity Analysis for Planning of Junctions

Dynamic Results Summary

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Pedestrian Accommodations	Bicycle Accommodations
Partial Cloverleaf B N-S	0.31	1	Good	Excellent
Partial Cloverleaf A N-S	0.35	2	Good	Excellent
Partial Cloverleaf A E-W	0.38	3	Good	Excellent
Diverging Diamond Interchange N-S	0.39	4	Good	Excellent
Partial Cloverleaf B E-W	0.42	5	Good	Excellent
Diverging Diamond Interchange E-W	0.44	6	Good	Excellent
Displaced Left Turn (Interchange) E-W	0.45	7	Good	Excellent
Diamond N-S	0.55	8	Good	Fair
Single Point N-S	0.57	9	Good	Excellent
Singe Point Diamond w/ RAB N-S	0.61	10	Good	Excellent

Use the "yes/no" drop-down menus in Step 2 (Base and Alt Selection) to exclude intersection types from summary rankings, if they are not applicable.

ICAT STAGE 2: ALTERNATIVE SELECTION DECISION RECORD

Developed and Maintained in Cooperation with Georgia DOT

CDOT ICAT Version 1.2 | Release Date: 4/26/2021

CDOT Project Number: 0000000
Project Location: Palmer Divi @ NB Off-Ramp /
Existing Intersection Control: Conventional Minor Stop
County/Region: El Paso / CDOT Region 2
Area Type: Urban
Prepared by: 0
Date: 1/0/1900
Type of Project: Operational Improvement Project

Existing / Design Year No-Build Traffic Operations

Traffic Analysis Measure of Effectiveness	Intersection Delay	
Traffic Analysis Software Used	--select one--	
Analysis Time Period	AM Peak Hr	PM Peak Hr
2024 Existing No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2024 Existing No-Build Peak Hr Intersection V/C ratio	0.00	0.00
2028 Design Yr No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2028 Design Yr No-Build Peak Hr Intersection V/C ratio	0.00	0.00

Alternatives Analysis	**Alternative 1**	**Alternative 2**	**Alternative 3**
Proposed Control Type Improvement:	Displaced Left-Turn / CFI	Signalized Intersection	Multilane Roundabout
	Add addt'l description here	*Add addt'l description here*	*Add addt'l description here*
Project Cost ***(From Cost Worksheet)***			
Construction Cost	$863,438	$416,251	$1,024,054
ROW Cost	$32,829	$2,296	$400,918
Environmental Cost	$0	$0	$0
Reimbursable Utility Cost	$25,903	$12,488	$30,722
Design & Contingency Cost	$259,031	$124,875	$307,216
Cost Adjustment (justification req'd)	0%	0%	0%
Total Cost	$1,181,202	$555,910	$1,762,910

Traffic Operations						
Traffic Analysis Software Used	--select one--		--select one--		--select one--	
Analysis Period	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr
2028 Design Yr Build Intersection Delay	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec
2028 Design Yr Build Intersection V/C	0.00	0.00	0.00	0.00	0.00	0.00

Safety Analysis			
Predefined CRF: PDO	0%	39%	32%
Predefined CRF: Fatal/Inj	0%	40%	71%
Predefined CRF Source:	-	FHWA Clearinghouse IDs: 7982 / 7984	FHWA Clearinghouse IDs: 236 / 237
User Defined CRF: PDO			
User Defined CRF: Fatal/Inj			
User Defined CRF Source (write in if applicable):			

Environmental Impacts			
Historic District/Property:	None	None	None
Archaeology Resources:	None	None	None
Graveyard:	None	None	None
Stream:	None	None	None
UST/Hazmat:	None	None	None
Park Land:	None	None	None
EJ Community:	None	None	None
Floodplain:	None	None	None
Wetland:	None	None	None
T&E Species Habitat:	None	None	None

Note: Be sure to go back to **Costs** worksheet to enter mitigation costs for each noted impact

Stakeholder Support:			
Local Community Support	Unknown	Unknown	Unknown
CDOT Region Support	Unknown	Unknown	Unknown

Final ICAT Stage 2 Score:	**2.8**	**3.5**	**2.2**
Rank of Control Type Alternatives:	**2**	**1**	**3**

Provide additional comments and/or explain any unique analysis inputs, or results (as necessary):

ICAT STAGE 2: ALTERNATIVE SELECTION DECISION RECORD

Developed and Maintained in Cooperation with Georgia DOT

CDOT ICAT Version 1.2 | Release Date: 4/26/2021

CDOT Project Number: 0000000
Project Location: Palmer Divi @ Road 2 / SB Off-Ramp
Existing Intersection Control: Conventional Minor Stop
County/Region: El Paso / CDOT Region 2
Area Type: Urban
Prepared by: 0
Date: 1/0/1900
Type of Project: Operational Improvement Project

Existing / Design Year No-Build Traffic Operations

Traffic Analysis Measure of Effectiveness	Intersection Delay	
Traffic Analysis Software Used	--select one--	
Analysis Time Period	AM Peak Hr	PM Peak Hr
2024 Existing No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2024 Existing No-Build Peak Hr Intersection V/C ratio	0.00	0.00
2028 Design Yr No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2028 Design Yr No-Build Peak Hr Intersection V/C ratio	0.00	0.00

Alternatives Analysis	**Alternative 1**	**Alternative 2**	**Alternative 3**
Proposed Control Type Improvement:	Displaced Left-Turn / CFI	Signalized Intersection	Multilane Roundabout
	Add addt'l description here	*Add addt'l description here*	*Add addt'l description here*
Project Cost ***(From Cost Worksheet)***			
Construction Cost	$863,438	$416,251	$804,054
ROW Cost	$32,829	$2,296	$200,918
Environmental Cost	$0	$0	$0
Reimbursable Utility Cost	$25,903	$12,488	$24,122
Design & Contingency Cost	$259,031	$124,875	$241,216
Cost Adjustment (justification req'd)	0%	0%	0%
Total Cost	$1,181,202	$555,910	$1,270,310

Traffic Operations						
Traffic Analysis Software Used	--select one--		--select one--		--select one--	
Analysis Period	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr
2028 Design Yr Build Intersection Delay	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec	0.0 sec
2028 Design Yr Build Intersection V/C	0.00	0.00	0.00	0.00	0.00	0.00

Safety Analysis			
Predefined CRF: PDO	0%	39%	32%
Predefined CRF: Fatal/Inj	0%	40%	71%
Predefined CRF Source:	-	FHWA Clearinghouse IDs: 7982 / 7984	FHWA Clearinghouse IDs: 236 / 237
User Defined CRF: PDO			
User Defined CRF: Fatal/Inj			
User Defined CRF Source (write in if applicable):			

Environmental Impacts			
Historic District/Property:	None	None	None
Archaeology Resources:	None	None	None
Graveyard:	None	None	None
Stream:	None	None	None
UST/Hazmat:	None	None	None
Park Land:	None	None	None
EJ Community:	None	None	None
Floodplain:	None	None	None
Wetland:	None	None	None
T&E Species Habitat:	None	None	None

Note: Be sure to go back to **Costs** worksheet to enter mitigation costs for each noted impact

Stakeholder Support:			
Local Community Support	Unknown	Unknown	Unknown
CDOT Region Support	Unknown	Unknown	Unknown

Final ICAT Stage 2 Score:	**2.6**	**3.4**	**2.5**
Rank of Control Type Alternatives:	**2**	**1**	**3**

Provide additional comments and/or explain any unique analysis inputs, or results (as necessary):

Kimley»Horn

May 28, 2025

Mr. John Cater
Division Administrator
Federal Highway Administration Colorado Division
12300 West Dakota Avenue, Suite 180
Lakewood, Colorado 80228

Re: Buc-ee's Palmer Lake
Minor Interchange Modification Request Memorandum
Palmer Lake, Colorado

Dear Mr. Cater:

This memorandum documents the results of traffic analysis prepared for the County Line Road & I-25 interchange in Palmer Lake, Colorado. The purpose of this traffic analysis was to compare various interchange alternatives as part of a Minor Interchange Modification Request (MIMR).

With anticipated development in the immediate area, the existing stop-controlled off-ramps at the County Line Road and I-25 Ramps intersections are expected to need improvement. The primary development anticipated to affect the interchange is a 120-fueling position Buc-ee's gas station with a 74,000 square foot convenience store is proposed on the southwest corner of the County Line Road and I-25 Southbound Ramps intersection.

Prior to preparing this memorandum, Kimley-Horn performed an analysis of the interchange utilizing the Capacity Analysis for Planning of Junction (Cap-X) Tool developed by the Federal Highway Administration. The results of the Cap-X analysis were reviewed by CDOT. Three alternatives identified in the Cap-X analysis were determined to be feasible options for this interchange due to a combination of available right of way for the improvement, constructability, and operational performance. These alternatives include:

- Alternative 1: Standard Diamond Interchange
- Alternative 2: Diverging Diamond Interchange (DDI)
- Alternative 3: Roundabout Interchange

After completion of the Cap-X analysis it was determined that additional analysis should be performed to identify a preferred solution for the interchange. This memorandum expands upon analysis prepared by the Buc-ee's development in the Travel Center Palmer Lake traffic impact study, using PTV Vissim microsimulation software to compare these interchange alternatives.

Following discussion with CDOT staff, a fourth alternative—Alternative 1b—was analyzed, which is a standard diamond interchange but includes additional improvements such as a separate northbound right turn lane on the I-25 northbound off-ramp as well as additional storage length available on the westbound County Line Road approach to the I-25 Northbound Ramps intersection. The additional storage length on westbound County Line Road would be constructed in conjunction with Buc-ee's Palmer Lake development. Based

Table 1 – Alternative 1 LOS, Delay, and Queues

Intersection	Mvmt./ App./ Int.	2045 AM		2045 PM	
		LOS (Delay, sec/veh)	Maximum Queue (ft)	LOS (Delay, sec/veh)	Maximum Queue (ft)
County Line Rd & I-25 SB Ramp	SB	B (12.3)	165	B (18.5)	418
	SBL	C (33.7)	165	C (34.1)	418
	SBT	C (34.7)	165	D (43.4)	418
	SBR	A (2.8)	111	A (3.9)	379
	EB	A (8.7)	266	B (11.9)	334
	EBT	B (12.8)	266	B (18.0)	334
	EBR	A (0.6)	170	A (0.9)	238
	WB	B (14.7)	369	C (26.0)	339
	WBL	C (20.3)	369	D (47.0)	339
	WBT	A (9.6)	209	B (17.1)	238
	Int.	B (11.9)	-	B (18.1)	-
County Line Rd & I-25 NB Ramp	NB	C (32.1)	270	C (27.2)	380
	NBL	D (35.1)	220	C (28.7)	330
	NBT	D (41.2)	220	C (33.4)	330
	NBR	C (22.6)	270	C (24.9)	380
	EB	B (12.6)	285	B (18.3)	368
	EBL	B (16.1)	285	C (20.0)	319
	EBT	A (7.6)	190	B (16.8)	368
	WB	A (9.0)	385	B (16.4)	289
	WBT	B (11.7)	385	C (23.5)	289
	WBR	A (5.0)	179	A (6.3)	150
	Int.	B (16.0)	-	C (21.4)	-

Alternative 1b: Standard Diamond Interchange with Additional Improvements
It is understood that there are future developments to the east of the County Line Road and I-25 Northbound Ramps (#3) intersection that are planning to install a separate northbound right turn lane on the I-25 northbound off-ramp. As requested by CDOT, additional analysis was conducted to assess overall network operations with the northbound off-ramp providing a designated left turn lane, a shared left/through lane, and a separate right turn lane. In addition to this improvement, Alternative 1b also widened the westbound County Line Road approach to the I-25 Northbound Ramps (#3) intersection from one lane to three lanes further to the east than the Alternative 1 analysis. Compared to Alternative 1, Alternative 1b includes an additional approximately 275 feet of storage length for both the innermost westbound through lane—which serves as a spillback lane for the eventual westbound left turning movement at the I-25 Southbound Ramps (#2) intersection—and in the shared westbound through/right turn lane.

While it is likely these improvements could require some additional widening and grading to accommodate these lanes, it is believed that these improvements could be constructed feasibly. The additional storage length on westbound County Line Road would be

constructed in conjunction with Buc-ee's Palmer Lake development. Based on discussion with CDOT, the separate right turn lane on the I-25 northbound off-ramp is expected to be constructed by future developments to the east of I-25, such as Monument Ridge East. A detailed exhibit displaying these additional improvements is attached. A screenshot of the Alternative 1b standard diamond interchange configuration is provided in **Figure 5**.

The level of service and maximum queue results for this alternative are shown in **Table 2**. As shown in the table, both ramp terminal intersections are anticipated to operate at LOS B during both the morning and afternoon peak hours through the 2045 horizon with a standard diamond interchange configuration and additional improvements compared to Alternative 1. The average maximum vehicle queues along the I-25 southbound and northbound off-ramps did not exceed 402 feet and 256 feet, respectively, during the morning or afternoon peak hours in this analysis. As such, it is not believed that this interchange configuration would cause vehicles queues to spill onto the mainline or other notable impacts to the mainline of I-25 traffic in either direction. Compared to Alternative 1, Alternative 1b with the additional improvements would generally be expected to improve both overall intersection operations and lessen vehicle queues. Of note, the absolute maximum queue on the I-25 northbound off-ramp during all 30 simulation runs did not exceed 327 feet during either peak hour.

Figure 5 – Alternative 1b: County Line Road & I-25 Diamond Interchange Configuration

Table 2 – Alternative 1b LOS, Delay, and Queues

Intersection	Mvmt./ App./ Int.	2045 AM		2045 PM	
		LOS (Delay, sec/veh)	Maximum Queue (ft)	LOS (Delay, sec/veh)	Maximum Queue (ft)
County Line Rd & I-25 SB Ramp	SB	B (12.5)	168	B (19.0)	402
	SBL	C (34.7)	168	D (35.2)	402
	SBT	C (34.7)	168	D (42.7)	402
	SBR	A (2.7)	110	A (3.8)	362
	EB	A (8.1)	260	B (11.3)	334
	EBT	B (12.0)	260	B (17.2)	334
	EBR	A (0.6)	164	A (1.0)	238
	WB	B (13.9)	350	C (25.2)	343
	WBL	B (18.8)	350	D (42.7)	343
	WBT	A (9.5)	210	B (17.8)	249
	Int.	B (11.3)	-	B (17.8)	-
County Line Rd & I-25 NB Ramp	NB	C (28.7)	233	C (21.2)	256
	NBL	D (35.6)	182	C (26.8)	204
	NBT	D (45.5)	182	C (31.4)	204
	NBR	A (6.7)	233	B (12.7)	256
	EB	B (11.0)	270	B (16.9)	363
	EBL	B (13.8)	270	B (17.8)	324
	EBT	A (7.1)	189	B (16.2)	363
	WB	A (7.4)	278	B (13.6)	227
	WBT	A (9.6)	278	B (20.0)	227
	WBR	A (4.3)	182	A (4.6)	149
	Int.	B (13.7)	-	B (17.6)	-

Alternative 2: Diverging Diamond Interchange (DDI)

A diverging diamond interchange (DDI) was analyzed at the County Line Road & I-25 interchange. This interchange is likely able to be constructed without bridge reconstruction. However, this configuration will require extensive widening to the east and west of the bridge structure, likely also resulting in impacts to the existing frontage road. There are several constraints impacting the feasibility of construction of this alternative, such as the existing conservation easement on the northwest corner of the interchange as well as the drainage structures on the southeast corner of the interchange.

As is typical with DDIs, the eastbound and westbound left turning movements onto the on-ramps would each operate with free movement. The northbound and southbound left turning movements on their respective off-ramps were conservatively assumed to operate with signal control with left turn on red allowed after stop. It is recognized that many DDIs with only one left turn off-ramp lane today instead operate with yield control and a posted R1-2 "YIELD" sign, however, it is believed the method used in this study for off-ramp left turns provides a conservative analysis of interchange operations as opposed to yield control. The northbound and southbound right turning movements on their respective off-ramps were

horizon with the roundabout interchange configuration. However, several movements at both ramp terminal intersections would be expected to operate at LOS E conditions, nearing LOS F operations. Additionally, during the morning peak hour the westbound approach to the County Line Road & I-25 Northbound Ramps (#3) intersection would experience long vehicle queues, at times extending beyond the County Line Road & Monument Hill Road (#4) intersection. Both the I-25 southbound off-ramp and I-25 northbound off-ramp vehicle queues could also be over 572 feet in length at times during the afternoon peak hour. These queues were evident even with a proposed configuration of three northbound off-ramp approach lanes. As such, it is believed that this proposed interchange configuration could cause negative impacts to the I-25 mainline with extensive vehicle queues along both off-ramp approaches to these roundabouts and less length available for off-ramp vehicles to decelerate from freeway speed.

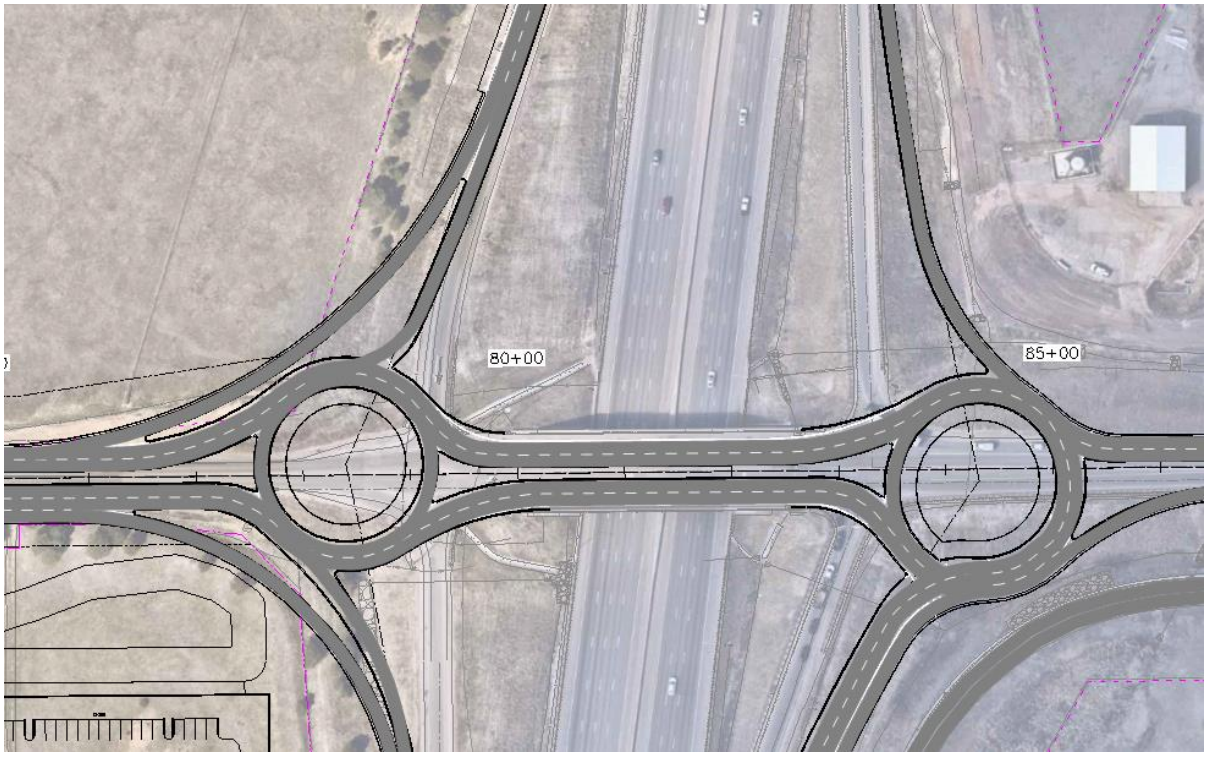


Figure 7 – County Line Road & I-25 Roundabout Interchange Configuration

Table 4 – Alternative 3 LOS, Delay, and Queues

Intersection	Mvmt./ App./ Int.	2045 AM		2045 PM	
		LOS (Delay, sec/veh)	Maximum Queue (ft)	LOS (Delay, sec/veh)	Maximum Queue (ft)
County Line Rd & I-25 SB Ramp	SB	B (11.2)	192	C (21.2)	634
	SBL	D (28.2)	192	E (37.5)	634
	SBT	D (28.6)	192	E (46.7)	634
	SBR	D (26.4)	192	E (36.4)	634
	EB	C (23.9)	423	C (27.2)	474
	EBT	E (37.4)	423	E (43.6)	474
	EBR	D (30.8)	423	D (34.9)	474
	WB	A (0.4)	0	A (0.5)	0
	WBL	A (0.5)	0	A (0.4)	0
	WBT	A (0.3)	0	A (0.5)	0
	Int.	B (11.8)	-	C (17.6)	-
County Line Rd & I-25 NB Ramp	NB	A (8.0)	123	E (46.2)	572
	NBL	A (8.8)	123	E (45.8)	403
	NBT	A (8.2)	123	E (47.5)	403
	NBR	A (5.6)	74	E (46.7)	572
	EB	A (0.6)	2	A (0.7)	5
	EBL	A (0.8)	2	A (1.0)	5
	EBT	A (0.2)	2	A (0.5)	5
	WB	C (31.5)	541	B (18.9)	272
	WBT	D (34.5)	541	C (19.7)	272
	WBR	D (27.2)	541	C (17.7)	272
	Int.	C (16.2)	-	C (20.6)	-

ALTERNATIVES COMPARISON

The following build alternatives were analyzed during the 2045 morning and peak hour traffic conditions to determine variation in both intersection and overall network operations:

- Alternative 1: Standard Diamond Interchange
  - Alternative 1b: Standard Diamond Interchange with additional improvements
- Alternative 2: Diverging Diamond Interchange (DDI)
- Alternative 3: Roundabout Interchange

The following intersections were included in each of the build alternatives:

- County Line Road & Beacon Lite Road (#1)
- County Line Road & I-25 Southbound Ramps (#2)
- County Line Road & I-25 Northbound Ramps (#3)
- County Line Road & Monument Hill Road (#4)

The proposed right-out only access from the Buc-ee's site located between Beacon Lite Road and the I-25 Southbound Ramps was also included in the model.

Level of Service Comparison

The overall intersection level of service and intersection delay—measured in seconds/vehicle (sec/veh)—between the build alternatives is similar at each intersection. The County Line Road & I-25 Southbound Ramps (#2) intersection was found to operate at LOS B in all build alternatives during both the morning and afternoon peak hours with the exception of the morning peak hour in Alternative 2, operating at LOS A, and the afternoon peak hour in Alternative 3, which would be expected to operate at overall LOS C.

The County Line Road & I-25 Northbound Ramps (#3) intersection operated at LOS B during the morning peak hour in Alternatives 1, 1b, and 2, while Alternative 3 operated at LOS C. During the afternoon peak hour, this intersection operated at LOS C in Alternatives 1 and 3, while at LOS B in Alternatives 1b and 2.

Table 5 provides a comparison of the overall intersection level of service and delay for each of the alternatives. As shown in the table, generally the best-performing alternative from an intersection level of service and delay perspective is Alternative 2—the DDI. Alternative 3—the Roundabout Interchange—yields relatively similar overall intersection level of service and delay conditions, however, as shown previously in **Table 4**, this alternative resulted in several approaches to intersections with extensive vehicle queues or poor level of service conditions. Alternative 1b was reported to operate better than Alternative 1, as the additional improvements improve overall intersection operations at both ramp interchange intersections.

Table 5 – Intersection LOS and Delay Comparison

Intersection	Peak Period	Scenario			
		Alt. 1 LOS (Delay, sec/veh)	Alt. 1b LOS (Delay, sec/veh)	Alt. 2 LOS (Delay, sec/veh)	Alt. 3 LOS (Delay, sec/veh)
County Line Rd & I-25 SB Ramp	2045 AM	B (11.9)	B (11.3)	A (9.1)	B (11.8)*
	2045 PM	B (18.1)	B (17.8)	B (12.0)	C (17.6)*
County Line Rd & I-25 NB Ramp	2045 AM	B (15.7)	B (13.7)	B (11.4)	C (16.2)
	2045 PM	C (20.9)	B (17.6)	B (10.6)	C (20.6)*

*At least one approach operating at LOS E or vehicle queues exceeding 570 feet

Network Comparison

To provide a more representative comparison of the impact of the various interchange alternatives on the overall street network surrounding the County Line Road & I-25 interchange, overall network results were also collected from the Vissim simulation runs. **Table 6** provides overall average network delay for each of the alternatives during the morning and afternoon peak hours. Network delay as a measure of effectiveness refers to

FEBRUARY 27, 2025

Town of Palmer Lake

Traffic Impact Study

Palmer Lake, Colorado
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Town of Palmer Lake

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Table of Contents

Executive Summary 3
Purpose 3
Conclusions and Recommendations 3
Introduction and Project Description 5
Study Area 5
Existing Roadway Network 6
Existing Conditions 8
Traffic Counts 8
LOS Criteria 9
Existing Traffic Operations 11
Year 2028 & 2045 No Build Analysis 12
Overview 12
Roadway Improvements 12
Background 2028 & 2045 Volumes 12
Background 2028 & 2045 Delay and LOS 14
Site Analysis 16
Overview 16
Proposed Site Access and Roadway Improvements 16
Trip Generation 16
Pass-By Trips 17
Trip Distribution 17
Build Conditions 22
Build 2028 & 2045 Traffic Forecasts 22
Roadway Classification 22
Build 2028 and 2045 Delay and LOS 23
Build 2028 and 2045 Queuing 26
Review of Kimley Horn Study 28
Conclusions and Recommendations 29

List of Figures

Figure 1: Vicinity Map 6
Figure 2: Existing Lane Configuration and Traffic Control 7
Figure 3- Existing Intersection Movements 9
Figure 4 LOS Conditions 10
Figure 5: 2028 Background Traffic Volumes 13
Figure 6: 2045 Background Traffic Volumes 14
Figure 7: Proposed Build Lane Configuration and Traffic Control 18
Figure 8: Trip Distribution 19
Figure 9: Site Trip Distribution Volumes 20
Figure 10: Pass-By Trip Distribution Volumes 21
Figure 11: Build 2028 Traffic Volumes 25
Figure 12: Build 2045 Traffic Volumes 26

List of Tables

Table 1: LOS Criteria 10
Table 2: Existing Delay and LOS 11
Table 3: No Build 2028 & 2045 Delay and LOS 15
Table 4: Johnstown Buc-ee's Trip Generation 17
Table 5: Buc-ee's Trip Generation 23
Table 6: Build 2028 & 2045 Delay and LOS 24
Table 7: Queuing Analysis 27

Executive Summary

Purpose

This traffic impact study was conducted in support of the Town of Palmer Lake regarding the proposed Buc-ee's travel center in the southwest corner of the I-25/County Line Rd interchange. Buc-ee's had hired Kimley Horn to prepare a traffic study for their development, however, the Town was interested in an independent traffic study being conducted to verify that the Buc-ee's would not negatively impact traffic operations within their town.

This traffic study independently collected traffic counts, forecasted future vehicular volumes and trip generation, and conducted a traffic analysis of each intersection within the study area. This study did evaluate the study area using the roadway improvements proposed in the Kimley Horn study to ensure that the proposed improvements from the developer would allow for acceptable traffic operations.

The Kimley Horn study was reviewed and Stolfus's response to their findings are discussed in this study.

Conclusions and Recommendations

The conclusions and recommendations from this study are summarized in the section below.

Conclusions

- The existing traffic operations (year 2025) are acceptable at all the study intersections. Delays and queues are minor.
- In the year 2028 No Build Scenario (site not constructed), the intersection of the I-25 SB Ramps/County Line Rd will operate at LOS E & F during the weekday AM and PM peak hours, respectively, but will remain under capacity.
- In the year 2045 No Build Scenario (site not constructed), the intersection of the I-25 SB Ramps/County Line Rd will operate at LOS F and will exceed capacity during both weekday peak periods. The I-25 NB Ramps/County Line Rd will be nearing capacity as well.
- The proposed development will generate 533 weekdays AM peak hour trips, 661 weekday PM peak hour trips, 967 weekend midday peak hour trips, and 10,947 weekday daily trips. Of these trips, 25% will be site trips and 75% will be pass-by trips.
- It was concluded that all the study intersections will operate acceptably in the year 2028 and 2045 Build Scenarios (site constructed) with the roadway improvements proposed by the developer.
- The two proposed site accesses along Beacon Lite Rd meet the El Paso County required access spacing. The proposed site access along County Line Rd does not meet the required access spacing, however, since it is a right-out only, the limited spacing is not expected to cause operational or safety problems.
- The developer has proposed adequate measures to ensure sufficient sight distance at the access points.
- Only 3% of the trip generation from the Buc-ee's is anticipated to come to/from the Palmer Lake Downtown along County Line Rd. Most of the site trips will come from I-25. As such,

the major traffic impacts from the site will be focused along County Line Rd and Beacon Lite Rd between I-25 and the site accesses. Traffic impacts west of the proposed site are expected to be minor.

Recommendations

- The proposed right-out access on County Line Rd is designated as yield-controlled. It is recommended that it be made stop-controlled to increase driver compliance.
- The developer is proposing to convert the Tri-Lakes Church of Christ access from a full movement to a right-in, right-out (RIRO), but it is not clear whether they will give the church an additional access. The restriction of left turns may cause operational and safety concerns along Beacon Lite Rd. It is recommended that access be provided by the developer to allow drivers exiting the church to access County Line Rd without having to make a U-turn. This can be done by tying the church access into the County Line Rd/Beacon Lite Rd intersection, or by providing access along County Line Rd.
- Although the Buc-ee's will not have a major impact on the intersection of County Line Rd/Spruce Mtn Rd, it is recommended that the Town of Palmer Lake evaluate this intersection configuration and consider aligning the north leg of Pery Park Rd and the south leg of County Line Rd to improve driver safety and operations.
- The traffic analysis showed the southbound left turn at the middle site access to exceed the proposed storage length of the turn lane during the Saturday midday period. It is recommended that the developer evaluate this movement and either ensure the signal is timed in a way that will reduce the queue, or that adequate storage is provided. Notably, the Kimley Horn study did not evaluate the Saturday peak hour, which has a higher rate of site trips than the weekday peak hours.
- The developer will be responsible for implementing the intersection improvements identified in the Kimley Horn Study and detailed in the "Site Analysis" section of this study.
- The proposed site will increase the traffic volumes throughout the study area, changing the roadway classifications in several areas. The developer should be responsible for contributing to the required roadway improvements in the following locations:
    - County Line Rd (east of Beacon Lite Rd): Minor Arterial to Principal Arterial
    - Beacon Lite Rd (north of south site access): Local Rd to Minor Arterial.

Introduction and Project Description

Study Area

The Town of Palmer Lake is considering annexation of the plot of land in the southwest corner of the I-25/County Line Rd interchanged where the proposed Buc-ee's is proposed to be located. The surrounding area is unincorporated El Paso County land, with the Palmer Lake Downtown several miles to the west. The site location is currently undeveloped and is generally surrounded by undeveloped land to the north and rural residential developments to the south. It will be bounded by County Line Rd to the north, the I-25 southbound on ramp to the east, Beacon Lite Rd to the west, and undeveloped land to the south. The location of the proposed development relative to Palmer Lake is shown in Figure 1. The study area for the project includes the following intersections that may see impacts to traffic operations as a result of the proposed development:

Existing Intersections

- County Line Rd/I-25 NB Ramps
- County Line Rd/I-25 SB Ramps
- County Line Rd/Beacon Lite Rd
- County Line Rd/Spruce Mountain Rd

Future Intersections

- Beacon Lite Rd/South Site Access
- Beacon Lite Rd/Middle Site Access
- County Line Rd/North Site Access

Although it is approximately 2.5 miles west of the development, the intersection of County Line Rd/Spruce Mountain Rd was included in this study to evaluate the impacts that the Buc-ee's will have on traffic operations closer to the Palmer Lake Downtown.

Figure 1: Vicinity Map

Existing Roadway Network

Figure 2 depicts existing lane use and traffic controls within the study area. The following describes each roadway within the study area.

County Line Rd

County Line Rd is an undivided, east/west, two-lane highway, with a posted speed limit of 35 mph. The proposed development will have one right-out only access along County Line Rd. County Line Rd serves as the primary northern connection between the Town of Palmer Lake and I-25, as well as providing access to several local residential roads.

Beacon Lite Rd

Beacon Lite Rd is a two lane, unpaved, north/south, unimproved county road, that will provide two full movement accesses to the site. The posted speed limit is 35 mph. Beacon Lite Rd accesses primarily residential developments but also provides access to the Tri-Lakes Church of Christ, across the road from the proposed Buc-ee's. Per the El Paso County 2016 Major Transportation Corridors Plan Update, Beacon Lite Rd will be upgraded to a Collector by 2040. There are current plans, unrelated to this project, to pave Beacon Lite Rd from County Line Rd to Wakonda Way.

I-25

I-25 is a north/south interchange just east of the study area. It is expected that the majority of the site trips will originate from I-25, using the I-25/County Line Rd interchange to reach the site.

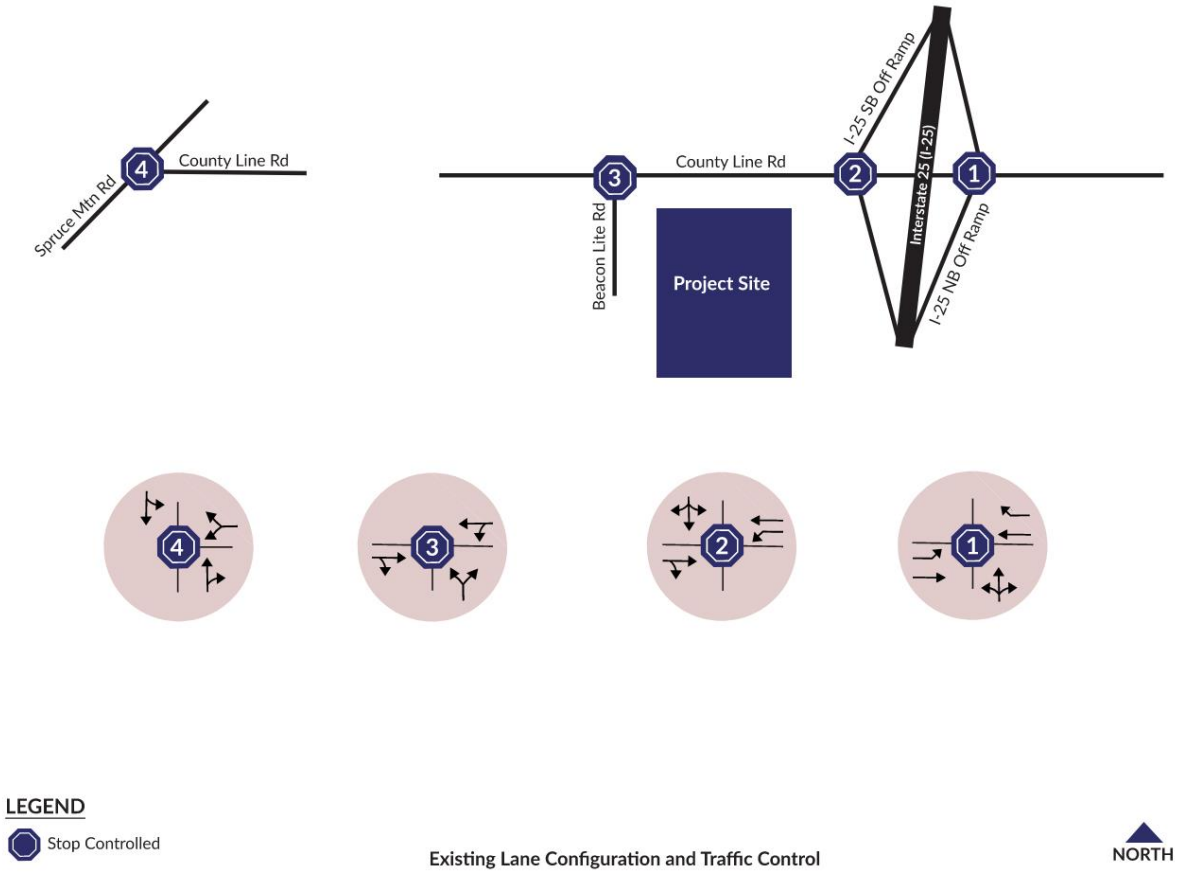


Figure 2: Existing Lane Configuration and Traffic Control

Existing Conditions

Traffic Counts

Turning movement counts were collected on Tuesday, 12/3/2024 and on Saturday, 1/11/2025 at the four study intersection in Palmer Lake, and at the two access points at the Buc-ee's in Johnstown, CO. In addition, two 24-hour vehicle classification counts were collected along County Line Rd on 12/3/2024, one to the east and one to the west of Beacon Lite Rd. Two 24-hour vehicle classification counts were collected at the two accesses to the Johnstown Buc-ee's on 12/3/2024 as well. The counts taken at the Johnstown Buc-ess were intended to help forecast the trip generation and will be discussed in further detail in the trip generation part of this study. The raw counts have been included in Appendix B.

Since the traffic counts were collected during off peak months, a seasonal adjustment factor was applied to the Palmer Lake counts to conduct a more conservative analysis. The seasonal adjustment factor was not applied to the counts taken at the Johnstown Buc-ees. Based on data collected at the CDOT maintained OTIS count station #100978 along I-25 in the vicinity of the study area, a factor of 1.18 was applied to the December counts and a factor of 1.27 was applied to the January counts. This is intended to inflate the traffic volumes to levels typically seen in July. Once these factors have been applied, the resulting volumes are considered the "existing volumes" for the remainder of this study.

The weekday AM & PM peak hour and the weekend midday peak hour for the turning movement counts collected in Palmer Lake are detailed in Figure 3. The ADTs reported along County Line Rd just to the east and west of Beacon Lite Rd were collected in the 24-hour vehicle classification counts. It was calculated that these ADTs were 8.6 times higher than the peak hour link volume in the same locations. As such, the remaining ADTs were estimated by multiplying the peak hour link volumes by 8.6.

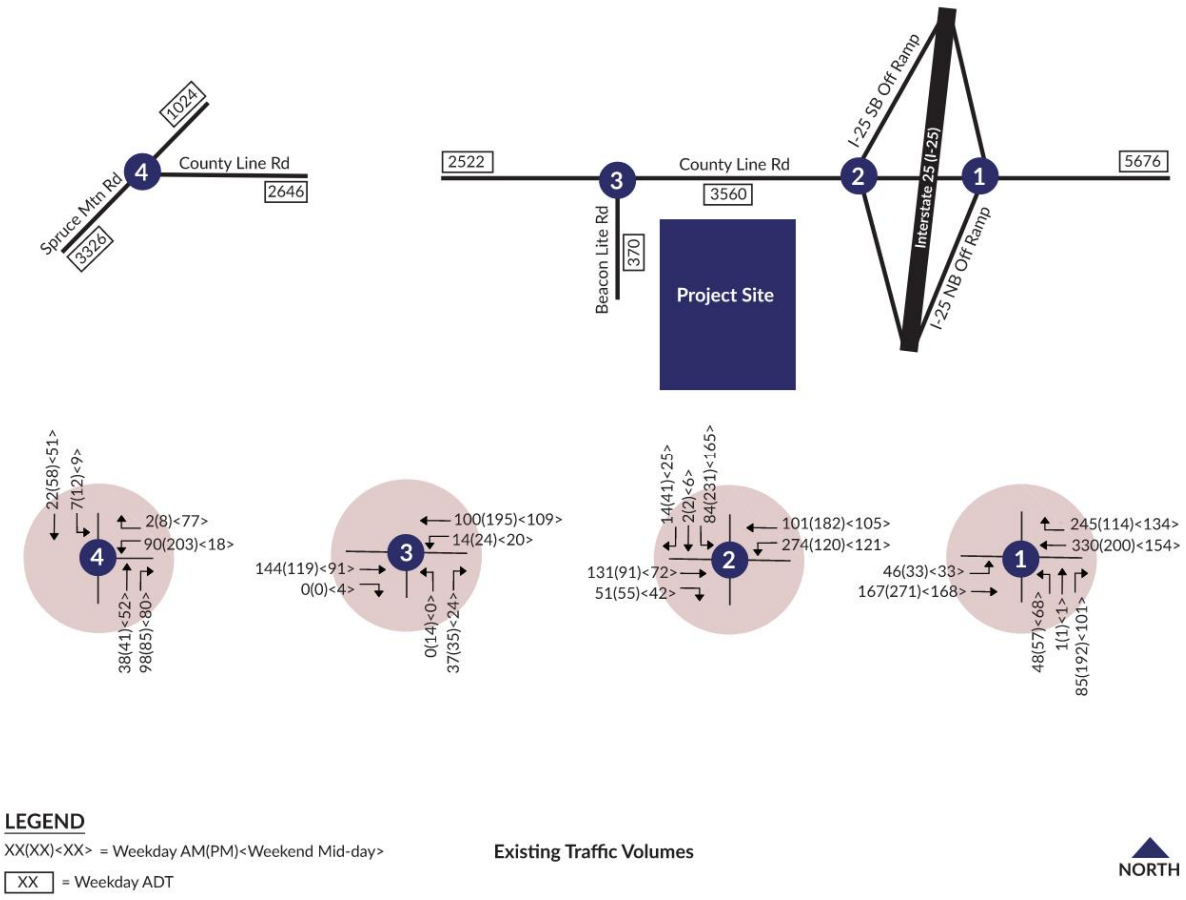
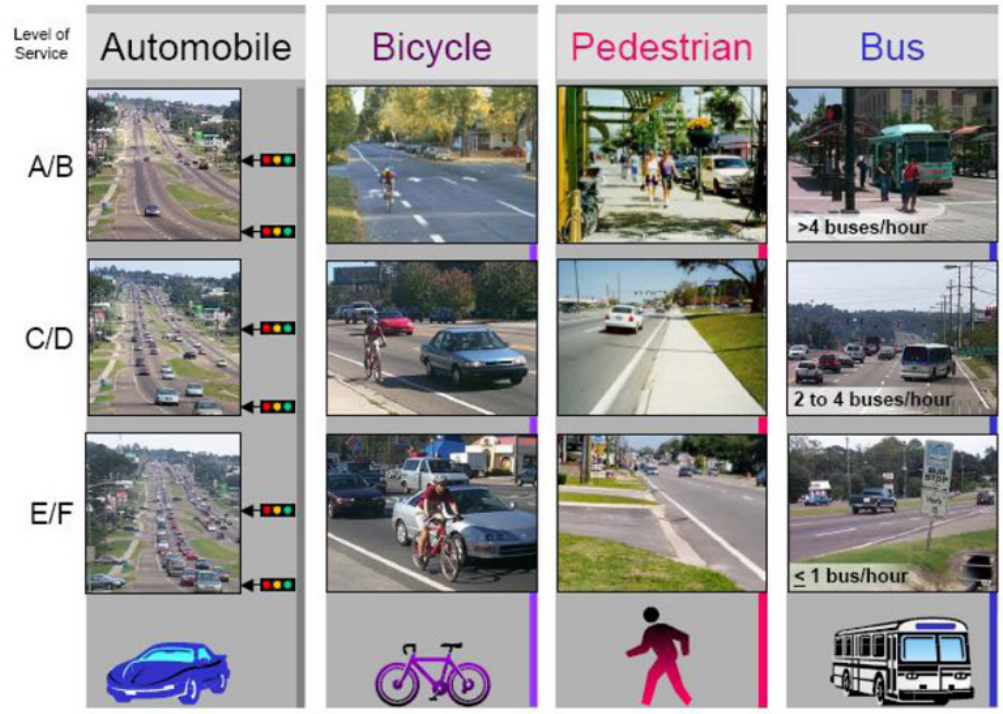


Figure 3- Existing Intersection Movements

LOS Criteria

Traffic analyses were conducted in accordance with procedures outlined in the Highway Capacity Manual (HCM) 6th Edition and included intersection Level-of-Service (LOS). LOS is a measure of the quality of traffic flow and ranges from LOS A (nearly ideal traffic conditions with very little delay for motorists) to LOS F (poor traffic conditions with long motorist delays). LOS C is typically considered a "good" traffic condition. LOS D or better conditions are typically desirable during peak traffic periods; however, LOS E conditions are not uncommon. LOS F, although undesirable, is also not uncommon for side street traffic movements at full movement, unsignalized intersections with high volume arterial roadways. Figure 4 illustrates examples of LOS for various modes of travel.



Source: FDOT Quality/Level of Service Handbook

Figure 4 LOS Conditions

When reporting delay and LOS, the HCM specifies that at a signalized intersection, the average intersection delay be used to derive the LOS. At a stop-controlled intersection, delay for the worst movement is used. Table 1 provides a summary of the Highway Capacity Manual's LOS Criteria. This study area contains both signalized and unsignalized intersections.

Table 1: LOS Criteria

Level of Service (LOS)	Signalized Intersection	Unsignalized Intersection	Traffic Characteristics
	Average Intersection Delay (sec/veh)	Worst Movement (sec/veh)	
A	<= 10	<= 10	Free Flow / Insignificant Delays
B	> 10-20	> 10-15	Stable Flow / Minimal Delays
C	> 20-35	>15-25	Stable Flow / Acceptable Delays
D	> 35-55	>25-35	Nearing Unstable / Tolerable Delays
E	> 55-80	>35-50	Unstable Flow / Significant Delays
F	> 80	> 50	Forced Flow / Excessive Delays

Where an unsignalized intersection operates at LOS E or F, a volume-to-capacity ratio (V/C) has been reported for the worst-case movement. Where V/C exceeds 1.00, traffic demand during peak periods exceeds the capacity for the movement. This condition will cause queues to grow, potentially filling auxiliary lanes and blocking adjacent traffic lanes until demand decreases.

Existing Traffic Operations

Traffic analyses were conducted at the four study intersections based on the existing lane use and traffic controls detailed in Figure 2, and existing traffic volumes shown in Figure 3. The system peak hours were determined to be from 7:00 – 8:00 AM and 5:00-6:00 PM on the weekdays, and from 1:30 – 2:30 on Saturday. Per the El Paso County Standards, the existing peak hour factors were calculated by approach, and a value of 0.85 was applied to any calculated peak hour factors below 0.85. The heavy vehicle percentages that were collected with the turning movement counts were incorporated into the Synchro models. The intersection delays and LOS are reported in Table 2 and the detailed Synchro reports are included in Appendix C. The worst movement at each intersection remained consistent across time periods, so it was only reported in one column of the table.

Table 2: Existing Delay and LOS

Intersection	Intersection Control	Worst Movement	Weekday AM		Weekday PM		Weekend Midday	
			Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
I-25 NB Off Ramp/County Line Rd	Stop-Controlled	NB	14.4	B	15.2	C	12.7	B
I-25 SB Off Ramp/County Line Rd	Stop-Controlled	SB	34.3	D	34.5	D	15.5	C
Beacon Lite Rd/County Line Rd	Stop-Controlled	NB	9.3	A	10.0	B	8.9	A
Spruce Mountain Rd/County Line Rd	Yield Controlled	WB	9.9	A	11.6	B	9.5	A

As can be seen in the table, the existing traffic operations are all acceptable (LOS D or better) and the reported queueing is minor. At the interchange, the NB ramps operate at LOS C or better while the SB ramps operate at LOS D or better. The two other intersections operate at LOS B or better. As such, there are no concerns with the existing traffic operations.

Year 2028 & 2045 No Build Analysis

Overview

This section of the study evaluates the 2028 and 2045 years of traffic volumes and operations with the assumption that background growth has occurred in the surrounding area, however, the proposed development has not been constructed. The intent of this scenario is to establish baseline volumes and traffic operations for the years 2028 and 2045 to compare the Build scenarios to.

Roadway Improvements

The roadway geometry is expected to remain similar to the existing scenario. The only planned roadway improvement is a westbound left turn lane at the intersection of County Line Rd/Beacon Lite Rd. This left turn lane was incorporated into the No Build traffic models.

Background 2028 & 2045 Volumes

The Pikes Peak Regional Travel Demand Model was evaluated to determine the background growth within the study area. The annual growth rate between 2020 and 2050 is forecasted at 1.98% per year along the I-25 mainline and at 1.32% per year along County Line Rd. To conduct a conservative analysis, a 2% annual growth rate was applied to all of the existing volumes to generate the No Build 2028 and No Build 2045 volume forecasts. These volume forecasts are detailed in Figures 5 & 6 respectively.

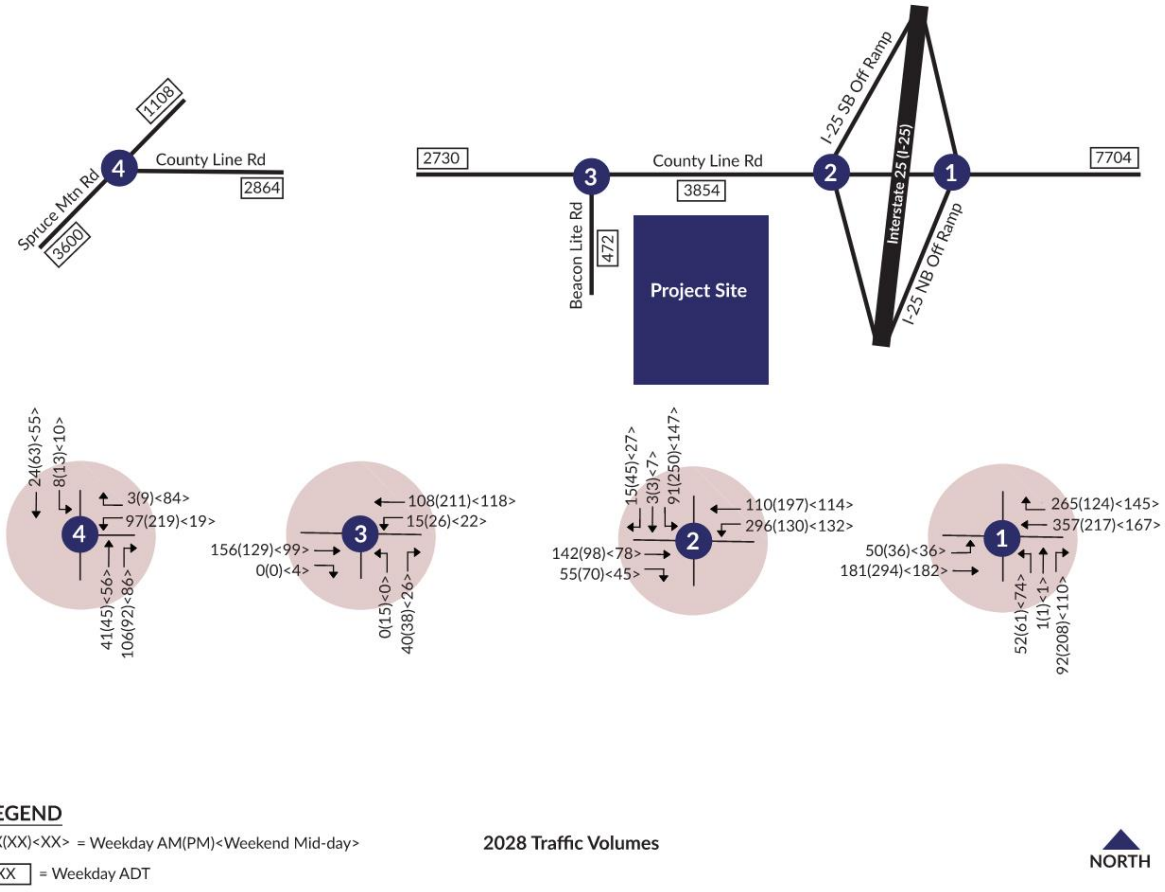


Figure 5: 2028 Background Traffic Volumes

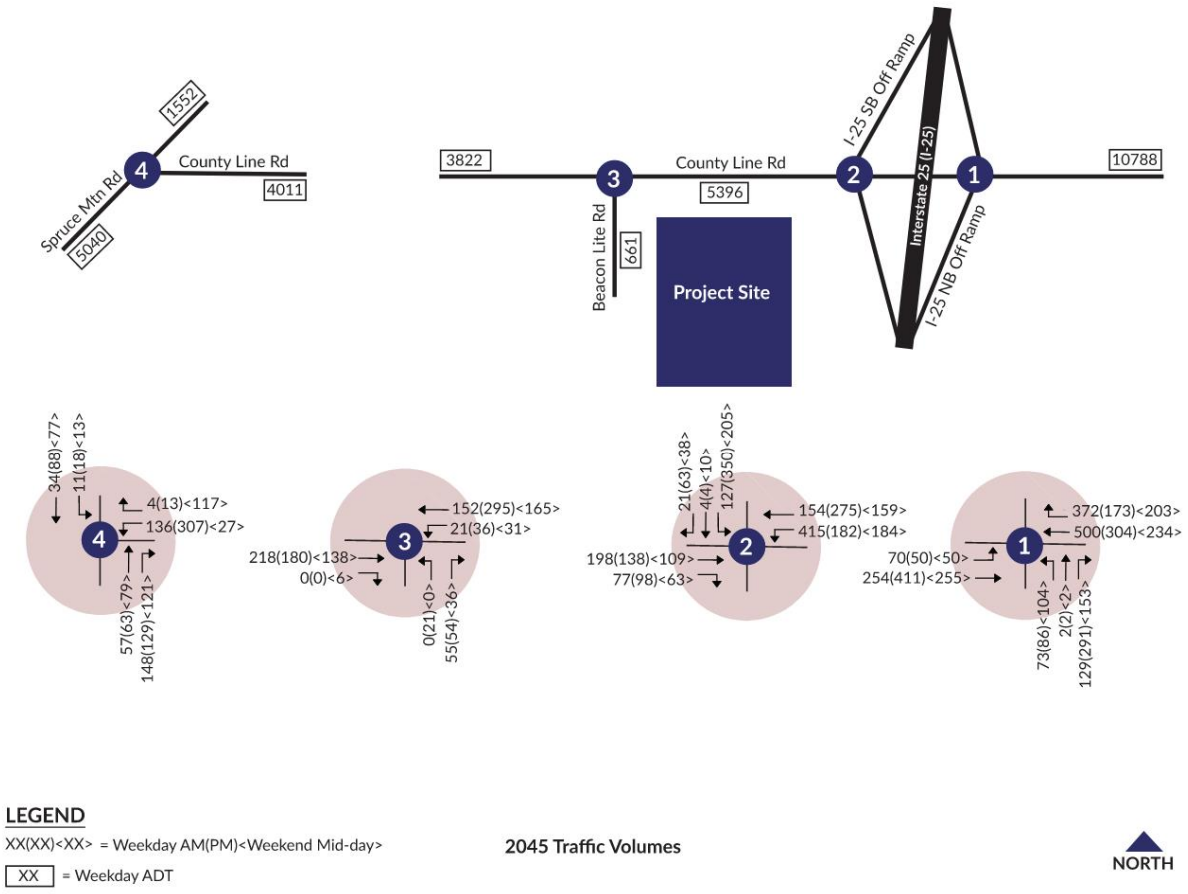


Figure 6: 2045 Background Traffic Volumes

Background 2028 & 2045 Delay and LOS

Traffic analyses were conducted at the four study intersections with the expected No Build roadway geometry and forecasted No Build traffic volumes (Figures 5 & 6) incorporated into the models. Per the El Paso County Standards, the peak hour factors were kept consistent with those from the existing analysis for the 2028 scenario but were set to 0.95 for any approach calculated to have a peak hour factor below 0.95 for the 2045 scenario. The heavy vehicle percentages that were collected with the turning movement counts were incorporated into the Synchro models. The intersection delays and LOS are reported in Table 3 and the detailed Synchro reports are included in Appendix C. The volume to capacity (V/C) ratios have been reported for each movement that was reported to operate at LOS E or F. The worst movement at each intersection remained consistent across time periods.

Table 3: No Build 2028 & 2045 Delay and LOS

	Intersection	Intersection Control	Worst Movement	Weekday AM		Weekday PM		Weekend Midday	
				Delay (sec)	LOS (V/C)	Delay (sec)	LOS (V/C)	Delay (sec)	LOS (V/C)
Year 2028	I-25 NB Off Ramp/County Line Rd	Stop-Controlled	NB	15.8	C	16.9	C	13.4	B
	I-25 SB Off Ramp/County Line Rd	Stop-Controlled	SB	47.1	E (0.62)	53.3	F (0.88)	17.3	C
	Beacon Lite Rd/County Line Rd	Stop-Controlled	NB	9.5	A	10.2	B	9.0	A
	Spruce Mountain Rd/County Line Rd	Yield Controlled	WB	10.0	B	12.0	B	9.6	A
Year 2045	I-25 NB Off Ramp/County Line Rd	Stop-Controlled	NB	26.2	D	38.4	E (0.82)	18.2	C
	I-25 SB Off Ramp/County Line Rd	Stop-Controlled	SB	217.1	F (1.22)	245.5	F (1.43)	48.1	E (0.80)
	Beacon Lite Rd/County Line Rd	Stop-Controlled	NB	9.8	A	10.9	B	9.2	A
	Spruce Mountain Rd/County Line Rd	Yield Controlled	WB	10.7	B	16.1	C	10.1	B

Due to background growth, the delays have increased from the existing conditions scenario, especially in the No Build 2045 scenario. In the No Build 2028 scenario, the southbound off ramp is reported to operate at LOS F during the PM peak hour but will remain under capacity. The remaining intersections are reported to operate acceptably. In the No Build 2045 scenario, the southbound off ramp will operate at LOS F during the AM and PM peak hours and will be over capacity during both of those periods, indicating that queueing could become problematic. The northbound ramps will operate at LOS E during the PM peak but will remain under capacity.

The results of the No Build analysis show that even without the Buc-ee's being constructed, the I-25/County Line Rd interchange will need to be improved by 2045 to maintain acceptable operations. The intersections along County Line Rd west of the interchange will operate well through 2045 and are expected to have minimal queueing and delays.

Site Analysis

Overview

The developer is proposing to construct a Buc-ee's travel center in the southwest corner of the I-25/County Line interchange. The Buc-ee's will contain 120 fueling pumps and a 74,000 SF convenience store.

Proposed Site Access and Roadway Improvements

The site will have two full movement accesses along Beacon Lite Rd and one right-out only access along County Line Rd. The northern of the two accesses on Beacon Lite Rd will be signalized. In addition, the developer has proposed several other roadway improvements to maintain acceptable traffic operations through the study area after the Buc-ee's opens. The intersection of County Line Rd/Beacon Lite Rd and both interchange ramp terminals will be signalized. In addition, County Line Rd will be expanded to have two thru lanes in each direction from the southbound ramps to the intersection of County Line Rd/Beacon Lite Rd. The northern portion of Beacon Lite Rd, between the middle site access and County Line Rd, will be expanded to have two thru lanes in each direction. The proposed lane configuration and traffic control for the Build Scenarios are detailed in Figure 7.

Trip Generation

Trip generation is a forecasting process that predicts the number of trips produced by the proposed development. The Trip Generation Manual published by the Institute of Transportation Engineers (ITE) has established trip rates from nationwide studies of similar land uses. The Buc-ee's would typically fall under the "945-Convenience Store/Gas Station" land use, however, the ITE only provides a data range of 2-24 fueling stations, making its data less reliable for a development the size of the Buc-ee's.

As such, it was decided that the Buc-ee's in Johnstown, CO would be the best predictor of trip generation. The Johnstown Buc-ee's is located approximately 90 miles north of the proposed Palmer Lake Buc-ee's. It is also located in the southwest corner of an I-25 interchange and has a similar surrounding population density. Since the Johnstown Buc-ee's has the same number of fueling pumps and the same convenience store size as the Palmer Lake Buc-ee's, it can be expected that there will be a similar trip generation between the two sites.

Counts were collected at the Johnstown Buc-ee's to establish the number of entering and existing vehicles. Turning movement counts were collected on Tuesday, 12/3/2024 from 7:00-9:00 AM and 4:00-6:00 PM and on Saturday, 1/11/2025 from 1:00 – 3:00 PM. In addition, 24-hour vehicle classification counts were collected on Tuesday, 12/3/2024.

Table 4 reports the number of entering and exiting site trips counted at the Johnstown Buc-ee's during the three peak hours being evaluated in this study, as well as the weekday ADT. The Saturday midday peak hour has the highest trip generation out of the peak hours evaluated in this study.

Table 4: Johnstown Buc-ee's Trip Generation

Time Period	Entering Site Trips	Exiting Site Trips	Total Site Trips	Weekday ADT
Weekday AM	262	271	533	10,947
Weekday PM	324	337	661	
Weekend Miday	764	203	967	

Pass-By Trips

A pass-by trip is when a driver who is already on route to a destination decides to stop at a development along the way. This will add a trip to the development's entering and exiting volume but will not add a trip to the adjacent roadway, since the driver would have been traveling along it anyway. Gas stations and fast-food restaurants are examples of developments that typically see high rates of pass-by trips. The ITE forecasts a pass-by trip rate of 75% for a gas station/convenience store. As such, the trips visiting the proposed Buc-ee's were assumed to consist of 75% pass-by trips and 25% site trips.

Trip Distribution

The trip distribution to and from the site was forecasted based on the existing ADT on each road. From this process, the following trip distribution was assumed:

- Interstate 25: 90% (45% north/45% south)
- Beacon Lite Road: 1%
- Palmer Divide Road East of I-25: 6%
- Palmer Divide Road West of Site: 3%

The site trips and pass-by trips were distributed through the network using the distribution listed above. Figure 8 details the distribution at each intersection within the study area, while Figure 9 shows the site trip distribution and Figure 10 shows the pass-by trip distribution.

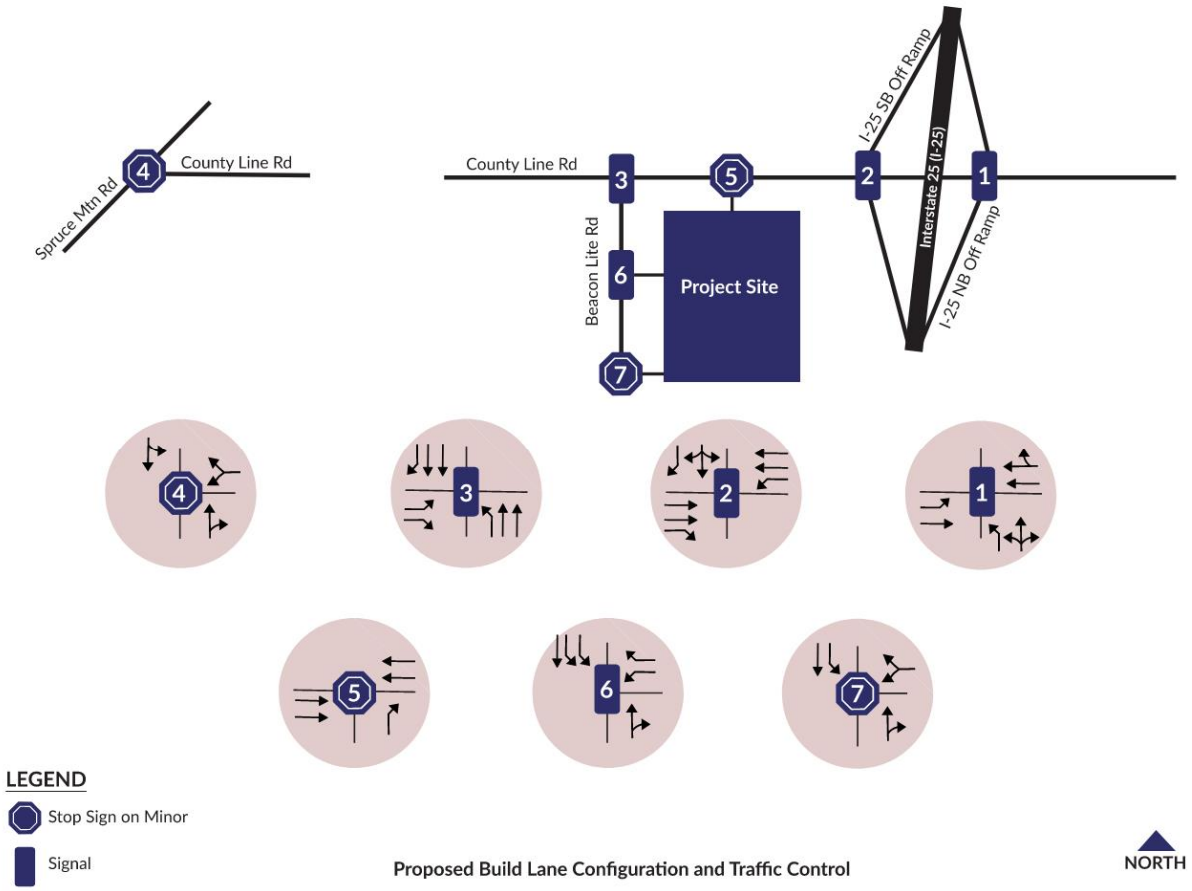


Figure 7: Proposed Build Lane Configuration and Traffic Control

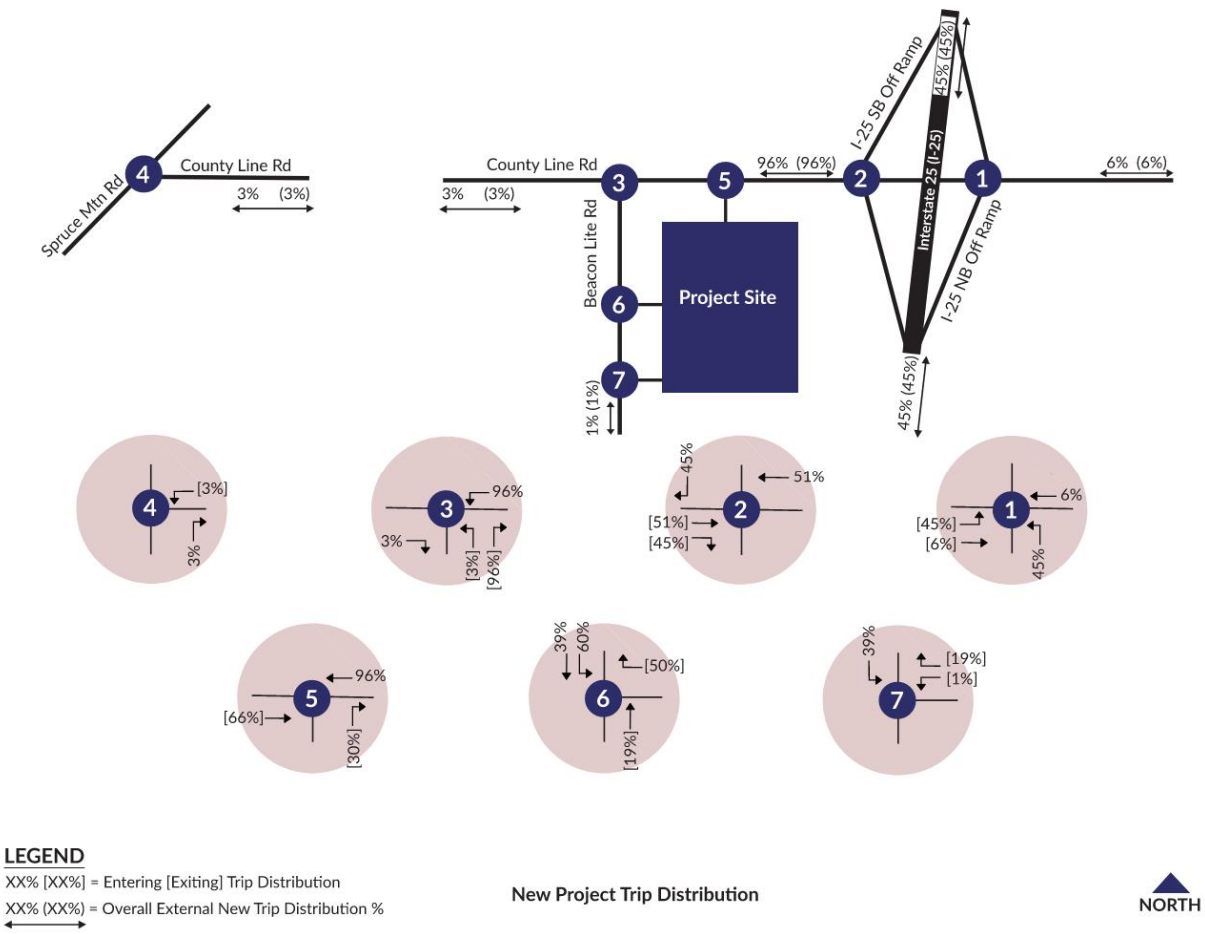


Figure 8: Trip Distribution

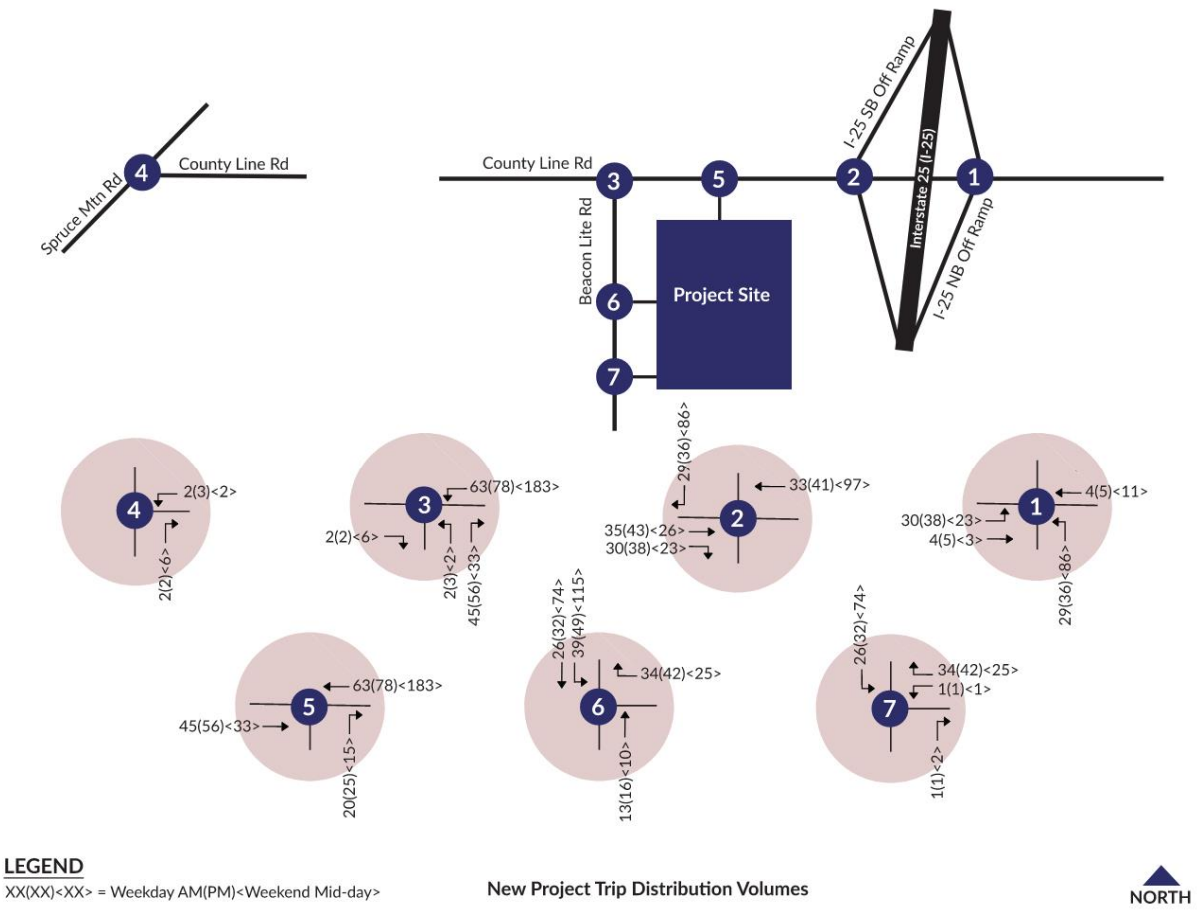


Figure 9: Site Trip Distribution Volumes

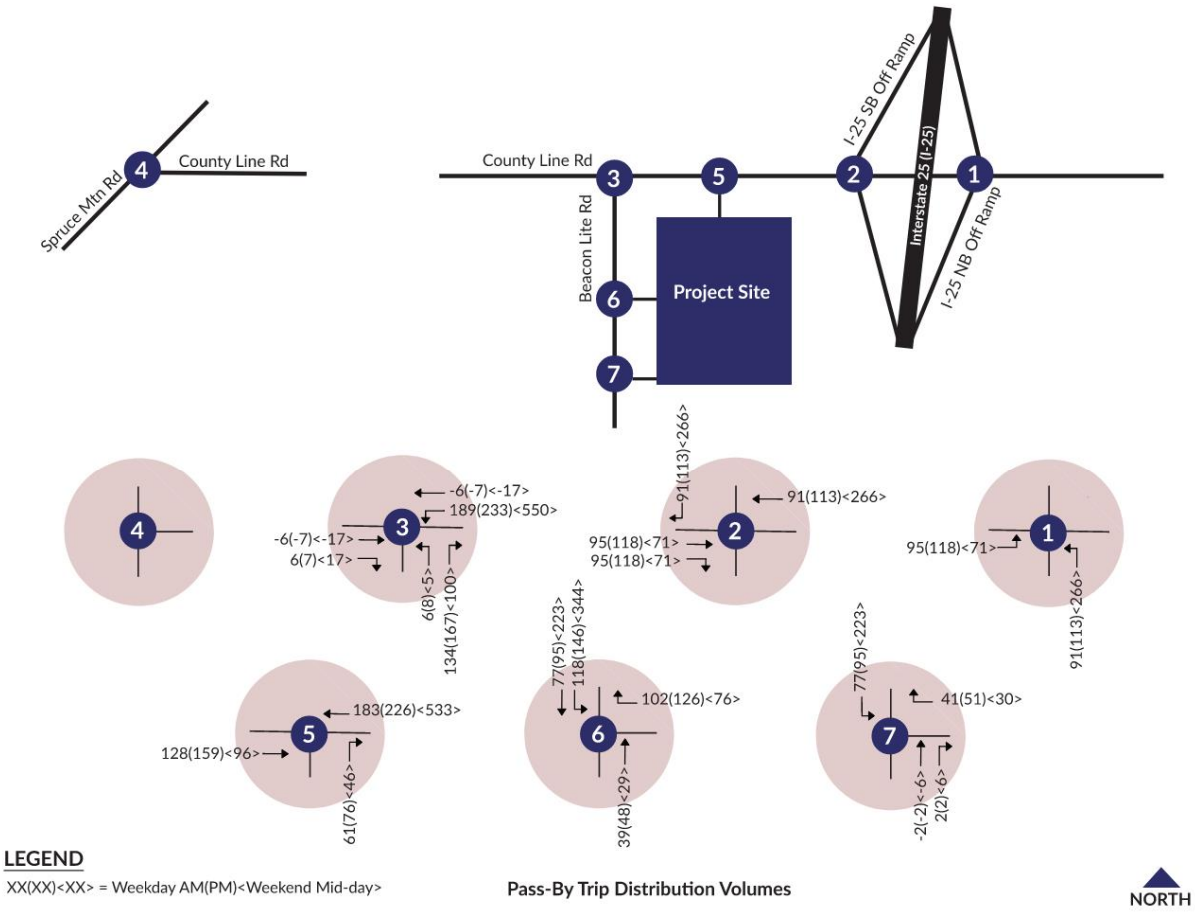


Figure 10: Pass-By Trip Distribution Volumes

Build Conditions

The Build Conditions section of the study analyses an opening year scenario (2028) for the Buc-ee's travel center as well as a horizon year scenario (2045). If traffic operations are found to be unacceptable, this section will evaluate possible mitigation options.

Build 2028 & 2045 Traffic Forecasts

The Build traffic forecasts were calculated by adding the No Build volume forecasts to the site trip and pass-by trip forecasts. The 2028 Build traffic forecasts, shown in Figure 11, were developed by combining the No Build 2028 forecasts (Figure 5), the site trip assignments (Figure 9), and the pass-by trip assignments (Figure 10). The 2045 Build traffic forecasts, shown in Figure 12, were developed by combining the No Build 2045 forecasts (Figure 6), the site trip assignments (Figure 9), and the pass by trip assignments (Figure 10).

The Buc-ee's will significantly increase the ADTs along the route between I-25 and the site accesses. County Line Rd (from Beacon Lite Rd to I-25 NB Ramps) and Beacon Lite Rd (from South Access to County Line Rd) will experience the most significant increases in traffic volumes. Since only 3% of the site trips are expected to come from the Town of Palmer Lake, and 75% of these will be pass-by trips, the western side of County Line Rd is not expected to see significant increases in traffic volumes upon completion of the site. The Buc-ee's is expected to only cause minimal increases in traffic volumes within the Town of Palmer Lake.

Roadway Classification

The existing and future ADTs on the roads within the study area were evaluated against the El Paso County standards to determine whether the forecasted increase in ADT would change the roadway classifications. Table 2-4 and Table 2-5 in Chapter 2.3.2 of the El Paso County Engineering Criteria Manual was referenced for this criteria. Table 5 details the existing and forecasted ADTs for each evaluated scenario and includes the roadway classification that each ADT meets, per El Paso County standards.

Table 5: Buc-ee's Trip Generation

Roadway	Existing	2028 No Build	2045 No Build	2028 Build	2045 Build
County Line Road West of Beacon Lite Rd	2522	2730	3822	2812	3904
	Major Collector	Major Collector	Minor Arterial	Major Collector	Minor Arterial
County Line Road East of Beacon Lite Rd	3560	3854	5396	14117	15659
	Minor Arterial	Minor Arterial	Minor Arterial	Principal Arterial	Principal Arterial
Beacon Lite Rd (north of south site access)	436	472	661	9667	9856
	Local	Local	Local	Minor Arterial	Minor Arterial
Beacon Lite Rd (south of south site access)	436	472	661	667	688
	Local	Local	Local	Local	Local

As can be seen in this table, three out of the four roadway segments that were evaluated experience a great enough volume increase to change roadway classification. County Line Rd west of Beacon Lite Rd will remain a major collector through the opening year of the site but will reach the classification of minor arterial by 2045. County Line Rd east of Beacon Lite Rd will remain a minor arterial until the opening year of the site, when it will have the ADT of a principal arterial due to the site trips. Beacon Lite Rd north of the south site access will have the volumes of a minor arterial upon opening of the site, while Beacon Lite Rd south of the south site access will have the ADT of a local road through the 2045 Build year.

The developer should be responsible for contributing to the required roadway improvements that are associated with an upgrade in roadway classification.

Build 2028 and 2045 Delay and LOS

Traffic analyses were conducted at the four study intersections and three proposed site accesses based on the Build lane configuration and the forecasted Build volumes. Per the El Paso County Standards, the peak hour factors were kept the same as from the existing analysis for the 2028 scenario but were set to 0.95 for any approach calculated to have a peak hour factor below 0.95 for the 2045 scenario. The heavy vehicle percentages that were collected with the turning movement counts were incorporated into the Synchro models. The heavy vehicle percentages that were counted at the Johnstown Buc-ee's were applied to the proposed site accesses. The cycle lengths for the signals were set to 120 seconds and the splits were optimized. The intersection delays and LOS are reported in Table 6 and the detailed Synchro reports are included in Appendix C. Per the HCM standards, the delay for the worst movement is reported for the stop-controlled intersections and the overall intersection delay is reported for the signalized intersections.

Table 6: Build 2028 & 2045 Delay and LOS

	Intersection	Intersection Control	Worst Movement	Weekday AM		Weekday PM		Weekend Midday	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Year 2028	I-25 NB Off Ramp/County Line Rd	Signal	-	16.7	B	21.1	C	28.0	C
	I-25 SB Off Ramp/County Line Rd	Signal	-	10.9	B	15.1	B	14.6	B
	Beacon Lite Rd/County Line Rd	Signal	-	23.5	C	21.9	C	25.8	C
	Spruce Mountain Rd/County Line Rd	Yield Controlled	WB	10.0	B	12.1	B	9.7	A
	North Site Access/County Line Rd	Stop-Controlled	NBR	10.2	B	10.2	B	9.3	A
	Middle Site Access/County Line Rd	Signal	-	35.7	D	34.4	C	29.6	C
	South Site Access/County Line Rd	Stop-Controlled	WB	8.8	A	8.9	A	8.8	A
Year 2045	I-25 NB Off Ramp/County Line Rd	Signal	-	16.4	B	20.4	C	26.3	C
	I-25 SB Off Ramp/County Line Rd	Signal	-	10.5	B	20.8	C	14.7	B
	Beacon Lite Rd/County Line Rd	Signal	-	26.0	C	24.2	C	27.1	C
	Spruce Mountain Rd/County Line Rd	Yield Controlled	WB	10.7	B	14.3	B	10.1	B
	North Site Access/County Line Rd	Stop-Controlled	NBR	10.4	B	10.5	B	9.5	A
	Middle Site Access/County Line Rd	Signal	-	38.4	D	33.1	C	29.6	C
	South Site Access/County Line Rd	Stop-Controlled	WB	8.9	A	9.0	A	8.8	A

As can be seen in the table, the roadway improvements that the developer is proposing will significantly improve traffic operations when compared to the background conditions, even with the additional trips generated by the Buc-ee's. All the intersections and site accesses are expected to operate acceptably (LOS D or better) during both Build scenarios. The site accesses will operate at LOS D or better, with the middle access incurring the greatest delay.

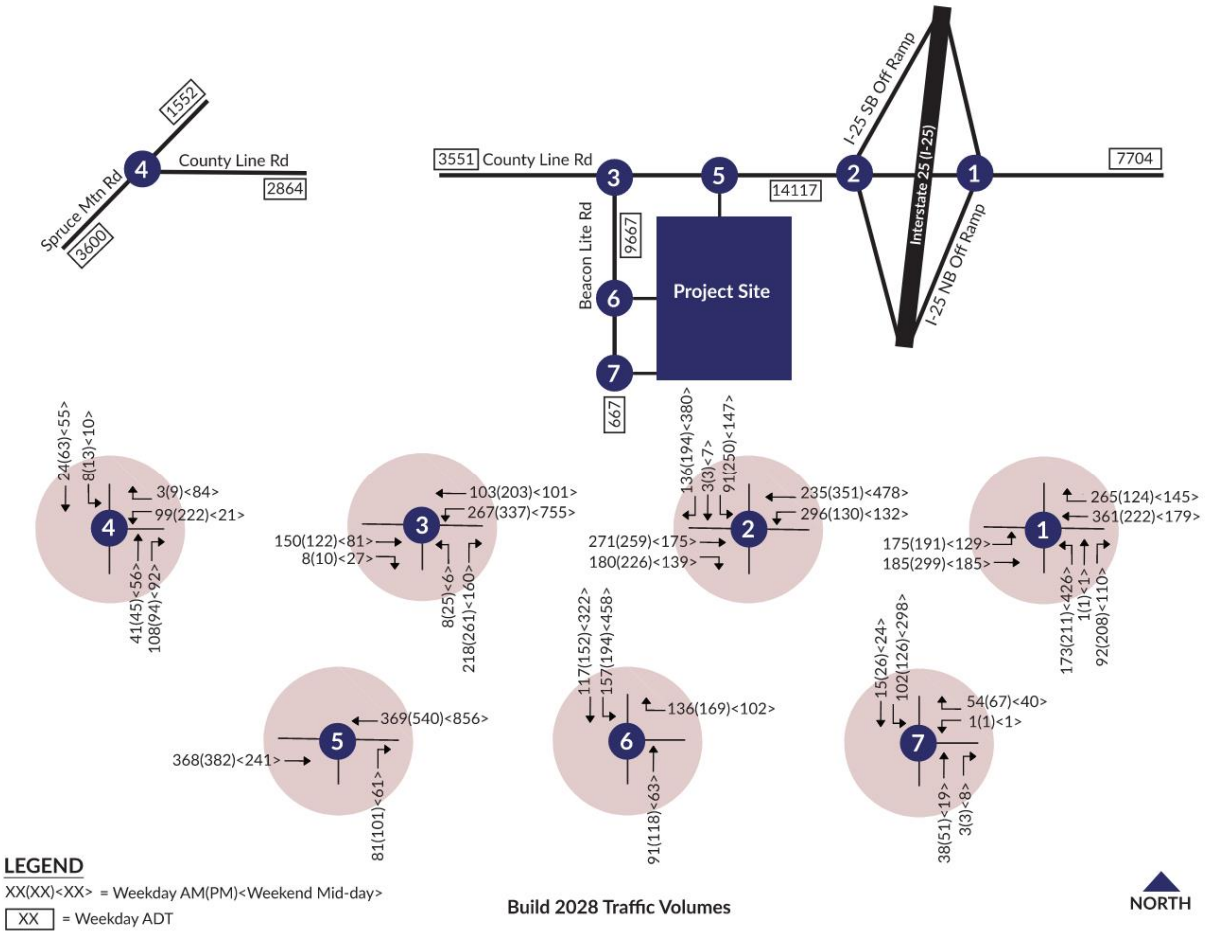


Figure 11: Build 2028 Traffic Volumes

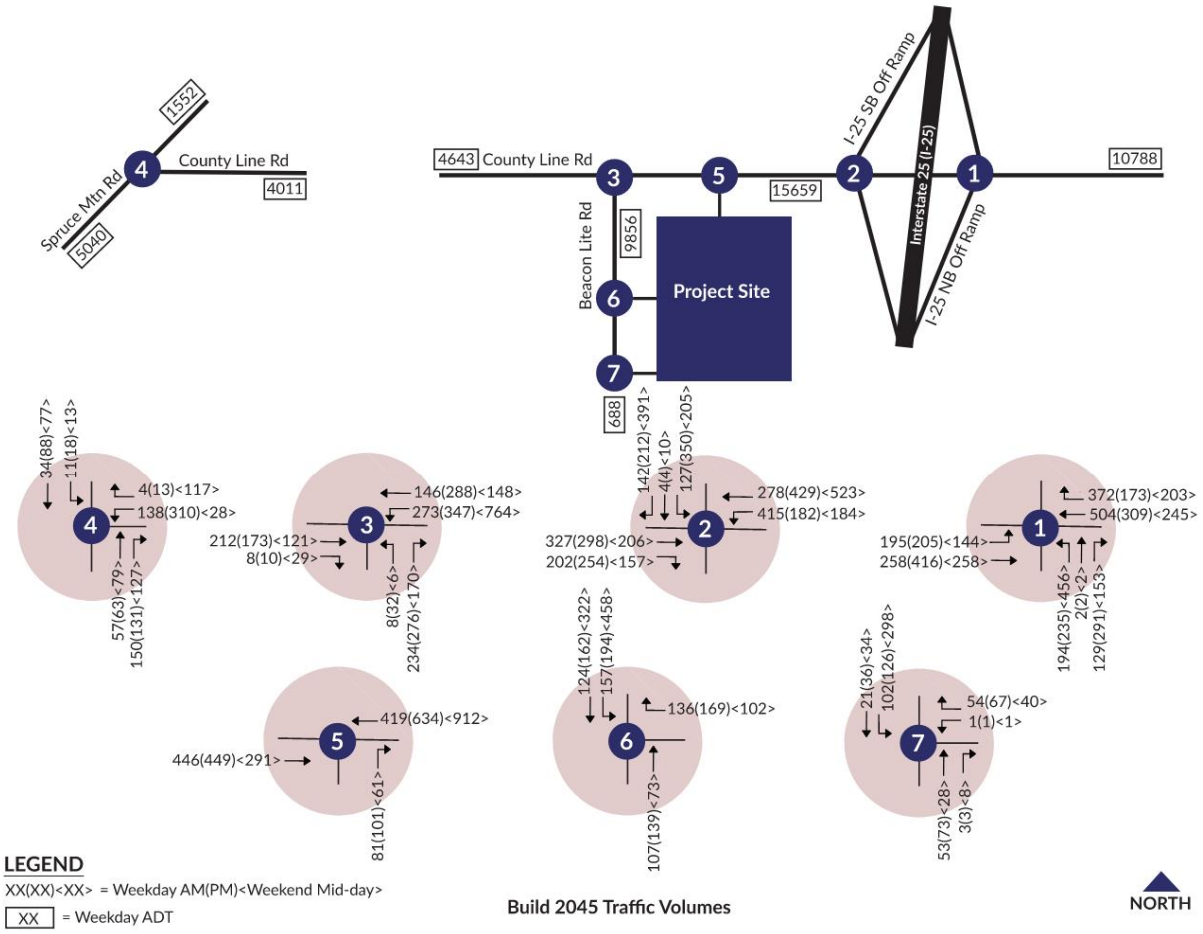


Figure 12: Build 2045 Traffic Volumes

Build 2028 and 2045 Queuing

This queuing evaluation is intended to ensure that the turn lanes proposed by the developer will be long enough to accommodate the forecasted vehicle queues. A vehicle queuing analysis was conducted at each of the proposed turn lanes, evaluating the 95th percentile queue lengths. Table 6 reports the longest queue out of the weekday morning, afternoon, or weekend midday peak hour, and compares that queue to the available storage length. Notably, there will be a taper length for most of the proposed auxiliary lanes, but since queues can only extend a little way along a taper before blocking the adjacent lane, the taper length was not included in the available storage length.

Table 7: Queuing Analysis

Intersection Turn Lane	Existing Queue	2028 No Build Queue	2028 Build Queue	2045 No Build Queue	2045 Build Queue	Developer Proposed Auxiliary Lane Storage
I-25 Northbound Off Ramp and County Line Road Signalized						
Eastbound left	10'	10'	117'	10'	128'	275'
I-25 Southbound Off Ramp and County Line Road Signalized						
Eastbound Right			23'		31'	300'
Westbound Left	10'	10'	148'	15'	173'	275'
Beacon Lite Rd & County Line Rd						
Eastbound Left			158'		235'	Continuous
Eastbound Right			16'		28'	150'
Northbound Left	10'	10'	17'	10'	23'	150'
Southbound Right			42'		124'	190'
Beacon Lite Rd & Middle Site Access						
Southbound Left			256'		256'	200'
Beacon Lite Rd & South Access						
Southbound left			20'		20'	150'

The projected vehicle queues are anticipated to remain within the proposed storage at all the proposed turn lanes with the exception of the southbound left turn movement at the middle site access during the weekend midday peak. Notably, the developer did not evaluate the weekend midday time period, even though it has the highest trip generation. While this movement likely won't cause operational issues since it remains under capacity and will clear each cycle, it should be monitored, and the developer should look into mitigation solutions. These solutions could include modifying the proposed signal timings to reduce queueing or extending the proposed storage length.

It is important to note that the left-turn lanes on the bridge fall short of the El Paso County required length length due to space constraints; however, the queues are not expected to exceed the storage.

Review of Kimley Horn Study

Kimley Horn has prepared a study of the Palmer Lake Buc-ee's in support of the developer. The proposed roadway improvements that will be provided by the developer are included in the study. The Town of Palmer Lake has requested that Stolfus review this study to determine whether the proposed improvements are adequate to maintain acceptable traffic operations, especially within the Town, once the site opens.

In summary, Kimley Horn's existing traffic counts were in line with the traffic counts collected for this study, as was their growth rate. Their trip generation forecast, however, was noticeably higher. The Kimley Horn study looked at the trip generation from multiple Buc-ee's sites in Texas while this study looked at the trip generation from the Johnstown CO Buc-ee's. While the Kimley Horn forecasts are more conservative, we reason that the Johnstown Buc-ee's is a more accurate predictor for the trip generation since it is in the same state and in a similar location in terms of proximity to I-25 and nearby population densities. Buc-ee's is very popular in Texas, and many of their sites are in densely populated urban areas, which will likely increase their trip generation. Since the Kimley Horn study does design for a higher trip generation, their proposed designs would be able to accommodate a lower trip generation.

The Kimley Horn study evaluated both a signal and a roundabout at the intersection of County Line Rd/Beacon Lite Rd. While both options would operate well through the 2045 Build scenario, a signal would have several benefits that a roundabout would not. Since there will be three other nearby signals, a signal at Palmer Divide Rd/Beacon Lite Rd can easily be coordinated and vehicles will be able to enter/exit the site in platoons that will be able to efficiently travel through all four signals. A roundabout that is situated in the middle of a dense network of coordinated signals can negatively impact the signal progression. To reiterate, however, a roundabout would still operate well in this location and would have low delays and queueing.

One point that was noticed in the Kimley Horn study is that the access to the Tri-Lakes Church of Christ is proposed to become a right-in right-out access. This has the potential to cause operational problems when church lets out. Most of the vehicles will likely be trying to turn left to reach County Line Rd but will be forced to turn right and head south down Beacon Lite Rd. There are no locations where the trips will easily be able to U-Turn, including at the signalized Middle Site Access. The trips will either have to turn into the Buc-ee's to turn around, or will have to make a U-Turn somewhere along Beacon Lite Rd. Since the traffic volumes will be high in this area, this has the potential to negatively impact driver safety and traffic operations for both the Buc-ee's trips and the trips exiting the church. The Kimley Horn study states that they will look into providing access to County Line Rd for the church. It is recommended that the developer ensure that additional access is provided to the church. Since the access on County Line Rd would not meet the El Paso County spacing requirements from Beacon Lite Rd/County Line Rd, another option the developer may wish to consider is to put a roundabout at County Line Rd/Beacon Lite Rd and tie in the church access as a fourth leg.

Conclusions and Recommendations

With the exception of a few minor points summarized in the recommendations below, the roadway improvements proposed by the developer will be adequate to maintain acceptable traffic operations through 2045. Since only 3% of the site trips are expected to originate from the Palmer Lake downtown, the traffic impacts west of the site are not expected to be significant. The most noticeable traffic impacts will be between I-25 and the site accesses. The conclusions and recommendations from this study are summarized below.

Conclusions

- The existing traffic operations (year 2025) are acceptable at all the study intersections. Delays and queues are minor.
- In the year 2028 No Build Scenario (site not constructed), the intersection of the I-25 SB Ramps/County Line Rd will operate at LOS E & F during the weekday AM and PM peak hours, respectively, but will remain under capacity.
- In the year 2045 No Build Scenario (site not constructed), the intersection of the I-25 SB Ramps/County Line Rd will operate at LOS F and will exceed capacity during both weekday peak periods. The I-25 NB Ramps/County Line Rd will be nearing capacity as well.
- The proposed development will generate 533 weekdays AM peak hour trips, 661 weekday PM peak hour trips, 967 weekend midday peak hour trips, and 10,947 weekday daily trips. Of these trips, 25% will be site trips and 75% will be pass-by trips.
- It was concluded that all the study intersections will operate acceptably in the year 2028 and 2045 Build Scenarios (site constructed) with the roadway improvements proposed by the developer.
- The two proposed site accesses along Beacon Lite Rd meet the El Paso County required access spacing. The proposed site access along County Line Rd does not meet the required access spacing, however, since it is a right-out only, the limited spacing is not expected to cause operational or safety problems.
- The developer has proposed adequate measures to ensure sufficient sight distance at the access points.
- Only 3% of the trip generation from the Buc-ee's is anticipated to come to/from the Palmer Lake Downtown along County Line Rd. Most of the site trips will come from I-25. As such, the major traffic impacts from the site will be focused along County Line Rd and Beacon Lite Rd between I-25 and the site accesses. Traffic impacts west of the proposed site are expected to be minor.

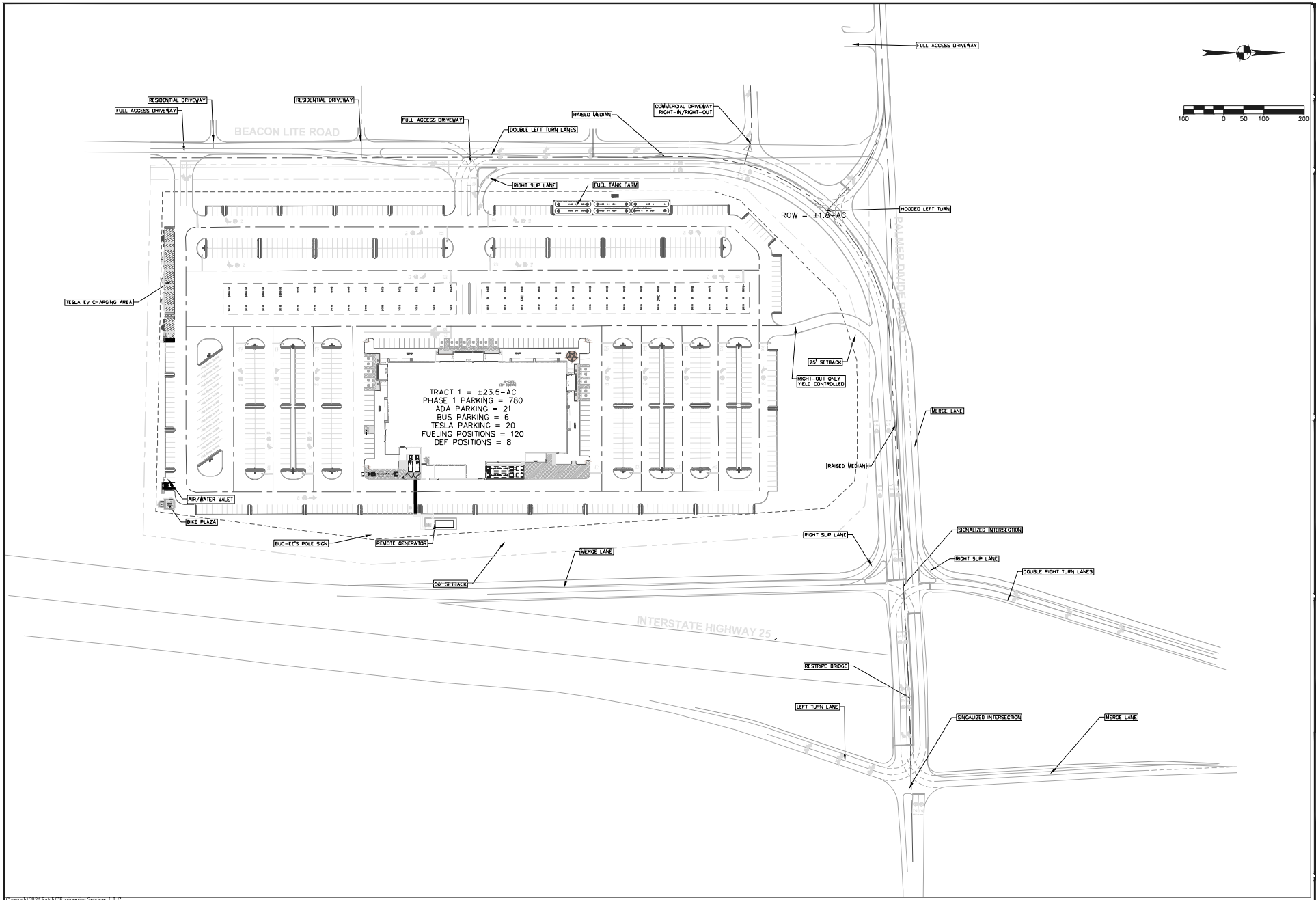
Recommendations

- The proposed right-out access on County Line Rd is designated as yield-controlled. It is recommended that it be made stop-controlled to increase driver compliance.
- The developer is proposing to convert the Tri-Lakes Church of Christ access from a full movement to a right-in, right-out (RIRO), but it is not clear whether they will give the church an additional access. The restriction of left turns may cause operational and safety concerns along Beacon Lite Rd. It is recommended that access be provided by the developer to allow drivers exiting the church to access County Line Rd without

having to make a U-turn. This can be done by tying the church access into the County Line Rd/Beacon Lite Rd intersection, or by providing access along County Line Rd.

- Although the Buc-ee's will not have a major impact on the intersection of County Line Rd/Spruce Mtn Rd, it is recommended that the Town of Palmer Lake evaluate this intersection configuration and consider aligning the north leg of Pery Park Rd and the south leg of County Line Rd to improve driver safety and operations.
- The traffic analysis showed the southbound left turn at the middle site access to exceed the proposed storage length of the turn lane during the Saturday midday period. It is recommended that the developer evaluate this movement and either ensure the signal is timed in a way that will reduce the queue, or that adequate storage is provided. Notably, the Kimley Horn study did not evaluate the Saturday peak hour, which has a higher rate of site trips than the weekday peak hours.
- The developer will be responsible for implementing the intersection improvements identified in the Kimley Horn Study and detailed in the "Site Analysis" section of this study.
- The proposed site will increase the traffic volumes throughout the study area, changing the roadway classifications in several areas. The developer should be responsible for contributing to the required roadway improvements in the following locations:
    - County Line Rd (east of Beacon Lite Rd): Minor Arterial to Principal Arterial
    - Beacon Lite Rd (north of south site access): Local Rd to Minor Arterial.

Appendix A: Site Plan



REVISIONS

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF DAVID S. RATCLIFF #97350 ON THE DATE SHOWN ON THE DATE STAMP. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

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TBPE FIRM #14464

SHEET INFORMATION

DATE:	03/19/2024
DESIGNED BY:	DSR
DRAWN BY:	DSR
PROJECT NO:	10053-163
APPROVED BY:	RG
FILE NAME:	
PLOT SCALE:	1:80
ISSUED FOR OWNER REVIEW:	
ISSUED FOR PERMIT REVIEW & BIDDING ONLY:	
ISSUED FOR CONSTRUCTION:	

CONCEPT PLAN A2

DRAWING

A2

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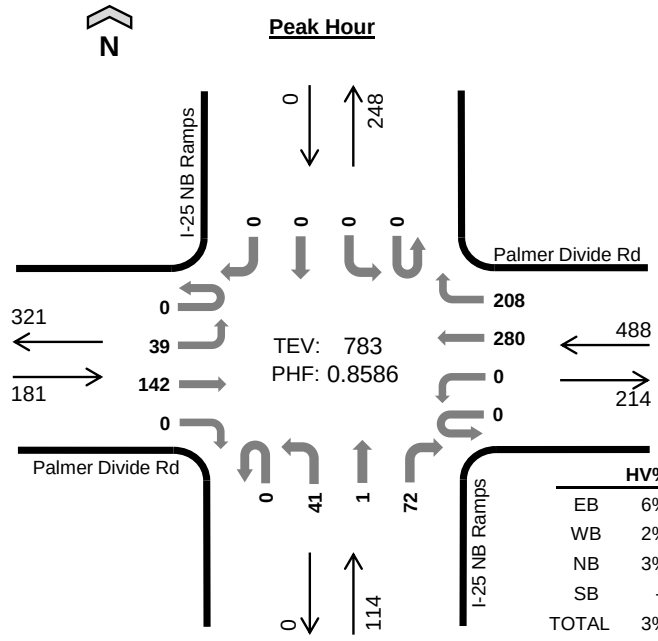
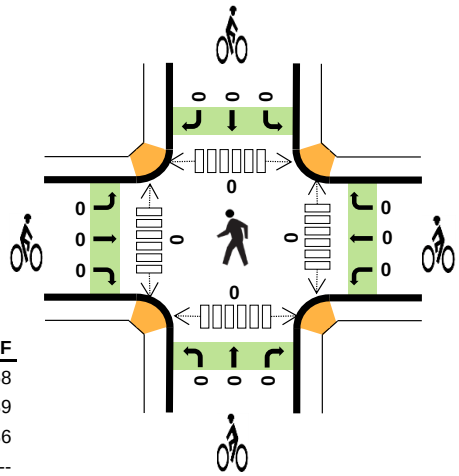
Appendix B: Traffic Counts

I-25 NB Ramps
Palmer Divide Rd

Date: 12/3/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV%	PHF
EB	6%	0.68
WB	2%	0.89
NB	3%	0.86
SB	--	--
TOTAL	3%	0.86



Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 NB Ramps Northbound				I-25 NB Ramps Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	10	35	0	0	0	47	51	0	6	0	15	0	0	0	0	164	0
7:15 AM		0	10	57	0	0	0	78	51	0	12	1	19	0	0	0	0	228	0
7:30 AM		0	13	28	0	0	0	73	51	0	8	0	20	0	0	0	0	193	0
7:45 AM		0	6	22	0	0	0	82	55	0	15	0	18	0	0	0	0	198	783
Pk Hr	All	0	39	142	0	0	0	280	208	0	41	1	72	0	0	0	0	783	
	HV	0	4	6	0	0	0	4	6	0	1	0	2	0	0	0	0	23	
	HV%	-	10%	4%	-	-	-	1%	3%	-	2%	0%	3%	-	-	-	-	3%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	2	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	0	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	3	3	2	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	2	5	0	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	10	10	3	0	*23*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**10**	**35**	**0**	**0**	**0**	**47**	**51**	**0**	**6**	**0**	**15**	**0**	**0**	**0**	**0**	**164**	0
7:15 AM	**0**	**10**	**57**	**0**	**0**	**0**	**78**	**51**	**0**	**12**	**1**	**19**	**0**	**0**	**0**	**0**	**228**	**0**
7:30 AM	**0**	**13**	**28**	**0**	**0**	**0**	**73**	**51**	**0**	**8**	**0**	**20**	**0**	**0**	**0**	**0**	**193**	**0**
7:45 AM	**0**	**6**	**22**	**0**	**0**	**0**	**82**	**55**	**0**	**15**	**0**	**18**	**0**	**0**	**0**	**0**	**198**	**783**
8:00 AM	0	5	19	0	0	0	50	51	0	12	1	18	0	0	0	0	156	775
8:15 AM	0	8	20	0	0	0	58	36	0	12	0	23	0	0	0	0	157	704
8:30 AM	0	2	30	0	0	0	53	33	0	13	0	18	0	0	0	0	149	660
8:45 AM	0	3	30	0	0	0	46	32	0	12	0	26	0	0	0	0	149	611
Count Total	0	57	241	0	0	0	487	360	0	90	2	157	0	0	0	0	1,394	
Pk Hr All	**0**	**39**	**142**	**0**	**0**	**0**	**280**	**208**	**0**	**41**	**1**	**72**	**0**	**0**	**0**	**0**	**783**	
Pk Hr HV	**0**	**4**	**6**	**0**	**0**	**0**	**4**	**6**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**23**	
Pk Hr HV%	**-**	**10%**	**4%**	**-**	**-**	**-**	**1%**	**3%**	**-**	**2%**	**0%**	**3%**	**-**	**-**	**-**	**-**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	**3**	**2**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:15 AM	**2**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**3**	**3**	**2**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**2**	**5**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	3	4	1	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	0	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	5	3	1	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	21	19	6	0	*46*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**10**	**10**	**3**	**0**	***23***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	0
7:15 AM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**
7:30 AM	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**8**	**0**
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**23**
8:00 AM	0	0	3	0	0	0	0	4	0	1	0	0	0	0	0	0	8	26
8:15 AM	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	3	26
8:30 AM	0	1	4	0	0	0	1	2	0	1	0	0	0	0	0	0	9	27
8:45 AM	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	23
Count Total	0	5	16	0	0	0	6	13	0	3	0	3	0	0	0	0	46	
Pk Hr Heavy	**0**	**4**	**6**	**0**	**0**	**0**	**4**	**6**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**23**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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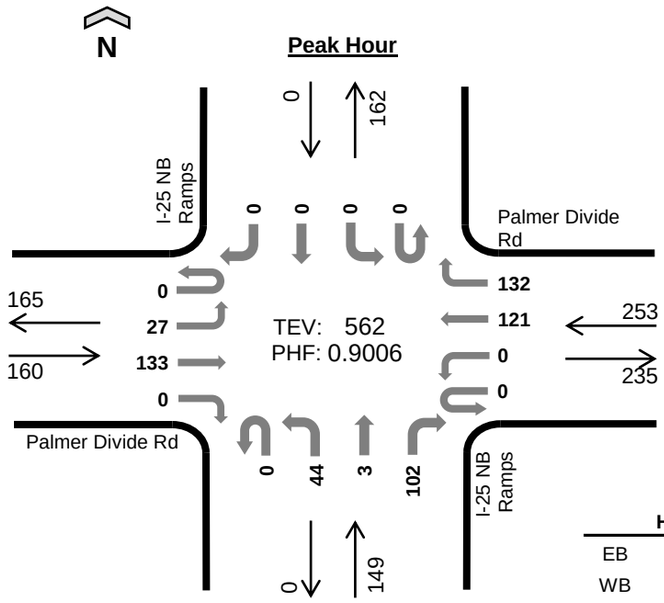
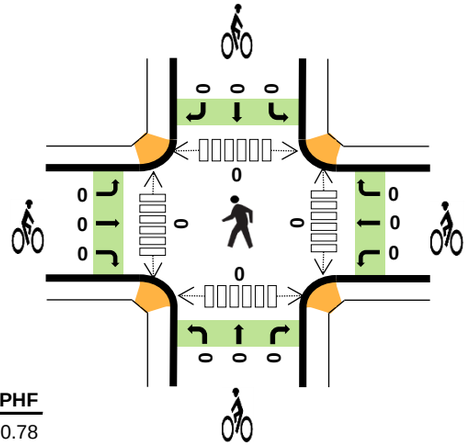
I-25 NB Ramps
Palmer Divide Rd

Date: 1/11/2025
Count Period: 1:00 PM to 3:00 PM
Peak Hour: 1:00 PM to 2:00 PM





	HV%	PHF
EB	1%	0.78
WB	1%	0.88
NB	1%	0.76
SB	--	--
TOTAL	1%	0.90

Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 NB Ramps Northbound				I-25 NB Ramps Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM		**0**	**8**	**43**	**0**	**0**	**0**	**31**	**37**	**0**	**7**	**2**	**28**	**0**	**0**	**0**	**0**	**156**	**0**
1:15 PM		**0**	**7**	**27**	**0**	**0**	**0**	**32**	**40**	**0**	**11**	**0**	**38**	**0**	**0**	**0**	**0**	**155**	**0**
1:30 PM		**0**	**8**	**32**	**0**	**0**	**0**	**30**	**31**	**0**	**16**	**1**	**16**	**0**	**0**	**0**	**0**	**134**	**0**
1:45 PM		**0**	**4**	**31**	**0**	**0**	**0**	**28**	**24**	**0**	**10**	**0**	**20**	**0**	**0**	**0**	**0**	**117**	**562**
Pk Hr	All	**0**	**27**	**133**	**0**	**0**	**0**	**121**	**132**	**0**	**44**	**3**	**102**	**0**	**0**	**0**	**0**	**562**	
	HV	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	
	HV%	-	**4%**	**1%**	-	-	-	**1%**	**2%**	-	**0%**	**33%**	**0%**	-	-	-	-	**1%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
1:00 PM	**1**	**1**	**1**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
1:15 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
1:30 PM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
1:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Peak Hour	**2**	**3**	**1**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	**0**	**8**	**43**	**0**	**0**	**0**	**31**	**37**	**0**	**7**	**2**	**28**	**0**	**0**	**0**	**0**	**156**	0
1:15 PM	**0**	**7**	**27**	**0**	**0**	**0**	**32**	**40**	**0**	**11**	**0**	**38**	**0**	**0**	**0**	**0**	**155**	**0**
1:30 PM	**0**	**8**	**32**	**0**	**0**	**0**	**30**	**31**	**0**	**16**	**1**	**16**	**0**	**0**	**0**	**0**	**134**	**0**
1:45 PM	**0**	**4**	**31**	**0**	**0**	**0**	**28**	**24**	**0**	**10**	**0**	**20**	**0**	**0**	**0**	**0**	**117**	**562**
2:00 PM	0	7	33	0	0	0	26	22	0	15	0	29	0	0	0	0	132	538
2:15 PM	0	7	37	0	0	0	38	29	0	13	0	15	0	0	0	0	139	522
2:30 PM	1	4	39	0	0	0	33	29	0	12	0	17	0	0	0	0	135	523
2:45 PM	0	7	35	0	0	0	28	36	0	9	0	8	0	0	0	0	123	529
Count Total	1	52	277	0	0	0	246	248	0	93	3	171	0	0	0	0	1,091	
Pk Hr All	**0**	**27**	**133**	**0**	**0**	**0**	**121**	**132**	**0**	**44**	**3**	**102**	**0**	**0**	**0**	**0**	**562**	
Pk Hr HV	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	
Pk Hr HV%	**-**	**4%**	**1%**	**-**	**-**	**-**	**1%**	**2%**	**-**	**0%**	**33%**	**0%**	**-**	**-**	**-**	**-**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
1:00 PM	**1**	**1**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:15 PM	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	3	10	1	0	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**2**	**3**	**1**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	0
1:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**
1:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**
2:00 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	6
2:15 PM	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	3	7
2:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	8
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Count Total	0	1	2	0	0	0	5	5	0	0	1	0	0	0	0	0	14	
Pk Hr Heavy	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
1:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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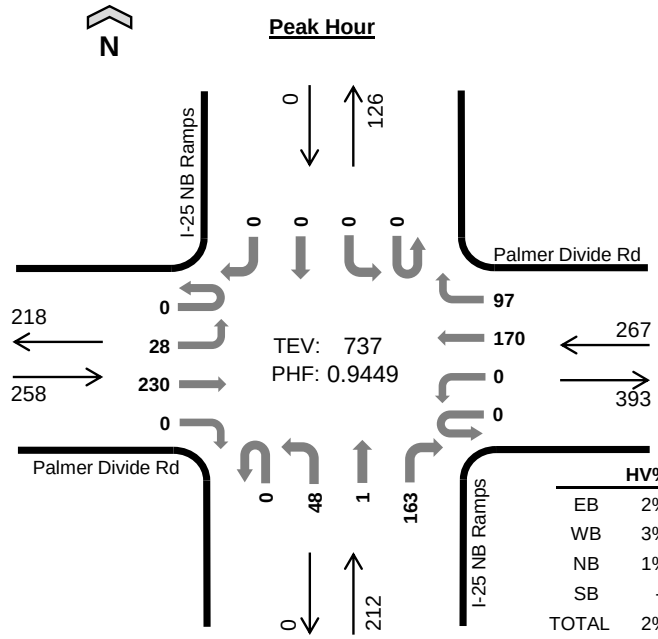
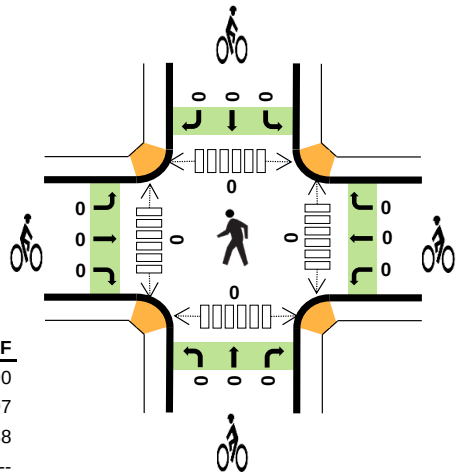
I-25 NB Ramps
Palmer Divide Rd

Date: 12/3/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV%	PHF
EB	2%	0.90
WB	3%	0.97
NB	1%	0.88
SB	--	--
TOTAL	2%	0.94



Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 NB Ramps Northbound				I-25 NB Ramps Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM		0	10	50	0	0	0	40	29	0	16	0	44	0	0	0	0	189	0
5:15 PM		0	10	62	0	0	0	36	26	0	8	1	38	0	0	0	0	181	0
5:30 PM		0	3	54	0	0	0	46	23	0	11	0	35	0	0	0	0	172	0
5:45 PM		0	5	64	0	0	0	48	19	0	13	0	46	0	0	0	0	195	737
Pk Hr	All	0	28	230	0	0	0	170	97	0	48	1	163	0	0	0	0	737	
	HV	0	2	2	0	0	0	2	5	0	0	0	2	0	0	0	0	13	
	HV%	-	7%	1%	-	-	-	1%	5%	-	0%	0%	1%	-	-	-	-	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
5:00 PM	3	3	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	4	7	2	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	60	0	0	0	66	31	0	11	1	23	0	0	0	0	196	0
4:15 PM	0	9	63	0	0	0	44	23	0	13	0	38	0	0	0	0	190	0
4:30 PM	0	8	49	0	0	0	37	17	0	14	1	31	0	0	0	0	157	0
4:45 PM	0	5	69	0	0	0	31	14	0	17	0	45	0	0	0	0	181	724
5:00 PM	**0**	**10**	**50**	**0**	**0**	**0**	**40**	**29**	**0**	**16**	**0**	**44**	**0**	**0**	**0**	**0**	**189**	**717**
5:15 PM	**0**	**10**	**62**	**0**	**0**	**0**	**36**	**26**	**0**	**8**	**1**	**38**	**0**	**0**	**0**	**0**	**181**	**708**
5:30 PM	**0**	**3**	**54**	**0**	**0**	**0**	**46**	**23**	**0**	**11**	**0**	**35**	**0**	**0**	**0**	**0**	**172**	**723**
5:45 PM	**0**	**5**	**64**	**0**	**0**	**0**	**48**	**19**	**0**	**13**	**0**	**46**	**0**	**0**	**0**	**0**	**195**	**737**
Count Total	0	54	471	0	0	0	348	182	0	103	3	300	0	0	0	0	1,461	
Pk Hr All	**0**	**28**	**230**	**0**	**0**	**0**	**170**	**97**	**0**	**48**	**1**	**163**	**0**	**0**	**0**	**0**	**737**	
Pk Hr HV	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**13**	
Pk Hr HV%	**-**	**7%**	**1%**	**-**	**-**	**-**	**1%**	**5%**	**-**	**0%**	**0%**	**1%**	**-**	**-**	**-**	**-**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	3	3	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	1	2	2	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	2	2	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	2	1	2	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**3**	**3**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**1**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**2**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	13	15	8	0	*36*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**4**	**7**	**2**	**0**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	0	0	0	1	2	0	0	0	0	0	0	0	0	6	0
4:15 PM	0	0	1	0	0	0	0	2	0	0	0	2	0	0	0	0	5	0
4:30 PM	0	2	1	0	0	0	1	1	0	1	1	0	0	0	0	0	7	0
4:45 PM	0	0	2	0	0	0	0	1	0	2	0	0	0	0	0	0	5	23
5:00 PM	**0**	**1**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**23**
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**21**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**17**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**13**
Count Total	0	4	9	0	0	0	4	11	0	3	1	4	0	0	0	0	36	
Pk Hr Heavy	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**13**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 NB Ramps				I-25 NB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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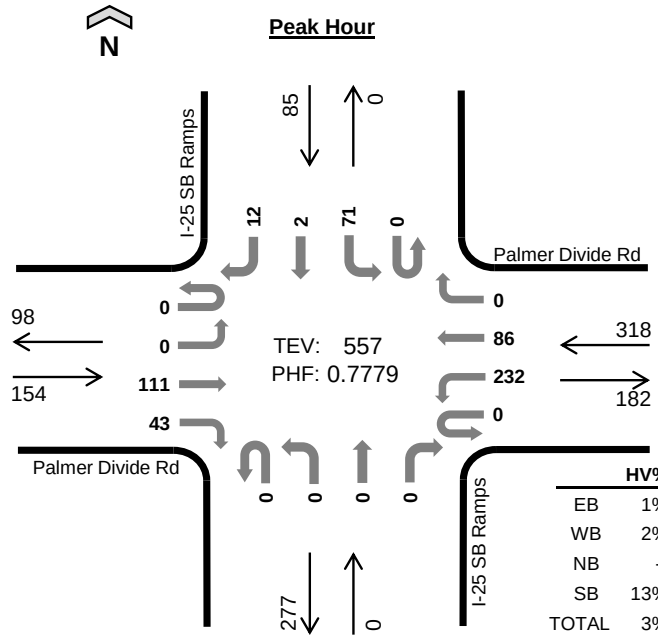
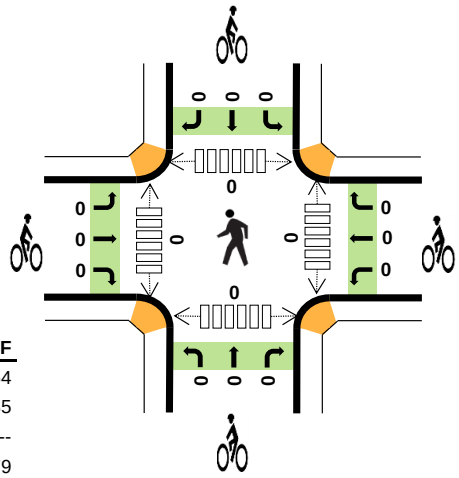
I-25 SB Ramps
Palmer Divide Rd

Date: 12/3/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV%	PHF
EB	1%	0.64
WB	2%	0.85
NB	--	--
SB	13%	0.79
TOTAL	3%	0.78



Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 SB Ramps Northbound				I-25 SB Ramps Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	26	13	0	38	12	0	0	0	0	0	0	19	0	1	109	0
7:15 AM		0	0	45	15	0	70	22	0	0	0	0	0	0	23	0	4	179	0
7:30 AM		0	0	27	12	0	60	23	0	0	0	0	0	0	13	2	3	140	0
7:45 AM		0	0	13	3	0	64	29	0	0	0	0	0	0	16	0	4	129	557
Pk Hr	All	0	0	111	43	0	232	86	0	0	0	0	0	0	71	2	12	557	
	HV	0	0	1	1	0	4	1	0	0	0	0	0	0	9	0	2	18	
	HV%	-	-	1%	2%	-	2%	1%	-	-	-	-	-	-	13%	0%	17%	3%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	1	0	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	2	0	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	0	2	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	2	0	4	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	2	5	0	11	*18*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**26**	**13**	**0**	**38**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**1**	**109**	0
7:15 AM	**0**	**0**	**45**	**15**	**0**	**70**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**23**	**0**	**4**	**179**	**0**
7:30 AM	**0**	**0**	**27**	**12**	**0**	**60**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**2**	**3**	**140**	**0**
7:45 AM	**0**	**0**	**13**	**3**	**0**	**64**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**4**	**129**	**557**
8:00 AM	0	0	12	11	0	41	21	0	0	0	0	0	0	13	0	3	101	549
8:15 AM	0	0	16	12	0	48	23	0	0	0	0	0	0	12	0	2	113	483
8:30 AM	0	0	11	13	0	44	23	0	0	0	0	0	0	21	1	6	119	462
8:45 AM	0	0	18	13	0	39	18	0	0	0	0	0	0	15	0	3	106	439
Count Total	0	0	168	92	0	404	171	0	0	0	0	0	0	132	3	26	996	
Pk Hr All	**0**	**0**	**111**	**43**	**0**	**232**	**86**	**0**	**0**	**0**	**0**	**0**	**0**	**71**	**2**	**12**	**557**	
Pk Hr HV	**0**	**0**	**1**	**1**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**2**	**18**	
Pk Hr HV%	**-**	**-**	**1%**	**2%**	**-**	**2%**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**13%**	**0%**	**17%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	**1**	**1**	**0**	**3**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:15 AM	**1**	**2**	**0**	**2**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**2**	**0**	**4**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	1	0	4	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	1	0	0	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	1	2	0	5	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	5	9	0	21	*35*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**2**	**5**	**0**	**11**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**5**	0
7:15 AM	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**5**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**6**	**18**
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	1	5	18
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2	15
8:30 AM	0	0	1	0	0	1	1	0	0	0	0	0	0	4	1	0	8	21
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	17
Count Total	0	0	4	1	0	5	4	0	0	0	0	0	0	17	1	3	35	
Pk Hr Heavy	**0**	**0**	**1**	**1**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**2**	**18**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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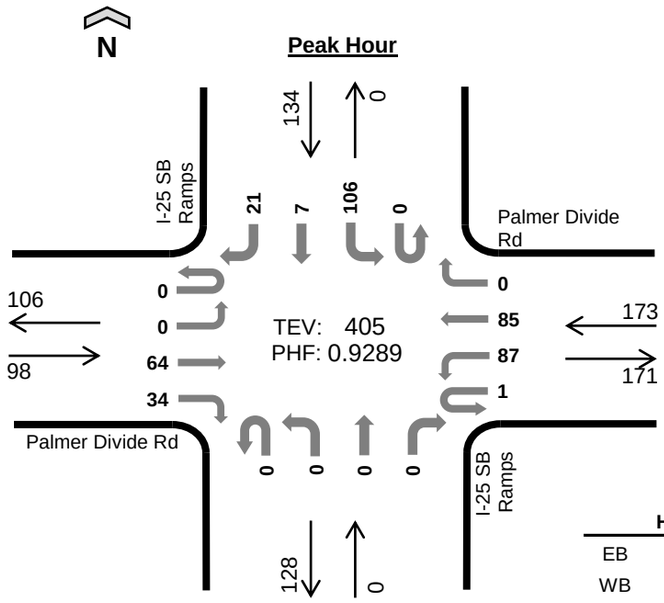
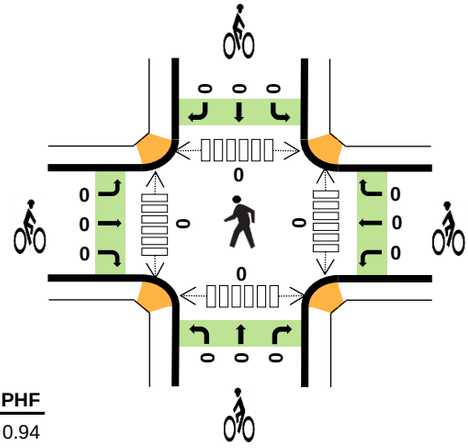
I-25 SB Ramps
Palmer Divide Rd

Date: 1/11/2025
Count Period: 1:00 PM to 3:00 PM
Peak Hour: 2:00 PM to 3:00 PM





	HV%	PHF
EB	0%	0.94
WB	2%	0.88
NB	--	--
SB	1%	0.91
TOTAL	1%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 SB Ramps Northbound				I-25 SB Ramps Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM		0	0	17	9	0	26	19	0	0	0	0	0	0	23	3	6	103	0
2:15 PM		0	0	14	9	0	29	20	0	0	0	0	0	0	34	1	2	109	0
2:30 PM		0	0	19	6	0	14	27	0	0	0	0	0	0	25	1	6	98	0
2:45 PM		0	0	14	10	1	18	19	0	0	0	0	0	0	24	2	7	95	405
Pk Hr	All	0	0	64	34	1	87	85	0	0	0	0	0	0	106	7	21	405	
	HV	0	0	0	0	0	3	1	0	0	0	0	0	0	1	0	0	5	
	HV%	-	-	0%	0%	0%	3%	1%	-	-	-	-	-	-	1%	0%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
2:00 PM	0	2	0	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	4	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	15	6	0	25	11	0	0	0	0	0	0	31	1	8	97	0
1:15 PM	0	0	14	11	0	24	20	0	0	0	0	0	0	22	0	4	95	0
1:30 PM	0	0	13	11	0	28	22	0	0	0	0	0	0	30	0	6	110	0
1:45 PM	0	0	13	4	0	13	22	0	0	0	0	0	0	20	1	6	79	381
2:00 PM	**0**	**0**	**17**	**9**	**0**	**26**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**23**	**3**	**6**	**103**	**387**
2:15 PM	**0**	**0**	**14**	**9**	**0**	**29**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**1**	**2**	**109**	**401**
2:30 PM	**0**	**0**	**19**	**6**	**0**	**14**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**1**	**6**	**98**	**389**
2:45 PM	**0**	**0**	**14**	**10**	**1**	**18**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**2**	**7**	**95**	**405**
Count Total	0	0	119	66	1	177	160	0	0	0	0	0	0	209	9	45	786	
Pk Hr All	**0**	**0**	**64**	**34**	**1**	**87**	**85**	**0**	**0**	**0**	**0**	**0**	**0**	**106**	**7**	**21**	**405**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	
Pk Hr HV%	**-**	**-**	**0%**	**0%**	**0%**	**3%**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**1%**	**0%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
1:00 PM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
1:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	**0**	**2**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	1	5	0	2	*8*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**4**	**0**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
1:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
2:00 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**5**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
Count Total	0	0	1	0	0	3	2	0	0	0	0	0	0	2	0	0	8	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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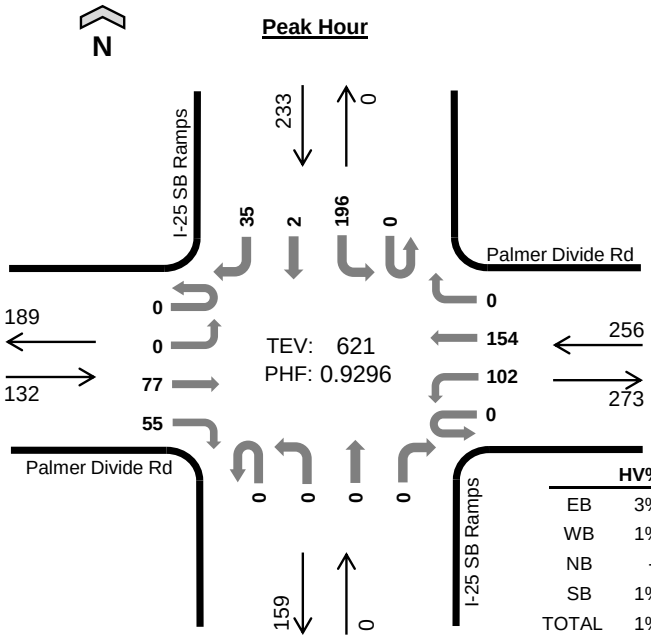
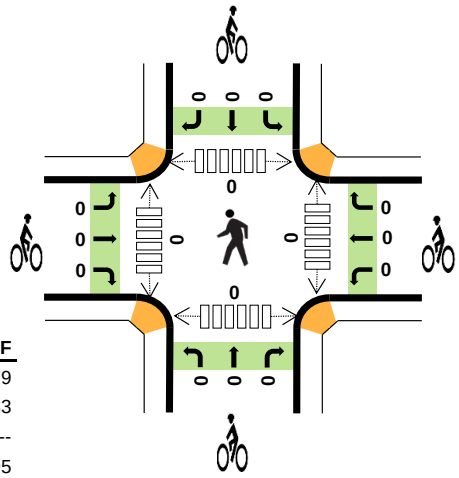
I-25 SB Ramps
Palmer Divide Rd

Date: 12/3/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV%	PHF
EB	3%	0.79
WB	1%	0.83
NB	--	--
SB	1%	0.95
TOTAL	1%	0.93



Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd Eastbound				Palmer Divide Rd Westbound				I-25 SB Ramps Northbound				I-25 SB Ramps Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM		0	0	26	11	0	26	19	0	0	0	0	0	0	47	1	5	135	0
5:15 PM		0	0	17	25	0	32	32	0	0	0	0	0	0	47	0	14	167	0
5:30 PM		0	0	16	9	0	20	57	0	0	0	0	0	0	49	0	11	162	0
5:45 PM		0	0	18	10	0	24	46	0	0	0	0	0	0	53	1	5	157	621
Pk Hr	All	0	0	77	55	0	102	154	0	0	0	0	0	0	196	2	35	621	
	HV	0	0	4	0	0	2	1	0	0	0	0	0	0	2	0	0	9	
	HV%	-	-	5%	0%	-	2%	1%	-	-	-	-	-	-	1%	0%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
5:00 PM	2	2	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	1	0	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	4	3	0	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	33	14	0	24	33	0	0	0	0	0	0	29	0	11	144	0
4:15 PM	0	0	28	13	0	24	17	0	0	0	0	0	0	44	0	8	134	0
4:30 PM	0	0	17	20	0	23	23	0	0	0	0	0	0	35	0	11	129	0
4:45 PM	0	0	15	18	0	28	26	0	0	0	0	0	0	53	0	4	144	551
5:00 PM	**0**	**0**	**26**	**11**	**0**	**26**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**47**	**1**	**5**	**135**	**542**
5:15 PM	**0**	**0**	**17**	**25**	**0**	**32**	**32**	**0**	**0**	**0**	**0**	**0**	**0**	**47**	**0**	**14**	**167**	**575**
5:30 PM	**0**	**0**	**16**	**9**	**0**	**20**	**57**	**0**	**0**	**0**	**0**	**0**	**0**	**49**	**0**	**11**	**162**	**608**
5:45 PM	**0**	**0**	**18**	**10**	**0**	**24**	**46**	**0**	**0**	**0**	**0**	**0**	**0**	**53**	**1**	**5**	**157**	**621**
Count Total	0	0	170	120	0	201	253	0	0	0	0	0	0	357	2	69	1,172	
Pk Hr All	**0**	**0**	**77**	**55**	**0**	**102**	**154**	**0**	**0**	**0**	**0**	**0**	**0**	**196**	**2**	**35**	**621**	
Pk Hr HV	**0**	**0**	**4**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**9**	
Pk Hr HV%	**-**	**-**	**5%**	**0%**	**-**	**2%**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**1%**	**0%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	2	2	0	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**2**	**2**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**1**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	9	7	0	6	*22*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**4**	**3**	**0**	**2**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	3	0	1	8	0
4:15 PM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	13
5:00 PM	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	**10**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
5:30 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**9**
5:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**9**
Count Total	0	0	8	1	0	6	1	0	0	0	0	0	0	5	0	1	22	
Pk Hr Heavy	**0**	**0**	**4**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**9**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				I-25 SB Ramps				I-25 SB Ramps				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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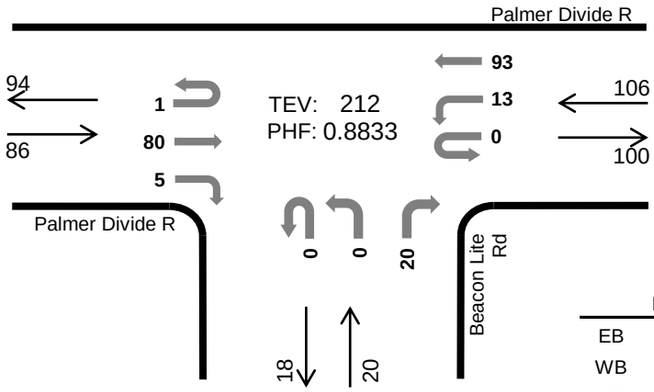
Beacon Lite Rd
Palmer Divide R

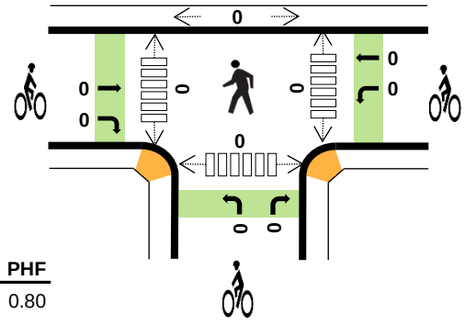
N

Peak Hour

Date: 1/11/2025
Count Period: 1:00 PM to 3:00 PM
Peak Hour: 2:00 PM to 3:00 PM



	HV%	PHF
EB	0%	0.80
WB	1%	0.78
NB	0%	0.71
SB	--	--
TOTAL	0%	0.88



Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide R Eastbound				Palmer Divide R Westbound				Beacon Lite Rd Northbound				n/a Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM		1	0	23	3	0	5	18	0	0	0	0	4	0	0	0	0	54	0
2:15 PM		0	0	20	0	0	2	20	0	0	0	0	4	0	0	0	0	46	0
2:30 PM		0	0	18	1	0	2	32	0	0	0	0	7	0	0	0	0	60	0
2:45 PM		0	0	19	1	0	4	23	0	0	0	0	5	0	0	0	0	52	212
Pk Hr	All	1	0	80	5	0	13	93	0	0	0	0	20	0	0	0	0	212	
	HV	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
	HV%	0%	-	0%	0%	-	0%	1%	-	-	-	-	0%	-	-	-	-	0%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
2:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide R				Palmer Divide R				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	18	0	0	2	14	0	0	0	0	1	0	0	0	0	35	0
1:15 PM	0	0	19	0	0	7	17	0	0	1	0	5	0	0	0	0	49	0
1:30 PM	0	0	18	0	0	2	26	0	0	0	0	5	0	0	0	0	51	0
1:45 PM	0	0	11	0	0	7	22	0	0	0	0	6	0	0	0	0	46	181
2:00 PM	**1**	**0**	**23**	**3**	**0**	**5**	**18**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**54**	**200**
2:15 PM	**0**	**0**	**20**	**0**	**0**	**2**	**20**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**46**	**197**
2:30 PM	**0**	**0**	**18**	**1**	**0**	**2**	**32**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**60**	**206**
2:45 PM	**0**	**0**	**19**	**1**	**0**	**4**	**23**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**52**	**212**
Count Total	1	0	146	5	0	31	172	0	0	1	0	37	0	0	0	0	393	
Pk Hr All	**1**	**0**	**80**	**5**	**0**	**13**	**93**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**212**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
Pk Hr HV%	**0%**	**-**	**0%**	**0%**	**-**	**0%**	**1%**	**-**	**-**	**-**	**-**	**0%**	**-**	**-**	**-**	**-**	**0%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
1:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
1:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide R				Palmer Divide R				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

Count Summaries - Bikes

Interval Start	Palmer Divide R				Palmer Divide R				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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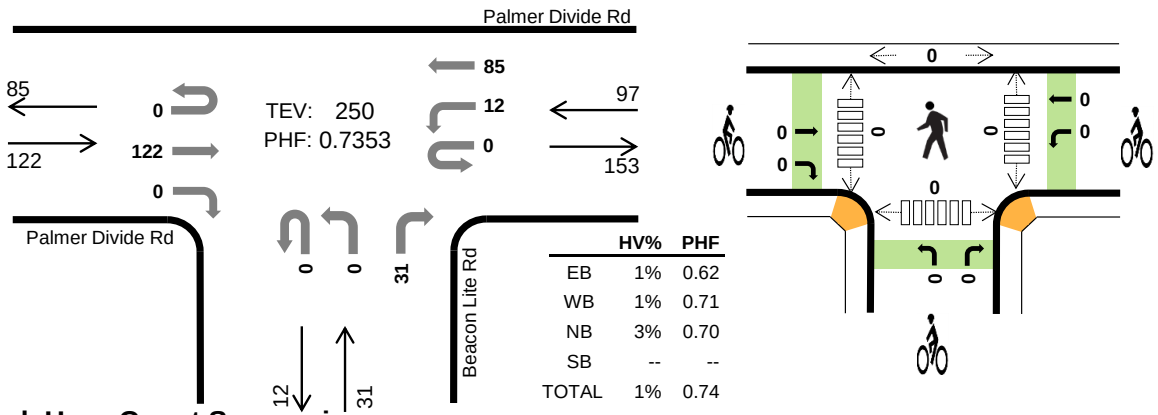
Beacon Lite Rd
Palmer Divide Rd

N

Peak Hour

Date: 12/3/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV%	PHF
EB	1%	0.62
WB	1%	0.71
NB	3%	0.70
SB	--	--
TOTAL	1%	0.74

Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	30	0	0	1	11	0	0	0	0	8	0	0	0	0	50	0
7:15 AM		0	0	49	0	0	4	21	0	0	0	0	11	0	0	0	0	85	0
7:30 AM		0	0	32	0	0	2	24	0	0	0	0	5	0	0	0	0	63	0
7:45 AM		0	0	11	0	0	5	29	0	0	0	0	7	0	0	0	0	52	250
Pk Hr	All	0	0	122	0	0	12	85	0	0	0	0	31	0	0	0	0	250	
	HV	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	3	
	HV%	-	-	1%	-	-	0%	1%	-	-	-	-	3%	-	-	-	-	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	1	1	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**30**	**0**	**0**	**1**	**11**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**50**	0
7:15 AM	**0**	**0**	**49**	**0**	**0**	**4**	**21**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**85**	**0**
7:30 AM	**0**	**0**	**32**	**0**	**0**	**2**	**24**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**63**	**0**
7:45 AM	**0**	**0**	**11**	**0**	**0**	**5**	**29**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**52**	**250**
8:00 AM	0	0	22	0	0	3	21	0	0	0	0	4	0	0	0	0	50	250
8:15 AM	0	0	20	2	0	2	23	0	0	0	0	4	0	0	0	0	51	216
8:30 AM	1	0	22	0	0	2	27	0	0	0	0	3	0	0	0	0	55	208
8:45 AM	0	0	24	0	0	1	19	0	0	0	0	6	0	0	0	0	50	206
Count Total	1	0	210	2	0	20	175	0	0	0	0	48	0	0	0	0	456	
Pk Hr All	**0**	**0**	**122**	**0**	**0**	**12**	**85**	**0**	**0**	**0**	**0**	**31**	**0**	**0**	**0**	**0**	**250**	
Pk Hr HV	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	
Pk Hr HV%	**-**	**-**	**1%**	**-**	**-**	**0%**	**1%**	**-**	**-**	**-**	**-**	**3%**	**-**	**-**	**-**	**-**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:15 AM	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	1	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	7	2	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**1**	**1**	**1**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
7:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
8:00 AM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3	5
8:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	6
8:30 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	9
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	10
Count Total	0	0	3	1	0	1	6	0	0	0	0	2	0	0	0	0	13	
Pk Hr Heavy	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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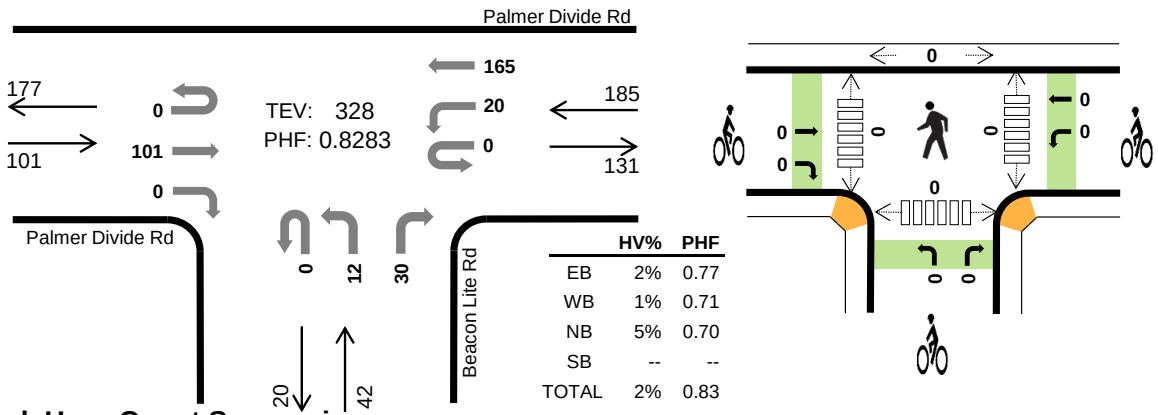
Beacon Lite Rd
Palmer Divide Rd

N

Peak Hour

Date: 12/3/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV%	PHF
EB	2%	0.77
WB	1%	0.71
NB	5%	0.70
SB	--	--
TOTAL	2%	0.83

Peak Hour Count Summaries

Peak Hour Interval Start		Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM		0	0	29	0	0	0	24	0	0	3	0	7	0	0	0	0	63	0
5:15 PM		0	0	33	0	0	11	34	0	0	2	0	9	0	0	0	0	89	0
5:30 PM		0	0	19	0	0	7	58	0	0	6	0	9	0	0	0	0	99	0
5:45 PM		0	0	20	0	0	2	49	0	0	1	0	5	0	0	0	0	77	328
Pk Hr	All	0	0	101	0	0	20	165	0	0	12	0	30	0	0	0	0	328	
	HV	0	0	2	0	0	0	1	0	0	0	0	2	0	0	0	0	5	
	HV%	-	-	2%	-	-	0%	1%	-	-	0%	-	7%	-	-	-	-	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
5:00 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	2	1	2	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	34	1	0	9	35	0	0	0	0	11	0	0	0	0	90	0
4:15 PM	0	0	32	1	0	5	20	0	0	0	0	11	0	0	0	0	69	0
4:30 PM	0	0	32	1	1	10	24	0	0	1	0	6	0	0	0	0	75	0
4:45 PM	0	0	25	1	0	6	25	0	0	0	0	8	0	0	0	0	65	299
5:00 PM	**0**	**0**	**29**	**0**	**0**	**0**	**24**	**0**	**0**	**3**	**0**	**7**	**0**	**0**	**0**	**0**	**63**	**272**
5:15 PM	**0**	**0**	**33**	**0**	**0**	**11**	**34**	**0**	**0**	**2**	**0**	**9**	**0**	**0**	**0**	**0**	**89**	**292**
5:30 PM	**0**	**0**	**19**	**0**	**0**	**7**	**58**	**0**	**0**	**6**	**0**	**9**	**0**	**0**	**0**	**0**	**99**	**316**
5:45 PM	**0**	**0**	**20**	**0**	**0**	**2**	**49**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**77**	**328**
Count Total	0	0	224	4	1	50	269	0	0	13	0	66	0	0	0	0	627	
Pk Hr All	**0**	**0**	**101**	**0**	**0**	**20**	**165**	**0**	**0**	**12**	**0**	**30**	**0**	**0**	**0**	**0**	**328**	
Pk Hr HV	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	
Pk Hr HV%	**-**	**-**	**2%**	**-**	**-**	**0%**	**1%**	**-**	**-**	**0%**	**-**	**7%**	**-**	**-**	**-**	**-**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	1	1	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	0	1	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	2	0	0	0	*2*
5:00 PM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	6	2	5	0	*13*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hour	**2**	**1**	**2**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	3	0
4:15 PM	0	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0	4	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**6**
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**5**
Count Total	0	0	5	1	0	1	1	0	0	1	0	4	0	0	0	0	13	
Pk Hr Heavy	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	

Count Summaries - Bikes

Interval Start	Palmer Divide Rd				Palmer Divide Rd				Beacon Lite Rd				n/a				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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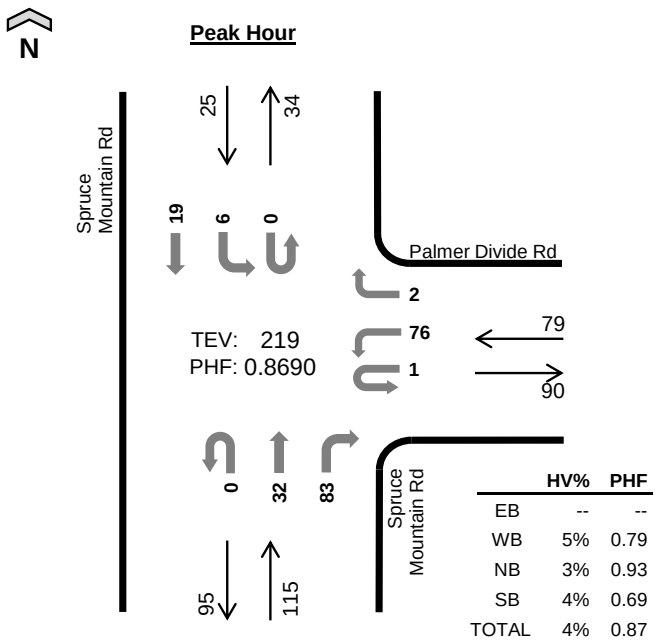
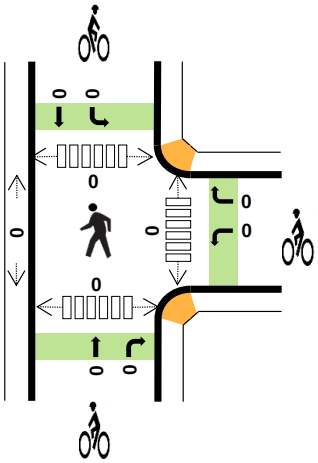
Spruce Mountain Rd
Palmer Divide Rd

Date: 12/3/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV%	PHF
EB	--	--
WB	5%	0.79
NB	3%	0.93
SB	4%	0.69
TOTAL	4%	0.87



Peak Hour Count Summaries

Peak Hour Interval Start		n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	0	0	0	0	13	0	1	0	0	5	23	0	1	6	0	49	0
8:15 AM		0	0	0	0	0	18	0	0	0	0	8	19	0	0	4	0	49	0
8:30 AM		0	0	0	0	1	21	0	0	0	0	10	21	0	1	4	0	58	0
8:45 AM		0	0	0	0	0	24	0	1	0	0	9	20	0	4	5	0	63	219
Pk Hr	All	0	0	0	0	1	76	0	2	0	0	32	83	0	6	19	0	219	
	HV	0	0	0	0	0	4	0	0	0	0	1	3	0	0	1	0	9	
	HV%	-	-	-	-	0%	5%	-	0%	-	-	3%	4%	-	0%	5%	-	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	2	2	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	4	4	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	8	0	1	0	0	10	27	0	0	1	0	47	0
7:15 AM	0	0	0	0	0	11	0	0	0	0	7	31	0	0	2	0	51	0
7:30 AM	0	0	0	0	0	13	0	0	0	0	7	17	0	0	2	0	39	0
7:45 AM	0	0	0	0	0	13	0	2	0	0	6	9	0	0	5	0	35	172
8:00 AM	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**1**	**0**	**0**	**5**	**23**	**0**	**1**	**6**	**0**	**49**	**174**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**8**	**19**	**0**	**0**	**4**	**0**	**49**	**172**
8:30 AM	**0**	**0**	**0**	**0**	**1**	**21**	**0**	**0**	**0**	**0**	**10**	**21**	**0**	**1**	**4**	**0**	**58**	**191**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**24**	**0**	**1**	**0**	**0**	**9**	**20**	**0**	**4**	**5**	**0**	**63**	**219**
Count Total	0	0	0	0	1	121	0	5	0	0	62	167	0	6	29	0	391	
Pk Hr All	**0**	**0**	**0**	**0**	**1**	**76**	**0**	**2**	**0**	**0**	**32**	**83**	**0**	**6**	**19**	**0**	**219**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**1**	**0**	**9**	
Pk Hr HV%	**-**	**-**	**-**	**-**	**0%**	**5%**	**-**	**0%**	**-**	**-**	**3%**	**4%**	**-**	**0%**	**5%**	**-**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	1	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**2**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**1**	**2**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	7	5	1	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**4**	**4**	**1**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**4**	**6**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**6**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**4**	**9**
Count Total	0	0	0	0	0	7	0	0	0	0	1	4	0	0	1	0	13	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**1**	**0**	**9**	

Count Summaries - Bikes

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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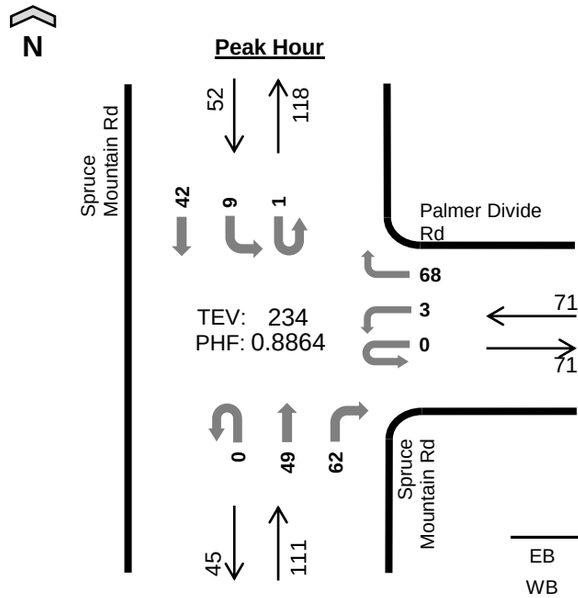
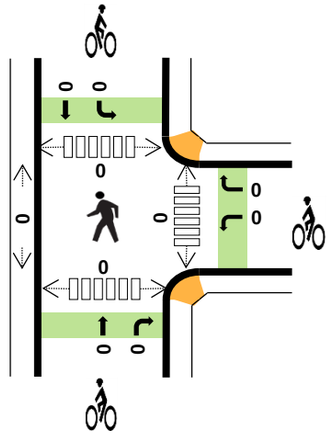
Spruce Mountain Rd
Palmer Divide Rd

Date: 1/11/2025
Count Period: 1:00 PM to 3:00 PM
Peak Hour: 1:00 PM to 2:00 PM



	HV%	PHF
EB	--	--
WB	4%	0.74
NB	0%	0.90
SB	0%	0.81
TOTAL	1%	0.89



Peak Hour Count Summaries

Peak Hour Interval Start		n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM		0	0	0	0	0	0	0	16	0	0	12	16	0	3	6	0	53	0
1:15 PM		0	0	0	0	0	0	0	12	0	0	10	13	1	2	13	0	51	0
1:30 PM		0	0	0	0	0	1	0	18	0	0	15	16	0	3	13	0	66	0
1:45 PM		0	0	0	0	0	2	0	22	0	0	12	17	0	1	10	0	64	234
Pk Hr	All	0	0	0	0	0	3	0	68	0	0	49	62	1	9	42	0	234	
	HV	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	
	HV%	-	-	-	-	-	0%	-	4%	-	-	0%	0%	0%	0%	0%	-	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
1:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
1:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**12**	**16**	**0**	**3**	**6**	**0**	**53**	0
1:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**0**	**10**	**13**	**1**	**2**	**13**	**0**	**51**	**0**
1:30 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**18**	**0**	**0**	**15**	**16**	**0**	**3**	**13**	**0**	**66**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**22**	**0**	**0**	**12**	**17**	**0**	**1**	**10**	**0**	**64**	**234**
2:00 PM	0	0	0	0	0	8	0	9	0	0	7	12	0	3	7	0	46	227
2:15 PM	0	0	0	0	0	3	0	12	0	0	7	18	0	0	10	0	50	226
2:30 PM	0	0	0	0	0	2	0	23	0	0	10	17	0	1	17	0	70	230
2:45 PM	0	0	0	0	0	2	0	26	0	0	5	13	0	2	8	0	56	222
Count Total	0	0	0	0	0	18	0	138	0	0	78	122	1	15	84	0	456	
Pk Hr All	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**68**	**0**	**0**	**49**	**62**	**1**	**9**	**42**	**0**	**234**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	
Pk Hr HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**4%**	**-**	**-**	**0%**	**0%**	**0%**	**0%**	**0%**	**-**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
1:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:15 PM	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	3	1	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
1:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**
1:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Count Total	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	4	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	

Count Summaries - Bikes

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
1:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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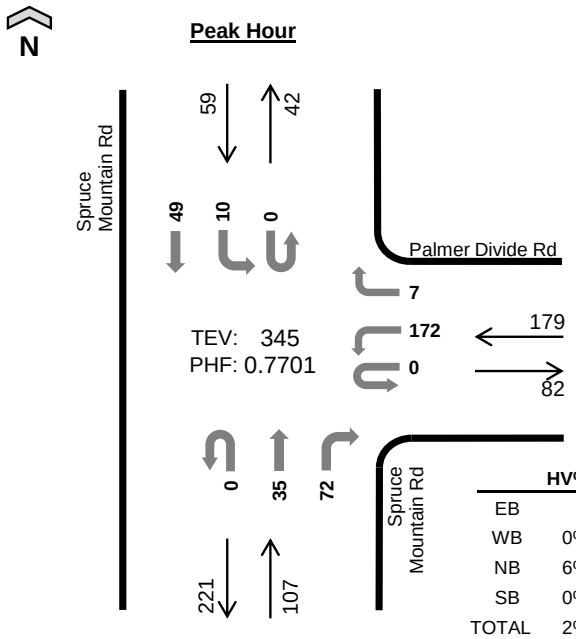
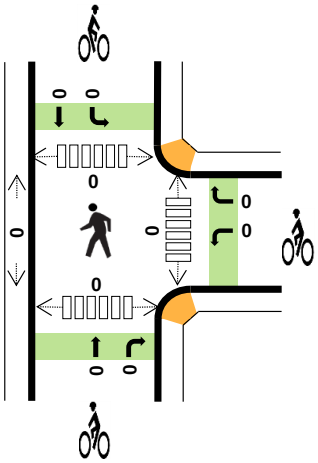
Spruce Mountain Rd
Palmer Divide Rd

Date: 12/3/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV%	PHF
EB	--	--
WB	0%	0.59
NB	6%	0.79
SB	0%	0.82
TOTAL	2%	0.77



Peak Hour Count Summaries

Peak Hour Interval Start		n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM		0	0	0	0	0	15	0	3	0	0	7	27	0	1	13	0	66	0
5:15 PM		0	0	0	0	0	29	0	1	0	0	10	18	0	3	15	0	76	0
5:30 PM		0	0	0	0	0	55	0	0	0	0	10	11	0	4	11	0	91	0
5:45 PM		0	0	0	0	0	73	0	3	0	0	8	16	0	2	10	0	112	345
Pk Hr	All	0	0	0	0	0	172	0	7	0	0	35	72	0	10	49	0	345	
	HV	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	6	
	HV%	-	-	-	-	-	0%	-	0%	-	-	14%	1%	-	0%	0%	-	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
5:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	4	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	0	6	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	24	0	2	0	0	8	23	0	3	18	0	78	0
4:15 PM	0	0	0	0	0	18	0	0	0	0	12	15	0	1	19	0	65	0
4:30 PM	0	0	0	0	0	20	0	0	2	0	8	11	0	2	9	0	52	0
4:45 PM	0	0	0	0	0	21	0	1	0	0	4	19	0	0	10	0	55	250
5:00 PM	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**3**	**0**	**0**	**7**	**27**	**0**	**1**	**13**	**0**	**66**	**238**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**1**	**0**	**0**	**10**	**18**	**0**	**3**	**15**	**0**	**76**	**249**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**55**	**0**	**0**	**0**	**0**	**10**	**11**	**0**	**4**	**11**	**0**	**91**	**288**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**73**	**0**	**3**	**0**	**0**	**8**	**16**	**0**	**2**	**10**	**0**	**112**	**345**
Count Total	0	0	0	0	0	255	0	10	2	0	67	140	0	16	105	0	595	
Pk Hr All	**0**	**0**	**0**	**0**	**0**	**172**	**0**	**7**	**0**	**0**	**35**	**72**	**0**	**10**	**49**	**0**	**345**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**0**	**6**	
Pk Hr HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**14%**	**1%**	**-**	**0%**	**0%**	**-**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	0	1	2	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	3	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	1	0	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	2	11	1	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**0**	**6**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	3	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	8
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**3**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**7**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**6**
Count Total	0	0	0	0	0	2	0	0	0	0	7	4	0	0	1	0	14	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**0**	**6**	

Count Summaries - Bikes

Interval Start	n/a				Palmer Divide Rd				Spruce Mountain Rd				Spruce Mountain Rd				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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Vehicle Classification Report Summary

Location: Palmer Divide Rd W/O Indi Dr

Count Direction: Eastbound / Westbound

Date Range: 12/3/2024 to 12/3/2024

Site Code: 01

Direction	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Eastbound	19	721	236	8	91	3	0	1	6	0	0	0	0	1,085
	1.8%	66.5%	21.8%	0.7%	8.4%	0.3%	0.0%	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	
Westbound	12	726	235	13	58	3	0	2	5	0	0	0	0	1,054
	1.1%	68.9%	22.3%	1.2%	5.5%	0.3%	0.0%	0.2%	0.5%	0.0%	0.0%	0.0%	0.0%	
Total	31	1,447	471	21	149	6	0	3	11	0	0	0	0	2,139
	1.4%	67.6%	22.0%	1.0%	7.0%	0.3%	0.0%	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

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Location: Palmer Divide Rd W/O Indi Dr
Date Range: 12/3/2024 to 12/3/2024
Site Code: 01

DATA SOLUTIONS

Tuesday, December 3, 2024
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
1:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
3:00 AM	0	5	1	0	0	0	0	0	0	0	0	0	0	**6**
4:00 AM	0	5	0	0	1	0	0	0	0	0	0	0	0	**6**
5:00 AM	0	7	1	1	1	0	0	0	0	0	0	0	0	**10**
6:00 AM	0	29	11	0	7	0	0	0	2	0	0	0	0	**49**
7:00 AM	0	61	14	2	6	0	0	0	0	0	0	0	0	**83**
8:00 AM	0	59	15	0	3	1	0	0	1	0	0	0	0	**79**
9:00 AM	0	43	16	1	12	0	0	0	1	0	0	0	0	**73**
10:00 AM	9	30	15	0	4	0	0	0	0	0	0	0	0	**58**
11:00 AM	0	32	10	0	2	0	0	0	0	0	0	0	0	**44**
12:00 PM	1	40	18	1	4	0	0	1	1	0	0	0	0	**66**
1:00 PM	0	31	20	0	2	0	0	0	0	0	0	0	0	**53**
2:00 PM	3	45	19	1	10	1	0	0	1	0	0	0	0	**80**
3:00 PM	6	46	23	1	7	0	0	0	0	0	0	0	0	**83**
4:00 PM	0	80	21	0	11	0	0	0	0	0	0	0	0	**112**
5:00 PM	0	52	21	0	13	1	0	0	0	0	0	0	0	**87**
6:00 PM	0	43	6	1	1	0	0	0	0	0	0	0	0	**51**
7:00 PM	0	34	12	0	1	0	0	0	0	0	0	0	0	**47**
8:00 PM	0	64	10	0	2	0	0	0	0	0	0	0	0	**76**
9:00 PM	0	9	2	0	2	0	0	0	0	0	0	0	0	**13**
10:00 PM	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**19**	**721**	**236**	**8**	**91**	**3**	**0**	**1**	**6**	**0**	**0**	**0**	**0**	**1,085**
	1.8%	**66.5%**	**21.8%**	**0.7%**	**8.4%**	**0.3%**	**0.0%**	**0.1%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

TJ Wethington: 720-646-1008
tj.wethington@idaxdata.com

Location: Palmer Divide Rd W/O Indi Dr
Date Range: 12/3/2024 to 12/3/2024
Site Code: 01

IDAX DATA SOLUTIONS

Tuesday, December 3, 2024
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00 AM	0	3	0	0	0	0	0	1	0	0	0	0	0	**4**
5:00 AM	0	6	2	0	0	0	0	0	1	0	0	0	0	**9**
6:00 AM	0	14	5	1	2	0	0	0	1	0	0	0	0	**23**
7:00 AM	0	48	20	0	8	1	0	0	1	0	0	0	0	**78**
8:00 AM	0	61	22	1	7	0	0	0	1	0	0	0	0	**92**
9:00 AM	1	40	14	1	1	0	0	0	0	0	0	0	0	**57**
10:00 AM	0	32	12	0	5	1	0	0	0	0	0	0	0	**50**
11:00 AM	1	34	10	2	2	0	0	0	0	0	0	0	0	**49**
12:00 PM	1	37	18	0	3	0	0	0	0	0	0	0	0	**59**
1:00 PM	4	42	16	0	6	1	0	1	1	0	0	0	0	**71**
2:00 PM	3	26	18	2	3	0	0	0	0	0	0	0	0	**52**
3:00 PM	2	63	23	4	8	0	0	0	0	0	0	0	0	**100**
4:00 PM	0	56	22	0	4	0	0	0	0	0	0	0	0	**82**
5:00 PM	0	140	36	0	5	0	0	0	0	0	0	0	0	**181**
6:00 PM	0	47	10	1	3	0	0	0	0	0	0	0	0	**61**
7:00 PM	0	25	0	1	1	0	0	0	0	0	0	0	0	**27**
8:00 PM	0	22	3	0	0	0	0	0	0	0	0	0	0	**25**
9:00 PM	0	18	3	0	0	0	0	0	0	0	0	0	0	**21**
10:00 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	**5**
11:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
Total	**12**	**726**	**235**	**13**	**58**	**3**	**0**	**2**	**5**	**0**	**0**	**0**	**0**	**1,054**
	1.1%	**68.9%**	**22.3%**	**1.2%**	**5.5%**	**0.3%**	**0.0%**	**0.2%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

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Location: Palmer Divide Rd W/O Indi Dr
Date Range: 12/3/2024 to 12/3/2024
Site Code: 01

DATA SOLUTIONS

Total Study Average
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
1:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
3:00 AM	0	5	1	0	0	0	0	0	0	0	0	0	0	**6**
4:00 AM	0	5	0	0	1	0	0	0	0	0	0	0	0	**6**
5:00 AM	0	7	1	1	1	0	0	0	0	0	0	0	0	**10**
6:00 AM	0	29	11	0	7	0	0	0	2	0	0	0	0	**49**
7:00 AM	0	61	14	2	6	0	0	0	0	0	0	0	0	**83**
8:00 AM	0	59	15	0	3	1	0	0	1	0	0	0	0	**79**
9:00 AM	0	43	16	1	12	0	0	0	1	0	0	0	0	**73**
10:00 AM	9	30	15	0	4	0	0	0	0	0	0	0	0	**58**
11:00 AM	0	32	10	0	2	0	0	0	0	0	0	0	0	**44**
12:00 PM	1	40	18	1	4	0	0	1	1	0	0	0	0	**66**
1:00 PM	0	31	20	0	2	0	0	0	0	0	0	0	0	**53**
2:00 PM	3	45	19	1	10	1	0	0	1	0	0	0	0	**80**
3:00 PM	6	46	23	1	7	0	0	0	0	0	0	0	0	**83**
4:00 PM	0	80	21	0	11	0	0	0	0	0	0	0	0	**112**
5:00 PM	0	52	21	0	13	1	0	0	0	0	0	0	0	**87**
6:00 PM	0	43	6	1	1	0	0	0	0	0	0	0	0	**51**
7:00 PM	0	34	12	0	1	0	0	0	0	0	0	0	0	**47**
8:00 PM	0	64	10	0	2	0	0	0	0	0	0	0	0	**76**
9:00 PM	0	9	2	0	2	0	0	0	0	0	0	0	0	**13**
10:00 PM	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**19**	**721**	**236**	**8**	**91**	**3**	**0**	**1**	**6**	**0**	**0**	**0**	**0**	**1,085**
	1.8%	**66.5%**	**21.8%**	**0.7%**	**8.4%**	**0.3%**	**0.0%**	**0.1%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

Note: Average only condsidered on days with 24-hours of data.

TJ Wethington: 720-646-1008
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Location: Palmer Divide Rd W/O Indi Dr
Date Range: 12/3/2024 to 12/3/2024
Site Code: 01

DATA SOLUTIONS

Total Study Average
Westbound

Time	FHWA Vehicle Classification													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	Volume
12:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
3:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00 AM	0	3	0	0	0	0	0	1	0	0	0	0	0	**4**
5:00 AM	0	6	2	0	0	0	0	0	1	0	0	0	0	**9**
6:00 AM	0	14	5	1	2	0	0	0	1	0	0	0	0	**23**
7:00 AM	0	48	20	0	8	1	0	0	1	0	0	0	0	**78**
8:00 AM	0	61	22	1	7	0	0	0	1	0	0	0	0	**92**
9:00 AM	1	40	14	1	1	0	0	0	0	0	0	0	0	**57**
10:00 AM	0	32	12	0	5	1	0	0	0	0	0	0	0	**50**
11:00 AM	1	34	10	2	2	0	0	0	0	0	0	0	0	**49**
12:00 PM	1	37	18	0	3	0	0	0	0	0	0	0	0	**59**
1:00 PM	4	42	16	0	6	1	0	1	1	0	0	0	0	**71**
2:00 PM	3	26	18	2	3	0	0	0	0	0	0	0	0	**52**
3:00 PM	2	63	23	4	8	0	0	0	0	0	0	0	0	**100**
4:00 PM	0	56	22	0	4	0	0	0	0	0	0	0	0	**82**
5:00 PM	0	140	36	0	5	0	0	0	0	0	0	0	0	**181**
6:00 PM	0	47	10	1	3	0	0	0	0	0	0	0	0	**61**
7:00 PM	0	25	0	1	1	0	0	0	0	0	0	0	0	**27**
8:00 PM	0	22	3	0	0	0	0	0	0	0	0	0	0	**25**
9:00 PM	0	18	3	0	0	0	0	0	0	0	0	0	0	**21**
10:00 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	**5**
11:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
Total	**12**	**726**	**235**	**13**	**58**	**3**	**0**	**2**	**5**	**0**	**0**	**0**	**0**	**1,054**
	1.1%	**68.9%**	**22.3%**	**1.2%**	**5.5%**	**0.3%**	**0.0%**	**0.2%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

Note: Average only condsidered on days with 24-hours of data.

TJ Wethington: 720-646-1008
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Vehicle Classification Report Summary

Location: Palmer Divide Rd E/O Beacon Lite Rd

Count Direction: Eastbound / Westbound

Date Range: 12/3/2024 to 12/3/2024

Site Code: 02

Direction	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Eastbound	15	1,041	383	15	128	9	0	1	7	0	0	0	1	1,600
	0.9%	65.1%	23.9%	0.9%	8.0%	0.6%	0.0%	0.1%	0.4%	0.0%	0.0%	0.0%	0.1%	
Westbound	5	867	377	16	140	7	0	0	8	0	0	0	0	1,420
	0.4%	61.1%	26.5%	1.1%	9.9%	0.5%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	
Total	20	1,908	760	31	268	16	0	1	15	0	0	0	1	3,020
	0.7%	63.2%	25.2%	1.0%	8.9%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

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Location: Palmer Divide Rd E/O Beacon Lite Rd
Date Range: 12/3/2024 to 12/3/2024
Site Code: 02

DATA SOLUTIONS

Tuesday, December 3, 2024
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	**4**
1:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
2:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
3:00 AM	0	6	1	0	0	0	0	0	0	0	0	0	0	**7**
4:00 AM	0	9	1	0	2	0	0	0	0	0	0	0	0	**12**
5:00 AM	0	15	6	1	1	0	0	0	0	0	0	0	0	**23**
6:00 AM	0	40	18	0	6	1	0	0	2	0	0	0	0	**67**
7:00 AM	0	113	30	2	9	0	0	0	0	0	0	0	0	**154**
8:00 AM	0	76	24	0	4	2	0	0	0	0	0	0	0	**106**
9:00 AM	0	63	21	2	16	0	0	0	2	0	0	0	0	**104**
10:00 AM	10	46	25	2	7	0	0	0	0	0	0	0	0	**90**
11:00 AM	0	54	17	0	8	3	0	0	0	0	0	0	0	**82**
12:00 PM	1	55	29	1	9	0	0	1	1	0	0	0	0	**97**
1:00 PM	0	52	34	1	3	0	0	0	1	0	0	0	0	**91**
2:00 PM	2	80	31	1	10	1	0	0	1	0	0	0	0	**126**
3:00 PM	2	72	35	2	10	0	0	0	0	0	0	0	1	**122**
4:00 PM	0	107	37	1	15	0	0	0	0	0	0	0	0	**160**
5:00 PM	0	81	32	1	16	2	0	0	0	0	0	0	0	**132**
6:00 PM	0	51	12	1	3	0	0	0	0	0	0	0	0	**67**
7:00 PM	0	37	14	0	2	0	0	0	0	0	0	0	0	**53**
8:00 PM	0	57	10	0	3	0	0	0	0	0	0	0	0	**70**
9:00 PM	0	13	2	0	1	0	0	0	0	0	0	0	0	**16**
10:00 PM	0	7	1	0	2	0	0	0	0	0	0	0	0	**10**
11:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
Total	**15**	**1,041**	**383**	**15**	**128**	**9**	**0**	**1**	**7**	**0**	**0**	**0**	**1**	**1,600**
	0.9%	**65.1%**	**23.9%**	**0.9%**	**8.0%**	**0.6%**	**0.0%**	**0.1%**	**0.4%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**	

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Location: Palmer Divide Rd E/O Beacon Lite Rd
Date Range: 12/3/2024 to 12/3/2024
Site Code: 02

Tuesday, December 3, 2024
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
1:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
2:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
3:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	**3**
5:00 AM	0	6	2	0	1	0	0	0	1	0	0	0	0	**10**
6:00 AM	0	15	7	1	6	0	0	0	1	0	0	0	0	**30**
7:00 AM	0	45	33	0	18	1	0	0	1	0	0	0	0	**98**
8:00 AM	0	59	24	1	13	0	0	0	1	0	0	0	0	**98**
9:00 AM	0	52	23	1	5	1	0	0	0	0	0	0	0	**82**
10:00 AM	0	33	18	1	16	0	0	0	0	0	0	0	0	**68**
11:00 AM	0	52	19	2	7	0	0	0	0	0	0	0	0	**80**
12:00 PM	1	45	33	0	3	0	0	0	1	0	0	0	0	**83**
1:00 PM	2	54	30	0	12	1	0	0	1	0	0	0	0	**100**
2:00 PM	2	44	25	3	10	2	0	0	0	0	0	0	0	**86**
3:00 PM	0	82	40	5	16	0	0	0	1	0	0	0	0	**144**
4:00 PM	0	81	41	0	7	0	0	0	0	0	0	0	0	**129**
5:00 PM	0	126	48	0	12	0	0	0	0	0	0	0	0	**186**
6:00 PM	0	67	10	1	8	0	0	0	0	0	0	0	0	**86**
7:00 PM	0	30	6	1	1	0	0	0	0	0	0	0	0	**38**
8:00 PM	0	27	5	0	0	0	0	0	0	0	0	0	0	**32**
9:00 PM	0	20	4	0	4	1	0	0	1	0	0	0	0	**30**
10:00 PM	0	10	5	0	0	0	0	0	0	0	0	0	0	**15**
11:00 PM	0	8	2	0	1	0	0	0	0	0	0	0	0	**11**
Total	**5**	**867**	**377**	**16**	**140**	**7**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**1,420**
	0.4%	**61.1%**	**26.5%**	**1.1%**	**9.9%**	**0.5%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

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Location: Palmer Divide Rd E/O Beacon Lite Rd
Date Range: 12/3/2024 to 12/3/2024
Site Code: 02

Total Study Average
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	**4**
1:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
2:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
3:00 AM	0	6	1	0	0	0	0	0	0	0	0	0	0	**7**
4:00 AM	0	9	1	0	2	0	0	0	0	0	0	0	0	**12**
5:00 AM	0	15	6	1	1	0	0	0	0	0	0	0	0	**23**
6:00 AM	0	40	18	0	6	1	0	0	2	0	0	0	0	**67**
7:00 AM	0	113	30	2	9	0	0	0	0	0	0	0	0	**154**
8:00 AM	0	76	24	0	4	2	0	0	0	0	0	0	0	**106**
9:00 AM	0	63	21	2	16	0	0	0	2	0	0	0	0	**104**
10:00 AM	10	46	25	2	7	0	0	0	0	0	0	0	0	**90**
11:00 AM	0	54	17	0	8	3	0	0	0	0	0	0	0	**82**
12:00 PM	1	55	29	1	9	0	0	1	1	0	0	0	0	**97**
1:00 PM	0	52	34	1	3	0	0	0	1	0	0	0	0	**91**
2:00 PM	2	80	31	1	10	1	0	0	1	0	0	0	0	**126**
3:00 PM	2	72	35	2	10	0	0	0	0	0	0	0	1	**122**
4:00 PM	0	107	37	1	15	0	0	0	0	0	0	0	0	**160**
5:00 PM	0	81	32	1	16	2	0	0	0	0	0	0	0	**132**
6:00 PM	0	51	12	1	3	0	0	0	0	0	0	0	0	**67**
7:00 PM	0	37	14	0	2	0	0	0	0	0	0	0	0	**53**
8:00 PM	0	57	10	0	3	0	0	0	0	0	0	0	0	**70**
9:00 PM	0	13	2	0	1	0	0	0	0	0	0	0	0	**16**
10:00 PM	0	7	1	0	2	0	0	0	0	0	0	0	0	**10**
11:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
Total	**15**	**1,041**	**383**	**15**	**128**	**9**	**0**	**1**	**7**	**0**	**0**	**0**	**1**	**1,600**
	0.9%	**65.1%**	**23.9%**	**0.9%**	**8.0%**	**0.6%**	**0.0%**	**0.1%**	**0.4%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**	

Note: Average only condsidered on days with 24-hours of data.

TJ Wethington: 720-646-1008
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Location: Palmer Divide Rd E/O Beacon Lite Rd
Date Range: 12/3/2024 to 12/3/2024
Site Code: 02

DATA SOLUTIONS

Total Study Average
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
1:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
2:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
3:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
4:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	**3**
5:00 AM	0	6	2	0	1	0	0	0	1	0	0	0	0	**10**
6:00 AM	0	15	7	1	6	0	0	0	1	0	0	0	0	**30**
7:00 AM	0	45	33	0	18	1	0	0	1	0	0	0	0	**98**
8:00 AM	0	59	24	1	13	0	0	0	1	0	0	0	0	**98**
9:00 AM	0	52	23	1	5	1	0	0	0	0	0	0	0	**82**
10:00 AM	0	33	18	1	16	0	0	0	0	0	0	0	0	**68**
11:00 AM	0	52	19	2	7	0	0	0	0	0	0	0	0	**80**
12:00 PM	1	45	33	0	3	0	0	0	1	0	0	0	0	**83**
1:00 PM	2	54	30	0	12	1	0	0	1	0	0	0	0	**100**
2:00 PM	2	44	25	3	10	2	0	0	0	0	0	0	0	**86**
3:00 PM	0	82	40	5	16	0	0	0	1	0	0	0	0	**144**
4:00 PM	0	81	41	0	7	0	0	0	0	0	0	0	0	**129**
5:00 PM	0	126	48	0	12	0	0	0	0	0	0	0	0	**186**
6:00 PM	0	67	10	1	8	0	0	0	0	0	0	0	0	**86**
7:00 PM	0	30	6	1	1	0	0	0	0	0	0	0	0	**38**
8:00 PM	0	27	5	0	0	0	0	0	0	0	0	0	0	**32**
9:00 PM	0	20	4	0	4	1	0	0	1	0	0	0	0	**30**
10:00 PM	0	10	5	0	0	0	0	0	0	0	0	0	0	**15**
11:00 PM	0	8	2	0	1	0	0	0	0	0	0	0	0	**11**
Total	**5**	**867**	**377**	**16**	**140**	**7**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**1,420**
	0.4%	**61.1%**	**26.5%**	**1.1%**	**9.9%**	**0.5%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

Note: Average only condsidered on days with 24-hours of data.

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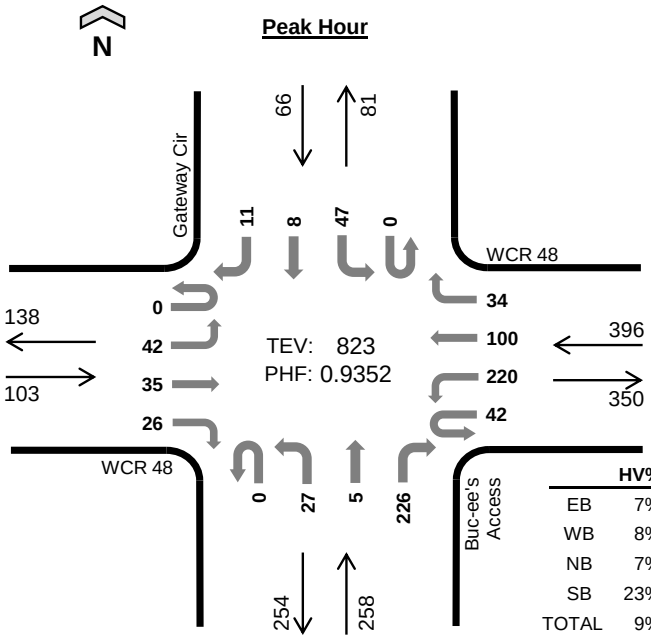
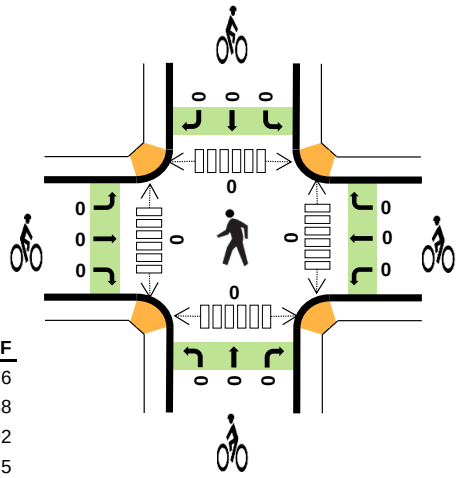
Gateway Cir
WCR 48

Date: 12/4/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV%	PHF
EB	7%	0.76
WB	8%	0.88
NB	7%	0.92
SB	23%	0.75
TOTAL	9%	0.94



Peak Hour Count Summaries

Peak Hour Interval Start		WCR 48 Eastbound				WCR 48 Westbound				Buc-ee's Access Northbound				Gateway Cir Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	12	6	3	14	59	24	12	0	7	1	54	0	18	1	3	214	0
7:15 AM		0	9	8	9	7	59	41	6	0	9	1	60	0	6	3	2	220	0
7:30 AM		0	7	10	5	12	40	17	5	0	6	2	57	0	10	1	4	176	0
7:45 AM		0	14	11	9	9	62	18	11	0	5	1	55	0	13	3	2	213	823
Pk Hr	All	0	42	35	26	42	220	100	34	0	27	5	226	0	47	8	11	823	
	HV	0	1	6	0	4	16	11	2	0	0	0	17	0	14	1	0	72	
	HV%	-	2%	17%	0%	10%	7%	11%	6%	-	0%	0%	8%	-	30%	13%	0%	9%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	6	4	8	*19*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	9	4	1	*16*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	1	7	2	2	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	3	11	7	4	*25*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	7	33	17	15	*72*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	WCR 48 Eastbound				WCR 48 Westbound				Buc-ee's Access Northbound				Gateway Cir Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**12**	**6**	**3**	**14**	**59**	**24**	**12**	**0**	**7**	**1**	**54**	**0**	**18**	**1**	**3**	**214**	0
7:15 AM	**0**	**9**	**8**	**9**	**7**	**59**	**41**	**6**	**0**	**9**	**1**	**60**	**0**	**6**	**3**	**2**	**220**	**0**
7:30 AM	**0**	**7**	**10**	**5**	**12**	**40**	**17**	**5**	**0**	**6**	**2**	**57**	**0**	**10**	**1**	**4**	**176**	**0**
7:45 AM	**0**	**14**	**11**	**9**	**9**	**62**	**18**	**11**	**0**	**5**	**1**	**55**	**0**	**13**	**3**	**2**	**213**	**823**
8:00 AM	0	6	11	1	8	63	19	3	0	10	0	56	0	15	1	5	198	807
8:15 AM	0	5	21	7	10	49	17	9	0	3	1	51	0	12	0	3	188	775
8:30 AM	0	9	13	1	7	55	17	9	0	1	1	52	0	14	0	6	185	784
8:45 AM	0	5	14	6	7	68	16	6	0	5	0	54	0	18	3	5	207	778
Count Total	0	67	94	41	74	455	169	61	0	46	7	439	0	106	12	30	1,601	
Pk Hr All	**0**	**42**	**35**	**26**	**42**	**220**	**100**	**34**	**0**	**27**	**5**	**226**	**0**	**47**	**8**	**11**	**823**	
Pk Hr HV	**0**	**1**	**6**	**0**	**4**	**16**	**11**	**2**	**0**	**0**	**0**	**17**	**0**	**14**	**1**	**0**	**72**	
Pk Hr HV%	**-**	**2%**	**17%**	**0%**	**10%**	**7%**	**11%**	**6%**	**-**	**0%**	**0%**	**8%**	**-**	**30%**	**13%**	**0%**	**9%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
7:00 AM	**1**	**6**	**4**	**8**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:15 AM	**2**	**9**	**4**	**1**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**1**	**7**	**2**	**2**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**3**	**11**	**7**	**4**	**25**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	5	4	4	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	1	4	1	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	6	3	1	4	*14*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	2	9	4	5	*20*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	21	53	27	29	*130*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**7**	**33**	**17**	**15**	***72***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	WCR 48				WCR 48				Buc-ee's Access				Gateway Cir				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**1**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**4**	**0**	**7**	**1**	**0**	**19**	0
7:15 AM	**0**	**1**	**1**	**0**	**1**	**5**	**3**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**16**	**0**
7:30 AM	**0**	**0**	**1**	**0**	**2**	**5**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**12**	**0**
7:45 AM	**0**	**0**	**3**	**0**	**1**	**4**	**4**	**2**	**0**	**0**	**0**	**7**	**0**	**4**	**0**	**0**	**25**	**72**
8:00 AM	0	0	5	0	1	2	1	0	0	1	0	3	0	0	0	0	13	66
8:15 AM	0	0	0	1	1	0	2	1	0	0	0	1	0	5	0	0	11	61
8:30 AM	0	1	5	0	0	2	0	1	0	0	0	1	0	4	0	0	14	63
8:45 AM	0	0	1	1	2	5	1	1	0	0	0	4	0	5	0	0	20	58
Count Total	0	2	17	2	8	25	15	5	0	1	0	26	0	28	1	0	130	
Pk Hr Heavy	**0**	**1**	**6**	**0**	**4**	**16**	**11**	**2**	**0**	**0**	**0**	**17**	**0**	**14**	**1**	**0**	**72**	

Count Summaries - Bikes

Interval Start	WCR 48				WCR 48				Buc-ee's Access				Gateway Cir				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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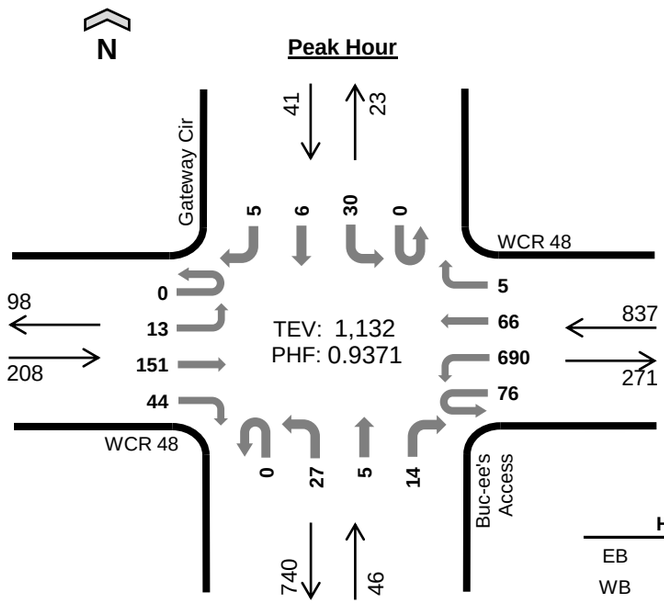
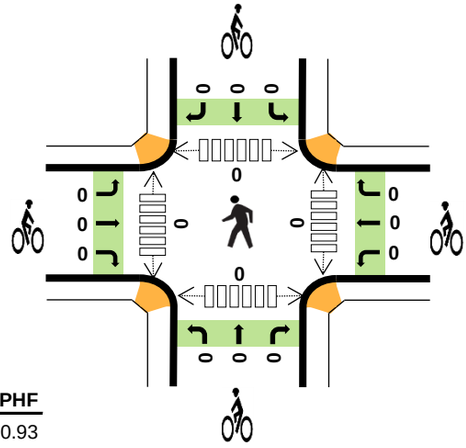
Gateway Cir
WCR 48

Date: 1/11/2025
Count Period: 1:00 PM to 3:00 PM
Peak Hour: 1:30 PM to 2:30 PM





	HV%	PHF
EB	1%	0.93
WB	1%	0.91
NB	0%	0.88
SB	0%	0.54
TOTAL	1%	0.94

Peak Hour Count Summaries

Peak Hour Interval Start		WCR 48 Eastbound				WCR 48 Westbound				Buc-ee's Access Northbound				Gateway Cir Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:30 PM		0	3	35	11	13	186	13	0	0	3	2	3	0	5	2	2	278	0
1:45 PM		0	5	39	12	15	204	11	0	0	6	3	4	0	2	0	1	302	0
2:00 PM		0	3	38	10	27	147	15	4	0	7	0	5	0	15	2	2	275	0
2:15 PM		0	2	39	11	21	153	27	1	0	11	0	2	0	8	2	0	277	1,132
Pk Hr	All	0	13	151	44	76	690	66	5	0	27	5	14	0	30	6	5	1,132	
	HV	0	0	3	0	3	4	1	0	0	0	0	0	0	0	0	0	11	
	HV%	-	0%	2%	0%	4%	1%	2%	0%	-	0%	0%	0%	-	0%	0%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
1:30 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	3	8	0	0	*11*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	WCR 48 Eastbound				WCR 48 Westbound				Buc-ee's Access Northbound				Gateway Cir Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	3	30	24	12	196	10	5	0	4	2	1	0	1	0	1	289	0
1:15 PM	1	0	23	9	8	174	13	2	0	9	2	3	0	7	0	4	255	0
1:30 PM	**0**	**3**	**35**	**11**	**13**	**186**	**13**	**0**	**0**	**3**	**2**	**3**	**0**	**5**	**2**	**2**	**278**	**0**
1:45 PM	**0**	**5**	**39**	**12**	**15**	**204**	**11**	**0**	**0**	**6**	**3**	**4**	**0**	**2**	**0**	**1**	**302**	**1,124**
2:00 PM	**0**	**3**	**38**	**10**	**27**	**147**	**15**	**4**	**0**	**7**	**0**	**5**	**0**	**15**	**2**	**2**	**275**	**1,110**
2:15 PM	**0**	**2**	**39**	**11**	**21**	**153**	**27**	**1**	**0**	**11**	**0**	**2**	**0**	**8**	**2**	**0**	**277**	**1,132**
2:30 PM	0	3	27	11	31	162	21	0	0	8	0	1	0	5	0	1	270	1,124
2:45 PM	0	2	18	6	12	163	12	1	0	10	1	3	0	2	0	0	230	1,052
Count Total	1	21	249	94	139	1,385	122	13	0	58	10	22	0	45	6	11	2,176	
Pk Hr All	**0**	**13**	**151**	**44**	**76**	**690**	**66**	**5**	**0**	**27**	**5**	**14**	**0**	**30**	**6**	**5**	**1,132**	
Pk Hr HV	**0**	**0**	**3**	**0**	**3**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	
Pk Hr HV%	**-**	**0%**	**2%**	**0%**	**4%**	**1%**	**2%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
1:00 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:30 PM	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:45 PM	**1**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	**1**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	0	4	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	17	0	1	*22*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**3**	**8**	**0**	**0**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	WCR 48				WCR 48				Buc-ee's Access				Gateway Cir				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	**0**	**0**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**
1:45 PM	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**11**
2:00 PM	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**11**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**
2:30 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	1	0	0	5	11
2:45 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3	11
Count Total	0	0	4	0	4	9	4	0	0	0	0	0	0	1	0	0	22	
Pk Hr Heavy	**0**	**0**	**3**	**0**	**3**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	

Count Summaries - Bikes

Interval Start	WCR 48				WCR 48				Buc-ee's Access				Gateway Cir				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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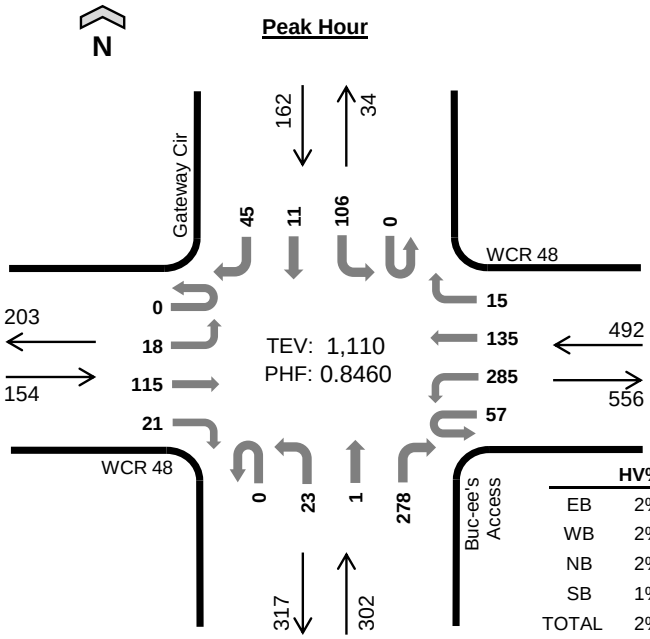
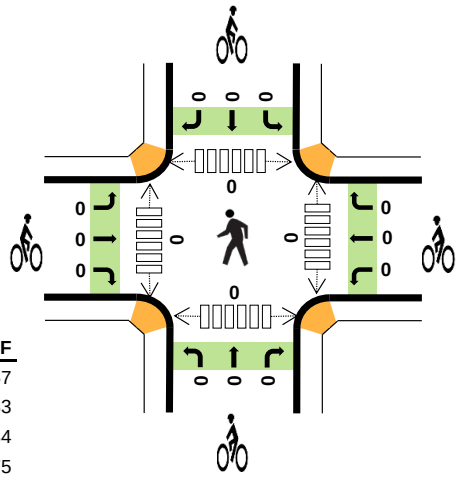
Gateway Cir
WCR 48

Peak Hour

Date: 12/4/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



	HV%	PHF
EB	2%	0.57
WB	2%	0.83
NB	2%	0.84
SB	1%	0.75
TOTAL	2%	0.85



Peak Hour Count Summaries

Peak Hour Interval Start		WCR 48 Eastbound				WCR 48 Westbound				Buc-ee's Access Northbound				Gateway Cir Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	5	23	7	9	82	22	5	0	5	0	85	0	38	4	12	297	0
4:30 PM		0	5	57	6	12	86	47	3	0	7	0	68	0	21	2	14	328	0
4:45 PM		0	5	14	3	14	65	35	4	0	7	0	58	0	14	2	5	226	0
5:00 PM		0	3	21	5	22	52	31	3	0	4	1	67	0	33	3	14	259	1,110
Pk Hr	All	0	18	115	21	57	285	135	15	0	23	1	278	0	106	11	45	1,110	
	HV	0	0	2	1	0	6	4	0	0	0	0	7	0	1	0	0	21	
	HV%	-	0%	2%	5%	0%	2%	3%	0%	-	0%	0%	3%	-	1%	0%	0%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:15 PM	1	3	2	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	2	4	2	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	1	2	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	3	10	7	1	*21*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	WCR 48 Eastbound				WCR 48 Westbound				Buc-ee's Access Northbound				Gateway Cir Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	6	17	8	2	80	9	1	0	5	0	80	0	28	1	13	250	0
4:15 PM	**0**	**5**	**23**	**7**	**9**	**82**	**22**	**5**	**0**	**5**	**0**	**85**	**0**	**38**	**4**	**12**	**297**	**0**
4:30 PM	**0**	**5**	**57**	**6**	**12**	**86**	**47**	**3**	**0**	**7**	**0**	**68**	**0**	**21**	**2**	**14**	**328**	**0**
4:45 PM	**0**	**5**	**14**	**3**	**14**	**65**	**35**	**4**	**0**	**7**	**0**	**58**	**0**	**14**	**2**	**5**	**226**	**1,101**
5:00 PM	**0**	**3**	**21**	**5**	**22**	**52**	**31**	**3**	**0**	**4**	**1**	**67**	**0**	**33**	**3**	**14**	**259**	**1,110**
5:15 PM	0	4	17	11	16	76	21	1	0	8	1	67	0	21	1	3	247	1,060
5:30 PM	0	8	10	4	28	82	19	2	0	7	0	73	0	14	2	6	255	987
5:45 PM	0	3	9	6	12	61	14	2	0	4	1	78	0	11	1	2	204	965
Count Total	0	39	168	50	115	584	198	21	0	47	3	576	0	180	16	69	2,066	
Pk Hr All	**0**	**18**	**115**	**21**	**57**	**285**	**135**	**15**	**0**	**23**	**1**	**278**	**0**	**106**	**11**	**45**	**1,110**	
Pk Hr HV	**0**	**0**	**2**	**1**	**0**	**6**	**4**	**0**	**0**	**0**	**0**	**7**	**0**	**1**	**0**	**0**	**21**	
Pk Hr HV%	**-**	**0%**	**2%**	**5%**	**0%**	**2%**	**3%**	**0%**	**-**	**0%**	**0%**	**3%**	**-**	**1%**	**0%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	1	5	4	2	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**1**	**3**	**2**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**2**	**4**	**2**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**1**	**2**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**2**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	1	3	1	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	4	1	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	5	25	13	3	*46*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**3**	**10**	**7**	**1**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	WCR 48				WCR 48				Buc-ee's Access				Gateway Cir				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	4	1	0	0	0	0	4	0	1	0	1	12	0
4:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**7**	**0**
4:30 PM	**0**	**0**	**1**	**1**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**8**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**3**	**30**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**21**
5:15 PM	0	1	0	0	1	1	0	1	0	0	0	1	0	0	0	0	5	19
5:30 PM	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	3	14
5:45 PM	0	0	0	0	0	3	0	1	0	0	0	1	0	0	0	0	5	16
Count Total	0	1	3	1	2	15	5	3	0	0	0	13	0	2	0	1	46	
Pk Hr Heavy	**0**	**0**	**2**	**1**	**0**	**6**	**4**	**0**	**0**	**0**	**0**	**7**	**0**	**1**	**0**	**0**	**21**	

Count Summaries - Bikes

Interval Start	WCR 48				WCR 48				Buc-ee's Access				Gateway Cir				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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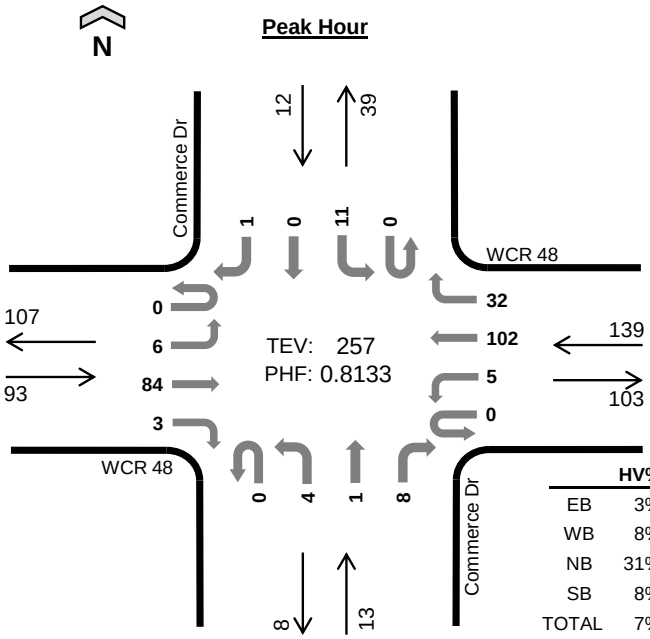
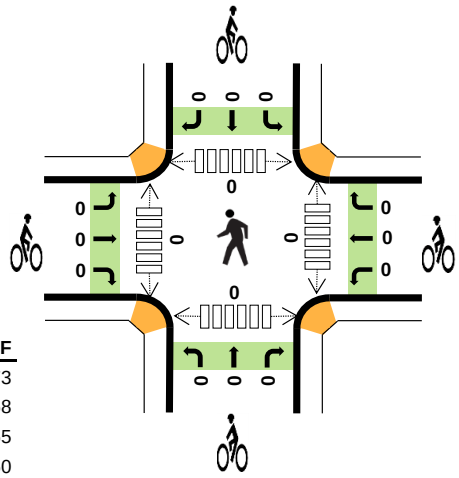
Commerce Dr
WCR 48

Peak Hour

Date: 12/4/2024
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV%	PHF
EB	3%	0.73
WB	8%	0.68
NB	31%	0.65
SB	8%	0.60
TOTAL	7%	0.81



Peak Hour Count Summaries

Peak Hour Interval Start		WCR 48 Eastbound				WCR 48 Westbound				Commerce Dr Northbound				Commerce Dr Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	1	20	0	0	1	24	8	0	0	0	0	0	2	0	0	56	0
7:15 AM		0	1	19	1	0	2	38	11	0	1	1	2	0	3	0	0	79	0
7:30 AM		0	3	15	1	0	1	18	7	0	2	0	2	0	4	0	1	54	0
7:45 AM		0	1	30	1	0	1	22	6	0	1	0	4	0	2	0	0	68	257
Pk Hr	All	0	6	84	3	0	5	102	32	0	4	1	8	0	11	0	1	257	
	HV	0	0	3	0	0	2	5	4	0	1	0	3	0	1	0	0	19	
	HV%	-	0%	4%	0%	-	40%	5%	13%	-	25%	0%	38%	-	9%	-	0%	7%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	3	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	4	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	2	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	4	2	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	3	11	4	1	*19*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	WCR 48 Eastbound				WCR 48 Westbound				Commerce Dr Northbound				Commerce Dr Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**1**	**20**	**0**	**0**	**1**	**24**	**8**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**56**	0
7:15 AM	**0**	**1**	**19**	**1**	**0**	**2**	**38**	**11**	**0**	**1**	**1**	**2**	**0**	**3**	**0**	**0**	**79**	**0**
7:30 AM	**0**	**3**	**15**	**1**	**0**	**1**	**18**	**7**	**0**	**2**	**0**	**2**	**0**	**4**	**0**	**1**	**54**	**0**
7:45 AM	**0**	**1**	**30**	**1**	**0**	**1**	**22**	**6**	**0**	**1**	**0**	**4**	**0**	**2**	**0**	**0**	**68**	**257**
8:00 AM	0	2	11	1	0	1	22	8	0	0	0	3	0	3	0	0	51	252
8:15 AM	0	1	25	1	0	3	16	7	0	1	1	3	0	7	0	0	65	238
8:30 AM	0	0	11	1	0	6	16	3	0	2	0	7	0	3	1	1	51	235
8:45 AM	0	0	17	1	0	2	17	5	0	0	1	6	0	2	0	0	51	218
Count Total	0	9	148	7	0	17	173	55	0	7	3	27	0	26	1	2	475	
Pk Hr All	**0**	**6**	**84**	**3**	**0**	**5**	**102**	**32**	**0**	**4**	**1**	**8**	**0**	**11**	**0**	**1**	**257**	
Pk Hr HV	**0**	**0**	**3**	**0**	**0**	**2**	**5**	**4**	**0**	**1**	**0**	**3**	**0**	**1**	**0**	**0**	**19**	
Pk Hr HV%	**-**	**0%**	**4%**	**0%**	**-**	**40%**	**5%**	**13%**	**-**	**25%**	**0%**	**38%**	**-**	**9%**	**-**	**0%**	**7%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
7:00 AM	**1**	**3**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:15 AM	**2**	**4**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**4**	**2**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	2	2	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	2	0	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	1	0	4	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	1	2	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	6	16	10	7	*39*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**3**	**11**	**4**	**1**	***19***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	WCR 48				WCR 48				Commerce Dr				Commerce Dr				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	0
7:15 AM	**0**	**0**	**2**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**7**	**19**
8:00 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	3	0	0	7	22
8:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	3	19
8:30 AM	0	0	1	0	0	0	0	0	0	1	0	3	0	2	0	0	7	24
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	20
Count Total	0	0	6	0	0	5	7	4	0	2	0	8	0	7	0	0	39	
Pk Hr Heavy	**0**	**0**	**3**	**0**	**0**	**2**	**5**	**4**	**0**	**1**	**0**	**3**	**0**	**1**	**0**	**0**	**19**	

Count Summaries - Bikes

Interval Start	WCR 48				WCR 48				Commerce Dr				Commerce Dr				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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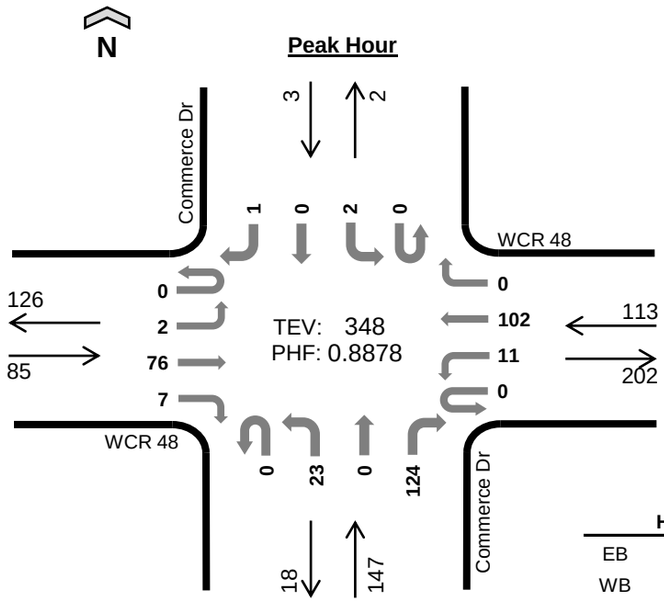
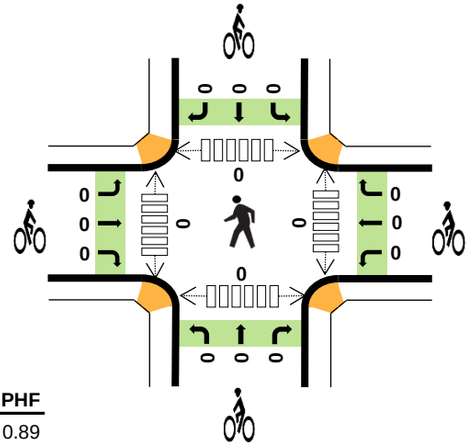
Commerce Dr
WCR 48

Date: 1/11/2025
Count Period: 1:00 PM to 3:00 PM
Peak Hour: 1:45 PM to 2:45 PM





	HV%	PHF
EB	0%	0.89
WB	3%	0.83
NB	1%	0.80
SB	0%	0.38
TOTAL	1%	0.89

Peak Hour Count Summaries

Peak Hour Interval Start		WCR 48 Eastbound				WCR 48 Westbound				Commerce Dr Northbound				Commerce Dr Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:45 PM		0	1	19	4	0	7	14	0	0	7	0	33	0	0	0	0	85	0
2:00 PM		0	0	23	0	0	1	24	0	0	3	0	33	0	1	0	1	86	0
2:15 PM		0	1	16	1	0	2	31	0	0	9	0	37	0	1	0	0	98	0
2:30 PM		0	0	18	2	0	1	33	0	0	4	0	21	0	0	0	0	79	348
Pk Hr	All	0	2	76	7	0	11	102	0	0	23	0	124	0	2	0	1	348	
	HV	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	5	
	HV%	-	0%	0%	0%	-	0%	3%	-	-	0%	-	2%	-	0%	-	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
1:45 PM	0	1	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	2	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	WCR 48 Eastbound				WCR 48 Westbound				Commerce Dr Northbound				Commerce Dr Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	30	1	0	0	13	1	0	6	0	26	0	2	0	0	79	0
1:15 PM	0	0	11	3	0	1	28	0	0	4	0	23	0	0	0	0	70	0
1:30 PM	0	0	22	5	0	4	12	0	0	7	0	28	0	0	0	0	78	0
1:45 PM	**0**	**1**	**19**	**4**	**0**	**7**	**14**	**0**	**0**	**7**	**0**	**33**	**0**	**0**	**0**	**0**	**85**	**312**
2:00 PM	**0**	**0**	**23**	**0**	**0**	**1**	**24**	**0**	**0**	**3**	**0**	**33**	**0**	**1**	**0**	**1**	**86**	**319**
2:15 PM	**0**	**1**	**16**	**1**	**0**	**2**	**31**	**0**	**0**	**9**	**0**	**37**	**0**	**1**	**0**	**0**	**98**	**347**
2:30 PM	**0**	**0**	**18**	**2**	**0**	**1**	**33**	**0**	**0**	**4**	**0**	**21**	**0**	**0**	**0**	**0**	**79**	**348**
2:45 PM	0	0	9	1	0	1	18	0	0	2	0	14	0	0	0	0	45	308
Count Total	0	2	148	17	0	17	173	1	0	42	0	215	0	4	0	1	620	
Pk Hr All	**0**	**2**	**76**	**7**	**0**	**11**	**102**	**0**	**0**	**23**	**0**	**124**	**0**	**2**	**0**	**1**	**348**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	
Pk Hr HV%	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**2%**	**-**	**0%**	**-**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
1:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
1:30 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	4	4	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**3**	**2**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	WCR 48				WCR 48				Commerce Dr				Commerce Dr				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**4**
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**5**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
Count Total	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	8	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	

Count Summaries - Bikes

Interval Start	WCR 48				WCR 48				Commerce Dr				Commerce Dr				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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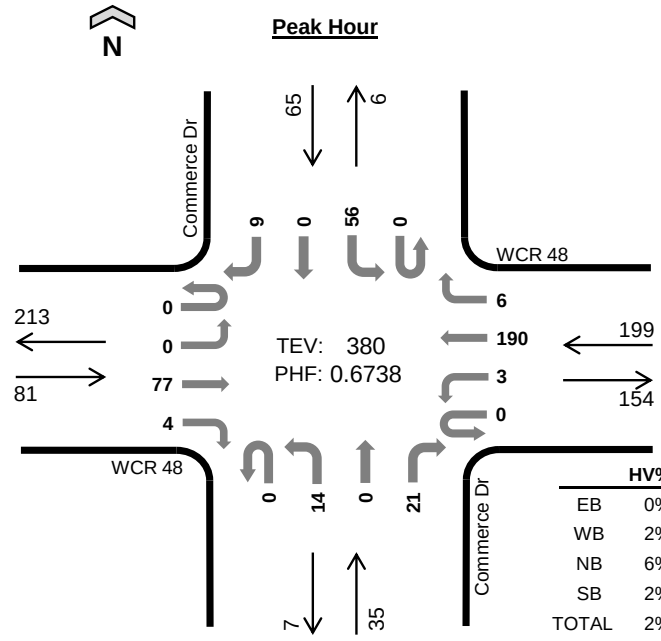
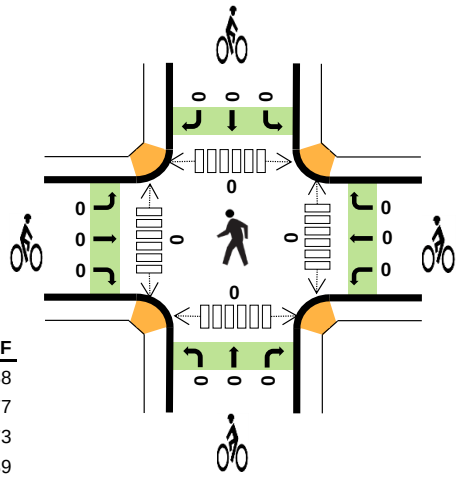
Commerce Dr
WCR 48

Date: 12/4/2024
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



	HV%	PHF
EB	0%	0.88
WB	2%	0.77
NB	6%	0.73
SB	2%	0.39
TOTAL	2%	0.67



Peak Hour Count Summaries

Peak Hour Interval Start		WCR 48 Eastbound				WCR 48 Westbound				Commerce Dr Northbound				Commerce Dr Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	18	1	0	1	36	1	0	5	0	5	0	10	0	3	80	0
4:30 PM		0	0	22	0	0	0	62	3	0	3	0	9	0	38	0	4	141	0
4:45 PM		0	0	14	3	0	0	46	1	0	3	0	7	0	2	0	0	76	0
5:00 PM		0	0	23	0	0	2	46	1	0	3	0	0	0	6	0	2	83	380
Pk Hr	All	0	0	77	4	0	3	190	6	0	14	0	21	0	56	0	9	380	
	HV	0	0	0	0	0	1	3	0	0	0	0	2	0	1	0	0	7	
	HV%	-	-	0%	0%	-	33%	2%	0%	-	0%	-	10%	-	2%	-	0%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	1	1	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	4	2	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*

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Count Summaries - All Vehicles

Interval Start	WCR 48 Eastbound				WCR 48 Westbound				Commerce Dr Northbound				Commerce Dr Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	22	0	0	0	27	3	0	0	0	6	0	4	0	2	65	0
4:15 PM	**0**	**0**	**18**	**1**	**0**	**1**	**36**	**1**	**0**	**5**	**0**	**5**	**0**	**10**	**0**	**3**	**80**	**0**
4:30 PM	**0**	**0**	**22**	**0**	**0**	**0**	**62**	**3**	**0**	**3**	**0**	**9**	**0**	**38**	**0**	**4**	**141**	**0**
4:45 PM	**0**	**0**	**14**	**3**	**0**	**0**	**46**	**1**	**0**	**3**	**0**	**7**	**0**	**2**	**0**	**0**	**76**	**362**
5:00 PM	**0**	**0**	**23**	**0**	**0**	**2**	**46**	**1**	**0**	**3**	**0**	**0**	**0**	**6**	**0**	**2**	**83**	**380**
5:15 PM	0	0	24	2	0	2	25	1	0	4	0	3	0	4	0	1	66	366
5:30 PM	0	0	15	1	0	0	35	0	0	2	0	4	0	4	0	2	63	288
5:45 PM	0	0	13	1	0	0	21	0	0	0	0	3	0	2	0	0	40	252
Count Total	0	1	151	8	0	5	298	10	0	20	0	37	0	70	0	14	614	
Pk Hr All	**0**	**0**	**77**	**4**	**0**	**3**	**190**	**6**	**0**	**14**	**0**	**21**	**0**	**56**	**0**	**9**	**380**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**7**	
Pk Hr HV%	**-**	**-**	**0%**	**0%**	**-**	**33%**	**2%**	**0%**	**-**	**0%**	**-**	**10%**	**-**	**2%**	**-**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	1	2	0	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**0**	**2**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**1**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	2	6	2	2	*12*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**4**	**2**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

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Count Summaries - Heavy Vehicles

Interval Start	WCR 48				WCR 48				Commerce Dr				Commerce Dr				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	4	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**3**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**7**
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	1	1	0	0	1	4	1	0	0	0	2	0	2	0	0	12	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**7**	

Count Summaries - Bikes

Interval Start	WCR 48				WCR 48				Commerce Dr				Commerce Dr				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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Appendix C: Synchro Reports

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	167	0	0	330	245	48	1	85	0	0	0
Future Vol, veh/h	46	167	0	0	330	245	48	1	85	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	89	89	89	86	86	86	86	86	86
Heavy Vehicles, %	10	4	0	0	1	3	2	0	3	2	2	2
Mvmt Flow	54	196	0	0	371	275	56	1	99	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	646	0	-	-	-	0	813	950	196
Stage 1	-	-	-	-	-	-	304	304	-
Stage 2	-	-	-	-	-	-	509	646	-
Critical Hdwy	4.2	-	-	-	-	-	6.42	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.29	-	-	-	-	-	3.518	4	3.327
Pot Cap-1 Maneuver	902	-	0	0	-	-	348	262	843
Stage 1	-	-	0	0	-	-	748	667	-
Stage 2	-	-	0	0	-	-	604	470	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	902	-	-	-	-	-	327	0	843
Mov Cap-2 Maneuver	-	-	-	-	-	-	327	0	-
Stage 1	-	-	-	-	-	-	703	0	-
Stage 2	-	-	-	-	-	-	604	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	537	902	-	-	-
HCM Lane V/C Ratio	0.29	0.06	-	-	-
HCM Control Delay (s)	14.4	9.2	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.2	0.2	-	-	-

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	131	51	274	101	0	0	0	0	84	2	14
Future Vol, veh/h	0	131	51	274	101	0	0	0	0	84	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	1	2	2	1	0	2	2	2	13	0	17
Mvmt Flow	0	154	60	322	119	0	0	0	0	99	2	16

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	214	0	0	947	977	119
Stage 1	-	-	-	-	-	-	763	763	-
Stage 2	-	-	-	-	-	-	184	214	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.5	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4	3.453
Pot Cap-1 Maneuver	0	-	-	1356	-	0	277	253	894
Stage 1	0	-	-	-	-	0	441	416	-
Stage 2	0	-	-	-	-	0	822	729	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1356	-	-	211	0	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	0	-
Stage 1	-	-	-	-	-	-	441	0	-
Stage 2	-	-	-	-	-	-	627	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.2	34.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1356	-	237
HCM Lane V/C Ratio	-	-	0.238	-	0.496
HCM Control Delay (s)	-	-	8.5	-	34.3
HCM Lane LOS	-	-	A	-	D
HCM 95th %tile Q(veh)	-	-	0.9	-	2.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	144	0	14	100	0	37
Future Vol, veh/h	144	0	14	100	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	0	0	1	0	3
Mvmt Flow	169	0	16	118	0	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	169	0	319	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	150	-
Critical Hdwy	-	-	4.1	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.327
Pot Cap-1 Maneuver	-	-	1421	-	678	872
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	883	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1421	-	670	872
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	872	-	-	1421	-
HCM Lane V/C Ratio	0.05	-	-	0.012	-
HCM Control Delay (s)	9.3	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	90	2	38	98	7	22
Future Vol, veh/h	90	2	38	98	7	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	85	85
Heavy Vehicles, %	5	0	3	4	5	4
Mvmt Flow	106	2	41	105	8	26

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	136	94	0	0	146	0
Stage 1	94	-	-	-	-	-
Stage 2	42	-	-	-	-	-
Critical Hdwy	6.45	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	850	968	-	-	1418	-
Stage 1	922	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	845	968	-	-	1418	-
Mov Cap-2 Maneuver	845	-	-	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	967	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	847	1418	-
HCM Lane V/C Ratio	-	-	0.128	0.006	-
HCM Control Delay (s)	-	-	9.9	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	271	0	0	200	114	57	1	192	0	0	0
Future Vol, veh/h	33	271	0	0	200	114	57	1	192	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	97	97	97	88	88	88	94	94	94
Heavy Vehicles, %	7	1	0	0	1	5	0	0	1	2	2	2
Mvmt Flow	37	301	0	0	206	118	65	1	218	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	324	0	-	-	-	0	640	699	301
Stage 1	-	-	-	-	-	-	375	375	-
Stage 2	-	-	-	-	-	-	265	324	-
Critical Hdwy	4.17	-	-	-	-	-	6.4	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.263	-	-	-	-	-	3.5	4	3.309
Pot Cap-1 Maneuver	1208	-	0	0	-	-	443	366	741
Stage 1	-	-	0	0	-	-	699	621	-
Stage 2	-	-	0	0	-	-	784	653	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1208	-	-	-	-	-	429	0	741
Mov Cap-2 Maneuver	-	-	-	-	-	-	429	0	-
Stage 1	-	-	-	-	-	-	677	0	-
Stage 2	-	-	-	-	-	-	784	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	635	1208	-	-	-
HCM Lane V/C Ratio	0.447	0.03	-	-	-
HCM Control Delay (s)	15.2	8.1	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	2.3	0.1	-	-	-

Intersection	
Int Delay, s/veh	14.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	91	65	120	182	0	0	0	0	231	2	41
Future Vol, veh/h	0	91	65	120	182	0	0	0	0	231	2	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	93	93	93	85	85	85
Heavy Vehicles, %	0	5	0	2	1	0	2	2	2	1	0	0
Mvmt Flow	0	107	76	141	214	0	0	0	0	272	2	48

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	183	0	0	641	679	214
Stage 1	-	-	-	-	-	-	496	496	-
Stage 2	-	-	-	-	-	-	145	183	-
Critical Hdwy	-	-	-	4.12	-	-	6.41	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.5	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.509	4	3.3
Pot Cap-1 Maneuver	0	-	-	1392	-	0	441	376	831
Stage 1	0	-	-	-	-	0	614	549	-
Stage 2	0	-	-	-	-	0	885	752	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1392	-	-	396	0	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	396	0	-
Stage 1	-	-	-	-	-	-	614	0	-
Stage 2	-	-	-	-	-	-	796	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.1	34.5
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1392	-	430
HCM Lane V/C Ratio	-	-	0.101	-	0.75
HCM Control Delay (s)	-	-	7.9	-	34.5
HCM Lane LOS	-	-	A	-	D
HCM 95th %tile Q(veh)	-	-	0.3	-	6.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	119	0	24	195	14	35
Future Vol, veh/h	119	0	24	195	14	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	0	0	1	0	7
Mvmt Flow	140	0	28	229	16	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	140	0	425	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1456	-	590	895
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	768	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1456	-	577	895
Mov Cap-2 Maneuver	-	-	-	-	577	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	751	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	773	-	-	1456	-
HCM Lane V/C Ratio	0.075	-	-	0.019	-
HCM Control Delay (s)	10	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	203	8	41	85	12	58
Future Vol, veh/h	203	8	41	85	12	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	14	1	0	0
Mvmt Flow	239	9	48	100	14	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	194	98	0	0	148	0
Stage 1	98	-	-	-	-	-
Stage 2	96	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	799	963	-	-	1446	-
Stage 1	931	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	791	963	-	-	1446	-
Mov Cap-2 Maneuver	791	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	796	1446	-
HCM Lane V/C Ratio	-	-	0.312	0.01	-
HCM Control Delay (s)	-	-	11.6	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	168	0	0	154	134	68	1	101	0	0	0
Future Vol, veh/h	33	168	0	0	154	134	68	1	101	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	85	85	85	85	85	85	86	86	86
Heavy Vehicles, %	4	1	0	0	1	2	0	33	0	2	2	2
Mvmt Flow	37	187	0	0	181	158	80	1	119	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	339	0	-	-	-	0	521	600	187
Stage 1	-	-	-	-	-	-	261	261	-
Stage 2	-	-	-	-	-	-	260	339	-
Critical Hdwy	4.14	-	-	-	-	-	6.4	6.83	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.83	-
Follow-up Hdwy	2.236	-	-	-	-	-	3.5	4.297	3.3
Pot Cap-1 Maneuver	1209	-	0	0	-	-	519	376	860
Stage 1	-	-	0	0	-	-	787	639	-
Stage 2	-	-	0	0	-	-	788	588	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1209	-	-	-	-	-	503	0	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	503	0	-
Stage 1	-	-	-	-	-	-	763	0	-
Stage 2	-	-	-	-	-	-	788	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.3	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	669	1209	-	-	-
HCM Lane V/C Ratio	0.299	0.03	-	-	-
HCM Control Delay (s)	12.7	8.1	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.3	0.1	-	-	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	72	42	121	105	0	0	0	0	135	6	25
Future Vol, veh/h	0	72	42	121	105	0	0	0	0	135	6	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	90	90	90	85	85	85	89	89	89
Heavy Vehicles, %	0	0	0	3	1	0	2	2	2	1	0	0
Mvmt Flow	0	83	48	134	117	0	0	0	0	152	7	28

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	131	0	0	492	516	117
Stage 1	-	-	-	-	-	-	385	385	-
Stage 2	-	-	-	-	-	-	107	131	-
Critical Hdwy	-	-	-	4.13	-	-	6.41	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.5	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.509	4	3.3
Pot Cap-1 Maneuver	0	-	-	1448	-	0	538	466	941
Stage 1	0	-	-	-	-	0	690	614	-
Stage 2	0	-	-	-	-	0	920	792	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1448	-	-	488	0	941
Mov Cap-2 Maneuver	-	-	-	-	-	-	488	0	-
Stage 1	-	-	-	-	-	-	690	0	-
Stage 2	-	-	-	-	-	-	834	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.1	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1448	-	528
HCM Lane V/C Ratio	-	-	0.093	-	0.353
HCM Control Delay (s)	-	-	7.7	-	15.5
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.3	-	1.6

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	4	20	109	0	24
Future Vol, veh/h	91	4	20	109	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	88	88	85	85
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	107	5	23	124	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	112	0	280	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1490	-	714	949
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	865	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1490	-	702	949
Mov Cap-2 Maneuver	-	-	-	-	702	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	850	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	949	-	-	1490	-
HCM Lane V/C Ratio	0.03	-	-	0.015	-
HCM Control Delay (s)	8.9	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	77	52	80	9	51
Future Vol, veh/h	18	77	52	80	9	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	4	0	0	0	0
Mvmt Flow	21	91	61	94	11	60

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	190	108	0	0	155	0
Stage 1	108	-	-	-	-	-
Stage 2	82	-	-	-	-	-
Critical Hdwy	6.4	6.24	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	804	940	-	-	1438	-
Stage 1	921	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	798	940	-	-	1438	-
Mov Cap-2 Maneuver	798	-	-	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	909	1438	-
HCM Lane V/C Ratio	-	-	0.123	0.007	-
HCM Control Delay (s)	-	-	9.5	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	181	0	0	357	265	52	1	92	0	0	0
Future Vol, veh/h	50	181	0	0	357	265	52	1	92	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	89	89	89	86	86	86	86	86	86
Heavy Vehicles, %	10	4	0	0	1	3	2	0	3	2	2	2
Mvmt Flow	59	213	0	0	401	298	60	1	107	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	699	0	-	-	-	0	881	1030	213
Stage 1	-	-	-	-	-	-	331	331	-
Stage 2	-	-	-	-	-	-	550	699	-
Critical Hdwy	4.2	-	-	-	-	-	6.42	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.29	-	-	-	-	-	3.518	4	3.327
Pot Cap-1 Maneuver	862	-	0	0	-	-	317	235	825
Stage 1	-	-	0	0	-	-	728	649	-
Stage 2	-	-	0	0	-	-	578	445	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	862	-	-	-	-	-	295	0	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	0	-
Stage 1	-	-	-	-	-	-	678	0	-
Stage 2	-	-	-	-	-	-	578	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.1	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	500	862	-	-	-
HCM Lane V/C Ratio	0.337	0.068	-	-	-
HCM Control Delay (s)	15.8	9.5	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	1.5	0.2	-	-	-

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	142	55	296	110	0	0	0	0	91	3	15
Future Vol, veh/h	0	142	55	296	110	0	0	0	0	91	3	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	1	2	2	1	0	2	2	2	13	0	17
Mvmt Flow	0	167	65	348	129	0	0	0	0	107	4	18

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	232	0	0	1025	1057	129
Stage 1	-	-	-	-	-	-	825	825	-
Stage 2	-	-	-	-	-	-	200	232	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.5	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4	3.453
Pot Cap-1 Maneuver	0	-	-	1336	-	0	248	227	882
Stage 1	0	-	-	-	-	0	412	390	-
Stage 2	0	-	-	-	-	0	808	716	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1336	-	-	184	0	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	0	-
Stage 1	-	-	-	-	-	-	412	0	-
Stage 2	-	-	-	-	-	-	598	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.3	47.1
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1336	-	207
HCM Lane V/C Ratio	-	-	0.261	-	0.619
HCM Control Delay (s)	-	-	8.6	-	47.1
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	1	-	3.6

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	156	0	15	108	0	40
Future Vol, veh/h	156	0	15	108	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	0	0	1	0	3
Mvmt Flow	184	0	18	127	0	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	184	0	347	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	163	-
Critical Hdwy	-	-	4.1	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.327
Pot Cap-1 Maneuver	-	-	1403	-	654	856
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	871	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1403	-	645	856
Mov Cap-2 Maneuver	-	-	-	-	645	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	860	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	856	-	-	1403	-
HCM Lane V/C Ratio	0.055	-	-	0.013	-
HCM Control Delay (s)	9.5	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	3	41	106	8	24
Future Vol, veh/h	97	3	41	106	8	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	85	85
Heavy Vehicles, %	5	0	3	4	5	4
Mvmt Flow	114	4	44	114	9	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	147	101	0	0	158	0
Stage 1	101	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Critical Hdwy	6.45	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	838	960	-	-	1403	-
Stage 1	916	-	-	-	-	-
Stage 2	969	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	832	960	-	-	1403	-
Mov Cap-2 Maneuver	832	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	835	1403	-
HCM Lane V/C Ratio	-	-	0.141	0.007	-
HCM Control Delay (s)	-	-	10	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	294	0	0	217	124	61	1	208	0	0	0
Future Vol, veh/h	36	294	0	0	217	124	61	1	208	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	97	97	97	88	88	88	94	94	94
Heavy Vehicles, %	7	1	0	0	1	5	0	0	1	2	2	2
Mvmt Flow	40	327	0	0	224	128	69	1	236	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	352	0	-	-	-	0	695	759	327
Stage 1	-	-	-	-	-	-	407	407	-
Stage 2	-	-	-	-	-	-	288	352	-
Critical Hdwy	4.17	-	-	-	-	-	6.4	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.263	-	-	-	-	-	3.5	4	3.309
Pot Cap-1 Maneuver	1180	-	0	0	-	-	411	338	717
Stage 1	-	-	0	0	-	-	676	601	-
Stage 2	-	-	0	0	-	-	766	635	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1180	-	-	-	-	-	397	0	717
Mov Cap-2 Maneuver	-	-	-	-	-	-	397	0	-
Stage 1	-	-	-	-	-	-	653	0	-
Stage 2	-	-	-	-	-	-	766	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	606	1180	-	-	-
HCM Lane V/C Ratio	0.506	0.034	-	-	-
HCM Control Delay (s)	16.9	8.2	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	2.9	0.1	-	-	-

Intersection	
Int Delay, s/veh	21.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	98	70	130	197	0	0	0	0	250	3	45
Future Vol, veh/h	0	98	70	130	197	0	0	0	0	250	3	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	93	93	93	85	85	85
Heavy Vehicles, %	0	5	0	2	1	0	2	2	2	1	0	0
Mvmt Flow	0	115	82	153	232	0	0	0	0	294	4	53

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	197	0	0	694	735	232
Stage 1	-	-	-	-	-	-	538	538	-
Stage 2	-	-	-	-	-	-	156	197	-
Critical Hdwy	-	-	-	4.12	-	-	6.41	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.5	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.509	4	3.3
Pot Cap-1 Maneuver	0	-	-	1376	-	0	410	349	812
Stage 1	0	-	-	-	-	0	587	526	-
Stage 2	0	-	-	-	-	0	875	742	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1376	-	-	364	0	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	364	0	-
Stage 1	-	-	-	-	-	-	587	0	-
Stage 2	-	-	-	-	-	-	778	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.2	53.3
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1376	-	397
HCM Lane V/C Ratio	-	-	0.111	-	0.883
HCM Control Delay (s)	-	-	7.9	-	53.3
HCM Lane LOS	-	-	A	-	F
HCM 95th %tile Q(veh)	-	-	0.4	-	8.9

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	129	0	26	211	15	38
Future Vol, veh/h	129	0	26	211	15	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	0	0	1	0	7
Mvmt Flow	152	0	31	248	18	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	152	0	462	152
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1441	-	562	881
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1441	-	550	881
Mov Cap-2 Maneuver	-	-	-	-	550	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	753	-	-	1441	-
HCM Lane V/C Ratio	0.083	-	-	0.021	-
HCM Control Delay (s)	10.2	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	219	9	45	92	13	63
Future Vol, veh/h	219	9	45	92	13	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	14	1	0	0
Mvmt Flow	258	11	53	108	15	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	211	107	0	0	161	0
Stage 1	107	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	782	953	-	-	1430	-
Stage 1	922	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	773	953	-	-	1430	-
Mov Cap-2 Maneuver	773	-	-	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	915	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	779	1430	-
HCM Lane V/C Ratio	-	-	0.344	0.011	-
HCM Control Delay (s)	-	-	12	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	182	0	0	167	145	74	0	110	0	0	0
Future Vol, veh/h	36	182	0	0	167	145	74	0	110	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	85	85	85	85	85	85	86	86	86
Heavy Vehicles, %	4	1	0	0	1	2	0	33	0	2	2	2
Mvmt Flow	40	202	0	0	196	171	87	0	129	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	367	0	-	-	-	0	564	649	202
Stage 1	-	-	-	-	-	-	282	282	-
Stage 2	-	-	-	-	-	-	282	367	-
Critical Hdwy	4.14	-	-	-	-	-	6.4	6.83	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.83	-
Follow-up Hdwy	2.236	-	-	-	-	-	3.5	4.297	3.3
Pot Cap-1 Maneuver	1181	-	0	0	-	-	490	351	844
Stage 1	-	-	0	0	-	-	770	625	-
Stage 2	-	-	0	0	-	-	770	571	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1181	-	-	-	-	-	473	0	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	473	0	-
Stage 1	-	-	-	-	-	-	744	0	-
Stage 2	-	-	-	-	-	-	770	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.3	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	642	1181	-	-	-
HCM Lane V/C Ratio	0.337	0.034	-	-	-
HCM Control Delay (s)	13.4	8.2	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.5	0.1	-	-	-

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	78	45	132	114	0	0	0	0	147	7	27
Future Vol, veh/h	0	78	45	132	114	0	0	0	0	147	7	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	90	90	90	85	85	85	89	89	89
Heavy Vehicles, %	0	0	0	3	1	0	2	2	2	1	0	0
Mvmt Flow	0	90	52	147	127	0	0	0	0	165	8	30

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	142	0	0	537	563	127
Stage 1	-	-	-	-	-	-	421	421	-
Stage 2	-	-	-	-	-	-	116	142	-
Critical Hdwy	-	-	-	4.13	-	-	6.41	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.5	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.509	4	3.3
Pot Cap-1 Maneuver	0	-	-	1435	-	0	506	438	929
Stage 1	0	-	-	-	-	0	664	592	-
Stage 2	0	-	-	-	-	0	911	783	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1435	-	-	454	0	929
Mov Cap-2 Maneuver	-	-	-	-	-	-	454	0	-
Stage 1	-	-	-	-	-	-	664	0	-
Stage 2	-	-	-	-	-	-	818	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.2	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1435	-	493
HCM Lane V/C Ratio	-	-	0.102	-	0.413
HCM Control Delay (s)	-	-	7.8	-	17.3
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.3	-	2

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	99	4	22	118	0	26
Future Vol, veh/h	99	4	22	118	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	88	88	85	85
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	116	5	25	134	0	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	121	0	303	119
Stage 1	-	-	-	-	119	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1479	-	693	938
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1479	-	681	938
Mov Cap-2 Maneuver	-	-	-	-	681	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	838	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1479	-
HCM Lane V/C Ratio	0.033	-	-	0.017	-
HCM Control Delay (s)	9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	84	56	86	10	55
Future Vol, veh/h	19	84	56	86	10	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	4	0	0	0	0
Mvmt Flow	22	99	66	101	12	65

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	206	117	0	0	167	0
Stage 1	117	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Critical Hdwy	6.4	6.24	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	787	930	-	-	1423	-
Stage 1	913	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	780	930	-	-	1423	-
Mov Cap-2 Maneuver	780	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	932	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	898	1423	-
HCM Lane V/C Ratio	-	-	0.135	0.008	-
HCM Control Delay (s)	-	-	9.6	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	254	0	0	500	372	73	2	129	0	0	0
Future Vol, veh/h	70	254	0	0	500	372	73	2	129	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	10	4	0	0	1	3	2	0	3	2	2	2
Mvmt Flow	74	267	0	0	526	392	77	2	136	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	918	0	-	-	-	0	1137	1333	267
Stage 1	-	-	-	-	-	-	415	415	-
Stage 2	-	-	-	-	-	-	722	918	-
Critical Hdwy	4.2	-	-	-	-	-	6.42	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.5	-
Follow-up Hdwy	2.29	-	-	-	-	-	3.518	4	3.327
Pot Cap-1 Maneuver	711	-	0	0	-	-	223	155	769
Stage 1	-	-	0	0	-	-	666	596	-
Stage 2	-	-	0	0	-	-	481	353	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	711	-	-	-	-	-	200	0	769
Mov Cap-2 Maneuver	-	-	-	-	-	-	200	0	-
Stage 1	-	-	-	-	-	-	597	0	-
Stage 2	-	-	-	-	-	-	481	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.3	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	379	711	-	-	-
HCM Lane V/C Ratio	0.567	0.104	-	-	-
HCM Control Delay (s)	26.2	10.6	-	-	-
HCM Lane LOS	D	B	-	-	-
HCM 95th %tile Q(veh)	3.4	0.3	-	-	-

Intersection	
Int Delay, s/veh	36.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	198	77	415	154	0	0	0	0	127	2	21
Future Vol, veh/h	0	198	77	415	154	0	0	0	0	127	2	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	2	2	1	0	2	2	2	13	0	17
Mvmt Flow	0	208	81	437	162	0	0	0	0	134	2	22

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	289	0	0	1285	1325	162
Stage 1	-	-	-	-	-	-	1036	1036	-
Stage 2	-	-	-	-	-	-	249	289	-
Critical Hdwy	-	-	-	4.12	-	-	6.53	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.53	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.53	5.5	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.617	4	3.453
Pot Cap-1 Maneuver	0	-	-	1273	-	0	172	157	845
Stage 1	0	-	-	-	-	0	326	311	-
Stage 2	0	-	-	-	-	0	767	677	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1273	-	-	~ 113	0	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 113	0	-
Stage 1	-	-	-	-	-	-	326	0	-
Stage 2	-	-	-	-	-	-	504	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.8	217.1
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1273	-	129
HCM Lane V/C Ratio	-	-	0.343	-	1.224
HCM Control Delay (s)	-	-	9.3	-	217.1
HCM Lane LOS	-	-	A	-	F
HCM 95th %tile Q(veh)	-	-	1.5	-	9.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	218	0	21	152	0	55
Future Vol, veh/h	218	0	21	152	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	3
Mvmt Flow	229	0	22	160	0	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	229	0	433	229
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	204	-
Critical Hdwy	-	-	4.1	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.327
Pot Cap-1 Maneuver	-	-	1351	-	584	808
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1351	-	575	808
Mov Cap-2 Maneuver	-	-	-	-	575	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	822	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	808	-	-	1351	-
HCM Lane V/C Ratio	0.072	-	-	0.016	-
HCM Control Delay (s)	9.8	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	136	4	57	148	11	34
Future Vol, veh/h	136	4	57	148	11	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	3	4	5	4
Mvmt Flow	143	4	60	156	12	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	198	138	0	0	216	0
Stage 1	138	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.45	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	784	916	-	-	1336	-
Stage 1	881	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	777	916	-	-	1336	-
Mov Cap-2 Maneuver	777	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	780	1336	-
HCM Lane V/C Ratio	-	-	0.189	0.009	-
HCM Control Delay (s)	-	-	10.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	411	0	0	304	173	86	2	291	0	0	0
Future Vol, veh/h	50	411	0	0	304	173	86	2	291	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	94	94	94
Heavy Vehicles, %	7	1	0	0	1	5	0	0	1	2	2	2
Mvmt Flow	53	433	0	0	320	182	91	2	306	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	502	0	-	-	-	0	950	1041	433
Stage 1	-	-	-	-	-	-	539	539	-
Stage 2	-	-	-	-	-	-	411	502	-
Critical Hdwy	4.17	-	-	-	-	-	6.4	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.263	-	-	-	-	-	3.5	4	3.309
Pot Cap-1 Maneuver	1037	-	0	0	-	-	291	232	625
Stage 1	-	-	0	0	-	-	589	525	-
Stage 2	-	-	0	0	-	-	674	545	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1037	-	-	-	-	-	276	0	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	276	0	-
Stage 1	-	-	-	-	-	-	559	0	-
Stage 2	-	-	-	-	-	-	674	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0	38.4
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	485	1037	-	-	-
HCM Lane V/C Ratio	0.823	0.051	-	-	-
HCM Control Delay (s)	38.4	8.7	-	-	-
HCM Lane LOS	E	A	-	-	-
HCM 95th %tile Q(veh)	8	0.2	-	-	-

Intersection	
Int Delay, s/veh	93.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	138	98	182	275	0	0	0	0	350	4	63
Future Vol, veh/h	0	138	98	182	275	0	0	0	0	350	4	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	93	93	93	95	95	95
Heavy Vehicles, %	0	5	0	2	1	0	2	2	2	1	0	0
Mvmt Flow	0	145	103	192	289	0	0	0	0	368	4	66

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	248	0	0	870	921	289
Stage 1	-	-	-	-	-	-	673	673	-
Stage 2	-	-	-	-	-	-	197	248	-
Critical Hdwy	-	-	-	4.12	-	-	6.41	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.5	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.509	4	3.3
Pot Cap-1 Maneuver	0	-	-	1318	-	0	~ 323	273	755
Stage 1	0	-	-	-	-	0	509	457	-
Stage 2	0	-	-	-	-	0	839	705	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1318	-	-	~ 276	0	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 276	0	-
Stage 1	-	-	-	-	-	-	509	0	-
Stage 2	-	-	-	-	-	-	717	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.3	245.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1318	-	306
HCM Lane V/C Ratio	-	-	0.145	-	1.434
HCM Control Delay (s)	-	-	8.2	-	245.5
HCM Lane LOS	-	-	A	-	F
HCM 95th %tile Q(veh)	-	-	0.5	-	23.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	0	36	295	21	54
Future Vol, veh/h	180	0	36	295	21	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	1	0	7
Mvmt Flow	189	0	38	311	22	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	189	0	576	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	-	-	4.1	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.363
Pot Cap-1 Maneuver	-	-	1397	-	482	840
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1397	-	469	840
Mov Cap-2 Maneuver	-	-	-	-	469	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	688	-	-	1397	-
HCM Lane V/C Ratio	0.115	-	-	0.027	-
HCM Control Delay (s)	10.9	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	8.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	307	13	63	129	18	88
Future Vol, veh/h	307	13	63	129	18	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	14	1	0	0
Mvmt Flow	361	15	74	152	21	104

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	296	150	0	0	226	0
Stage 1	150	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	699	902	-	-	1354	-
Stage 1	883	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	688	902	-	-	1354	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	1.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	695	1354	-
HCM Lane V/C Ratio	-	-	0.542	0.016	-
HCM Control Delay (s)	-	-	16.1	7.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.3	0	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	255	0	0	234	203	104	2	153	0	0	0
Future Vol, veh/h	50	255	0	0	234	203	104	2	153	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	275	-	-	-	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	86	86	86
Heavy Vehicles, %	4	1	0	0	1	2	0	33	0	2	2	2
Mvmt Flow	53	268	0	0	246	214	109	2	161	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	460	0	-	-	-	0	727	834	268
Stage 1	-	-	-	-	-	-	374	374	-
Stage 2	-	-	-	-	-	-	353	460	-
Critical Hdwy	4.14	-	-	-	-	-	6.4	6.83	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.83	-
Follow-up Hdwy	2.236	-	-	-	-	-	3.5	4.297	3.3
Pot Cap-1 Maneuver	1091	-	0	0	-	-	394	272	776
Stage 1	-	-	0	0	-	-	700	567	-
Stage 2	-	-	0	0	-	-	716	517	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1091	-	-	-	-	-	375	0	776
Mov Cap-2 Maneuver	-	-	-	-	-	-	375	0	-
Stage 1	-	-	-	-	-	-	666	0	-
Stage 2	-	-	-	-	-	-	716	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.4	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	542	1091	-	-	-
HCM Lane V/C Ratio	0.503	0.048	-	-	-
HCM Control Delay (s)	18.2	8.5	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	2.8	0.2	-	-	-

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	109	63	184	159	0	0	0	0	205	10	38
Future Vol, veh/h	0	109	63	184	159	0	0	0	0	205	10	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	275	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	25	95	95	95	85	85	85	95	95	95
Heavy Vehicles, %	0	0	0	3	1	0	2	2	2	1	0	0
Mvmt Flow	0	115	252	194	167	0	0	0	0	216	11	40

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	367	0	0	796	922	167
Stage 1	-	-	-	-	-	-	555	555	-
Stage 2	-	-	-	-	-	-	241	367	-
Critical Hdwy	-	-	-	4.13	-	-	6.41	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.5	-
Follow-up Hdwy	-	-	-	2.227	-	-	3.509	4	3.3
Pot Cap-1 Maneuver	0	-	-	1186	-	0	357	272	882
Stage 1	0	-	-	-	-	0	577	516	-
Stage 2	0	-	-	-	-	0	801	626	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1186	-	-	298	0	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	298	0	-
Stage 1	-	-	-	-	-	-	577	0	-
Stage 2	-	-	-	-	-	-	670	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.6	48.1
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1186	-	332
HCM Lane V/C Ratio	-	-	0.163	-	0.802
HCM Control Delay (s)	-	-	8.6	-	48.1
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	0.6	-	6.7

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	6	31	165	0	36
Future Vol, veh/h	138	6	31	165	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	145	6	33	174	0	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	151	0	388	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1442	-	619	904
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	805	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1442	-	605	904
Mov Cap-2 Maneuver	-	-	-	-	605	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	786	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	904	-	-	1442	-
HCM Lane V/C Ratio	0.042	-	-	0.023	-
HCM Control Delay (s)	9.2	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	117	79	121	13	77
Future Vol, veh/h	27	117	79	121	13	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	0	0
Mvmt Flow	28	123	83	127	14	81

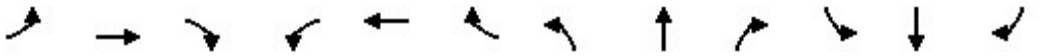
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	256	147	0	0	210	0
Stage 1	147	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.4	6.24	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	737	895	-	-	1373	-
Stage 1	885	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	895	-	-	1373	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	911	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	858	1373	-
HCM Lane V/C Ratio	-	-	0.177	0.01	-
HCM Control Delay (s)	-	-	10.1	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Build 2028 Weekday AM
1: I-25 Northboun Off Ramp & County Line Rd

02/02/2025

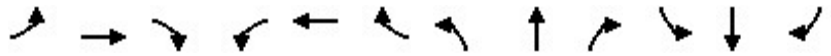


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	185	0	0	361	265	173	1	92	0	0	0
Future Volume (veh/h)	175	185	0	0	361	265	173	1	92	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1752	1841	0	0	1885	1856	1870	1900	1856			
Adj Flow Rate, veh/h	206	218	0	0	406	298	154	66	107			
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.86	0.86	0.86			
Percent Heavy Veh, %	10	4	0	0	1	3	2	0	3			
Cap, veh/h	591	1471	0	0	1397	1016	224	82	133			
Arrive On Green	0.11	1.00	0.00	0.00	0.71	0.71	0.13	0.13	0.13			
Sat Flow, veh/h	1668	1841	0	0	2073	1439	1781	652	1057			
Grp Volume(v), veh/h	206	218	0	0	367	337	154	0	173			
Grp Sat Flow(s),veh/h/ln	1668	1841	0	0	1791	1626	1781	0	1710			
Q Serve(g_s), s	4.1	0.0	0.0	0.0	9.1	9.2	9.9	0.0	11.8			
Cycle Q Clear(g_c), s	4.1	0.0	0.0	0.0	9.1	9.2	9.9	0.0	11.8			
Prop In Lane	1.00		0.00	0.00		0.88	1.00		0.62			
Lane Grp Cap(c), veh/h	591	1471	0	0	1265	1148	224	0	215			
V/C Ratio(X)	0.35	0.15	0.00	0.00	0.29	0.29	0.69	0.00	0.80			
Avail Cap(c_a), veh/h	894	1471	0	0	1265	1148	438	0	420			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	3.9	0.0	0.0	0.0	6.5	6.5	50.2	0.0	51.0			
Incr Delay (d2), s/veh	0.4	0.2	0.0	0.0	0.6	0.6	3.7	0.0	6.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.0	0.1	0.0	0.0	3.3	3.0	4.7	0.0	5.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.2	0.2	0.0	0.0	7.1	7.2	53.9	0.0	57.9			
LnGrp LOS	A	A	A	A	A	A	D	A	E			
Approach Vol, veh/h		424			704			327				
Approach Delay, s/veh		2.2			7.1			56.0				
Approach LOS		A			A			E				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		19.6		100.4			11.2	89.2				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		29.5		81.5			28.5	48.5				
Max Q Clear Time (g_c+I1), s		13.8		2.0			6.1	11.2				
Green Ext Time (p_c), s		1.3		1.3			0.6	5.0				

Intersection Summary	
HCM 6th Ctrl Delay	16.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	271	180	296	235	0	0	0	0	91	3	136
Future Volume (veh/h)	0	271	180	296	235	0	0	0	0	91	3	136
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1885	1870	1870	1885	0				1707	1900	1648
Adj Flow Rate, veh/h	0	319	0	348	276	0				107	41	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85				0.85	0.85	0.85
Percent Heavy Veh, %	0	1	2	2	1	0				13	0	17
Cap, veh/h	0	2534		921	2952	0				134	51	
Arrive On Green	0.00	0.71	0.00	0.13	1.00	0.00				0.10	0.10	0.00
Sat Flow, veh/h	0	3676	1585	1781	3676	0				1326	508	1397
Grp Volume(v), veh/h	0	319	0	348	276	0				148	0	0
Grp Sat Flow(s),veh/h/ln	0	1791	1585	1781	1791	0				1834	0	1397
Q Serve(g_s), s	0.0	3.4	0.0	6.5	0.0	0.0				9.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.4	0.0	6.5	0.0	0.0				9.5	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.72		1.00
Lane Grp Cap(c), veh/h	0	2534		921	2952	0				185	0	
V/C Ratio(X)	0.00	0.13		0.38	0.09	0.00				0.80	0.00	
Avail Cap(c_a), veh/h	0	2534		1381	2952	0				481	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.93	0.93	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	5.6	0.0	3.0	0.0	0.0				52.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.1	0.0				7.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	1.4	0.0	0.0				4.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.7	0.0	3.2	0.1	0.0				60.5	0.0	0.0
LnGrp LOS	A	A		A	A	A				E	A	
Approach Vol, veh/h		319			624						148	
Approach Delay, s/veh		5.7			1.8						60.5	
Approach LOS		A			A						E	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		14.0	89.4		16.6		103.4					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		40.5	34.5		31.5		79.5					
Max Q Clear Time (g_c+I1), s		8.5	5.4		11.5		2.0					
Green Ext Time (p_c), s		1.1	2.1		0.7		1.9					

Intersection Summary	
HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	150	8	8	218	267	103
Future Volume (veh/h)	150	8	8	218	267	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1900	1885
Adj Flow Rate, veh/h	176	9	9	256	314	121
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	0	0	3	0	1
Cap, veh/h	210	188	874	2850	2196	972
Arrive On Green	0.12	0.12	0.32	1.00	0.20	0.20
Sat Flow, veh/h	1795	1610	1810	3618	3705	1598
Grp Volume(v), veh/h	176	9	9	256	314	121
Grp Sat Flow(s),veh/h/ln	1795	1610	1810	1763	1805	1598
Q Serve(g_s), s	11.5	0.6	0.1	0.0	8.6	7.5
Cycle Q Clear(g_c), s	11.5	0.6	0.1	0.0	8.6	7.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	210	188	874	2850	2196	972
V/C Ratio(X)	0.84	0.05	0.01	0.09	0.14	0.12
Avail Cap(c_a), veh/h	696	624	874	2850	2196	972
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	47.1	2.6	0.0	22.2	21.8
Incr Delay (d2), s/veh	8.7	0.1	0.0	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.6	0.0	0.0	3.9	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.6	47.2	2.6	0.1	22.4	22.0
LnGrp LOS	E	D	A	A	C	C
Approach Vol, veh/h	185			265	435	
Approach Delay, s/veh	59.9			0.1	22.3	
Approach LOS	E			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		101.5		18.5	24.0	77.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		64.5		46.5	19.5	40.5
Max Q Clear Time (g_c+I1), s		2.0		13.5	2.1	10.6
Green Ext Time (p_c), s		2.0		0.5	0.0	2.4

Intersection Summary						
HCM 6th Ctrl Delay			23.5			
HCM 6th LOS			C			

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	3	41	108	8	24
Future Vol, veh/h	99	3	41	108	8	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	85	85
Heavy Vehicles, %	5	0	3	4	5	4
Mvmt Flow	116	4	44	116	9	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	148	102	0	0	160	0
Stage 1	102	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Critical Hdwy	6.45	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	837	959	-	-	1401	-
Stage 1	915	-	-	-	-	-
Stage 2	969	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	831	959	-	-	1401	-
Mov Cap-2 Maneuver	831	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	834	1401	-
HCM Lane V/C Ratio	-	-	0.144	0.007	-
HCM Control Delay (s)	-	-	10	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	368	0	0	369	0	81
Future Vol, veh/h	368	0	0	369	0	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	9
Mvmt Flow	400	0	0	401	0	88

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	200
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.08
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.39
Pot Cap-1 Maneuver	-	0	0	-	0	786
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	786
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	786	-	-
HCM Lane V/C Ratio	0.112	-	-
HCM Control Delay (s)	10.2	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	136	91	0	157	117
Future Volume (veh/h)	0	136	91	0	157	117
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1767	1767	1870	1767	1767
Adj Flow Rate, veh/h	0	148	99	0	171	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	9	9	2	9	9
Cap, veh/h	207	174	1236	0	234	1429
Arrive On Green	0.00	0.12	0.70	0.00	0.12	1.00
Sat Flow, veh/h	1781	1497	1767	0	3264	1767
Grp Volume(v), veh/h	0	148	99	0	171	127
Grp Sat Flow(s),veh/h/ln	1781	1497	1767	0	1632	1767
Q Serve(g_s), s	0.0	11.6	2.1	0.0	6.1	0.0
Cycle Q Clear(g_c), s	0.0	11.6	2.1	0.0	6.1	0.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	207	174	1236	0	234	1429
V/C Ratio(X)	0.00	0.85	0.08	0.00	0.73	0.09
Avail Cap(c_a), veh/h	512	430	1236	0	857	1429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.98	0.98
Uniform Delay (d), s/veh	0.0	52.0	5.7	0.0	51.7	0.0
Incr Delay (d2), s/veh	0.0	10.8	0.1	0.0	4.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.9	0.8	0.0	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	62.8	5.9	0.0	56.0	0.1
LnGrp LOS	A	E	A	A	E	A
Approach Vol, veh/h	148		99			298
Approach Delay, s/veh	62.8		5.9			32.2
Approach LOS	E		A			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.1	88.4			101.5	18.5
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	31.5	40.5			76.5	34.5
Max Q Clear Time (g_c+I1), s	8.1	4.1			2.0	13.6
Green Ext Time (p_c), s	0.6	0.6			0.8	0.4

Intersection Summary	
HCM 6th Ctrl Delay	35.7
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	54	38	3	102	15
Future Vol, veh/h	1	54	38	3	102	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	270	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	9	3	9	9	0
Mvmt Flow	1	59	41	3	111	16

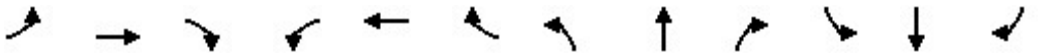
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	281	43	0	0	44	0
Stage 1	43	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	694	1008	-	-	1520	-
Stage 1	962	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	643	1008	-	-	1520	-
Mov Cap-2 Maneuver	643	-	-	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	6.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1520	-
HCM Lane V/C Ratio	-	-	0.06	0.073	-
HCM Control Delay (s)	-	-	8.8	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Build 2028 Weekday PM
1: I-25 Northboun Off Ramp & County Line Rd

02/02/2025

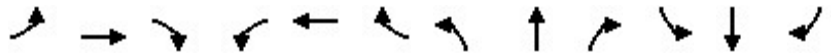


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	299	0	0	222	124	211	1	208	0	0	0
Future Volume (veh/h)	191	299	0	0	222	124	211	1	208	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1796	1885	0	0	1885	1826	1900	1900	1885			
Adj Flow Rate, veh/h	212	332	0	0	229	128	238	3	236			
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.88	0.88	0.88			
Percent Heavy Veh, %	7	1	0	0	1	5	0	0	1			
Cap, veh/h	762	1407	0	0	1451	781	323	4	284			
Arrive On Green	0.13	1.00	0.00	0.00	0.65	0.65	0.18	0.18	0.18			
Sat Flow, veh/h	1711	1885	0	0	2342	1210	1810	20	1593			
Grp Volume(v), veh/h	212	332	0	0	181	176	238	0	239			
Grp Sat Flow(s),veh/h/ln	1711	1885	0	0	1791	1667	1810	0	1613			
Q Serve(g_s), s	5.1	0.0	0.0	0.0	4.8	5.0	14.9	0.0	17.1			
Cycle Q Clear(g_c), s	5.1	0.0	0.0	0.0	4.8	5.0	14.9	0.0	17.1			
Prop In Lane	1.00		0.00	0.00		0.73	1.00		0.99			
Lane Grp Cap(c), veh/h	762	1407	0	0	1156	1076	323	0	288			
V/C Ratio(X)	0.28	0.24	0.00	0.00	0.16	0.16	0.74	0.00	0.83			
Avail Cap(c_a), veh/h	1088	1407	0	0	1156	1076	656	0	585			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.1	0.0	0.0	0.0	8.4	8.4	46.6	0.0	47.5			
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.0	0.3	0.3	3.3	0.0	6.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.4	0.2	0.0	0.0	1.8	1.8	7.0	0.0	7.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.3	0.4	0.0	0.0	8.7	8.8	49.9	0.0	53.6			
LnGrp LOS	A	A	A	A	A	A	D	A	D			
Approach Vol, veh/h		544			357			477				
Approach Delay, s/veh		2.3			8.7			51.8				
Approach LOS		A			A			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		25.9		94.1			12.1	82.0				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		43.5		67.5			30.5	32.5				
Max Q Clear Time (g_c+I1), s		19.1		2.0			7.1	7.0				
Green Ext Time (p_c), s		2.3		2.1			0.6	2.1				

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	259	226	130	351	0	0	0	0	250	3	194
Future Volume (veh/h)	0	259	226	130	351	0	0	0	0	250	3	194
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1900	1870	1885	0				1885	1900	1900
Adj Flow Rate, veh/h	0	305	0	153	413	0				294	4	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85				0.85	0.85	0.85
Percent Heavy Veh, %	0	5	0	2	1	0				1	0	0
Cap, veh/h	0	1383		547	1806	0				752	10	
Arrive On Green	0.00	0.40	0.00	0.14	1.00	0.00				0.42	0.42	0.00
Sat Flow, veh/h	0	3561	1610	1781	3676	0				1786	24	1610
Grp Volume(v), veh/h	0	305	0	153	413	0				298	0	0
Grp Sat Flow(s),veh/h/ln	0	1735	1610	1781	1791	0				1811	0	1610
Q Serve(g_s), s	0.0	7.0	0.0	6.0	0.0	0.0				13.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	7.0	0.0	6.0	0.0	0.0				13.7	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	1383		547	1806	0				762	0	
V/C Ratio(X)	0.00	0.22		0.28	0.23	0.00				0.39	0.00	
Avail Cap(c_a), veh/h	0	1383		671	1806	0				762	0	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.94	0.94	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	23.8	0.0	16.6	0.0	0.0				24.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.3	0.3	0.0				1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	0.0	2.2	0.1	0.0				6.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	24.1	0.0	16.9	0.3	0.0				25.6	0.0	0.0
LnGrp LOS	A	C		B	A	A				C	A	
Approach Vol, veh/h		305			566						298	
Approach Delay, s/veh		24.1			4.8						25.6	
Approach LOS		C			A						C	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		12.6	52.4		55.0		65.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		16.5	39.5		50.5		60.5					
Max Q Clear Time (g_c+I1), s		8.0	9.0		15.7		2.0					
Green Ext Time (p_c), s		0.2	2.0		2.0		2.9					

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	122	10	25	261	337	203
Future Volume (veh/h)	122	10	25	261	337	203
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1885	1900	1796
Adj Flow Rate, veh/h	144	12	29	307	396	239
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	0	0	1	0	7
Cap, veh/h	176	159	794	2960	2231	941
Arrive On Green	0.10	0.10	0.34	1.00	0.20	0.20
Sat Flow, veh/h	1781	1610	1810	3676	3705	1522
Grp Volume(v), veh/h	144	12	29	307	396	239
Grp Sat Flow(s),veh/h/ln	1781	1610	1810	1791	1805	1522
Q Serve(g_s), s	9.5	0.8	0.3	0.0	10.9	15.8
Cycle Q Clear(g_c), s	9.5	0.8	0.3	0.0	10.9	15.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	176	159	794	2960	2231	941
V/C Ratio(X)	0.82	0.08	0.04	0.10	0.18	0.25
Avail Cap(c_a), veh/h	512	463	794	2960	2231	941
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	53.0	49.1	2.4	0.0	22.6	24.5
Incr Delay (d2), s/veh	9.0	0.2	0.1	0.1	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.8	0.1	0.0	5.2	6.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	62.0	49.3	2.5	0.1	22.7	25.2
LnGrp LOS	E	D	A	A	C	C
Approach Vol, veh/h	156			336	635	
Approach Delay, s/veh	61.1			0.3	23.7	
Approach LOS	E			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		103.7		16.3	25.0	78.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		76.5		34.5	20.5	51.5
Max Q Clear Time (g_c+I1), s		2.0		11.5	2.3	17.8
Green Ext Time (p_c), s		2.1		0.4	0.0	3.6

Intersection Summary		
HCM 6th Ctrl Delay		21.9
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	222	9	45	94	13	63
Future Vol, veh/h	222	9	45	94	13	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	14	1	0	0
Mvmt Flow	261	11	53	111	15	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	213	109	0	0	164	0
Stage 1	109	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	780	950	-	-	1427	-
Stage 1	921	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	771	950	-	-	1427	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	915	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	777	1427	-
HCM Lane V/C Ratio	-	-	0.35	0.011	-
HCM Control Delay (s)	-	-	12.1	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	382	0	0	540	0	101
Future Vol, veh/h	382	0	0	540	0	101
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	2	2
Mvmt Flow	415	0	0	587	0	110

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	208
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	798
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	798
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	798	-	-
HCM Lane V/C Ratio	0.138	-	-
HCM Control Delay (s)	10.2	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.5	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	169	118	0	194	152
Future Volume (veh/h)	0	169	118	0	194	152
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	184	128	0	211	165
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	240	213	1257	0	280	1478
Arrive On Green	0.00	0.13	0.67	0.00	0.14	1.00
Sat Flow, veh/h	1781	1585	1870	0	3456	1870
Grp Volume(v), veh/h	0	184	128	0	211	165
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1728	1870
Q Serve(g_s), s	0.0	13.6	2.9	0.0	7.1	0.0
Cycle Q Clear(g_c), s	0.0	13.6	2.9	0.0	7.1	0.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	240	213	1257	0	280	1478
V/C Ratio(X)	0.00	0.86	0.10	0.00	0.75	0.11
Avail Cap(c_a), veh/h	527	469	1257	0	878	1478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.98	0.98
Uniform Delay (d), s/veh	0.0	50.8	6.9	0.0	50.7	0.0
Incr Delay (d2), s/veh	0.0	9.9	0.2	0.0	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.0	1.2	0.0	3.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	60.7	7.1	0.0	54.8	0.1
LnGrp LOS	A	E	A	A	D	A
Approach Vol, veh/h	184		128			376
Approach Delay, s/veh	60.7		7.1			30.8
Approach LOS	E		A			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	14.2	85.1			99.4	20.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	30.5	40.5			75.5	35.5
Max Q Clear Time (g_c+I1), s	9.1	4.9			2.0	15.6
Green Ext Time (p_c), s	0.7	0.7			1.0	0.5

Intersection Summary			
HCM 6th Ctrl Delay		34.4	
HCM 6th LOS		C	

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	67	51	3	126	26
Future Vol, veh/h	1	67	51	3	126	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	270	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	73	55	3	137	28

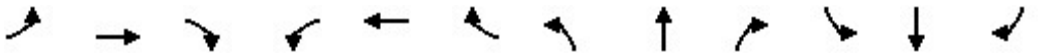
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	359	57	0	0	58	0
Stage 1	57	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	640	1009	-	-	1546	-
Stage 1	966	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	583	1009	-	-	1546	-
Mov Cap-2 Maneuver	583	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	6.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1546	-
HCM Lane V/C Ratio	-	-	0.074	0.089	-
HCM Control Delay (s)	-	-	8.9	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-

Build 2028 Weekend Midday
1: I-25 Northboun Off Ramp & County Line Rd

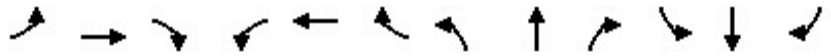
02/02/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	185	0	0	179	145	426	1	110	0	0	0
Future Volume (veh/h)	129	185	0	0	179	145	426	1	110	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1885	0	0	1885	1870	1900	1411	1900			
Adj Flow Rate, veh/h	143	206	0	0	211	171	316	261	129			
Peak Hour Factor	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85			
Percent Heavy Veh, %	4	1	0	0	1	2	0	33	0			
Cap, veh/h	594	1131	0	0	974	751	588	290	143			
Arrive On Green	0.07	0.80	0.00	0.00	0.51	0.51	0.33	0.33	0.33			
Sat Flow, veh/h	1753	1885	0	0	2019	1484	1810	891	440			
Grp Volume(v), veh/h	143	206	0	0	196	186	316	0	390			
Grp Sat Flow(s),veh/h/ln	1753	1885	0	0	1791	1618	1810	0	1332			
Q Serve(g_s), s	4.5	3.1	0.0	0.0	7.3	7.7	17.1	0.0	33.5			
Cycle Q Clear(g_c), s	4.5	3.1	0.0	0.0	7.3	7.7	17.1	0.0	33.5			
Prop In Lane	1.00		0.00	0.00		0.92	1.00		0.33			
Lane Grp Cap(c), veh/h	594	1131	0	0	906	819	588	0	433			
V/C Ratio(X)	0.24	0.18	0.00	0.00	0.22	0.23	0.54	0.00	0.90			
Avail Cap(c_a), veh/h	780	1131	0	0	906	819	822	0	605			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.99	0.99	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.8	5.2	0.0	0.0	16.4	16.5	33.1	0.0	38.6			
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.0	0.5	0.6	0.8	0.0	13.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.2	0.0	0.0	3.1	3.0	7.6	0.0	12.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.0	5.5	0.0	0.0	17.0	17.2	33.9	0.0	51.6			
LnGrp LOS	B	A	A	A	B	B	C	A	D			
Approach Vol, veh/h		349			382			706				
Approach Delay, s/veh		8.2			17.1			43.7				
Approach LOS		A			B			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		43.5		76.5			11.2	65.2				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		54.5		56.5			19.5	32.5				
Max Q Clear Time (g_c+I1), s		35.5		5.1			6.5	9.7				
Green Ext Time (p_c), s		3.5		1.2			0.3	2.2				
Intersection Summary												
HCM 6th Ctrl Delay			28.0									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	175	139	132	478	0	0	0	0	147	7	380
Future Volume (veh/h)	0	175	139	132	478	0	0	0	0	147	7	380
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1900	1900	1856	1885	0				1885	1900	1900
Adj Flow Rate, veh/h	0	201	0	147	531	0				165	198	0
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	3	1	0				1	0	0
Cap, veh/h	0	1282		555	1657	0				391	469	
Arrive On Green	0.00	0.36	0.00	0.14	0.93	0.00				0.46	0.46	0.00
Sat Flow, veh/h	0	3705	1610	1767	3676	0				844	1013	1610
Grp Volume(v), veh/h	0	201	0	147	531	0				363	0	0
Grp Sat Flow(s),veh/h/ln	0	1805	1610	1767	1791	0				1858	0	1610
Q Serve(g_s), s	0.0	4.6	0.0	6.2	1.9	0.0				15.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	4.6	0.0	6.2	1.9	0.0				15.7	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.45		1.00
Lane Grp Cap(c), veh/h	0	1282		555	1657	0				859	0	
V/C Ratio(X)	0.00	0.16		0.26	0.32	0.00				0.42	0.00	
Avail Cap(c_a), veh/h	0	1282		704	1657	0				859	0	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.89	0.89	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	26.4	0.0	19.1	2.5	0.0				21.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.2	0.5	0.0				1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.0	0.0	2.3	0.7	0.0				7.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.7	0.0	19.3	2.9	0.0				23.1	0.0	0.0
LnGrp LOS	A	C		B	A	A				C	A	
Approach Vol, veh/h		201			678						363	
Approach Delay, s/veh		26.7			6.5						23.1	
Approach LOS		C			A						C	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		12.9	47.1		60.0		60.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		18.5	32.5		55.5		55.5					
Max Q Clear Time (g_c+I1), s		8.2	6.6		17.7		3.9					
Green Ext Time (p_c), s		0.3	1.2		2.5		3.9					

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	81	27	6	160	755	101
Future Volume (veh/h)	81	27	6	160	755	101
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	95	32	7	188	858	115
Peak Hour Factor	0.85	0.85	0.85	0.85	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	126	112	610	3088	2396	1061
Arrive On Green	0.07	0.07	0.05	0.28	0.22	0.22
Sat Flow, veh/h	1810	1610	1810	3705	3705	1598
Grp Volume(v), veh/h	95	32	7	188	858	115
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1805	1805	1598
Q Serve(g_s), s	6.2	2.3	0.1	4.6	24.2	6.9
Cycle Q Clear(g_c), s	6.2	2.3	0.1	4.6	24.2	6.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	126	112	610	3088	2396	1061
V/C Ratio(X)	0.76	0.29	0.01	0.06	0.36	0.11
Avail Cap(c_a), veh/h	385	342	610	3088	2396	1061
HCM Platoon Ratio	1.00	1.00	0.33	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	53.0	5.1	7.9	25.2	18.5
Incr Delay (d2), s/veh	8.8	1.4	0.0	0.0	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.1	0.0	1.1	11.8	2.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	63.7	54.4	5.1	7.9	25.6	18.7
LnGrp LOS	E	D	A	A	C	B
Approach Vol, veh/h	127			195	973	
Approach Delay, s/veh	61.3			7.8	24.8	
Approach LOS	E			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		107.2		12.8	23.0	84.2
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		85.5		25.5	18.5	62.5
Max Q Clear Time (g_c+I1), s		6.6		8.2	2.1	26.2
Green Ext Time (p_c), s		1.3		0.3	0.0	7.4

Intersection Summary		
HCM 6th Ctrl Delay		25.8
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	84	56	92	10	55
Future Vol, veh/h	21	84	56	92	10	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	4	0	0	0	0
Mvmt Flow	25	99	66	108	12	65

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	209	120	0	0	174	0
Stage 1	120	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Critical Hdwy	6.4	6.24	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	784	926	-	-	1415	-
Stage 1	910	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	777	926	-	-	1415	-
Mov Cap-2 Maneuver	777	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	932	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	892	1415	-
HCM Lane V/C Ratio	-	-	0.138	0.008	-
HCM Control Delay (s)	-	-	9.7	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	241	0	0	856	0	61
Future Vol, veh/h	241	0	0	856	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	262	0	0	930	0	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	131
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	-	0	0	-	0	897
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	897
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	897	-	-
HCM Lane V/C Ratio	0.074	-	-
HCM Control Delay (s)	9.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	102	63	0	458	322
Future Volume (veh/h)	0	102	63	0	458	322
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	0	111	68	0	498	350
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	152	136	1197	0	584	1584
Arrive On Green	0.00	0.08	0.64	0.00	0.28	1.00
Sat Flow, veh/h	1795	1598	1885	0	3483	1885
Grp Volume(v), veh/h	0	111	68	0	498	350
Grp Sat Flow(s),veh/h/ln	1795	1598	1885	0	1742	1885
Q Serve(g_s), s	0.0	8.2	1.6	0.0	16.2	0.0
Cycle Q Clear(g_c), s	0.0	8.2	1.6	0.0	16.2	0.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	152	136	1197	0	584	1584
V/C Ratio(X)	0.00	0.82	0.06	0.00	0.85	0.22
Avail Cap(c_a), veh/h	367	326	1197	0	1495	1584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.90	0.90
Uniform Delay (d), s/veh	0.0	54.0	8.3	0.0	41.8	0.0
Incr Delay (d2), s/veh	0.0	11.4	0.1	0.0	3.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.7	0.7	0.0	6.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	65.4	8.4	0.0	45.1	0.3
LnGrp LOS	A	E	A	A	D	A
Approach Vol, veh/h	111		68			848
Approach Delay, s/veh	65.4		8.4			26.6
Approach LOS	E		A			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	24.6	80.7			105.3	14.7
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	51.5	30.5			86.5	24.5
Max Q Clear Time (g_c+I1), s	18.2	3.6			2.0	10.2
Green Ext Time (p_c), s	1.9	0.3			2.4	0.2

Intersection Summary		
HCM 6th Ctrl Delay		29.6
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	40	19	8	298	24
Future Vol, veh/h	1	40	19	8	298	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	270	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	43	21	9	324	26

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	700	26	0	0	30	0
Stage 1	26	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	407	1053	-	-	1589	-
Stage 1	999	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	324	1053	-	-	1589	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	404	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1589	-
HCM Lane V/C Ratio	-	-	0.045	0.204	-
HCM Control Delay (s)	-	-	8.8	7.8	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.8	-

Build 2045 Weekday AM
1: I-25 Northboun Off Ramp & County Line Rd

02/02/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	258	0	0	504	372	194	2	129	0	0	0
Future Volume (veh/h)	195	258	0	0	504	372	194	2	129	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1752	1841	0	0	1885	1856	1870	1900	1856			
Adj Flow Rate, veh/h	205	272	0	0	531	392	171	48	136			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	10	4	0	0	1	3	2	0	3			
Cap, veh/h	485	1455	0	0	1369	1010	240	59	167			
Arrive On Green	0.11	1.00	0.00	0.00	0.70	0.70	0.13	0.13	0.13			
Sat Flow, veh/h	1668	1841	0	0	2059	1450	1781	437	1239			
Grp Volume(v), veh/h	205	272	0	0	484	439	171	0	184			
Grp Sat Flow(s),veh/h/ln	1668	1841	0	0	1791	1624	1781	0	1677			
Q Serve(g_s), s	4.2	0.0	0.0	0.0	13.5	13.5	11.0	0.0	12.8			
Cycle Q Clear(g_c), s	4.2	0.0	0.0	0.0	13.5	13.5	11.0	0.0	12.8			
Prop In Lane	1.00		0.00	0.00		0.89	1.00		0.74			
Lane Grp Cap(c), veh/h	485	1455	0	0	1248	1132	240	0	226			
V/C Ratio(X)	0.42	0.19	0.00	0.00	0.39	0.39	0.71	0.00	0.82			
Avail Cap(c_a), veh/h	732	1455	0	0	1248	1132	423	0	398			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.99	0.99	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	4.9	0.0	0.0	0.0	7.6	7.6	49.7	0.0	50.5			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	0.9	1.0	3.9	0.0	7.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.1	0.1	0.0	0.0	5.0	4.5	5.2	0.0	5.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	0.3	0.0	0.0	8.5	8.6	53.6	0.0	57.5			
LnGrp LOS	A	A	A	A	A	A	D	A	E			
Approach Vol, veh/h		477			923			355				
Approach Delay, s/veh		2.5			8.5			55.6				
Approach LOS		A			A			E				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		20.6		99.4			11.2	88.1				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		28.5		82.5			24.5	53.5				
Max Q Clear Time (g_c+I1), s		14.8		2.0			6.2	15.5				
Green Ext Time (p_c), s		1.3		1.7			0.5	7.2				

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	327	202	415	278	0	0	0	0	127	4	142
Future Volume (veh/h)	0	327	202	415	278	0	0	0	0	127	4	142
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1885	1870	1870	1885	0				1707	1900	1648
Adj Flow Rate, veh/h	0	344	0	437	293	0				134	12	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	1	2	2	1	0				13	0	17
Cap, veh/h	0	2449		918	2954	0				167	15	
Arrive On Green	0.00	0.68	0.00	0.17	1.00	0.00				0.10	0.10	0.00
Sat Flow, veh/h	0	3676	1585	1781	3676	0				1667	149	1397
Grp Volume(v), veh/h	0	344	0	437	293	0				146	0	0
Grp Sat Flow(s),veh/h/ln	0	1791	1585	1781	1791	0				1817	0	1397
Q Serve(g_s), s	0.0	4.0	0.0	9.0	0.0	0.0				9.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	4.0	0.0	9.0	0.0	0.0				9.4	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.92		1.00
Lane Grp Cap(c), veh/h	0	2449		918	2954	0				182	0	
V/C Ratio(X)	0.00	0.14		0.48	0.10	0.00				0.80	0.00	
Avail Cap(c_a), veh/h	0	2449		1409	2954	0				447	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.89	0.89	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.6	0.0	3.2	0.0	0.0				52.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.3	0.1	0.0				8.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.0	1.8	0.0	0.0				4.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.8	0.0	3.5	0.1	0.0				60.8	0.0	0.0
LnGrp LOS	A	A		A	A	A				E	A	
Approach Vol, veh/h		344			730						146	
Approach Delay, s/veh		6.8			2.1						60.8	
Approach LOS		A			A						E	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		16.9	86.6		16.5		103.5					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		45.5	31.5		29.5		81.5					
Max Q Clear Time (g_c+I1), s		11.0	6.0		11.4		2.0					
Green Ext Time (p_c), s		1.4	2.2		0.7		2.0					

Intersection Summary	
HCM 6th Ctrl Delay	10.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	212	8	8	234	273	146
Future Volume (veh/h)	212	8	8	234	273	146
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1900	1885
Adj Flow Rate, veh/h	223	8	8	246	287	154
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	3	0	1
Cap, veh/h	258	231	851	2755	2099	929
Arrive On Green	0.14	0.14	0.32	1.00	0.19	0.19
Sat Flow, veh/h	1795	1610	1810	3618	3705	1598
Grp Volume(v), veh/h	223	8	8	246	287	154
Grp Sat Flow(s),veh/h/ln	1795	1610	1810	1763	1805	1598
Q Serve(g_s), s	14.6	0.5	0.1	0.0	7.9	9.7
Cycle Q Clear(g_c), s	14.6	0.5	0.1	0.0	7.9	9.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	258	231	851	2755	2099	929
V/C Ratio(X)	0.86	0.03	0.01	0.09	0.14	0.17
Avail Cap(c_a), veh/h	726	651	851	2755	2099	929
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	44.2	3.1	0.0	23.5	24.2
Incr Delay (d2), s/veh	8.5	0.1	0.0	0.1	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	0.5	0.0	0.0	3.6	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.7	44.3	3.1	0.1	23.6	24.6
LnGrp LOS	E	D	A	A	C	C
Approach Vol, veh/h	231			254	441	
Approach Delay, s/veh	58.2			0.2	24.0	
Approach LOS	E			A	C	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	98.3		21.7	24.0	74.3
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	62.5		48.5	19.5	38.5
Max Q Clear Time (g_c+I1), s	2.0		16.6	2.1	11.7
Green Ext Time (p_c), s	1.9		0.7	0.0	2.3

Intersection Summary		
HCM 6th Ctrl Delay		26.0
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	138	4	57	150	11	34
Future Vol, veh/h	138	4	57	150	11	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	3	4	5	4
Mvmt Flow	145	4	60	158	12	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	199	139	0	0	218	0
Stage 1	139	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.45	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	783	915	-	-	1334	-
Stage 1	880	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	776	915	-	-	1334	-
Mov Cap-2 Maneuver	776	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	779	1334	-
HCM Lane V/C Ratio	-	-	0.192	0.009	-
HCM Control Delay (s)	-	-	10.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	0	0	419	0	81
Future Vol, veh/h	446	0	0	419	0	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	9
Mvmt Flow	469	0	0	441	0	85

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	235
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.08
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.39
Pot Cap-1 Maneuver	-	0	0	-	0	746
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	746
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	746	-	-
HCM Lane V/C Ratio	0.114	-	-
HCM Control Delay (s)	10.4	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	136	107	0	157	124
Future Volume (veh/h)	0	136	107	0	157	124
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1767	1767	1870	1767	1767
Adj Flow Rate, veh/h	0	143	113	0	165	131
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	9	9	2	9	9
Cap, veh/h	201	169	1243	0	232	1435
Arrive On Green	0.00	0.11	0.70	0.00	0.02	0.27
Sat Flow, veh/h	1781	1497	1767	0	3264	1767
Grp Volume(v), veh/h	0	143	113	0	165	131
Grp Sat Flow(s),veh/h/ln	1781	1497	1767	0	1632	1767
Q Serve(g_s), s	0.0	11.2	2.4	0.0	6.0	6.7
Cycle Q Clear(g_c), s	0.0	11.2	2.4	0.0	6.0	6.7
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	201	169	1243	0	232	1435
V/C Ratio(X)	0.00	0.85	0.09	0.00	0.71	0.09
Avail Cap(c_a), veh/h	497	418	1243	0	830	1435
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.98	0.98
Uniform Delay (d), s/veh	0.0	52.2	5.6	0.0	57.4	10.7
Incr Delay (d2), s/veh	0.0	11.0	0.1	0.0	3.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.8	0.9	0.0	2.7	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	63.2	5.8	0.0	61.3	10.8
LnGrp LOS	A	E	A	A	E	B
Approach Vol, veh/h	143		113			296
Approach Delay, s/veh	63.2		5.8			39.0
Approach LOS	E		A			D

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.0	88.9			102.0	18.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	30.5	42.5			77.5	33.5
Max Q Clear Time (g_c+I1), s	8.0	4.4			8.7	13.2
Green Ext Time (p_c), s	0.5	0.7			0.9	0.4

Intersection Summary		
HCM 6th Ctrl Delay		38.4
HCM 6th LOS		D

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	54	53	3	102	21
Future Vol, veh/h	1	54	53	3	102	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	270	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	3	9	9	0
Mvmt Flow	1	57	56	3	107	22

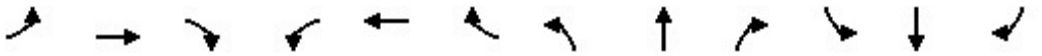
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	294	58	0	0	59	0
Stage 1	58	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	682	989	-	-	1501	-
Stage 1	947	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	634	989	-	-	1501	-
Mov Cap-2 Maneuver	634	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	6.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	979	1501	-
HCM Lane V/C Ratio	-	-	0.059	0.072	-
HCM Control Delay (s)	-	-	8.9	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Build 2045 Weekday PM
1: I-25 Northboun Off Ramp & County Line Rd

02/02/2025

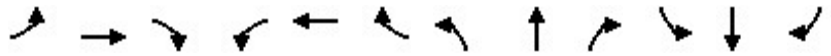


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	416	0	0	309	173	235	2	291	0	0	0
Future Volume (veh/h)	205	416	0	0	309	173	235	2	291	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1796	1885	0	0	1885	1826	1900	1900	1885			
Adj Flow Rate, veh/h	216	438	0	0	319	178	247	2	306			
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95			
Percent Heavy Veh, %	7	1	0	0	1	5	0	0	1			
Cap, veh/h	635	1324	0	0	1329	725	403	2	356			
Arrive On Green	0.14	1.00	0.00	0.00	0.59	0.59	0.22	0.22	0.22			
Sat Flow, veh/h	1711	1885	0	0	2331	1220	1810	10	1601			
Grp Volume(v), veh/h	216	438	0	0	254	243	247	0	308			
Grp Sat Flow(s),veh/h/ln	1711	1885	0	0	1791	1666	1810	0	1612			
Q Serve(g_s), s	6.0	0.0	0.0	0.0	8.0	8.3	14.7	0.0	22.0			
Cycle Q Clear(g_c), s	6.0	0.0	0.0	0.0	8.0	8.3	14.7	0.0	22.0			
Prop In Lane	1.00		0.00	0.00		0.73	1.00		0.99			
Lane Grp Cap(c), veh/h	635	1324	0	0	1064	990	403	0	359			
V/C Ratio(X)	0.34	0.33	0.00	0.00	0.24	0.25	0.61	0.00	0.86			
Avail Cap(c_a), veh/h	892	1324	0	0	1064	990	641	0	571			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	7.0	0.0	0.0	0.0	11.5	11.6	42.0	0.0	44.8			
Incr Delay (d2), s/veh	0.3	0.7	0.0	0.0	0.5	0.6	1.5	0.0	7.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	0.2	0.0	0.0	3.2	3.1	6.8	0.0	9.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.7	0.0	0.0	12.0	12.2	43.5	0.0	52.4			
LnGrp LOS	A	A	A	A	B	B	D	A	D			
Approach Vol, veh/h		654			497			555				
Approach Delay, s/veh		2.9			12.1			48.5				
Approach LOS		A			B			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		31.2		88.8			13.0	75.8				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		42.5		68.5			26.5	37.5				
Max Q Clear Time (g_c+I1), s		24.0		2.0			8.0	10.3				
Green Ext Time (p_c), s		2.7		3.0			0.6	3.1				

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	298	254	182	429	0	0	0	0	350	4	212
Future Volume (veh/h)	0	298	254	182	429	0	0	0	0	350	4	212
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1900	1870	1885	0				1885	1900	1900
Adj Flow Rate, veh/h	0	314	0	192	452	0				368	4	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	5	0	2	1	0				1	0	0
Cap, veh/h	0	1236		523	1716	0				798	9	
Arrive On Green	0.00	0.36	0.00	0.11	0.64	0.00				0.45	0.45	0.00
Sat Flow, veh/h	0	3561	1610	1781	3676	0				1791	19	1610
Grp Volume(v), veh/h	0	314	0	192	452	0				372	0	0
Grp Sat Flow(s),veh/h/ln	0	1735	1610	1781	1791	0				1810	0	1610
Q Serve(g_s), s	0.0	7.7	0.0	7.9	6.6	0.0				17.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	7.7	0.0	7.9	6.6	0.0				17.2	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	1236		523	1716	0				807	0	
V/C Ratio(X)	0.00	0.25		0.37	0.26	0.00				0.46	0.00	
Avail Cap(c_a), veh/h	0	1236		646	1716	0				807	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.93	0.93	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.3	0.0	19.6	12.5	0.0				23.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.4	0.3	0.0				1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	0.0	3.2	2.5	0.0				7.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.8	0.0	20.0	12.9	0.0				25.1	0.0	0.0
LnGrp LOS	A	C		C	B	A				C	A	
Approach Vol, veh/h		314			644						372	
Approach Delay, s/veh		27.8			15.0						25.1	
Approach LOS		C			B						C	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		14.7	47.3		58.0		62.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		18.5	34.5		53.5		57.5					
Max Q Clear Time (g_c+I1), s		9.9	9.7		19.2		8.6					
Green Ext Time (p_c), s		0.3	2.0		2.6		3.2					

Intersection Summary	
HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	173	10	32	276	347	288
Future Volume (veh/h)	173	10	32	276	347	288
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1885	1900	1796
Adj Flow Rate, veh/h	182	11	34	291	365	303
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	1	0	7
Cap, veh/h	215	194	761	2881	2181	920
Arrive On Green	0.12	0.12	0.32	1.00	0.20	0.20
Sat Flow, veh/h	1781	1610	1810	3676	3705	1522
Grp Volume(v), veh/h	182	11	34	291	365	303
Grp Sat Flow(s),veh/h/ln	1781	1610	1810	1791	1805	1522
Q Serve(g_s), s	12.0	0.7	0.4	0.0	10.0	20.5
Cycle Q Clear(g_c), s	12.0	0.7	0.4	0.0	10.0	20.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	215	194	761	2881	2181	920
V/C Ratio(X)	0.85	0.06	0.04	0.10	0.17	0.33
Avail Cap(c_a), veh/h	527	476	761	2881	2181	920
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	51.7	46.7	2.8	0.0	23.0	27.2
Incr Delay (d2), s/veh	8.8	0.1	0.1	0.1	0.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.7	0.1	0.0	4.7	8.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.5	46.8	2.9	0.1	23.2	28.2
LnGrp LOS	E	D	A	A	C	C
Approach Vol, veh/h	193			325	668	
Approach Delay, s/veh	59.7			0.4	25.4	
Approach LOS	E			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		101.0		19.0	24.0	77.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		75.5		35.5	19.5	51.5
Max Q Clear Time (g_c+I1), s		2.0		14.0	2.4	22.5
Green Ext Time (p_c), s		2.0		0.5	0.0	3.6

Intersection Summary		
HCM 6th Ctrl Delay		24.2
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	7.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	310	13	63	131	18	88
Future Vol, veh/h	310	13	63	131	18	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	14	1	0	0
Mvmt Flow	326	14	66	138	19	93

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	266	135	0	0	204	0
Stage 1	135	-	-	-	-	-
Stage 2	131	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	727	919	-	-	1380	-
Stage 1	896	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	716	919	-	-	1380	-
Mov Cap-2 Maneuver	716	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	887	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	722	1380	-
HCM Lane V/C Ratio	-	-	0.471	0.014	-
HCM Control Delay (s)	-	-	14.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2.5	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	449	0	0	634	0	101
Future Vol, veh/h	449	0	0	634	0	101
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	1	2	2
Mvmt Flow	473	0	0	667	0	106

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	237
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	764
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	764
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	764	-	-
HCM Lane V/C Ratio	0.139	-	-
HCM Control Delay (s)	10.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.5	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	169	139	0	194	162
Future Volume (veh/h)	0	169	139	0	194	162
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	178	146	0	204	171
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	233	207	1268	0	272	1486
Arrive On Green	0.00	0.13	0.68	0.00	0.13	1.00
Sat Flow, veh/h	1781	1585	1870	0	3456	1870
Grp Volume(v), veh/h	0	178	146	0	204	171
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1728	1870
Q Serve(g_s), s	0.0	13.2	3.3	0.0	6.8	0.0
Cycle Q Clear(g_c), s	0.0	13.2	3.3	0.0	6.8	0.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	233	207	1268	0	272	1486
V/C Ratio(X)	0.00	0.86	0.12	0.00	0.75	0.12
Avail Cap(c_a), veh/h	527	469	1268	0	878	1486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.98	0.98
Uniform Delay (d), s/veh	0.0	51.1	6.7	0.0	51.0	0.0
Incr Delay (d2), s/veh	0.0	9.9	0.2	0.0	4.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.8	1.3	0.0	3.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	61.0	6.9	0.0	55.0	0.2
LnGrp LOS	A	E	A	A	D	A
Approach Vol, veh/h	178		146			375
Approach Delay, s/veh	61.0		6.9			30.0
Approach LOS	E		A			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	14.0	85.9			99.8	20.2
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	30.5	40.5			75.5	35.5
Max Q Clear Time (g_c+I1), s	8.8	5.3			2.0	15.2
Green Ext Time (p_c), s	0.6	0.8			1.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	67	73	3	126	36
Future Vol, veh/h	1	67	73	3	126	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	270	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	71	77	3	133	38

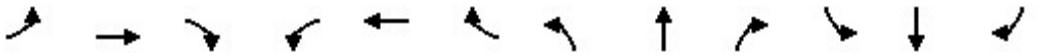
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	383	79	0	0	80	0
Stage 1	79	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	620	981	-	-	1518	-
Stage 1	944	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	565	981	-	-	1518	-
Mov Cap-2 Maneuver	565	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	682	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	5.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	970	1518	-
HCM Lane V/C Ratio	-	-	0.074	0.087	-
HCM Control Delay (s)	-	-	9	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-

Build 2045 Weekend Midday
1: I-25 Northboun Off Ramp & County Line Rd

02/02/2025



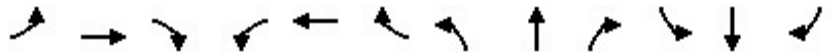
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	258	0	0	245	203	456	2	153	0	0	0
Future Volume (veh/h)	144	258	0	0	245	203	456	2	153	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1885	0	0	1885	1870	1900	1411	1900			
Adj Flow Rate, veh/h	152	272	0	0	258	214	322	224	161			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	4	1	0	0	1	2	0	33	0			
Cap, veh/h	547	1132	0	0	951	761	587	248	178			
Arrive On Green	0.12	1.00	0.00	0.00	0.50	0.50	0.32	0.32	0.32			
Sat Flow, veh/h	1753	1885	0	0	1986	1512	1810	763	549			
Grp Volume(v), veh/h	152	272	0	0	244	228	322	0	385			
Grp Sat Flow(s),veh/h/ln	1753	1885	0	0	1791	1613	1810	0	1312			
Q Serve(g_s), s	5.0	0.0	0.0	0.0	9.4	9.8	17.5	0.0	33.7			
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.0	9.4	9.8	17.5	0.0	33.7			
Prop In Lane	1.00		0.00	0.00		0.94	1.00		0.42			
Lane Grp Cap(c), veh/h	547	1132	0	0	901	811	587	0	426			
V/C Ratio(X)	0.28	0.24	0.00	0.00	0.27	0.28	0.55	0.00	0.90			
Avail Cap(c_a), veh/h	741	1132	0	0	901	811	777	0	563			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.99	0.99	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.5	0.0	0.0	0.0	17.2	17.3	33.3	0.0	38.8			
Incr Delay (d2), s/veh	0.3	0.5	0.0	0.0	0.7	0.9	0.8	0.0	14.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	0.2	0.0	0.0	4.0	3.8	7.8	0.0	12.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	0.5	0.0	0.0	17.9	18.1	34.1	0.0	53.7			
LnGrp LOS	B	A	A	A	B	B	C	A	D			
Approach Vol, veh/h		424			472			707				
Approach Delay, s/veh		4.6			18.0			44.8				
Approach LOS		A			B			D				

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		43.4		76.6			11.7	64.9				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		51.5		59.5			20.5	34.5				
Max Q Clear Time (g_c+I1), s		35.7		2.0			7.0	11.8				
Green Ext Time (p_c), s		3.3		1.7			0.3	2.8				

Intersection Summary												
HCM 6th Ctrl Delay			26.3									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	206	157	184	523	0	0	0	0	205	10	391
Future Volume (veh/h)	0	206	157	184	523	0	0	0	0	205	10	391
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1900	1900	1856	1885	0				1885	1900	1900
Adj Flow Rate, veh/h	0	217	0	194	551	0				216	150	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	3	1	0				1	0	0
Cap, veh/h	0	1274		577	1716	0				486	337	
Arrive On Green	0.00	0.35	0.00	0.18	0.96	0.00				0.45	0.45	0.00
Sat Flow, veh/h	0	3705	1610	1767	3676	0				1089	756	1610
Grp Volume(v), veh/h	0	217	0	194	551	0				366	0	0
Grp Sat Flow(s),veh/h/ln	0	1805	1610	1767	1791	0				1846	0	1610
Q Serve(g_s), s	0.0	5.0	0.0	8.3	1.1	0.0				16.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	5.0	0.0	8.3	1.1	0.0				16.5	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.59		1.00
Lane Grp Cap(c), veh/h	0	1274		577	1716	0				823	0	
V/C Ratio(X)	0.00	0.17		0.34	0.32	0.00				0.44	0.00	
Avail Cap(c_a), veh/h	0	1274		766	1716	0				823	0	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.89	0.89	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	26.7	0.0	18.1	1.3	0.0				23.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.3	0.4	0.0				1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.2	0.0	2.9	0.4	0.0				7.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.0	0.0	18.4	1.8	0.0				24.7	0.0	0.0
LnGrp LOS	A	C		B	A	A				C	A	
Approach Vol, veh/h		217			745						366	
Approach Delay, s/veh		27.0			6.1						24.7	
Approach LOS		C			A						C	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		15.2	46.8		58.0		62.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		23.5	29.5		53.5		57.5					
Max Q Clear Time (g_c+I1), s		10.3	7.0		18.5		3.1					
Green Ext Time (p_c), s		0.4	1.2		2.5		4.1					

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	29	6	170	764	148
Future Volume (veh/h)	121	29	6	170	764	148
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	127	31	6	179	804	156
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	160	142	610	3021	2329	1031
Arrive On Green	0.09	0.09	0.05	0.28	0.21	0.21
Sat Flow, veh/h	1810	1610	1810	3705	3705	1598
Grp Volume(v), veh/h	127	31	6	179	804	156
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1805	1805	1598
Q Serve(g_s), s	8.3	2.1	0.1	4.4	22.7	9.5
Cycle Q Clear(g_c), s	8.3	2.1	0.1	4.4	22.7	9.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	160	142	610	3021	2329	1031
V/C Ratio(X)	0.80	0.22	0.01	0.06	0.35	0.15
Avail Cap(c_a), veh/h	430	382	610	3021	2329	1031
HCM Platoon Ratio	1.00	1.00	0.33	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	50.9	5.2	8.7	25.7	20.5
Incr Delay (d2), s/veh	8.7	0.8	0.0	0.0	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	2.0	0.0	1.2	11.1	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	62.4	51.6	5.2	8.7	26.1	20.8
LnGrp LOS	E	D	A	A	C	C
Approach Vol, veh/h	158			185	960	
Approach Delay, s/veh	60.3			8.6	25.2	
Approach LOS	E			A	C	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	104.9		15.1	23.0	81.9
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	82.5		28.5	18.5	59.5
Max Q Clear Time (g_c+I1), s	6.4		10.3	2.1	24.7
Green Ext Time (p_c), s	1.2		0.4	0.0	6.9

Intersection Summary		
HCM 6th Ctrl Delay		27.1
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	117	79	127	13	77
Future Vol, veh/h	28	117	79	127	13	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Stop
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	0	0
Mvmt Flow	29	123	83	134	14	81

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	259	150	0	0	217	0
Stage 1	150	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.4	6.24	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	734	891	-	-	1365	-
Stage 1	883	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	726	891	-	-	1365	-
Mov Cap-2 Maneuver	726	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	911	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	854	1365	-
HCM Lane V/C Ratio	-	-	0.179	0.01	-
HCM Control Delay (s)	-	-	10.1	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	291	0	0	912	0	61
Future Vol, veh/h	291	0	0	912	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	306	0	0	960	0	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	153
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	-	0	0	-	0	869
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	869
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	869	-	-
HCM Lane V/C Ratio	0.074	-	-
HCM Control Delay (s)	9.5	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	102	73	0	458	322
Future Volume (veh/h)	0	102	73	0	458	322
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	0	107	77	0	482	339
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	147	131	1211	0	567	1589
Arrive On Green	0.00	0.08	0.64	0.00	0.27	1.00
Sat Flow, veh/h	1795	1598	1885	0	3483	1885
Grp Volume(v), veh/h	0	107	77	0	482	339
Grp Sat Flow(s),veh/h/ln	1795	1598	1885	0	1742	1885
Q Serve(g_s), s	0.0	7.9	1.8	0.0	15.7	0.0
Cycle Q Clear(g_c), s	0.0	7.9	1.8	0.0	15.7	0.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	147	131	1211	0	567	1589
V/C Ratio(X)	0.00	0.82	0.06	0.00	0.85	0.21
Avail Cap(c_a), veh/h	367	326	1211	0	1437	1589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.90	0.90
Uniform Delay (d), s/veh	0.0	54.2	8.0	0.0	42.3	0.0
Incr Delay (d2), s/veh	0.0	11.5	0.1	0.0	3.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	0.8	0.0	6.4	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	65.7	8.1	0.0	45.6	0.3
LnGrp LOS	A	E	A	A	D	A
Approach Vol, veh/h	107		77			821
Approach Delay, s/veh	65.7		8.1			26.9
Approach LOS	E		A			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	24.0	81.6			105.6	14.4
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	49.5	32.5			86.5	24.5
Max Q Clear Time (g_c+I1), s	17.7	3.8			2.0	9.9
Green Ext Time (p_c), s	1.8	0.4			2.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	40	28	8	298	34
Future Vol, veh/h	1	40	28	8	298	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	270	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	42	29	8	314	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	697	33	0	0	37	0
Stage 1	33	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	409	1043	-	-	1580	-
Stage 1	992	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	328	1043	-	-	1580	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	7
HCM LOS	A		

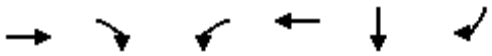
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	990	1580	-
HCM Lane V/C Ratio	-	-	0.044	0.199	-
HCM Control Delay (s)	-	-	8.8	7.8	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.7	-

2028 Build AM
1: I-25 Northboun Off Ramp & County Line Rd

02/05/2025

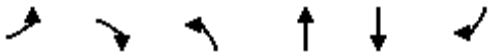
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	206	218	704	161	148
v/c Ratio	0.38	0.15	0.31	0.68	0.48
Control Delay	7.0	4.2	7.1	62.6	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	4.2	7.1	62.6	20.7
Queue Length 50th (ft)	49	51	75	126	32
Queue Length 95th (ft)	72	75	136	182	85
Internal Link Dist (ft)		322	595		875
Turn Bay Length (ft)	275			300	
Base Capacity (vph)	707	1432	2276	413	458
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.15	0.31	0.39	0.32

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	319	212	348	276	141	130
v/c Ratio	0.14	0.19	0.41	0.10	0.68	0.45
Control Delay	6.9	1.1	4.6	2.4	61.6	12.6
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	6.9	1.1	4.8	2.4	61.6	12.6
Queue Length 50th (ft)	30	0	74	28	102	0
Queue Length 95th (ft)	59	0	80	17	154	48
Internal Link Dist (ft)	460			322	922	
Turn Bay Length (ft)		300	275			
Base Capacity (vph)	2338	1108	1045	2831	397	440
Starvation Cap Reductn	0	0	150	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.19	0.39	0.10	0.36	0.30

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	176	9	9	256	314	121
v/c Ratio	0.68	0.04	0.01	0.09	0.26	0.20
Control Delay	61.6	21.2	4.1	3.6	24.9	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	21.2	4.1	3.6	24.9	3.4
Queue Length 50th (ft)	131	0	1	20	84	6
Queue Length 95th (ft)	184	14	6	36	111	15
Internal Link Dist (ft)	594			508	298	
Turn Bay Length (ft)	270		270			310
Base Capacity (vph)	692	631	1060	2734	1218	619
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.01	0.01	0.09	0.26	0.20

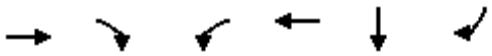
Intersection Summary

Lane Group	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	148	99	171	127
v/c Ratio	0.16	0.08	0.54	0.08
Control Delay	0.4	4.7	95.6	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.4	4.7	95.6	0.1
Queue Length 50th (ft)	0	18	73	0
Queue Length 95th (ft)	0	37	111	0
Internal Link Dist (ft)		570		508
Turn Bay Length (ft)			200	
Base Capacity (vph)	1067	1296	843	1532
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.08	0.20	0.08

Intersection Summary

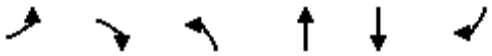
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	212	332	357	216	261
v/c Ratio	0.29	0.24	0.17	0.71	0.56
Control Delay	9.6	9.0	8.3	58.5	11.8
Queue Delay	0.0	0.5	0.0	0.0	0.0
Total Delay	9.6	9.5	8.3	58.5	11.8
Queue Length 50th (ft)	74	118	41	167	16
Queue Length 95th (ft)	117	174	82	229	84
Internal Link Dist (ft)		322	595		875
Turn Bay Length (ft)	275			300	
Base Capacity (vph)	869	1405	2116	621	707
Starvation Cap Reductn	0	667	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.45	0.17	0.35	0.37

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	305	266	153	413	321	205
v/c Ratio	0.24	0.35	0.29	0.23	0.45	0.27
Control Delay	30.1	9.0	23.5	23.3	27.0	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	9.0	23.5	23.3	27.0	3.8
Queue Length 50th (ft)	80	0	87	128	181	0
Queue Length 95th (ft)	122	59	106	127	248	38
Internal Link Dist (ft)	460			322	922	
Turn Bay Length (ft)		300	275			
Base Capacity (vph)	1283	769	571	1801	713	764
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.35	0.27	0.23	0.45	0.27

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	144	12	29	307	396	239
v/c Ratio	0.65	0.06	0.03	0.11	0.26	0.30
Control Delay	62.7	20.5	5.5	5.2	23.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	20.5	5.5	5.2	23.3	6.4
Queue Length 50th (ft)	108	0	6	36	85	0
Queue Length 95th (ft)	158	16	17	57	127	42
Internal Link Dist (ft)	594			508	298	
Turn Bay Length (ft)	270		270			310
Base Capacity (vph)	508	472	984	2855	1549	784
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.03	0.03	0.11	0.26	0.30

Intersection Summary

Lane Group	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	184	128	211	165
v/c Ratio	0.21	0.09	0.58	0.10
Control Delay	0.5	5.0	48.9	5.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.5	5.0	48.9	5.5
Queue Length 50th (ft)	0	25	87	71
Queue Length 95th (ft)	0	48	127	131
Internal Link Dist (ft)		570		508
Turn Bay Length (ft)			200	
Base Capacity (vph)	1068	1370	872	1637
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.09	0.24	0.10

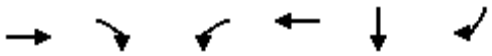
Intersection Summary

2028 Build Weekend Midday
1: I-25 Northboun Off Ramp & County Line Rd

02/05/2025

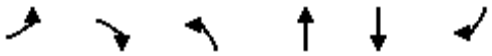
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	143	206	382	326	305
v/c Ratio	0.22	0.16	0.20	0.76	0.69
Control Delay	11.5	10.7	8.7	52.2	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	10.7	8.7	52.2	42.5
Queue Length 50th (ft)	43	63	38	247	197
Queue Length 95th (ft)	80	108	75	294	246
Internal Link Dist (ft)		322	595		875
Turn Bay Length (ft)	275			300	
Base Capacity (vph)	727	1267	1929	778	767
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.16	0.20	0.42	0.40

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	201	160	147	531	310	290
v/c Ratio	0.17	0.25	0.27	0.32	0.40	0.35
Control Delay	24.7	4.0	32.4	34.8	19.8	5.2
Queue Delay	0.0	0.0	0.0	0.8	0.0	0.0
Total Delay	24.7	4.0	32.4	35.6	19.8	5.2
Queue Length 50th (ft)	43	0	101	203	137	20
Queue Length 95th (ft)	72	23	148	226	211	71
Internal Link Dist (ft)	460			322	922	
Turn Bay Length (ft)		300	275			
Base Capacity (vph)	1189	639	585	1652	778	840
Starvation Cap Reductn	0	0	0	779	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.25	0.25	0.61	0.40	0.35

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	95	32	7	188	858	115
v/c Ratio	0.54	0.17	0.01	0.06	0.46	0.13
Control Delay	62.4	17.5	1.7	1.4	31.8	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	17.5	1.7	1.4	31.8	13.3
Queue Length 50th (ft)	71	0	1	6	287	29
Queue Length 95th (ft)	116	27	2	12	323	64
Internal Link Dist (ft)	594			508	298	
Turn Bay Length (ft)	270		270			310
Base Capacity (vph)	383	368	735	2988	1880	887
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.09	0.01	0.06	0.46	0.13

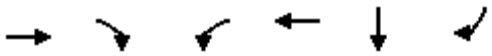
Intersection Summary

Lane Group	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	111	68	498	350
v/c Ratio	0.11	0.06	0.75	0.21
Control Delay	0.2	8.8	36.3	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.2	8.8	36.3	3.0
Queue Length 50th (ft)	0	18	203	51
Queue Length 95th (ft)	0	40	256	128
Internal Link Dist (ft)		570		508
Turn Bay Length (ft)			200	
Base Capacity (vph)	1101	1221	1487	1653
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.06	0.33	0.21

Intersection Summary

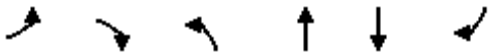
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	205	272	923	180	162
v/c Ratio	0.47	0.19	0.41	0.70	0.47
Control Delay	11.9	4.9	8.9	62.5	15.0
Queue Delay	0.0	0.6	0.0	0.0	0.0
Total Delay	11.9	5.5	8.9	62.5	15.0
Queue Length 50th (ft)	55	74	121	141	18
Queue Length 95th (ft)	124	107	214	209	80
Internal Link Dist (ft)		322	595		875
Turn Bay Length (ft)	275			300	
Base Capacity (vph)	582	1411	2240	399	465
Starvation Cap Reductn	0	782	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.43	0.41	0.45	0.35

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	344	213	437	293	153	134
v/c Ratio	0.15	0.20	0.52	0.10	0.70	0.44
Control Delay	8.7	2.3	5.7	2.2	63.7	11.7
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	8.7	2.3	5.7	2.2	63.7	11.7
Queue Length 50th (ft)	30	0	112	25	116	0
Queue Length 95th (ft)	79	0	91	14	183	55
Internal Link Dist (ft)	460			322	922	
Turn Bay Length (ft)		300	275			
Base Capacity (vph)	2222	1064	1053	2794	373	423
Starvation Cap Reductn	0	0	55	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.20	0.44	0.10	0.41	0.32

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	223	8	8	246	287	154
v/c Ratio	0.73	0.03	0.01	0.09	0.25	0.25
Control Delay	60.1	19.9	5.2	4.6	25.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.1	19.9	5.2	4.6	25.7	3.2
Queue Length 50th (ft)	165	0	1	23	75	8
Queue Length 95th (ft)	235	13	7	44	107	17
Internal Link Dist (ft)	594			508	298	
Turn Bay Length (ft)	270		270			310
Base Capacity (vph)	722	657	1036	2638	1158	617
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.01	0.01	0.09	0.25	0.25

Intersection Summary

Lane Group	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	143	113	165	131
v/c Ratio	0.16	0.09	0.54	0.09
Control Delay	0.4	4.7	93.3	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.4	4.7	93.3	0.2
Queue Length 50th (ft)	0	21	70	0
Queue Length 95th (ft)	0	41	108	2
Internal Link Dist (ft)		570		508
Turn Bay Length (ft)			200	
Base Capacity (vph)	1047	1299	816	1532
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.09	0.20	0.09

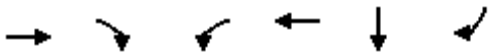
Intersection Summary

2045 Build PM
1: I-25 Northboun Off Ramp & County Line Rd

02/05/2025

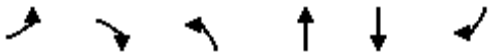
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	216	438	497	222	333
v/c Ratio	0.34	0.31	0.24	0.71	0.63
Control Delay	10.6	10.7	9.8	57.4	11.6
Queue Delay	0.0	0.6	0.0	0.0	0.0
Total Delay	10.6	11.3	9.8	57.4	11.6
Queue Length 50th (ft)	80	174	66	171	18
Queue Length 95th (ft)	128	249	125	238	102
Internal Link Dist (ft)		322	595		875
Turn Bay Length (ft)	275			300	
Base Capacity (vph)	763	1394	2091	607	741
Starvation Cap Reductn	0	583	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.54	0.24	0.37	0.45

Intersection Summary



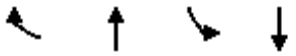
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	314	267	192	452	394	201
v/c Ratio	0.28	0.37	0.38	0.26	0.52	0.25
Control Delay	35.4	11.1	24.7	23.6	26.9	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	11.1	24.7	23.6	26.9	3.5
Queue Length 50th (ft)	88	0	113	141	225	0
Queue Length 95th (ft)	142	85	124	132	326	45
Internal Link Dist (ft)	460			322	922	
Turn Bay Length (ft)		300	275			
Base Capacity (vph)	1140	714	550	1712	756	795
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.37	0.35	0.26	0.52	0.25

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	182	11	34	291	365	303
v/c Ratio	0.70	0.04	0.04	0.10	0.24	0.37
Control Delay	62.1	19.8	7.0	6.5	33.9	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	19.8	7.0	6.5	33.9	15.8
Queue Length 50th (ft)	136	0	8	40	104	71
Queue Length 95th (ft)	202	16	23	67	152	124
Internal Link Dist (ft)	594			508	298	
Turn Bay Length (ft)	270		270			310
Base Capacity (vph)	523	485	964	2777	1549	820
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.02	0.04	0.10	0.24	0.37

Intersection Summary



Lane Group	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	178	146	204	171
v/c Ratio	0.21	0.11	0.57	0.10
Control Delay	0.5	5.0	38.6	7.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.5	5.0	38.6	7.1
Queue Length 50th (ft)	0	28	84	95
Queue Length 95th (ft)	0	53	124	159
Internal Link Dist (ft)		570		508
Turn Bay Length (ft)			200	
Base Capacity (vph)	1049	1373	872	1637
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.11	0.23	0.10

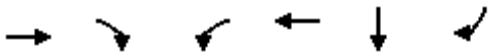
Intersection Summary

2045 Build Weekend Midday
1: I-25 Northboun Off Ramp & County Line Rd

02/05/2025

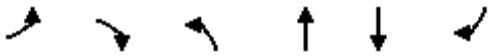
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	152	272	472	331	312
v/c Ratio	0.26	0.22	0.25	0.76	0.68
Control Delay	12.9	12.5	10.2	51.8	39.7
Queue Delay	0.0	0.4	0.0	0.0	0.0
Total Delay	12.9	12.9	10.2	51.8	39.7
Queue Length 50th (ft)	53	97	56	249	189
Queue Length 95th (ft)	89	147	113	320	261
Internal Link Dist (ft)		322	595		875
Turn Bay Length (ft)	275			300	
Base Capacity (vph)	682	1259	1910	736	728
Starvation Cap Reductn	0	590	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.41	0.25	0.45	0.43

Intersection Summary



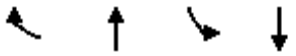
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	217	165	194	551	330	309
v/c Ratio	0.18	0.26	0.35	0.32	0.44	0.38
Control Delay	23.8	4.7	30.2	30.9	23.3	6.5
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	23.8	4.7	30.2	31.6	23.3	6.5
Queue Length 50th (ft)	41	0	118	204	167	30
Queue Length 95th (ft)	82	31	173	218	252	92
Internal Link Dist (ft)	460			322	922	
Turn Bay Length (ft)		300	275			
Base Capacity (vph)	1191	643	625	1712	751	819
Starvation Cap Reductn	0	0	0	787	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.26	0.31	0.60	0.44	0.38

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	127	31	6	179	804	156
v/c Ratio	0.61	0.15	0.01	0.06	0.45	0.18
Control Delay	62.6	16.3	1.8	1.5	35.3	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	16.3	1.8	1.5	35.3	15.2
Queue Length 50th (ft)	95	0	0	6	284	45
Queue Length 95th (ft)	153	28	2	13	336	83
Internal Link Dist (ft)	594			508	298	
Turn Bay Length (ft)	270		270			310
Base Capacity (vph)	428	407	749	2924	1789	871
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.08	0.01	0.06	0.45	0.18

Intersection Summary



Lane Group	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	107	77	482	339
v/c Ratio	0.11	0.06	0.74	0.21
Control Delay	0.2	8.5	34.6	3.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.2	8.5	34.6	3.9
Queue Length 50th (ft)	0	20	197	71
Queue Length 95th (ft)	0	43	250	150
Internal Link Dist (ft)		570		508
Turn Bay Length (ft)			200	
Base Capacity (vph)	1089	1230	1430	1653
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.06	0.34	0.21

Intersection Summary

Economic & Planning Systems, Inc.
The Economics of Land Use

BUC-EE'S TRAVEL CENTER FISCAL IMPACT ANALYSIS

FINAL REPORT

Prepared for:
Town of Palmer Lake

Prepared by:
Economic & Planning Systems, Inc.

April 24, 2025

EPS #243128

Table of Contents

1. Introduction and Summary of Findings 1

Background 1
Scope of Work 1
Summary of Findings 2

2. Existing Conditions 5

Demographics 5
2025 Town Budget 8
Water Fund Revenue and Expenditures 12

3. Buc-ee's Fiscal Impact 15

Proposed Development 15
Sales Tax Estimate 16
Use Tax Estimate 17
Property Tax Estimate 17
Water Revenues 21
Expenditures 21

4. Annual Budget Summary 29

Projected Net Impact 29
Next Steps 33

List of Tables

Table 1. Population and Households, 2000-2024 5
Table 2. Revenues, 2025 Budget 8
Table 3. Expenditures, 2025 Budget 9
Table 4. Expenditures by Department, 2025 10
Table 5. Administrative Department Expenditures, 2025 10
Table 6. Police Department Expenditures, 2025 11
Table 7. Fire Department Expenditures, 2025 11
Table 8. Public Works (Roads) Expenditures, 2025 12
Table 9. Water Fund Revenues, 2025 12
Table 10. Water Fund Expenditures, 2025 13
Table 11. Palmer Lake First Year Sales Tax Estimate, 2027 16
Table 12. Use Tax Estimate 17
Table 13. Current Property Value 17
Table 14. Property Tax Revenues 18
Table 15. Property Tax Revenues to Other Entities 20
Table 16. Water Revenues 21
Table 17. Police Department, Buc-ee's Impacts 22
Table 18. Police Department, 2027 Expenditures 22
Table 19. Fire Department, Buc-ee's Impacts 23
Table 20. Fire Department, 2027 Expenditures 23
Table 21. Public Works (Roads), New Costs 25
Table 22. Public Works (Roads), 2027 Expenditures 25
Table 23. Buc-ee's Transportation Costs 26
Table 24. Buc-ee's Water Costs 27
Table 25. Net Increase in Revenues 30
Table 26. Net Increase in Expenditures 31
Table 27. Net Fiscal Impact 32

List of Figures

Figure 1. Population by Age Group, 2010-2024 6
Figure 2. Housing Units and Vacancy Rate, 2000-2024 7
Figure 3. Proposed Buc-ee's Site 15
Figure 4. Property and Sales Tax Revenue 19
Figure 5. Town Revenues and Expenditures 33

1. Introduction and Summary of Findings

This report summarizes the analysis and conclusions of Economic & Planning Systems (EPS) regarding the anticipated fiscal and economic impacts of the proposed Buc-ee's Travel Center annexation and development on the Town of Palmer Lake, Colorado. The report was prepared under a contract between EPS and the Town dated October 22, 2024.

Background

The Town of Palmer Lake is currently reviewing a proposal from Buc-ee's, Ltd. for the annexation and planned development zoning of 41.2 acres of land located at the southwest corner of Interstate 25 (I-25) and County Line Road for the development of a Buc-ee's Travel Center. The proposed annexation would require the Town to complete a flagpole annexation of approximately 1.5 miles of County Line Road from the current town boundary to the subject property.

If annexed, and the required zoning and site plan approvals are received, Buc-ee's is planning to develop 24.9 acres at the site with a highway adjacent travel center including a 74,000 square foot retail convenience store, 120 fueling positions, 12 electric vehicle (EV) charging stations, and 780 parking spaces. Pending approvals, Buc-ee's is hoping to break ground in late summer 2025 with anticipated completion in late 2026.

Buc-ee's is a Texas-based chain of travel centers founded in 1982 in Lake Jackson, Texas. The first store was a modest 3,000 square foot convenience store with a few gas pumps. The chain expanded throughout Texas over the next 20 years and built more expansive retail stores in the early 2000s featuring a wider range of food and merchandise including Texas BBQ and tourist memorabilia, other fresh foods, and is known for its large and clean restrooms. The first travel center outside of Texas was built in Alabama in 2019. The chain now has 50 locations in nine primarily southern states. The first Colorado store was opened in Johnstown in March of 2024 and includes a 74,000 square foot retail store and 116 fuel pumps.

Scope of Work

The Town of Palmer Lake solicited a proposal from EPS to complete a third-party objective evaluation of the economic and fiscal impacts of the proposed development on the Town. The Study will be paid for by Buc-ee's under a cost reimbursement agreement with the Town. The Town selected EPS to complete the Study based on its experience completing similar fiscal impact studies for major commercial developments in other Colorado towns including Timnath, Johnstown, Parker, and Castle Rock.

This fiscal impact analysis includes estimates of annual revenues from property taxes and sales taxes, and the estimated annual expenses expected to be incurred by the Town by providing services to the site and development. It also includes one-time revenues from construction use tax and one-time costs associated with extending infrastructure to the site from the existing town limits, which includes the necessary equipment each department will need to acquire as listed in other Town reports.

The analysis and findings are presented in three sections following this Introduction and Summary of Findings as follows:

- **Existing Conditions** – This section summarizes EPS' analysis of existing economic, demographic, and fiscal conditions in the Town of Palmer Lake.
- **Buc-ee's Fiscal Impact** – This section presents estimated revenues and expenses generated by the proposed Buc-ee's Travel Center on the Town's departments required to provide services including Administration, Police, Fire, Public Works (Roads), and Water. It also includes one-time revenues associated with building construction and one-time costs associated with the development of roads and utilities needed to serve the proposed development and purchasing other capital equipment needed to serve the project in the future.
- **Annual Budget Summary** – This section summarizes the estimated annual impacts of the Buc-ee's Travel Center on the Town's budget based on the first full year of operations projected to be in 2027.

Summary of Findings

Below is a summary of initial findings of the fiscal impact analysis for a new Buc-ee's Travel Center in the Town of Palmer Lake.

1. ***Buc-ee's is expected to generate a significant increase in annual sales tax revenues to the Town.***

   Based on data provided by Buc-ee's, Ltd, EPS estimates the proposed Palmer Lake travel center will generate $31.8 million in taxable retail sales in 2027, the first full year of operations (does not include gas sales). At the Town's 3.0 percent sales tax rate, this would generate an estimated $955,087 in sales tax revenues for the Town in 2027. Buc-ee's would increase estimated total sales tax revenues in 2027 from $2.2 million to $3.1 million, which is an increase of 30.7 percent.

2. ***Buc-ee's is estimated to also generate $379,500 in one-time revenues from use taxes paid for by the developer on the project's construction materials.***

   Buc-ee's estimates the total development cost for the project at $63.3 million not including land. Based on average costs, approximately 30 percent of the construction budget is estimated to be for materials that would be subject to use tax at the Town's 3 percent rate resulting in $379,500 paid out over two years of expected construction in 2026 and 2027.

3. ***Buc-ee's is expected to generate an increase in General Fund revenues by 28.7 percent from $5.57 million in 2025 to $7.17 million in 2027, the first full year of operation for the travel center.***

   In addition to annual sales taxes and one-time use tax, Buc-ee's is estimated to generate approximately $229,476 in annual property taxes to the Town in 2027.

4. ***The proposed Buc-ee's project will trigger the need for the Town to increase its level of service for several key functions.***

   The most impacted departments are Police, Fire, Roads, and Water. Based on inputs provided by key department heads, the impact of the proposed project on the annual operating budget of each department was estimated. The Town's General Fund expenditures are estimated to increase by 23.7 percent from $4.23 million in 2025 to $5.23 million in 2027 based on the estimated service level increases and accounting for 2.0 percent annual cost inflation.

5. ***The Buc-ee's annexation and development will require the Town to make approximately $5.9 million in additional one-time capital infrastructure investments.***

   This includes new equipment for the Police, Fire, and Road Departments, water facility upgrades, as well as road and utility improvements to County Line Road from the existing town boundary to the Buc-ee's site 1½ miles to the east.

6. ***Buc-ee's is expected to invest $10.52 million in transportation improvements as part of its site development costs.***

   The transportation improvements include an expansion and reconfiguration of the I-25 and County Line Road interchange ramps, signalization and reconstruction of County Line Road and Beacon Lite Road including turn lanes and signalization.

7. ***Buc-ee's will have a significant impact on the water infrastructure of the Town.***

   The water utility improvements include water taps and a 10,900 foot 12-inch trunk line extension to connect to the Buc-ee's site. Additionally, the Town will need to replace 1,600 feet of water line and construct a new A-3 well and water treatment plant to support the increased water usage throughout the town.

8. ***Buc-ee's is expected to request the Town to provide an economic development incentive as part of the development agreement negotiation.***

   As summarized in the report, Buc-ee's has negotiated a sales tax incentive agreement with many of the cities and towns where it has built its travel centers. The amount of sales tax revenue generated by the project that is shared varies by community based on multiple factors including the amount of up-front capital investment required, projected annual sales, and other

economic and political considerations. The data for 12 centers built between 2016 and 2024 provided by Buc-ee's had an average rebate of 1.1 percent of projected sales tax over 20 years and an annual average of $326,500 in annual payments. The data provided does not include all Buc-ee's travel centers built over that period.

9. ***Any retail sales tax incentive negotiated between the Town and Buc-ee's will reduce the net increase in sales tax revenues to be retained by the Town over the time period of revenue sharing.***

   Many of the communities where Buc-ee's has located have agreed to a sales tax sharing agreement as an economic development incentive. Should the Town of Palmer Lake agree to providing an incentive, the estimated $955,087 in new sales taxes to the Town's annual budget will need to be adjusted.

2. Existing Conditions

The Town of Palmer Lake is located at the north edge of El Paso County, close to the top of Monument Hill. The proposed Buc-ee's site at the intersection of I-25 and County Line Road is approximately 1.5 miles east of the current town boundary of Palmer Lake, 20 miles north of downtown Colorado Springs, and two miles north of the Town of Monument.

Demographics

In 2024, the population of Palmer Lake was 2,643, an increase of 468 residents since 2000 as shown in **Table 1**. Most of this growth was between 2000 and 2010, with a total of 245 residents added, or 52.3 percent of the total growth.

Table 1. Population and Households, 2000-2024

Description	2000	2010	2020	2024	2000-2024 Total	2000-2024 Ann. #	2000-2024 Ann. %
Population	2,175	2,420	2,636	2,643	468	20	0.8%
Households	841	955	1,072	1,130	289	12	1.2%
Average HH Size	2.59	2.53	2.46	2.34	-0.25	-0.01	-0.4%

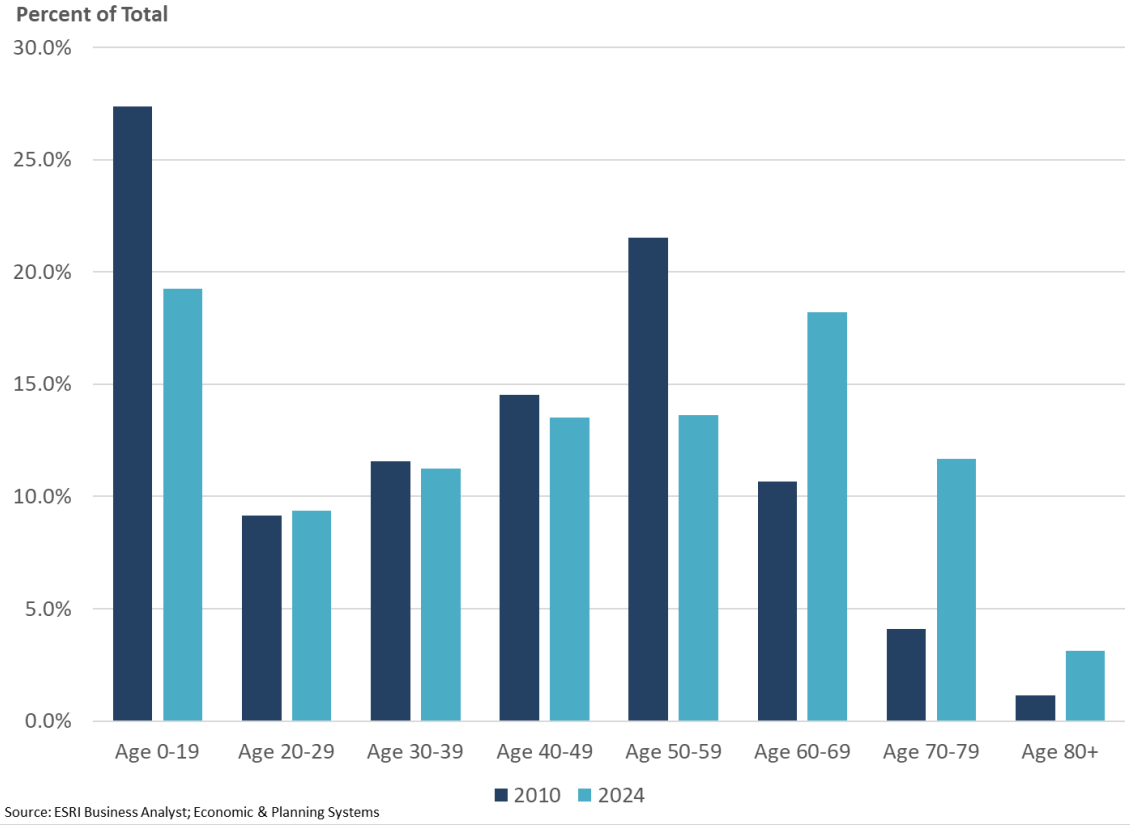
Source: U.S. Census Bureau, 2000-2020; ESRI Estimate, 2024; Economic & Planning Systems

From 2000 to 2024, the Town of Palmer Lake gained a total of 289 households, increasing from 841 to 1,130 households, as shown. Household growth was strongest from 2000 to 2010, like the population growth, accounting for 39.4 percent of the total household growth from 2000 to 2024.

Similar to national and regional trends, the average household size in Palmer Lake has decreased from 2.59 persons per household in 2000 to 2.34 persons per household in 2024. This decrease has been much more pronounced since 2010, with the average household size decreasing from 2.46 to 2.34 persons per household in 2024.

Since 2010, the percentage of total residents over the age of 60 has increased from 15.9 percent to 33 percent of the total population, as shown below in **Figure 1**. Meanwhile, those under the age of 19 have decreased from 27.4 percent of the total population in 2010 to 19.3 percent in 2024. This change, combined with a trend in households becoming smaller, is reflective of a combination of an aging population and more retired age households moving to the town.

Figure 1. Population by Age Group, 2010-2024

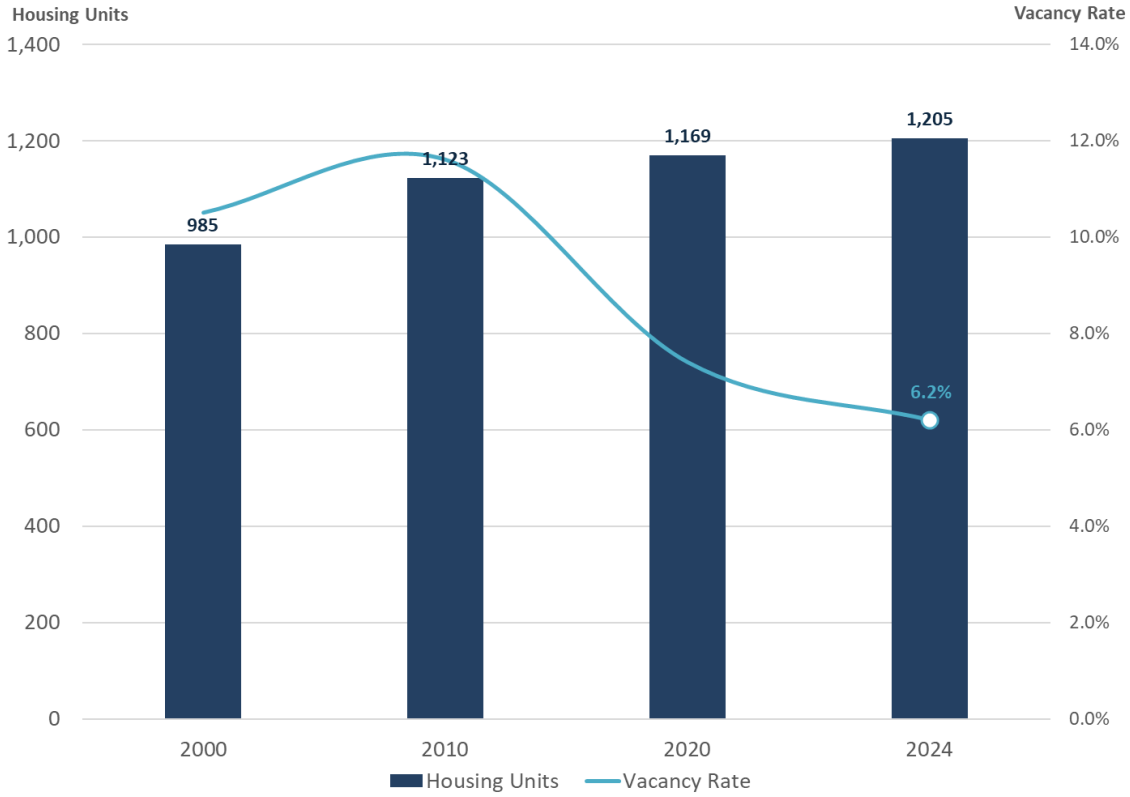


Source: ESRI Business Analyst; Economic & Planning Systems

Housing Units and Vacancy Rate

The Town of Palmer Lake has experienced modest growth in its housing inventory since 2000 with a total of 220 housing units added, which averages approximately 9 units per year, or 0.8 percent annually, as shown in **Figure 2**. This modest growth in housing is due to individual builds, as opposed to new subdivisions. With more households added than housing units, the vacancy rate has lowered from 10.5 percent in 2000 to 6.2 percent in 2024.

Figure 2. Housing Units and Vacancy Rate, 2000-2024



Source: ESRI Business Analyst; Economic & Planning Systems

2025 Town Budget

The Town of Palmer Lake 2025 General Fund budget is summarized in **Table 2** and **Table 3**. Revenue sources include property tax, sales tax, fees and licenses, fines, grants, and donations. Expenditure sources are split between five departments—Administration, Police, Fire, Public Works (Roads), and Public Works (Parks).

General Fund Revenues

Revenues in Palmer Lake are split into three categories: Taxes, Fees and Licenses, and All Other. As shown in **Table 2**, property taxes are estimated at $ 1.17 million or 21 percent of total revenues. Sales taxes are estimated at $2.07 million or 37 percent of total revenues. Grants are also shown as a major revenue source at $1.47 million; however, grants are a variable revenue source and fluctuate widely year to year. The FY 2025 budget anticipates a $1.3 million road grant. By contrast, grant revenues were $330,000 in 2023 and $780,000 in 2024.

Table 2. Revenues, 2025 Budget

Revenues	$ Amount	% of Total
Taxes		
Property Tax	$1,172,378	21.1%
Specific Ownership Tax	$108,000	1.9%
Highway Users Tax	$103,000	1.8%
Sales/Use/Excise Tax	$2,076,000	37.3%
All Other Taxes	$50,000	0.9%
Subtotal	**$3,509,378**	**63.0%**
Fees and Licenses		
Franchise Fees	$142,000	2.6%
Permits	$60,000	1.1%
Drainage Impact Fees	$15,000	0.3%
Licenses	$31,725	0.6%
Lodging Fees	$40,000	0.7%
Subtotal	**$288,725**	**5.2%**
All Other		
Fines	$60,000	1.1%
Interest	$85,567	1.5%
Departmental	$71,500	1.3%
Grants and Donations	$1,465,761	26.3%
Miscellaneous	$87,600	1.6%
Subtotal	**$1,770,428**	**31.8%**
Total Revenue	**$5,568,531**	**100.0%**

Source: Town of Palmer Lake; Economic & Planning Systems

General Fund Expenditures

General Fund Expenditures in Palmer Lake are split into four categories: Salaries and Benefits, Professional Services, Administrative/Operations, and Capital Outlays. As shown in **Table 3**, the greatest expenditure is Salaries and Benefits, which is estimated to account for 46.6 percent of total expenditures in 2025. This is followed by Capital Outlays, which accounts for 31.6 percent of total expenditures. Administrative/Operations and Professional Services account for 13.3 and 8.4 percent respectively of total estimated expenditures. Total expenditures are estimated at $6.0 million, which exceeds revenues by approximately $400,000.

Table 3. Expenditures, 2025 Budget

Expenditures	$ Amount	% of Total
Salaries & Benefits		
Administration	$312,049	5.2%
Police	$1,154,866	19.1%
Fire	$1,031,443	17.1%
Public Works - Roads	$317,600	5.3%
Public Works - Parks	--	--
Subtotal	**$2,815,958**	**46.6%**
Professional Services		
Administration	$345,600	5.7%
Police	$114,400	1.9%
Fire	$17,700	0.3%
Public Works - Roads	$31,300	0.5%
Public Works - Parks	--	--
Subtotal	**$509,000**	**8.4%**
Administrative/Operations		
Administration	$260,700	4.3%
Police	$169,475	2.8%
Fire	$138,025	2.3%
Public Works - Roads	$187,800	3.1%
Public Works - Parks	$47,600	0.8%
Subtotal	**$803,600**	**13.3%**
Capital Outlays		
Administration	$26,200	0.4%
Police	$12,000	0.2%
Fire	$15,000	0.2%
Public Works - Roads	$1,825,996	30.2%
Public Works - Parks	$30,000	0.5%
Subtotal	**$1,909,196**	**31.6%**
Total Expenditures	**$6,037,754**	**100.0%**

Source: Town of Palmer Lake; Economic & Planning Systems

This fiscal analysis looks at the impact of the Buc-ee's project by cost of service and focuses on the Police, Fire, Public Works (Roads) Department in the General Fund and the Water Fund. EPS used the budget data to separate cost by function as shown in **Table 4**. When examining the expenditures by department, Public Works (Roads) accounts for the largest expenditure category with 39.1 percent of total expenditures. This is followed by Police (24 percent), Fire (19.9 percent), Administration (15.6 percent), and Public Works (Parks) (1.3 percent). Expenditures for 2025 are estimated to cost $5,343 per household, or $2,284 per capita.

Table 4. Expenditures by Department, 2025

Department	Expenditures	% of Total	Cost per HH	Cost per Capita
Administration	$944,549	15.6%	$835.88	$357.38
Police	$1,450,741	24.0%	$1,283.84	$548.90
Fire	$1,202,168	19.9%	$1,063.87	$454.85
Public Works - Roads	$2,362,696	39.1%	$2,090.88	$893.94
Public Works - Parks	$77,600	1.3%	$68.67	$29.36
Total	**$6,037,754**	**100.0%**	**$5,343.15**	**$2,284.43**

Source: Town of Palmer Lake; Economic & Planning Systems

Administration

In the proposed 2025 budget, expenditures for Administration are estimated to be $944,549, or $836 per household, as shown in **Table 5**. Estimated expenditures are divided rather evenly between Salaries and Benefits, Professional Services, and Administrative/Operations. The remaining 2.8 percent of expenditures are estimated to be Capital Outlays.

Table 5. Administrative Department Expenditures, 2025

Description	Expenditures	% of Total	Cost per HH	Cost per Capita
Salaries & Benefits	$312,049	33.0%	$276.15	$118.07
Professional Services	$345,600	36.6%	$305.84	$130.76
Admin/Operations	$260,700	27.6%	$230.71	$98.64
Capital Outlay	$26,200	2.8%	$23.19	$9.91
Total	**$944,549**	**100.0%**	**$835.88**	**$357.38**

Source: Town of Palmer Lake; Economic & Planning Systems

Police Department

In the proposed 2025 budget, expenditures for the Police Department are estimated to be $1.5 million, or $1,284 per household, as shown in **Table 6**. The majority of expenditures are dedicated to Salaries and Benefits, which account for 79.6 percent of total expenses.

Table 6. Police Department Expenditures, 2025

Description	Expenditures	% of Total	Cost per HH	Cost per Capita
Salaries & Benefits	$1,154,866	79.6%	$1,022.01	$436.95
Professional Services	$114,400	7.9%	$101.24	$43.28
Admin/Operations	$169,475	11.7%	$149.98	$64.12
Capital Outlay	$12,000	0.8%	$10.62	$4.54
Total	**$1,450,741**	**100.0%**	**$1,283.84**	**$548.90**

Source: Town of Palmer Lake; Economic & Planning Systems

Fire Department

In the proposed 2025 budget, expenditures for the Fire Department are estimated to be $1.2 million, or $1,064 per household, as shown in **Table 7**. Like police, the majority of expenditures are dedicated to salaries and benefits, which account for 85.8 percent of total expenses.

Table 7. Fire Department Expenditures, 2025

Description	Expenditures	% of Total	Cost per HH	Cost per Capita
Salaries & Benefits	$1,031,443	85.8%	$912.78	$390.25
Professional Services	$17,700	1.5%	$15.66	$6.70
Admin/Operations	$138,025	11.5%	$122.15	$52.22
Capital Outlay	$15,000	1.2%	$13.27	$5.68
Total	**$1,202,168**	**100.0%**	**$1,063.87**	**$454.85**

Source: Town of Palmer Lake; Economic & Planning Systems

Public Works – Roads

In the proposed 2025 budget, expenditures for the Roads Division of the Public Works Department are estimated to be $2.4 million, or $2,091 per household, as shown in **Table 8**. The majority of these costs are associated with Capital Outlay projects, which account for 77.3 percent of total expenditures for the division.

Table 8. Public Works (Roads) Expenditures, 2025

Description	Expenditures	% of Total	Cost per HH	Cost per Capita
Salaries & Benefits	$317,600	13.4%	$281.06	$120.17
Professional Services	$31,300	1.3%	$27.70	$11.84
Admin/Operations	$187,800	7.9%	$166.19	$71.06
Capital Outlay	$1,825,996	77.3%	$1,615.93	$690.88
Total	**$2,362,696**	**100.0%**	**$2,090.88**	**$893.94**

Source: Town of Palmer Lake; Economic & Planning Systems

Water Fund Revenue and Expenditures

The Water Fund is an enterprise fund separate from the General Fund budget. It is self-sustaining and needs to generate sufficient revenue from fees and services charges to cover its costs. For the proposed 2025 budget, the Water Department is anticipated to have $1.86 million in revenues and $1.82 million in expenditures, as described in more detail below.

Water Fund Revenues

In the proposed 2025 budget, the Water Department is estimated to bring in $1.86 million in revenues, as shown in **Table 9**. The majority of these revenues are from water billings, which account for $1.44 million, or 77.4 percent of total revenue.

Table 9. Water Fund Revenues, 2025

Revenues	$ Amount	% of Total
Water Billing Revenue	$1,438,257	77.4%
Water Improvement Fee	$79,626	4.3%
Water Loan Revenue	$217,596	11.7%
Water Tap Fees	$75,090	4.0%
Water Meter/Parts	$2,550	0.1%
Late Fees/Service Fees	$15,000	0.8%
Water Reserve/Savings Interest	$30,000	1.6%
Total Revenue	**$1,858,119**	**100.0%**

Source: Town of Palmer Lake; Economic & Planning Systems

Water Fund Expenditures

The Water Department is estimated to have $1.82 million in expenditures in 2025, or $1,612 per household, as shown in **Table 10**. The three major expenditure categories for 2025 are Salaries and Benefits (31.8 percent); Capital Outlay (25.0 percent); and Administration/Operations (24.3 percent).

Table 10. Water Fund Expenditures, 2025

Department	Expenditures	% of Total	Cost per HH	Cost per Capita
Salaries & Benefits	$579,304	31.8%	$512.66	$219.18
Professional Services	$132,600	7.3%	$117.35	$50.17
Admin/Operations	$443,300	24.3%	$392.30	$167.73
Capital Outlay	$454,800	25.0%	$402.48	$172.08
Debt Service	$211,887	11.6%	$187.51	$80.17
Total	**$1,821,891**	**88.4%**	**$1,612.29**	**$689.33**

Source: Town of Palmer Lake; Economic & Planning Systems

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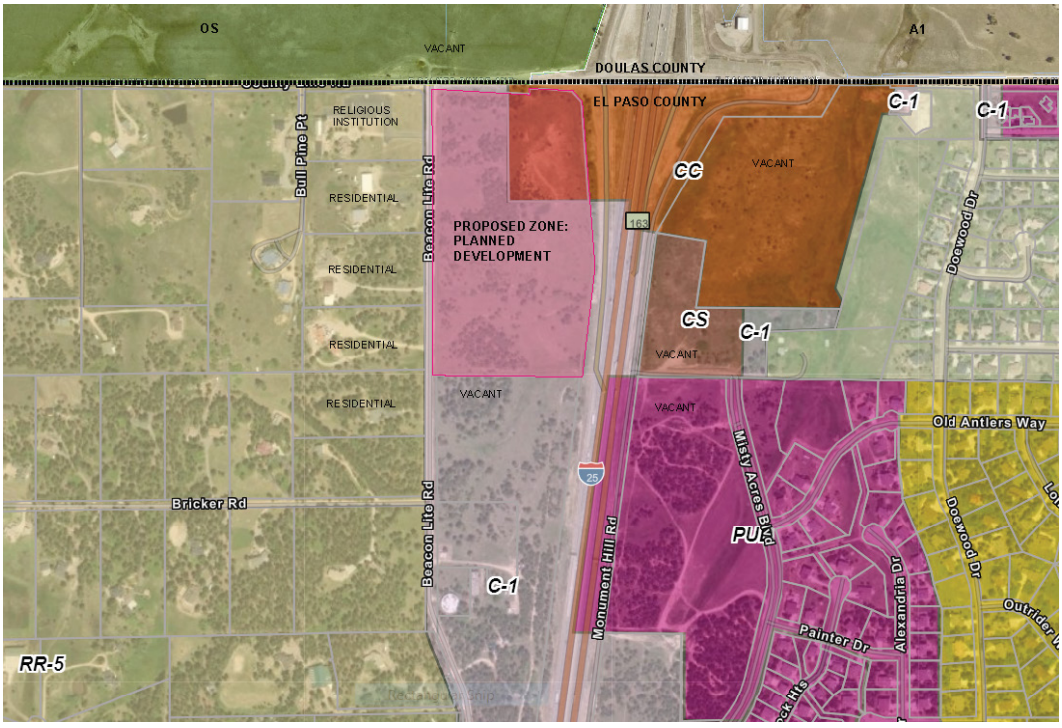
3. Buc-ee's Fiscal Impact

Proposed Development

The proposed Buc-ee's Travel Center will be located on 24.9 acres of the total 41.2-acre annexation at the southwest corner of I-25 and County Line Road in El Paso County as shown in **Figure 3**. Buc-ee's is proposing to develop the site with a 74,000 square foot retail store, 120 fueling positions, 12 electric vehicle (EV) charging stations, and 780 parking spaces. Pending approvals, Buc-ee's is hoping to break ground in late summer 2025 with anticipated completion in late 2026.

Figure 3. Proposed Buc-ee's Site



Sales Tax Estimate

Buc-ee's is a private company, and there is no published data on its annual sales. Buc-ee's management provided publicly available data on the annual sales estimates upon which recent travel center sales incentives agreements were negotiated.

The company provided average data from twelve Buc-ee's Travel Centers approved for development between 2016 and 2024. The incentives agreements were based on a minimum average annual sales level averaging $30 million in 2024 dollars as shown in **Table 11**. In many cases, actual annual sales in the initial year of operation have exceeded these figures. However, it is a reasonably conservative figure upon which to estimate the expected impact of the proposed project on Town of Palmer Lake sales tax revenues.

The sales projection is based on the average estimated 2024 sales of $30 million, which is then adjusted by 2.0 percent per year from 2024 to 2027. As shown, EPS estimated retail sales in 2027 at $31.8 million, which would generate $955,087 in sales tax revenue based on the Town's current 3.0 percent sales tax rate.

Table 11. Palmer Lake First Year Sales Tax Estimate, 2027

Description	$ Amount	% of Total
Buc-ee's Sales Tax, 2027		
2024 Average Annual Sales (Buc-ee's)	$30,000,000	--
Inflation	2.0%	--
2027 Average Annual Sales (Buc-ee's)	$31,836,240	--
Town of Palmer Lake Sales Tax Rate	3.0%	--
Average Annual Revenue	**$955,087**	44.2%
Town of Palmer Lake Sales Tax, 2027		
2025 Sales Tax Revenue (Estimate)	$2,076,000	--
Inflation	2.0%	--
2027 Sales Tax Revenue (Estimate)	$2,159,870	69.3%
Estimated Growth	$955,087	30.7%
2027 "First-Year" Sales Tax Revenue	**$3,114,958**	**100.0%**

Source: Town of Palmer Lake; Developer Financial Documents; Economic & Planning Systems

The addition of $955,087 in sales tax from Buc-ee's would result in an estimated $3.11 million in total Town of Palmer Lake sales tax in 2027, which represents a 30.7 percent increase in the Town's annual sales tax collections between 2025 and 2027.

Use Tax Estimate

The Town will also collect one-time use tax on the construction of the proposed travel center. Use tax in Colorado applies to construction materials and not labor. EPS estimated use tax based on 30 percent of the project construction costs (not including land) totaling $63.2 million (This percentage estimate was based on the Developer's experience with other travel center construction projects). The Town is estimated to capture $379,500 in one-time use tax revenue, as shown in **Table 12**. For this projection, this revenue is split over the two years of expected construction (2026 and 2027).

Table 12. Use Tax Estimate

Description	$ Amount
Buc-ee's Improved Value	$63,250,000
Material Cost Rate	30.0%
Total Taxable Value	$18,975,000
Use Tax Rate	2.0%
One-Time Use Tax Revenue	**$379,500**

Source: Town of Palmer Lake; Developer Financial Documents; Economic & Planning Systems

Property Tax Estimate

Upon annexation, the Buc-ee's property will be added to the Town's property tax roll. The current total value of the two parcels that Buc-ee's intends to develop on is $59,920 in the El Paso County Assessor records as shown in **Table 13**.

Table 13. Current Property Value

		Assessed Value (AV)				
Description	Acreage	Land	Improved	Total	Rate	Land Market Value
2025 Value (El Paso County)	24.9	$59,920	$0	$59,920	27.0%	$221,926
Palmer Lake Buc-ee's	**24.9**	**$1,917,000**	**$17,077,500**	**$18,994,500**	**27.0%**	**$7,100,000**

Source: El Paso County Assessor; Developer Financial Documents; Economic & Planning Systems

Based on the table above, EPS then estimated the growth in property tax revenues over the development period of the site. In 2026, it is estimated that the Town will collect an additional $1,273 in revenue, as shown in **Table 14**. This revenue is based on the land value of the site prior to its sale in 2024. For 2027, this revenue is estimated to increase to $229,467, which incorporates the full commercial sale value of the land ($7.1 million) and half of its improved value since construction will not be complete until the end of 2026. For 2028, this revenue increases to the completed project total of $403,405, which includes the full value of the land and improvements. Property taxes will change in the future based on biannual reevaluation of property by the County Assessor.

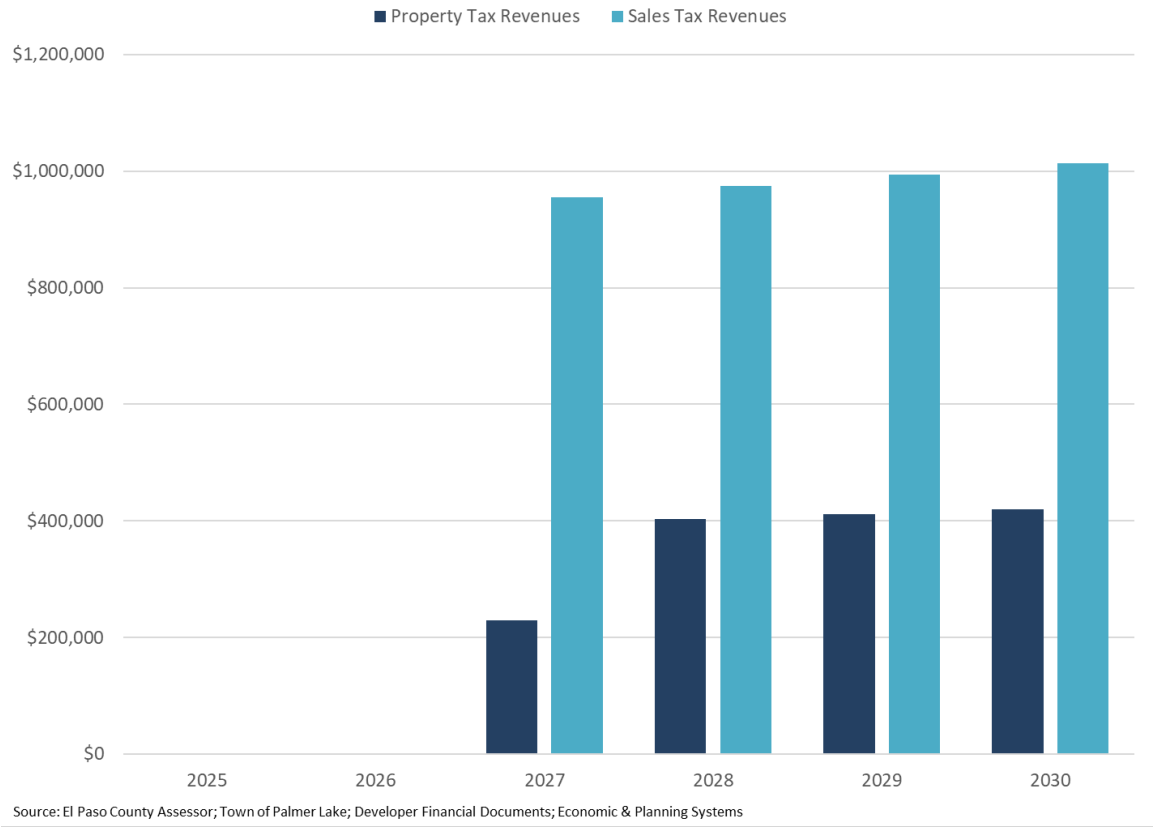
Table 14. Property Tax Revenues

Description	Acreage	AV/Acre	Total AV	Town Mill	Fire Mill	Town Rev.	Fire Rev.	Total Rev.
Revenues								
2026 Revenues	24.9	$2,406	$59,920	11.238	10.000	$673	$599	$1,273
2027 Revenues	24.9	$433,917	$10,804,538	11.238	10.000	$121,421	$108,045	$229,467
2028 Revenues	24.9	$762,831	$18,994,500	11.238	10.000	$213,460	$189,945	$403,405

Source: El Paso County Assessor; Developer Financial Documents; Economic & Planning Systems

Figure 4 shows the combined annual impact of property tax and sales tax revenues from Buc-ee's over the next five years. Revenues from property tax will lag behind one year due to assessment periods and sales tax revenue will not be captured until the store is in operation.

Figure 4. Property and Sales Tax Revenue



Source: El Paso County Assessor; Town of Palmer Lake; Developer Financial Documents; Economic & Planning Systems

Property Tax Revenues to Other Entities

In addition to the Town's mill levy, Buc-ee's will generate property tax revenue for several other taxing districts including El Paso County, Lewis-Palmer School District, and Pikes Peak Library District. The school district, with a 37.50 mill levy tax rate, will receive the largest share of the property tax revenue at $405,000 in 2027 and $712,000 in 2028. Combined, the total mill levy of other taxing entities is 47.905 mills, as shown in **Table 15**. This results in total property tax revenues of $2,870 in 2026, $517,591 in 2027, and $909,932 in 2028.

Table 15. Property Tax Revenues to Other Entities

Description	Total AV	Taxing Entities: El Paso County	EPC Road & Bridge	Lewis-Palmer School Dist.	Pikes Peak Library Dist.	Total
Mill Rates						
2026 Tax Year	$59,920	6.935	0.330	37.500	3.140	47.905
2027 Tax Year	$10,804,538	6.935	0.330	37.500	3.140	47.905
2028 Tax Year	$18,994,500	6.935	0.330	37.500	3.140	47.905
Tax Revenues						
2026 Revenues	$59,920	$416	$20	$2,247	$188	$2,870
2027 Revenues	$10,804,538	$74,929	$3,565	$405,170	$33,926	$517,591
2028 Revenues	$18,994,500	$131,727	$6,268	$712,294	$59,643	$909,932

Source: El Paso County Assessor; Developer Financial Documents; Economic & Planning Systems

Water Revenues

Once Buc-ee's is operational, it will be billed monthly by the Town's Water Department for water usage. Based on information provided by the Town, Buc-ee's is estimated to use 1,119,000 gallons of water monthly, as shown in **Table 16**. This results in an estimated monthly water bill of $26,965, or $323,579 in additional water revenues annually to the Town. Water usage revenues are set to offset annual operating costs including raw water purchases, treatment and distribution. The estimated increase in revenues is shown for informational purposes only. It is not considered a source of revenue growth to the Town.

Table 16. Water Revenues

Description	Revenue to City
Estimated Gallons per Month	1,119,000
Estimated per Month Revenue	$26,965
Annual Revenue	**$323,579**

Source: Town of Palmer Lake; Economic & Planning Systems

Expenditures

The proposed development is expected to trigger the need for the Town to increase its level of service for several key functions. These estimated service cost increases are shown by each department below in comparison to current levels in the Town budget. The estimates shown are based on the assessment of each department based on their knowledge of the proposed development. The Town lacks sufficient data on cost trends over time upon which to base a more quantitative forecast.

Administration

The administrative operations of the Town are anticipated to incur additional review responsibilities during the planning and construction of the Buc-ee's site. This may include additional time reviewing site plans, performing inspections, and attending public meetings, which may incur additional one-time costs.

Police Department

The Police Department, which had 1,070 dispatched calls in 2024, is expecting to incur additional patrol costs associated with assuming responsibility for providing service to the new travel center at the I-25 interchange, as well as for patrolling the one-and-a-half-mile segment of County Line Road being added to the Town's roads.

The Police Department estimates that an additional patrol route would be required, which would trigger the need for hiring two new patrol officers and purchasing one new patrol car. This results in a net increase of $170,180 in annual operating expenditures and $75,000 in one-time capital purchases, as shown in **Table 17**.

Table 17. Police Department, Buc-ee's Impacts

Description	Factor	Quantity	Cost
Salaries			
Patrol Officer	$67,000	2	$134,000
Benefits			
Patrol Officer	27.0%		$36,180
Total Operating			**$170,180**
Capital (One-Time)			
Patrol Car	$67,000	1	$67,000
Officer Equipment & Training	$8,000	1	$8,000
Total Capital (One-Time)			**$75,000**

Source: Town of Palmer Lake; Economic & Planning Systems

These increased costs would result in a 15.8 percent increase in the annual operating budget, from $1.45 million in 2025 to $1.68 million in 2027.

Table 18. Police Department, 2027 Expenditures

Description	2025 Expenditures	% of Total	Added Cost	2027 Expenditures	% of Total	% Increase
Salaries & Benefits	$1,154,866	79.6%	$170,180	$1,371,703	81.7%	18.8%
Professional Services	$114,400	7.9%	$0	$119,022	7.1%	4.0%
Admin/Operations	$169,475	11.7%	$0	$176,322	10.5%	4.0%
Capital Outlay	$12,000	0.8%	$0	$12,485	0.7%	4.0%
Total Operating	**$1,450,741**	**99.2%**	**$170,180**	**$1,679,531**	**100.0%**	**15.8%**
One-Time Capital	--	--	$75,000	$78,030	--	--

Source: Town of Palmer Lake; Economic & Planning Systems

Fire Department

The Fire Department's call volume in 2024 was 30 fire related calls and 505 EMT related calls. The Fire Department expects to experience a significant increase in the demand for EMT services due to the travel center visitor volumes as well as its being a 24-hour a day operation. The Fire Chief estimates the department would need to hire six new Fire/EMT staff, which allows for two, three person shifts on the requested additional fire truck. This would add an additional $559,440 including benefits to the development budget, as shown in **Table 19**. In terms of new equipment, an additional Type 1 fire truck and four vehicle fire blankets are estimated to be required, which results in total one-time capital costs of $406,000.

Table 19. Fire Department, Buc-ee's Impacts

Description	Factor	Quantity	Cost
Salaries			
Fire/EMT Officer	$74,000	6	$444,000
Benefits			
Fire/EMT Officer	26.0%		$115,440
Total Operating			**$559,440**
Capital (One-Time)			
Fire Trucks - Type 1	$400,000	1	$400,000
Vehicle Fire Blankets	$1,500	4	$6,000
Total Capital (One-Time)			**$406,000**

Source: Town of Palmer Lake; Economic & Planning Systems

If this level of staffing increase and equipment costs were determined to be necessary, the department operating budget would increase by an estimated 50.6 percent from $1.2 million in 2025 to $1.81 million in 2027, as shown in **Table 20**. Additionally, the added equipment would result in a one-time capital cost of $422,402.

Table 20. Fire Department, 2027 Expenditures

Description	2025 Expenditures	% of Total	Added Cost	2027 Expenditures	% of Total	% Increase
Salaries & Benefits	$1,031,443	85.8%	$559,440	$1,632,553	90.2%	58.3%
Professional Services	$17,700	1.5%	$0	$18,415	1.0%	4.0%
Admin/Operations	$138,025	11.5%	$0	$143,601	7.9%	4.0%
Capital Outlay	$15,000	1.2%	$0	$15,606	0.9%	4.0%
Total Operating	**$1,202,168**	**100.0%**	**$559,440**	**$1,810,176**	**100.0%**	**50.6%**
One-Time Capital	--	--	$406,000	$422,402	--	--

Source: Town of Palmer Lake; Economic & Planning Systems

Public Works – Roads

The Public Works Department Road Division currently maintains 26 miles of road, of which only 6.5 miles are paved. The annexation of the Buc-ee's property will require the Town to assume responsibility for the maintenance of County Line Road from the current town boundary approximately 1½ miles to the I-25 interchange.

County Line Road is the dividing line between Douglas County and El Paso County and responsibility for the road is currently split between the two counties. The north section of the road is under Douglas County jurisdiction and the south portion is under El Paso County jurisdiction. The Town does not have the staff or equipment to take on responsibility for maintenance of the road including street sweeping, pavement repair, or most significantly snow plowing.

As shown in **Table 21,** the Public Works Director estimates the need for an additional maintenance employee at a salary of $70,000 including benefits (total of $88,220). In addition, a large plow truck sander would be needed with an estimated cost of approximately $200,000. The annual operating cost for maintenance is estimated to increase by $14,000 based on plow truck maintenance for six winter months (including chains, sand material, fuel, and repairs if it were to be added to the Town's inventory). This results in a total increase in operations and maintenance costs of $102,200.

There may be potential for the Town to forgo or postpone the capital costs of acquiring a large plow truck by contracting with either El Paso or Douglas County to continue to plow and maintain the road. This option would be subject to discussions and negotiations between the Town and Counties.

The Town has also identified the need for roadway repair or repaving on a ½ to ¾ mile segment of County Line Road west of the Beacon Lite Road for which the Town estimates a cost of $300,000 to $500,000 (shown as $400,000) in **Table 21**.

Table 21. Public Works (Roads), New Costs

Description	Factor	Quantity	Cost
Salaries			
Full-Time Staff	$70,000	1	$70,000
Benefits			
Road Maintenance Specialist	26.0%		$18,200
Capital Maintenance (Annual)			
Plow Truck Maintenance	$14,000	1	$14,000
Total Operating & Maintenance			**$102,200**
Town Capital (One-Time)			
Plow Truck with Sander	$200,000	1	$200,000
County Line Road Improvements	$400,000	1	$400,000
Total Town Capital (One-Time)			**$600,000**

Source: Town of Palmer Lake; Economic & Planning Systems

The estimated costs would result in an increase in the Road Operating budget of $102,200 per year, or a 22.4 percent increase, from $556,700 in 2025 to $681,391 in 2027, as shown in **Table 22**. There would also be an additional one-time capital cost of $624,240.

Table 22. Public Works (Roads), 2027 Expenditures

Description	2025 Expenditures	% of Total	Added Cost	2027 Expenditures	% of Total	% Increase
Salaries & Benefits	$317,600	57.1%	$88,200	$418,631	61.4%	31.8%
Professional Services	$31,300	5.6%	$0	$32,565	4.8%	4.0%
Admin/Operations	$187,800	33.7%	$14,000	$209,387	30.7%	11.5%
Capital Outlay	$20,000	3.6%	$0	$20,808	3.1%	4.0%
Total Operating	**$556,700**	**100.0%**	**$102,200**	**$681,391**	**100.0%**	**22.4%**
One-Time Capital	$1,805,996	--	$600,000	$624,240	--	--

Source: Town of Palmer Lake; Economic & Planning Systems

Buc-ee's Site Transportation Costs

Buc-ee's also provided estimates for improvements to the I-25 and Palmer Lake Road interchange and access improvements to the site from Beacon Lite Road and Palmer Lake Road as shown in **Table 23** and summarized below.

Table 23. Buc-ee's Transportation Costs

Description	Factor	Quantity	Cost
Buc-ee's Transporation Costs (One-Time)			
1. I-25 SB Ramp Improvements	$600,000	1	$600,000
2. I-25 Southbound Signal	$1,200,000	1	$1,200,000
3. I-25 NB Ramp Improvements	$450,000	1	$450,000
4. I-25 Northbound Signal	$1,200,000	1	$1,200,000
5. Overpass Modifications	$420,000	1	$420,000
6. County Line Road Improvements	$2,350,000	1	$2,350,000
7. Beacon Lite Road Improvements	$1,500,000	1	$1,500,000
8. County Line/Beacon Lite Signals	$2,800,000	1	$2,800,000
Total			**$10,520,000**

Source: Developer Financial Documents; Economic & Planning Systems

- I-25 Ramp and Signal Improvements – The southbound and northbound exit ramps will be rebuilt with new signals at the intersection with County Line Road totaling $3.87 million (items 1-5).
- County Line Road improvements – County Line Road will be widened and rebuilt with access lanes to the Buc-ee's site, as well as a reconfigured intersection with Beacon Lite Road with an estimated cost of $2.35 million (item 6).
- Beacon Lite Road – Beacon Lite Road will be paved with turn lanes and access to the Buc-ee's site, and the intersection of Beacon Lite Road and County Line Road will be signalized (items 7 and 8) with an estimated cost of $4.3 million.

The site access and signalization improvements total $10.52 million as shown. These are one-time improvements that will be made by Buc-ee's as part of its site development costs.

Buc-ee's Water Extension Costs

Buc-ee's estimates that the travel center will require approximately 1,119,000 gallons per month for water use. The Water Department estimates that Buc-ee's will use 25 percent of the Town's average daily water demand once fully developed. Two major one-time capital projects, a water line extension and water facility upgrades, will need to be completed in order for the Buc-ee's site to be fully operational.

The water line extension project will cost approximately $5.7 million, as shown in **Table 24.** This includes a 12-inch water main extension of approximately 10,900 feet along County Line Road and Beacon Lite Road, the upsizing of 1,600 feet of pipe from 6-inches to 12-inches, the installation of six combination air/vacuum valve assemblies, the installation of 11 new fire hydrant assemblies, and the installation of 14 new gate valves.

Meanwhile, the water facility upgrades will cost approximately $4.8 million with $1.2 million reasonably attributed to the development of Buc-ee's based on its water usage. These facility upgrades include a new A-3 well in the Arapahoe aquifer and raw water piping to a new water treatment plant to treat the new A-3 well, and the installation of an 8-inch water line of 1,000 feet to connect the new water treatment plant to the water distribution system.

Table 24. Buc-ee's Water Costs

Description	Quantity		Cost
Waterline Extension			
12" Water Main Extension	10,900	feet	--
12" Water Main Replacement	1,600	feet	--
Combo Air/Vacuum Valve Assemblies	6	units	--
Fire Hydrant Assemblies	11	units	--
Gate Valves	14	units	--
Total			**$5,651,200**
Facility Upgrades			
New A-3 Well	1	unit	--
New Water Treatment Plant (#2)	1	unit	--
8" Water Line Connection	1,000	feet	--
Subtotal			**$4,771,400**
Percent Usage attributed to Buc-ee's			25.0%
Total			**$1,192,850**
Total One-Time Capital Costs			**$6,844,050**

Source: Buc-ee's; Town of Palmer Lake; Economic & Planning Systems

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4. Annual Budget Summary

This section of the report provides EPS' summary of the impact of the proposed Buc-ee's on the Town's annual budget starting in 2027, the first year of expected operations.

Projected Net Impact

To determine the net fiscal impact that the Buc-ee's Travel Center will have on the Town of Palmer Lake, new revenues for a 2027 budget year are projected below and compared against the anticipated increase in expenditures.

Overall Revenues

Using a scenario that projects sales tax revenues from the Buc-ee's Travel Center based on an average of recently completed Buc-ee's Travel Centers, sales tax revenue is estimated to increase from $2.1 million in 2025 to $3.1 million in 2027, as shown in **Table 11**. In addition, property tax revenue is estimated to increase by $229,467 in 2027 (increasing to $403,405 in 2028), as shown in **Table 14**. One-time revenue from use tax, as shown in **Table 12**, is split between 2026 and 2027 and totals $379,500. All other revenue sources are increased using an inflation factor of 2 percent year-over-year. Therefore, as shown in **Table 25**, the General Fund revenue is projected to increase from approximately $5.6 million in 2025 to $7.2 million in 2027.

Table 25. Net Increase in Revenues

Revenues	Proposed 2025 Budget $ Amount	Proposed 2025 Budget % of Total	Projected 2027 Budget $ Amount	Projected 2027 Budget % of Total
Taxes				
Property Tax	$1,172,378	21.1%	$1,449,209	20.2%
Specific Ownership Tax	$108,000	1.9%	$112,363	1.6%
Highway Users Tax	$103,000	1.8%	$107,161	1.5%
Sales/Use/Excise Tax	$2,076,000	37.3%	$3,304,708	46.1%
All Other Taxes	$50,000	0.9%	$52,020	0.7%
Subtotal	**$3,509,378**	**63.0%**	**$5,025,461**	**70.1%**
Fees and Licenses				
Franchise Fees	$142,000	2.6%	$147,737	2.1%
Permits	$60,000	1.1%	$62,424	0.9%
Drainage Impact Fees	$15,000	0.3%	$15,606	0.2%
Licenses	$31,725	0.6%	$33,007	0.5%
Lodging Fees	$40,000	0.7%	$41,616	0.6%
Subtotal	**$288,725**	**5.2%**	**$300,389**	**4.2%**
All Other				
Fines	$60,000	1.1%	$62,424	0.9%
Interest	$85,567	1.5%	$89,024	1.2%
Departmental	$71,500	1.3%	$74,389	1.0%
Grants and Donations	$1,465,761	26.3%	$1,524,978	21.3%
Miscellaneous	$87,600	1.6%	$91,139	1.3%
Subtotal	**$1,770,428**	**31.8%**	**$1,841,953**	**25.7%**
Total Revenue	**$5,568,531**	**100.0%**	**$7,167,804**	**100.0%**

Source: Town of Palmer Lake; Economic & Planning Systems

Overall Expenditures

To compare revenues and expenditures incurred by the development of Buc-ee's Travel Center, all new expenditures anticipated including one-time capital costs potentially incurred by the Town have been included in the projected 2027 budget. In addition to the newly incurred costs, the base costs from 2025 have been increased using an inflation factor of 2 percent year-over-year. As shown in **Table 26**, General Fund expenditures are projected to increase from $4.2 million in 2025 to $5.2 million in 2027. Not including inflation, Police expenditures are projected to increase by $170,180 annually (**Table 17**) with $78,030 in one-time costs. Fire Department expenditures are projected to increase by $559,440 annually (**Table 19**) with $422,402 in one-time costs and Public Works (Roads) expenditures are estimated to increase $102,200 annually (**Table 21**) with $624,240 in one-time costs. Water facility upgrades account for $4.8 million in one-time costs. In total, the one-time costs incurred by the Town equate to $5.9 million.

Table 26. Net Increase in Expenditures

Expenditures	Proposed 2025 Budget $ Amount	% of Total	Projected 2027 Budget $ Amount	% of Total
Salaries & Benefits				
Administration	$312,049	7.4%	$324,656	6.2%
Police	$1,154,866	27.3%	$1,371,703	26.2%
Fire	$1,031,443	24.4%	$1,632,553	31.2%
Public Works - Roads	$317,600	7.5%	$418,631	8.0%
Public Works - Parks	--	--	--	--
Subtotal	**$2,815,958**	**66.5%**	**$3,747,543**	**71.6%**
Professional Services				
Administration	$345,600	8.2%	$359,562	6.9%
Police	$114,400	2.7%	$119,022	2.3%
Fire	$17,700	0.4%	$18,415	0.4%
Public Works - Roads	$31,300	0.7%	$32,565	0.6%
Public Works - Parks	--	--	--	--
Subtotal	**$509,000**	**12.0%**	**$529,564**	**10.1%**
Administrative/Operations				
Administration	$260,700	6.2%	$271,232	5.2%
Police	$169,475	4.0%	$176,322	3.4%
Fire	$138,025	3.3%	$143,601	2.7%
Public Works - Roads	$187,800	4.4%	$209,387	4.0%
Public Works - Parks	$47,600	1.1%	$49,523	0.9%
Subtotal	**$803,600**	**19.0%**	**$850,065**	**16.2%**
Capital Outlays				
Administration	$26,200	0.6%	$27,258	0.5%
Police	$12,000	0.3%	$12,485	0.2%
Fire	$15,000	0.4%	$15,606	0.3%
Public Works - Roads	$20,000	0.5%	$20,808	0.4%
Public Works - Parks	$30,000	0.7%	$31,212	0.6%
Subtotal	**$103,200**	**2.4%**	**$107,369**	**2.1%**
Total Expenditures	**$4,231,758**	**100.0%**	**$5,234,541**	**100.0%**
One-Time Costs				
Administration	$0	0.0%	$0	0.0%
Police	$0	0.0%	$78,030	1.3%
Fire	$0	0.0%	$422,402	7.2%
Water	$0	0.0%	$4,771,400	80.9%
Public Works - Roads	$1,805,996	100.0%	$624,240	10.6%
Subtotal	**$1,805,996**	**100.0%**	**$5,896,072**	**100.0%**

Source: Town of Palmer Lake; Economic & Planning Systems

Net Impact

Overall, the Town of Palmer Lake would incur a net negative impact of $4.0 million in Buc-ee's first year of operation (2027), as shown in **Table 27** and **Figure 5**. This projection accounts for a 2 percent inflation factor year-over-year. In 2025, no additional revenues or costs are added since this is considered the base year. In 2026, additional revenues include initial property tax revenue from the annexed site and half of the use tax associated with the development. In 2026, no new costs are expected to be incurred by the Town.

In 2027, or Buc-ee's first year of operation, an "interim" property tax that includes full land value and partial improved value is collected. In addition, the other half of the use tax is collected. This would also be the first year of sales tax collections, which brings total revenues up from $5.9 million in 2026 to $7.2 million in 2027. Meanwhile, new expenses would include an increase in operating costs for Police, Fire, and Public Works, as well as all one-time capital investments such as the County Line Road repair, water facility upgrades, and the purchasing of vehicles and equipment. This results in total expenditures increasing from $4.3 million in 2026 to $11.1 million in 2027.

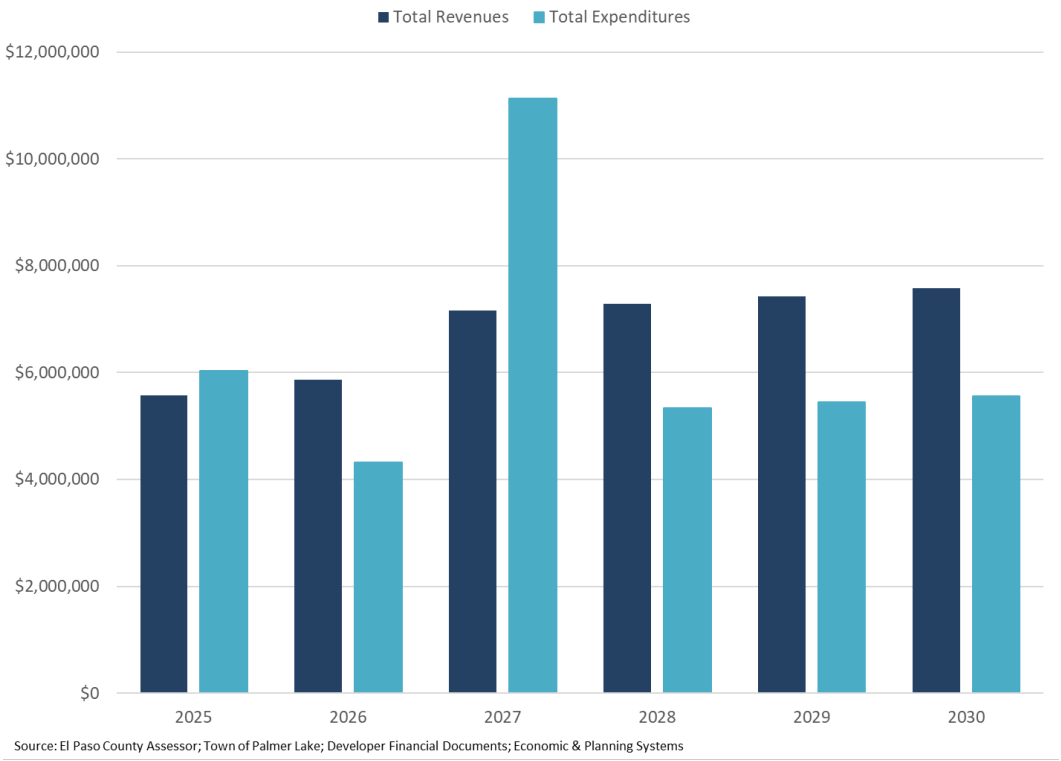
In 2028, net revenues are estimated to increase to $1.9 million as the one-time capital costs associated with Buc-ee's will be fully absorbed.

Table 27. Net Fiscal Impact

Year	Base Revenues	New Property Tax	New Use Tax	New Sales Tax	Total Revenues	Base Expenditures	New Operating	One-Time Capital	Total Expenditures	Net Impact
2025	$5,568,531	$0	$0	$0	$5,568,531	-$4,231,758	$0	-$1,805,996	-$6,037,754	-$469,223
2026	$5,679,902	$1,273	$189,750	$0	$5,870,924	-$4,316,393	$0	$0	-$4,316,393	$1,554,531
2027	**$5,793,500**	**$229,467**	**$189,750**	**$955,087**	**$7,167,804**	**-$4,402,721**	**-$831,820**	**-$5,896,072**	**-$11,130,613**	**-$3,962,810**
2028	$5,909,370	$403,405	$0	$974,189	$7,286,964	-$4,490,775	-$848,456	$0	-$5,339,232	$1,947,732
2029	$6,027,557	$411,473	$0	$993,673	$7,432,703	-$4,580,591	-$865,426	$0	-$5,446,016	$1,986,687
2030	$6,148,108	$419,703	$0	$1,013,546	$7,581,357	-$4,672,203	-$882,734	$0	-$5,554,937	$2,026,420

Source: Town of Palmer Lake; Economic & Planning Systems

Figure 5. Town Revenues and Expenditures



Source: El Paso County Assessor; Town of Palmer Lake; Developer Financial Documents; Economic & Planning Systems

Next Steps

As summarized in the report, Buc-ee's has negotiated a sales tax revenue sharing agreement with many of the cities and towns where it has built its travel centers. The amount of rebate received varies by community based on multiple factors including the amount of capital investment required, projected annual sales, and other economic and political considerations.

Any retail sales tax incentive negotiated will reduce the net increase in sales tax revenues to be retained by the Town over the time period of revenue sharing. Should such a revenue sharing agreement be completed, the net increase in sales tax revenues to the Town's annual budget will need to be recalculated.

PRELIMINARY ENGINEERING REPORT
TOWN OF PALMER LAKE
WATER SYSTEM IMPROVEMENTS

for

PROPOSED BUC-EE'S TRAVEL CENTER

Prepared for:

TOWN OF PALMER LAKE

GMS, Inc.
Consulting Engineers

PRELIMINARY ENGINEERING REPORT
TOWN OF PALMER LAKE
WATER SYSTEM IMPROVEMENTS

FOR

PROPOSED BUC-EE'S TRAVEL CENTER

PROJECT NO. 2024-079.100

DRAFT: MARCH 2025
FINAL: APRIL 2025

OWNER:

TOWN OF PALMER LAKE
28 VALLEY CRESCENT
PALMER LAKE, CO 80133

PREPARED BY:

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TABLE OF CONTENTS

Page

Section I – Executive Summary 1

Section II – Introduction 5

A. Purpose and Scope 5
B. Background 5
C. Service Area 7

Section III – Population 10

A. Historical Population 10
B. Population Projections 11
C. Potential Annexation Customer Projections 13

Section IV – Existing Water System 20

A. Background 20
B. Water Supply 22
1. Summary of Water Rights 22
2. Summary of Available Supply 23
C. Water Treatment 25
1. Surface Water Treatment Plant, (SW-WTP) 25
2. Groundwater Treatment Plant, (GW-WTP) 26
D. Water Storage 26
E. Water Distribution System 27
F. Water Meters 27

Section V – Historical and Projected Water Demands 28

A. Town of Palmer Lake Current Water Use 28
B. Proposed Commercial Development Water Use 32
1. Conceptual Annexation Proposal Letter by Vertex Consulting Services, LLC 33
2. The Annexation Impact Report by Vertex Consulting Service, LLC 34
3. Buc-ee's Store #22 in New Braunfels, Texas 34
4. Buc-ee's Store #60 in Johnstown, Colorado 35
5. Projected Buc-ee's Water Usage in Palmer Lake 36
C. Potential Annexation Customers Water Usage 38
D. Water Demand Summary 38

Section VI – Future Water Supply Requirements 41

Section VII – Evaluation of Existing Water System Improvements 44

A. Water Supply 44
B. Water Quality and Treatment 45
C. Treated Water Storage 47
D. Distribution System 49
E. Meters 54

Section VIII – Alternatives to Palmer Lake Water Service 55

A. Alternative 1 – On-Site Private Water Supply and Treatment in Town 55
B. Alternative 2 – On-Site Private Water Supply and Treatment in County.....57
C. Alternative 3 – Water Service Provided by Another Entity.....57

Section IX – Recommended Improvements 59

LIST OF FIGURES

Figure 1 – Vicinity Map.....8
Figure 2 – Location Map 9
Figure 3 – Future Land Use Map 15
Figure 4 – Potential Future Annexation Water Connections 19
Figure 5 – Existing Water System 21
Figure 6 – Recommended Improvements 60

LIST OF TABLES

Table 1 – Water Production Capacity.....2
Table 2 – 2050 Future Water Demands 2
Table 3 – Preliminary Cost Estimate 4
Table 4 – Historical Population.....11
Table 5 – Projected Population 13
Table 6 – Estimated Water Connections and Population.....18
Table 7 – Surface and Groundwater Supply Capacities 25
Table 8 – Water Production.....28
Table 9 – Water System Production and Sales 30
Table 10 – 2022 to 2024 Baseline Water Use Parameters.....32
Table 11 – Store #22 New Braunfels Buc-ee's Water Use 34
Table 12 – Store #60 Johnstown Buc-ee's Water Use 35
Table 13 – Projected Buc-ee's Water Use Criteria 37
Table 14 – Existing and Projected WTP Demands.....39
Table 15 – Projected Demand Increases for Development 40
Table 16 – Water Supply Requirements.....42
Table 17 – Hydraulic Analysis Results 51
Table 18 – Waterline Extension Cost Estimate.....61
Table 19 – Facility Upgrades Cost Estimate.....61

APPENDICES

Appendix A – Residual Pressure Exhibits

SECTION I
EXECUTIVE SUMMARY

The Town of Palmer Lake, Colorado is a statutory Town with a 2020 census population of 2,636 people. The Town operates a public drinking water system providing potable water under regulatory oversight of the Colorado Department of Public Health and Environment (CDPHE). Buc-ee's Holdings, Inc. has proposed the annexation and development of two parcels of land located in unincorporated El Paso County for a Buc-ee's Travel Center. The planned retail center will include a 74,000 square foot building with fuel pumps. The proposed development has requested potable water service from the Town. The purpose of this report is to:

1) Evaluate impacts of the proposed commercial development to the Town's existing water system and
2) Identify any needed improvements to the Town's existing water system

A comprehensive water study prepared for the Town, titled "Preliminary Engineering Report for Water System Improvements," dated November 2022 and amended in July 2023, was used as the basis of this report. The 2022 Preliminary Engineering Report (PER) recommended, among other items, the addition of a new groundwater well (Well A-1) to provide redundant supply capacity to the water system. The Town concurred with that recommendation. The 2022 PER was prepared prior to the Buc-ee's development proposal; and therefore did not consider the development. The Town's water demands presented in the 2022 report, have been updated in this report to include updated Town data, the proposed Buc-ee's development and potential future Town development adjacent to the waterline extension to the Buc-ee's development.

The proposed Buc-ee's development will increase the Town's daily water demands. In addition, the waterline extension to serve the new development will pass numerous properties along County Line Road and Beacon Lite Road, creating opportunities for additional potential customers on the Town's water system in the future. These properties, currently undeveloped or served by private wells, could benefit from connecting to the Town's water system because it could provide enhanced water reliability, fire protection, and property values. The combination of Buc-ee's Travel Center with the potential annexation customers will place increased demands on the Town's water system, necessitating upgrades to the supply, treatment and distribution capacities.

The proposed development would increase projected maximum day water demands in the Town by approximately 19%, and the potential future annexation customers could increase these demands by another 11%.

Table 1 summarizes the Town's water production rates at both water treatment plants (WTPs). For the Groundwater WTP (GW-WTP), the numbers reflect the largest existing well out of service and Well A-1 available as a redundant well per the 2022 PER. For the Surface Water WTP (SW-WTP), the numbers represent a 20-year low stream flow condition. Table 2 summarizes the projected demands of the Town, Buc-ee's, and potential future annexation customers.

TABLE 1
TOWN OF PALMER LAKE
WATER PRODUCTION CAPACITY

	Actual Production (gpd)	Maximum Available Production (gpd)
SW-WTP	60,400	60,400
GW-WTP	532,800	720,000
Total	593,200	780,400

TABLE 2
TOWN OF PALMER LAKE
2050 FUTURE WATER DEMANDS

Projected Water Demands (gpd)		
Service Area	Average Day Demand (ADD)	Maximum Day Demand (MDD)(%) [1)]
Town of Palmer Lake	206,300	585,900 (76%)
Buc-ee's Development	37,300	113,600 (15%)
Potential Annexation Area	22,900	65,100 (9%)
Total	266,500	764,600 (100%)

1) % = percent of Total Demand

The Town's water department staff provided input to the consultant for the Town's existing facilities. The Town's current water system relies on groundwater from the Denver basin aquifers and limited surface water. The aquifers are nonrenewable and are experiencing annual drawdown. The current A-2 and D-2R wells are capable of running at their maximum pumping rates. However, this is not sustainable for extended periods of time, as the wells require recovery

time to recharge. Therefore, their combined maximum pumping rate of 500 gpm is not sustainable due to the groundwater drawdown. To accommodate the additional demands, a new Well A-3 is recommended. Due to the new well's proximity to the existing GW-WTP, a new GW-WTP #2 is recommended in lieu of expanding the existing GW-WTP and installing nearly two miles of raw water pipeline to it.

Hydraulic modeling was conducted to size the waterline extension to the proposed site based on the development's fire flow requirements and identify potential problematic areas that limit flow delivery in the Town. A 12-inch ductile iron pipe (DIP) was sufficient for a needed fire flow (NFF) of 1,500 gpm and to maintain a minimum residual pressure of 20 psi throughout the pipeline. The pressures within the distribution system were not impacted by the waterline extension. A portion of the 6-inch pipe from Spruce Avenue along County Line Road is required to be upsized to attain adequate pressures. It is noted that Buc-ee's representatives indicated a total fire flow of 1,700 gpm may be needed for the proposed development, depending on various site and underground utility conditions. In order to accommodate a NFF of 1,700 gpm, modeling calculations show the 12" DIP waterline extension is adequate to maintain a minimum residual pressure of 20 psi throughout the pipeline.

The water system improvements required to provide adequate service to the Town and the proposed development are divided into two classifications of work: Waterline Extension and Facility Upgrades. The preliminary cost estimate for the waterline extension is approximately $5,651,200 and generally includes:

- Replace 1,600 feet of existing 6-inch pipe with 12-inch DIP and install approximately 10,900 feet of new 12-inch DIP along County Line Road and Beacon Lite Road to the proposed development.
- Install six combination air/vacuum valve assemblies along the waterline extension.
- Install 11 new fire hydrant assemblies along the waterline extension.
- Install 14 new gate valves along the waterline extension.

The facility upgrades will be needed to the Town's water system because of the estimated increase in demands resulting from the proposed development and future potential annexations. The preliminary cost estimate for the facility upgrades is approximately $4,771,400 and generally includes:

- Construct a new A-3 well in the Arapahoe aquifer and raw water piping to the new GW-WTP #2 to provide additional supply.
- Construct a new GW-WTP #2 to treat the new A-3 well.
- Install 1,000 feet of new 8" DIP to connect GW-WTP #2 to the distribution system.

Table 3 summarizes the preliminary estimated costs for the recommended water system improvements to accommodate the proposed development and annexation.

TABLE 3
TOWN OF PALMER LAKE
PRELIMINARY COST ESTIMATE [1)]

Proposed Buc-ee's Development Water System Improvements	
Waterline Extension	$5,651,200
Facility Upgrades	$4,771,400
Total Estimated Cost	$10,422,600

1) Includes 20% contingencies, Engineering costs and soft costs

SECTION II
INTRODUCTION

A. PURPOSE AND SCOPE

This Preliminary Engineering Report (PER) has been prepared on behalf of the Town of Palmer Lake to evaluate the necessary improvements to the Town's potable water system to serve a proposed development of two parcels of land in unincorporated El Paso County. The proposed Buc-ee's Travel Center development includes a large-scale retail store with fuel sales. The developer has requested treated water service for the development's use and fire protection should the proposed annexation of the parcels into the Town be completed.

The purpose of this report is to: 1) evaluate the water system impacts of the requested commercial development and 2) identify needed improvements for the Town's existing water system, and the estimated costs associated with the improvements. The scope of the evaluation includes a review of the Town of Palmer Lake's water rights, supply and treatment capacities, treated water storage, and water distribution system piping. The PER identifies necessary water system improvements and estimated costs to deliver a reliable and safe water supply to the proposed development. The PER also evaluates future requirements to serve adjacent properties along the service area extension. The recommended improvements are to comply with *Regulation No. 11 - Colorado Primary Drinking Water Regulations* and the *State of Colorado Design Criteria for Potable Water Systems (DW005).*

B. BACKGROUND

The Town of Palmer Lake's government is that of a Statutory town. A Statutory town is a town that is governed by the state's general laws regarding municipalities, as opposed to having its own "home rule" charter allowing for more local autonomy. Therefore, in the case of drinking water systems, the Town of Palmer Lake is governed by the State of Colorado Primary Drinking Water Regulations and Design Criteria for Potable Water Systems. The Town has provided water service to its customers since around 1867 with the adjudication of its original water rights. The Town's current water supply consists of two active groundwater wells located within the Town limits, and the Glen Park and lower reservoirs

located west of Town. The wells draw from the Arapahoe and Denver aquifers within the Denver Basin. The reservoirs located on Monument Creek provide surface water supply for the Town. Surface water is treated at the Town's surface water treatment plant (SW-WTP). Groundwater from the wells is treated at the groundwater treatment plant (GW-WTP). The water system is operated as a single pressure zone with storage provided by two (2) 250,000-gallon gravity storage tanks, known as the High Zone Tanks. Water from the lower 500,000-gallon treated groundwater storage tank, known as the Low Zone Tank, is pumped into the distribution system. The water distribution system consists primarily of polyvinylchloride (PVC) piping with limited portions of cast-iron pipe (CIP) within the system.

In 1985, the Town passed a deemed consent ordinance to claim groundwater underlying the corporate limits of the Town. The ordinance also allowed private property owners the ability to drill a private well within the corporate limits of the Town if public water facilities are not available.

In 2024, the Town was presented a concept for a proposed annexation of two parcels of land currently located within unincorporated El Paso County. Once annexed, the property would be developed into a Buc-ee's Travel Center, a large-scale retail store with fuel sales. The two vacant parcels of land, identified by El Paso County Assessor's Office as Parcel Nos. 7102200014 and 7102200015, are comprised of 4.95 and 20.01 acres, respectively. The 4.95-acre parcel is currently zoned CC (Commercial Community), and the 20.01-acre parcel is zoned C-1 (Commercial – Obsolete) by El Paso County. The proposed commercial building is estimated to have 74,000 square feet of retail space. The latest documents submitted to the Town for the proposed annexation into the Town of Palmer Lake requested Planned Development (PD) zoning of the parcels.

Buc-ee's Holdings, Inc. is an American chain of travel centers established in 1982. This family-focused travel center features a wide range of prepared foods including custom Texas-style barbeque sandwiches, salads, fruits, baked goods, and sweets as well as a unique collection of gifts, housewares, clothing, and weekend traveling gear. Buc-ee's is open 24 hours per day, seven days per week and known for its abundant gas pumps and clean and spacious restrooms. The travel center does not allow larger semi-trucks on the property.

The proposed development's parcels are located approximately two (2) miles east of the Town's water distribution system. A waterline extension is needed to serve the proposed

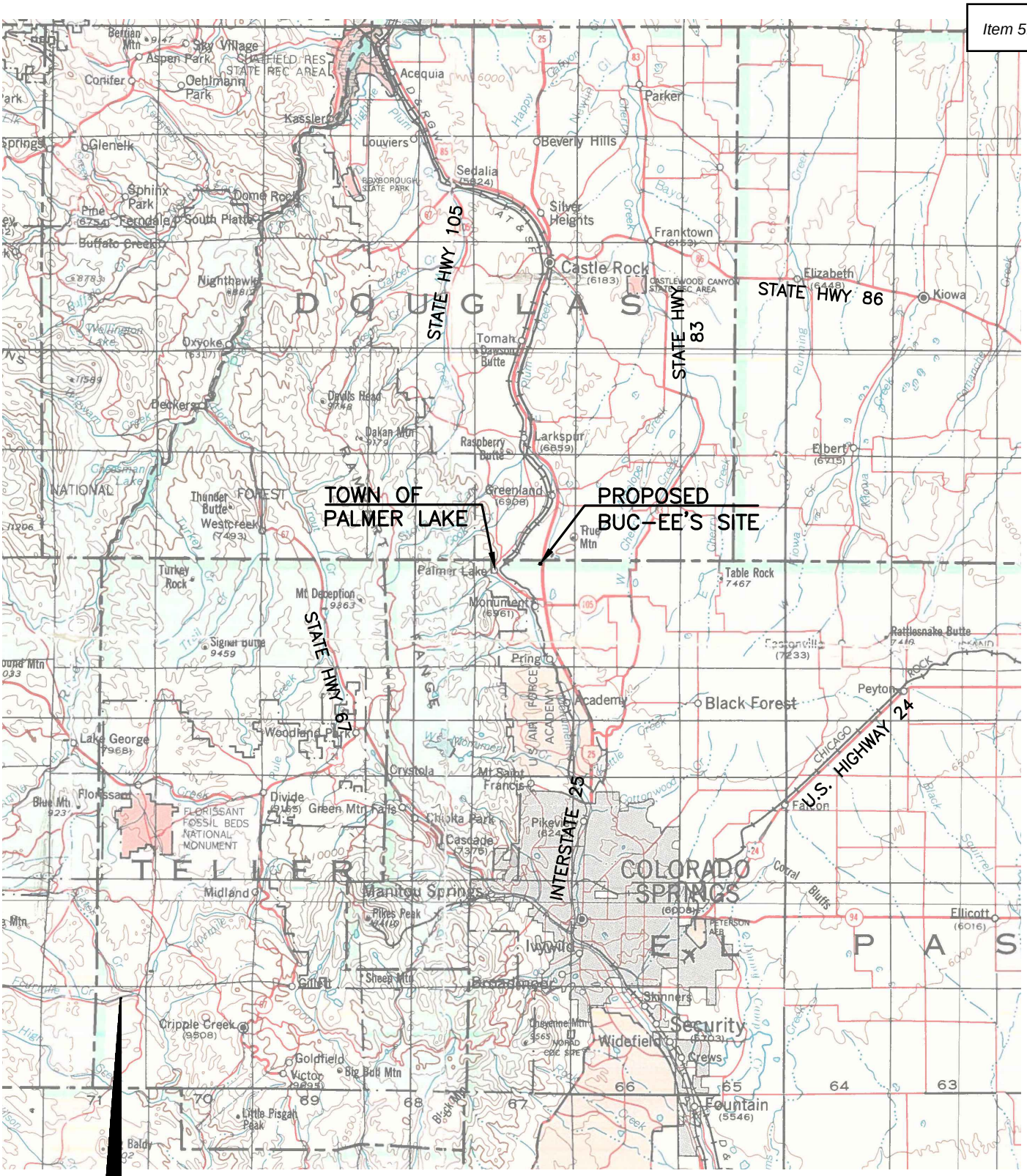
development. The waterline extension route passes numerous (developed and undeveloped) properties that may desire connecting to the Town's water system in the future. Therefore, this report also addresses potential annexation and water service connections along the waterline extension route.

This PER includes a comprehensive evaluation of the Town's existing water system and presents an evaluation of alternatives to provide new water supply infrastructure to the proposed development and potential future customers along its annexation corridor.

C. SERVICE AREA

The Town of Palmer Lake is located in central Colorado within northeastern El Paso County. The community is located within Sections 4, 5, 8, 9, 10, and 15, Township 11, Range 67 West of the Principal Meridian. The Town's water service area consists of the incorporated limits of the Town, with the majority of the Town's population being served by the water distribution system. The southeast quadrant of the Town is served by individual private wells.

The proposed development site is located on the southwest corner of the Interstate 25 and County Line Road interchange, approximately two (2) miles east of the incorporated limits of the Town. This proposed site is located within Section 2, Township 11, Range 67 West of the Principal Meridian. The general location of the Town and the proposed site are depicted on Figure 1 – Vicinity Map. The Town of Palmer Lake corporate boundary and the proposed annexation area to the Town are shown on Figure 2 – Location Map. This figure also shows the general locations of the major components of the Town's water system.


TOWN OF PALMER LAKE
PROPOSED BUC-EE'S SITE
STATE HWY 105
STATE HWY 83
STATE HWY 86
STATE HWY 67
INTERSTATE 25
U.S. HIGHWAY 24
DOUGLAS
TELLER
EL PASO
Castle Rock
Palmer Lake
Monument
Larkspur
Franktown
Elizabeth
Kiowa
Parker
Black Forest
Academy
Colorado Springs
Manitou Springs
Woodland Park
Cascade
Green Mtn Falls
Divide
Florissant
Florissant Fossil Beds National Monument
Cripple Creek
Victor
Goldfield
Midland
Fountain
Security
Widefield
Ellicott
Peyton
Falcon
Calhan
Rattlesnake Butte
Table Rock
Pring
Greenland
Raspberry Butte
Tomah
Dakan Mtn
Devils Head
Thunder Butte
Westcreek
Turkey Rock
Mt Deception
Signal Butte
Lake George
Crystola
Mt Saint Francis
Pikeview
Ivywild
Broadmoor
Skinners
Crews
Peterson AFB
Cheyenne Mtn
Sheep Mtn
Big Bull Mtn
Little Pisgah Peak
Pikes Peak
Sphinx Park
Dome Rock
Pine
Ferndale
South Platte
Buffalo Creek
Nighthawk
Oxyoke
Deckers
Wellington Lake
Chessman Lake
Turkey Creek
Trout Creek
Beaver Creek
Rampart Range
Pikeview
Acequia
Louviers
Sedalia
Kassler
Conifer
Aspen Park
Sky Village
Bergen Mtn
Oehlmann Park
Glenelk
Springs
Cheesman Lake
Elbert
Table Rock
Monument
Pring
Academy
Black Forest
Peyton
Falcon
Ellicott
Fountain
Security
Widefield
Colorado Springs
Manitou Springs
Woodland Park
Castle Rock
Franktown
Parker
Elizabeth
Kiowa
Elbert
Larkspur
Palmer Lake

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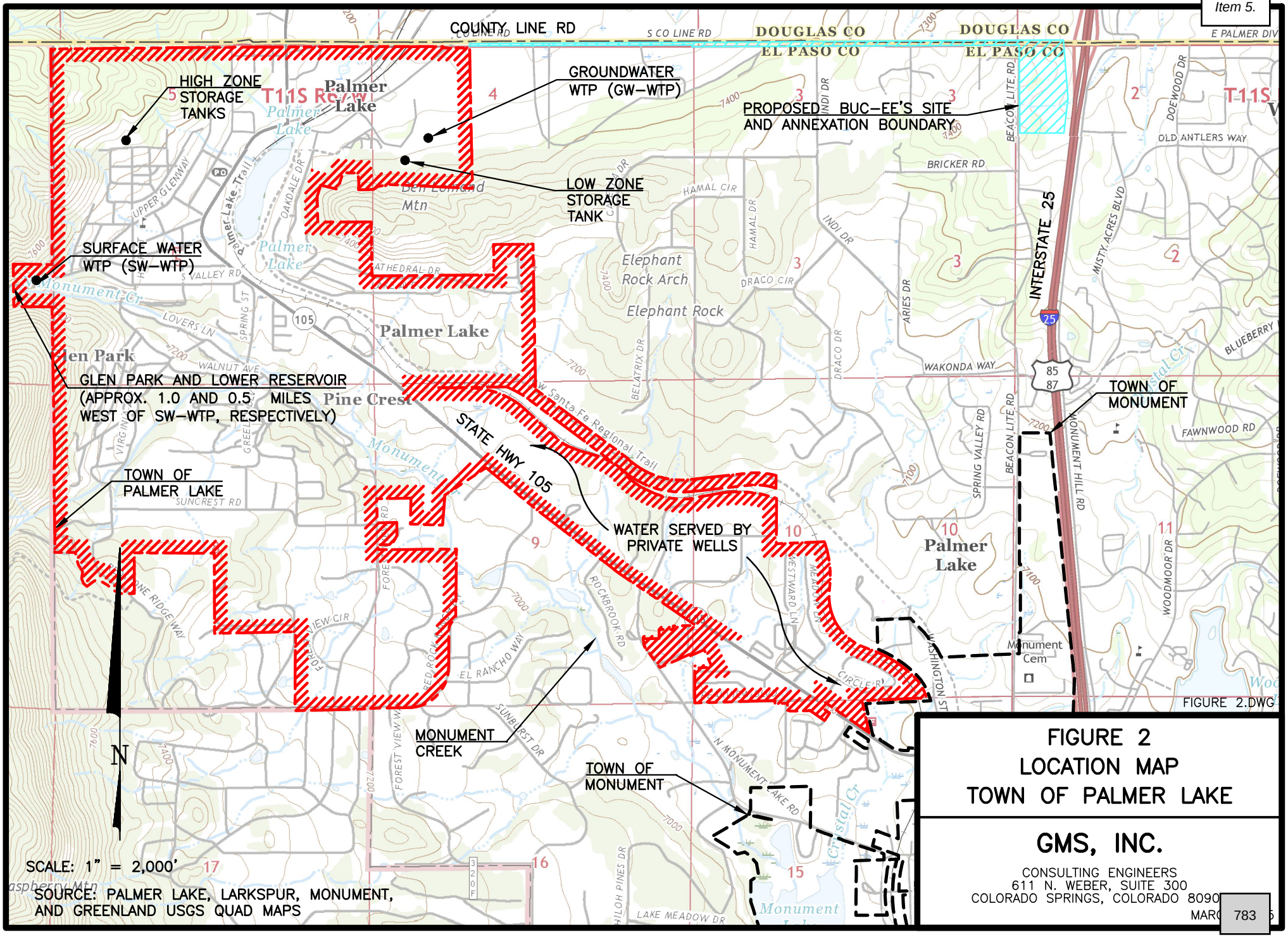

FIGURE 2
LOCATION MAP
TOWN OF PALMER LAKE

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MARC

SECTION III
POPULATION

The planning area of this evaluation is limited to the incorporated limits of the Town of Palmer Lake, the proposed annexation area associated with the new commercial development, and potential additional annexation areas along the proposed annexation location. The primary focus will be on the Town of Palmer Lake and the potential additional annexations areas to project future populations.

A. HISTORICAL POPULATION

The general population of the Colorado Front Range has seen a long-term steady increase in numbers over the last century. The Pikes Peak Region includes the counties of El Paso, Park, and Teller. From 1980 to 2023 this region grew from a population of 325,611 people to 786,885 people, an increase of 142%, or an average of 2.1% per year. The historical long-term increase in population in the Front Range of Colorado has been influenced by strong economic growth of the large metropolitan cities (Denver and Colorado Springs) and the desirable Colorado lifestyle. In general, El Paso County and Palmer Lake experienced similar growth from 1980 through 2023, growing in population by 141% and 135% respectively. Strong growth within the Colorado Springs area is projected to continue based on projections by the Colorado Department of Local Affairs, State Demographer's Office (SDO), dated October 2024.

The following table provides a tabulation of data from the previous five census periods for El Paso County and the incorporated Town of Palmer Lake.

TABLE 4

TOWN OF PALMER LAKE

HISTORICAL POPULATION [1)]

Year	El Paso County	Town of Palmer Lake
1980	309,424	1,130
1990	397,014	1,480
2000	516,929	2,179
2010	622,263	2,420
2020	730,395	2,636
2021 [2)]	737,239	2,643
2022 [2)]	740,539	2,647
2023 [2)]	744,153	2,650 [3)]

1) Census Population
2) State Demography population estimates, October 2024.
3) Includes 240 people served by 147 private wells.

The above table shows the total County and Town population increase from 1980 and 2023. The Town experienced its most dramatic population growth during the 1990s, but growth slowed in the following years due to limitations in the capabilities of the water supply facilities.

B. POPULATION PROJECTIONS

For this report, population estimates will focus on future growth within the current incorporated limits of the Town, known as in-fill, as well as expansion of the Town. The proposed development and adjacent properties to the proposed annexation route are accounted for separately from the Town's population projections.

The SDO compiles population projections for both regions and counties. They do not compile any statistical projections for individual communities or unincorporated portions of counties. The SDO population projections are based on regional statistical data for births, deaths and migration into and out of an area.

The recent population projection data from the SDO, dated October 2024, reflects an increasing population trend for El Paso County over the next 25 years with a steady population increase through 2050 at an average rate of 1.1% per year The SDO average annual growth rate is comparable to the average annual population increase seen in the census data from 2000 to 2020. The magnitude of this projected growth is attributable to the continuation of

new housing construction in the urbanizing fringe of the Colorado Springs Metro area, which is occurring within both the incorporated and unincorporated areas of El Paso County. These countywide growth figures are possible for the Town of Palmer Lake, if the availability of water supply continues.

The pressures for growth within Palmer Lake and subsequently to the Town's water system are strong. This is facilitated in part by the construction of the Interstate 25 Gap project between Monument and Castle Rock has improved the traffic congestion along this major Colorado Springs to Denver transportation corridor. A 2017 estimate by Tetra Tech Engineering Services put the available number of water taps at 1,060. A moratorium by the Town was implemented in September 2020 through Resolution No. 18-2020 to effectively evaluate the Town's water supply and demand. The 2020 Water Resources Study conducted a more detailed evaluation of the available water supply and estimated the number of available taps at 1,145. In February 2021, the Town partially lifted the moratorium in Resolution No. 12-2021 by allowing up to 10 new water taps. Not all residents in the Town are served by the Town's water system. Currently, 147 private residential and commercial water wells have been constructed within the Town limits (six more residential wells have been constructed since the 2022 PER). These existing wells could potentially be replaced with potable water from the Town's system in the future. For the purposes of this report, a Town growth rate equal to the SDO's county-wide growth rate of 1.1% / year is used.

The following table presents population projections for the Town of Palmer Lake based on the SDO's county-wide growth rate for El Paso County. These population projections for Palmer Lake through the year 2050 are seen as being relatively conservative and for planning purposes generally include localized contiguous growth of the Town and general infill within the Town. The following population projections for the Town's water system reflect the service area's population including those currently on private wells.

TABLE 5

TOWN OF PALMER LAKE

PROJECTED POPULATION

Year	El Paso County [1)]	Town of Palmer Lake [2)]
2023	744,153	2,650
2025	758,150	2,709
2030	810,949	2,862
2035	867,406	3,024
2040	920,112	3,195
2045	965,080	3,376
2050	1,001,087	3,567

1) Population forecasts from State Demographer's Office, October 2024.
2) Town growth rate based on countywide projections includes properties served by private wells.

Based on these population projections, the Town's population is projected to increase from a 2023 population of 2,650 people to 3,567 people in 2050, an increase of 35%. The average household size within the Town of Palmer Lake is 2.42 people per household based on the State Demographer's Office data, dated 2024.

C. POTENTIAL ANNEXATION CUSTOMER PROJECTIONS

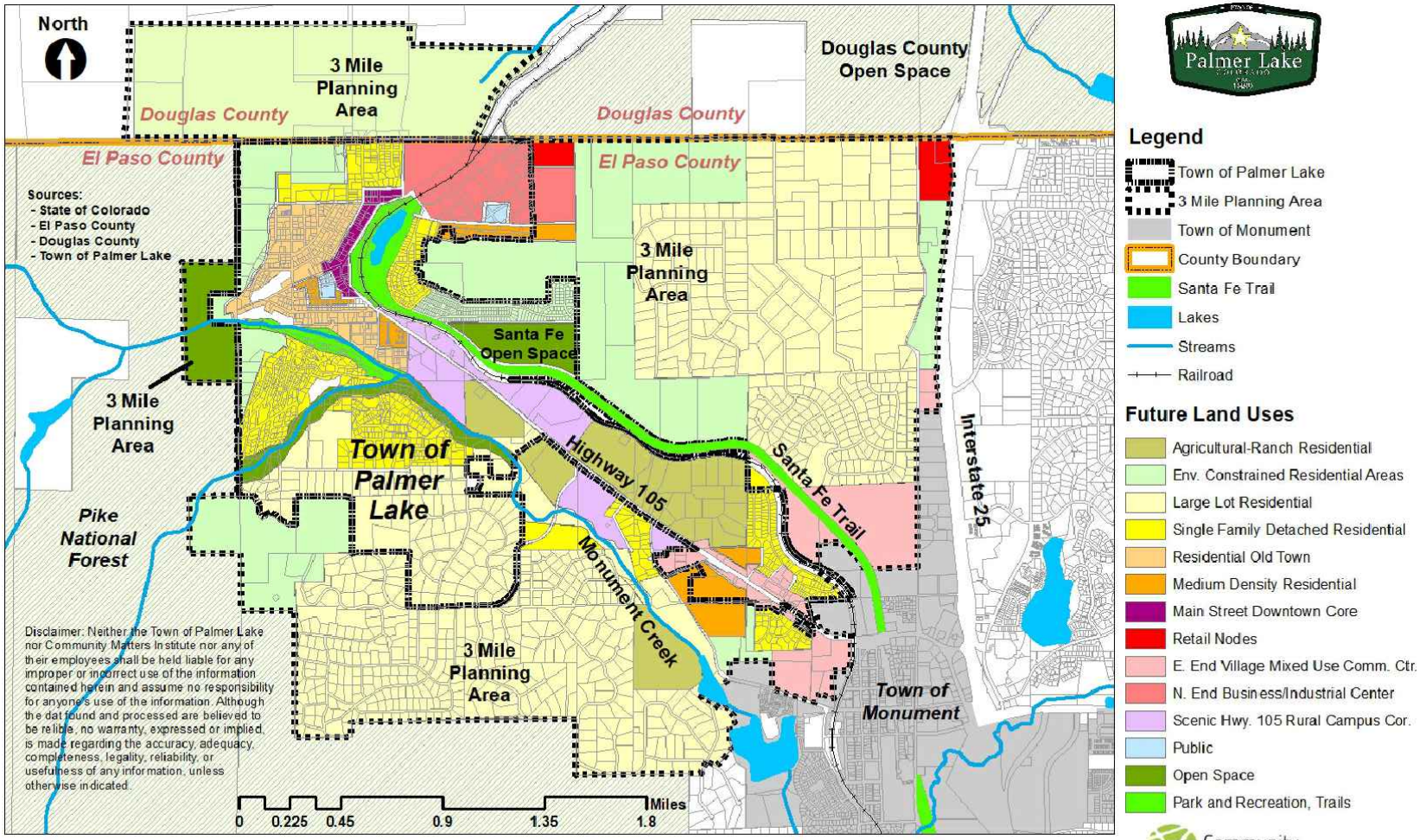
The proposed development is located approximately two (2) miles from the Town's existing water distribution system. A waterline extension to connect the proposed development would pass numerous properties (developed and undeveloped), those of which are developed are currently on their own water supplies. The waterline extension is discussed in Section VII. With the proposed annexation area and the waterline extension being in County Line Road and Beacon Lite Road, properties along this annexation route may desire to be annexed in the future as well. These properties along County Line Road and Beacon Lite Road which could be, or are, on their own water supplies could benefit from connecting to the Town's municipal water supply because it may improve their water reliability, ensure safe drinking water and reduce maintenance costs compared to private wells. In addition, connection to the Town's water system could offer other benefits such as enhanced property values, fire protection, and potentially lower insurance premiums.

When evaluating and sizing the improvements to the Town's water system, the potential additional annexation areas which could be served by the waterline extension to the proposed site must be considered. These potential connections were evaluated using the Future Land Use Map from the Town's 2022 Community Master Plan, as shown in Figure 3. The parcels included in the proposed development are designated as a retail node in Figure 3. Adjacent parcels to the south of County Line Road and west of the proposed development are primarily classified as large-lot residential, while land further west is categorized as environmentally constrained residential areas. To the north of County Line Road, land is primarily designated as Douglas County open space. Environmentally constrained residential areas and another retail node were previously identified in the Master Plan, but have recently been removed from consideration based on property owner requests. An updated Future Land Use Map received from the Town was used as a basis for Figure 3, and also serves as the reference for assessing potential waterline connections and annexations which may come to fruition if the waterline extension is in place.

For the purposes of this report, the potential connections were narrowed to properties adjacent to County Line Road and Beacon Lite Road which is the most likely proposed waterline extension route. The potential customers selected were for any homes whose primary driveway access is from these roads. In addition, an offset distance of 1,500 feet from County Line Road was selected as the nominal distance for an immediate potential customer. This distance reflects the approximate location of the furthest property boundary whose direct access is from County Line Road.

Regions outside of this offset were excluded from this analysis, as the focus is on potential connections in the foreseeable future due to the water extension to the proposed commercial development. As the Town expands and considers annexing lands to the east of its current limits, further studies will be necessary to evaluate the system capacity, components and necessary looping.

A majority of the properties south of County Line Road and to the west of the commercial development (labeled as large lot residential by the Town) are developed and designated by the El Paso County Development Service Department as RR-5 (Residential Rural – 5 acres). There are fifteen (15) immediate potential customer connections along the south side of County Line Road within the 1,500-foot offset.



Community Master Plan **Future Land Use Map** January 24, 2025

FIGURE 3.DWG

FIGURE 3
FUTURE LAND USE MAP
TOWN OF PALMER LAKE

NOTE: THIS MAP IS THE CURRENT VERSION OF THE MAP THAT ORIGINALLY APPEARED IN THE TOWN'S 2022 COMMUNITY MASTER PLAN. THE ONLY CHANGE FROM THE ORIGINAL MAP IS THE REMOVAL FROM THE FUTURE LAND USE BOUNDARY OF THE PRIVATE LAND NORTH OF COUNTY LINE ROAD THAT IS SURROUNDED BY DOUGLAS COUNTY OPEN SPACE.

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COLORADO SPRINGS, COLORADO 80903

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The water main extension is proposed to run along County Line Road before heading south on Beacon Lite Road. The extension is proposed to the main entrance of the proposed commercial development, approximately 850 feet south of County Line Road. Opposite the proposed commercial development along Beacon Lite Road are four more properties with driveway access, including one for a church. The current land owner of the proposed development site also owns land southeast of the County Line Road and Interstate 25 interchange, which was rezoned in December 2024 to RM-12 (Residential Multi-Dwelling) and RS-6000 (Residential Suburban). The new commercial development is expected to encourage further growth in the area. South of the proposed site is a 35-acre parcel zoned as C-1 (Commercial Obsolete) with allowances for special uses. This land surrounds property owned by the Town of Monument, for the Town of Monument's water storage tank, and land owned by a telephone company, which is occupied by a communications tower. South of these facilities, and on part of the 35-acre parcel, are two single-family residential homes. North of the storage tank lies the undeveloped portion of the 35-acre parcel. Development is anticipated to occur on this 10-acre portion of land given that residential and multi-dwelling zoning has already been approved at the southeast corner of the County Line Road and Interstate 25 interchange. The El Paso County Land Development Code limits RM-12 to a minimum lot area of 3,500 square feet to a single family attached dwelling (7,000 square feet for two-family dwellings). The original Monument Ridge West LLC multifamily development (once contemplated on the proposed development site) had an approximate dwelling density of 4,800 square feet per dwelling unit. Applying this density to the 10-acre parcel, there would be an estimated 45 duplexes (90 single-family attached units). Additionally, three adjacent homes opposite Beacon Lite Road extend the same distance as this 10-acre portion of land and are included as potential customers. In total, this stretch represents 97 potential customers along Beacon Lite Road.

The property owned by the United Congregational Church (UCC) was recently disconnected from the Town of Palmer Lake, removing it from the Town's corporate boundary. The property is listed as parcel number 7104200012 in the El Paso County Assessor's records. Because this property was previously contained within the Town of Palmer Lake and has since intentionally removed itself from the Town, it is believed that the property will not be seeking water service from the Town in the future. Although this property is currently outside of the Town and could potentially receive water service from the water line extension to the proposed Buc-ee's development, the recent separation from the Town justifies this property not being

included in any future annexation lands or additional water demands which may arise from the water line extension serving the proposed Buc-ee's development.

An area located just east of the UCC property described above, known as the Ben Lomand Mountain Village development, remains undeveloped (labeled as environmentally constrained residential by the Town's Future Land Use Map). This area consists of approximately 181.5 acres and is outside Town boundaries. An application was previously submitted to the Town to annex the 181.5 acres. If annexed, the owner planned to rezone the parcels from RR-5 to RE (Residential Estate) zoning. According to the Town of Palmer Lakes Code of Ordinances, RE Estate Zone allows for single-family dwellings on minimum lot sizes of 2.5 acres. Upon review of the Town's *Annexation Impact Report for the Ben Lomand Mountain Village Annexation into the Town of Palmer Lake,* within the proposed 181.5-acre annexation, approximately 130-acres is reported to be available for development, with a usable building area of around 104 acres (assuming 20% land use for rights-of-way and Town infrastructure). Assuming the RE Estate Zones, approximately 41 lots could be built in the development. These numbers present an estimated number of connections based on previously submitted documents and could change in the future.

The north side of County Line Road is zoned by Douglas County. A majority of the land adjacent to County Line Road is zoned as OS (Open Space) and not available for development. There are two parcels of land located with driveway access to County Line Road and are zoned by Douglas County as A1 (Agricultural One). These lots were previously designated as a retail node and environmentally constrained residential lots in the Town's Future Land Use Map. The A1 zone district discourages urban development and is characterized by large-acreage (35-acres or greater) farms, ranches, open area, etc. Development is limited to churches, fire stations, library, open space/trails, schools, etc. The smaller 38-acre property (noted as a retail node) has already been developed with a single residential building. The larger 120-acre property remains undeveloped; however, it is possible that this larger acreage property could be divided into three (3) 35-acre potential lots. Although this area has development potential as described above, the recent requests from the property owners have removed this area from the future land use considerations. Therefore, based on this recent change, this area is not considered to contribute to future annexation connections.

Based on a land use review and estimates of potential connections for future developments, it was assumed that approximately 153 potential connections will be made (152 residential and one church), excluding the Buc-ee's Travel Center. Assuming the Town of Palmer Lake's household density of 2.42 people per household (per the SDO dated October 2024), the projected population increase for the water extension is 368 people.

The table below summarizes the estimated potential water customers for future annexation areas along the proposed annexation route to the Buc-ee's Development. Figure 4 illustrates the location and extents of the various areas considered as potential future annexation customers.

TABLE 6
TOWN OF PALMER LAKE
ESTIMATED WATER CONNECTIONS AND POPULATION

Area	Land Use	Customer Connection	Population [1)]
A	Environmentally Constrained Residential	41	100
B	Large Lot Residential	15	36
C	Environmentally Constrained Residential	0 (4) [2)]	0 (10) [2)]
D	Large Lot Residential and Church	4	7
E	Multi-Family Residential	90	218
F	Large Lot Residential	3	7
	Total	153	368

1) Based on 2.42 people/residential connection
2) Land area C is not considered

LEGEND
PALMER LAKE BOUNDARY
PROPOSED ANNEXATION
EXISTING WATERLINES
PROPOSED WATERLINE EXTENSION
POTENTIAL ANNEXATION AREA
EXISTING FIRE HYDRANT ASSEMBLY
PROPOSED FIRE HYDRANT ASSEMBLY
PROPOSED GATE VALVE
WELL

0' 1,000' 2,000'
SCALE: 1" = 1,000'

SPRUCE MOUNTAIN RD
DOUGLAS COUNTY OPEN SPACE
C
4 POTENTIAL CONNECTIONS REMOVED FROM CONSIDERATION
DOUGLAS COUNTY OPEN SPACE
REPLACE 6" PVC WITH 12" DIP TO SPRUCE AVE
NEW 12" DIP
DOUGLAS COUNTY
COUNTY LINE RD
NEW ARAPAHOE A-1 WELL
EL PASO COUNTY
A
B
~15 POTENTIAL LARGE LOT RESIDENTIAL CONNECTIONS
BEN LOMAND MOUNTAIN VILLAGE DEVELOPMENT
41 POTENTIAL RESIDENTIAL CONNECTIONS
4 POTENTIAL CONNECTIONS (INCLUDING ONE CHURCH)
D
BEACON LITE RD
RAILROAD RIGHT-OF-WAY
SPRUCE AVE
DENVER WELL D-2R AND WELL HOUSE
GW-WTP
ARAPAHOE WELL A-2
CAPELLA DR
3 POTENTIAL RESIDENTIAL CONNECTIONS
BRICKER RD
F
E
PROPOSED COMMERCIAL DEVELOPMENT
PROPOSED TOWN ANNEXATION
HAMAL CIR
INDI RD
POTENTIAL MULTI-FAMILY DEVELOPMENT (APPROX. 90 UNITS).
BOOSTER PUMP STATION
LOW ZONE STORAGE TANK 500,000 GALLONS
HAMAL DR
TOWN OF MONUMENT WATER STORAGE TANK
INTERSTATE 25
DRACO DR
DRACO CIR
BELATRIX DR
CAPELLA DR
ARIES DR
POTENTIAL TOWN OF MONUMENT SERVICE AREA
TOWN OF PALMER LAKE BOUNDARY
WAKONDA WAY
SANTA FE TRAIL
RAILROAD RIGHT-OF-WAY
STATE HIGHWAY 105
FIGURE 4.DWG

FIGURE 4
POTENTIAL FUTURE ANNEXATION WATER CONNECTIONS
TOWN OF PALMER LAKE

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MARCH 202

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SECTION IV
EXISTING WATER SYSTEM

The existing water system is discussed in detail in the Town of Palmer Lake's *Preliminary Engineering Report (PER) for Water System Improvements – 2022.* The purpose of this section is to summarize the information from the 2022 PER, relevant to proposed water service to the Buc-ee's development. Figure 5 shows the Town boundaries, existing water distribution system, surface water treatment plant (SW-WTP), groundwater treatment plant (GW-WTP), the storage tanks and wells. The Town of Palmer Lake service area consists of approximately 3.1 square miles (sq. mi.) or 1,934 acres. The Town limits extend southeast in an area north of Highway 105. This portion of the Town is not served by the Town's water system. Water in this area of Town is provided by private groundwater wells. Figure 3 also shows the proposed annexation with respect to the current Town boundaries. The proposed annexation has a total combined property area of 0.04 sq. mi. or 24.96 acres.

A. BACKGROUND

As previously discussed, the Town has maintained its own water system since around the time of its first water right in 1867. The original distribution system has been extended and replaced extensively since then. In the last ten years, the Town has aggressively been replacing segments of old cast-iron pipe having lead joints. The SW-WTP was constructed in the 1960's and was upgraded in 2012 with new microfiltration process equipment. The GW-WTP was constructed in 2002 for the then-constructed Arapahoe Aquifer Well. The Denver Aquifer Well was later connected to flow through this WTP.

A water use study prepared by W.W. Wheeler & Associates in 1987 evaluated surface water rights for the Town. The study recommended obtaining court approval for an augmentation plan for out-of-priority surface water diversions and claiming groundwater rights below the footprint of the Town. These groundwater rights and augmentation plan were adjudicated in 1987. The 1987 study was updated in 2000. The update included a distribution system model and pipeline recommendations to the distribution system. Also recommended was

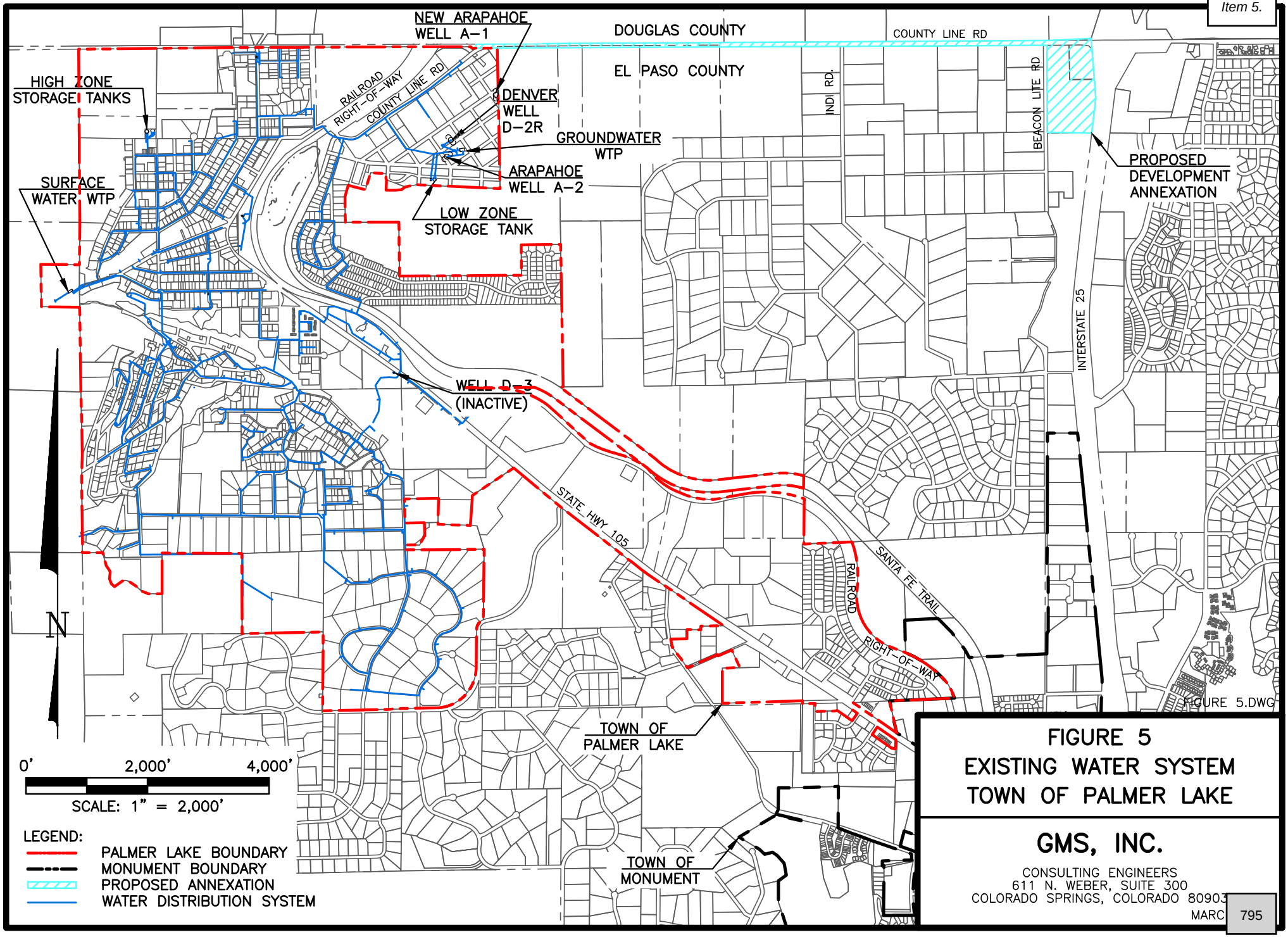

FIGURE 5.DWG

FIGURE 5
EXISTING WATER SYSTEM
TOWN OF PALMER LAKE

GMS, INC.
CONSULTING ENGINEERS
611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 80903

MARC

the construction of an Arapahoe Aquifer Well for augmentation of out-of-priority diversions. An additional update to the study was conducted in 2017 in order to establish the number of available taps based on surface water supplies only. A separate water resources evaluation for the Town of Palmer Lake was prepared by the consultant in 2020. The evaluation summarized the Town's current water rights status and water system capacity.

A PER was conducted for the Town of Palmer Lake in 2022 with an accompanying addendum. The PER analyzed the Town's reservoir storage, supply, groundwater well production, surface water and groundwater treatment, treated water storage, distribution and customer metering components. The report determined that the Town's surface water and groundwater rights were sufficient, but recommended additional redundant well capacity to address the worst-case scenario of a 20-year low surface water availability and with one groundwater well being out of service. The report recommended installing a new Arapahoe Aquifer well (A-1) and replacing aging cast iron and problematic areas in the distribution system. System looping across Highway 105 was also advised. Extending the water system to properties on private wells to the southeast of the Town was deemed cost-prohibitive and not recommended at the time. At the preparation of this report, the Town is actively pursuing the construction of the new A-1 well.

B. WATER SUPPLY

The Town of Palmer Lake derives its water supply from both surface water and groundwater sources. The following is a summary of the Town's surface water and groundwater rights. Details of the Town's water rights are presented in the *2020 Palmer Lake Water Resources Evaluation* report.

1. Summary of Water Rights

The Town has two direct flow surface water rights available for its potable water system. The Anchor Ditch right at 0.89 cubic feet per second (cfs) (575,000 gallons per day [gpd]) has a #1 priority. The Town of Palmer Lake Water System right at 2.19 cfs (1,420,000 gpd) has a #65 right and is subject to senior priority calls. The combined 3.08 cfs (1,995,000 gpd) can be replaced for out-of-priority diversions with non-tributary water via the adjudicated exchange plan.

The Town has a total nontribuatry and not-nontributary water rights of 3,378 AF per year (3,106,000 gpd). The Town has consented 404 AF per year (361,000 gpd) to private wells within the Town limits. The net amount of nontributary and not-nontributary groundwater rights available for the Town's potable water system, and for augmentation, totals 2,974.4 AF per year (2,650,000 gpd).

Since the 2022 PER, the Town had six new residential wells come online. A tabulation of private wells within the corporate limits of the Town is presented in the 2020 Water Resources Evaluation by GMS, Inc. Of the 151 private well records compiled, 141 are listed as constructed and 10 are listed as having the permit issued. For this evaluation, it is assumed the six wells are part of the 10 that were permitted but not constructed. Thus, keeping the water rights consented assumption the same as the 2022 PER.

The Town has a net total of 4,650,000 gpd (5,209 ac-ft/yr) in domestic water supply rights. This, of course, does not represent the amount of treated water that can be physically delivered to the water system.

2. Summary of Available Supply

The Town's water supply capacity is limited to the actual availability of water supply and associated facilities' capacities. In general, surface water supply is preferred to groundwater supply because it comes at a lower operating cost.

The Town's surface water supply is currently limited to 72,000 gpd (50 gpm). The Town has indicated that pumping at rates exceeding 50 gpm would drain the water reservoir to a level that has negative water quality impacts during warm months and can lead to freezing of the intake during cold weather. The 2020 Water Resources Evaluation presented an update of available surface water supplies. The minimum calculated available surface water supply of 5.75 AF per month equates to 60,400 gpd (41.9 gpm); worst-case. Under this worst-case condition with only 60,400 gpd in direct stream flows available, the remaining water system demand would need to be made up using reservoir storage and non-tributary groundwater. The Glen Park Reservoir has a 147.5 AF storage right. Of this, 51.6 AF per year is required for Colorado Water Conservation Board (CWCB) minimum stream flows and evaporation losses. Approximately 50 AF of storage

should be considered unusable in the bottom of the impoundment. This leaves approximately 45 AF of storage available for use.

The Town's groundwater rights far surpass its groundwater well capacity. The Town's A-2 Arapahoe Well is 2,233 feet deep into the Arapahoe aquifer. The well normally pumps at 240 gpm, but has a maximum capacity of 300 gpm. The newly constructed Denver D-2R replacement well is 1,630 feet deep into the Denver aquifer. The D-2R well normally pumps at 130 gpm, with a maximum capacity of 200 gpm. The D-3 well was constructed in 2001 but had a low production rate of only 60 gpm. This well is currently not equipped with a pump. Both the A-2 and D-2R wells pump to the Town's GW-WTP. Although the wells are capable of pumping at their respective maximum capacities, the drawdown is significant enough that time is needed for the recovery of both wells. Thus, pumping the wells at their maximum capacities is not sustainable. With a combined capacity of up to 500 gpm, the two wells could produce 720,000 gpd. However, this maximum combined rate of 500 gpm is not sustainable due to the groundwater drawdown; therefore, the current pumping rates listed above are used for available capacity values rather than using the unsustainable maximum rates. With the larger capacity well out of service, the maximum available groundwater capacity is 288,000 gpd. However, the actual pumping rate of 130 gpm results in a capacity of 187,200 gpd. The GW-WTP has a total capacity of 1,000 gpm, or 1,440,000 gpd.

Under worst-case surface water right conditions of 5.75 AF per month (60,400 gpd), and worst-case groundwater production capacity of 288,000 gpd, the Town's maximum potable water production capacity is 348,400 gpd, assuming no supplemental storage reserve is available in the Glen Park Reservoir. This maximum water production rate, under worst-case conditions, needs to be able to supply the maximum day demand condition on the water system. The Town is working on the new Arapahoe Aquifer A-1 well, as recommended in the Town’s 2022 PER. With the new Arapahoe A-1 well in service pumping at a maximum rate of 300 gpm (similar to the A-2 well), the Town’s worst-case maximum water production capacity would then be 780,400 gpd. These numbers are noted as the maximum values. Under typical and sustainable pumping rates, the actual water production capacities are reduced. Refer to the following table for maximum and actual capacities. This report assumes the new Arapahoe A-1 well will be completed by the time the proposed water system improvements have been constructed and placed into service, and the Buc-ee’s development is operational.

TABLE 7

TOWN OF PALMER LAKE

SURFACE AND GROUNDWATER SUPPLY CAPACITIES

	Maximum		Actual	
	gpm	gpd	gpm	gpd
Surface Water Supply	41.9 [1)]	60,400 [1)]	41.9	60,400
Groundwater Supply				
Arapahoe A-2 Well (existing)	300	432,000	240	345,600
Denver D-2R Well (existing)	200	288,000	130	187,200
Arapahoe A-1 Well (future)	300	432,000	240	345,600
Total Supply Worst-Case [2)] (with largest well out of service)				
Existing Well Conditions	241.9	348,400	171.9	247,600
Future Well Conditions	541.9	780,400	411.9	593,200

1) Assuming no storage in Glen Park Reservoir
2) Worst case surface water conditions plus largest groundwater well out of service

C. WATER TREATMENT

1. Surface Water Treatment Plant, (SW-WTP)

The Town's SW-WTP is located on the north side of North Monument Creek on Glen Avenue as shown on Figure 5. The facility treats surface water piped in from Glen Park Reservoir. The WTP has two treatment skids, each with a capacity of 350 gpm. With one skid being redundant, the firm capacity of the WTP is 350 gpm. Although actual production rates are limited by the supply capacities in the previous table.

Raw water from the reservoir enters the building at 110 psi and flows through an Amiad self-cleaning, 130-micron pre-strainer rated at 750 gpm. The water pressure is then reduced to 5-10 psi into the two microfiltration units. Filtered water flows to a small break tank. The filtered water is then boosted to 100 psi into the distribution system with three (3) 40-HP pumps. Gas chlorine solution is added for disinfection before the piping leaves the building. Buried 24-inch diameter piping outside the WTP provides disinfection contact before the first customer.

2. Groundwater Treatment Plant, (GW-WTP)

The Town's GW-WTP is located on the north side of Lomand Mountain at the end of Spruce Avenue as shown in Figure 5. This facility treats water from the Town's A-2 Well and D-2R Well. This filtration plant provides iron and manganese removal with iron oxidation and filtration of the groundwater supply. Certain levels of radium in the raw water are also removed with the oxidation of the iron.

Water is chlorinated as it enters the GW-WTP with sodium hypochlorite solution and flows into two (2) large contactor vessels for contact time. From the contactors, water flows to two (2) horizontal pressure filters manufactured by Filtronics, Inc. These filters use a proprietary media, presumably some form of manganese greensand. Filtered water continues out of the WTP to the low-pressure zone 500,000-gallon storage tank, or directly to the distribution system. The filtration equipment is rated at 500 gpm per filter, with two filters in the GW-WTP, and production is limited to the supply capacities described previously. Disinfection contact piping outside of the WTP consists of approximately 400 feet of 24-inch piping.

D. WATER STORAGE

Treated water storage for the distribution system is provided by three storage tanks having a combined capacity of 1.0 million gallons (MG). The original storage tank, High Zone Tank No. 1, is located in the northwest quadrant of the Town, north of Brook Street as shown in Figure 5. High Zone Tank No. 1 is a buried concrete storage tank with a capacity of 250,000 gallons. The tank was built in the 1960's. High Zone Tank No. 2 is also a buried concrete tank with a capacity of 250,000 gallons. These two High Zone tanks are approximately 50-feet in diameter and are connected to the distribution system in Brook Street by a single inlet/outlet 8-inch pipeline. The maximum water level in the tanks is estimated at an elevation of 7,556. Level controls in the tanks signal SW-WTP or GW-WTP to turn on and off. The high zone tanks typically operate in the range of 12 feet to 16.4 feet of depth.

The Low Zone Storage Tank is located south of the GW-WTP. This welded steel ground-level storage tank is 60 feet in diameter, 24 feet high, and has a capacity of 500,000 gallons. The Low Zone Storage Tank is 167 feet lower than the high zone tanks with an overflow elevation of approximately 7,389. Treated water enters the low zone tank from the GW-WTP through a 12-inch inlet pipeline and altitude valve.

The booster pump station adjacent to the Low Zone Storage Tank boosts the stored water to the distribution system pressure. The Low Zone Tank booster pump station is equipped with two pumps. The duty pump is a Cornell model 1.5Y-20-2, 20 horsepower (hp), 3600 rpm, 7.3 inch impeller, close-coupled, end suction centrifugal pump with a capacity of approximately 120 gpm. The second pump is considered to be, although not designated as, a fire pump. This booster pump is a Cornell model 4YB-100-2, 100-hp, 3600 rpm, 9.5 eight-inch impeller, close-coupled, end suction centrifugal pump with a capacity of 1,400 gpm.

E. WATER DISTRIBUTION SYSTEM

The Town's water distribution system is shown in Figure 5. Distribution piping ranges in size from 2-inch to 12-inch diameter. The system consists of 20.6 miles of distribution piping, primarily 6-inch in size. A breakdown of pipe sizes consists of 79% 6-inch, 5% 8-inch, 8% 10-inch and 1% 12-inch. The distribution system operates as a single pressure zone with gravity storage provided by the two High Zone storage tanks. Static pressure ranges from a low of 35 pounds per square inch (psi) at Highland Road and Brook Street, near the tanks; to a high of 210 psi on Forest View Way at the south end of the distribution system. In the center of Town near the Town Hall, the system pressure is approximately 125 psi.

F. WATER METERS

The Town of Palmer Lake requires the installation of water meters for all customers. The meter reading system consists of a radio read system. Meters are read by the Town monthly. Meter reads are provided to the Deputy Town Clerk so that monthly water bills can be issued. Meters are located within in-ground meter pits. Service lines are typically copper pipe extending from the meter to the water main in the street. The Town has indicated that there are no lead service lines, however, there are several galvanized service lines that will need to be replaced under the requirements of the Lead and Copper Rule Revisions.

The Town's A-2 and D-2R wells are metered at the GW-WTP by the filter effluent meters. Meter readings are read and recorded monthly. Monthly well pumpage readings are maintained by the Town’s water system supervisor and are provided to the Colorado Division of Water Resources annually. The filter meters measure water pumped through the filters to the distribution system and filter backwash water from the distribution system to the backwash waste tank. Reservoir inflow to the SW-WTP is metered at the inlet to each microfiltration skid. Backwash maintenance waste is also metered.

SECTION V
HISTORICAL AND PROJECTED WATER DEMANDS

An assessment of the historical and projected water demands for the Town of Palmer Lake is presented in this section. Historical well pumping records and total water sales were used to establish the baseline water use parameters for the Town. In addition, the estimated number of potential connections to the water system extension is calculated along with the projected water consumption of the proposed commercial development. These parameters were then used to project future demands on the water system based on service area population projections.

A. TOWN OF PALMER LAKE CURRENT WATER USE

Total production data for the GW-WTP and SW-WTP and total monthly water sales data were provided by the Town for the period from January 2022 through December 2024.

The following table is an annual summary of water production from the Town's two WTPs for the period of analysis. The specific break down in production between the two wells was not provided at the writing of this report.

TABLE 8
TOWN OF PALMER LAKE
WATER PRODUCTION

Year	Surface Water, MG.	Groundwater Wells (D-2R + A-2), MG [1)]	Total Production, MG.
2022	35.1	25.6	60.7
2023	33.3	22.8	56.1
2024	24.9	31.0	55.8

1) Well D-2 taken offline in November 2020. Well D-2R came online in Summer 2022.

Total well production in 2024 was 31.0 million gallons (MG), or 95.0 ac-ft. The 2024 SW-WTP production was 24.9 MG, or 76.3 ac-ft. The water source preference by the Town is to maximize the use of the surface water supply because it comes at a lower cost for treatment and pumping. However, in 2024, the Town utilized more water from the groundwater wells than from surface water.

Total water production has decreased from 2022 to 2024 due to the Town's effort to reduce leaks and replace aging pipes. It may also be due to the recent water rate increase which is a strong encouragement to decrease water usage. These actions have reduced water loss within the system, thereby lowering the volume of water required to compensate for unaccounted for losses. Filter backwash at both WTPs use treated water from the distribution system. Spent backwash water at the GW-WTP is recycled. At the SW-WTP, backwash water amounts to approximately 5.1% of the total throughput, which is discharged to Palmer Lake Sanitation District sewer system.

The following table presents monthly water production from the SW-WTP and the GW-WTP, and the monthly water sales totals for the period from 2022 through 2024.

TABLE 9

TOWN OF PALMER LAKE

WATER SYSTEM PRODUCTION AND SALES

Month	2022		2023		2024	
	Production [1], gal.	Sales [2], gal.	Production [1], gal.	Sales [2], gal.	Production [1], gal.	Sales [2], gal.
January	60,700,000	3,414,500	56,100,000	3,181,700	4,094,000	3,498,000
February		3,096,000		3,221,100	3,507,000	3,031,550
March		3,096,000		2,909,900	3,405,000	2,889,000
April		3,218,300		3,211,200	4,067,000	3,401,100
May		3,828,850		3,499,400	4,648,000	3,410,300
June		4,766,450		3,657,400	6,024,000	4,560,620
July		5,505,400		4,428,800	6,687,000	5,888,918
August		5,031,500		5,105,400	5,854,000	4,918,121
September		5,118,800		4,896,950	5,588,000	5,145,525
October		4,330,100		4,087,400	4,692,000	4,117,600
November		3,451,600		3,457,400	3,660,000	3,258,300
December		3,036,900		3,198,500	3,608,000	2,892,300
Total, gal.	60,700,000	47,894,400	56,100,000	44,855,150	55,834,000	47,011,334
WTP backwash waste, gal. [3]	2,920,000		2,920,000		2,928,000	
WTP Net Production [6], gpd [4]	158,301		145,699		144,552	
Water Sales, gpd [4]	131,218		122,891		128,446	
Unaccounted-for-water, % [5]	17.1%		15.7%		11.1%	
Water Customer Taps	1,015		1,018		1,022	
Gallons per Tap per Day	156.0	129.3	143.1	120.7	141.4	125.7

1) Total raw water from Glen Park Reservoir, Well A-2, and Well D-2R. Well D-2R came online in Summer 2022.
2) Total metered water sales. Monthly water sales not available for 2022 and 2023.
3) Based on daily use of 8,000 gpd at the Surface Water WTP. A high percentage of the backwash waste at the Groundwater WTP is recycled.
4) gpd = gallons per day, average.
5) Unaccounted-for-water is WTP production minus backwash waste minus water sales divided by WTP production minus backwash waste. This represents water which is not accounted for. Note that the water sales data straddles months so monthly loss is not accurate. Annual loss Is more accurate.
6) Net Average Production = Total Production – WTP Backwash Waste

As presented in the above table, net WTP production is calculated on an average day basis by subtracting the estimated backwash use at the SW-WTP. In 2024, net production averaged 144,552 gpd. This total production was similar in 2023 and higher in 2022.

Unaccounted-for-water represents water pumped into the Town's distribution system that is not measured by the Town's customer meters. Unaccounted-for-water is primarily attributed to unmetered uses such as fire hydrant usage for fire department training, customer meter inaccuracies, storage tank overflows, as well as pipeline leaks and breaks within the distribution system. These loss factors are not quantifiable. An unaccounted-for-water value of 15% to 20% is typical for a small system. Values of 30% to 40% can be observed. The American Water Works Association recommends an unaccounted-for water goal of 10% with proactive efforts taken to reach this goal. A comparison of water put into the system to the total metered water sales was made for the period from January 2022 through December 2024. The comparison indicates unaccounted-for-water ranged from 17.1% in 2022 to 11.1% in 2024. This amounts to an average water loss of 22,000 gpd. As mentioned previously, the Town has made significant efforts to repair leaks in the system. This is reflected in the unaccounted-for-water being reduced since the 2022 PER. Therefore, water demand projections presented in this section are based on the average metered water sales between 2022 to 2024, and an average unaccounted-for-water percentage of 14.6%.

AWWA no longer uses the term “unaccounted-for-water” in assessing water loss. The AWWA has seen an inconsistent use and interpretation of “unaccounted-for-water” because it has varied for different systems. Currently, AWWA uses “non-revenue” water to reflect the distributed volume of water that is not seen in customer billings. This method specifically analyzes unbilled consumption (water for firefighting, flushing, etc.), apparent losses (customer meter inaccuracies and unauthorized consumption), and real losses (system leakage and storage tank overflows) to attain a more accurate estimate of water that is not billed to customers. For larger systems that have more resources, tracking the different ways that water is being utilized is feasible. However, smaller systems with less resources cannot easily assess the different ways that water is being lost. Regardless of the terminology, this report does provide consideration to the unquantifiable losses apparent in the Town of Palmer Lake including flushing losses, customer meter inaccuracies, and system leaks and breaks.

The maximum month of water production occurred in July 2024 and totaled 6.7 MG. This represents a maximum month factor of 144% of the average day demand. Maximum daily demand conditions occur during the summer months when conditions are dry and outdoor water usage is elevated. The maximum day demand peaking factor is estimated at 284% which remains consistent with the 2022 PER of average day demand. The highest demand condition that stresses a system the most is the peak hour demand that occurs typically for a

short period of time during the maximum day demand condition. Typical peak hour demand factors of a community of this size range from 3.0 to 4.0 times the average day demand. For the purpose of this evaluation, a peak hour demand of 3.5 or 350% of average day demand has been selected as being representative of peak hour conditions.

The following table is a summary of the baseline water use parameters that will be used in this report.

TABLE 10
TOWN OF PALMER LAKE
2022 to 2024 BASELINE WATER USE PARAMETERS

Parameter	Value
Average daily WTP Net production, gpd	149,600
Average daily water sales, gpd	127,500
Unaccounted-for-water	14.6%
Maximum monthly water usage [1)]	144%
Maximum daily water usage [2)]	284%
Peak hour water usage [5)]	350%
Service area taps	1,022
Service area population [3)]	2,410
Average per capita water production, gpcd [4)]	62.0

1) Occurred in July 2024
2) Maximum day factor as determined in 2022 PER.
3) Based on 996 residential taps and 2.42 people per household (per SDO, dated October 2024).
4) Gallons per capita per day. Includes commercial and industrial uses.
5) Assumed peak hour to average day factor

The baseline water use parameter of 62.0 gpcd will be used for the anticipated demands from the potential connections into the new water system extension

B. PROPOSED COMMERCIAL DEVELOPMENT WATER USE

Buc-ee's is a travel center made famous for its numerous gas pumps, Texas-style foods, shopping, and clean and spacious restrooms. According to Buc-ee's officials, more than 85% of customers come from well beyond the city, county, and even state boundaries.

Water usage data from various sources was collected and analyzed to determine the estimated water demands for the proposed Buc-ee's location. These sources include demand projections provided in a *Conceptual Annexation Proposal* letter by Vertex Consulting

Services, LLC, an *Annexation Impact Report for Monument Ridge West, LLC Annexation into the Town of Palmer Lake* by Vertex Consulting Services, LLC, and water usage data from Buc-ee's representatives for Buc-ee's Store #22 in New Braunfels, Texas and Store #60 in Johnstown, Colorado. This section evaluates the water demands presented by each source.

1. *Conceptual Annexation Proposal Letter* by Vertex Consulting Services, LLC

   A conceptual annexation proposal letter was written to the Town of Palmer Lake Board of Trustees for a concept review of the possible site development. The letter provided an estimate for the Palmer Lake location based off of the square footage of the building and areas to irrigate. It estimated an average day demand of 0.14 gpm/1,000 square foot (sf) and a peak hour demand of 0.60 gpm/1,000 sf for the building. Therefore, separate calculations would suggest that the 74,000 square-foot building would have an average daily water demand of 10.36 gpm and a peak hour demand of 44.40 gpm. This would indicate a peak hour factor of 4.3 times or 430% of average day demand, which exceeds the maximum value of 4.0 or 400% typically considered for a peak hour factor range.

   It also indicated a total daily requirement of 30,064 gpd. It is important to notice that the average day demand of 10.36 gpm does not directly correlate to the daily demand of 30,064 gpd. This difference is not outlined in the letter. However, reversing the calculation would indicate the daily demand was based off of a square footage demand of approximately 0.28 gpm/1,000 sf.

   The property is also estimated to include 0.94 acres for irrigation. The letter estimated an irrigation peak hour demand of 24 gpm/acre, which equates a total peak hour demand of 22.56 gpm of irrigation use for the property. The letter did not include an average irrigation demand in gpm/acre but provided a total average daily irrigation requirement of 10,160 gpd. This results in a combined daily water usage estimate of 40,224 gpd (27.9 gpm) for in-store and irrigation purposes.

2. The *Annexation Impact Report* by Vertex Consulting Services, LLC

An *Annexation Impact Report for Monument Ridge West, LLC Annexation into the Town of Palmer Lake* was written to assess the impacts of the potential annexations by Monument Ridge West LLC (the property owners) and Buc-ee's (the developer). The letter indicated that exact data was not certain at the time and general assumptions were made to address the needs of the report. In this report, the estimated demand for the proposed development is 860,000 gallons per month (in-store and irrigation). No additional data was provided. This would equate to an average daily demand of 28,700 gpd (19.9 gpm) or 0.27 gpm/1,000 sf of building space.

3. Buc-ee's Store #22 in New Braunfels, Texas

Water demands were provided by Buc-ee's representatives for a slightly smaller sized store in New Braunfels, Texas. Store #22 in New Braunfels is approximately 68,000 square feet and includes 120 fueling positions, 1,000 parking spots, 64 ice freezers, 83 toilets, and 80 fountain dispensers. The following table presents monthly water use for this Buc-ee's location since its opening in October 2021 to September 2024. The table separates in-store and irrigation usage to highlight the climatic differences between Texas and Colorado.

TABLE 11
TOWN OF PALMER LAKE
STORE #22 NEW BRAUNFELS BUC-EE'S WATER USE

Year	In-store, gal	Irrigation, gal	In-store, gpd [1)]	In-Store Demand, gpm / 1,000 sf [2)]	Irrigation, gpd [1)]
2021 [3)]	2,145,860	0	27,163	0.28	0
2022	10,633,904	593,394	29,134	0.30	1,626
2023	11,640,941	359,567	31,893	0.33	985
2024 [4)]	9,410,291	596,451	36,903	0.38	2,339

1) gpd = gallons per day
2) Based off store size of 68,000 square feet.
3) Partial year data only. Store opened October 13, 2021.
4) Partial year data only. Data available up to September 12, 2024.

From the above table, 2024 had the highest in-store average daily usage at 36,903 gpd (25.6 gpm). The average in-store daily use for 2023 and 2022 were fairly similar at 31,893 gpd (22.1 gpm) and 29,134 gpd (20.2 gpm), respectively. In 2021, the store saw

the least in-store usage at 27,163 gpd (18.9 gpm). The maximum month of in-store water consumption for this location occurred in July 2024 and totaled 1.28 MG. This represents a maximum monthly factor of 136% of the average day demand. Irrigation data was not deemed useable due to the difference in climates between this store and the proposed store in Palmer Lake.

Based on the above in-store average water uses, an estimate was also evaluated based off of the square footage of the building. The 68,000 square foot building had a year high in 2024 at 0.38 gpm/1,000 sf and a low in 2021 at 0.28 gpm/1,000 sf. However, both these years are partial years and not fully representative of the entire year. Thus, the square footage demand of 0.30 gpm/1,000 sf for 2022 and 0.33 gpm/1,000 sf for 2023 are more realistic.

4. Buc-ee's Store #60 in Johnstown, Colorado

Water demands were provided by Buc-ee's representatives for the store in Johnstown, Colorado. This northern Colorado location was requested as it would provide a useful benchmark to gauge water usage that the store in southern Colorado might use. This store is currently the only Buc-ee's in Colorado. Store #60 is approximately 74,000 square feet and includes 120 fueling positions, 478 parking stalls, 12 electric vehicle charging stations, and dozens of toilets. The following table presents monthly water consumption for this Buc-ee's location since its opening in March 2024 to November 2024. Although this data is not extensive, it is helpful to establish baseline usage for the proposed development in the same state.

TABLE 12

TOWN OF PALMER LAKE

STORE #60 JOHNSTOWN BUC-EE'S WATER USE

Year	In-store, gal	Irrigation, gal	In-store, gpd [1)]	In-Store Demand, gpm/1,000 sf [2)]	Irrigation, gpd [1)]
2024 [3)]	4,621,000	632,000	18,709	0.18	10,032

1) gpd = gallons per day
2) Based off store size of 74,000 sf.
3) Partial year data only (Store opened March 18, 2024 through November 2024)

In 2024, the Johnstown location had an average in-store daily usage at 18,709 gpd (13.0 gpm). The irrigation usage for 2024 estimated an average daily usage of 10,032 gpd (7.0 gpm). The higher irrigation use is likely due to the newly laid sod and the initial requirements needed to establish the grass, as well as the fact that it was a dry summer

in Northern Colorado. The maximum month of in-store water consumption for this location occurred in July 2024 and totaled 0.72 MG. This presents a maximum month factor of 125% of the average day demand.

Based on the above in-store average water use, an estimate was also evaluated based off of the square footage of the building. The 74,000 square foot building is estimated at 0.18 gpm/1,000 sf. However, this is only a partial year and is not representative of a full year.

Compared to the rest of the data received, this estimate from the Johnstown's location had the least amount of water usage. The New Braunfels location also experienced a slower first year, but was followed by a notable increase in usage as the store became fully operational and gained
traction in subsequent years. As suggested by the New Braunfels location, there appears to be an initial adjustment period at new locations before an increase in water usage is observed.

5. Projected Buc-ee's Water Usage in Palmer Lake

The projected water usage for the Buc-ee's development in Palmer Lake is based on the combination of in-store operations and irrigation needs. The in-store water usage is based on demands per store size. *The Conceptual Annexation Proposal Letter* estimated an average day demand of 0.14 gpm/1,000 sf which would equate to a store use of 14,918 gpd. However, the concluded average daily demand equated to 30,064 gpd, reflecting a square footage demand of 0.28 gpm/1,000 sf. The *Annexation Impact Report* was calculated from a monthly demand to have an average square footage demand of 0.27 gpm/1,000 sf. Historical data for an entire year from the new Braunfels location shows an average demand of 0.30 gpm/1,000 sf in 2022 and 0.33 gpm/1,000 sf in 2023, the highest yearly demand. Data from 2021 and 2024 for New Braunfels, as well as the Johnstown location for 2024, are partial years and not used for this analysis as they do not capture the entire year. For this evaluation, a more conservative estimate based on the highest New Braunfels demand was applied, resulting in a projected square footage demand of 0.33 gpm/1,000 sf. Thus, the new 74,000 square foot store is expected to have an in-store average day demand of 35,200 gpd (24.4 gpm).

Irrigation needs are calculated using Colorado's annual supplemental irrigation amount of 2.5 acre-feet per acre (AF/acre) (30 inches of water depth). This is taken from the

Colorado State University research and is generally accepted by the Division of Water Resources as a typical supplemental irrigation value for Colorado. With a proposed irrigation area of 0.94 acres, the annual irrigation demand is approximately 765,800 gallons/year (2,100 gpd). The maximum daily demand for irrigation is estimated at 0.083 AF/acre (approximately 1" of precipitation), which translates to a daily maximum irrigation use of approximately 25,600 gpd (17.8 gpm). Since irrigation occurs sporadically during the week and over shorter durations, it is assumed that it will happen over a duration of four hours. Therefore, the maximum daily irrigation demand will have a total use of 4,250 gallons over the four-hour use.

The following table summarizes baseline criteria to establish the water use demands for the proposed new Buc-ee's Palmer Lake development.

TABLE 13
TOWN OF PALMER LAKE
PROJECTED BUC-EE'S WATER USE CRITERIA

Parameter	Value	
In-Store		
Average In-Store Demand, gpm/1,000 sf [1)]	0.33	
Average daily consumption, gpd [2)]	35,200	
Maximum Monthly Water Usage Factor [3)]	136%	
Maximum Daily Water Usage Factor [4)]	250%	
Peak Hour Water Usage Factor [5)]	400%	
Irrigation		
Average Demand, AF/acre/Year [6)]	2.50	
Average Demand, gpd [7)]	2,100	
Maximum daily water usage, AF/acre [8)]	0.08	
Maximum Demand, gpd	25,600	
Combined		
Average Day Demand, (ADD) [9)]	25.9 gpm	37,300 gpd
Maximum Day Demand,(MDD) [10)]	78.9 gpm	113,600 gpd
Peak Hour Demand, (PHD) [11)]	115.6 gpm	166,500 gpd

1) New Braunfels Buc-ee's average square footage demand for 2023.
2) Average daily consumption = average square footage demand x 74,000 sf x 1440
3) Based on maximum month for New Braunfels Buc-ee's in August 2023
4) Engineering estimate
5) Estimate from *Conceptual Annexation Proposal Letter*
6) Based on Colorado's common annual supplemental irrigation amount (30 in)
7) Based on 0.94 acres to irrigate
8) Based on Colorado's maximum irrigation daily use (1 in)
9) ADD = average day in-store demand + average day irrigation demand
10) MDD = (average in-store demand x maximum daily usage factor) + maximum day irrigation demand
11) PHD = (average in-store demand x peak hourly usage factor) + maximum day irrigation demand

The criteria in the table above is based on the New Braunfels location as it had the most robust data with a similar store size, multiple years of water data and entire years' worth of data. Whereas the other sources provided estimated values without supporting data, or snapshots of data which did not cover an entire year of operating time. Based on the criteria shown in the above table, it is estimated that the new Buc-ee's development will have an average day demand of 25.9 gpm (37,300 gpd), a maximum day demand of 78.9 gpm (113,600 gpd), and a peak hour demand of 115.6 gpm (166,500 gpd).

C. POTENTIAL ANNEXATION CUSTOMERS WATER USAGE

In correspondence with Community Matters Institute, a planning consultant for the Town, it was noted that potential annexation along County Line Road will occur along the "flagpole" annexation to the Buc-ee's development. Therefore, these potential annexation customers are not included as part of the Town's natural growth rate as described in previous sections and are provided as a separate demand category due to the unique nature of the proposed development and its location.

The proposed flagpole annexation of the new commercial development would potentially allow for an additional 153 connections (152 residential and one church) to the water system extension. The estimated population along this route is approximately 368 people. According to the 2022 to 2024 baseline water use parameters from Table 9, the Town had an estimated demand of 62.0 gpcd. Projecting this per capita demand to the potential additional population from the water extension, the water system could experience an increased average day demand of 15.9 gpm (22,900 gpd) and maximum day demand of 45.2 gpm (65,100 gpd). This demand is included in the final assessment for sizing of the water extension main and supply capacity assessment.

D. WATER DEMAND SUMMARY

The Town's water demands are incrementally projected in five-year estimates in the 2022 *Preliminary Engineering Report for Water System Improvements*. These estimates extend through 2045 and include projections for buildout conditions and a scenario where private wells within the Town boundaries are served by the municipal water system. However, the Town has determined that extending the system to serve private wells is cost-prohibitive, so those projections are not considered in this report.

The following table summarizes the existing and projected water demands of the proposed annexation and combines them with the Town's existing and future projected demands.

TABLE 14
TOWN OF PALMER LAKE
EXISTING AND PROJECTED WTP DEMANDS [1)]

Condition	Service Area Population	Average Day Demand [2)], gpd	Maximum Day Demand [3)], gpd	Peak Hour Demand [4)], gpm
Town of Palmer Lake Demands				
Existing - 2023 [5)]	2,410	149,600	424,900	364
Future - 2050 [5)]	3,327	206,300	585,900	501
Buc-ee's Demands				
Buc-ee's Travel Center [6)]	-	37,300	113,600	116
Potential Annexation Customer Demands				
Potential Annexation Customers [7)]	368	22,900	65,100	56
Total Demands from Proposed Annexation				
Existing - 2023 plus Buc-ee's	2,410	186,900	538,500	480
Future - 2050 plus Buc-ee's	3,327	243,600	699,500	617
Future - 2050 plus Buc-ee's plus Potential Annexation Customers	3,695	266,500	764,600	673

1) Based on Water Treatment Plant production of 62.0 gpcd.
2) Average Day Demand = population x gpcd
3) Maximum Day Demand for Town = 284% of average day demand
4) Peak Hour Demand for Town = 350% of average day demand/1440
5) Assumed estimated population of 240 people serviced by 147 private wells will remain unchanged. (From Table 5: 2,650 – 240 = 2,410 and 3,567 – 240 = 3,327)
6) From Table 13.
7) Potential connections of 152 residential and one church for a population of 368 people.

Based on the previous table, it is clear that the proposed development would result in increased demands on the water system attributable to not only the Buc-ee's development, but also the potential future annexation customers. The following table presents the added demands of the proposed Buc-ee's development and the potential annexation customers as percentage increases to the current and projected demands of the Town of Palmer Lake.

TABLE 15

TOWN OF PALMER LAKE

PROJECTED DEMAND INCREASES FOR DEVELOPMENT

Condition	Average Day Demand	Maximum Day Demand	Peak Hour Demand
Increase to Existing 2023 Palmer Lake Demands			
Buc-ee's Development	25%	27%	32%
Potential Annexation Area	15%	15%	15%
Buc-ee's plus Potential Annexation	40%	42%	47%
Increase to Future 2050 Palmer Lake Demands			
Buc-ee's Development	18%	19%	23%
Potential Annexation Area	11%	11%	11%
Buc-ee's plus Potential Annexation	29%	30%	34%

SECTION VI
FUTURE WATER SUPPLY REQUIREMENTS

A summary of the Town's adjudicated water rights are presented in the 2020 Palmer Lake Water Resources Evaluation and include a combination of groundwater rights and surface water rights. The Town's groundwater supply is from non-tributary Denver basin aquifers. These aquifers are not naturally recharged. Groundwater rights decreed to the Town are based on a depletion rate over a 100-year period for water underlying the incorporated area of the Town. Surface water rights are generally confined to the available surface water and the priority of the right. The existing water system capacity is defined by available minimum stream flow (surface water), well flow rates (groundwater), and treatment facility capacities.

A WTP is required to provide backup or redundant treatment equipment when the facility is treating water to meet water quality standards of the Colorado Primary Drinking Water Regulations. The SW-WTP is required to provide redundant treatment as it provides filtration of surface water. The SW-WTP has a rated capacity of 350 gpm (one of two treatment trains) and is well above the available minimum low flow of North Monument Creek. The GW-WTP has two 500 gpm filters that provide iron and manganese removal from the deep wells. Iron and manganese are not regulated contaminants under the Colorado Primary Drinking Water Regulations. However, radium is a regulated contaminant. The elevated raw water radium levels in the wells may require this facility to meet compliance regulations in the future as radium levels in the Denver and Arapahoe aquifers have been documented to be increasing in the region.

Treatment facilities must be capable of meeting maximum day demand conditions. Typical maximum day requirements will occur with several days of heightened demand occurring prior to and immediately after the maximum day demand is experienced. Maximum day demand conditions typically occur during the summer months when conditions are dry and irrigation demands are at their highest. Sufficient water storage cannot be economically provided to meet these extended demand periods.

The following table compares the water supply requirements for current and future demand conditions for the Town of Palmer Lake, Buc-ee's and potential annexation customers to the existing available water supply capabilities. The pumping rates assume the

recommended Arapahoe aquifer A-1 well from the 2022 PER is built as a redundant well, not as an additional capacity well, and thus is not included in the production totals.

TABLE 16
TOWN OF PALMER LAKE
WATER SUPPLY REQUIREMENTS

Condition	Average Day Demand, gpd [2]	Maximum Day Demand, gpd [2]	Water Production [1] [3], gpd [2]	
			Current [4]	Maximum [5]
Existing - 2023	149,600	424,900	593,200	780,400
Future - 2050	206,300	585,900		
Existing - 2023 plus Buc-ee's	186,900	538,500		
Future - 2050 plus Buc-ee's	243,600	699,500		
Future - 2050 plus Buc-ee's plus Potential Annexation Customers	266,500	764,600		

1) Assumed Arapahoe Aquifer, A-1 well, built as redundant well from 2022 PER.
2) gpd = gallons per day
3) Water production from SW-WTP and GW-WTP
4) Production rates of actual conditions. SW-WTP based on 20-year low stream flow condition of 60,400 gpd, 130 gpm (187,200 gpd) for D-2R well, and 240 gpm (345,600 gpd) for A-2 well.
5) Production rates of maximum pumping rates. SW-WTP flow condition of 60,400 gpd, 200 gpm (288,000) for D-2R well, and 300 gpm (432,00 gpd) for A-2 well.

From the table above, it is important to note the Town's existing and future maximum day demands without the annexation development appear feasible with the Town's current infrastructure production rate of 593,200 gpd. In addition, the future average day water requirement of the Town with Buc-ee's and potential annexation customers of 266,500 gpd is well within the Town's current WTP production capabilities. However, the Town's current WTP production of 593,200 gpd is insufficient to meet the future maximum day demands when factoring in the Buc-ee's development. It is additionally insufficient when also considering the potential annexation customers along County Line Road.

The combined future maximum day demand for the Town, Buc-ee's, and potential annexation customers is approximately 98% of the existing maximum capacity of the WTP production, and 129% of current WTP production capacity. This demand is the primary focus due to the likelihood that these connections along County Line Road will happen due to the unique annexation of the commercial development. This extent of utilization leaves little room for operation flexibility or emergency response. In addition, the nonrenewable

basin that supplies the wells is experiencing significant drawdowns. The Buc-ee's Travel Center and the potential annexation customers result in an increase of approximately 29% of future average day demands (18% solely contributed by Buc-ee's). Thus, it is not unreasonable to think the Town's aquifers would continue to deplete further at a rate of at least that currently seen. If this trend continues, it is probable that the well's maximum pumping rates will decline further, potentially falling short of the required demand.

The Town's net available ground water rights for each aquifer in the Denver Basin, with the consented rights to private wells, are presented in the Town's 2022 PER. The Denver Aquifer has a net estimated groundwater right of 222.8 ac-ft/yr after the private well groundwater rights are subtracted. The D-2R well in the Denver Aquifer has an annual limit of 281 ac-ft/yr, however, this is reduced to 222.8 because of the consented water rights to private wells. The Arapahoe Aquifer has an estimated net available groundwater right of 1,313 ac-ft/yr for all decreed Arapahoe wells, after the private well groundwater rights are subtracted. Thus, the Town's total net available water rights for the existing wells is approximately 1,371,000 gpd (1,535.8 ac-ft/yr). However, it is noted that this figure is net available water rights and does not reflect actual well production capabilities.

To address the long-term water security and from a water rights position, it is recommended that an additional well in the Arapahoe aquifer be constructed to support the proposed development. The new A-3 well would increase the Town's overall well capacity and reduce strain on the existing wells. By avoiding consistent operation near or at maximum capacity, the Town can help minimize the impacts of aquifer drawdowns during maximum day demand events.

SECTION VII
EVALUATION OF EXISTING WATER SYSTEM IMPROVEMENTS

A list of recommended improvements to the Town's water system were developed in the Town's 2022 Preliminary Engineering Report for Water System Improvements (PER). The recommended improvements included a new Arapahoe Aquifer groundwater well (future Well A-1) and pipeline to the GW-WTP with the new well serving as a redundant groundwater source. The recommendations in this report pertain to those required due to the proposed Buc-ee's development. While these are separate recommendations, they build upon those outlined in the 2022 PER, with a specific focus on the proposed waterline extension.

A. WATER SUPPLY

Treatment facilities must be capable of meeting maximum day demand conditions with the largest water supply out-of-service. Under worst case conditions for low stream flow for the SW-WTP and both existing wells serving the GW-WTP, the maximum water production capacity is 780,400 gpd. However, with the larger capacity well out of service, the combined WTP water production capacity reduces to 348,400 gpd. This capacity is below the existing maximum day demand (MDD) of just the current Town limits. As recommended in the 2022 PER, from a water rights position, a new Denver Basin well (future Well A-1) would be best constructed into the Arapahoe Aquifer to meet the Town's existing MDD. With the future A-1 well, the GW-WTP production capacity in the worst-case scenario would increase to 720,000 gpd, bringing the maximum WTP production capacity to 780,400 gpd. However, this is the maximum water production capacity for the Town's facilities. As stated in previous sections, the groundwater wells are not run at maximum capacity due to issues with well drawdown. If current well production rates are presumed to be sustainable to meet future demands, the current water production capacity, assuming the future Well A-1 is operational, would be 593,200 gpd. This capacity would be sufficient for the Town's existing and future MDD of 424,900 gpd and 585,900 gpd, respectively.

The Buc-ee's development with the potential annexation is projected to increase the Town's future MDD by 30% which then exceeds the current water production capacity. Therefore, water supply improvements are needed to meet future MDD conditions with the proposed development and future annexations. A new A-3 well is recommended in the Arapahoe

aquifer to accommodate the increased demand and bolster long-term water production. An Arapahoe aquifer well is recommended over a Denver aquifer well for the new Well A-3. The Town currently holds 1,190 AF of water rights to the Arapahoe and 436.3 AF to the Denver. The Town has consented 213 AF of Denver rights to private wells, leaving only 223.3 AF of Denver rights. With water levels in the Denver aquifer reportedly dropping faster than Arapahoe, and a smaller reserve of rights remaining in the Denver, a new well into the Arapahoe aquifer is recommended as it would provide a more reliable long term supply. The new well would increase overall supply capacity, reduce strain on existing wells, and minimize impacts of aquifer drawdowns during maximum day demand events. The location of this well will be in accordance with the Town's Water Court Decree Case No. 86CW108. As stated in the decree, the A-3 well location will be in the NE ¼ of the NE ¼ of Section 8, Township 11 South, Range 67 West of the 6th Principal Meridian. Raw water piping will be piped from the well to a treatment facility. Refer to the following section for details on the treatment facility.

B. WATER QUALITY AND TREATMENT

Treated water quality data for the Town of Palmer Lake was obtained from the CDPHE water quality database from 2002 through 2024 for both the SW-WTP and the GW-WTP sources. Overall water quality from both sources of supply are considered to be good. The GW-WTP constructed in 2002 was installed for the purpose of iron and manganese removal from the then newly constructed A-2 Well. No raw water iron and manganese sample data is available to demonstrate the iron and manganese removal efficiency. Iron and manganese are not primary contaminants. The oxidation of iron and manganese prior to filtration also provides a degree of radium removal. Radium is a primary contaminant, and is commonly found in both the Arapahoe and Denver Aquifers. Raw water combined radium concentrations measured from the new D-2R well were found to be at 3.9 pCi/L, below the 5 pCi/L Maximum Contaminant Level (MCL). The finished water supply had combined radium concentrations well below the MCL; therefore, specific treatment for radium removal is not required at this time.

With a GW-WTP rated capacity of 500 gpm (720,000 gpd), the GW-WTP is currently configured for redundant treatment capabilities with each of the two filter units being rated at 500 gpm. Upon completion of the Town's future A-1 well, the groundwater production being delivered to the GW-WTP is 593,200 gpd minimum, and 792,000 gpd maximum. In order to realize the added groundwater production capacity from the recommended A-3 well which will

accommodate the proposed development and the potential annexation area, two water treatment options must be considered. The first option being the expansion of the existing GW-WTP with a 500 gpm filter unit to match the capacity of the existing units. This option requires an 8-inch raw water line approximately 8,200 feet long through difficult terrain and crossing the railroad, the state highway and the Santa Fe Trail. The second option would be to construct a separate water treatment facility, GW-WTP #2. The GW-WTP #2 would be served by only the recommended A-3 well, which poses advantages over expanding the existing GW-WTP. The GW-WTP #2 can be equipped with a single filter unit having a lower rated capacity of 300 gpm to accommodate only the A-3 well output. As the groundwater well redundancy is being provided by the future A-1 well, the filter unit of the GW-WTP #2 would not require a redundant filter unit. Finally, considering the decreed location of the recommended A-3 well, a treated water line connection from GW-WTP #2 to the distribution system would be significantly shorter than a raw water line installed from the A-3 well to the existing GW-WTP. The treated water line would be an 8-inch pipe extended to connect to the Town's main 10-inch trunk line, rather than utilizing the aging and undersized 6-inch pipe currently in place at the site.

It is noted that the option of constructing the new well and treatment facility improvements on a site adjacent to the proposed Buc-ee's site was not evaluated in detail as a preliminary review suggests it would be less desirable and more expensive than the recommended option of constructing these facilities on Town owned property. Constructing the new facilities adjacent to the Buc-ee's site would require the applicant to acquire additional property for the facilities, which would then be deeded to the Town. That property would also need to be included into the Town of Palmer Lake through the necessary annexation proceedings. This option would not significantly reduce the scope of construction for the new facilities. In addition, the remote location is not desirable for staff accessibility for operation and maintenance, nor is it desirable from a security perspective for public water system infrastructure. Therefore, the additional costs, efforts and time required to locate the new facilities on a less desirable site deterred the option from being investigated further.

With the recommend A-3 well located at its decreed location, and the GW-WTP #2 sited near the A-3 well, the maximum water treatment capacities will be capable of meeting the combined future maximum day demands on the Town, the Bucc-ee's development and the potential annexation area customers. The existing GW-WTP capacity of 720,000 gpd, plus the GW-WTP #2 capacity of 432,000 gpd, plus the SW-WTP capacity of 60,400 gpd equates to total

treatment capacity of 1,212,400 gpd. This maximum capacity will accommodate the total combined maximum day demand. It is noted that total water production will not necessarily be that of the maximum treatment capacity. It will be dependent upon the groundwater well production in terms of which wells are operated and at what rate each well is operated.

C. TREATED WATER STORAGE

Treated water storage for the Town of Palmer Lake is provided by the two high zone gravity storage tanks and a low zone storage tank. Distribution storage serves several purposes. Total storage needs must be evaluated with consideration given to each individual storage component. The three primary purposes of water storage are:

1) Equalization storage to meet hourly variations in demand.
2) Fire storage to store water for firefighting.
3) Emergency storage to provide a reserve supply for emergency use.

Instantaneous demands place on a water system are not uniform throughout any given day. The system must be able to supply the peak demands that occur on an hourly basis throughout the day. Water storage is a means whereby the equalization of these heightened demands can be obtained without placing the demand directly on the supply source. Equalization storage for a community the size of Palmer Lake typically ranges from 15% to 30% of maximum day demand. As developed in this study, the future maximum day demand of the Town with Buc-ee's and potential annexation customers is estimated at 764,600 gpd. Thus, the equalization storage requirement for the annexation is between 114,690 and 229,380 gallons.

The second component of storage is fire flow. Fire protection within the Town is provided by the Palmer Lake Fire Department. The Town of Palmer Lake has adopted the 2015 International Fire Code (IFC). The building is proposed to be 74,000 sf and the building type is classified as Type IV construction as referenced in the 2015 International Building Code (IBC). Per Table B105.1(2) in the 2015 IFC, the fire flow is 5,000 gpm for a duration of 4 hours. The commercial building is designed to include a sprinkler system, and per Table B105.2 in the 2015 IFC when an automatic sprinkler system is provided, the minimum fire flow is 25% of the fire flow listed in Table B105.1(2) for a duration at this reduced flow rate. The minimum fire flow is reduced to 1,250 gpm, however, per the 2015 IFC, the reduced fire-flow

shall not be less than 1,500 gpm. Therefore, the minimum fire flow for the proposed commercial development is 1,500 gpm, whose corresponding flow duration is two (2) hours. Buc-ee's engineers, however, have indicated a preferred fire flow of 1,700 gpm for the commercial building whose corresponding flow duration is also two (2) hours. This preferred fire flow includes 1,200 gpm for the sprinklers, 100 gpm for the interior hose, and 400 for the exterior hose. This preferred fire flow is greater than the minimum requirement from the 2015 IFC and used for the storage assessment.

The Town's distribution system is largely comprised of 6-inch diameter pipelines. Water system hydraulic modeling has previously been conducted in the Town. Based on the average system pressures within the Town, the maximum commercial fire flow of 2,500 gpm is easily available at all hydrants, while maintaining a minimum distribution residual pressure of 20 psi. In determining the needed fire storage capacity for the commercial development, the needed fire flow of 1,700 gpm is increased by the maximum future day demand of the Town, Buc-ee's, and potential annexation customers which have been established at 764,600 gpd (531 gpm) and is decreased by the worst-case water system supply rate (500 gpm from the GW-WTP assuming the new A-1 well is built from the 2022 PER). Thus, the minimum needed fire flow rate from storage is 1,731 gpm (1,700+531-500). The available storage requirement per the International Fire Code is two hours for multi-family and commercial fire protection. Therefore, the minimum needed fire storage requirement from the Town's storage tanks is 207,720 gallons.

The third factor in sizing storage is an emergency reserve. An emergency supply is that portion of the total storage that is available when the normal supply is interrupted. The quantity of supply for emergency storage depends primarily upon the source of water and method of its delivery. The Town does not have an emergency supply connection with a nearby water system. Town water wells and treatment facilities have back-up power supply generators and are, in general, not subject to power supply interruptions. Therefore, the necessary future emergency storage volume would be minimal. Conservatively using six hours of emergency storage at future average day demand with Buc-ee's and potential annexation customer conditions equates to 66,625 gallons.

Based on the estimated quantities from these three factors described above, the calculated minimum future distribution storage requirement for the Town's future demand and the proposed commercial development with annexation customers is 503,725 gallons. The Town

currently has storage for 1.0 MG. Therefore, the Town has adequate storage capacity to accommodate the proposed development.

D. DISTRIBUTION SYSTEM

The waterline extension to the Buc-ee's development consists of extending a pipeline approximately two miles east of the existing water system to the proposed development. The route of the pipeline will proceed east along County Line Road before heading south on Beacon Lite Road approximately 850 feet to the entrance of the proposed development.

Water system hydraulic modeling was conducted for the Town's water distribution system for ADD, MDD, and fire flow conditions. The modeling considered multiple operating scenarios summarized as follows:

- Existing Demand Scenarios:
  - ADD of the Town, Buc-ee's, and potential annexation customers
  - MDD of the Town, Buc-ee's, and potential annexation customers
  - MDD of the Town and the potential annexation customers with the fire flow requirements for Buc-ee's
- Future Demand Scenarios:
  - ADD of the Town, Buc-ee's, and potential annexation customers
  - MDD of the Town, Buc-ee's, and potential annexation customers
  - MDD of the Town and the potential annexation customers with the fire flow requirements for Buc-ee's

The modeling primarily analyzed the residual pressures for the points of interest along County Line Road. The waterline extension size is subject to *CDPHE Design Criteria for Potable Water Systems* Chapter 8.2.1 which states that "the system must be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow. The normal working pressure in the distribution system must be at least 35 psi and should be approximately 60 to 80 psi." County Line Road features significant elevation changes, with its highest point at an elevation of 7,393 feet near its intersection with Indi Road. The elevation at the proposed entrance of the commercial development is approximately 7,355 feet. As mentioned previously, the Town's Low Zone Storage Tank is located south of the GW-WTP and pressurizes the distribution system via a booster pump. A

1,400-gpm high usage pump is also located at this pump station for fire scenarios. The 500,0000-gallon Low Zone Storage Tank has an overflow elevation of 7,389 feet. The Town has two other High Zone storage tanks that are 250,000 gallons each and have maximum water level elevations of 7,556 feet. Both tanks operate in the depth range of 12 to 16.4 feet. These tanks provide pressure via gravity to the community.

The hydraulic modeling indicated a minimum size for the waterline extension of 12 inches. This pipeline size was determined from the minimum needed fire flow (NFF) requirements of 1,500 gpm for Buc-ee's (as required by the 2015 IFC); in addition to the maximum day demands of the Town and the potential annexation customers along County Line Road and Beacon Lite Road. The pipe was modeled assuming an increased pipe roughness (C value=130) to properly account for the age of the pipe in the future. With the anticipated annexation, residual pressures within the Town boundaries for future average day demands ranged from 37 psi near the High Storage tanks to 210 psi near the south end of the Town along Forest View Way. Peak hour demands dropped pressures in the community less than five psi. The hydraulic modeling primarily analyzed pressures along the proposed waterline extension to determine if adequate pressures were met with the existing facilities. The following table provides the residual pressures at the Buc-ee's entrance and the highest elevation located along County Line Road. The results can be graphically seen in Appendix A.

TABLE 17

TOWN OF PALMER LAKE

HYDRAULIC ANALYSIS RESULTS

Condition	Residual Pressure (psi) at NFF=1,500 gpm		Residual Pressure (psi) at NFF=1,700 gpm	
	Highest Point on County Line Road	Buc-ee's Entrance	Highest Point on County Line Road	Buc-ee's Entrance
Initial Demand Conditions				
ADD for the Town, Buc-ee's, and potential annexation customers [1)]	73.1	89.5		
MDD for the Town, Buc-ee's, and potential annexation customers [1)]	70.1	86.5		
MDD for the Town and potential annexation customers with fire flow requirements from Buc-ee's [2)]	48.1	54.1	36.8	40.2
Future Demand Conditions				
ADD for the Town, Buc-ee's, and potential annexation customers [1)]	72.8	89.3		
MDD for the Town, Buc-ee's, and potential annexation customers [1)]	68.8	85.1		
MDD for the Town and potential annexation customers with fire flow requirements from Buc-ee's [2)]	46.1	52.2	34.3	37.8

1) Booster pump in operation, fire pump in off position. Minimum pressure required is 35 psi.
2) Booster pump and fire pump in operation and minimum required pressure of 20 psi.

The table indicates that the current storage tanks in the community, along with the existing booster pump in operation, are adequate to provide the proposed annexation with adequate pressures at a NFF of 1,500 gpm. The analysis was conducted with the Town's existing booster pump operating continuously to maintain pressure, and the fire pump only activated for the fire scenario at the Buc-ee's site. Therefore, a 12-inch diameter line is recommended. The above table assumes that the existing 6-inch PVC line is replaced with the recommended 12-inch pipeline extending from Spruce Avenue to the end of the current line to the northeast. Retaining the existing 6-inch waterline and simply extending it with 12-inch piping would not provide Buc-ee's with the minimum NFF. Therefore, it is recommended to replace the 6-inch PVC line up to Spruce Avenue.

This analysis was completed using the minimum NFF of 1,500 as specified by the 2015 IFC. Buc-ee's representatives had indicated that the most demanding areas of Buc-ee's, including external and internal hose usages, require a fire flow of 1,700 gpm. This preferred fire flow of 1,700 gpm can also be achieved through a 12-inch pipeline. The residual pressure for this fire demand have also been presented in the previous table and do meet the minimum residual pressure of 20 psi during fire flow scenarios according to the CDPHE.

As seen in the previous table, the 12-inch waterline provides adequate pressures along the waterline extension for the evaluated scenarios. However, the fire pump is essential for maintaining the necessary flow and pressure during fire events, as the system alone cannot meet these demands. The pressures within the Town limits were also analyzed for a fire scenario at the Buc-ee's site. Pressures remained primarily unaffected in the community with the lowest pressure at approximately 26 psi near the high storage tanks, which exceeds the minimum requirement of 20 psi set by the CDPHE. Additionally, the pressure at Buc-ee's was also minimally affected with a fire scenario occurring within Town limits. To provide initial fire protection measures along County Line Road, it is also recommended that fire hydrants be installed at approximately 1,000-foot spacings.

The water model also evaluated fire flow demands solely to Buc-ee's without including the maximum day demands associated with the full potential annexation area. This analysis was conducted to roughly distinguish the infrastructure requirements directly attributable to Buc-ee's from those that could be attributable to the future annexation areas. The analysis concluded that to serve only the Buc-ee's development a 12-inch pipeline is the minimum size required to maintain 20 psi residual pressure at the Buc-ee's location for both the 1,500 and 1,700 gpm fire flow scenarios. Therefore, the same 12-inch pipeline size is required for the Buc-ee's development alone, as well as the Buc-ee's development plus the potential annexation area.

An important consideration for the nearly two-mile waterline extension is the water quality. Excessive water age can lead to a deterioration of distribution system water quality, including increased disinfection byproduct (DBP) formation and disinfectant residual consumption. Microbial growth can become a particular problem at dead-end water mains and where accumulated air blocks water flow at high points. The design criteria require systems to be designed to maximize turnover and to minimize residence times while delivering acceptable

pressures and flows. As this waterline extension dead ends into the proposed commercial development, a fire hydrant is required to provide firefighting capabilities and a means to provide adequate flushing. The Environmental Protection Agency (EPA) recommends finished water storage facilities to have a 3-to-5-day complete water turnover as a starting point, but acknowledges each storage facility must be evaluated individually. Based on future average day demands along this pipeline, the minimum water turnover would be approximately 1.3 days. Thus, the water age is considered acceptable. In addition, the model analyzed the chlorine decay throughout the 2-mile pipeline. Chlorine decay is the gradual decrease in chlorine concentration in water over time. The chlorine residual in the existing system is approximately 1.1 mg/l. With a starting point of 1.1 mg/l in the Town's existing system, the chlorine will decay to approximately 1.0 mg/l at the end of the waterline extension. The CDPHE minimum chlorine residual is 0.2 mg/l. Therefore, no chlorination facility will be required. According to the EPA, it is recommended that the Town continuously monitor the water quality at the end of the extension by flushing the water extension to remove stagnant water, regularly measuring the disinfectant residual at the end, and exercising valves regularly.

The recommended material for the pipe extension is ductile iron pipe (DIP). In accordance with the Town's water department requirements. The two-mile stretch of pipeline extending to the annexation is a dead-end line and is vulnerable to service loss in the event a pipe break occurs. The DIP pipe provides a high degree of strength and minimizes the potential negative impacts from water hammer or other transient pressure scenarios. In addition, several 12-inch gate valves are recommended along the extension to further isolate the line for repairs and maintenance if needed.

The waterline extension is susceptible to service loss in the event of a pipe burst or maintenance event. Therefore, it is recommended that the Town include in its future planning the eventual looping of the pipeline to the south and west from Beacon Lite Road back towards Highway 105 and the Palmer Lake service area to ensure service reliability. This looping is recommended in the future as the Town expands and incorporate more land to the north and east of the existing service area.

E. METERS

The Town of Palmer Lake requires the installation of water meters for all customers. Any connections will require meters to be installed. Some locations will require a pressure reducing valve to lower pressures before entering the house. An appropriately sized meter will be required for the proposed development. The proposed site's plumbing and water distribution design will dictate the size of the service and meter, backflow prevention devices and pressure control devices.

SECTION VIII
ALTERNATIVES TO PALMER LAKE WATER SERVICE

The majority of this report is focused on the infrastructure required for the Town of Palmer Lake's water system to provide satisfactory service to the proposed development and potential future annexation customers without compromising service to existing and future Town customers. This section provides brief summaries of other available options for providing water service to the proposed commercial development. The details of the alternatives are presented below with consideration given to feasibility, costs, regulatory requirements, and long-term sustainability. Recommendations presented in a subsequent section of this report are based on the alternative evaluations and are intended to ensure the most effective and practical solution for meeting the development's water needs.

A. ALTERNATIVE 1 - ON-SITE PRIVATE WATER SUPPLY AND TREATMENT IN TOWN

This alternative assumes the proposed annexation continues to completion, but the Town's water system is not extended to the development for water service. In this case, the new commercial development has the option to drill a private individual well and pay the Town fee for an alternative water supply. According to Palmer Lake's Municipal Code Chapter 13.28 – Underground Water, the Town has appropriated all water rights underlying all lands within the boundaries of the Town which includes the lower Dawson, Denver, Arapahoe and Laramie-Fox Hills aquifers. However, if water service is not available, the property can apply for an alternative water supply. If the Town determines that it is unable to provide water services to the specified area, the Town can accept the request and consent to withdrawal of the specified groundwater rights. The property would then pay a fee as set in the master fee schedule to the Town for each permit granted for the alternate water supply. However, when the Town can provide water service to the specified region in the future, the Town may require all properties to connect to the Town's facilities and acquire all individual water facilities and rights by purchase or condemnation.

The alternate source of supply for the proposed development must comply with Town Municipal Code Chapter 13.32. This ordinance requires a well permit issued by the Town in addition to all other permits from state or federal governments or agencies. Building a new well within a newly annexed portion of the Town would likely require a water court filing to

comply with legal restrictions, requesting a formal location of the permitted well through the Colorado Division of Water Resources, adding cost, complexity, and time to the project. Additionally, the Town's water court filing denotes withdrawals from the specified aquifers which would require a deeper well to be drilled in a deeper aquifer, which is a timely and costly endeavor. Lastly, the water rights of the annexed land would need to be analyzed against the demands of the proposed development to ensure equity for the Town and its water rights portfolio.

Since Buc-ee's Travel Center serves a high volume of non-local customers, the water system facilities would be classified as a "transient non-community water system" under Regulation No. 11 – Colorado Primary Drinking Water. This regulation classifies a water supplier as a "public water supplier" when the provider has "at least fifteen service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year." The commercial development meets this classification and is subject to full compliance under Colorado Regulation No. 11 to ensure safe drinking water. Historically, most areas of the Denver and Arapahoe aquifers have had high concentrations of radium in the raw water, data suggests this will continue and potentially increase in the future. To meet Colorado's primary drinking water standards, the development well would require a treatment system to reduce radium concentrations to acceptable levels, since radium concentrations in the aquifers are likely to be above the maximum contaminant levels. Such a treatment facility would be classified as a treatment compliance facility and require redundant treatment equipment. This type of facility would require certified operators to run the treatment facility; which adds not only short and long-term operation and maintenance costs to this approach, but also involves a perpetual commitment to proper operation to meet all CDPHE regulations in the future.

The new commercial development would also be required to meet building and fire code regulations. If the proposed development pursues an individual well on-site, it will require a large above-ground or ground-level storage tank on the proposed property to meet local Insurance Service Office (ISO) storage requirements. The tank would need to be designed for proper fire flow requirements and that may include fire pumps. These items would result in reduced parking to reallocate the land use of the site, additional expenses to the project and continuous commitments to operation and maintenance to meet all regulatory requirements.

These infrastructure requirements—including the well, treatment system, and fire storage facilities—would occupy significant property space, detracting from the commercial development's operations. Additionally, the ongoing maintenance and operations of the treatment facility would impose long-term costs for the development, which extend to a commitment in perpetuity to meet public water system regulations. Also, with no waterline extension for potential subsequent taps, there would be no opportunity for a reimbursement agreement to help offset or re-coop a portion of the costs of the improvements. Given these substantial challenges and continuous costs, this alternative was not considered a viable option for the proposed development.

B. ALTERNATIVE 2 – ON-SITE PRIVATE WATER SUPPLY AND TREATMENT IN COUNTY

This Alternative 2 is very similar to Alternative 1, where the proposed development would design and construct private water supply, water treatment, fire protection and distribution facilities within the site. The difference being this alternative to would not include the process of annexation into the Town of Palmer Lake. The proposed site would remain as in unincorporated El Paso County. The majority of the items described for Alternative 1 would apply to this Alternative 2. The exception being the particular Town of Palmer Lake requirements specified would be replaced with the El Paso County requirements associated with developing a source water well, designing and constructing treatment facilities for a public water system, and designing and constructing a fire protection system adequate for the proposed development. The requirements to be met through El Paso County for the water system construction are likely more lengthy and costly than that associated with the Town of Palmer Lake's processes. In addition, all other construction scope, costs, maintenance and operation responsibilities and perpetual regulatory compliance issues remain the same as presented in Alternative 1. Considering those similarities to Alternative 1 and the potential for additional time and costs associated with the El Paso County processes, this Alternative 2 was not considered a viable option for the proposed development.

C. ALTERNATIVE 3 – WATER SERVICE PROVIDED BY ANOTHER ENTITY

Alternative 3 introduces the idea of the proposed development obtaining water service from an entity other than the Town of Palmer Lake. Other public water systems which provide potable water service to its constituents are located near the general area surrounding the

proposed development site. The specific details and requirements associated with obtaining water service from another entity are not presented here. The developer would need to contact any such water provider to determine the requirements associated with obtaining service from that entity. This item does not provide specific details or scope of work estimates for this alternative. Rather, it merely poses the option should it be considered actionable by the developer as a viable option for water service to the proposed development.

SECTION IX
RECOMMENDED IMPROVEMENTS

The recommended alternative to provide the Buc-ee's Travel Center with a long-term, reliable, and safe water supply is to connect to the Town of Palmer Lake's water system. This approach provides several advantages over other water service options. It utilizes the Town's established water rights and existing wells, eliminating the need for the proposed development to file its own permits with the Town and State, a significant time-saving advantage. Incorporating water treatment needs of the development with the Town's treatment facilities minimizes new treatment requirements to meet Colorado's drinking water regulations. The Town's storage tanks provide enough storage to serve the proposed development. This includes the necessary fire flow, and an already installed high usage pump at the Town's GW-WTP to aid in the delivery of the necessary fire flows to the distribution system. The Town's full-time and appropriately certified staff oversees proper system operations and maintenance to meet CDPHE regulations for public water systems and provide a reliable water service to its customers . The Town's willingness to consider a cost reimbursement agreement would allow the development to recover portions of the initial cost investment to construct the infrastructure improvements from future customers who connect to the new construction in the future. The amounts and details associated with cost recovery from future connections shall be in accordance with the Cost Recovery Agreement to be executed between the applicant and the Town.

The specific details of each of the recommended improvements have been presented in previous sections of this report. This section has divided the recommended improvements into two major categories: waterline extension and facility upgrades. The recommended improvements are graphically shown on Figure 6. A summarized scope of work is presented in the line items of the costs prepared for each category.

The following table presents the cost estimate for the waterline extension with project soft costs included in the estimate. The costs do not include tap fees and assume the water line in County Line Road is installed outside of the road surface to avoid costs for pavement removal and replacement.

LEGEND
PALMER LAKE BOUNDARY
PROPOSED ANNEXATION
EXISTING WATERLINES
PROPOSED WATERLINE EXTENSION
PROPOSED FACILITY UPGRADES
POTENTIAL ANNEXATION AREA
EXISTING FIRE HYDRANT ASSEMBLY
PROPOSED FIRE HYDRANT ASSEMBLY
PROPOSED GATE VALVE
WELL

0' 1,000' 2,000'
SCALE: 1" = 1,000'

SPRUCE MOUNTAIN RD
DOUGLAS COUNTY OPEN SPACE
DOUGLAS COUNTY OPEN SPACE
DOUGLAS COUNTY
EL PASO COUNTY
COUNTY LINE RD
REPLACE 6" PVC WITH NEW 12" DIP TO SPRUCE AVE
NEW 12" DIP
NEW ARAPAHOE A-1 WELL
DENVER WELL D-2R AND WELL HOUSE
GW-WTP
ARAPAHOE WELL A-2
BOOSTER PUMP STATION
LOW ZONE STORAGE TANK 500,000 GALLONS
RAILROAD RIGHT-OF-WAY
SPRUCE AVE
BEACON LITE RD
PROPOSED COMMERCIAL DEVELOPMENT
PROPOSED TOWN ANNEXATION
CAPELLA DR
BRICKER RD
HAMAL CIR
HAMAL DR
INDI RD
DRACO DR
DRACO CIR
CAPELLA DR
BELATRIX DR
ARIES DR
TOWN OF MONUMENT WATER STORAGE TANK
INTERSTATE 25
POTENTIAL TOWN OF MONUMENT SERVICE AREA
WAKONDA WAY
TOWN OF PALMER LAKE BOUNDARY
CONNECTION TO EXISTING SYSTEM
NEW 8" DIP WATER LINE
PROPOSED ARAPAHOE WELL A-3 AND WTP
STATE HIGHWAY 105
SANTA FE TRAIL
RAILROAD RIGHT-OF-WAY

FIGURE 6.DWG

FIGURE 6
RECOMMENDED IMPROVEMENTS
TOWN OF PALMER LAKE

GMS, INC.
CONSULTING ENGINEERS
611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 80903
MARCH 202

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TABLE 18

TOWN OF PALMER LAKE

WATERLINE EXTENSION COST ESTIMATE

Item	Description	Quantity		Unit Cost	Total Cost
1.	Traffic Control (along County Line Road and Beacon Lite Road)	1	LS	$35,000	$35,000
2.	New 12-inch DIP Water Piping	12,500	LF	$300	$3,750,000
3.	Connection to existing piping	1	EA	$5,000	$5,000
5.	12-inch gate valves w/riser boxes	14	EA	$7,500	$105,000
6.	Fire hydrant assembly	11	EA	$10,000	$110,000
7.	Air/vac assembly	6	EA	$18,000	$108,000
8.	New meter assemblies	1	LS	$10,000	$10,000
9.	Service Line and Connection, approx. 400 feet	1	LS	$37,500	$37,500
10.	Fire line and connection, approximately 400 feet	1	LS	$45,000	$45,000
11.	Sawcut, remove and replace asphalt driveways	50	SY	$350	$17,500
12.	Seeding	8	AC	$3,500	$28,000
Subtotal preliminary cost					$4,251,000
Project contingencies @ 20%					$850,200
Engineering design/contract administration					$309,000
Construction observation based on 160 calendar days					$192,000
Other engineering [1)]					$46,000
Administrative expenses (Advertising, Legal Counsel, Bond Counsel, and Audit)					$3,000
Total preliminary project cost estimate					$5,651,200

1) Other engineering costs include: easements and rights-of-way, geotechnical services, county permits, and reproduction.

The table below presents the cost estimate for the Town water system facility upgrades. The existing infrastructure will require a new A-3 well in the Arapahoe Aquifer, a new water treatment plant for the well and treated water piping to the distribution system. The location of the A-3 well would be in accordance with the Town's water court decree. Test wells have been included to evaluate the viability of well sites. The A-3 water treatment plant would be located adjacent to the well. These facilities will be on Town owned property.

TABLE 19

TOWN OF PALMER LAKE

FACILITY UPGRADES COST ESTIMATE

Item	Description	Quantity		Unit Cost	Total Cost
A.	**New Arapahoe Formation Well**				
1.	Test well	3	EA	$50,000	$150,000
2.	18" diameter hole	2,154	VF	$110	$236,940
3.	30" surface casing	40	VF	$630	$25,200

Item	Description	Quantity		Unit Cost	Total Cost
4.	10" diameter steel casing	1,601	VF	$130	$208,130
5.	10" stainless steel wire screen	553	VF	$260	$143,780
6.	Gravel pack	553	VF	$150	$82,950
7.	Cement grout	1,601	VF	$30	$48,030
8.	Well development	24	HRS	$3,300	$79,200
9.	72-hr pumping test	1	LS	$60,000	$60,000
10.	Geophysical log	1	LS	$40,000	$40,000
11.	Video log	1	LS	$3,000	$3,000
12.	300 gpm well pump, motor, level sensor and conductors	1	LS	$210,000	$210,000
13.	4" stainless steel drop pipe with centralizers	1,854	VF	$105	$194,670
14.	Pitless Unit	1	LS	$30,000	$30,000
15.	Electrical including new service, power panel, step-up transformer, VFD, pressure switches and pump control panel	1	LS	$140,000	$140,000
16.	Disinfection	1	LS	$3,000	$3,000
17.	Site work, fencing and piping	1	LS	$15,000	$15,000
18.	SCADA and control integration	1	LS	$50,000	$50,000
19.	Well house building, piping and valves	1	LS	$100,000	$100,000
20.	8" DIP treated water piping to Town distribution system	1,100	LF	$150	$165,000
21.	Property purchase	1	LS	$25,000	$25,000
22.	Water Rights Filing	1	LS	$30,000	$30,000
	Subtotal				$2,039,900
B.	**New A-3 Groundwater Treatment Plant**				
1.	Site work	1	LS	$30,000	$30,000
2.	Slab on grade foundation	1	LS	$45,000	$45,000
3.	Metal Building, 24 x 50' building including insulation, lighting, HVAC, and electrical	1	LS	$360,000	$360,000
4.	Filtration system, 250 gpm, and controls	1	LS	$650,000	$650,000
5.	Chemical feed systems	1	LS	$60,000	$60,000
6.	Backwash holding and settling facilities	1	LS	$80,000	$80,000
7.	Pumps, piping and valves	1	LS	$180,000	$180,000
	Subtotal				$1,405,000
Subtotal preliminary cost					$3,444,900
Project contingencies @ 20%					$689,000
Engineering design/contract administration					$286,000
Construction observation based on 180 calendar days					$216,000
Other engineering [1)]					$130,500
Administrative expenses (Advertising, Legal Counsel, Bond Counsel, and Audit)					$5,000
Total preliminary project cost estimate					$4,771,400

1) Other engineering costs include: easements and rights-of-way, geotechnical, environmental report, reproduction, basis of design report, CDPHE approvals, PPBRD permits, and water quality testing.
2) Slab on grade foundation

The total preliminary cost for the waterline extension is estimated at $5,651,200. The total preliminary cost to add an additional well and treatment facilities is estimated at $4,771,400. The total estimated preliminary cost of both improvements is $10,422,600.

Additional recommendations for the Town in the future relate to the Town's water supply and property ownership around the existing and proposed GW-WTPs. The Town's groundwater sources are from the Denver Basin. As previously noted, the Denver basin aquifers have a finite amount of water if not artificially replenished with ground water recharging. Therefore, it is recommended for long-term future water supply, that the Town pursue additional surface water supply sources and/or consider ground water recharge.

With reference to Town owned property at the existing and proposed GW-WTPs, the increased system demands and declining aquifer levels may lead to higher natural radium concentration levels in the groundwater supply. The CDPHE has established specific guidelines and regulations to manage and safely dispose of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). These regulations would apply to generators of TENORM materials such as WTPs that are intended to treat and/or remove radium. In the future, the Town may need to implement measures to dewater backwash solids containing radium prior to disposal. In consideration of this future possibility, it is recommended that the Town retain ownership of the property surrounding the GW-WTPs to accommodate the potential needs relating to backwash solids management.

APPENDIX A – RESIDUAL PRESSURE EXHIBITS

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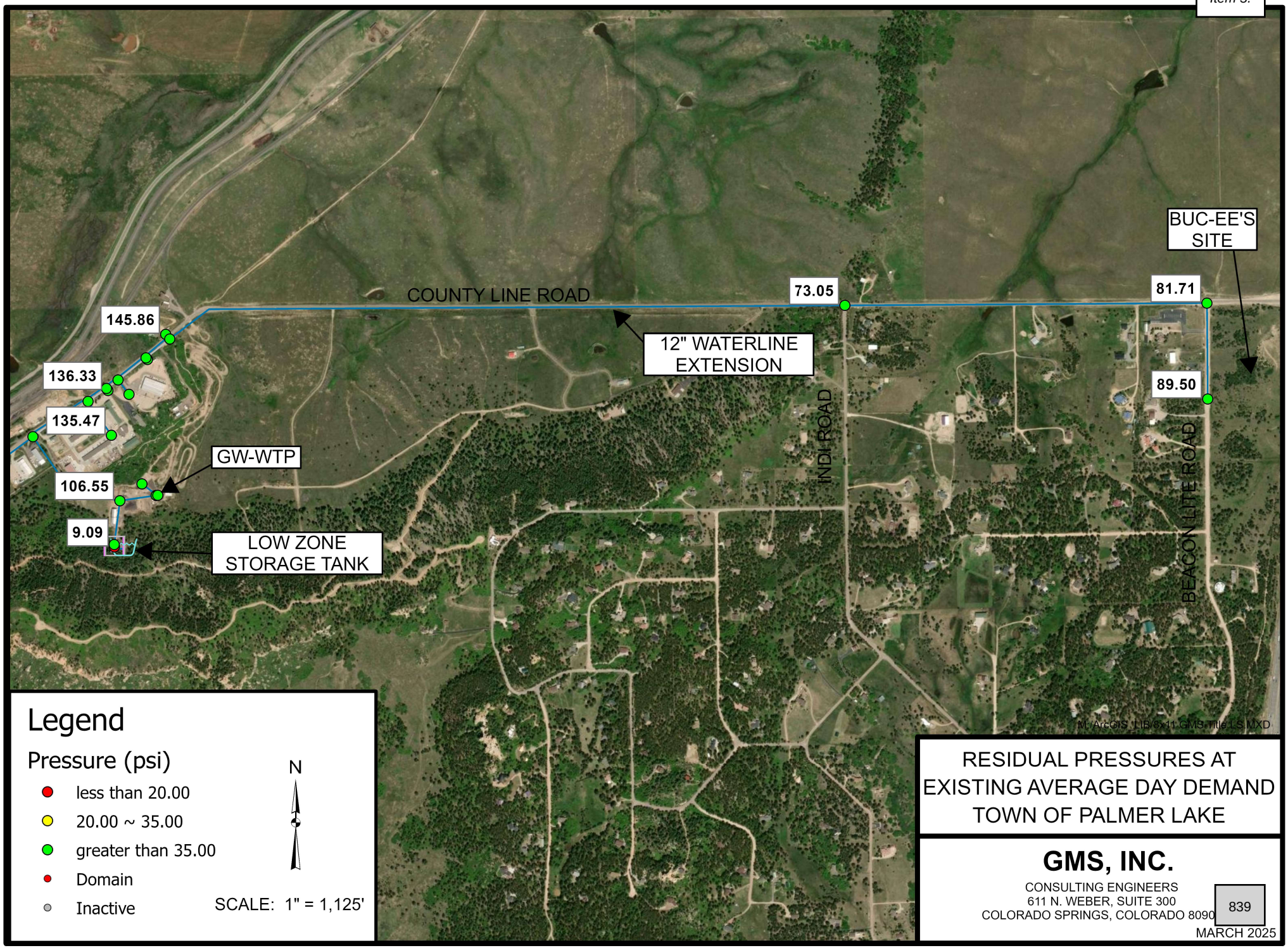

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Pressure (psi)

- less than 20.00
- 20.00 ~ 35.00
- greater than 35.00
- Domain
- Inactive

N

SCALE: 1" = 1,125'

RESIDUAL PRESSURES AT EXISTING AVERAGE DAY DEMAND TOWN OF PALMER LAKE

GMS, INC.
CONSULTING ENGINEERS
611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 8090

839

MARCH 2025

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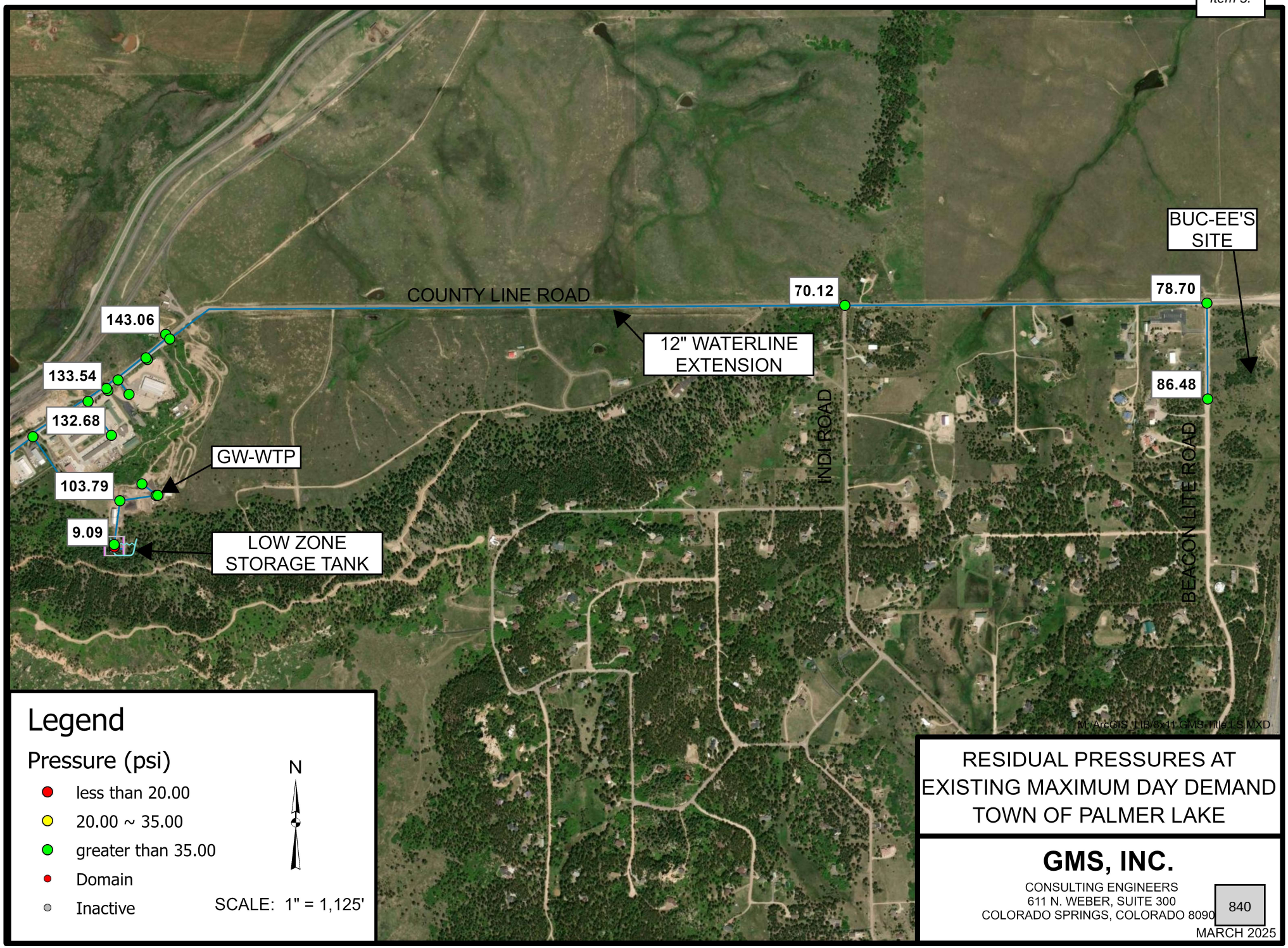

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- greater than 35.00
- Domain
- Inactive

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SCALE: 1" = 1,125'

RESIDUAL PRESSURES AT EXISTING MAXIMUM DAY DEMAND TOWN OF PALMER LAKE

GMS, INC.
CONSULTING ENGINEERS
611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 80903

840

MARCH 2025

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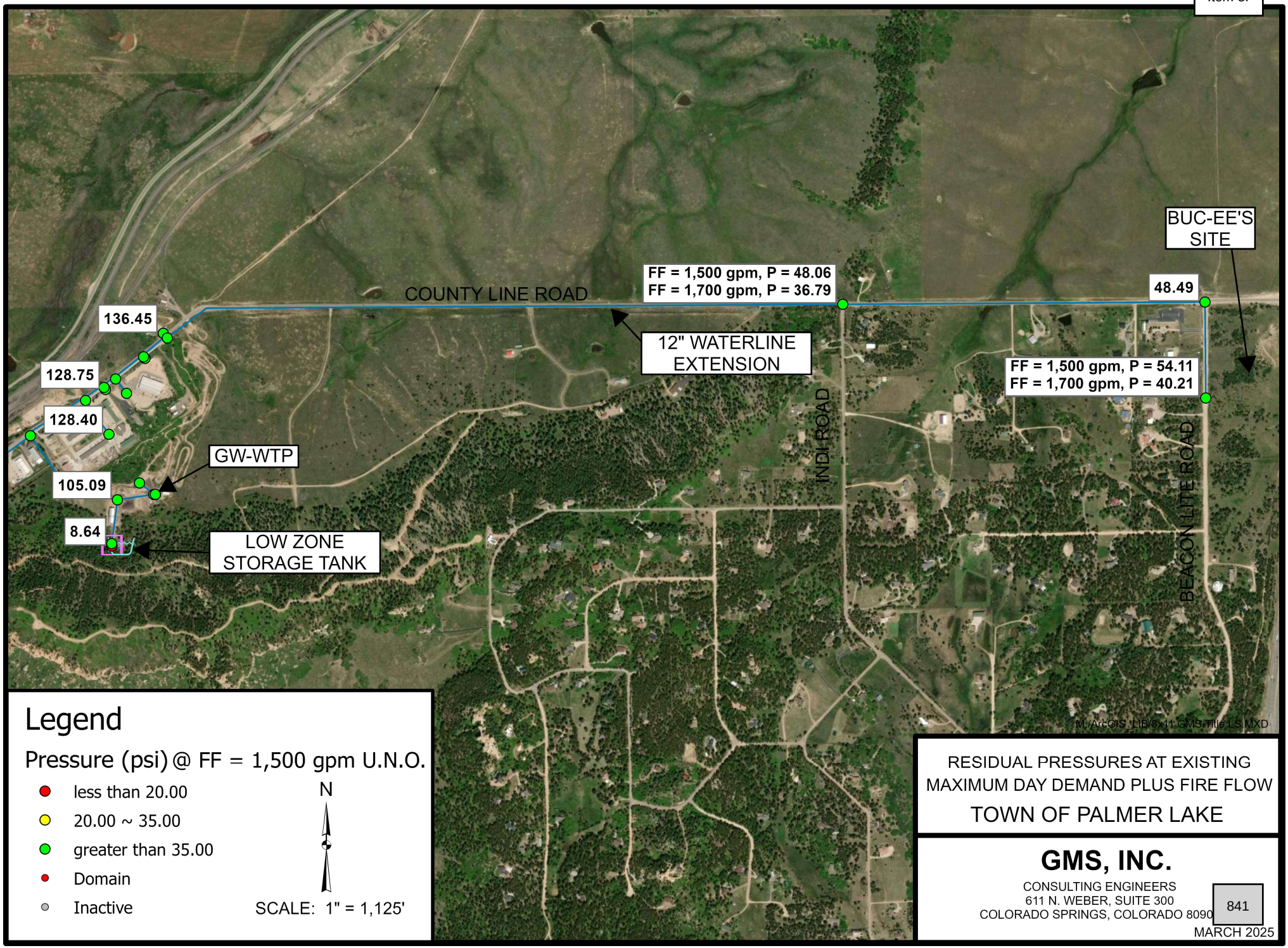

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Pressure (psi) @ FF = 1,500 gpm U.N.O.

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- greater than 35.00
- Domain
- Inactive

N

SCALE: 1" = 1,125'

RESIDUAL PRESSURES AT EXISTING
MAXIMUM DAY DEMAND PLUS FIRE FLOW

TOWN OF PALMER LAKE

GMS, INC.
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611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 8090

841

MARCH 2025

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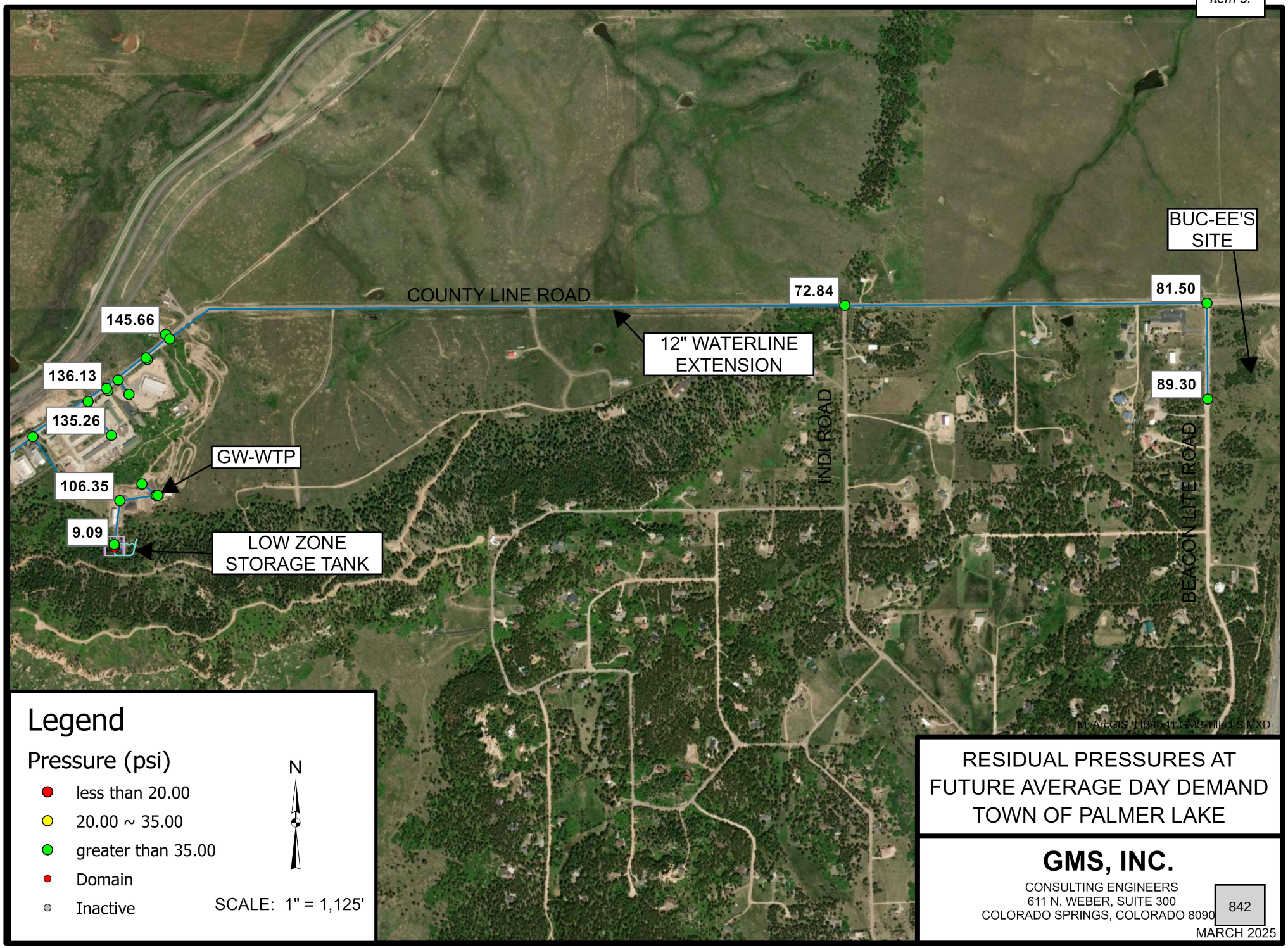

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- greater than 35.00
- Domain
- Inactive

N

SCALE: 1" = 1,125'

RESIDUAL PRESSURES AT FUTURE AVERAGE DAY DEMAND TOWN OF PALMER LAKE

GMS, INC.
CONSULTING ENGINEERS
611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 8090

842

MARCH 2025

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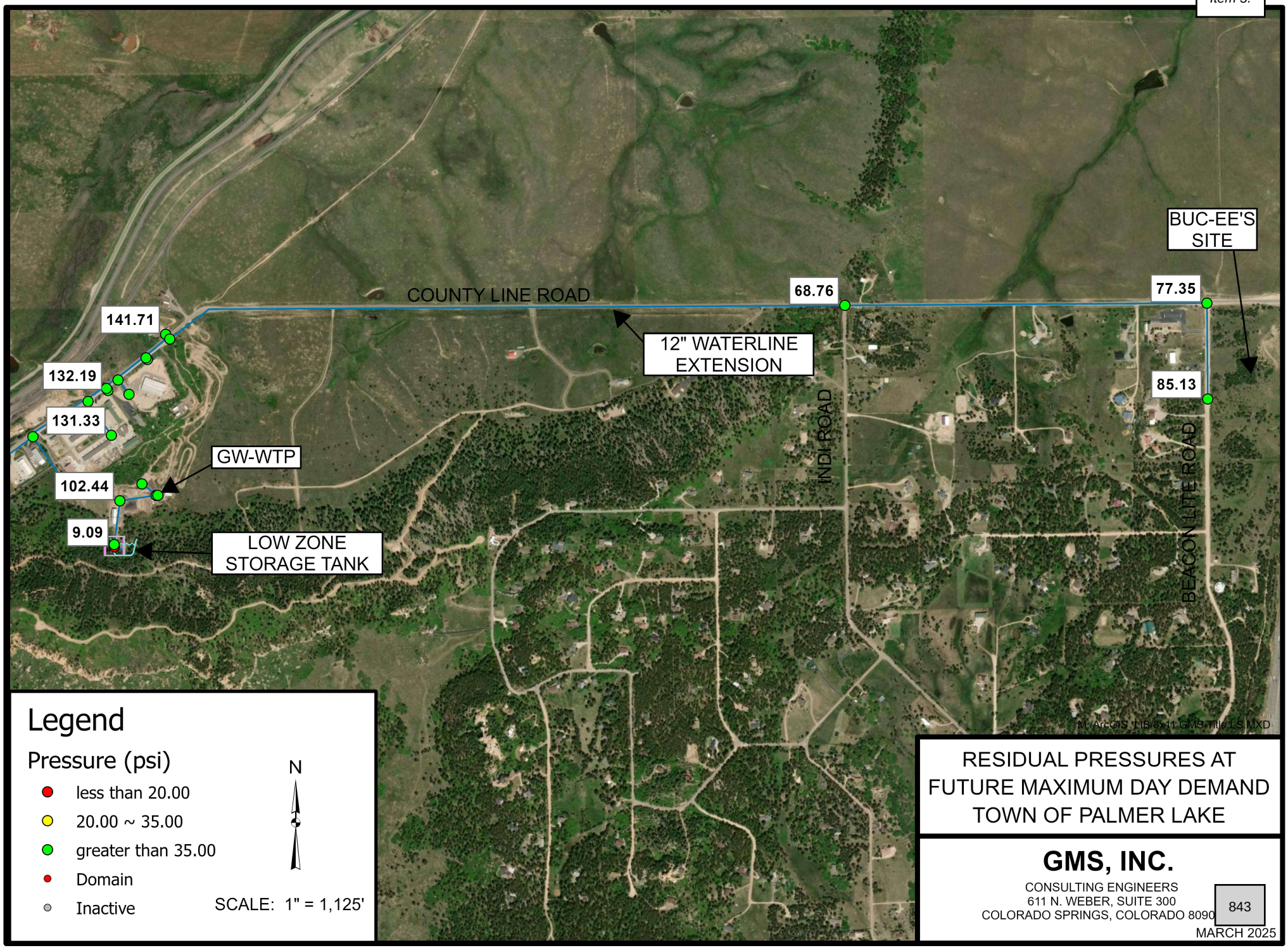

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Pressure (psi)

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- 20.00 ~ 35.00
- greater than 35.00
- Domain
- Inactive

N

SCALE: 1" = 1,125'

RESIDUAL PRESSURES AT FUTURE MAXIMUM DAY DEMAND TOWN OF PALMER LAKE

GMS, INC.
CONSULTING ENGINEERS
611 N. WEBER, SUITE 300
COLORADO SPRINGS, COLORADO 80903

843

MARCH 2025

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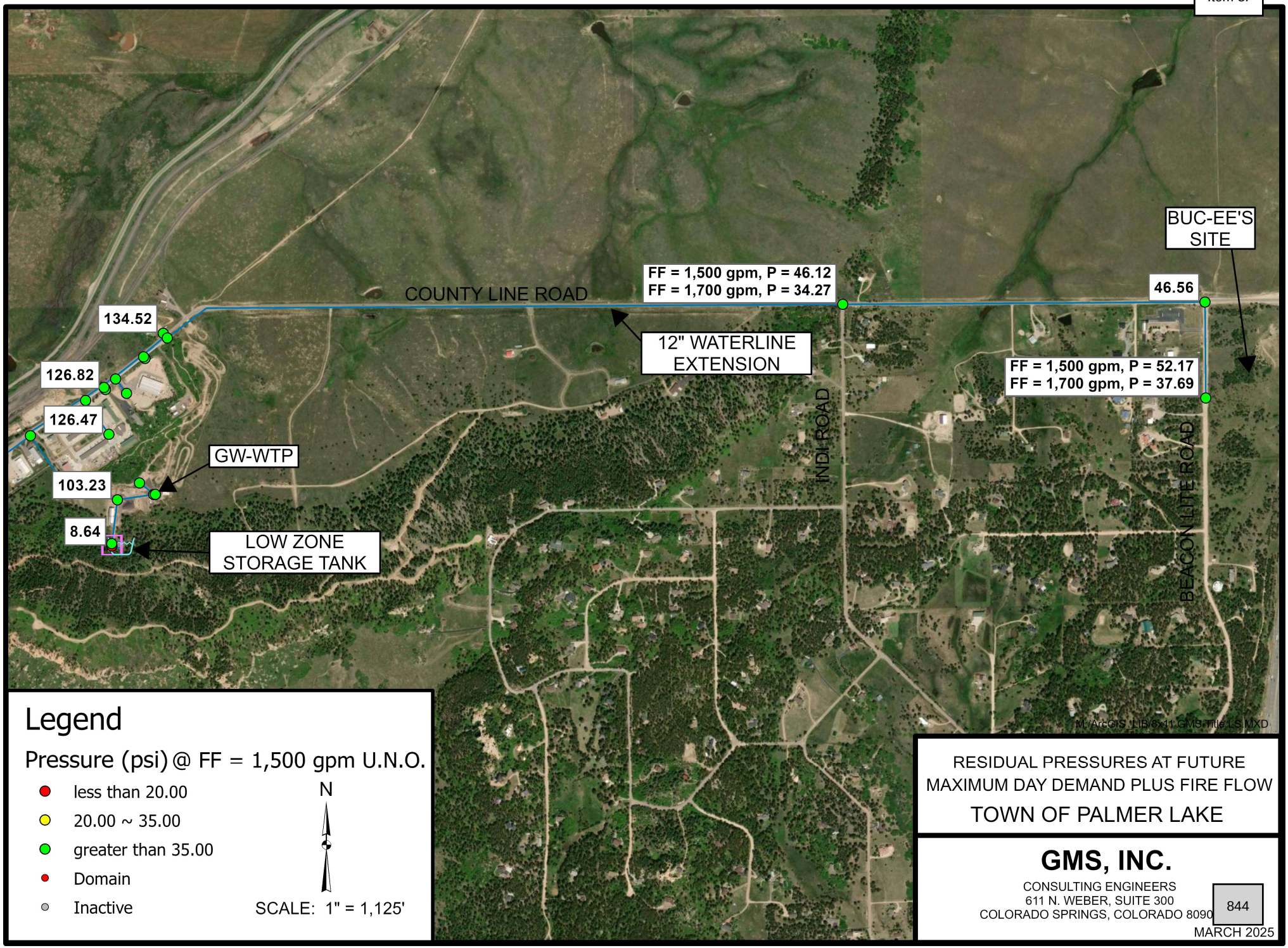

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Pressure (psi) @ FF = 1,500 gpm U.N.O.

- less than 20.00
- 20.00 ~ 35.00
- greater than 35.00
- Domain
- Inactive

N

SCALE: 1" = 1,125'

RESIDUAL PRESSURES AT FUTURE
MAXIMUM DAY DEMAND PLUS FIRE FLOW

TOWN OF PALMER LAKE

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COLORADO SPRINGS, COLORADO 8090

844

MARCH 2025

Buc-ee's Palmer Lake Site
Proposed Commercial Travel Center
Environmental Assessment
El Paso County, Colorado
June 12, 2025

Prepared for:

Ian Griffis

Prepared by:

HWA Wildlife Consulting, LLC
2308 South 8th Street
Laramie, WY 82070
www.hwa-wildlife.com
(307) 742-544

1. Executive Summary

Buc-ee's is proposing a commercial travel center in El Paso County, Colorado. The proposed 24.9-acre commercial travel center raises two primary environmental concerns: impacts to aquatic resources and adverse effects on big game populations. HWA Wildlife Consulting, LLC conducted an environmental assessment of the proposed travel center project site by assessing big game habitat and wetland and riparian habitat. The proposed project includes a 77,303 square foot facility, 120 fueling stations, 828 parking spaces, stormwater detention infrastructure, a retaining wall, and utility installations. The project will introduce substantial increases in water runoff, vehicle traffic (22,150 daily weekday trips), noise, and lighting. These factors present both direct and indirect risks to sensitive ecosystems and wildlife corridors in the region.

The site's topography and proximity to the Colorado Parks and Wildlife (CPW) designated aquatic High Priority Habitat (HPH), located 0.25 miles downslope, raise concerns about contamination from stormwater runoff and fuel-related pollutants. Fuel spills are inevitable at the proposed site, especially given the high number of planned fueling pumps. These spills can release toxic hydrocarbons, including benzene, toluene, and xylene, which are known to contaminate soil, surface water, and groundwater and pose serious ecological and human health risks. Spills at the site could have significant impacts to groundwater, nearby streams, and the CPW-designated aquatic HPH located approximately 0.25 miles downgradient of the project site.

Furthermore, the project site is located within habitat for elk and mule deer, including resident populations, summer ranges, concentration areas, and highway crossing habitats. It is located less than a mile from two major I-25 wildlife underpasses—Monument Hill and Dogleg—that provided over 4,000 mule deer crossing attempts during 2022–2023. The Greenland Wildlife Overpass is a new overpass designed to support long-term elk herd connectivity and is visible from the project site, which may impede big game movement along the overpass. Direct habitat loss (24.9 acres) combined with increased traffic, human presence, and visibility of the project site may cause avoidance of these wildlife crossings and the surrounding habitats. A GIS-based viewshed analysis shows much of the region's critical big game habitat, including the Greenland Overpass, big game HPHs, the approaches to the Dogleg Underpass, and the adjacent wildlife escape ramp, is within direct line-of-sight of the project. This visual and auditory exposure from the proposed project could lead to avoidance behaviors, habitat fragmentation, increased mortality from vehicle collisions, and reduced wildlife movements between seasonal ranges for big game species.

The proposed Buc-ee's travel center's scale, location, and associated vehicle traffic presents risks to both aquatic ecosystems and big game movement corridors. According to this assessment, the proposed project could negatively impact aquatic and big game habitat within the surrounding area.

2. Introduction

Buc-ee's has a proposed commercial travel center (project site) within El Paso County, Colorado. HWA Wildlife Consulting, LLC (HWA) completed an environmental assessment for the project site in 2025. This effort included a desktop analysis using online resources and field data collected

by HWA within and around the project site during a ground survey on May 15, 2025. The ground survey focused on:

- Assessing big game habitat within and around the project site
- Assessing the wetland and riparian habitat within and around the project site
- Photographing the project site and the surrounding habitat

The perimeter of the site was surveyed from the ground using adjacent roads (Palmer Drive Road and Beacon Lite Road) and a drone was used to survey the actual site and the surrounding habitat. This environmental assessment focused on potential impacts to aquatic habitats and big game species within and around the project site.

3. Project Site

The project site is located in the southwest corner of I-25 and Palmer Drive Road, approximately 2.5 miles east of Palmer Lake, Colorado, in Section 2 T11N:R67E (Figure 1). According to the development plan, the project site's boundary encompasses 24.9 acres to accommodate a 77,303 square foot travel center, 120 fueling stations, 828 parking spaces arranged along all four sides of the travel center, stormwater detention facilities, a retaining wall on the east side, and utilities. The site will be open twenty-four hours a day, seven days a week. The primary access points to the site are from Palmer Drive Road to the north and Beacon Lite Road to the west. The majority of the vehicles accessing the site will be exiting off of I-25, driving west along Palmer Drive Road, and then south into the site. Based on a traffic impact study, the project site will generate 22,150 daily weekday trips (Kimley-Horn 2024). Photos referenced in this report are included in Appendix A.

4. Vegetation

The vegetation cover within the project site primarily consists of undisturbed ponderosa pine (*Pinus ponderosa*) forested habitat and prairie grassland habitat (see photos in Appendix A). There is a small drainage that flows west to east through the site that could contain riparian associated plant species (Figure 2, Photo 4).

5. Wetland Habitat, Riparian Habitat, and Aquatic Species

Potential wetlands and riparian habitat within and around the project site were identified using U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), U.S. Geological Surveys (USGS) National Hydrography Dataset (NHD), Colorado Parks and Wildlife (CPW) High Priority Habitat (HPH) data, and drone imagery (Figure 2).

One NHD feature, classified as a stream/river, occurs within the project site (Figure 2). The NHD feature could not be surveyed from the ground due to land access restrictions. Drone imagery shows that there is a depression within this feature (Photo 4). This feature likely contains water during heavy rain events. The water flows west to east, crosses under I-25, and eventually heads northeast into CPW-designated aquatic native species conservation waters HPH. The aquatic HPH is located approximately 0.25 miles northeast of the project site (Figure 2, Photo 5). CPW

recommends that HPHs be avoided to minimize impacts to wildlife and sensitive habitats from land use developments in Colorado.

One of the primary aquatic concerns about the proposed development is potential spills impacting the important aquatic HPH and impacts to local groundwater. Based on the topography, spills within the project site will eventually flow east and northeast into the CPW designated aquatic HPH, located approximately 0.25 miles to the northeast (Figure 2). The newly developed Buc'-ees in Johnstown, Colorado, has already reported a diesel line spill that was reported on November 20, 2024 (Release #REL-016877; CDOPS, 2025). In addition to underground gas line and tank spills, there is a concern about gas spills at the 120 fueling pumps. Research from John Hopkins University indicates that a typical gas station may spill approximately 40 gallons of gasoline annually, with a substantial portion eventually seeping through the concrete and into the ground, potentially introducing hazardous substances like benzene into the environment (Hilpert and Breysse 2014). The estimated 40 gallons of gasoline spilled annually is referring to gasoline spilled at the pump and does not include spills from underground storage gas lines or tanks. This study focused on typical gas stations much smaller than the 120 fueling pump stations that the Buc'-ees site will have.

Gasoline spills can cause significant environmental impacts, contaminate soil, contaminate groundwater, and contaminate surface water due to the presence of toxic hydrocarbons such as benzene, toluene, and xylene (ATSDR 2015). These substances are not only harmful to aquatic life but also pose health risks to humans through contaminated drinking water and inhalation of volatile compounds (EPA 2020). In aquatic ecosystems, gasoline can reduce oxygen availability in water, leading to fish kills and disruption of aquatic habitats (NOAA 2021). Additionally, long-term exposure of these contaminates in the soil can hinder plant growth and degrade land quality, making remediation both complex and costly (EPA 2020). There is a concern that the gas spills at the project site will negatively impact ground water and the CPW-designated aquatic HPH that is located approximately 0.25 miles downslope of the project site.

6. Big Game

CPW has identified big game HPHs to protect species such as elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus*). CPW recommends that HPHs be avoided to minimize impacts to wildlife (including big game) from land use developments in Colorado. CPW has also identified habitat ranges where big game spend the majority of their time. Avoiding and minimizing impacts in HPHs and big game habitat ranges will help minimize any negative impacts to big game populations.

The location of big game HPHs and habitat ranges in the vicinity of the project site were obtained from the CPW – Geospatial Data website (CPW 2025, Figures 3-5). Big game HPHs do not occur within the project site. However, elk migration corridor HPH occurs approximately 0.14 miles to the north of the project site and mule deer severe winter range HPH and winter concentration area HPH occurs approximately 1.95 miles to the northwest of the project site (Photo 6). Additionally, the project site is located within elk resident population area habitat, elk highway crossings habitat, mule deer concentration area habitat, mule deer summer range habitat, mule deer resident population area habitat, and mule deer highway crossing habitat. And elk summer range habitat

is located approximately 0.39 miles to the west and mule deer winter range habitat is located approximately 0.01 miles to the north. The majority of the habitat within and around the project site is suitable for big game. Although some small-scale disturbances do occur in the area (e.g., roads and residential housing), the majority of the habitat is undisturbed and provides a mix of forage and cover habitat for big game (Figure 1 and photos in Appendix A).

Due to the elk and mule deer populations in the area and high fencing along I-25 that restricts big game movements, CPW and the Colorado Department of Transportation (CDOT) have strategically located underpasses, wildlife escape ramps, and overpasses, along I-25 to support big game movements (Figures 1-5 and photos in Appendix A).

Specifically, the Monument Hill Underpass is located approximately 0.63 miles south of the project site and the Dogleg Underpass is located approximately 0.67 miles north of the project site (Figures 1-5, Photos 6 and 7). These two underpasses were studied in 2022 and 2023 to determine wildlife activity and use with a focus on big game successfully crossing I-25 (Kintsch et al. 2025). The Monument Hill Underpass had 2,051 attempted mule deer crossings in 2022 and 2,444 in 2023 (Kintsch et al. 2025). The Dogleg Underpass had 378 attempted mule deer crossings in 2022 and 84 in 2023 (Kintsch et al. 2025). Successful mule deer crossings (number of mule deer that fully crossed the underpass) at the two underpasses ranged from 86% to 93% and wildlife-vehicle collisions decreased by 78% during the two-year study (Kintsch et al. 2025). Additional mammal species observed at the two underpasses include black bear (*Ursus americana*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), elk, fox (*Vulpes* sp.), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*) (Kintsch et al. 2025). This data shows that deer, elk, and other wildlife species are in the area and move through the habitat during different times of the year. There is a concern that the increase in vehicle traffic associated with the project site will result in more noise, human activity, and vehicle lights at night, all of which could impact big game movement patterns within and between the two underpasses.

Wildlife high fencing is located along I-25 where big game species frequently attempt to cross the highway. Occasionally, big game species will pass through the high fencing (e.g., where the fencing is broken) and then they can become trapped within the I-25 corridor. Wildlife escape ramps are designed to allow big game species to safely escape from the high fenced areas. These wildlife escape ramps are strategically placed in areas where they are most likely to be utilized by big game species. A wildlife escape ramp, along the west side of I-25, is located adjacent to the project site (Figures 1-5, Photos 1 and 8). The wildlife escape ramp is located approximately 20 feet from the project site's boundary and approximately 100 feet from the project site's proposed retaining wall. Due to the project site's close proximity to the escape ramp, big game species might not feel comfortable using the escape ramp. As depicted in Photo 8, there will be limited space between the I-25 wildlife high fencing and the project site's retaining wall for big game to exit from the escape ramp. Human activity (vehicle and foot traffic), lights, and noise from the project site, which will be visible from the escape ramp, could prevent big game species from using the wildlife escape ramp and from traveling along the area between I-25 and the project site's retaining wall. Big game species trapped within the I-25 corridor present an increased risk for big game-vehicle collisions and could place more stress on the animals until they can escape from the corridor.

Further, the new I-25 Greenland Wildlife Overpass is located approximately 2.1 miles north of the project site (Figures 1-5, Photo 6). According to CDOT (2025), the overpass will provide a vital and safe connection for large game to cross I-25 in their natural habitat, addressing specific needs of elk and other large animals that need wide open areas to cross because they avoid tunnels, underpasses, and enclosed areas. This overpass will connect 39,000 acres of big game habitat (Douglas County Land Conservancy) to more than one million acres of the Pike National Forest (CDOT 2025). Due to this overpass being visible from the project site (see Viewshed Analysis in Figures 3-5) and the important habitat north of the project site that could be used for approaching and dispersing from the overpass, there is a concern that big game movements could be impacted by the project.

Finaly, a viewshed analysis was conducted to determine the potential visual impacts from the project site. The viewshed analysis was ran using the Visibility (Spatial Analyst) tool in GIS ArcMap (v 10.8; ESRI Inc, Redlands, CA). Parameters for the viewshed included approximately 850-foot stretch of road along Palmer Drive Road (between I-25 and Beacon Lite Road), and the project site boundary, 1-meter resolution digital elevation model (DEM) obtained from The National Map (TNM) server (USGS 2025), and using a 6-foot height offset. The 6-foot height offset represents the taller vehicles entering and leaving the Buc-ee's site. The result of this analysis is included in Figures 3-5. The viewshed displays areas visible from the increased traffic associated with the project site. The viewshed analysis displays a significant amount of big game habitat, including elk HPH, that will be visible from the project site (Figures 3-5). According to a meta-analysis by Benitez-Lopez et al (2010), infrastructural developments resulted in mammal populations declining, with an increase in population declines (out to 5 km) in open areas compared to forested areas. The big game habitat to the north, northwest, and northeast is primarily open and visible from the project site (Figures 3 and 4). There is a concern that wildlife will avoid suitable big game habitat and travel corridors that are visible from the project site.

Due to the project site being located within big game habitat ranges, near big game HPHs, adjacent to a wildlife escape ramp, near two underpasses that are being used by elk, deer, and other wildlife species (Kintsch et al. 2025), and near the new I-25 Greenland Wildlife Overpass, there is a concern that the project site could negatively impact big game populations. As mentioned, the adjacent I-25 wildlife escape ramp, the new I-25 Greenland Wildlife Overpass, and the west and east approaches to the Dogleg Underpass, will all be visible from the project site based on the viewshed analysis (Figures 3-5). Big game could avoid portions of these visual (i.e., direct line-of-sight) areas due to the increase in vehicle traffic, lights, and noise that will not be blocked by the landscape. The increase in vehicle traffic at the project site (22,150 daily weekday trips [Kimley-Horn 2024]), not only disrupts the natural behavior of big game but also contributes to higher rates of mortality through vehicle collisions.

Large mammals (i.e., big game) avoid roads due to traffic-related disturbances (e.g. lights, noise, and chemical emissions), which can result in habitat fragmentation, loss, and degradation (Rytwinski and Fahrig 2015). Studies have shown that mammal population densities declined based on their close proximity to infrastructure (including busy roads) and minimizing infrastructure developments in relatively undisturbed areas is important for conserving wildlife populations (Benitez-Lopez et al 2010). There is a concern that the increase in vehicle traffic (22,150 daily weekday trips), resulting in more noise, human activity, and vehicle lights at night,

will result in big game avoiding portions of the habitat surrounding the project site. Many large mammals, such as elk and deer, tend to move more frequently at night. Studies have shown that large mammals such as elk or mule deer change their behaviors more during the day compared to night (Northrup et al. 2015, Dzialak et al. 2011, Sawyer et al. 2009). In both Colorado and Wyoming, elk have been shown to select areas associated with human development or roads during the night compared to daytime hours (Dzialak et al. 2011, Sawyer et al. 2009). However, if there is a significant increase in light from vehicles or project infrastructure, these areas might be avoided. With the amount of light, traffic, and noise expected from the project site, there is potential for the project to equate to hundreds of acres of suitable habitat being avoided by big game, including important wildlife migration corridors and HPH areas.

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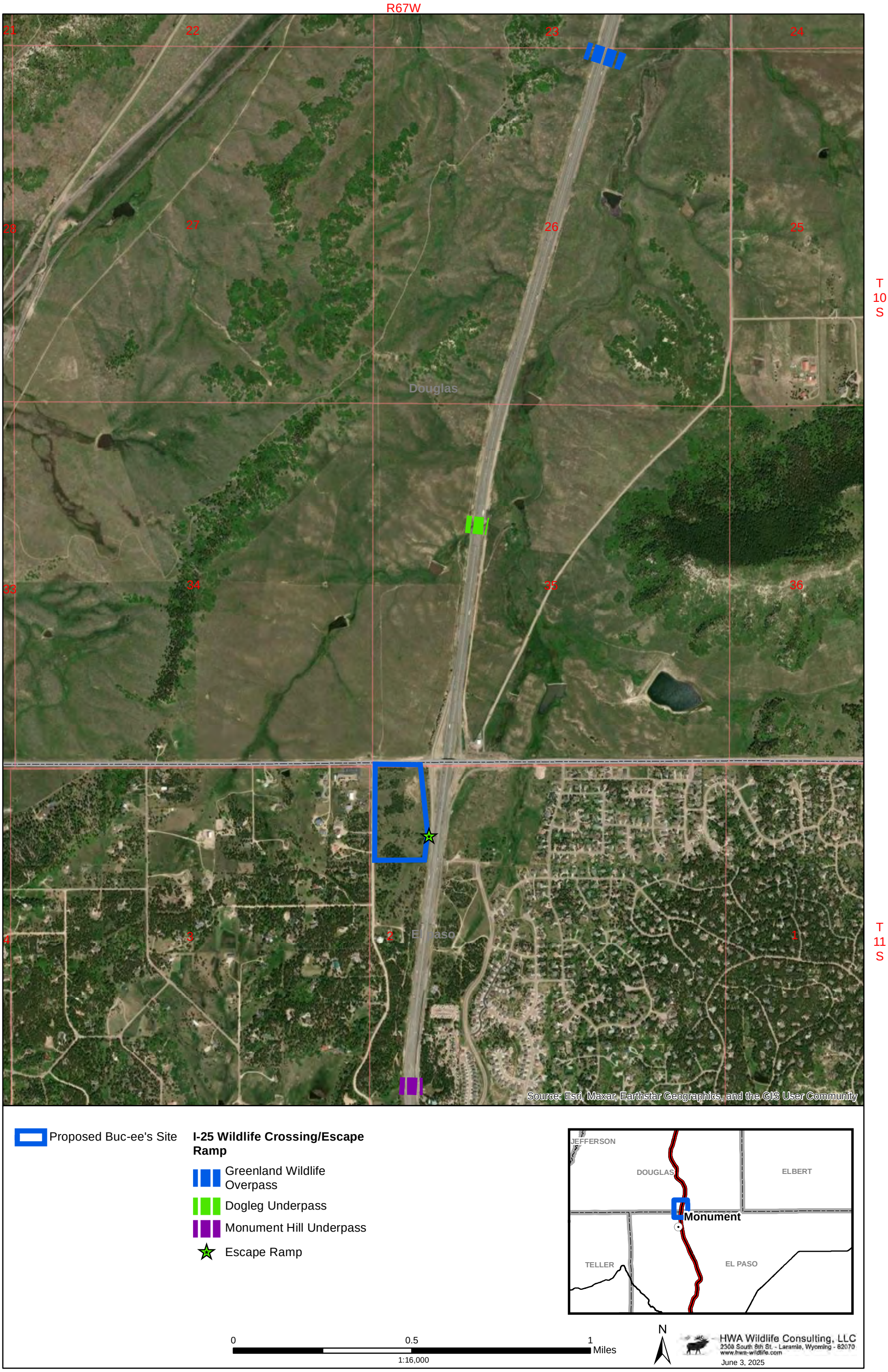


Figure 1. The proposed Buc-ee's Palmer Lake site.

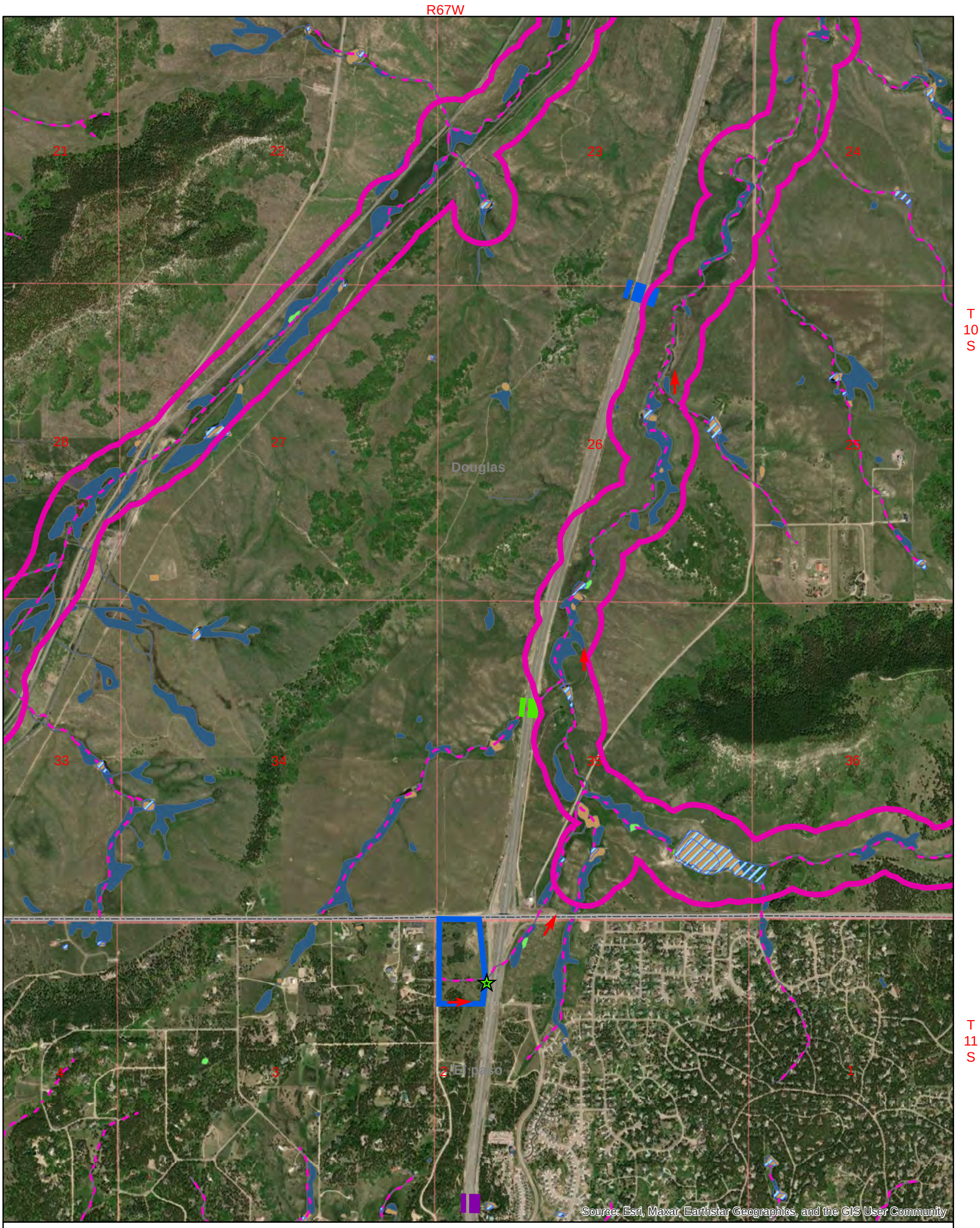


Figure 2. Wetland and riparian data (USFWS NWI, USGS NHD, and CPW HPH) around the proposed Buc-ee's site.

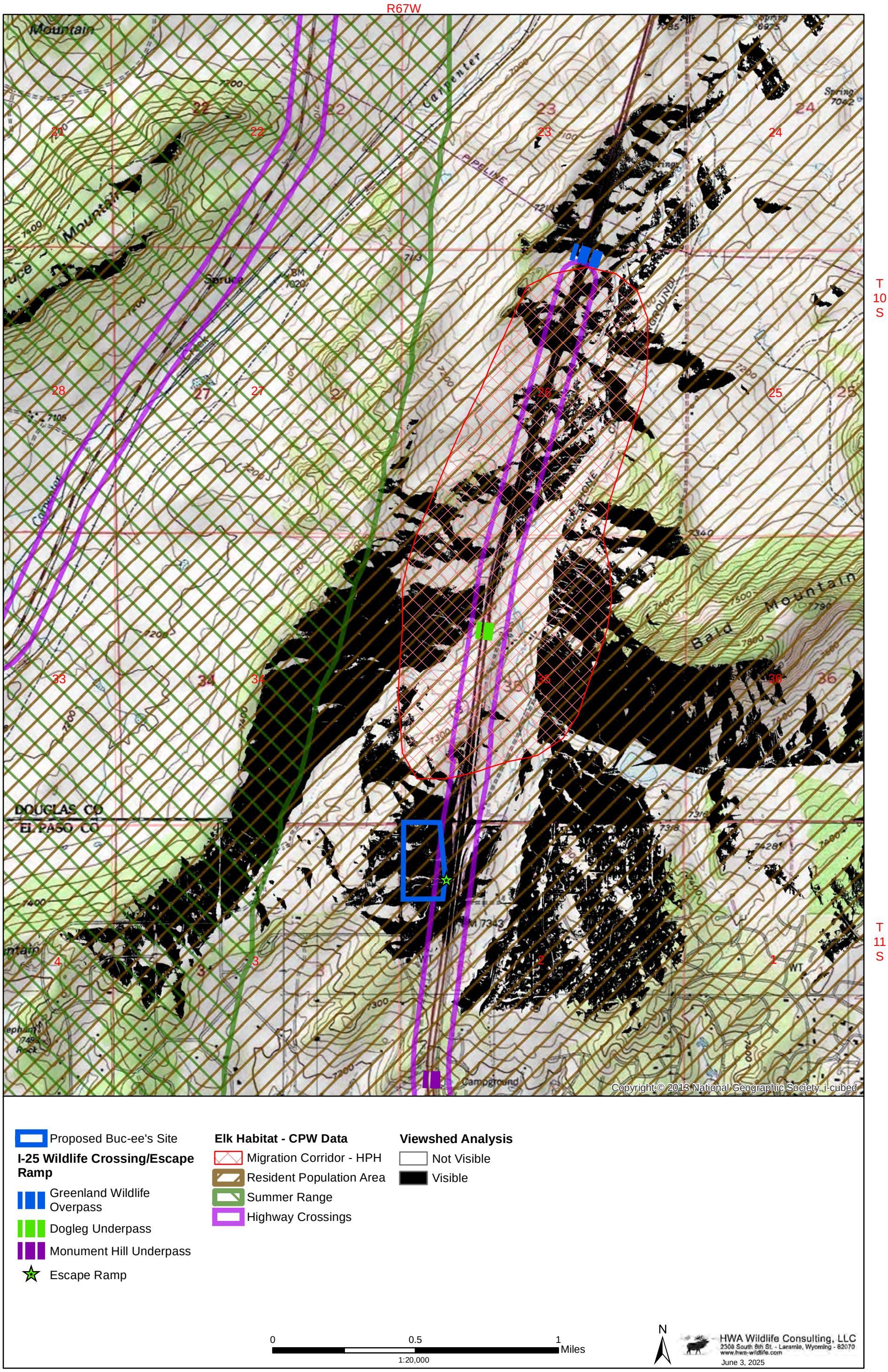


Figure 3. Elk habitat (CPW data) and viewshed analysis around the proposed Buc-ee's site.

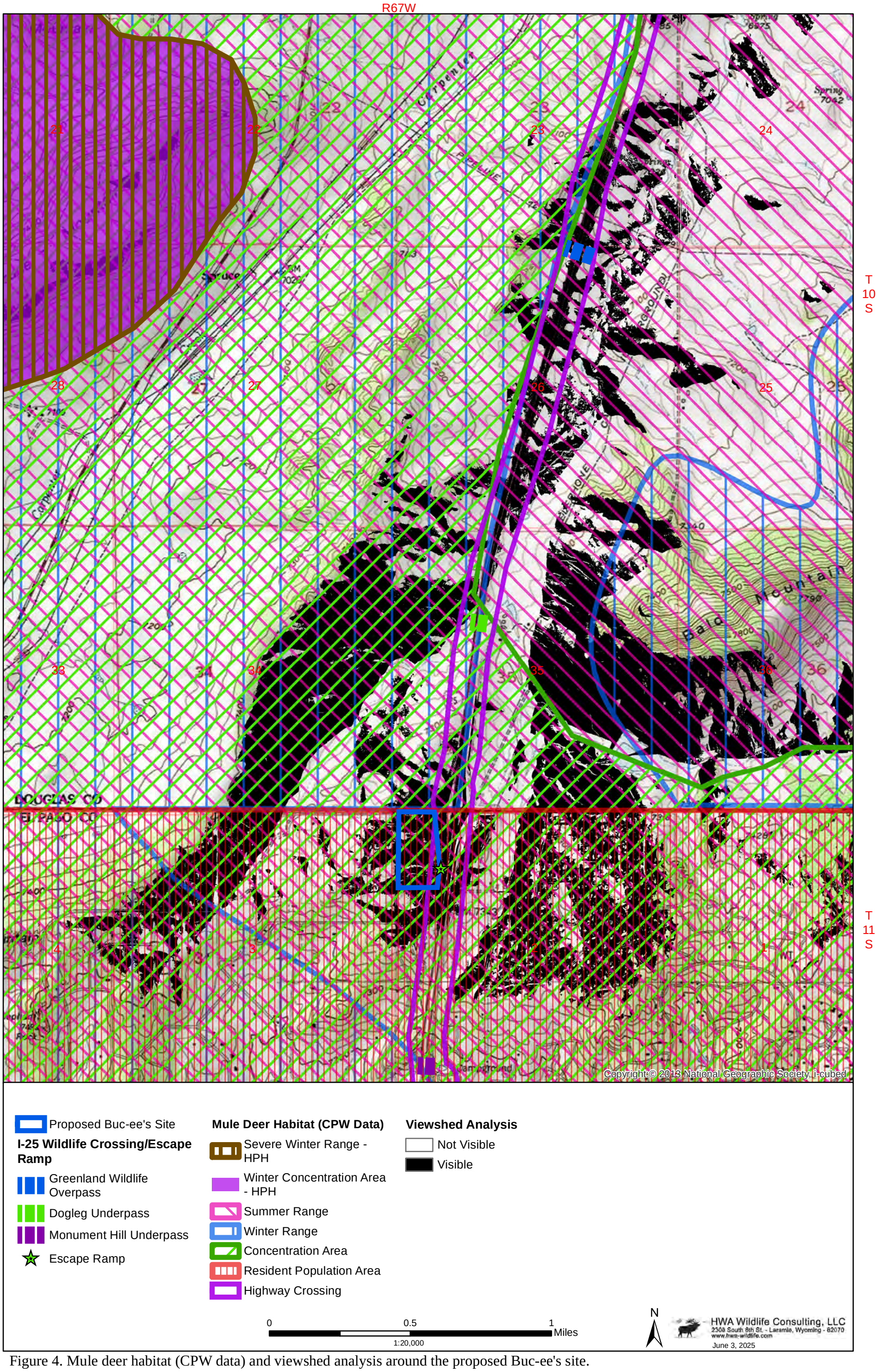


Figure 4. Mule deer habitat (CPW data) and viewshed analysis around the proposed Buc-ee's site.

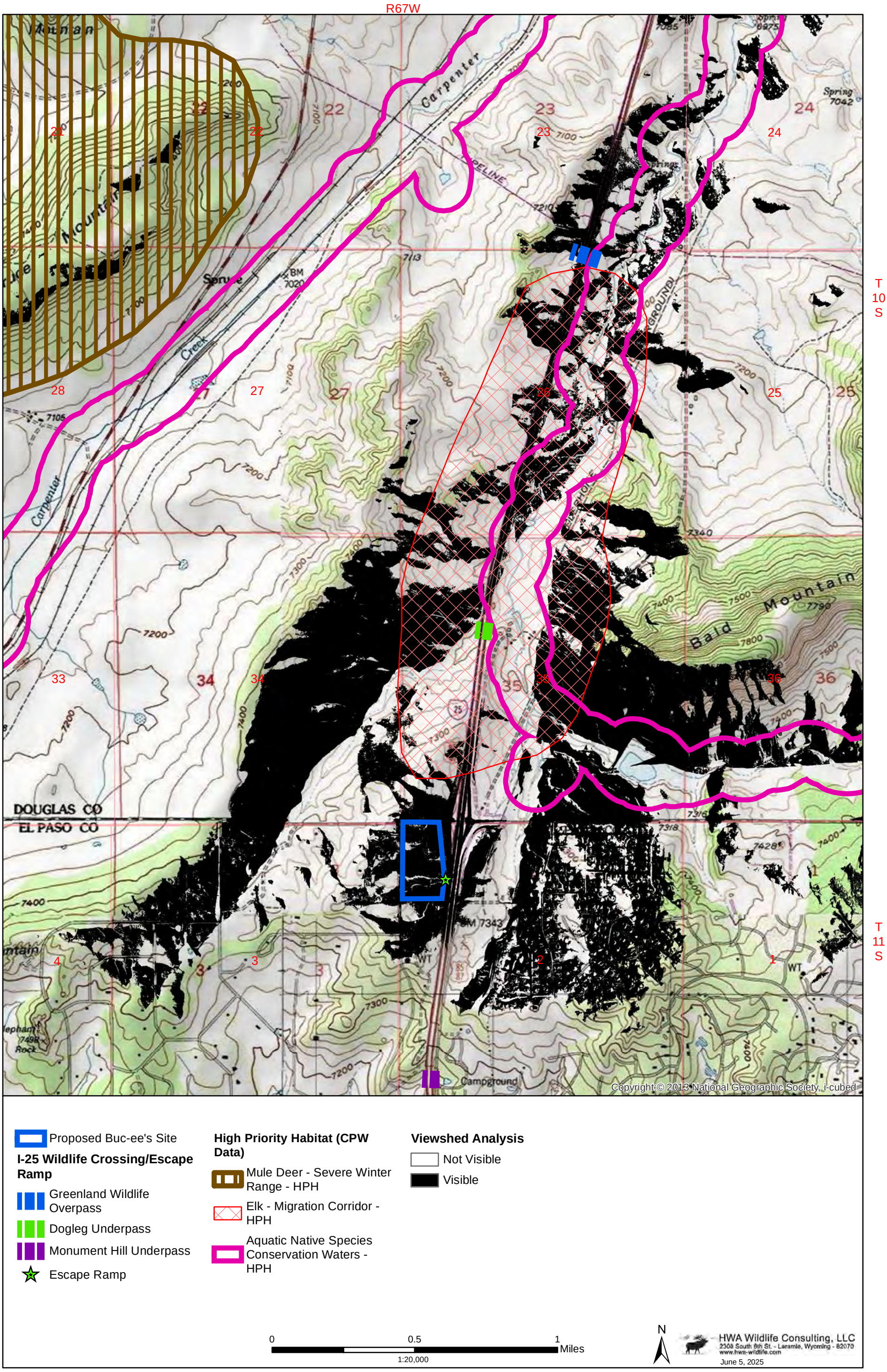


Figure 5. High priority habitat (CPW data) and viewshed analysis around the proposed Buc-ee's site.

Appendix A

Photos of the project site and surrounding habitat

(Survey Date: 5/15/2025)

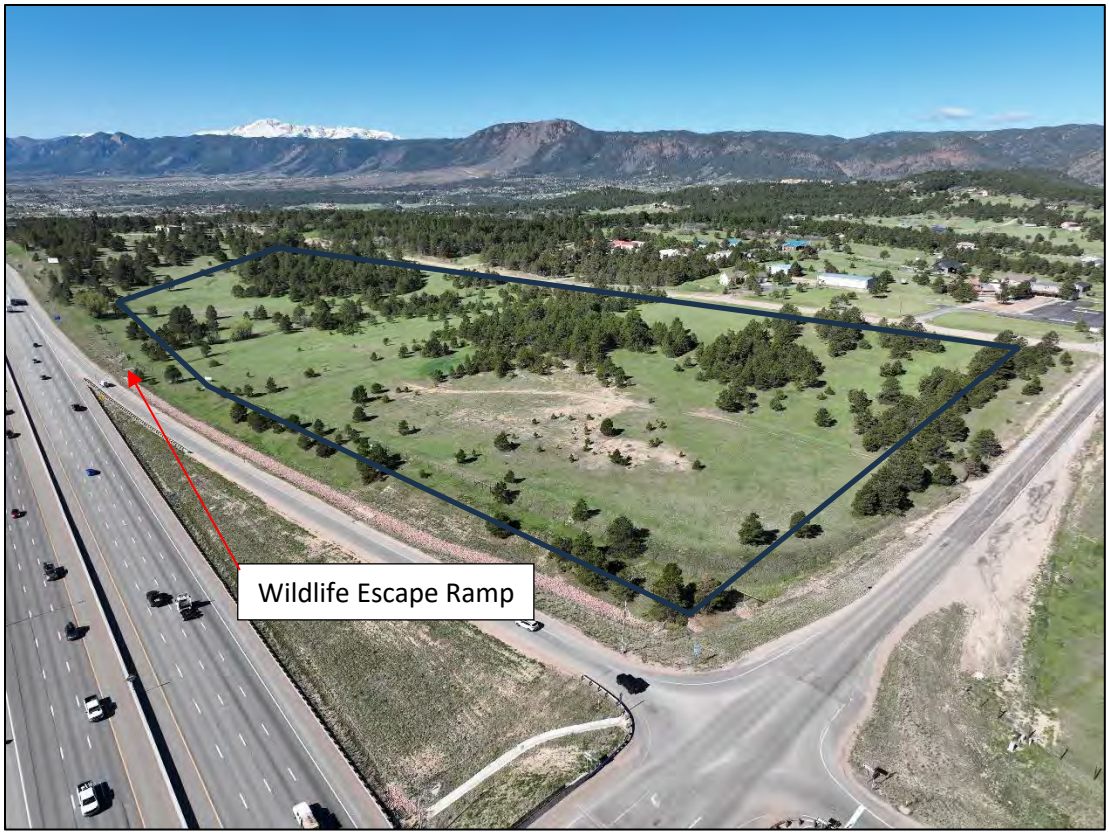


Photo 1. Looking SW at the project site.

Photo 2. Looking SE at the project site.

Photo 3. Looking N at the northern half of the project site.

Photo 4. Looking W at the drainage (NHD feature) within the project site.

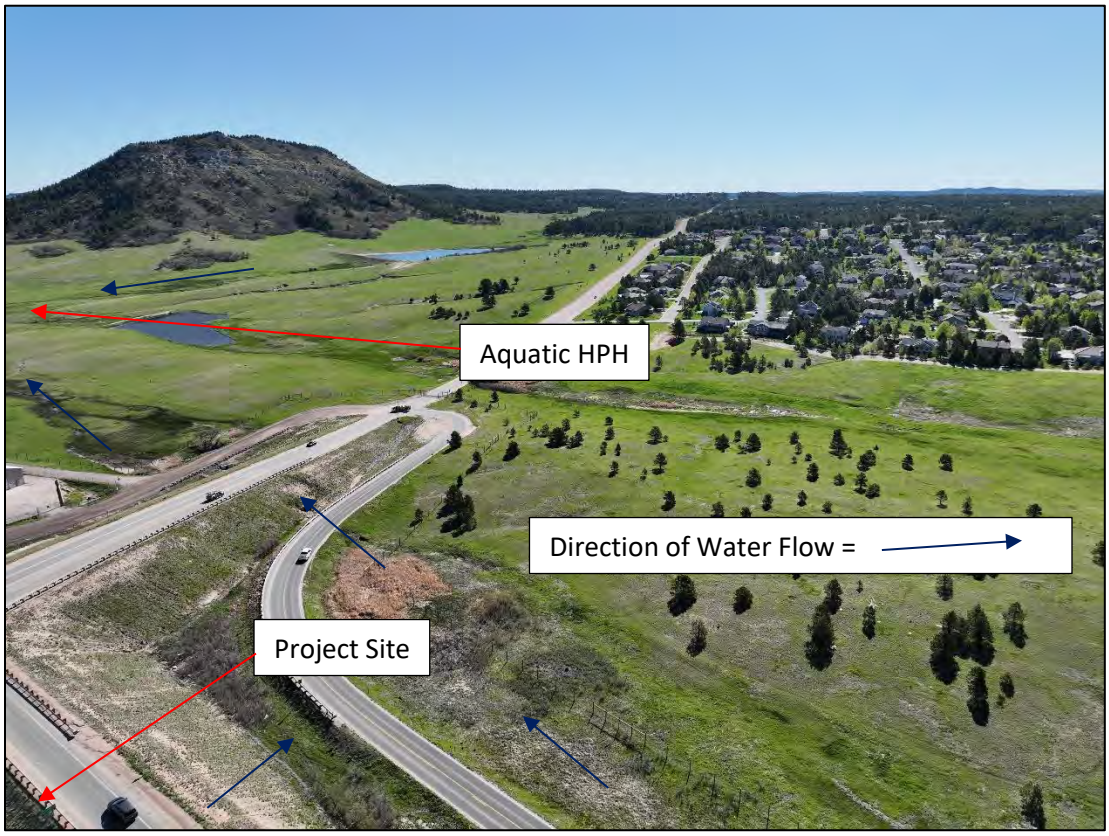


Photo 5. Looking NE at aquatic HPH.

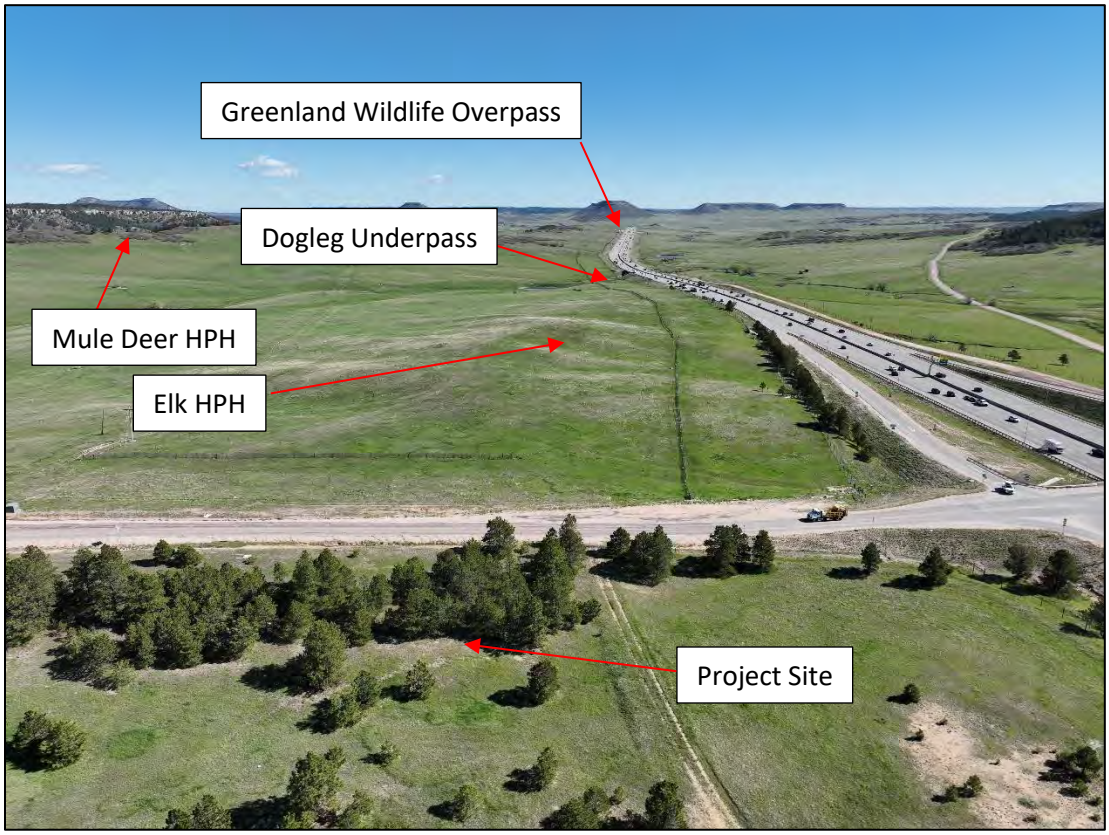


Photo 6. Big game HPHs and I-25 wildlife crossings.

Photo 7. I-25 wildlife crossing.

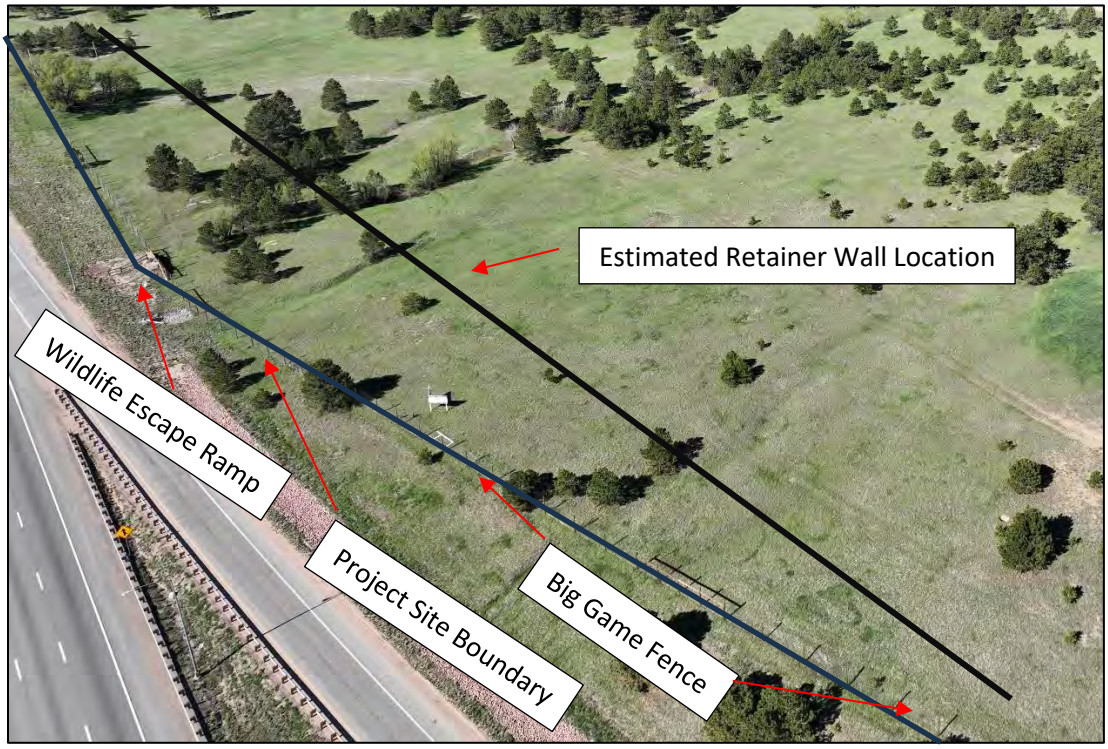


Photo 8. I-25 wildlife escape ramp.

BBA
Water Consultants, Inc.

June 12, 2025

Town of Palmer Lake Planning Commission
42 Valley Crescent
Palmer Lake, CO 80133

RE: Buc-ee's Travel Center Water Supply Considerations

Dear Commissioners:

We are writing on behalf of Ian Griffis regarding Town of Palmer Lake ("Town") water supply considerations for the proposed Buc-ee's Travel Center annexation. We have consulted with northern El Paso County water users for over two decades regarding groundwater geology, Denver Basin aquifer well development, municipal water supply planning, and water rights matters. Our resumes are attached as **Appendix A**.

1. Summary

i) The Town is in a precarious position due to an underdeveloped water supply system. Presently, the Town cannot meet peak day water demand if there is a well failure. The Town should address its current water supply deficiencies before taking on new commitments.

ii) Approximately 50% of Town water supply comes from the non-renewable Denver Basin aquifers.

iii) Buc-ee's Travel Center will increase Town water demand by 25-27% and that demand will necessarily be served by Denver Basin groundwater.

iv) Denver Basin well construction is capital-intensive, with each well costing approximately $2.8M, or $4.7M with treatment.

www.bbawater.com 333 West Hampden Avenue, Suite 1050 Englewood, Colorado 80110 phone 303.806.8952

v) Only the Denver and Arapahoe aquifers can be practically developed for Town municipal water use; Denver aquifer well yields are unpredictable.

vi) Denver and Arapahoe aquifer water levels are declining beneath the Town. Based on data from the Town's A-2 well, water level decline in the Arapahoe aquifer has averaged 17 feet per year and yield has decreased by 40% since when the well was first drilled in 2001.

vii) Denver Basin groundwater is a nonrenewable resource. The rate of Denver Basin water level and well yield decline will accelerate with greater Town well pumping and a higher density of Town wells.

viii) The April 2025 GMS Report estimates a $10.4M capital cost to serve Buc-ee's Travel Center. The actual long-term capital cost will be greater because the April 2025 GMS Report does not account for the cost to construct additional wells as well yields decline.

ix) The Town's water service commitments are permanent, yet the proposed Buc-ee's Travel Center Denver Basin supply is nonrenewable and finite. The April 2025 GMS Report does not address the cost for renewable water service.

x) Most water providers require development to pay its own way both for immediate capital improvements (e.g. wells, treatment, and distribution) and also costs for renewable water rights acquisition and infrastructure.

xi) Instead of making a new water service commitment to Buc-ee's Travel Center, the Town should:

a. Remedy its immediate water supply issues.

b. Compare projected Town water demand vs future well yield to ensure that the Town can provide water service to its residents in the future in the event that the top producing well is offline.

c. Identify and budget for future well construction projects to make up for declining well yields and routine well replacement.

d. Identify and budget for a permanent, renewable water supply to replace or substantially supplement Denver Basin groundwater in the future.

xii) There are grant and low-interest loan funding opportunities available through the Colorado Water Conservation Board to support the Town's planning and water infrastructure. Town can secure its water future without relying on Buc-ee's Travel Center tax revenue.

xiii) Annexation of the Buc-ee's Travel Center is likely to result in increased scrutiny over the Town's water rights operations, including preservation of the water level in historic Palmer Lake.

2. Introduction

In addition to professional experience and references cited in this letter, we have relied upon information from the:

i) April 2021 Water Resource Evaluation report prepared by GMS, Inc. (the "April 2021 GMS Report");

ii) November 2022 Preliminary Engineering Report for Water System Improvements prepared by GMS, Inc. (the "November 2022 GMS Report");

iii) April 2025 Preliminary Engineering Report, Town of Palmer Lake Water System Improvements for Proposed Buc-ee's Travel Center report prepared by GMS, Inc. ("April 2025 GMS Report"); and

iv) May 5, 2025 Town Board of Trustees Workshop.

The April 2025 GMS Report identifies that the Buc-ee's Travel Center will increase Town water demand by 25-27% over current conditions.[1] In recent years, the Town water supply has been derived from approximately 40-55% non-renewable Denver Basin aquifer pumping from the Denver and Arapahoe aquifers.[2] The Town plans to supply the Buc-ee's Travel Center and annexations enabled by the new 12-inch water line with additional Denver Basin wells because the Town's surface water supplies are already maximized to physical and water rights capacity.

3. Denver Basin aquifers

The layered sandstone, siltstone, clay, and shale Denver Basin aquifers were deposited approximately 70 to 34 million years ago, first as marine beach deposits (Fox Hills aquifer) and later as rivers that eroded sediment from mountains to the west (Arapahoe, Denver, and Dawson aquifers).[3] From top to bottom, the Denver Basin includes the Dawson, Denver, Arapahoe, and Fox Hills aquifers. The aquifers are not homogeneous units but rather zones of sandstone/siltstone/clay/shale layers separated by thicker zones of impermeable clay and shale. The aquifers are variable both vertically and laterally.

[1] April 2025 GMS Report, Table 15 at 40.
[2] April 2025 GMS Report, Table 8 at 28.
[3] Thorson, Jon, P. Geology of Upper Cretaceous, Paleocene and Eocene Strata in the Southwestern Denver Basin, Colorado, Colorado Geological Survey, 2011.

Denver Basin groundwater rights are allocated based on land area and a 100-year aquifer life.[4] Discharge from the Denver Basin aquifers is much greater than recharge; groundwater is mined.[5] As a practical matter, the economic life of the Denver Basin aquifers for municipal use is much less than 100-years in northern El Paso County.[6]

The Town is located on the western edge of the Denver Basin, where the Denver Basin aquifers are truncated by the Rampart Range Fault system along the mountain front at the base of Sundance and Chautauqua Mountains.[7] Well yields near the edge of the aquifer can experience "boundary effects" that reduce long-term well yield. Douglas County implemented special "Margin B" zoning regulations to prevent excessive depletion of the vulnerable western edge of the Denver Basin.

3.1. Denver Basin aquifers beneath the Town

Beneath the Town, each of the Denver Basin aquifers have different characteristics:

i) The Dawson aquifer generally supports well yields less than 50 gallons per minute (gpm) at a total depth of approximately 1,100-1,400 feet. The Dawson aquifer is "not-nontributary." Municipal pumping from the Dawson aquifer must be approved by a decreed plan for augmentation. We are not aware of a plan for augmentation that would allow Dawson aquifer pumping by the Town.

ii) The Denver aquifer has a total depth of approximately 1,400-1,700 feet. Denver aquifer well yields are laterally variable in northern El Paso County. For example, the Town's D-3 well is unused due to low yield. *See* April 2021 GMS Report at 12. After the Arapahoe aquifer, the Denver aquifer is the second most widely developed aquifer for municipal use in northern El Paso County.

iii) The Arapahoe aquifer has a total depth of approximately 2,100 to 2,400 feet and currently supports well yields on the order of 150 to 300 gpm in northern El Paso County. For example, Town Well A-2 has a reported current "actual" yield of 240 gpm. *See* April 2025 GMS Report, Table 7 at 25. The Arapahoe aquifer is the most widely developed aquifer in northern El Paso County for municipal use due to relatively high well yield. Water levels in the Arapahoe aquifer are declining, as addressed in subsection 3.2, below.

iv) The Laramie-Fox Hills aquifer has a total depth of approximately 2,500 to 2,800 feet. The Laramie-Fox Hills aquifer is not widely developed in northern El Paso County due to: (i) substantial depth and corresponding well construction cost; (ii) yield likely lower

[4] § 37-90-137(4), C.R.S.
[5] Paschke, Suzanne S., et. al., Groundwater Availability of the Denver Basin Aquifer System, Colorado, Professional Paper 1770, United States Geological Survey, 2011.
[6] El Paso County Water Master Plan, Forsgren Associates, Inc., February 2009.
[7] Keller, John W., et. al., Geologic Map of the Palmer Lake Quadrangle, El Paso County, Colorado, Colorado, Open-File Report 06-6, Geological Survey, 2007.

than in the Arapahoe aquifer; and (iii) serious water quality issues including total dissolved solids (salts) and radionuclides that exceed drinking water standards. For these reasons, we are not aware of any northern El Paso County municipalities that have or plan to develop Laramie-Fox Hills aquifer wells for potable consumption.

3.2. Denver Basin aquifer water levels

Well yield is particularly sensitive to "available drawdown" which is the difference between the static, non-pumping water level and the deepest practical pumping water level in a well. A shallower "static" water level affords more available drawdown and greater well yield. As the aquifer and well static water level declines due to groundwater mining, well yield also decreases. Wells cannot be deepened because they already fully penetrate the targeted Denver Basin aquifer.

There are two serious well water supply concerns for the Denver Basin aquifers in northern El Paso County related to aquifer water level: (i) long-term well water level declines and (ii) well-to-well interference.

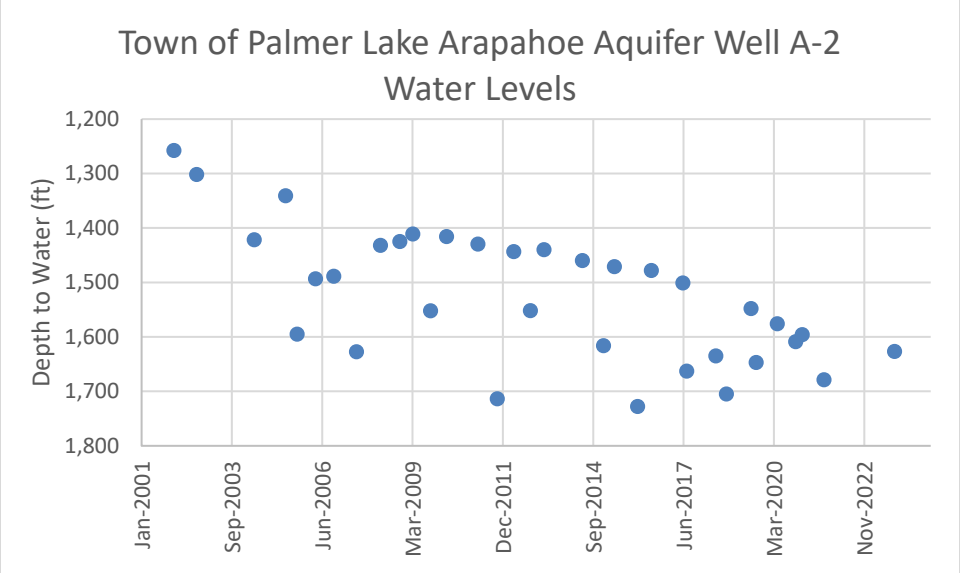
3.2.1 Aquifer water level declines

Denver Basin aquifer water level declines occur because aquifer discharge through pumping greatly exceeds aquifer recharge. Such water level declines are well documented, well understood, and occurring throughout the Denver Basin. The Town's Denver Basin aquifer wells have experienced substantial water level and yield declines:

i) When Town Denver aquifer well D-2 was equipped in 1989, it was tested at 210 gpm. The replacement well D-2R well has a reported yield of 130 gpm, a decrease of 38%. This change in yield is likely due to a decrease in the well static water level of 207 feet from a depth of 342 feet in 1989 to 549 feet in 2023 at an average decline rate of 6 feet per year. [8]

ii) When Town Arapahoe aquifer well A-2 was drilled in 2001, it was tested at 400 gpm. Today, the A-2 well has a reported yield of 240 gpm, a decrease of 40%. This change in yield is likely due to a decrease in the well static water level of 369 feet from a depth of 1,258 feet in 2001 to 1,627 feet in 2023 at an average decline rate of 17 feet per year.[9] Well A-2 water levels are illustrated in the graph below.

[8] Well yield and water levels from Colorado Division of Water Resources permit file no. 31264-F and 31264-FR and Colorado Decision Support System water level information, DB-119 PALMER LAKE D-2R and DB-119 (1987-2022). Current reported yield from the April 2025 GMS Report, Table 7 at 25.
[9] Well yield and water levels reported in Colorado Division of Water Resources permit file no. 56816-F and Colorado Decision Support System water level information, DB-119 PALMER LAKE A-2. Current reported yield from the April 2025 GMS Report, Table 7 at 25.



Denver and Arapahoe aquifer water level declines are not unique to the Town. Other northern El Paso County municipalities report similar and more severe water level declines. Our experience with Denver Basin aquifer development has shown that increased rates of aquifer withdrawal increase the rate of water level decline. A portion of water level declines result from neighboring pumping, but the most immediate effects result from in-Town or in-District pumping.

3.2.2 Well-to-well water level impacts

Groundwater in the Denver and Arapahoe aquifers is stored under artesian pressure, which is an important consideration for well spacing because groundwater level impacts extend for great distances in artesian or confined aquifers. The "cone of depression," which is the zone of water level impact surrounding a pumping well, can extend more than a mile from each confined Denver Basin aquifer well. During peak irrigation season pumping, we have documented and plan for 75 to 150 feet of water level impact due to well-to-well interference.

To manage, but not eliminate, well-to-well interference, Denver Basin wells constructed in the same aquifer should be spaced at least a half mile apart. Unfortunately, such well spacing results in substantial capital distribution and treatment costs.

4. Town water demands and water supply

The Town derives its water supply from surface water rights diverted from Monument Creek and Denver Basin well pumping. The Town's surface water rights are fully developed and future water demands will necessarily be met by new Denver Basin wells.

The Town appears to have a robust water rights portfolio relative to future water demand: The Town's current annual water demand is 168 acre-feet per year (AF/yr) and buildout (2050) water

demands including Buc-ee's Travel Center and associated potential annexations is 299 AF/yr. *See* April 2025 GMS Report, Table 14 at 39. The Town estimates that it has substantial "paper" Denver Basin water rights in the traditionally developed Denver and Arapahoe aquifers, totaling 1,535.8 AF/yr. *See* November 2022 GMS Report, Table 8 at 34.

However, "paper" water rights must be developed with expensive Denver Basin aquifer wells to serve customer demand. Construction of wells and water treatment is driven by peak day demand, estimated by the Town at 284% of average annual demand. Unfortunately, well drilling is capital-intensive. For example, the Town estimates that proposed Buc-ee's Well A-3 is a $4.7M project. *See* April 2025 GMS Report, Table 19 at 61-62.

4.1. Current Town water demands and water supply

Despite what appears to be a rich "paper" water rights portfolio, the Town is in a precarious water supply situation. Current average day demand is peak day is estimated at 0.42 million gallons per day (MGD). *See* April 2025 GMS Report, Table 16 at 39. Yet, firm water supply is 0.25 MGD (a 40% deficit), assuming well A-2 goes offline. *See* April 2025 GMS Report, Table 7 at 25. This critical vulnerability has been known to the Town since 2022:

> *The water system…needs include the addition of a new Arapahoe Aquifer well. The Town's well supply capacity is vulnerable with only two wells. With the existing larger capacity well out of service, well production capacity is limited to 288,000 gpd, less than the existing…demand.* (November 2022 GMS Report, § IX at 67).

We understand that the Town plans to remedy their existing water supply gap by constructing Arapahoe aquifer well A-1 in the near future, estimated to initially yield 0.35 MGD (240 gpm) to provide 0.59 MGD firm capacity. However, until that well is drilled, constructed, and online, the Town may need to impose outdoor use water restrictions if well or well pump failure occurs. Furthermore, well yield is not known until a well is drilled, constructed, and tested.

4.2. Near-term Town water demands and water supply

With addition of Buc-ee's Travel Center demand, peak day Town water demand will be approximately 0.54 MGD, which is slightly less than Town firm capacity if future Arapahoe aquifer well A-1 yields 0.35 MGD as expected by the Town. We understand the Town will also drill Buc-ee's Arapahoe aquifer well A-3, bringing estimated firm Town capacity to 0.94 MGD.

Based on the April 2021, November 2022, and April 2025 GMS Reports, it does not appear that the Town has planned for additional future Denver or Arapahoe aquifer wells that will be needed as well yields decline. This is an important planning consideration because a new Town Arapahoe

aquifer well supply is estimated to cost $4.7M with treatment, or approximately $2.8M exclusive of treatment.[10]

4.2.1 Shortcomings in Town Denver Basin water supply planning

The April 2025 GMS Report estimates a $10.4M cost for waterline extension, well construction, and water treatment for Buc-ee's Travel Center. The actual capital cost will be greater because the Town's water supply projections are based upon current Denver Basin well yields and does not account for the cost for future well construction to maintain production from a declining resource. The Town has not considered the following factors that will affect Town water supply during the next 10 years and add to the estimated $10.4M Buc-ee's Travel Center water infrastructure cost:

i) Decrease in Denver Basin aquifer well yields over time due to declining aquifer water levels. A rule-of-thumb is that well capacity decreases by approximately 5% per year due to water level declines, although the actual rate of decline depends on local factors.

ii) Decrease in Denver Basin aquifer well yields due to well-to-well interference, which depends on well spacing.

iii) Uncertain yield for new Denver Basin aquifer wells.

iv) Replacement of well A-1 that was drilled in 2021 and is near its 25 to 30 year expected usable life. (For example, Town well D-2 failed after 34 years).

v) Treatment of radium that is naturally occurring and reportedly increasing in concentration in water pumped from the Denver and Arapahoe aquifers. *See* April 2025 GMS Report, § IX at 63.

By not considering these factors, the Town has failed to consider the actual costs to continue reliance on the Denver Basin aquifers and the increased rate of aquifer depletion and treatment costs due to the Buc-ee's Travel Center and associated future annexations.

4.2.2 Future renewable water supply

In the mid-2000's neighboring water providers including Triview Metropolitan District ("Triview"), Donala Water and Sanitation District ("Donala"), Woodmoor Water and Sanitation District ("Woodmoor"), and the Town of Monument ("Monument") began to grapple with the finite nature of Denver Basin groundwater resource and the economic reality of drilling more wells to maintain production from declining aquifers.

Over the past two decades, neighboring water providers have been implementing renewable water supply plans: (i) Triview acquired renewable water rights on Fountain Creek and the Arkansas

[10] Well cost based upon April 2025 GMS Report, Table 19 at 61-62. Well cost exclusive of treatment is a pro-rated amount.

River that are treated and delivered through Colorado Springs Utilities ("CS-U") infrastructure; (ii) Donala acquired water rights on the Arkansas River that are also conveyed through CS-U infrastructure; and (iii) Donala, Woodmoor, and Monument have partnered in the Loop Water Authority to deliver renewable Fountain Creek water rights.

The Town's need for a new renewable water supply is not a question of "if," but a question of "when." Water service to the Buc-ee's Travel Center will accelerate the timing of when the Town's reliance on Denver Basin groundwater becomes uneconomical. A critical shortcoming of the April 2025 GMS Report is that it does not address the actual cost for a permanent water commitment to Buc-ee's, which will ultimately require a renewable water supply.

5. Water rights administration

The Town operates a complex water rights portfolio including: (i) surface water rights decreed in Case Nos. CA-751, CA-13801, and 13CW3061; (ii) Denver Basin groundwater rights decreed Case Nos. 86CW108, 87CW68; (iii) plans for augmentation decreed in Case Nos. 87CW69, 10CW87, and 14CW3068; and (iv) rights of exchange decreed in Case Nos. 87CW69.

Initial review of the water accounting requirements in the above-mentioned water rights decrees compared to water accounting submitted by the Town to the Colorado Division of Water Resources indicates compliance deficiencies.

In our experience, unintentional decretal non-compliance often goes unnoticed until a water user embarks on a substantial new project. We encourage the Town to take compliance with its water rights decrees seriously before considering a large increment of new growth with the Buc-ee's Travel Center. Non-compliance issues have the potential to reignite historical Town water challenges including preservation of water levels in Palmer Lake.

If you have any questions about this letter, please contact us.

Very truly yours,

BBA Water Consultants, Inc.

Daniel O. Niemela, C.P.G.
Principal – Hydrogeologist

Rachael Frei, P.E.
Project Manager – Water Resources Engineer

DN/RF/jeb
Enclosures
2515.00

BBA Water Consultants, Inc.

APPENDIX A

DANIEL O. NIEMELA, C.P.G.

Principal - Hydrogeologist

EDUCATION

B.A. in Geology, 2000, The Colorado College, Colorado Springs, Colorado.
Emphasis in Geology. Received Distinction for senior thesis project entitled "An Evaluation of Ground Water Development Potential for an Alluvial Aquifer in Crested Butte, CO."

Graduate course work at Colorado School of Mines

PROFESSIONAL

American Water Resources Association
American Institute of Professional Geologists
Colorado Water Well Contractors Association – Technical Director, 2006 - 2021
Colorado Water Well Contractors Association Member of the Year – 2013
HB13-1248 and SB15-198 Leasing Fallowing Technical Committee, 2012 - 2015
Colorado Ground Water Association – Director-at-Large, 2005 - 2006
National Ground Water Association
Chaffee County Economic Development Corporation, Policy Committee, 2023 - 2025

REGISTRATION

American Institute of Professional Geologists Certified Professional Geologist. CPG-12016

EXPERIENCE RECORD

2002-Present BBA Water Consultants, Inc., Englewood, Colorado
Principal/Hydrogeologist. Assist clients with development and maintenance of physical and legal ground and surface water supplies. Water supply planning; preparation of technical reports in support and opposition of Water Court applications; historical consumptive use quantification; water rights administration; augmentation plans; water rights valuation; water rights change of use; develop and implement water accounting procedures; water rights and reservoir modeling; design groundwater tests and analyses; supervise and perform pump tests and analyze test data; prepare analytical groundwater models; prepare well and recharge facility designs and specifications; conduct field investigations; evaluate geophysical log data, geologic maps and aerial photos; perform numerical groundwater modeling and calibration using MODFLOW; prepare groundwater quantifications; evaluate well-to-well impacts; and quantify surface water and groundwater interaction.

PUBLICATIONS

"Irrigation Season Water Level Changes in Municipal Arapahoe Aquifer Wells, Douglas County, Colorado," Geological Society of America Abstract with Programs, Vol. 39, No. 6, p. 43. 2007.

DANIEL O. NIEMELA – Continued

"Monitoring and Management of Nonrenewable Ground Water Resources – Case Study: Denver Basin Aquifers," AWRA Adaptive Management of Water Resources AWRA Summer Specialty Conference Proceedings. 2006.

"A Review of Water Level Changes in the Denver Basin Bedrock Aquifers," Geological Society of America Abstract with Programs, Vol. 36, No. 5, p. 311. 2004.

PRESENTATIONS

Colorado Bar Association "Maximizing the Effectiveness of Your Expert Witness in Water Court," October 2024.

EDC Insights Panel "Whiskey's for Drinking. Water's for Fighting," November 2023.

"Drought, Wildfire and Ground Water." CWWCA Annual Conference, Webinar, January 2021.

"History of Colorado Water Rights." The Colorado College, Webinar, November 2020.

"Types of Well Permits from Easy Exempt to Complex Fee Wells." CWWCA Annual Conference, Denver, CO, January 2019.

"History of Colorado Water Rights." CWWCA Mid-Year Conference, Breckenridge, CO, July 2017.

"History of Colorado Water Rights." Colorado College Guest Speaker, February 2017.

"Western Water Rights and Groundwater Administration." NGWA Webinar, August 2014.

"Introduction to Hydrogeology." CWWCA Annual Conference, Denver, CO, January 2014.

"Well Augmentation Plans." CWWCA Mid-Year Conference, Breckenridge, CO, July 2013.

"Introduction to Fractured Rock Hydrology, Various Case Studies." CWWCA Annual Conference, Denver, CO, January 2013.

"Introduction to Hydrology." CWWCA Short Course, Denver, CO, January 2013.

"Introduction to Sedimentary Rock Hydrology, The Denver Basin." CWWCA Mid-Year Conference, Breckenridge, CO, July 2012.

"Introduction to Fractured Rock Hydrology, Summit County." CWWCA Mid-Year Conference, Breckenridge, CO, July 2012.

"Adaptive Management in the Denver Basin Aquifers, Colorado." Declining Ground Water Levels: Measuring, Monitoring, and Mitigation – A National Ground Water Association Virtual Conference, October 2011.
"Turning to Groundwater: An engineering perspective." The University of Denver Water Law Review 2011 Symposium, Denver, CO, April, 2011.

DANIEL O. NIEMELA – Continued

"Economics of Denver Basin and Renewable Water Supply Planning and Surprising Ground Water Level Trends," Colorado Section of the American Water Resources Association, Monthly Lunch Program, July 2010.

"Pumping Tests and Hydrogeologic Data," CWWCA Annual Conference, Denver, CO, January 2009.

"Denver Basin Water Supply Planning: A Cost Comparison to Renewable Water," Colorado Groundwater Association Denver Basin Lecture Series, Parker, CO, May 2009.

"Denver Basin Aquifers," Metropolitan State College of Denver, Guest Lecturer, Denver, CO, 2003 through 2008.

"Irrigation Season Water Level Changes in Municipal Arapahoe Aquifer Wells, Douglas County, CO," Geological Society of America 2007 Annual Meeting, Denver, CO, October 2007.

"Monitoring and Management of Nonrenewable Ground Water Resources – Case Study: Denver Basin Aquifer," AWRA Adaptive Management of Water Resources AWRA Specialty Conference, Missoula, MT, June 2006.

"A Review of Water Level Changes in the Denver Basin Bedrock Aquifers," Geological Society of America 2004 Annual Meeting, Denver, CO, November 2004.

Year	Type of Report or Testimony	Case No.	Description
2025	Deposition	22CW3074, Division 5	5/13/25 Deposition, Snake River Water District
2024	Deposition	22CW3074, Division 5	9/11/24 Deposition, Snake River Water District
2024	Expert Report	21CW3058, Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to Triview Metropolitan District Exchanges
2024	Expert Report	20CW3012 and 20CW3013, Division 2	Tri-State Generation and Transmission Association Pueblo East Pit III Appropriative Storage Right and Plan for Augmentation
2022	Expert Report	19CW3036, Division 2	Tri-State Generation and Transmission Association and Amity Mutual Irrigation Company Opposition to Lower Arkansas Water Management Association Change of Use
2021	Testimony	17CW3069, Division 2	Tri-State Generation and Transmission Association and Amity Mutual Irrigation Company Opposition to Lower Arkansas Water Management Association Plan for Augmentation
2021	Expert Report	17CW3069, Division 2	Tri-State Generation and Transmission Association and Amity Mutual Irrigation Company Opposition to Lower Arkansas Water Management Association Plan for Augmentation
2020	Expert Report	17CW3202, Division 1	Centennial Water and Sanitation District Opposition to Central Colorado Water Conservancy District Change of Use and Appropriation of Storage Water Rights
2020	Expert Report	16CW3010, Division 2	[Additional] Supplemental Disclosure, Woodmoor Water and Sanitation District No. 1 Opposition to Triview Metropolitan District Application to Amend Plans for Augmentation
2020	Expert Report	16CW3010, Division 2	Supplemental Disclosure, Woodmoor Water and Sanitation District No. 1 Opposition to Triview Metropolitan District Application to Amend Plans for Augmentation
2020	Expert Report	17CW3122, Division 1	Centennial Water and Sanitation District Opposition to Perry Park Water and Sanitation District Application for Change of Use and Plan for Augmentation
2020	Expert Report	16CW3010, Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to Triview Metropolitan District Application to Amend Plans for Augmentation
2019	Expert Report	17CW3072, Division 2	Woodmoor Water and Sanitation District No. 1 Rebuttal in Widefield Water and Sanitation District Change of Water Rights
2019	Expert Report	18CW3016, Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to Triview Metropolitan District and Fountain Mutual Irrigation Company Change of Water Rights and Plan for Augmentation
2019	Expert Report	16CW3056, Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to Colorado Springs Utilities Plan for Augmentation, Addition of Replacement Water Sources and Appropriative Rights of Exchange
2019	Deposition	16CW3202, Division 1	5/29/19 Deposition, Centennial Water and Sanitation District Opposition to Central Colorado Water Conservancy District, the Ground Water Management Subdistrict of the Central Colorado Water Conservancy District and the Well Augmentation Subdistrict of the Central Colorado Water Conservancy District Application for Conditional Ground Water Rights, Conditional Surface Water Rights, Conditional Recharge Rights and Plan for Augmentation
2019	Expert Report	16CW3202, Division 1	Supplemental Disclosure, Centennial Water and Sanitation District Opposition to Central Colorado Water Conservancy District, the Ground Water Management Subdistrict of the Central Colorado Water Conservancy District and the Well Augmentation Subdistrict of the Central Colorado Water Conservancy District Application for Conditional Ground Water Rights, Conditional Surface Water Rights, Conditional Recharge Rights and Plan for Augmentation
2019	Expert Report	17CW3069, Division 2	Tri-State Generation and Transmission Association Opposition to Lower Arkansas Water Management Association Application for a Plan for Augmentation
2019	Expert Report	16CW3202, Division 1	Centennial Water and Sanitation District Opposition to Central Colorado Water Conservancy District, the Ground Water Management Subdistrict of the Central Colorado Water Conservancy District and the Well Augmentation Subdistrict of the Central Colorado Water Conservancy District Application for Conditional Ground Water Rights, Conditional Surface Water Rights, Conditional Recharge Rights and Plan for Augmentation
2019	Expert Report	15CW3016, Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to United States of America Application for Appropriative Storage Rights and Plan for Augmentation for the United States Air Force Academy
2018	Expert Report	16CW3119, Division 1	Centennial Water and Sanitation District Opposition to Central Colorado Water Conservancy District Change of Use and Appropriation of Storage Water Rights
2018	Expert Report	10CW4, Division 2	Tri-State Generation and Transmission Association Opposition to Lower Arkansas Valley Water Conservancy District and lower Arkansas Valley Super Ditch Company Appropriative Rights of Substitution and Exchange
2018	Expert Report	08CW104, Division 1	Centennial Water and Sanitation District Opposition to Fort Morgan Farms Plan for Augmentation
2018	Expert Report	13CW3153, Division 1	Centennial Water and Sanitation District Opposition to Kenneth Mayer Junior Water Rights, Change of Use, Plan for Augmentation and Exchange Water Rights
2017	Expert Report	14CW3123, Division 1	Centennial Water and Sanitation District Opposition to Groundwater Management Subdistrict and Well Augmentation Subdistrict of the Central Water Conservancy District Change of Use, Recharge and Exchange
2017	Testimony	N/A	10/5/17 Testimony to Water Resources Review Committee regarding HB17-1289
2017	Testimony	N/A	8/2/17 Testimony to Water Resources Review Committee regarding HB17-1289
2017	Deposition	14CW3177, Division 1	5/24/17 Deposition, Centennial Water and Sanitation District Opposition to City of Aurora Change of Use

Year	Type of Report or Testimony	Case No.	Description
2017	Expert Report	14CW3177, Division 1	Supplemental Disclosure, Centennial Water and Sanitation District Opposition to City of Aurora Change of Use
2017	Expert Report	12CW94, Division 2	Supplemental Disclosure, Tri-State Generation and Transmission Association, Inc Opposition to Catlin Augmentation Association Change of Use
2017	Expert Report	12CW94, Division 2	Tri-State Generation and Transmission Association, Inc Opposition to Catlin Augmentation Association Change of Use
2017	Expert Report	09CW91, Division 1	Centennial Water and Sanitation District Opposition to Public Service Company of Colorado Change of Use and Addition of Water Rights to Plan for Augmentation
2017	Expert Report	14CW3177, Division 1	Centennial Water and Sanitation District Opposition to City of Aurora Change of Use
2016	Expert Report	12CW94, Division 2	Tri-State Generation and Transmission Association, Inc Opposition to Catlin Augmentation Association Change of Use
2016	Expert Report	15CW3010, Division 1	Centennial Water and Sanitation District Opposition to Town of Wiggins and Box Elder Creek Properties Application for Conditional Water Right, Appropriative Right of Exchange and Plan for Augmentation
2016	Expert Report	16CW3038, Division 2	Amity Mutual Irrigation Company v. Fort Lyon Canal Company
2015	Expert Report	11CW13, Division 2	Tri-State Generation and Transmission Association, Inc Opposition to City of La Junta Water Rights Change of Use and Exchange
2015	Expert Report	12CW31, Division 2	Tri-State Generation and Transmission Association, Inc Opposition to Colorado Springs Utilities Application for Conditional Rights of Storage and Exchange
2015	Expert Report	12CW31, Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to Colorado Springs Utilities Application for Conditional Rights of Storage and Exchange
2015	Expert Report	88CW23(B), Division 2	Woodmoor Water and Sanitation District No. 1 Opposition to Triview Metropolitan District Plan for Augmentation and Lawn Irrigation Return Flow Quantification
2014	Expert Report	2010-CV-4123 District Court, Denver, CO	Highland Ditch Co. Irrigation Water Supply in Longmont, CO, Prepared for Shigo, LLC
2013	Rebuttal Expert Report	12CW1, Division 2	Woodmoor Water and Sanitation District Change in Water Rights
2013	Supplemental Expert Report	11CW95, Division 2	Tri-State Generation and Transmission Association, Inc Opposition to Lance O. Verhoeff & Verhoeff Farms, Inc. Storage Rights
2013	Expert Report	11CW95, Division 2	Tri-State Generation and Transmission Association, Inc Opposition to Lance O. Verhoeff & Verhoeff Farms, Inc. Storage Rights
2013	Expert Report	12CW1, Division 2	Woodmoor Water and Sanitation District Change in Water Rights
2012	Expert Report	10CW29, Division 2	Woodmoor Water and Sanitation District Substitution and Exchange Water Rights
2012	Expert Report	10CW28, Division 2	Woodmoor Water and Sanitation District Plan for Augmentation and for Quantification of Reusable Outdoor Use Return Flows
2011	Rebuttal Expert Report	07CW104, Division 2 and 08CW263, Division 1	Woodmoor Water and Sanitation District Denver Basin Water Rights Adjudication
2011	Expert Report	07CW104, Division 2 and 08CW263, Division 1	Woodmoor Water and Sanitation District Denver Basin Water Rights Adjudication

RACHAEL D. FREI, P.E.

Project Manager - Senior Water Resources Engineer

EDUCATION

B.S. in Environmental Engineering, Colorado State University, Fort Collins, Colorado
Graduated December 2014

M.S. in Civil & Environmental Engineering, Colorado School of Mines, Golden, Colorado
Graduated December 2021

Relevant coursework include: analytical hydrology, integrated surface water hydrology, watershed modeling, mathematical modeling of groundwater systems, soil and water engineering, water law, engineering applications of GIS, numerical modeling and risk analysis, and project management.

Academic projects include: evaluation of sustainable ground water supply using ESRI ArcMap tools and development of an interactive multi-criteria decision analysis tool in Microsoft Excel to provide recommended options based on input water quality and site characteristics.

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers, Denver Section, Member since 2015
American Water Resources Association, Colorado Section, Member since 2015
ASCE Environmental & Water Resources Institute, Colorado Section, Member since 2015, Board Member 2024-Present
Colorado Ground Water Associations, Member since 2015
National Ground Water Association, Member since 2015

REGISTRATION

Registered Professional Engineer in the State of Colorado (P.E. 0057005).

EXPERIENCE RECORD

2015 - Present — BBA Water Consultants, Inc., Englewood, Colorado.
Project Manager – Senior Water Resources Engineer. Responsible for managing and leading various water resources and water rights projects, including: surface and ground water modeling, water rights operational modeling, historical use evaluations and changes of water rights, analysis and oversight of substitute water supply plans, augmentation plan operations and accounting, reservoir modeling and accounting, design and construction management of water supply wells and monitoring wells, operation of ground water pumping tests and data analysis, general water use accounting, water rights evaluations, and field data collection and interpretation. Serves as mentor to junior staff. Assists in preparation of technical reports in support of and opposition to Water Court applications.

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To: Ian Griffis

From: Brian J. Horan, P.E.
Kevin R. Fellin, P.E.

Cc: Caitlin S. Quander

Date: June 12, 2025

Re: Proposed Palmer Lake, Co - Buc-ee's

Subject: Traffic Impact Study Review

The purpose of this memorandum is to summarize a review of the traffic impact studies that have been prepared for the Buc-ee's travel center that is proposed to be located in the southwest quadrant of the I-25/County Line Road interchange in what is now part of El Paso County, Colorado. **This memorandum does not support or oppose the proposed project, however, it provides a technical review of the submitted traffic impact studies to highlight any potential critical traffic related considerations that may have not been fully addressed.**

As such, the following documents were reviewed in detail by our traffic engineering team:

TRAVEL CENTER PALMER LAKE – TRAFFIC IMPACT STUDY
Dated: November 19, 2024
Prepared by: Kimley-Horn and Associates, Inc.
Prepared for: Ratcliff Engineering Services, LLC

TOWN OF PALMER LAKE – TRAFFIC IMPACT STUDY
Dated: February 27, 2025
Prepared by: Stolfus & Associates, Inc.
Prepared for: Town of Palmer Lake, CO

This assessment was undertaken at the request of Ian Griffis who represents a consortium of local landowners and entities that depend on safe and convenient access to their local/regional road network to meet their transportation needs. As a result, this memorandum assesses the traffic impact studies that were prepared to evaluate this new use with respect to best practices and sound assumptions.

OVERVIEW

Overall, we found that each traffic study reviewed generally followed typical guidelines and practices in preparation of a traffic impact study.

Traffic Counts. Both traffic studies conducted existing traffic counts during acceptable periods (weekday AM and PM periods) with the Stolfus study also collecting traffic counts during a peak weekend period.

Given the highlighted impacts to the existing Tri Lakes Church of Christ, an additional traffic count collected on a Sunday that correlated with their Sunday service would better demonstrate the Buc-ee's impact and emphasis to maintain adequate access for the church beyond a right-in/right-out access point as currently provided in the future.

Spot checks of the existing traffic count figures would suggest traffic balancing was warranted at certain locations, but it should be noted such balancing would ultimately not fundamentally impact the reported results.

Trip Generation. Both studies relied on actual field measurements at existing Buc-ee's sites which does provide the most accurate representation of the traffic generated by this unique use given the Institute of Transportation Engineer's (ITE) Trip Generation Manual does not provide equivalent data.

The Kimley-Horn study utilized a more conservative trip generation assessment based on existing sites across the country while the Stolfus study concentrated on an existing Buc-ee's in Colorado.

The Kimley-Horn study assumed that 85 percent of the future site traffic would predominately already exist on I-25 and then divert their trip to Buc-ee's on the way to their final destination. The Stolfus study assumed 75 percent. For both studies, these assumptions appear to be based on the ITE Trip Generation Handbook for a typical gasoline station with convenience store. Based on our knowledge of a Buc-ee's travel center, this type of facility acts more as a destination than a typical travel center so it should be expected that a lesser percent of site trips will be attracted from the adjacent roadways and that a greater percentage will be new trips added to the road network as destination trips. The difference between diverted link and destination trips does not materially impact the study intersections given all trips (primary and diverted link) show up at the site entrances. It should be expected the overall volume of traffic on I-25 will increase in the area as a result of the Buc-ee's site.

Site Access. The site access for the proposed Buc-ee's site is proposed to include two (2) full-movement access points on Beacon Lite Road and one (1) right-out only on County Line Road. In review of other Buc-ee's sites, they typically provide more access opportunities to support efficient circulation into and out of the site.

The limited access line should be verified for the proposed right-out access on County Line Road. Also, the proposed right-out was identified to require a deviation from access management minimum spacing standards. Impacts should be evaluated if the deviation is not approved.

Site Distribution. Both studies assumed that approximately 90 percent or more of the site trips will be oriented to/from I-25. This evaluation concurs and as a result focuses in part on the I-25/County Line Road interchange in the subsequent Traffic Operations section of this memorandum.

TRAFFIC OPERATIONS

I-25/County Line Road Interchange

As noted in both traffic studies, nearly all of the site generated traffic would be oriented to/from the I-25/County Line Road interchange. Therefore, the analysis and recommendations from the previously prepared traffic studies were reviewed in detail. The results are summarized below.

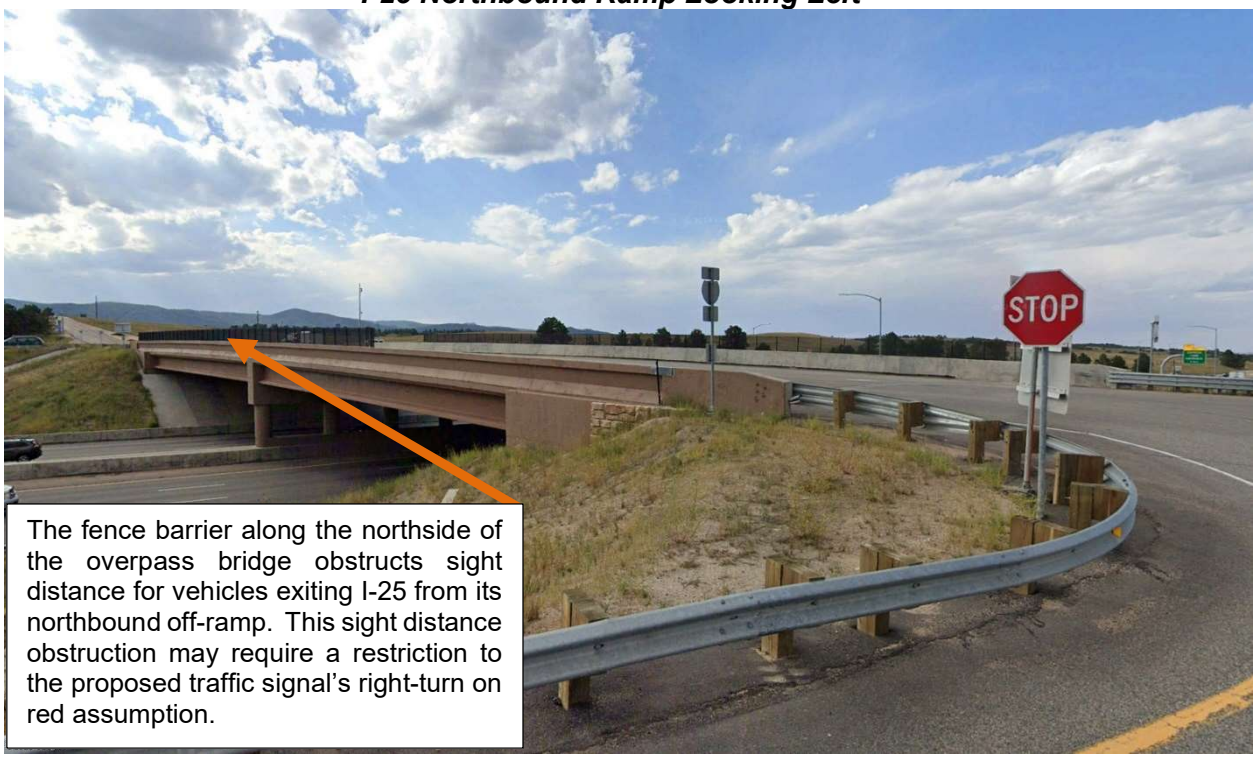
Roadway Geometry. The previously prepared traffic studies provided the following improvements at the I-25/County Line Road interchange:

- Restripe the existing bridge lanes to provide three (3) westbound and two (2) eastbound lanes.
- Construct an additional lane on the I-25 NB off-ramp and the I-25 SB off-ramp at their intersection with County Line Road.
- Reconstruct the eastbound approach to provide a total of three lanes at the intersection with the I-25 SB off-ramp.
- Install traffic signals on County Line Road at both I-25 off-ramp intersections.

The fifth travel lane on the interchange bridge would require the reduction of existing striped shoulders. Therefore, the lateral offset requirements from the bridge wall need to be considered to ensure proper clearance from heavy vehicles. Additionally, the alignment of the relocated through lanes with the corresponding receiving lanes would need to be reviewed.

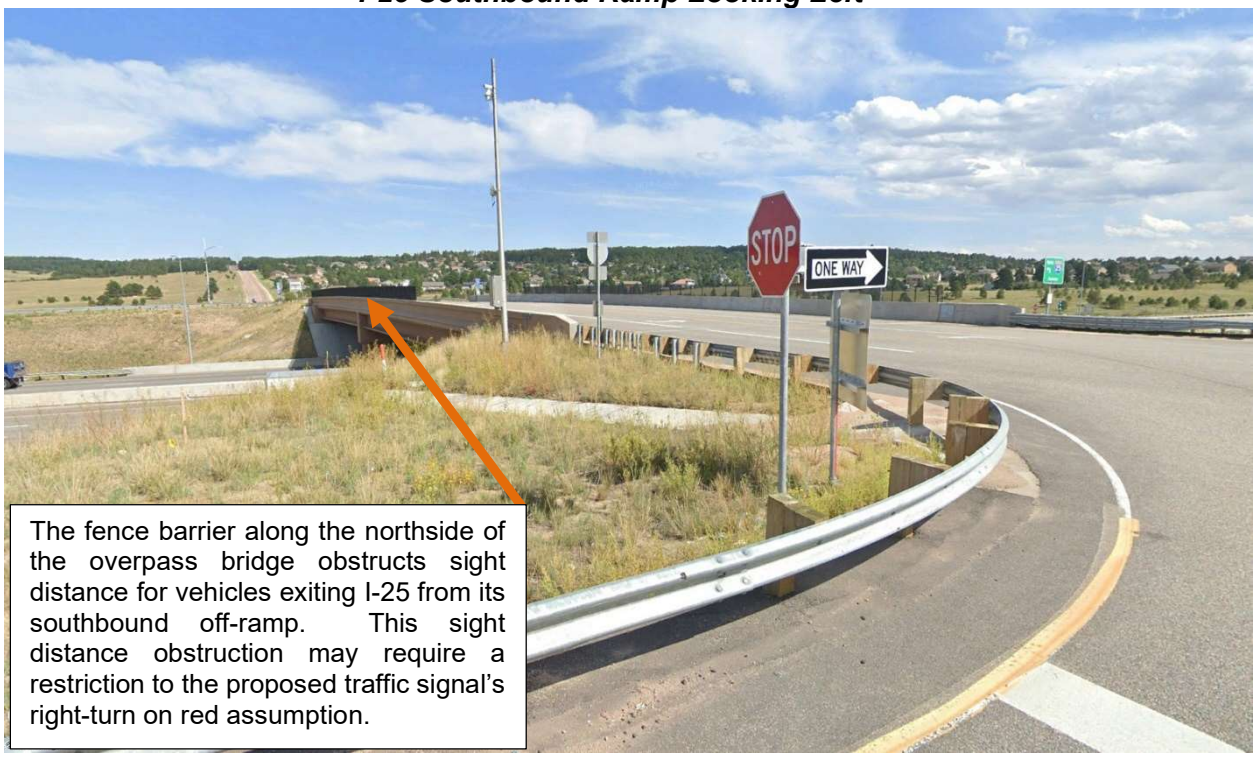
The relocation of the roadway edge lines would also impact sight distance considerations. The driver's viewing (eye) location would need to be shifted further back on each of the I-25 off-ramps. As shown below, with the shift in viewing location, the bridge wall and fence on top of the wall would likely obstruct the line on sight. While the installation of a traffic signal would help resolve sight distance concerns, right-turn-on-red (RTOR) maneuvers would likely be prohibited which would impact vehicle throughput and increase vehicle queues exiting the off-ramp.

I-25 Northbound Ramp Looking Left



The fence barrier along the northside of the overpass bridge obstructs sight distance for vehicles exiting I-25 from its northbound off-ramp. This sight distance obstruction may require a restriction to the proposed traffic signal's right-turn on red assumption.

I-25 Southbound Ramp Looking Left



The fence barrier along the northside of the overpass bridge obstructs sight distance for vehicles exiting I-25 from its southbound off-ramp. This sight distance obstruction may require a restriction to the proposed traffic signal's right-turn on red assumption.

Traffic Analysis. While a traditional macroscopic analysis using Highway Capacity Manual methodologies was used in both studies to assess the lane use configuration at the I-25 ramp intersections at County Line Road, a more detailed microsimulation would be required to fully evaluate how the interchange operates due to the following reasons:

- The two I-25 ramp intersections are in close proximity to each other (less than 400 feet centerline-to-centerline) and may experience impacts due to queue spillback.
- The proposed traffic signals would likely operate under clustered or highly coordinated signal timing patterns, created platooning effects.
- The I-25 ramps would impact operations on I-25 at the merge and diverge points especially if traffic spills back into the mainline interstate travel lanes.

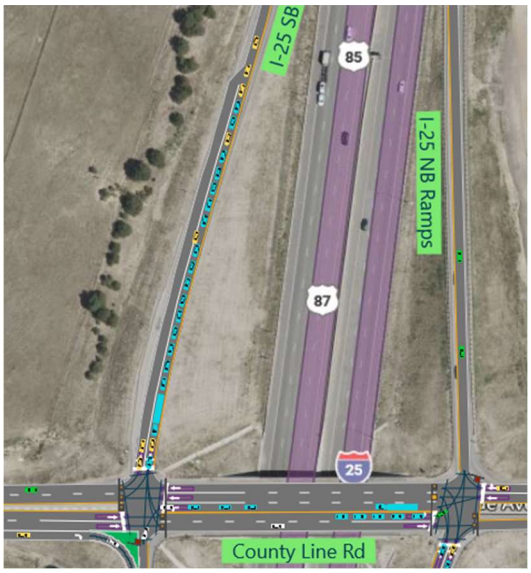
While a full analysis of the interchange and freeway operations would likely be required as part of the interchange modification process, a preliminary assessment was performed as part of this review. Specifically, the 2045 Synchro analysis from the Kimley Horn study was replicated based on the analysis worksheets and signal timing sheets provided in the report appendices. The following modifications were then made to support the SimTraffic model:

- The yellow and red times were increased from the Synchro default values (3.5 sec. yellow, 1.0 sec. red) to values (4.1-4.3 sec. yellow, 2.6 sec. red) consistent with CDOT's "Guidelines for Traffic Signal Vehicle Change and Clearance Intervals".
- Right-turns-on-Red (RTOR) was turned off for the I-25 Off-Ramp approaches to the proposed traffic signals for the sight distance constraints outlined above.
- The Link Origin-Destination settings were revised to account for the fact that few (if any) vehicles would exit I-25 at one intersection and re-enter at the adjacent intersection.

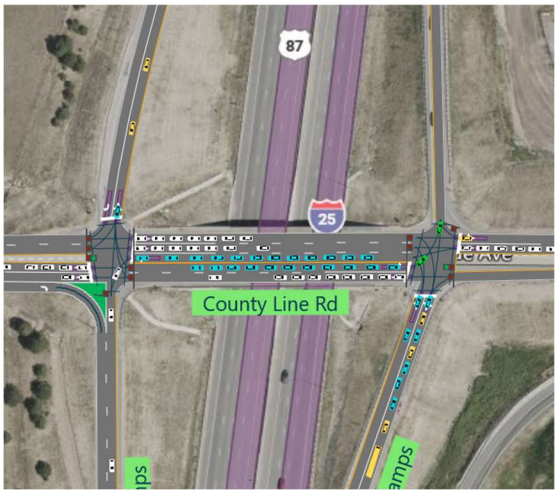
Using the revised Synchro files described above, a SimTraffic simulation analysis was performed, and the results are summarized below:

- During the PM peak hour, queues on the I-25 NB off-ramp would periodically extend to the gore point. It is noted that based on AASHTO standards and a design speed of 80 mph (posted 75 mph + 5 mph), an additional 705 feet of deceleration distance would be required to ensure mainline freeway operations are not impacted.

- The peak southbound left queue on the ramp would extend approximately 500 feet. The proposed right turn lane would need to be constructed to this length to avoid being blocked by the adjacent queue. The 705 feet of deceleration distance beyond the queue would extend to the taper area of the ramp.



- During the AM and PM peaks, queues for the eastbound and westbound left-turn movements onto I-25 would extend to the adjacent ramp intersection. Thus, the delays and queuing would likely be greater than the results presented in the traffic studies that did not account for vehicle spillback effects.



While the acceleration distance requirements for the on-ramps would not fundamentally be affected by the proposed interchange modifications, the traffic generated by the site would create the need for an increased number of gaps within the I-25 mainline traffic in order to adequately merge onto the highway. Neither study provided traffic volume data for I-25. Therefore, performing a traffic merge analysis to ensure I-25 traffic operations would be maintained is not possible at this time.

It is noted that items mentioned in the section above would be addressed during the formal interchange modification process. However, interchange modification reports are typically at the time of project funding and the timeline for this process is typically hard to predict. Given the need for the I-25/County Line Road interchange to adequately serve site project, a preliminary interchange and freeway traffic analysis is recommended as part of the project approval process.

CONCLUSIONS

Based on a preliminary review of the traffic impact studies prepared by Kimley-Horn and Stolfus, the following conclusions are presented:

1) In general, the traffic studies followed typical guidelines and practices in preparation of a traffic impact study. Minor errors and/or typos were observed but were determined to not fundamentally change the presented results.

2) Given the characteristics of Buc-ee's to draw destination trips beyond a typical gasoline station with a convenience store, it should be anticipated that a greater percentage of the total site trips will be destination and diverted in nature thereby adding more site trips to I-25 than assumed in each study.

3) The primary vehicular site impacts to the public road network will occur at the I-25/County Line Road interchange. Neither study focused nor provided adequate details to evaluate whether off-ramp vehicle queues would spill back into the mainline interstate travel lanes. Based on a preliminary SimTraffic model, critical attention should be given to the adequacy of this interchange beyond adding traffic signals at the end of the interstate ramps and adding turn lanes to the approaches of those traffic signals. This is critical to the future operation of this interchange and whether it is adequate to support the proposed new use. The following elements should also be considered:

    a. Available intersection sight distance for the exiting off-ramp approaches to the proposed traffic signals and likely prohibition of assuming right-turns on red to improve vehicle capacity and queuing.
    b. The spacing between the proposed interchange traffic signals and potential spill back of vehicle queues into each other.
    c. Lengths of the interstate off-ramps with respect to debilitating vehicle queues that may spill back in the interstate mainline.
    d. Review of historical crash data over the past 3-years to identify any existing issues that could be exacerbated by the project.

4) Analysis of the on-ramp merge area on I-25 is recommended to measure the adequacy of the freeway facility.

5) Given the need for the I-25/County Line Road interchange to adequately serve site project, a preliminary interchange and freeway traffic analysis is recommended as part of the project approval process.

6) Impacts should be evaluated if the deviation for the proposed right-out entrance on County Line Road is not approved.