UPDATE TO ENVIRONMENTAL CHECKLIST PREPARED 11.30.2020
Updates in *blue bold italics* indicate changes related to removal of APN: 25361.0004 from the proposal.

Environmental Checklist

File No. Z25-371PPLT

Purpose of Checklist:

The State Environmental Policy Act (SEPA) chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An Environmental Impact Statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:
This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:
Complete this checklist for nonproject proposals, even though questions may be answered "*does not apply*."

IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS
(Part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable: Latah Glen ~~Residential Community~~

2. Name of applicant: Sycamore Group, LLC

3. Address and phone number of applicant or contact person:
Storhaug Engineering -- 510 E 3rd Avenue, Spokane, WA 99202 – 509.242.1000 – Contact: William Sinclair

4. Date checklist prepared: ~~07.31.2020~~ – UPDATED ~~11.30.2021~~ (updates in ***bold italics***) Updated 8-7-2025

5. Agency requesting checklist: City of Spokane, Washington

6. Proposed timing or schedule (including phasing, if applicable): ~~Conditioned on City approvals, the project is expected to break ground as soon as weather permits in Spring of **2022**. The project is expected to be developed over approximately a four (4) year period with absorption optimistically assumed to be 40 +/- homes per year. The developer plans to develop the club house, backbone infrastructure and 3 to 6 homes, 3 serving as models initially.~~
The project is currently under construction for roads and utilities/infrastructure under its previous entitlement.
The project will be done in three phases, total. Full build-out is planned for fall of 2028.

7. a. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. No.

   b. Do you own or have options on land nearby or adjacent to this proposal? If yes, explain. ***Yes. The project proponent controls north and adjacent parcel, APN: 25361.0004 that was formerly included with the proposal.***

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to his proposal.
SEPA Environmental Checklist, Geotechnical Report, Hydraulic Analysis, Drainage Report, Traffic Analysis, Critical Areas Checklist, Erosion and Sediment Control Plan.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. None known.

10. List any government approvals or permits that will be needed for your proposal, if known.
Type III permits: ~~Conditional Use Permit for Manufactured Home Park and Planned Unit Development.~~ Building Permits, Grading Permit, Lot Aggregation or Lot Adjustment, Sign Permit, Fence Permit, as well as preliminary and final plat apoproval.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. ~~The Latah Glen Residential Community is a proposed Manufactured Home Park on approximately ***39.44*** Acres with approximately 157 lease spaces, a community clubhouse, laundry facility, interconnected pedestrian system and conserved open space.~~ (M. Owen note: 19 tracts in August revised map) The project is for a 142-lot subdivision over 39.29 acres, with ~~14~~ open space tracts. The open space with common areas within the project will amount to approximately 13 acres, which accounts to 28% of total open space. The zoning designation of our parcel lies in the Residential Single Family (R1) zone. The Comprehensive Plan Designation is Residential Low. Access is proposed off S Inland Empire Way for its primary access, and S Marshall Rd for secondary access. Utilities are proposed within a 10' easement adjacent to the sidewalk, on the lot side of the sidewalk. Water and sewer are proposed to be served by the City of Spokane, and Will Serve letters for all utilities will be provided in the preliminary plat application.

12. Location of the proposal. Give sufficient information to a person to understand the precise location of your proposed project, including a street address, if any, and section, township and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit application related to this checklist.

1925 W 36th Ave., Spokane, WA 99224 – ***Assessor's Parcel No: 25364.0001***. Legal Description: ***That portion of the Northwest quarter of the Southeast quarter of Section 36, Township 25 North, Range 42 East of the Willamette Meridian in City of Spokane, Spokane County, Washington, lying East of the Oregon, Washington Railway and Navigation Railway.***

13. Does the proposed action lie within the Aquifer Sensitive Area (ASA)? The General Sewer Service Area? The Priority Sewer Service Area? The City of Spokane? (See: Spokane County's ASA Overlay Zone Atlas for boundaries.)

The proposed action lies within the City of Spokane an`d aquifer susceptibility is not mapped for municipalities on the Spokane County Aquifer Susceptibility Map, retrieved 08.03.2020. However, the site is located outside the mapped Spokane-Rathdrum Aquifer extents, per City of Spokane GIS information. The site is served by a City Sewer main in the adjacent right-of-way with S. Inland Empire Way.

14. The following questions supplement Part A.

a. Critical Aquifer Recharge Area (CARA) / Aquifer Sensitive Area (ASA)

15. Describe any systems, other than those designed for the disposal of sanitary waste, installed for the purpose of discharging fluids below the ground surface (includes systems such as those for the disposal of stormwater or drainage from floor drains). Describe the type of system, the amount of material to be disposed of through the system and the types of material likely to be disposed of (including materials which may enter the system inadvertently through spills or as a result of firefighting activities).

Stormwater swales and drywells will be designed and constructed to receive run-off from impervious surfaces for treatment on-site, per City of Spokane regulations (SMC 17D.060.140). Stormwater run-off is anticipated during to primarily include typical automobile wastes, and to a lesser extent, jacuzzi and/or pool discharge (SMC 17D.060.190.D.5), household chemicals, animal waste, and fire-fighting chemicals. Additionally, an interception ditch and swales are anticipated to capture and detain existing off-site run-off from higher elevations.

16. Will any chemicals (especially organic solvents or petroleum fuels) be stored in aboveground or underground storage tanks? If so, what types and quantities of material will be stored?

None are anticipated.

(3) What protective measures will be taken to ensure that leaks or spills of any chemicals stored or used on site will not be allowed to percolate to groundwater. This includes measures to keep chemicals out of disposal systems.

This is a proposed residential development and does not propose chemical storage or handling. The development will comply with applicable regulations.

(4) Will any chemicals be stored, handled or used on the site in a location where a spill or leak will drain to surface or groundwater or to a stormwater disposal system discharging to surface or groundwater?

This is a proposed residential development and does not propose chemical storage or handling. The development will comply with applicable regulations.

b. Stormwater

(1) What are the depths on the site to groundwater and to bedrock (if known)?

According to Dept. of Ecology Well Reports from the area, static water level is reported to be at 50' depth, and bedrock was not reported to be encountered to a depth of 160'.

(2) Will stormwater be discharged into the ground? If so, describe any potential impacts?

The proposed development will include stormwater swales and drywells and will comply with applicable stormwater regulations to mitigate stormwater impacts. Stormwater requirements can be found in the Spokane Regional Stormwater Manual (SRSM) and City of Spokane Design Standards Section 6.

TO BE COMPLETED BY APPLICANT

B. ENVIRONMENTAL ELEMENTS

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1. Earth

a. General description of the site (circle one):*flat, rolling,hilly, steep slopes, mountains, other*: _____

b. What is the steepest slope on the site (approximate percent slope)? _____

~~Per a 03.12.2020~~ See Exhibit A, sheets 2 - 4 of the Geohazard Evaluation prepared by Budinger and Associates, ~~the steepest slopes on site are 51%.~~

Evaluation for Agency Use Only

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The Natural Resource Conservation Service (NRCS) lists the native soils associated with the site as *Marble loamy sand, 0 to 8 percent slopes* (Unit 3120) and *Marble loamy sand, 15 to 30 percent slopes* (unit 3122). The soil units are derived from glaciofluvial deposits and are well drained.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

~~The Geohazard Evaluation indicates that slopes observed 03.02.2020, appear stable without observable signs of instability.~~ See Exhibit A for Geotech summay, page 2.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill:

Grading will occur to accommodate utilities, construct roads and driveways, stormwater facilities, lease spaces, and building foundations. Small quantities of clean topsoil from approved sources may be imported for landscaping. Gravel, concrete, and asphalt will be purchased to construct road, driveways, parking areas, and foundations. Cuts and fill quantities are anticipated to balance on-site ***and on adjacent parcel APN: 25361.0004.*** ~~with approximately 154,000 CY~~

Cut quantity is 164,000 CY. Fill quantity is 137,000 CY. Total aggregate is (164,000+137,000)= 301,000 CY. Balance quantity is 137,000 CY. Shrinkage is about 20% of excavation.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Some minor erosion will likely occur during construction activities however the Contractor will be required to protect water quality.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

To meet minimum density requirements, approximately 39% of the site is anticipated to be covered with impervious surfaces including roads/parking areas, walks, roofs, and driveways.

h. Proposed measures to reduce or control erosion or other impacts to the earth, if any:

Erosion is anticipated to be mitigated through implementation of the required Erosion and Sediment Control Plan.

2. Air

a. What type of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial, wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Dust and fuel emissions are anticipated during construction. The completed project is anticipated to increase vehicle trips with the typical emissions associated with residential use. Quantities are unknown. The proposal will comply with Spokane Regional Clean Air Agency (SRCAA) requirements.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None anticipated.

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c. Proposed measures to reduce or control emissions or other impacts to air, if any:

During construction, applicable clean air regulations are anticipated, i.e., water truck operations to control dust.

3. Water

a. SURFACE:

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is surface water off-site to the north of the subject property. The closest Measurement from the subject site is approximately ***720'***, according to City of Spokane GIS mapping. The Geohazard Evaluation includes reference to this water body as a small oxbow lake, and observed: "[t]he depression in which the lake was formed is a paleochannel of Latah Creek which trended northward approximately 1,100 feet to the east. Waters of the oxbow lake and Latah Creek were not surficially connected."

See also the updated Wetland Report reference at the end of this document as Exhibit B.

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from the surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

N/A

(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

(5) Does the proposal lie within a 100-year floodplain? No. If so, note location on the site plan.

N/A

Evaluation for Agency Use Only

(6) Does the proposal involve any discharge of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. GROUND:

(1) Will groundwater be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

The proposed project will connect to available public water and sewer systems.
Stormwater systems will conform to applicable City and Regional regulations.

(2) Describe waste material that will be discharged into the ground from septic tanks or other sanitary waste treatment facility. Describe the general size of the system, the number of houses to be served (if applicable) or the number of persons the system(s) are expected to serve.

The proposed residential ~~community~~ subdivision will be served by the City of Spokane sanitary
Sewer system available at the site.

c. WATER RUNOFF (INCLUDING STORMWATER):

(1) Describe the source of runoff (including stormwater) and method of collection and disposal if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Stormwater run-off is anticipated from the impervious surfaces proposed.
Treatment and disposal will be consistent with City and Regional regulations.

(2) Could waste materials enter ground or surface waters? If so, generally describe.

It is not anticipated that any waste materials would enter ground or surface waters.
The proposed project will be served by City Solid Waste services as well as public
sanitary sewer.

d. PROPOSED MEASURES to reduce or control surface, ground, and runoff water impacts, if any.

The proposed project will connect to City sanitary sewer and water available at the site.
Erosion and Stormwater will be controlled in accordance with applicable regulations.

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4. Plants

a. Check or circle type of vegetation found on the site:

_X_ Deciduous tree: *alder, maple, aspen, other*.

_X_ Evergreen tree: *fir, cedar, pine, other.*

_X_ Shrubs

_X_ Grass

_____ Pasture

_____ Crop or grain

_____ Wet soil plants, *cattail, buttercup, bullrush, skunk cabbage, other*.

_____ Water plants: *water lilly, eelgrass, milfoil, other*.

_____ Other types of vegetation.

b. What kind and amount of vegetation will be removed or altered? Approximately one-half to two-thirds of the above-mentioned vegetation will be removed during construction of the proposed project. Significant existing vegetation is anticipated to be retained along the south and west property boundaries, as well as a portion of the north boundary.

c. List threatened or endangered species known to be on or near the site. None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: Anticipated landscaping includes visual screening at the property boundary, street frontage and parking area landscaping, and turf in accordance with City requirements. Significant existing vegetation is anticipated to be preserved along portions of the project boundary in lieu of a planted visual screen, as approved, and in common areas.

5. Animals

a. Circle any birds and animals which have been observed on or near the site are known to be on or near the site:
birds: (*hawk,*) *heron, eagle,* (*songbirds,*) *other*: _____
mammals: (*deer,*) *bear, elk, beaver, other*: _____
fish: *bass, salmon, trout, herring, shellfish, other*: _____
other: _____

b. List any threatened or endangered species known to be on or near the site.

None known

c. Is the site part of a migration route? If so, explain.
Not known.

d. Proposed measures to preserve or enhance wildlife, if any:
Preservation of significant existing vegetation in steep slope areas along and extending into the site from portions of the project boundary, south, west and north.

6. Energy and natural resources

a. What kinds or energy (electric, natural gas, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. The proposed project will use electricity for lighting, cooking, mechanical operation, heating, and cooling. Natural gas may also be used for heating and cooking.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:
The proposed project will comply with applicable energy codes and regulations.

7. Environmental health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.
None known.

(1) Describe special emergency services that might be required.

None known.

(2) Proposed measures to reduce or control environmental health hazards, if any:

The proposed project will comply with applicable regulations.

b. NOISE:

(1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

US-195 and its associated traffic noise is located nearby the east boundary of the proposed project – this is not anticipated to significantly impact the proposed project.

(2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Short-term noise associated with construction activities will be mitigated by applicable noise ordinance requirements for these activities. Long-term noise generated is anticipated to be like other residential neighborhoods and mitigated by applicable noise ordinance requirements for these activities.

(3) Proposed measure to reduce or control noise impacts, if any:

The proposal is anticipated comply with applicable noise ordinance requirements.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

Current use of the site is ***vacant (formerly auto salvage and sales).***
Adjacent uses: Vacant & RV/tiny home rental/lease space (North); Government Service (East); Single-Family Residential & Vacant (West); Vacant & Government Service (South)

b. Has the site been used for agriculture? If so, describe.

Not known.

c. Describe any structures on the site.

None.

d. Will any structures be demolished? If so, which?

Not applicable.

e. What is the current zoning classification of the site?

RSF – Residential Single Family

f. What is the current comprehensive plan designation of the site? Residential 4-10

g. If applicable, what is the current shoreline master program designation of the site?

N/A

h. Has any part of the site been classified as a critical area? If so, specify. Yes. Erodible Soils and Hazardous Geology.

i. Approximately how many people would reside or work in the completed project?

Based on Census 2000 averages for Spokane Co. of 2.46 people per household, approximately ~~386~~ 349 people may reside in the completed project.

j. Approximately how many people would the completed project displace? None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project will comply with applicable regulations to ensure compatibility with existing and projected land uses and plans.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle or low-income housing.
Approximately ~~157~~ 142 dwelling units are proposed – ~~low to~~ middle income.

b. Approximately how many units, if any, would be eliminated? Indicate whether high-, middle- or low-income housing.
None

c. Proposed measures to reduce or control housing impacts, if any: None – the proposed project will improve upon an important housing option in the City (Comp Plan LU 1.16).

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
35' maximum height. Anticipated exterior materials include: asphalt shingle roofs, fiber cement board, hardwood, and/or engineered wood trim and siding; masonry, stone, stucco, and/or vinyl siding backed with oriented strand board.

b. What views in the immediate vicinity would be altered or obstructed?
None

c. Proposed measures to reduce or control aesthetic impacts, if any:
The project will comply with applicable regulations to reduce or control aesthetic impacts.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
The proposed project is anticipated to produce headlight and street light akin to any residential development when it is dark, typically in the evening/nighttime.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not anticipated.

c. What existing off-site sources of light or glare may affect your proposal?

US-195 traffic lights will likely be visible from the site, but are not anticipated to have a negative effect on the proposed project.

d. Proposed measures to reduce or control light and glare impacts, if any:

The project will comply with applicable regulations to reduce or control light or glare impacts.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Fish Lake Trail, RV Park

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

The project will include common area and recreational opportunities for use by project residents and their guests.

13. Historic and cultural preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No.

b. Generally describe any landmarks or evidence of historic archaeological, scientific or cultural importance known to be on or next to the site.

None known.

c. Proposed measures to reduce or control impacts, if any:

None anticipated.

14. Transportation

a. Identify public streets and highways serving the site and describe proposed access to the existing street system. Show on site plans, if any.

Primary access to the site will be from ***the extension of*** S Inland Empire Way ***through APN 25361.0004*** via US-195. The site is adjacent to S Marshall Rd. to the west and it is proposed that emergency and pedestrian access to Marshall are created by the project via internal private roads.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop? No – Not applicable.

c. How many parking spaces would the completed project have? How many would the project eliminate?

~~Approximately 375 parking spaces are proposed;~~ 142 driveways and garages are proposed. ~~Existing spaces may serve the existing business – they are unpaved and unmarked, and the number is unknown – any existing spaces will be eliminated.~~

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets not including driveways? If so, generally describe (indicate whether public or private).

Yes. The project's internal roads are proposed as ~~private~~ public. ~~with an approved. variance to right-of-way and road widths.~~ Existing roadway improvements are anticipated to S. Inland Empire Way.

e. Will the project use (or occur in the immediate vicinity of) water, rail or air transportation? If so, generally describe.

The site borders Burlington Northern Santa Fe railroad right-of-way to the east at the very northern edge.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak would occur.

~~Per 10th Edition of Trip Generation Manual by the Institute of Transportation Engineers, Land Use: 240 Mobile Home Park, Average Daily Trips (ADT) per dwelling unit is reported to be 5.00; 157 units therefore generate 785 Weekday ADT. AM Weekday Peak Hour Trips (0.26/unit) = 41 trips; PM Weekday Peak Hour Trips (0.49/unit) = 77 trips.~~ See the attached original TIS from 2022, as well as updated Traffic Memo's from both May and June of 2025 referenced respectively as Exhbits C-1, C-2, and C-3.

(*Note: to assist in review and if known indicate vehicle trips during PM peak, AM Peak and Weekday (24 hours).)*

g. Proposed measures to reduce or control transportation impacts, if any:

The project will comply with applicable regulations to reduce or control transportation impacts and may provide traffic mitigation, if necessary.

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15. Public services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

The project will result in an incremental increase in the need for public services. Impacts are anticipated to be partially offset by tax revenues generated by the project.

b. Proposed measures to reduce or control direct impacts on public services, if any:

The project will comply with applicable regulations to reduce or control impacts to public services.

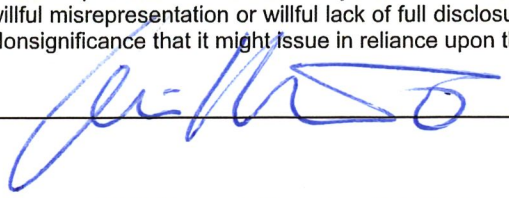
16. Utilities

a. Circle utilities currently available at the site: *electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other*:

b. Describe the utilities that are proposed for the project, the utility providing the service and the general construction activities on the site or in the immediate vicinity which might be needed. Electricity and Natural Gas: Avista; Sewer, Water, and Refuse: City of Spokane; Cable/Phone: Comcast

C. SIGNATURE

I, the undersigned, swear under penalty of perjury that the above responses are made truthfully and to the best of my knowledge. I also understand that, should there be any willful misrepresentation or willful lack of full disclosure on my part, the *agency* must withdraw any determination of Nonsignificance that it might issue in reliance upon this checklist.

Date: 8/18/2025 Signature: 

Please Print or Type:

Proponent: William Nascimento, Sycamore Group LLC Address: 9850 Research Dr., Irvine, CA 92618

Phone: 949-357-9015 william@lagunacg.com

Person completing form
(if different
from proponent): Clifton Trimble; Storhaug Engineering Address: 510 East Third Avenue, Spokane, WA 99202

Phone: 509-242-1000 clifton.trmible@storhaug.com

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Staff member(s) reviewing checklist:

Based on this staff review of the environmental checklist and other pertinent information, the staff concludes that:

___ A. there are no probable significant adverse impacts and recommends a Determination of Nonsignificance.

___ B. probable significant adverse environmental impacts do exist for the current proposal and recommends a Mitigated Determination of Nonsignificance with conditions.

___ C. there are probable significant adverse environmental impacts and recommends a Determination of Significance.

EXHIBIT A

Geotechnical Engineering Report
Latah Glen
Parcel Nos: 25364.0001 & 25361.0004
Spokane, Washington

Prepared For:
William Nascimento
Sycamore Group, LLC
10 Sycamore Canyon Drive
Dove Canyon, California 92679

Prepared By:

LIBERTY GEOTECH

Liberty Geotechnical Engineering, Inc.
3012 N Sullivan Rd
Spokane Valley, Washington 99216
(509) 255-3736

Report Date: September 30, 2020
Job Number: 20211

Table of Contents

Appendices

1.0 EXECUTIVE SUMMARY

The following geotechnical engineering report has been prepared for the Latah Glen development located at the above referenced site in Spokane, Washington. From a geotechnical perspective, the following concepts were identified as favorable for the proposed construction:

- The site is suitable for the proposed construction provided the following report recommendations are implemented.
- Most of the native soils encountered at the site will provide adequate bearing capacity for foundations, support for pavements, and drainage.

The following items have been identified at the project site and proposed construction that should be carefully considered during design and construction:

- Test pits TP-4, TP-7 to TP-10, TP-13, TP-14 and TP-24 encountered refusal due to bedrock at depths ranging from about 2.5-feet to 13-feet below the ground surface. The bedrock is anticipated to be variable across the site. A hydraulic ram or blasting may be required to excavate for utilities, house foundations or other infrastructure improvements.
- Undocumented fill was encountered in test pits TP-3 to TP-8, TP-10 to TP-16, TP-18, TP-20, TP-22 to TP-23 and TP-26 to TP-28 at depths ranging from about ½-feet to 6-feet to below ground surface. Undocumented fill should be removed and replaced with compacted *Structural Fill* below all settlement prone structures.
- Further slope stability evaluation should be performed if house foundations are closer than 30 feet from the crest of a slope steeper than 1.5H:1.0V. The exploration was based on a preliminary plan.
- Limited sub-excavations into native soils will be necessary below foundations if alluvial silts are encountered at foundation subgrade elevations. Recommendations for the sub-excavations are provided below in Section 5.1.1.
- Slope design and construction should incorporate the recommendations provided in the attached *Benching and Slope Fill Requirements* diagram in Appendix E.
- The silty sands and sandy silts at the site are moderately to highly frost-susceptible. Recommendations to help mitigate the potential for frost heave are provided below in Section 5.4.

Liberty Geotech should be involved in the design development and earthwork construction to help ensure that the report recommendations are incorporated into the design and construction Liberty Geotech is available to discuss these items further in-person or via conference call.

2.0 PROPOSED CONSTRUCTION

The project will consist of a residential development at the above referenced site. The development will consist of asphalt paved roadways, underground utilities, and stormwater

management facilities associated with 157 residential homes. Stormwater will be managed using infiltration swales with drywells.

Furthermore, the recommendations included in this report are based on the following plans:

- *Site Plan* prepared by Storhaug, dated July 15, 2020.
- *Design Review Exhibits* (sheets 1 through 4) prepared by Storhaug, dated July 15, 2020.
- *Storm Drain Plan* prepared by Storhaug, dated August 7, 2020.
- *Concept Profile* prepared by Storhaug, dated August 7, 2020.

3.0 GEOTECHNICAL EXPLORATION

3.1 Geology, Topography, and Current Site Use

The *Geologic Map of the Spokane Southwest 7.5-minute Quadrangle* (Hamilton, 2004) was reviewed to determine the geologic deposit at the site. The geologic map indicated that the geologic unit was an Alluvium, Glacial Flood Deposit, and Grande Ronde Basalt. In addition, the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2019) was reviewed. The soil survey indicates that the soil units are Marble Loamy Sand, Clayton-Hagen, Lakespring Ashy Loam. The soil survey describes the soil as sandy glaciofluvial deposits and loess mixed with minor amounts of volcanic ash over glaciolacustrine deposits.

The majority of the site is an abandoned auto salvage yard. There are 2 structures located at the northeast portion of the property. The eastern half of the property is heavily littered with abandoned vehicles and trash. The central western portion of the property is relatively steeply sloped and contains what appears to be old mining roads. Outside of the previous auto yard and possible mining area is sparsely vegetated with trees and prairie grasses. Based on elevations obtained from Google Earth™, the site slopes from the southwest to the northeast with approximately 160-feet of relief.

3.2 Subsurface Exploration

The soils encountered in the test pits were highly variable across the site. In general, the test pits encountered either topsoil or undocumented fill to depths ranging from about ½-foot to 7 ½-feet. Below the topsoil or undocumented fill, the test pits encountered alluvium, glacial outwash, wind deposits, lacustrine deposits, and/or bedrock to their termination or refusal depths. The alluvium consisted of silt and clayey and silty to poorly graded sand, the glacial outwash consisted of silty to poorly graded sand, the wind deposits consisted of silt, and the lacustrine deposits consisted of silt.

3.3 Estimated Groundwater and Bedrock Elevations

Groundwater was not observed during the exploration. Well logs in the vicinity of the site (Department of Ecology, State of Washington) indicate that the static groundwater is at depth of about 50-feet below the ground surface. However, groundwater can become perched on the shallow bedrock surface. Seasonal and annual fluctuations of groundwater levels should be anticipated.

Furthermore, bedrock was encountered in test pits TP-4, TP-7 to TP-10, TP-13, TP-14, TP-24 and TP-25 at depths ranging from about 2.5-feet to 13-feet below the ground surface.

4.0 LABORATORY TESTING RESULTS

Soil samples were obtained in the exploration locations at varying depths to characterize the soil encountered at the site. The results of the laboratory testing results are presented in Appendix C: *Laboratory Testing Results*. The laboratory testing was performed referencing the following American Society for Testing and Material Standard Methods (ASTM):

- ASTM D1140 *Amount of Material in Soils Finer than the No. 200 Sieve*,
- ASTM D2216 *Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass,*
- ASTM D6913 *Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*.

4.1 Summary of Laboratory Testing Results

The following table summarizes the laboratory tests that were performed on the soil samples obtained from the site. Additional details are provided in Appendix B and D.

Table 4.1.A - Summary of Laboratory Testing

Soil Unit	Lab Tests Performed	Summary of Results
Native Alluvium	• Percent Passing No. 200 Sieve • Gradation Sieve • Natural Moisture Content	Soil classified as silty sand and sandy silt. • % Passing No. 200: 16% - 59% • Moisture Content: 4% - 29%
Glacial Outwash	• Percent Passing No. 200 Sieve • Gradation Sieve • Natural Moisture Content	Soil classified as poorly-graded sand. • % Passing No. 200: 1% - 7% • Moisture Content: 3% - 4%

Native Lacustrine	• Percent Passing No. 200 Sieve • Natural Moisture Content	Soil classified as sandy silt • % Passing No. 200: 63% Moisture Content: 29%

5.0 GEOTECHNICAL RECOMMENDATIONS

5.1 Earthwork

The following recommendations should be considered by the general contractors and earthwork subcontractors prior to providing a cost estimate for the earthwork on the project.

5.1.1 Subgrade Preparation

Clear and grub all vegetation, strip all topsoil and remove all undocumented fill to prepare the subgrades under foundations, slabs, and pavements. If alluvial silts are encountered at foundation subgrade elevation, the soil should be sub-excavated to at least 1 foot below bottom of footing elevation and replaced with compacted structural fill. The sub-excavations should be oversized to provide lateral stability for the structural backfill. The bottoms of the excavations should be oversized at least 1 foot beyond the outside edges of the proposed footings for each foot of excavation below the bottoms of the footings (1H:1V oversizing).

Liberty Geotech should be contacted once the foundation subgrade areas have been exposed to review the subgrade conditions.

In pavement areas, after removing any topsoil and existing fill, the upper 8 inches of the resulting subgrade should be scarified, moistened or dried to within -1 to +3 percent optimum moisture, and compacted to a minimum of 95 percent of the modified Proctor dry density determined in accordance with ASTM D 1557. Furthermore, prior to placing the aggregate base, all areas should be proof-rolled with a loaded dump truck or loaded water truck to determine if the subgrade materials are loose, soft or weak, and in need of further stabilization, compaction, or sub-excavation and re-compaction or replacement. The proof-roll should be witnessed by a geotechnical engineer from Liberty Geotech.

5.1.2 Site Grading

The pavement subgrade surface should be shaped to provide positive drainage to minimize the potential for water to pond in the subgrade. Because the site soils are moderately to highly frost susceptible, it will be important to avoid creating low areas in the subgrade where water can

pond and freeze, which could heave the pavement. Snow storage areas should be carefully considered to minimize the amount of water infiltrating in the subgrade areas.

Slope construction will require proper benching techniques as shown on the attached *Benching and Slope Fill Requirements* diagram in Appendix E. These recommendations should be applied to *Structural Fill* placed on slopes steeper than 10 percent. Furthermore, keyway and bench drains should be considered to remove potential groundwater from the keyway and benches.

Permanent slopes should be graded no steeper than 1.5:1 (horizontal:vertical). Establishing vegetation on permanent slopes as soon as possible is recommended. Slopes excavated into bedrock are often stable at steeper angles. We recommend the geotechnical engineer be retained to observe excavations into bedrock to provide final sloping recommendations.

5.1.3 Earthwork Soil Products, Compaction, and Testing Frequency

Different soil products should be used for different applications. The following table presents recommendations for anticipated earthwork construction:

Table 5.1.2.A - Soil product selection.

Soil Product	Project Use	Soil Description
Structural Fill	● Fill areas under foundation. ● Fill to achieve subgrade under pavement, slab or driveway. ● Backfill of shallow foundations. ● Fill outside 3 feet of the back face of retaining walls. ● Soil restraining a retaining wall from sliding. ● Embankment fill.	Soil classified as: ● GP-GM or GW-GM ● GM ● SP-SM or SW-SM ● SM Soil should be free of organics, deleterious material, and all material larger than 6-inches in diameter.
Retaining Wall Fill	● Fill within 3 feet of the back face of retaining walls. ● Fill within 1.5 feet of the back face of basement walls.	Free-draining soil classified as: ● GP or GW ● SP or SW Soil should be free of organics, deleterious material, and all material larger than 3-inches in diameter.
Concrete Slab	● Fill immediately below	Soil should meet the percent passing the

Cushion	slab-on-grade, sidewalks and exterior hardscapes.	following sieve size: ● 1”: 80-100% ● No. 4: 25-65% ● No. 200: 7% maximum Soil should be free of organics, clay fines, deleterious material, and all material larger than 2-inches in diameter.
Crushed Surfacing	● Fill immediately below slab-on-grade, asphaltic-pavement, concrete pavement, sidewalks and exterior hardscapes.	Crushed rock should meet the percent passing the following sieve size: ● 1-¼”: 99-100% ● 1”: 80-100% ● ⅝”: 50-80% ● No. 4: 25-45% ● No. 40: 3-18% ● No. 200: 7.5% maximum ● Sand equivalent: 40 minimum Also, the material should be free of wood, roots, bark, and deleterious material. For roadway base the following requirements should also be met: ● Fracture face: 75%, minimum ● Los Angeles Wear, 500 rev: 35%, maximum. ● Degradation factor: 15 minimum.
Landscaping Fill	● Non-structural fill areas. ● Vegetated areas.	Soil meeting the following requirements: ● Silt or Clay: 35% to 70% ● Sand: 20% to 60% ● Organic material: 2% to 20% ● Deleterious materials (gravel, rock, slag, cinder, roots, sod): 5% max ● pH between 5 and 7

The following table provides compaction recommendations specific to ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort.* All fill products should be compacted in lifts of soil not exceeding 12 inches measured prior to compaction.

Table 5.1.3.B - Compaction recommendation.

Project Use	Recommended Compaction
● Fill areas under foundation. ● Fill to achieve subgrade under slab or driveway.	95 percent of the maximum dry density of Modified Proctor.

• Fill immediately below slab-on-grade. • Fill immediately below the asphaltic-concrete pavement, concrete pavement, sidewalks, and exterior hardscapes.	
• Exterior wall backfill. • Utility trench backfills.	92 percent of the maximum dry density of Modified Proctor.
• Non-structural fill areas. • Vegetated areas.	80 to 85 percent of the maximum dry density of Modified Proctor.

If more than 30 percent of native or imported *Structural Fill* material is retained on the ¾" sieve, ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort* is not recommended to be used. In this case, a soil specific method specification can be developed. A nuclear density gauge can be used during earthwork operations to establish a moisture and compaction method that provides an acceptable maximum dry density. Method specification earthwork operations are recommended to have full-time soil testing to ensure adequate compaction.

The soil products are recommended to have passing compaction testing results at the following frequency to ensure the soil is uniformly meeting compaction requirements. Failing test results should be retested after additional compactive effort and, if necessary, water is added. At least 90% of the compaction testing results must achieve the required maximum dry density.

Table 5.1.3.C - Testing Frequency.

Project Use	**Testing Frequency**
• Below interior building concrete slabs for fill less than a vertical foot.	2,500 square feet and a minimum of 2 tests.
• Along the building footings for every vertical foot of fill.	50 lineal feet and a minimum of 2 tests.
• Structural fill placements larger than one foot in height	100 cubic yards
• Fill under asphalt parking areas and exterior concrete flatwork	5,000 square feet and a minimum of 2 tests.
• Utility trenches for every two vertical feet of trench backfill.	100 lineal feet and a minimum of 2 tests.

The jurisdictional requirements should be conformed to if there is a conflict with the requirements of Table 5.1.2.C. Excavations deeper than four feet must have adequate trenching protection or sloped back in accordance with state and federal requirements in order to be compaction tested.

5.1.4 Excavation Construction Considerations

The soils at the site are removable with a toothed-bucket on an excavator. However, a hydraulic breaker may be required for excavations into weathered bedrock. Blasting may be considered to remove isolated rock outcroppings if it is more economical than removal with a hydraulic breaker. A blasting plan should be prepared if blasting is required.

If groundwater is encountered in excavations we recommend dewatering. When final plans are available, we should be contacted to discuss dewatering options.

No excavation support or sloped excavations have been reviewed in preparation of this report. The contractor should perform excavations in accordance with state and federal regulations. If requested, Liberty Geotech is available to provide further analysis of excavation support or shoring design. Liberty Geotech is not responsible for the safety of trenches, excavations or shoring support.

5.1.5 Weather-Related Earthwork Considerations

Wet weather, freezing conditions, or snow can impede or prevent earthwork operations. The following recommendations should be considered by the contractors and owners during construction:

1. It is not recommended that soil products are placed during freezing conditions. No concrete or soil products should be placed on frozen soil.
2. The steeply-sloped topography may cause hazardous working conditions during winter or wet weather conditions.
3. The on-site soils, bedrock and any imported soil products may become saturated during earthwork operations and will reduce operation production.
4. Stockpiles of soil products should be protected during wet weather. Soil products that have been compacted should be protected and not travelled on during wet weather to prevent disturbing the subgrade.

This report does not provide recommendations for erosion, runoff, trackout from trucks removing site stripping, or environmental considerations associated with earthwork operations.

5.2 Shallow Foundation Design

The following design parameters are provided based on the project understanding described in Section 2.0. Liberty Geotech should be notified to revise or confirm the following

recommendations if the building location, locations of the site improvements, or structural loads change.

- If alluvial silts are encountered at foundation subgrade elevation, the soil should be sub-excavated to at least 1 foot below bottom of footing elevation and replaced with compacted structural fill.
- Allowable bearing capacity for foundations: 1,500 psf.
- Footing embedment for heated foundations*:* 2 feet.
- Footing embedment for unheated foundations: 3 feet.
- Estimated total settlement for foundations on *Structural Fill:* Less than 1 inch.
- A sliding coefficient of friction between the shallow foundations and native soil of 0.35 may be used.

Differential settlement can occur when two different foundations exert different bearing pressures on the soil. The magnitude of the differential settlement depends on the foundation pressure difference. Or, differential settlement can occur due to differences in the soil resistance to the foundation pressure. Footing foundations are not recommended to bear on both *Structural Fill* and bedrock to prevent differential settlement. Differential settlement is anticipated to be less than ½ inch.

5.3 Concrete Slab Design and Construction Considerations

The following recommendations should be considered to be the minimum design requirements. The structural engineer's design supersedes these recommendations. A structural engineer should design concrete slabs supporting more than 200 pounds per square foot.

- The concrete slab should be a minimum of four inches thick.
- The slab reinforcement should not be less than No. 3 rebar, 18 inches in the center in both directions, and constructed in the middle of the slab.
- The modulus of subgrade support is recommended to be 150 pounds per square inch per inch (pci).
- The slab should be supported with inches of compacted *Concrete Slab Cushion* soil in accordance with Section 5.1.

Vapor transmission through the concrete slabs may damage moisture sensitive floor coverings. The design and ownership team should carefully consider design publication *Guide to Concrete Floor and Slab Construction* (ACI, 2015) before ommiting a vapor retarded under the slab. The design and ownership team may consider omitting a vapor retarder under the slab based on lack of clay in the native soil, depth to groundwater, usage of *Concrete Slab Cushion*, and no proposed moisture sensitive floor coverings. If a moisture retarder is used, it should meet the requirements of ASTM E1643: *Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*.

Concrete slabs can crack because of numerous reasons. The following considerations should be mitigated during construction to reduce the risk of the concrete slabs cracking.

- The concrete mix design can be altered based on the ambient temperature, aggregate moisture content, anticipated time in the mix truck, and finishing methods. A poorly designed mix that does not incorporate these factors can cause concrete slabs to crack.
- The contractor's means and methods can cause concrete slabs to crack including improper placement of rebar support, improper crack control joints, improper curing methods or poor finishing techniques, and placing concrete during cold or hot weather.

5.4 Exterior Slabs

The silty sands and silts at the site are considered to be moderately to highly frost-susceptible. If these soils become saturated and freeze, heave may occur. One way to reduce the potential for heave is to remove any frost-susceptible soil down to bottom-of-footing grade or to a maximum depth of 3 feet, whichever is less, and replace with non-frost-susceptible sand or gravel. Sand or sandy gravel having less than 5 percent of the particles by weight passing a 200 sieve is considered to be non-frost-susceptible.

5.5 Seismicity and Liquefaction

The proposed site is designated a **Site Class D**. The following table presents seismicity coefficients referencing the IBC 2015 code.

Table 5.4.A Seismic Design Parameters

0.2 Second MCE Spectral Response Acceleration	S_S	0.330
0.2 Second MCE Spectral Response Acceleration	S_1	0.115
1.0 Second MCE Spectral Response Acceleration	S_{DS}	0.338
1.0 Second MCE Spectral Response Acceleration	S_{D1}	0.179
Design Peak Ground Acceleration	PGA_M	0.216

Latitude: 47.619941

Longitude: -117.43970

There is a low potential for liquefaction based on the *Liquefaction Susceptibility Map of Spokane County, Washington*.

5.6 Lateral Earth Pressure Design

The following table provides equivalent fluid pressures recommended to be used by the structural engineer to design retaining or basement walls.

Table 5.5.A Seismic Design Parameters

Equivalent Fluid Pressure Designation	Unit Weight (PCF)
Active Equivalent Fluid Pressure	40
At-rest Equivalent Fluid Pressure	60
Passive Equivalent Fluid Pressure	250

Concrete basement walls that are fully restrained should be designed for at-rest equivalent fluid pressure. Flexible walls or concrete walls that are allowed to crack may be designed for the active equivalent fluid pressure. Soil that is preventing a retaining wall or foundation wall from sliding may be analyzed with the passive equivalent fluid pressure.

5.7 Drainage and Stormwater Infiltration Recommendations

The following recommendations should be used by the civil engineer to design bio-infiltration swales, drywell structures, or infiltration galleries:

- The depth to a restrictive layer is highly variable across the site.
- Based on the test pits, drywells would be suitable for the proposed swales located near TP-18, TP-20, TP-21, and TP-22. Low-profile drywells could be considered for the swale located near TP-14. Furthermore, drainage areas could be repositioned such that they are located in areas of the site containing free-draining soils at depth (sands classified as SP).
- Swales and drywells should be located 10-feet from the edge of buildings and concrete hardscapes to minimize the effects of infiltration.
- Hardscaping and landscaping should be sloped at least five percent away from buildings or settlement prone site improvements.

Subsurface infiltration using bio-infiltration swales or infiltration galleries may be designed with a hydraulic conductivity of 15 inches per hour should be used for infiltration design. The following recommendations are provided in the *Stormwater Management Manual for Eastern Washington* (Stormwater, 2019).

- All biofiltration swales should be sized to empty within 72 hours of an infiltration event.

- The soil has a medium to high treatment capacity based on Table 5.6.1 of the *Stormwater Management Manual for Eastern* (Stormwater, 2004).

Single and double-depth drywells may utilize a design outflow rate of 0.14 and 0.23 cubic feet per second, respectively. Higher drywell outflow recommendations may be provided once the final drywell locations are determined. Drywells should only be placed in the free-draining sands encountered at the site. The drywells must conform to the jurisdiction specification in which they are constructed. Low profile drywells could be considered for swales in areas with shallow limiting layers.

Foundation drains should not be omitted based on the drainage characteristics of the native soils. In addition, all basement walls are recommended to have a waterproofing membrane to help prevent water infiltration. A plate in Appendix F: *Basement Wall Drainage Detail* provides recommendations for helping mitigate water seepage through the basement wall.

5.8 Pavement Section Design Recommendations

The following pavement design recommendations are provided for 3.0 inches of asphaltic-concrete pavement over 6.0 inches of *Crushed Surfacing*. Subgrade areas that are predominately silt should be over-excavated by 6.0 inches and replaced with *Structural Fill* or *Crushed Surfacing.* Alternative to over-excavation, a geotextile separation (Mirifi H2Ri or an approved equivalent) may be installed over prepared silt subgrade. The Structural Number for this pavement section is 1.91 and the number of passes with an equivalent single-axle load (ESAL) is 50,000. The following design parameters were used in the analysis:

- Subgrade support modulus, M_r: 8,000 psi (assuming the subgrade has been scarified and re-compacted to a minimum of 95 percent of the modified Proctor).
- Reliability percent: 80%.
- Standard deviation: 0.45.
- Asphaltic-concrete layer coefficient, a1: 0.42.
- Aggregate base layer coefficient, a2: 0.12.
- Drainage coefficient of aggregate base, m: 0.90.

Paving operations can be observed and tested by Liberty Geotech or by the asphalt paving company. Asphalt should be compacted to 92 percent of the Rice density. Liberty Geotech can provide additional traffic analysis or life-cycle cost analysis upon request.

6.0 DESIGN REVIEW AND CONSTRUCTION OBSERVATIONS

6.1 Geotechnical Consultant versus Geotechnical Inspector

The owner chooses to retain Liberty Geotech as either the Geotechnical Consultant or Geotechnical Inspector. Liberty Geotech provides recommendations and suggestions to the project team as the Geotechnical Consultant. In a Consultant role, Liberty Geotech has no

liability for settlement associated with *Structural Fill* placement and compaction, moisture or seepage through retaining walls or concrete slabs, site drainage, or cracks in the interior or exterior concrete flatwork. Liberty Geotech's liability is limited to the authorized proposal dated August 19, 2020. As a geotechnical inspector, Liberty Geotech provides inspections and soil testing during construction.

Liberty Geotech has been retained as a Geotechnical Consultant for the Latah Glen. At the owner's request Liberty Geotech can provide a proposal to perform additional geotechnical inspections for the project. This report cannot be relied upon for geotechnical recommendations if Liberty Geotech is not retained to observe and confirm the soil conditions as recommended in this report.

6.2 Revisions and Transfer of Geotechnical Recommendations

Liberty Geotech should be notified to update recommendations if the proposed development changes or subsurface soil or groundwater conditions vary from those described in this report. This report cannot be relied upon by property owners adjacent to this property without confirmation of their specific site soil conditions. Also, the report recommendations cannot be transferred to other business entities or subsequent property owners without written authorization. No warranty or certification of construction is provided with this report. It is recommended that Liberty Geotech is retained to provide design review of the proposed construction and be the Geotechnical Consultant during construction in order to continue to be the Geotechnical Engineer of Record.

7.0 REFERENCES

ACI Committee 302. "Guide for Concrete Floor and Slab Construction." ACI 302.1R-15. American Concrete Institute, P.O. Box 19150 Redford Station, Detroit, Michigan 48219.

Derkey, Robert E., Hamilton, Michael M., Stradling, Dale F., 2004. Geologic Map of the Spokane SW 7.5-minute Quadrangle, Spokane County, Washington. Washington Division of Geology and Earth Resources.

OSHPD. "Seismic Design Maps."Accessed September 27, 2020. https://seismicmaps.org/

Palmer, Stephen P., Magsino, Sammantha L., Bilderback, Eric L., *et. al.,* 2004. "Liquefaction Susceptibility Map of Yakima County, Washington." Washington State Department of Natural Resources.

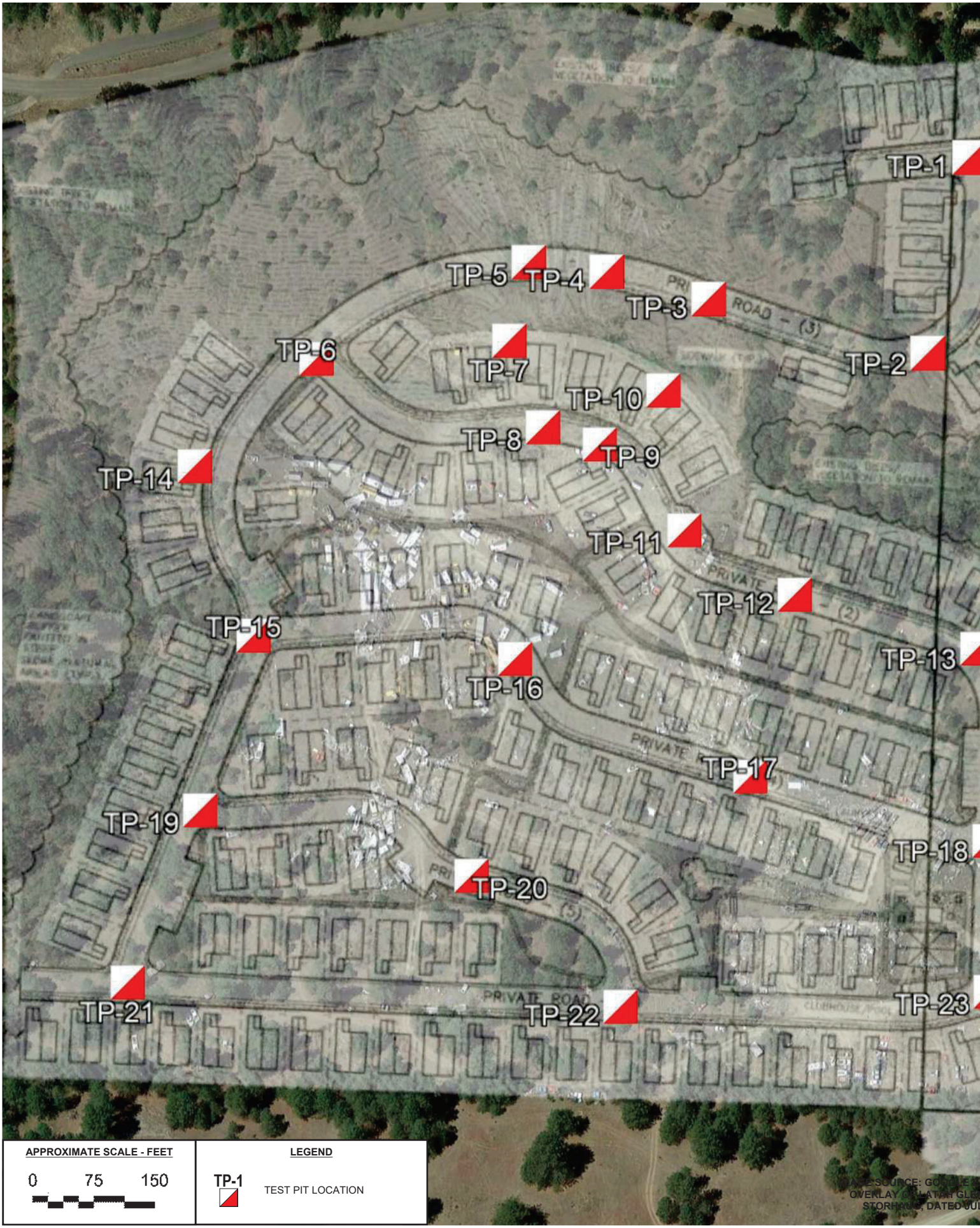
United States Department of Agriculture, Natural Resources Conservation Service. "Web Soil Survey." Accessed September 27, 2020. http://websoilsurvey.nrcs.usda.gov/

Washington State Department of Ecology. "Stormwater Management Manual for Eastern Washington." February 2019. Publication Number 18-10-044.

Washington State Department of Ecology. “Washington State Well Report Viewer.” Accessed September 27, 2020. fortress.wa.gov/ecy/wellconstruction/map/WCLSWebMap/

APPENDIX A

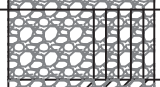
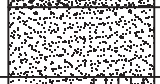
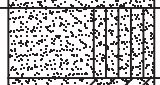
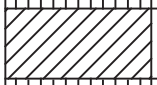
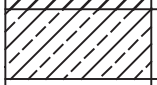
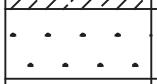
Exploration Site Plan


TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
TP-13
TP-14
TP-15
TP-16
TP-17
TP-18
TP-19
TP-20
TP-21
TP-22
TP-23
PRIVATE ROAD - (3)
PRIVATE
PRIVATE ROAD
APPROXIMATE SCALE - FEET
0 75 150
LEGEND
TP-1
TEST PIT LOCATION

APPENDIX B

Subsurface Exploration Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS GROUP SYMBOL	SOIL DECRIPTION
COURSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL
				GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES		GM	SILTY GRAVEL SILTY GRAVEL WITH SAND
				GC	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	SAND	CLEAN SAND		SW	WELL-GRADED SAND
				SP	POORLY-GRADED SAND
		SAND WITH FINES		SM	SILTY SAND
				SC	CLAYEY SAND
	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INELASTIC SILT
				CL	LEAN CLAY
				OL	ORGANIC SILT
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	ELASTIC SILT
				CH	FAT CLAY
				OH	ORGANIC CLAY
				PT	PEAT

ABBREVATIONS
BGS - BELOW EXISTING GROUND SURFACE
N.E. - NOT ENCOUNTERED

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Poorly-Graded Sand with Silt (SP-SM) Loose, Brown, Dry	1934	0								
ALLUVIUM - Sandy Silt (ML) Firm, Brown, Dry	1930	5								cobbles and boulders up to 16"
ALLUVIUM - Silty Sand (SM) Medium Dense, Brown, Moist	1925	10								

Test pit terminated at 10-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 1		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: ne	Logged By: MK		Sheet: 1 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Silty Sand (SM) Loose, Light Brown, Dry	1920	0								
ALLUVIUM - Sandy Silt (ML) Firm, Light Brown, Dry	1915	5		1-Gallon Bag		57		8		
ALLUVIUM - Silty Sand (SM) Dense, Brown, Moist	1910	10		1-Gallon Bag		33		8		

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 2		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: ne	Logged By: MK		Sheet: 2 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Dense, Brown, Dry	1910									
		5								
	1905									
		10								
	1900			1-Gallon Bag						
		15								

Test pit terminated at 15-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 3		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 3 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1910	0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Light Brown, Dry	1905	5		1-Gallon Bag		16		13		
LACUSTRINE - Sandy Silt (ML) Firm, Light Brown, Moist	1900	10		1-Gallon Bag	4.5+	63		29		
BEDROCK - Poorly-Graded Gravel (GP) Hard, Brown, Moist										

Test pit terminated at 13-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 4		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 4 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt (SP-SM) Loose, Light Brown, Dry	1902	0								
EOLIAN - Sandy Silt (ML) Hard, Brown, Dry	1900	5		1-Gallon Bag						
ALLUVIUM - Silty Sand with Gravel (SM) Dense, Dark Brown, Moist	1895			1-Gallon Bag						
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Dark Brown, Moist		10								

Test pit terminated at 11-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 5		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 5 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1865	0								
ALLUVIUM - Silty Sand (SM) Loose, Brown, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Dense, Dark Brown, Moist	1860	10		1-Gallon Bag		1		4.8		angular cobbles

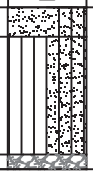
Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 6		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 6 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1892	0								
BEDROCK - Poorly-Graded Gravel (GP) Dense, Light Brown, Dry										

Test pit terminated at 4-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 7		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 7 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1864	0								
LACUSTRINE - Sandy Silt (ML) Soft, Light Brown, Dry										
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Dry										

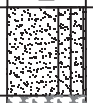
Test pit terminated at 2.75-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 8		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 8 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
ALLUVIUM - Silty Sand (SM) Loose, Light Brown, Dry	1855	0		1-Gallon Bag						
LACUSTRINE - Sandy Silt (ML) Very Hard, Brown, Dry	1850	5		1-Gallon Bag 1-Gallon Bag	4.5+					
LACUSTRINE - Sandy Silt (ML) Very Hard, Dark Brown, Moist					4.5+					
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Moist				1-Gallon Bag	4.5+					

Test pit terminated at 9-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 9		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 9 of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand (SM) Loose, Light Brown, Dry	1880	0								
BEDROCK - Poorly-Graded Gravel (GP) Very Hard, Brown, Dry										

Test pit terminated at 2.5-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 10		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 10of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt with Gravel (ML) Very Soft, Light Brown, Dry	1850	0								
ALLUVIUM - Silty Sand (SM) Loose, Tan, Dry	1845	5		1-Gallon Bag						
ALLUVIUM - Sandy Silt (ML) Firm, Tan, Dry				1-Gallon Bag		59		32		
ALLUVIUM - Silty Sand (SM) Dense, Light Brown, Dry	1840	10		1-Gallon Bag		33		18		

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 11		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 11of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt with Gravel (ML) Very Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1845									
ALLUVIUM - Silty Sand (SM) Medium Dense, Brown, Moist		5								
	1840									
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense Gray, Moist		10		1-Gallon Bag		4		6		
	1835									

Test pit terminated at 14-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 12		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 12of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silt (ML) Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1830	5								
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Dark Brown, Moist										

Test pit terminated at 8-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 13		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 13of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1860	0								angular basalt cobbles
UNDOCUMENTED FILL - Silty Sand (SM) Medium Dense, Tan, Dry										andgular cobbels from builidng the road.
ALLUVIUM - Poorly-Graded Sand (SP) Dense, Dark Brown, Moist	1855	5								angular cobbles
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Dark Brown, Moist		10								

Test pit terminated at 10-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 14		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 14of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1855	0								angular basalt cobbles, old car parts
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Dark Brown, Dense	1850									angular cobbles

Test pit terminated at 9-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 15		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 15of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1850	0								
UNDOCUMENTED FILL - Silty Gravel with Sand (GM) Loose, Tan, Dry										cobble and boulders up to 30"
	1845	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Medium Dense, Gray, Moist										
	1840	10								

Test pit terminated at 11-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 16		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 16of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
ALLUVIUM - Sandy Silt (ML) Very Soft, Light Brown, Dry		0		1-Gallon Bag		32		4		
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1830	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Gray, Medium Dense	1825	10								angular cobbles

Test pit terminated at 13-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 17		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 17of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry	1825	0								
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry		5								cobbles and boulders up to 36"/ concrete blocks
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Light Gray, Moist	1820	10								
	1815									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 18		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 18of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Soft, Light Brown, Dry		0								
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry	1850	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Silt (SP-SM) Medium Dense, Dark Brown, Dry	1845	10		1-Gallon Bag		7		3		
	1840									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 19		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 19of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Soft, Light Brown, Dry	1845	0								Garbage and road building material
ALLUVIUM - Silty Sand (SM) Medium Dense, Tan, Dry		5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1840	10								
	1835									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 20		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 20of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Soft, Light Brown, Dry	1845	0								
ALLUVIUM - Silty Sand (SM) Dense, Tan, Dry	1840	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1835	10								

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 21		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 21of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Sandy Silt (ML) Very Soft, Light Brown, Dry	1835	0								
ALLUVIUM - Silty Sand (SM) Loose, Tan, Dry	1830	5								
		10								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Dense, Gray, Moist	1825									cobbles

Test pit terminated at 14-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 22		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 22of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Light Gray, Dry	1825	0								
UNDOCUMENTED FILL - Poorly-Graded Sand with Silt and Gravel (SP-SM) Loose, Light Gray, Dry		5		1-Gallon Bag						cobbles and boulders up to 20" and garbage
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand (SP) Loose, Light Gray, Dry	1820	10		1-Gallon Bag		1		4		
	1815									

Test pit terminated at 12-feet bgs due to proposed depth.

Client: Sycamore Group, LLC	Test Pit Number: 23		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 23of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Silty Sand with Gravel (SM) Loose, Light Gray, Dry		0								
UNDOCUMENTED FILL - Silt (ML) Loose, Light Gray, Dry	1810	5		5-Gallon Bulk						boulders up to 20", Very ashy, Small pieces of charcoal
ALLUVIUM - Silty Sand with Gravel (SM) Loose, Brown, Dry	1805			1-Gallon Bag		18		4		boulders up to 20"
BEDROCK - Poorly-Graded Gravel (GP) Very Dense, Brown, Dry										Basalt bedrock

Test pit terminated at 9-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 24		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT 316F	Date Excavated: 9/9/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 24of 24

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
TOPSOIL - Sandy Silt (ML) Loose, Dark Brown, Dry ALLUVIUM - Sandy Silt (ML) Soft, Light Brown, Dry										With roots With roots and cobbles

Test pit terminated at 3.5-feet bgs due to bedrock.

Client: Sycamore Group, LLC	Test Pit Number: 25		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 1 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry	1815									With cobbles, boulders, and debris
UNDOCUMENTED FILL - Poorly-Graded Sand with Gravel (SP) Loose, Dark Gray, Dry	1810	5								With cobbles and boulders
ALLUVIUM - Clayey Sand (SC) Loose, Brown, Moist										
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	10								

Test pit terminated at 13.5-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 26		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 2 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry		0								With cobbles and debris
GLACIAL FLOOD DEPOSITS - Silty Sand with Gravel (SM) Loose, Light Brown, Dry	1810	5								
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	10		1-Gallon Bag		2		4		

Test pit terminated at 12-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 27		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 3 of 4

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE INTERVAL	POCKET PEN. (TSF)	% PASSING NO. 200 SIEVE	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	VOID RATIO (%)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silty Sand with Gravel (SM) Loose, Dark Brown, Dry	1810									With cobbles and debris
GLACIAL FLOOD DEPOSITS - Poorly-Graded Sand with Gravel (SP) Loose, Dark Brown, Dry	1805	5								With cobbles and boulders
		10								

Test pit terminated at 10-feet bgs due to sidewall caving.

Client: Sycamore Group, LLC	Test Pit Number: 28		
Project: Latah Glen	Project Number: 20211		
Equipment: CAT308D	Date Excavated: 9/28/2020		
Depth to Groundwater: NE	Logged By: MK		Sheet: 4 of 4

APPENDIX C

Laboratory Testing Results

ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

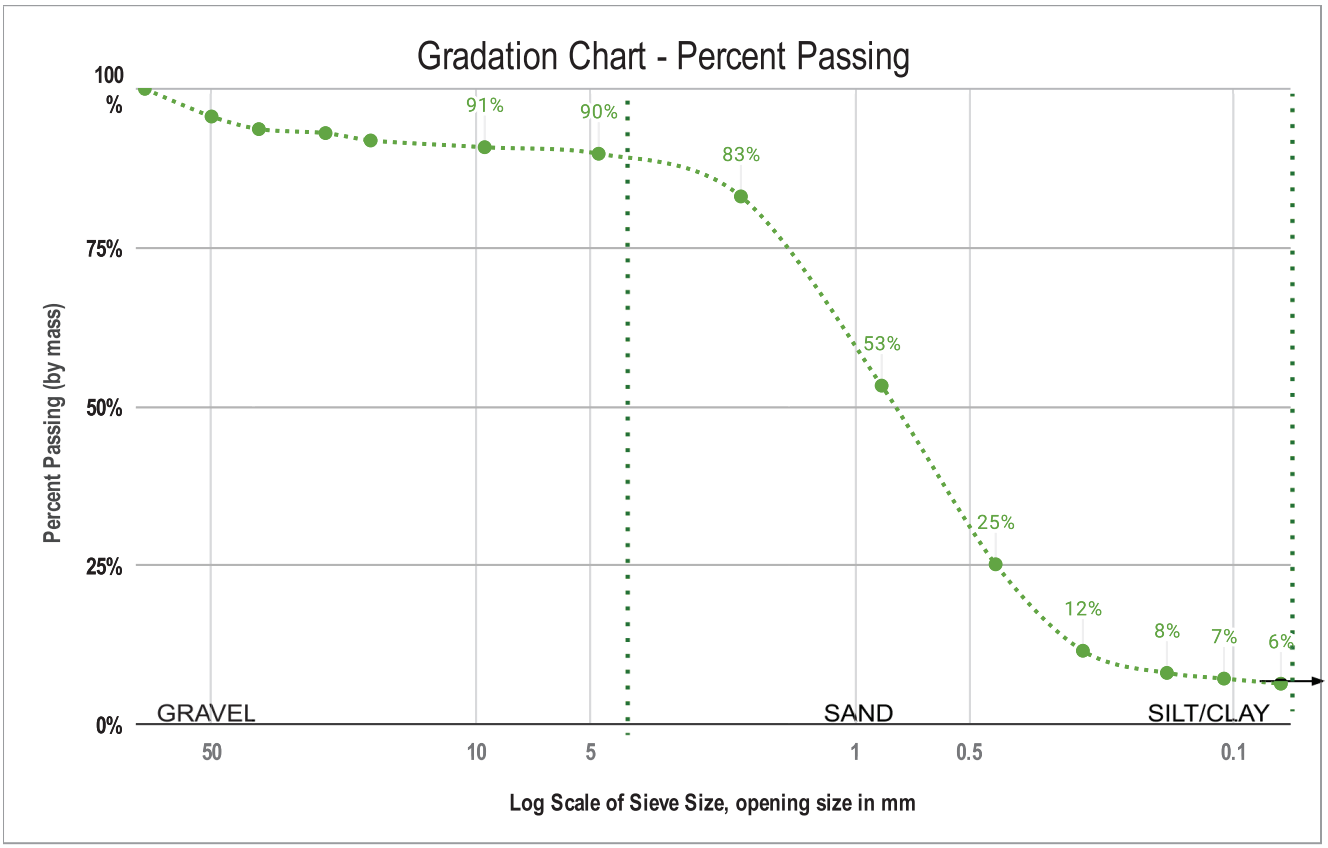
Project: Latah Glen **Test No.:** 20211.2 **Testing Date:** 9/21/2020

Job No: 20211 **Sample Location:** TP-23@3.5' **Laboratory Technician:** James Swearingen

Method Used: Method A Max Particle Size: 3/8"

Total Sample Mass: 25,336 grams Minimum Sample Size: 165 grams

Drying Method: Oven Dry



Notes:

Excluded Material: None.

Additional Results

Soil Classification: Poorly-Graded Sand with Silt

Percent Moisture: 2.7%

%Gravel: 10% **%Sand:** 83% **%Fines:** 6%

Coefficient of Uniformity, Cu: 5.0

Coefficient of Curvature, Cc: 1.3

ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

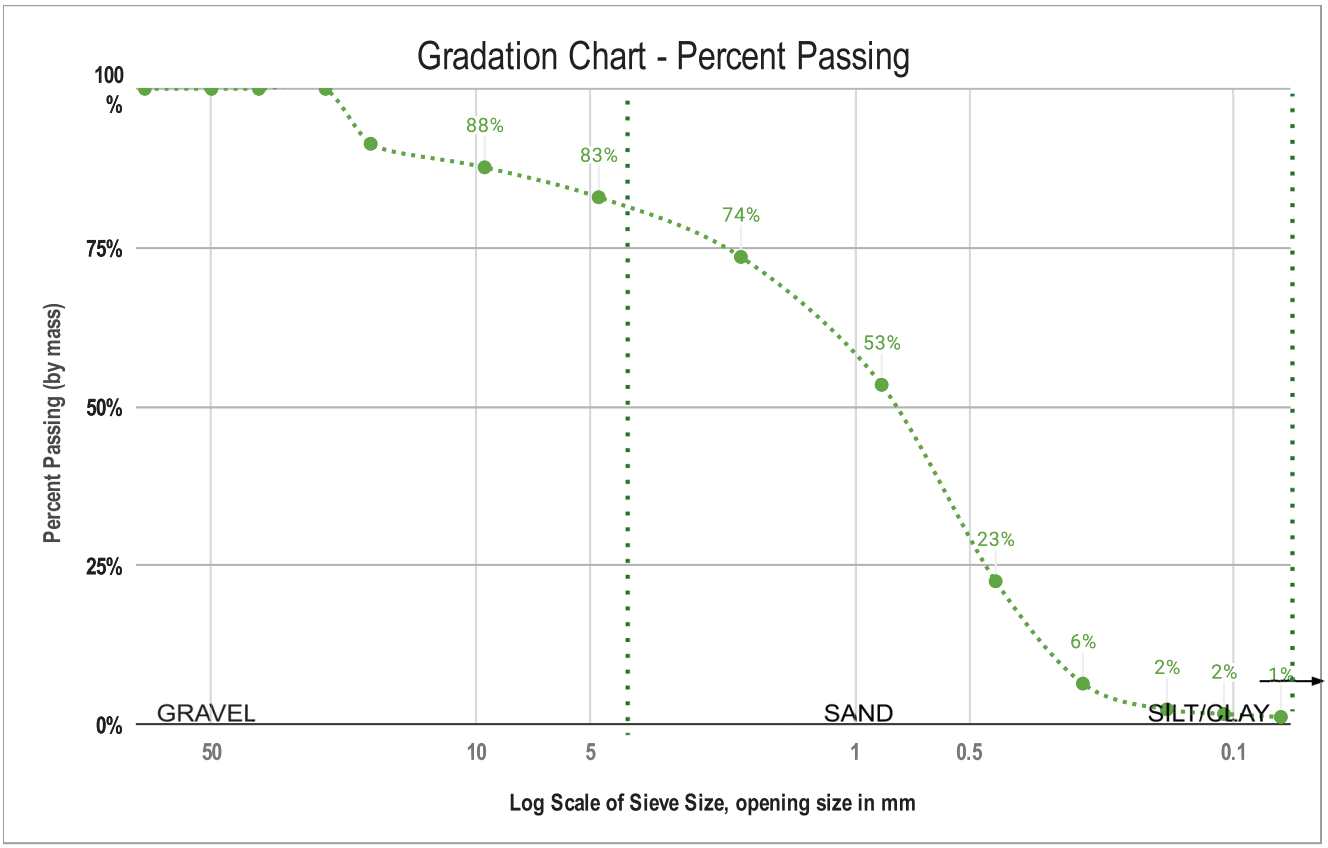
Project: Latah Glenn **Test No.:** 20211.4 **Testing Date:** 9/11/2020

Job No: 20211 **Sample Location:** TP-6@12' **Laboratory Technician:** James Swearingen

Method Used: Method A Max Particle Size: 3/4"

Total Sample Mass: 1,521 grams Minimum Sample Size: 1,300 grams

Drying Method: Oven Dry



Notes:

Excluded Material: None.

Additional Results

Soil Classification: Well-Graded Sand with Gravel

Percent Moisture: 4.8%

%Gravel: 17% **%Sand:** 82% **%Fines:** 1%

Coefficient of Uniformity, Cu: 5.0

Coefficient of Curvature, Cc: 0.5

EXHIBIT B

WETLAND DELINEATION REPORT AND SURFACE WATER EVALUATION

South Inland Empire Way Improvements
associated with the
Latah Glen Residential Community
S36, T25N, R42E

April 2025
Updated June 2025

Prepared by:
Environmental Inc.
/Advanced Wetland Studies
Rathdrum, ID 83858
208.651.4536
davidAarmes@gmail.com

EXECUTIVE SUMMARY AND FINDINGS

Environmental Inc. completed this Wetland Delineation Report and Surface Water Evaluation (Report) for the Latah Glen Residential Community (Project) on Spokane County Parcel #s 25361.0004 and 25364.0001 (Property) and the South Inland Empire Way Improvements located in the adjacent Washington Department of Transportation right-of-way (ROW) and adjacent parcel number 25361.0004. No wetland areas will be impacted or disturbed. Wetland buffer disturbances will occur, and buffer enhancement/restoration will ensure no net loss of wetland buffer functions and values will occur.

This Wetland Delineation was completed on behalf of and for the exclusive use of the client and/or its agents, consultants, and contractors. The scope of services performed to complete this report may not be appropriate to satisfy the needs of other users, and any other use or re-use of this report is at the sole risk of said user. The findings and conclusions contained in this report are based upon the currently accepted legal and regulatory requirements, agency guidance, and the best professional judgment of the preparer. The findings presented herein apply to those conditions observed on the site at the time of the evaluation. The timing of the field evaluation may not always coincide with the growing season, identifiable phenological stages of vegetation, or during the hydrological active (wet) season. Often time's secondary indicators, interpretation of vegetation and hydrology indicators and best professional judgment may be required to determine the presence or absence of wetlands. Future environmentally significant changes may occur at the site, which could result in future findings and conclusions differing from those contained in this report.

Prepared by:
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TABLE OF CONTENTS

1. INTRODUCTION

Environmental Inc. completed this Wetland Delineation Report and Surface Water Evaluation (Report) for the Latah Glen Residential Community (Project) on Spokane County Parcel #s 25361.0004 and 25364.0001 (Property) and the South Inland Empire Way Improvements located in the adjacent Washington Department of Transportation right-of-way (ROW) and adjacent parcel number 25361.0004. The Property is located in Spokane County, Washington in Section 36, Township 25N, Range 42E (Figure 1 Vicinity Map). This Wetland Delineation Report (Report) is based upon the requirements and definitions contained within Chapter 17E.070 Wetlands Protection of the Spokane Municipal Code (SMC).

The proposed development, Latah Glen Residential Community, encompasses the platting of approximately 39.44 acres into 142 single-family residential lots. The project scope includes the construction of public roadways and public utilities, and associated infrastructure improvements.

Primary access to the site will be through the extension of South Inland Empire Way through parcel number 25361.0004 (addressed as 3504 South Inland Empire Way) and improvements to the gravel road South Inland Empire Way through Washington State Route 195 Right of Way. Improvements to South Inland Empire Way will include full paving of the roadway, a five-foot-wide sidewalk along the east side, and a ten-foot-wide swale separating the sidewalk from the paved surface. Right-of-way dedication through parcel 25361.0004 (addressed as 3504 South Inland Empire Way) will be completed by the project developer.

A previous Wetland Delineation Report and Surface Waters Evaluation was completed in 2021. This updated 2025 Report is being completed to include the South Inland Empire Way Improvements.

1.1 Purpose

The purpose of the study was to document the presence or absence and extent of wetlands or surface waters located on the Property, adjacent to the Property, or within the vicinity of the South Inland Empire Way Improvement and determine jurisdictional status and regulatory requirements based upon the findings.

1.2 Regulatory Requirements

This Report delineates, describes, and maps the presence and extent of wetlands, jurisdictional waters of the United States and non-jurisdictional surface waters based upon definitions in the 1987 Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory. 1987); Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region or Arid West (U.S. Army Corps of Engineers. 2008); Washington State Wetlands Identification and Delineation Manual (DOE. 1997); and Chapter 17E.070 Wetlands Protection of the Spokane Municipal Code.

Federal

Local, state and federal regulations apply to activities in and near wetlands. The Clean Water Act is a federal act that regulates the placement of fill in jurisdictional wetlands and waters of the United States. Section 404 of the Clean Water Act requires permits for filling jurisdictional wetlands and waters of the United States. Section 404 permits must be administered by the United States Army Corps of Engineers (USACE) and certified by the state agency (as outlined in Section 401 of the Clean Water Act). Work

within the boundaries of jurisdictional wetlands or the ordinary high water mark of waters of the United States are regulated under the USACE permitting process.

The USACE defines wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Generally, this definition requires the three parameters of hydrophytic vegetation, hydric soils, and wetland hydrology be simultaneously present. The USACE only regulates jurisdictional wetlands. Wetlands are considered jurisdictional by the USACE if they are closely associated with jurisdictional waters of the United States. The term waters of the United States has a broad meaning and incorporates both deepwater aquatic habitats and special aquatic sites, including wetlands, as follows:

a. The territorial seas;

b. Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including adjacent wetlands;

c. Tributaries to navigable waters of the United States, including adjacent wetlands;

d. Interstate waters and their tributaries, including adjacent wetlands; and

e. All other waters of the United States not identified above, the degradation of or destruction of which could affect interstate commerce.

Final determination of jurisdictional wetlands and waters of the United States is subject to approval by the USACE. Wetlands and surface waters that are not under USACE jurisdiction may still require permits from local, county, or state agencies.

State

The Washington State Department of Ecology (DOE) defines and regulates wetlands as described in Washington State Wetlands Identification and Delineation Manual and Wetland Rating System for Eastern Washington (Hruby, T. 2014). The DOE wetland definition is based on the USACE wetland definition and includes areas where hydrophytic vegetation, hydric soils, and wetland hydrology are simultaneously present.

Local

Defined in Chapter 17E.070 Wetlands Protection of the Spokane Municipal Code.

2. METHODOLOGY

The analysis for wetlands conducted on this site is based on the routine (on-site) methodology of the USACE Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region or Arid West. This method requires that evidence of three parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) be simultaneously present for a wetland determination (specific and problematic situations may not always require all three parameters be present simultaneously at the time of the onsite investigation).

Two levels of information, preliminary site research and a site-specific investigation have been gathered for this analysis for the purposes of determining the presence and extent or absence of wetlands and water bodies.

2.1 Preliminary Research

Environmental Inc. conducted a review of existing information to develop background knowledge of physical features and to identify the potential for wetland occurrence on or within the vicinity of the Property. The following information related to topography, drainage, and water features was obtained for preliminary review of the site conditions:

- National Wetland Inventory (NWI)/Spokane County Scout Map (Figure 2);
- Washington Department of Ecology Water Quality Atlas (Figure 3);
- Aerial Images showing 1 kilometer area (Figure 4);
- NRCS Web Soil Survey (Figure 5), and
- NRCS WETS precipitation data (Figure 6.).

2.2 Site Specific Investigation

An initial site investigation was completed on 5/18/21, follow up site investigations were completed on 3/31/25 and 4/4/25. Four data plots (DP) were established to evaluate for the three-wetland parameters of hydrology, hydric soils, and hydrophytic vegetation (Photographs 1-4; Appendix A. Wetland Data Forms). In addition to the DP's, the Property and adjacent areas were visually inspected (no associated DP's) for the three wetland parameters of hydrology, hydric soils, and hydrophytic vegetation as necessary to assist in identifying and determining wetland boundaries.

2.2.1 Data Plot 1

Data Plot 1 (DP1) did not meet the three wetland parameters and was not located within a wetland. DP1 was located within the ROW in a disturbed area. Approximately three plus feet of soil had recently been removed from this location (as shown on Figure 7. South Inland Empire Way Improvement Cross Section; and Figure 8. South Inland Empire Way Improvement Wetland Delineation), as such an atypical data form was utilized at DP1.

<u>Hydrology</u>

The United States Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Western Mountains, Valleys and Coast Region (Wetland Manual) identifies wetland hydrology indicators. According to the Wetland Manual and in order to meet wetland hydrology indicators, a water table or soil saturation is required within 12 inches or less of the surface. Under normal circumstances, and prior to the removal of approximately three plus feet of soil, wetland hydrology indicators would not be present at DP1. Based on topographical contours of the area prior to soil removal, the area was on a slope, and the water table was greater than three feet below the surface. Surface water would not be present on the sloped area, nor would any of the other wetland hydrology indicators be present on the sloped area as indicated by adjacent and/or undisturbed areas on similar elevation or contours. As such, wetland hydrology was not present at DP1.

<u>Soils</u>

The Wetland Manual states for most soils, the recommended excavation depth of a soil data plot is approximately 20 inches from the soil surface. Pre-disturbed soil evaluation was not possible at DP1 due to the removal of three plus feet of soil. Undisturbed native soils and soils at what would have been equivalent elevational contours in the immediate vicinity were examined and did not meet any of the hydric soil requirements. As such, hydric soils were not present at DP1.

Vegetation
Previous vegetation is unknown, however based upon historical aerial images and adjacent areas of similar topographical elevations and contours, vegetation could be similar to what was present at the data plot 3 location. As such, hydrophytic vegetation was not likely present.

2.2.2 Data Plot 2

Data plot 2 (DP2) met the three wetland parameters and was located within a wetland boundary.

Hydrology
Surface water and saturated soils were observed at DP2.

Soils
Hydric soils indicators were present at DP2.

Vegetation
Hydrophytic vegetation was present at DP2.

2.2.3 Data Plot 3

Data plot 3 (DP3) did not meet the three wetland parameters and was located within a wetland boundary.

Hydrology
Wetland hydrology was not observed at DP3.

Soils
Hydric soils indicators were not present at DP3.

Vegetation
Hydrophytic vegetation was not present at DP3.

2.2.3 Data Plot 4

Data plot 4 (DP4) did not meet the three wetland parameters and was located within a wetland boundary.

Hydrology
Wetland hydrology was not observed at DP4.

Soils
Hydric soils indicators were not present at DP4.

Vegetation
Hydrophytic vegetation was present at DP4.

3. RESULTS

One wetland area was identified in the vicinity of the South Inland Empire Way Improvements (Figure 8. South Inland Empire Way Improvement Wetland Delineation). No wetlands were identified on the Latah Glen Residential Community Development Property. The wetland boundary was identified based upon physical observation of the three wetland parameters, existing topographical data and aerial photograph interpretation. The wetland boundary was flagged, Storhaug Engineering subsequently surveyed the flagged wetland boundary.

The wetland is an palustrine emergent slope/depressional wetland area located on the adjacent parcel northwest of the Property and adjacent to the ROW. This wetland flows under State Route 195 in a culvert and appears to be connected via surface water to Hangman Creek. As such, this wetland is likely jurisdictional under Section 404 of the Clean Water Act. Final jurisdictional determination is made by the United States Army Corps of Engineers.

Wetland Rating

Wetland ratings were based upon the 2014 Washington State Wetland Rating System for Eastern Washington and definitions identified in Chapter 17E.070 Wetlands Protection of the Spokane Municipal Code. This wetland was rated as a depressional wetland and is rated as a Category III wetland (Appendix B. Wetland Rating Form).

Wetland Buffer

This wetland is a Category III wetland with a recommended 150 foot buffer based upon regulations outlined in Chapter 17E.070 Wetlands Protection of the Spokane Municipal Code. (Figure 8. South Inland Empire Way Improvement Wetland Delineation).

Impacts

No wetland impacts will occur; no dredging, no placement of fill within the wetland boundary or temporary disturbances within the wetland boundary will occur.

Approximately 22,000 square feet (sf) of wetland buffer will be disturbed (Figure 9. South Inland Empire Way Proposed Improvements).

4. WETLAND BUFFER RESTORATION

Impacts were avoided and minimized to the extent practicable. Impacts to the wetland were avoided entirely. Impacts to the associated wetland buffer were minimized by keeping the project footprint to the minimum necessary to meet the purpose and needs of the improvements. Unavoidable wetland buffer disturbances will be mitigated through wetland buffer restoration.

Approximately 22,000 square feet of wetland buffer will be restored and enhanced (Planting Area) to ensure no net loss of wetland buffer functions and values occurs. Within this Planting Area is an additional 211 square foot wetland planting area. The Planting Area will be re-seeded with a native upland seed mix and re-planted with 105 trees and shrubs (Figure 10. Planting Plan Area).

Planting Specifications

A total of 105 plantings will be installed within the Planting Area. The quantity of plantings was determined by using 15 foot spacing (225 sf per planting) between plantings extrapolated over the 22,000 sf Mitigation Planting Area (22,000/225=100), along with an additional five shrubs placed within the 211 square foot wetland planting area. All proposed mitigation plants are native to Spokane County.

The following quantity, species and size will be utilized for planting. As needed, modifications may be required due to planting stock availability. The city of Spokane will be notified in writing should any species substitutions be required due to availability.

Proposed Plantings:

- Sixteen (16) black cottonwood (*Populus trichocarpa*) one inch caliper in size;
- Forty-one (41) serviceberry (*Amelanchier alnifolia*) two-gallon container stock;
- Forty-three (43) wood's rose (*Rosa woodsii*) two-gallon container stock: and
- Five (5) sitka willow (*Salix sitchensis*) one-gallon container stock.

Specifications:

- The boundaries of the Planting Area are identified on the Planting Plan, the corners of the Planting Area shall be staked on site.
- Fifteen foot spacing was utilized to determine planting quantities. Actual placement of plants may vary based upon site conditions utilizing in part a "fit in the field approach" in which best professional judgment will be utilized to maximize species survivorship and species contribution to the overall functions and values of the site. This may include grouping of plants within the Planting Area.
- Mitigation plantings shall occur in the first fall upon completion of the South Inland Empire Way Improvements.
- Hand watering or irrigation may be necessary during the first few years and/or during the drier seasons to ensure higher survivorship.
- Additional specifications are identified on the Planting Plan (Figure 10).

Re-seeding

The Planting Area will be re-seeded with a Dryland Mix: "Inland Northwest Native Mix" at approximately 1 pound per 1,000 sf. This dryland mix consists of:

- Mountain Brome (*Bromus carinatus*),
- Idaho Fescue (*Festuca idahoensis*),
- Bluebunch Wheatgrass (*Pseudoroegneria spicata*),
- Slender Wheatgrass (*Elymus trachycaulus*),
- Sherman Big Bluegrass (*Poa secunda*).

Re-seeding will be completed in accordance with the specifications on the Planting Plan (Figure 10).

Monitoring

Plantings will be monitored annually for three years to ensure survival rates are sufficient to meet the goals and objectives. The overall goals and objectives of the buffer enhancement/restoration are to restore and enhance the wetland buffer area. The goals and objectives will be accomplished by achieving an overall survivorship of 75% of the plantings (100 plantings x 75% = 75 plantings) at the end of the three year monitoring period.

In the event the overall survivorship falls below 75% during the monitoring period, additional plantings will be placed to ensure the overall survivorship numbers are at or above the 75% goal.

Annual monitoring will occur in years 1, 2 and 3 following the installation of the plantings. Annual monitoring reports will document the number of surviving plantings by species, photo documentation as necessary and will include any recommendations or contingency actions should survivorship fall below

75%. Annual monitoring reports will be submitted to the city of Spokane prior to December 1st in years 1, 2 and 3 following the implementation of the plantings.

5. REGULATORY DOCUMENTS

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* FWS/OBS-79/31. Office of Biological Services, USFWS, Washington D.C.

Environmental Laboratory. 1987. *Corps of Engineers wetlands delineation manual*. Technical Report Y-87-1. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station. (http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf)

Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1973. *Vascular Plants of the Pacific Northwest*. University of Washington Press. Seattle, Washington.

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Hruby, T. 2004. Washington State wetland rating system for eastern Washington – Revised. Washington State Department of Ecology Publication # 04-06-15.

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U.S. Geological Survey. 2006. 1:24,000. United States Geological Survey Denver, Colorado. Maptech, Inc. 1998. Version 3.01 Greenland, New Hampshire.

U.S. Geologic Survey (USGS). 1998. *USGS Topographic, 7.5 minute series topographic maps*. Maptech, Inc. Version 3.01 Greenland, New Hampshire

Washington Department of Ecology (DOE). 1997. Washington State Wetlands Delineation and Identification Manual.

Washington Department of Ecology (DOE). 2014. Eastern Washington Wetland Rating System.

Photograph 1. Data Plot 1 Location

Photograph 2. Data Plot 2 Location

Photograph 3. Data Plot 3 Location

Photograph 4. Data Plot 4 Location

Figure 1. Vicinity Map

Parcel Numbers 25361.0004 and 25364.0001

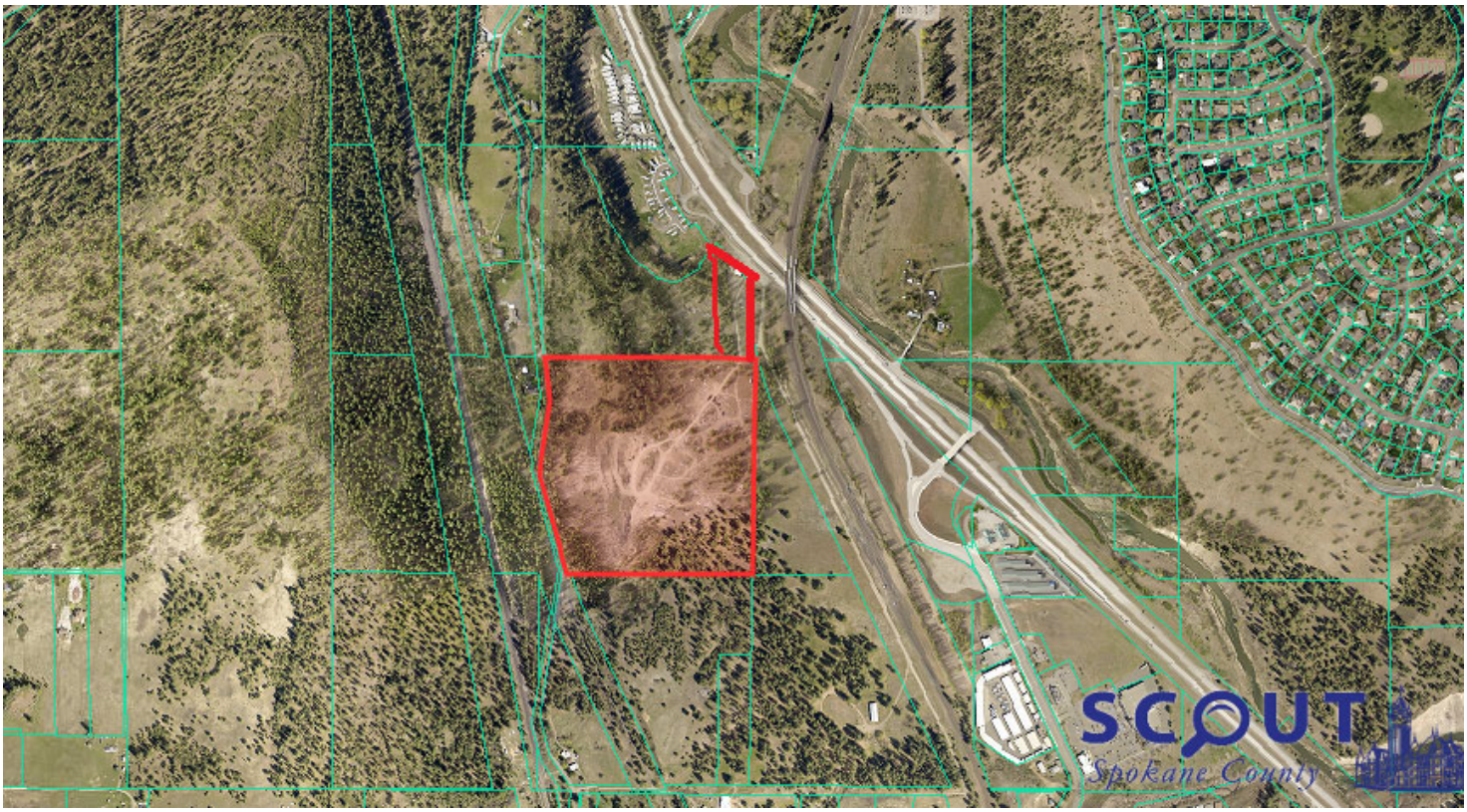
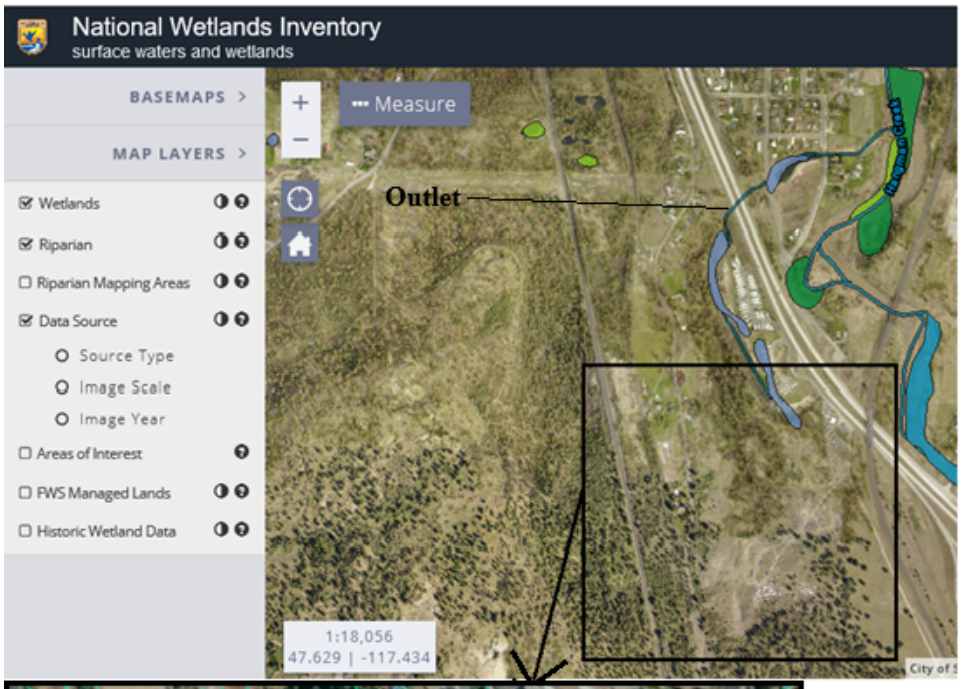


Figure 2. National Wetland Inventory /Spokane County Interactive Map



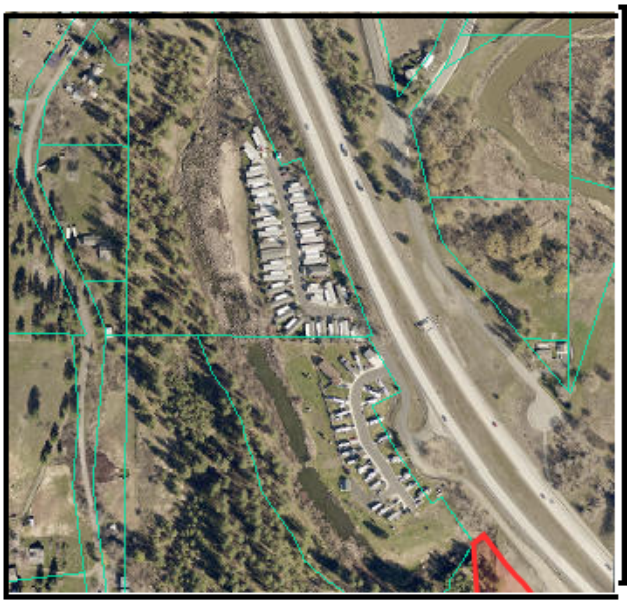
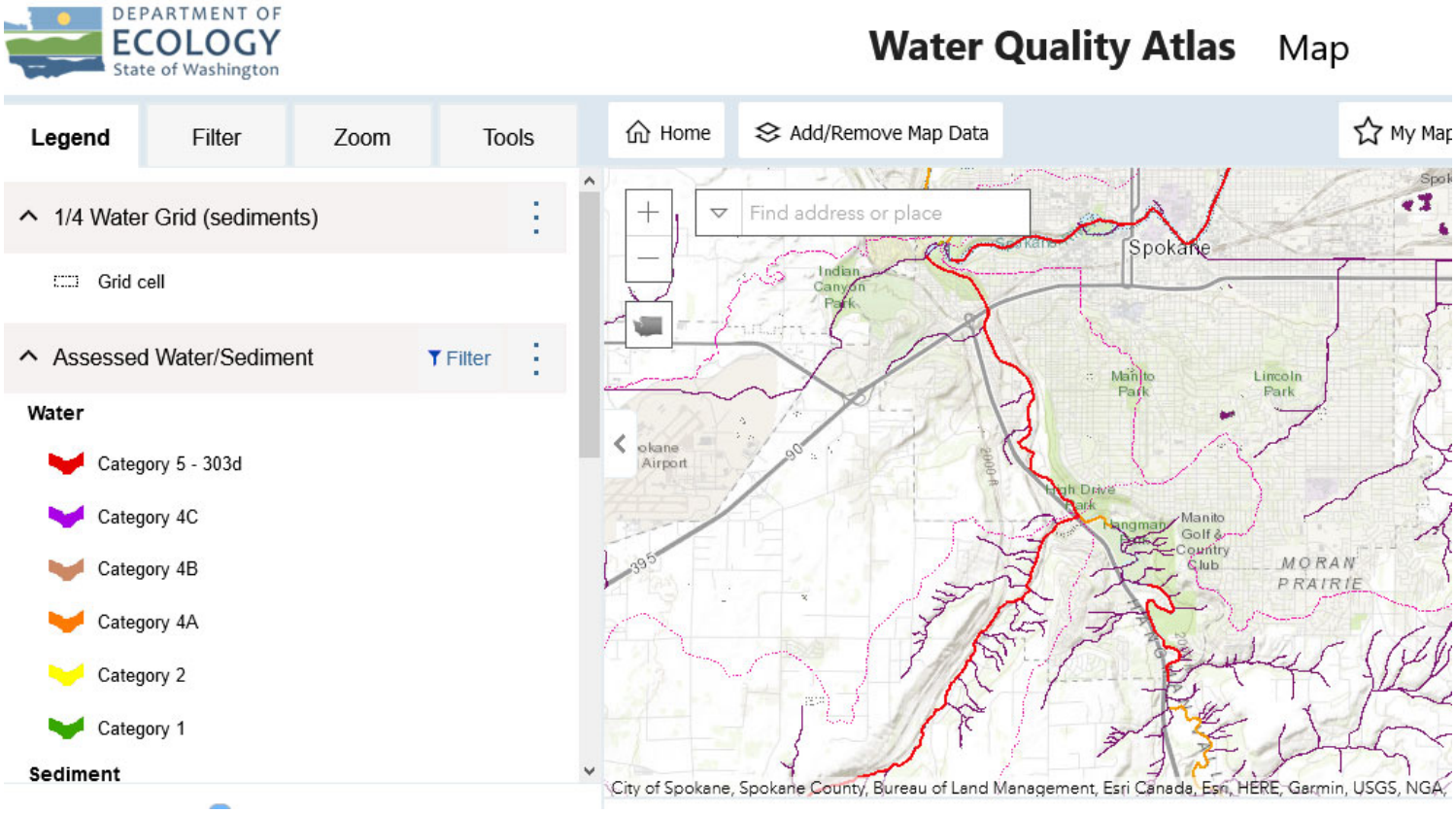


Figure 3. Washington Department of Ecology Water Quality Atlas



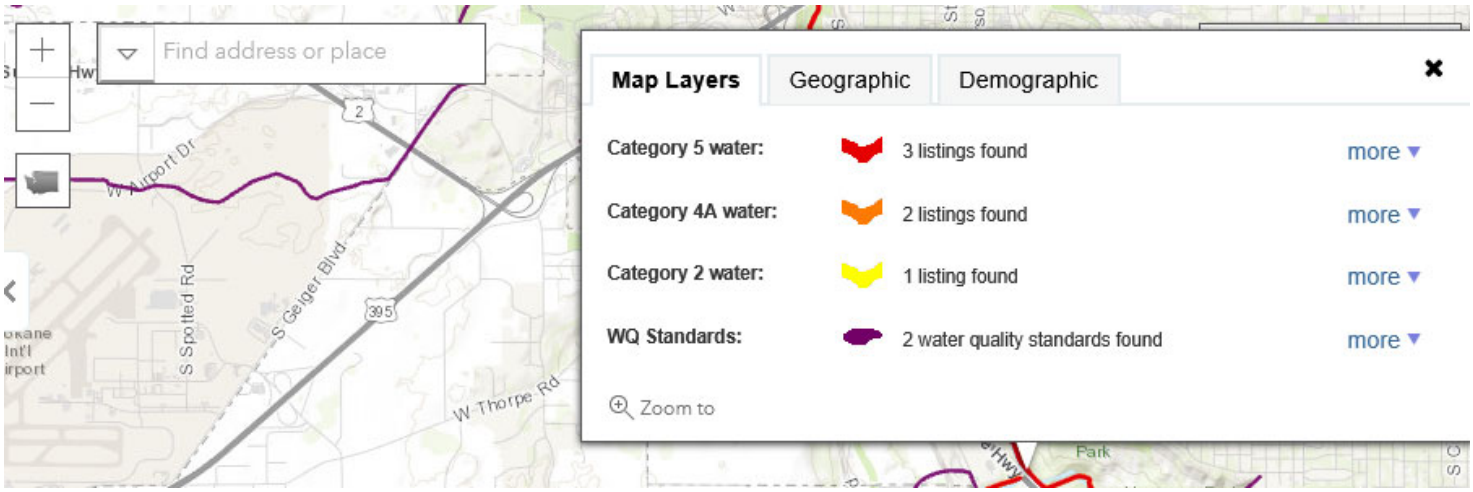


Figure 4. Aerial Images showing 1 kilometer area

Figure 5. NRCS Web Soil Survey

Map Scale: 1:4,670 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 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: Spokane County, Washington
Survey Area Data: Version 16, Aug 26, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 9, 2022—Aug 15, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

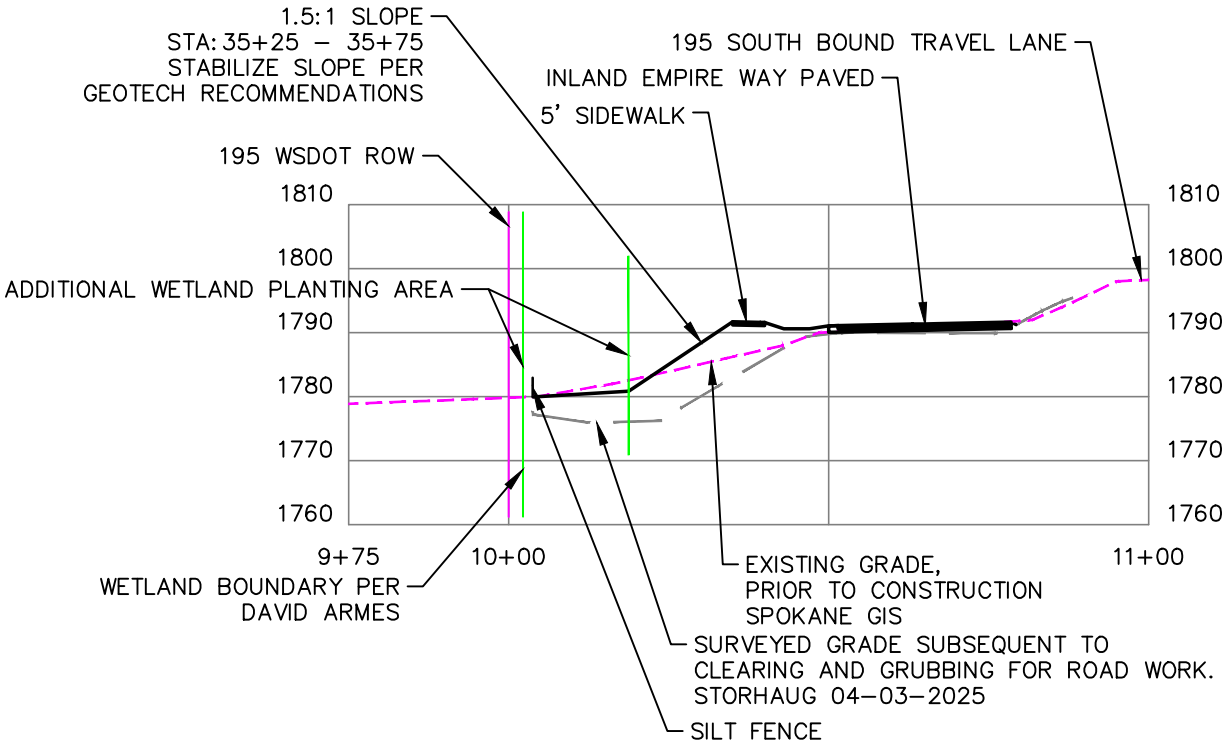
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1200	Endoaquolls and Fluvaquents, 0 to 3 percent slopes	4.3	4.0%
3055	Clayton-Hagen complex, 8 to 25 percent slopes	4.3	4.0%
3057	Hagen ashy sandy loam, 3 to 8 percent slopes	0.7	0.7%
3120	Marble loamy sand, 0 to 8 percent slopes	60.1	56.0%
3121	Marble loamy sand, 8 to 15 percent slopes	6.5	6.0%
3122	Marble loamy sand, 15 to 30 percent slopes	24.5	22.8%
3123	Marble loamy sand, 30 to 55 percent slopes	5.8	5.4%
4032	Lakespring ashy loam, 8 to 25 percent slopes	1.2	1.1%
Totals for Area of Interest		**107.3**	**100.0%**

Figure 6. NRCS WETS

Monthly Total Precipitation for SPOKANE 5.5 S, WA (CoCoRaHS)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	M	M	M	M	M	M	M	M	M	M	M	M	M
2001	M	M	M	M	M	M	M	M	M	M	M	M	M
2002	M	M	M	M	M	M	M	M	M	M	M	M	M
2003	M	M	M	M	M	M	M	M	M	M	M	M	M
2004	M	M	M	M	M	M	M	M	M	M	M	M	M
2005	M	M	M	M	M	M	M	M	M	M	M	M	M
2006	M	M	M	M	M	M	M	M	M	M	M	M	M
2007	M	M	M	M	M	M	M	M	M	M	M	M	M
2008	M	M	M	M	M	M	0.05	M	0.74	0.40	M	M	M
2009	M	0.85	M	M	M	1.18	0.54	1.25	0.80	M	M	2.38	M
2010	2.09	1.46	M	1.72	1.56	M	M	0.19	1.44	1.75	3.17	M	M
2011	M	0.90	3.15	2.22	2.53	1.00	0.57	0.00	M	1.02	1.58	1.11	M
2012	2.18	1.87	4.38	1.62	1.47	M	0.75	0.16	0.01	1.60	2.51	2.23	M
2013	0.82	0.66	M	1.09	1.30	2.40	T	1.45	2.02	0.29	M	0.73	M
2014	0.79	1.83	3.12	0.95	0.86	1.66	0.57	0.63	0.13	1.48	1.69	1.95	15.66
2015	2.07	1.12	2.72	0.93	0.50	0.10	0.99	0.28	0.48	0.73	1.46	M	M
2016	M	0.83	3.32	0.66	1.33	0.83	0.34	0.42	0.50	8.08	2.09	1.30	M
2017	1.86	4.66	3.58	1.25	1.19	1.06	T	0.01	1.37	2.17	3.36	M	M
2018	2.73	1.52	M	M	1.33	0.68	0.02	0.18	0.04	1.68	2.14	M	M
2019	1.72	2.46	0.43	M	1.91	0.43	0.57	0.49	2.26	1.99	0.57	2.05	M
2020	3.19	0.85	0.76	0.58	3.04	1.12	0.26	0.05	0.32	2.06	1.90	2.29	M
2021	2.70	0.72	0.47	0.24	0.15	0.60	0.03	0.09	0.79	1.58	2.38	1.23	10.98
2022	1.92	0.72	1.54	0.95	2.23	3.04	0.60	0.04	0.75	0.53	2.59	3.73	18.64
2023	1.49	0.73	0.87	1.60	2.09	0.77	0.09	0.80	0.94	0.47	2.34	3.88	M
2024	2.32	1.90	1.20	0.76	M	1.05	0.08	0.24	0.04	0.90	4.08	4.43	M
2025	1.50	2.50	1.79	M	M	M	M	M	M	M	M	M	M
Mean	1.96	1.50	2.10	1.12	1.54	1.14	0.34	0.39	0.79	1.67	2.28	2.28	15.09

Figure 7. South Inland Empire Way Improvement Cross Section



HORIZONTAL GRAPHIC SCALE
0 15 30
(IN FEET)
1 inch = 30 ft.

VERTICAL GRAPHIC SCALE
0 15 30
(IN FEET)
1 inch = 30 ft.

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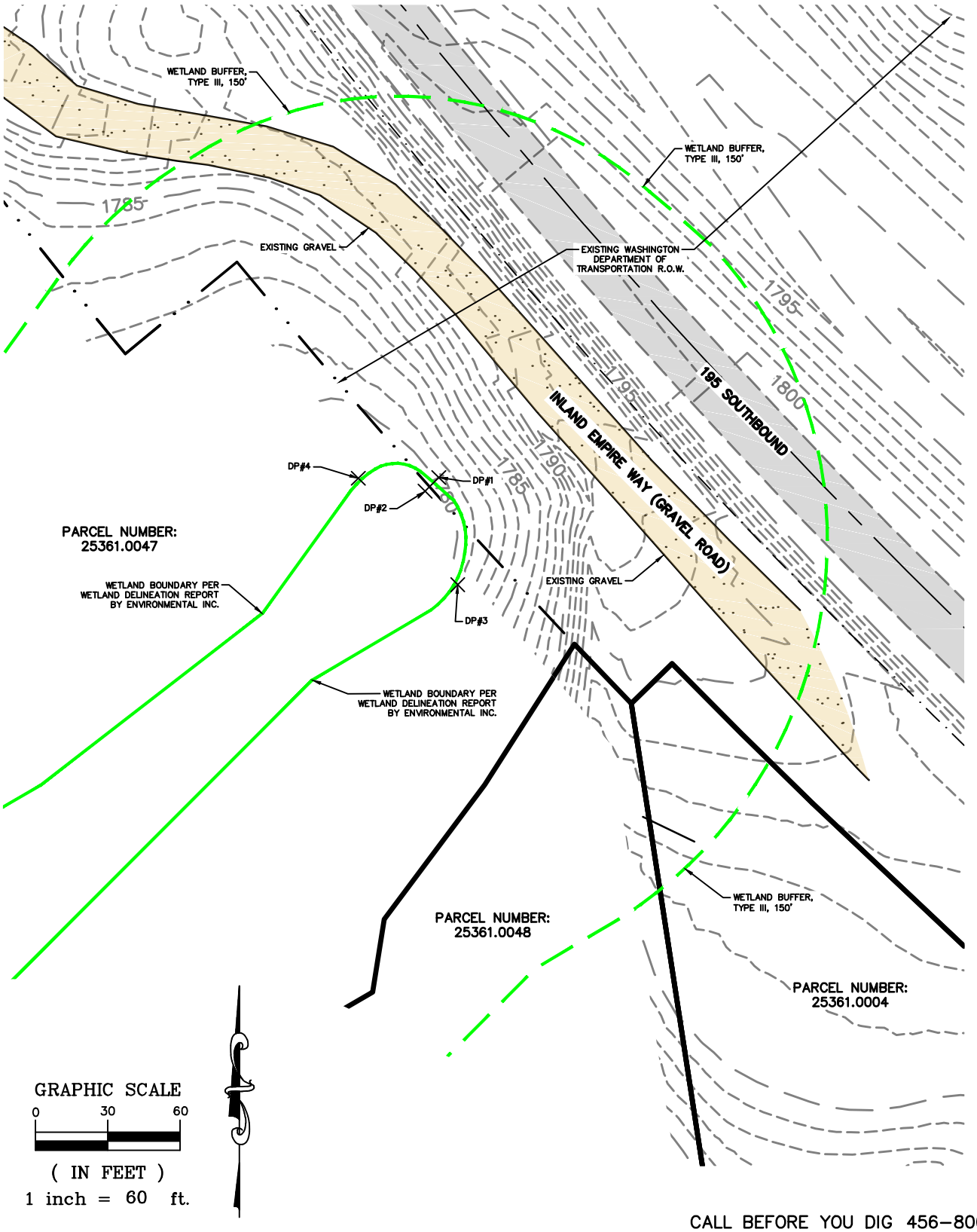
INLAND EMPIRE WAY

CIVIL IMPROVEMENTS AT WETLAND SECTION
SPOKANE, WA.

DRAWN	JCL	DATE	06/10/25	EXHIBIT	3
CHECKED	LC	SCALE	1" = 30'	PROJECT	19–342

X–19–342–wetland area.dwg 8.5x11 SECTION

Figure 8. South Inland Empire Way Wetland Delineation



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INLAND EMPIRE WAY

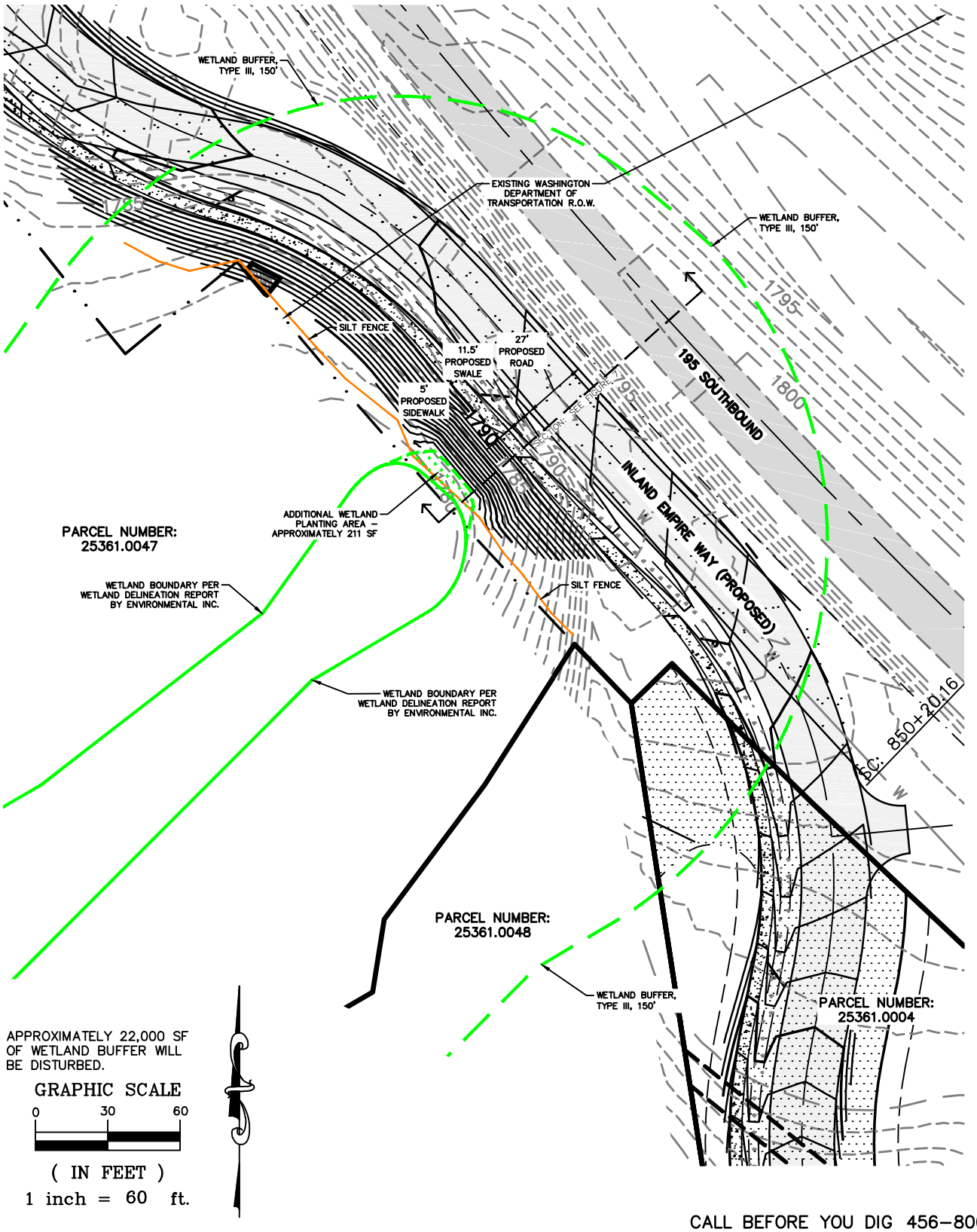
WETLAND DELINEATION ON 04/07/2025

SPOKANE, WA.

DRAWN	JCL	DATE	06/10/25	EXHIBIT	1
CHECKED	LC	SCALE	1" = 60'	PROJECT	19-342

X-19-342-wetland area.dwg 8.5x11 WETLAND EXHIBIT

Figure 9. South Inland Empire Way Proposed Improvements



APPROXIMATELY 22,000 SF OF WETLAND BUFFER WILL BE DISTURBED.

GRAPHIC SCALE

0 30 60

(IN FEET)

1 inch = 60 ft.

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INLAND EMPIRE WAY

PROPOSED CIVIL IMPROVMENTS AT WETLAND

SPOKANE, WA.

DRAWN	JCL	DATE	06/10/25	EXHIBIT	2
CHECKED	LC	SCALE	1" = 60'	PROJECT	19-342

X-19-342-wetland area.dwg 8.5x11 PROPOSED IMPROVMENTS

Figure 10. South Inland Empire Way Planting Plan

REFERENCE NOTES SCHEDULE WETLAND RESTORATION

SYMBOL	DESCRIPTION	QTY
	DRY LAND HYDROSEED AREA - SEE DETAIL SHEET L2.0 FOR HYDROSEED SPECIFICATION.	22,000 SF

PLANT SCHEDULE WETLAND RESTORATION: TREES

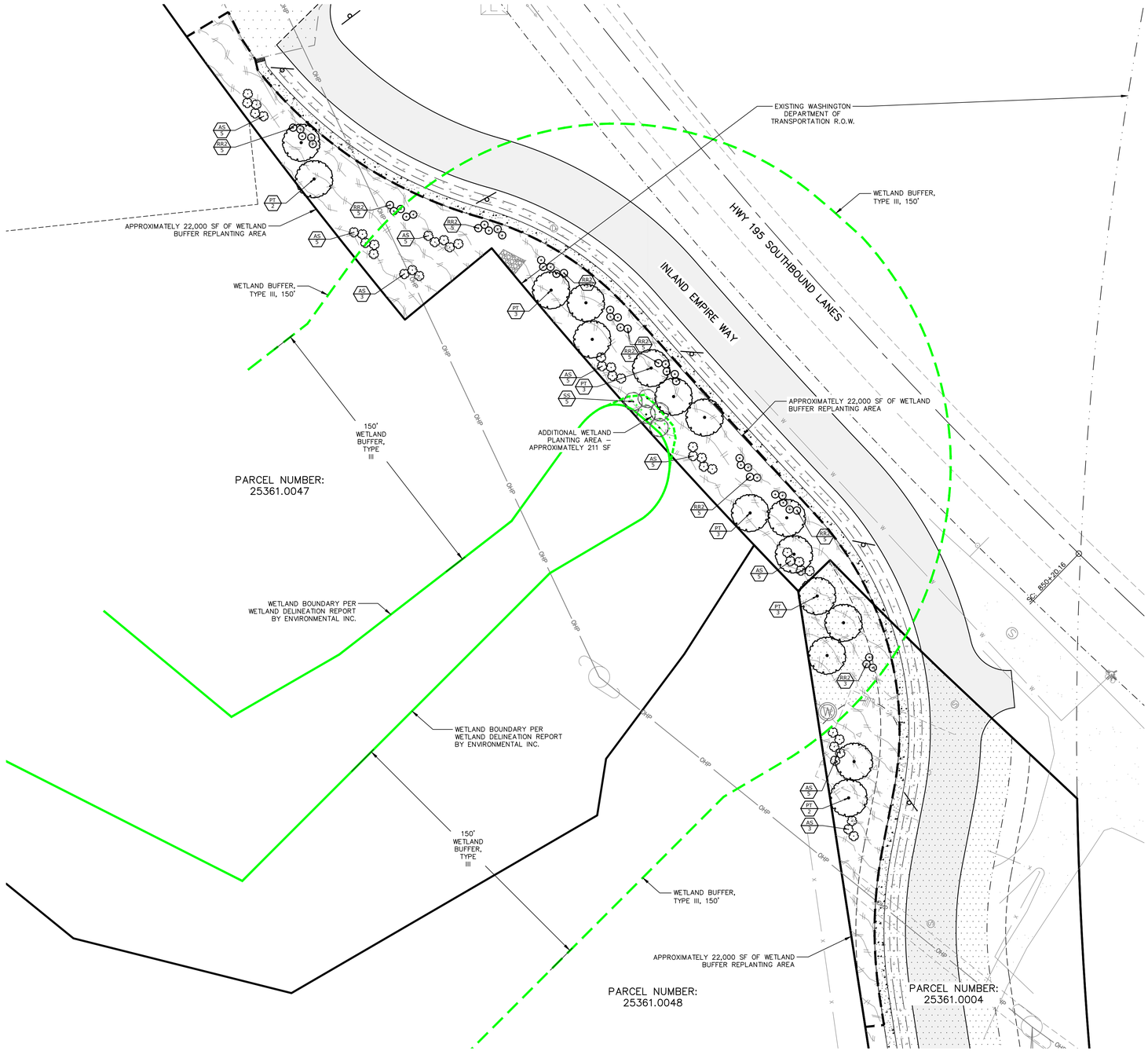
SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	QTY
TREES						
	PT	POPULUS TRICHOCARPA	BLACK COTTONWOOD	1" CAL.	B&B	16
	SS	SALIX SITCHENSIS	SITKA WILLOW	1 GAL.		5

PLANT SCHEDULE WETLAND RESTORATION: SHRUBS

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	QTY
SHRUBS					
	AS	AMELANCHIER ALNIFOLIA	SERVICEBERRY	2 GAL.	41
	RR2	ROSA RUGOSA	WOODS ROSE	2 GAL.	43

BUFFER REPLANTING AREA NOTES:

1. PROPOSED PLANTINGS IN BUFFER REPLANTING AREA TO BE INSTALLED THE FALL FOLLOWING COMPLETION OF INLAND EMPIRE WAY IMPROVEMENTS.
2. PROPOSED PLANTINGS IN BUFFER REPLANTING AREA TO ACHIEVE A SURVIVORSHIP RATE OF 75% AFTER THREE YEARS. IF PLANTING SURVIVORSHIP RATE FALLS BELOW 75%, CONTRACTOR TO REPLACE PLANTINGS.



GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

STATE OF WASHINGTON LICENSED LANDSCAPE ARCHITECT
Leisa Rae Baker
1291
LICENSE NO.
EXPIRES ON 5/7/2026

LA - 1.0
LA - 2.1

REVISIONS			
DATE	BY	PROJECT	DESCRIPTION

NAVD88 = ESTABLISHED FROM GPS

NAVD88 ELEV. 1843.87

CBM NO. :

NAVD88 DATUM

0' 25' 50' 75'

SCALE IN FEET

BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER

SCALE: HORIZONTAL SCALE (22 x 34); VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	JCL	6/10/2025
APPROVED:	LB	6/10/2025

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19–342

PROJECT NAME: INLAND EMPIRE WAY

SEGMENT LIMITS:

PLANTING PLAN AREA

APN 25361.0001 & 25364.0001

PROJECT LIMITS: INLAND EMPIRE WAY

TYPE OF IMPROVEMENT: LANDSCAPE

PROJECT NO.

2023519

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GENERAL NOTES:

1. CONTRACTOR IS REQUIRED TO READ ALL OF THE NOTES IN THESE PLANS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO KEEP A FULL SET OF TO-SCALE LANDSCAPE PLANS ON SITE FOR THE DURATION OF LANDSCAPE INSTALLATION.
3. CONTRACTOR TO LOCATE UNDERGROUND UTILITIES, i.e., CABLES, CONDUIT, GAS, WATER, SEWER, ETC. PRIOR TO DIGGING. CONTRACTOR TO BE LIABLE AND PAY FOR REPAIR TO ANY AND ALL UTILITY DAMAGES AT NO EXTRA COST TO THE OWNER. CALL 811 BEFORE DIGGING, EXCAVATING, TRENCHING, DEMOLITION OR OTHER CONSTRUCTION.
4. NOT ALL SPRINKLER HEADS, VALVES, BACK-FLOW PREVENTION DEVICES, PIPING OR OTHER EQUIPMENT ARE SHOWN ON THIS PLAN. LOCATE ALL SPRINKLER HEADS, VALVES, BACK-FLOW PREVENTION DEVICES, PIPING OR OTHER EQUIPMENT IN THE FIELD PRIOR TO CONSTRUCTION. NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICTS.
5. SCOPE OF WORK: THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, TRANSPORTATION AND SERVICES NECESSARY TO COMPLETE THE CONSTRUCTION SHOWN ON THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF ALL REQUIRED PERMITS AND INSPECTIONS. LOCAL CODES PREVAIL.
6. ALL PLANTER AND TURF AREAS TO RECEIVE 6" OF CLEAN TOPSOIL; PLANTER AREA TOPSOIL TO BE MIXED 50/50 WITH ORGANIC COMPOST. PLANTER AREAS TO RECEIVE 3" DEPTH (MIN.) MULCH OVER FINISHED TOPSOIL GRADE AFTER PLANTING UNLESS STATED OTHERWISE ON PLANS.
7. REFER TO DETAIL SHEET FOR PLANTING DETAILS. ALL PLANTS SHALL BE PLANTED THE DAY OF DELIVERY AND BE "MUDDED IN" DURING BACKFILLING - BACKFILL IS TO BE MIXED WITH WATER TO ACHIEVE A THICK MUD DURING BACKFILL OPERATIONS. EACH PLANT NEEDS A FORMED WATER WELL THAT MUST BE FILLED WITH WATER BEFORE LEAVING THE SITE. TREE WATER WELLS SHOULD BE FILLED 3-4 TIMES A WEEK DURING GROWING SEASON(S) TO ESTABLISH OVER AT LEAST THE FIRST YEAR OF PLANTING AS A SUPPLEMENT TO AUTOMATIC IRRIGATION.
8. SEE ENGINEERING DRAWINGS FOR DETAILED SITE, UTILITY AND DRAINAGE FEATURE INFORMATION.
9. PRESERVE AND PROTECT EXISTING HARDSCAPE TO REMAIN. DAMAGE TO HARDSCAPE INCURRED AS A RESULT OF LANDSCAPE INSTALLATION OPERATION TO BE REPAIRED/REPLACED AT CONTRACTOR'S EXPENSE.
10. CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND ACTUAL SITE CONDITIONS.
11. GENERAL CONTRACTOR TO PROVIDE ROUGH GRADE IN ALL TURF AREAS AND PLANTER BEDS WITHIN 0.10 FOOT OF GRADE SHOWN ON CIVIL DRAWINGS MINUS THE COMBINED TOTAL DEPTH OF TOPSOIL AND MULCH SPECIFIED AND AN ADDITIONAL 0.5 INCH DEPTH WITHIN 1 HORIZONTAL FOOT OF EXISTING AND/OR PROPOSED HARDSCAPES.
12. GENERAL CONTRACTOR TO CLEAR AND GRUB TURF AREAS AND PLANTING BEDS OF ALL WEEDS, ROOTS, LAWN AND DEBRIS; SPECIFIED LANDSCAPE AREAS TO BE SMOOTH AND CONTOURED AS SHOWN ON CIVIL DRAWINGS; ANY ROCK/DEBRIS LARGER THAN 1.5" TO BE REMOVED FROM TOP 12" OF SOIL AS MEASURED FROM FINISHED GRADES.
13. THE CONTRACTOR SHALL MAINTAIN A QUALIFIED SUPERVISOR ON THE SITE AT ALL TIMES DURING CONSTRUCTION THROUGH COMPLETION OF FINAL PUNCH-LIST WORK.
14. IMPORTED TOPSOIL SHALL CONSIST OF SANDY LOAM; NONTOXIC, FREE OF NOXIOUS WEEDS, GRASS, BRUSH, STICKS OR ROCKS GREATER THAN ½" IN DIAMETER, UNLESS OTHERWISE NOTED.
15. CONTRACTOR TO RAKE FINISH GRADE SMOOTH AND NATURAL. NO SLOPE TO EXCEED 3:1. SEE 'SLOPE ROUNDING' DETAIL ON LANDSCAPE DETAILS SHEET.

PLANTING NOTES:

1. A QUALIFIED SUPERVISOR SHALL BE ON-SITE AT ALL TIMES FOR THE DURATION OF CONSTRUCTION.
2. ALL PLANT MATERIAL QUANTITIES SHALL BE VERIFIED PRIOR TO INSTALLATION. QUANTITIES LISTED IN SCHEDULES ARE FOR THE CONVENIENCE OF THE CONTRACTOR. THE NUMBER OF PLANTS SHOWN ON LANDSCAPE PLANS SHALL HAVE PRIORITY OVER THE NUMBER LISTED IN THE SCHEDULE, IF GIVEN.
3. ALL CONTAINER OR FIELD GROWN TREES, SHRUBS, VINES AND FLATTED GROUNDCOVERS SHALL BE PURCHASED BY THE CONTRACTOR. ALL SEEDED AND SOD TURF (INCLUDING HYDROMULCHES) SHALL BE PURCHASED BY THE CONTRACTOR. PAYING FOR THE PLANTING OF ALL PLANT MATERIALS; THE SPECIFIED GUARANTEE OF ALL PLANT MATERIALS; THE STAKING AND GUYING OF TREES AND THE CONTINUOUS PROTECTION OF ALL PLANT MATERIALS UPON THEIR ARRIVAL AT THE SITE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. GROUNDCOVER PLANTING UNDER TREES AND SHRUBS SHALL BE CONTINUOUS AS SHOWN ON PLANS.
5. ALL INSTALLED PLANT MATERIAL SHALL CONFORM TO THE CURRENT AMERICAN ASSOCIATION OF NURSERYMAN'S NATIONAL STANDARD SPECIFICATIONS.
6. ALL MATERIALS (PLANT MATERIALS, SOD, SEED, LANDSCAPE MULCHES, EDGING, ETC.) ARE SUBJECT TO APPROVAL BY THE OWNER AND/OR OWNER REPRESENTATIVE PRIOR TO INSTALLATION.
7. ALL PLANT MATERIAL INSTALLED BY CONTRACTOR SHALL BE WARRANTED FOR EIGHTEEN MONTHS FROM DATE OF FINAL ACCEPTANCE. LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE ALL DEAD AND/OR DYING PLANT MATERIAL (EXCEPT THOSE DUE TO VANDALISM OR NEGLECT) WITH PLANT MATERIAL EQUAL TO THE INSTALLED MATERIAL. GUARANTEE TO BE WRITTEN, DATED AND SIGNED BY CONTRACTOR ON CONTRACTOR'S LETTERHEAD.
8. CONTRACTOR TO PNEUMATICALLY APPLY (HYDROSEED) DRYLAND GRASS AREAS BETWEEN SEPTEMBER 15TH AND OCTOBER 1ST, OR MARCH 1ST AND APRIL 1ST.
9. NO SUBSTITUTIONS ARE PERMITTED WITHOUT THE WRITTEN CONSENT OF OWNER AND/OR OWNER REPRESENTATIVE.

1. SEED SHALL BE DELIVERED IN ORIGINAL, UNOPENED CONTAINERS SHOWING WEIGHT, CERTIFIED ANALYSIS, NAME AND ADDRESS OF MANUFACTURER, AND INDICATION OF CONFORMANCE WITH STATE AND FEDERAL LAWS, AS APPLICABLE.
2. CONTRACTOR TO BRING TO THE JOB SITE THE PACKING LIST FROM THE SEED SUPPLIER LISTING ALL THE SEED DELIVERED TO THE JOB SITE.
3. PROVIDE FRESH, CLEAN, NEW–CROP SEED COMPLYING WITH TOLERANCE OF PURITY AND GERMINATION ESTABLISHED BY THE OFFICIAL SEED ANALYSIS OF NORTH AMERICA. PROVIDE SEED MIXTURE COMPOSED OF GRASS SPECIES AND PERCENTAGES AS SPECIFIED BY SEED MANUFACTURER OR SUPPLIER.
4. PROVIDE MIXTURE COMPOSED OF GRASS AND FERTILIZER AS FOLLOWS:

4.1. TURF MIX: "IDEAL TURF" FROM PLANTS OF THE WILD OR APPROVED EQUAL
DRYLAND MIX: "INLAND NORTHWEST NATIVE MIX" FROM PLANTS OF THE WILD OR APPROVED EQUAL.

5. FERTILIZER: PER SPECIFICATIONS
6. COORDINATE WITH CIVIL PLANS FOR STABILIZATION OF SLOPES TO RECEIVE HYDROSEED.
7. SEED SUPPLIER: PLANTS OF THE WILD, TEKOA WA 509–284–2848

1 HYDROSEED NOTES
NTS P-SE-TUR-10

STATE OF WASHINGTON
LICENSED LANDSCAPE ARCHITECT
Leisa Rae Baker
LICENSE NO. 1291
EXPIRES ON 5/7/2026

LA - 2.0
LA - 2.1

REVISIONS			
DATE	BY	PROJECT	DESCRIPTION

NAVD88 = ESTABLISHED FROM GPS
NAVD88 ELEV. 1843.87
CBM NO. :
NAVD88 DATUM
0' 25' 50' 75'
SCALE IN FEET
BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER
SCALE HORIZONTAL SCALE (22 x 34)
VERTICAL SCALE (22 x 34)

	BY	DATES
DRAWN:	JCL	6/10/2025
APPROVED:	LB	6/10/2025

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19–342

PROJECT NAME: INLAND EMPIRE WAY
SEGMENT LIMITS:
STANDARD NOTES AND DETAILS
APN 25361.0001 & 25364.0001
PROJECT LIMITS: INLAND EMPIRE WAY
TYPE OF IMPROVEMENT: LANDSCAPE
PROJECT NO.
2023519

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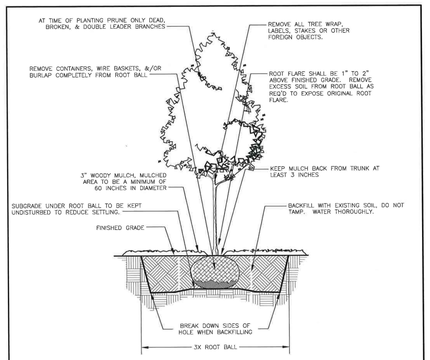
CITY OF SPOKANE STANDARD LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL PLANT ALL TREES AND SHRUBS ON SITE ACCORDING TO DETAIL V-101 AND V-102. AFTER PLANTING, IF TREES ARE UNSTABLE STAKING MAY BE USED BUT ONLY AS NECESSARY. AT 6 MONTHS ALL TREE STAKING SHALL BE REMOVED. IF TREE IS STILL UNSTABLE AFTER 6 MONTHS TREE MAY NEED TO BE REPLACED.
2. TREE PROTECTION FENCING SHALL BE INSTALLED AROUND ALL STREET TREES PRIOR TO ANY SITE/DEMO/SOIL WORK PER CITY OF SPOKANE SPECIFICATIONS AND DETAIL. TREE PROTECTION FENCING SHALL REMAIN INTACT THROUGHOUT ALL PHASES OF DEMO AND CONSTRUCTION. THE GENERAL CONTRACTOR IS RESPONSIBLE TO ENSURE THIS REQUIREMENT IS MET.
3. TREES SHALL BE STAKED AS NEEDED PER CITY OF SPOKANE STANDARDS.
4. TREES AND/OR SHRUBS PLANTED IN SIGHT TRIANGLES SHALL BE MAINTAINED TO PRESERVE CLEAR SIGHT LINES BETWEEN 3' AND 8' ABOVE GROUND PER SMC 17A.020.030(N) AND 17C.200.050(F).
5. ANY SUBSTITUTIONS OF PUBLIC/STREET TREES MUST HAVE WRITTEN APPROVAL FROM URBAN FORESTRY AND THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
6. STREET TREES BEING REMOVED SHALL BE DONE PRIOR TO ISSUANCE OF DEMO PERMIT.
7. CONTRACTOR RESPONSIBLE FOR THE HIRING OF A LICENSED CERTIFIED ARBORIST TO SUBMIT A PUBLIC TREE PERMIT APPLICATION FOR ALL WORK ON STREET TREES, INCLUDING REMOVALS, PRUNING, AND PLANTING. THIS APPLICATION SHOULD BE SUBMITTED AT LEAST 10 DAYS PRIOR TO WORK FOR THIS PROJECT, SHOWING START AND COMPLETION DATES.
8. STREET TREES IN CONTINUOUS PLANTING STRIPS MUST HAVE A TREE WELL AT THE BASE THAT IS NO LESS THAN 5' DIAMETER AND FREE OF TURF AND OTHER VEGETATION.
9. INDIVIDUAL TREE PLANTING VAULTS MUST HAVE THE CAPACITY TO HOLD A MINIMUM OF 100 CUBIC FEET OF UN-COMPACTED SOILS.
10. MODIFICATION TO THE APPROVED LANDSCAPE PLAN MUST HAVE WRITTEN APPROVAL FROM CITY OF SPOKANE PLANNING AND URBAN FORESTRY PRIOR TO INSTALLATION.
11. ROCK MULCH MAY ONLY BE USED AS AN ACCENT ONLY; ANY ROCK MULCH LOCATED WITHIN THE RIGHT OF WAY NEEDS TO BE A MINIMUM OF 1" BELOW THE LEVEL OF THE SIDEWALK OR CURB AND NEEDS TO BE LANDSCAPE ROCK INSTEAD OF PEA GRAVEL OR OTHER MATERIAL WITH FINES THAT CAN BE WASHED AWAY.
12. ALL MULCH AND LANDSCAPE FABRIC SHALL BE PULLED AWAY FROM CROWNS/ROOT FLARES OF ALL WOODY PLANTS 3-6" SO CROWNS/ROOT FLARES ARE VISIBLE.
13. ALL PROPOSED FENCING DEPICTED REQUIRES A SEPARATE FENCE PERMIT, PER SECTION 17C.111.245 FENCES.
14. ANY NEW SIGNAGE REQUIRES A SEPARATE SIGN PERMIT.
15. OBSERVE THE FOLLOWING MINIMUM SEPARATION DISTANCES FROM THE CENTERLINE OF A TREE TO OTHER STRUCTURES OR IMPROVEMENTS IN THE PLANTING STRIP SHALL BE AS FOLLOWS (PER CITY OF SPOKANE DESIGN STANDARDS (UNLESS STATED OTHERWISE ON LANDSCAPE PLANS):

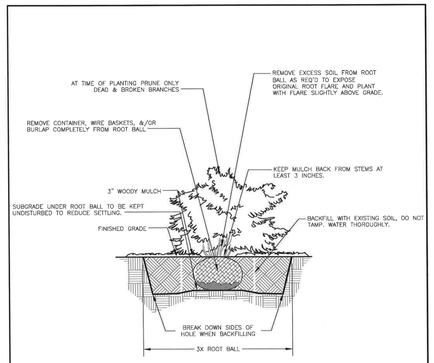
- 10' TO EDGE OF SINGLE FAMILY RESIDENTIAL DRIVEWAY; 15' FROM EDGE OF COMMERCIAL OR MULTI-FAMILY DRIVEWAY (10 FEET MAY BE ALLOWED IN SOME CASES).
- 20' TO STREET LIGHT LUMINAIRE (15' MAY BE ALLOWED WHERE LIGHTING PATTERN IS NOT AFFECTED).
- 10' FROM FIRE HYDRANTS AND UTILITY POLES. LOWER LIMBS MUST BE PRUNED FOR FULL VISIBILITY OF THE HYDRANT. NO NEW UTILITY POLE LOCATIONS SHALL BE ESTABLISHED CLOSER THAN 10 FEET TO AN EXISTING TREE.
- AS REQUIRED TO PROVIDE AN ADEQUATE CLEAR VIEW TRIANGLE AS DEFINED BELOW AND SHOWN IN THE APPENDIX.
- 15' TO UNDERGROUND DUCT OR PIPE
- 5' FROM CURB CUT FOR DRAINAGE
- 20' FROM DRYWELL, UNLESS THE SPECIES PERMITS A CLOSER PLACEMENT DUE TO CROWN DIAMETER.



NOTES:

1. TREES BURIED TOO DEEP, OR WITHOUT EXPOSING ROOT FLARE WILL BE REJECTED & SHALL BE REMOVED & REPLANTED AT PROPER DEPTH.
2. ALL 'ADVENTITIOUS ROOTS' AND 'SUCKERS' SHALL BE PRUNED AWAY PRIOR TO PLANTING.
3. DEVIATIONS FROM THIS DETAIL SHALL ONLY BE ALLOWED WITH PERMISSION FROM THE CITY ARBORIST.
4. TREES NOT PLANTED IN CONFORMITY WITH THIS DETAIL WILL BE REJECTED BY THE CITY ARBORIST. REPLACEMENT OF REJECTED TREES WILL BE DONE AT THE CONTRACTOR'S EXPENSE & NOT BY THE CITY OF SPOKANE.
5. LOCATIONS OF TREES TO MEET THE REQUIREMENTS OF DESIGN STANDARDS 3.5-2. ≥ 15 FT FROM DRIVEWAYS, ≥ 10 FT FROM DRAINAGE INLETS, ≥ 20 FT FROM DRYWELLS, NOT OBSTRUCT TRAFFIC SIGNS OR SIGHT TRIANGLES, AND 15 FT FROM UNDERGROUND UTILITIES
6. AFTER PLANTING, IF TREES ARE UNSTABLE, STAKING MAY BE USED BUT ONLY AS NECESSARY. AT 6 MONTHS, ALL STAKING MATERIAL SHALL BE REMOVED. IF TREE IS STILL UNSTABLE, AFTER 6 MONTHS, TREE MAY NEED TO BE REPLACED.

APPROVED BY		TREE PLANTING DETAILS	
ENGINEERING OPERATIONS MANAGER KYLE TWOHIG	ADOPTED: 2/1986	ALL TYPES, FORMS AND SPECIES	
PRINCIPAL ENGINEER, CONST. KENNETH M. BROWN, P.E.	REVISED: 05/2015	ENGINEERING SERVICES	STANDARD PLAN No.
	SUPERSEDES: 04/2012	CITY OF SPOKANE, WASHINGTON	V-101
	CHECKED BY: SJS		
	SCALE: N.T.S.		
	REVISED BY: M.E.P.		



NOTES:

1. SHRUBS BURIED TOO DEEP, OR WITHOUT EXPOSING ROOT FLARE WILL BE REJECTED & SHALL BE REMOVED & REPLANTED AT PROPER DEPTH.
2. DEVIATIONS FROM THIS DETAIL SHALL ONLY BE ALLOWED WITH PERMISSION FROM THE CITY ARBORIST.
3. SHRUBS NOT PLANTED IN CONFORMITY WITH THIS DETAIL WILL BE REJECTED BY THE CITY ARBORIST. REPLACEMENT OF REJECTED SHRUBS WILL BE DONE AT THE CONTRACTOR'S EXPENSE & NOT BY THE CITY OF SPOKANE.

APPROVED BY		SHRUB PLANTING DETAILS	
ENGINEERING OPERATIONS MANAGER KYLE TWOHIG	ADOPTED: 2/1986	ALL TYPES, FORMS AND SPECIES	
PRINCIPAL ENGINEER, CONST. KENNETH M. BROWN, P.E.	REVISED: 05/2015	ENGINEERING SERVICES	STANDARD PLAN No.
	SUPERSEDES: 04/2012	CITY OF SPOKANE, WASHINGTON	V-102
	CHECKED BY: SJS		
	SCALE: N.T.S.		
	REVISED BY: M.E.P.		

STATE OF WASHINGTON
LICENSED
LANDSCAPE ARCHITECT
Leisa Rae Baker
1291
LICENSE NO.
EXPIRES ON 3/17/2026

LA - 2.1
LA - 2.1

REVISIONS				NAVD88 = ESTABLISHED FROM GPS					
				NAVD88 ELEV. 1843.87	0' 25' 50' 75'	BENCH MARK LOCATION: 5/8" REBAR WITH PLASTIC CAP PLS 48373 AT THE SOUTHEAST PROPERTY CORNER		BY	DATES
				CBM NO. :					
				NAVD88 DATUM	SCALE IN FEET	SCALE	HORIZONTAL SCALE (22 x 34)	DRAWN: JCL	6/10/2025
DATE	BY	PROJECT	DESCRIPTION				VERTICAL SCALE (22 x 34)	APPROVED: LB	6/10/2025

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19-342

PROJECT NAME: INLAND EMPIRE WAY
SEGMENT LIMITS: CITY OF SPOKANE DETAILS/NOTES
APN 25361.0001 & 25364.0001
PROJECT LIMITS: INLAND EMPIRE WAY
TYPE OF IMPROVEMENT: LANDSCAPE
PROJECT NO. 2023519

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Appendix A Wetland Data Forms

DATA FORM
ATYPICAL SITUATIONS

Applicant Name: Storhaug Engineering/Mr. William Nascimento. Date: 4/4/25

Project Name: South Inland Empire Way Improvements Location: DP1

A. VEGETATION:

1. Type of Alteration: Removed

2. Effect on the Vegetation: Removed

3. Previous Vegetation: Unknown, however based upon historical aerial images and similar topographical elevations and contours, vegetation could be similar to what was present at the data plot 3 location.

DATA POINT:

4. Hydrophytic Vegetation? YES____ NO___x___

B. HYDROLOGY:

1. Type of Alteration: Dredge/removal of approximately 3+ feet of top soil

2. Effect on the Hydrology: ground water 3+ feet below original grade

3. Previous Hydrology: Not present.

The United States Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation manual, Western Mountains, Valleys and Coast Region (Wetland Manual) identifies wetland hydrology indicators. Under normal circumstances, and prior to the removal of approximately 3+ feet of soil, wetland hydrology indicators would not be present. Based on topographical contours of the area prior to soil removal, the area was on a slope, and the water table was greater than 3 feet below the surface. According to the Wetland Manual, the water table or soil saturation is required within 12 inches or less of the surface; surface water would not be present on the sloped area; nor would any of the other wetland hydrology indicators be present on the sloped area as indicated by adjacent and/or undisturbed areas on similar elevation or contours. As such, wetland hydrology would not be present.

DATA POINT:

4. Wetland Hydrology? YES___ NO__x__

C. SOILS:

1. Type of Alteration: removal of 3+ feet of soil

2. Effect on the Soils: removed

3. Previous Soils: The previous soil was removed. Soils in the vicinity and at similar elevational contours was sampled and observed and did not meet the hydric soil requirements.

DATA POINT:

Depth	Depth	Munsell Matrix		Mottle	
Inches	Inches	Color	Mottle Color	Abundance	Texture
0-6		10YR 5/4			loam
6-24		10YR 4/4			Sandy/loam

4. Hydric Soils? YES_____ NO_x__

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Inland Empire Way Improvements City/County: Spokane Sampling Date: 4/4/25

Applicant/Owner: Storhaug Engineering/Mr. William Nascimento State: WA Sampling Point: DP2

Investigator(s): David Armes Section, Township, Range: S36 T25N R42E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 1-2%

Subregion (LRR): E Lat: 47.62314 Long: -117.43917 Datum: _____

Soil Map Unit Name: 1200- Endoaquolls and Fluvaquents, 0 to 3 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Cornus sericea	15	YES	FACW
2. Salix discolor	15	YES	FACW
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 144sf)			
1. Phalaris arundinacea	20	YES	FACW
2. Typha latifolia	50	YES	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	100% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-24	10Y2/1	100%					silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 12

Water Table Present? Yes ✓ No _____ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Inland Empire Way Improvements City/County: Spokane Sampling Date: 4/4/25

Applicant/Owner: Storhaug Engineering/Mr. William Nascimento State: WA Sampling Point: DP3

Investigator(s): David Armes Section, Township, Range: S36 T25N R42E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 1-2%

Subregion (LRR): E Lat: 47.6231 Long: -117.43903 Datum: _____

Soil Map Unit Name: 1200- Endoaquolls and Fluvaquents, 0 to 3 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Cornus sericea	15	YES	FACW
2. Rosa woodsii	70	YES	FACU
3.			
4.			
5.			
	85 = Total Cover		
Herb Stratum (Plot size: 144sf)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	90% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR4/3	100%					loam	
10-24	10YR4/2	95%					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Inland Empire Way Improvements City/County: Spokane Sampling Date: 4/4/25

Applicant/Owner: Storhaug Engineering/Mr. William Nascimento State: WA Sampling Point: DP4

Investigator(s): David Armes Section, Township, Range: S36 T25N R42E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 1-2%

Subregion (LRR): E Lat: 47.62323 Long: -117.43919 Datum: _____

Soil Map Unit Name: 1200- Endoaquolls and Fluvaquents, 0 to 3 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 144sf)			
1. Phalaris arundinacea	75%	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	75% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR4/3	100%					loam	
10-24	10YR4/2	95%					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B Wetland Rating Form

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): South Inland Empire Way Improvements Date of site visit: 4/4/2025

Rated by Armes Trained by Ecology? ☑ Yes ☐ No Date of training 2012

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☑ Yes ☐ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map Google Earth; Spokane County Scout Map

OVERALL WETLAND CATEGORY III (based on functions ☑ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 22 - 27
_____ **Category II** - Total score = 19 - 21
X **Category III** - Total score = 16 - 18
_____ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		List appropriate rating (H, M, L)		
Site Potential	M	M	M	
Landscape Potential	H	M	M	
Value	H	L	L	**Total**
Score Based on Ratings	8	5	5	**18**

Score for each function based on three ratings (*order of ratings is not important*)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Vernal Pools	
Alkali	
Wetland of High Conservation Value	
Bog and Calcareous Fens	
Old Growth or Mature Forest - slow growing	
Aspen Forest	
Old Growth or Mature Forest - fast growing	
Floodplain forest	
None of the above	**X**

Maps and Figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	Wetland Report
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	Wetland Report
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	Wetland Report
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	Wetland Report
Map of the contributing basin	D 5.3	Wetland Report
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	Wetland Report
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	Wetland Report
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	Wetland Report

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	R 2.4	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream (*can be added to another figure*)	R 4.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above*)	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

HGM Classification of Wetland in Eastern Washington

For questions 1 - 4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size

☐ At least 30% of the open water area is deeper than 10 ft (3 m)

☑ NO - go to 2 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit meet all of the following criteria?

☐ The wetland is on a slope (*slope can be very gradual*),

☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;

☐ The water leaves the wetland **without being impounded**.

☐ NO - go to 3 ☑ **YES** - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;

☐ The overbank flooding occurs at least once every 10 years.

☑ NO - go to 4 ☐ **YES** - The wetland class is **Riverine**

NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO - go to 5 ☑ **YES** - The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1 - 4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

NOTES and FIELD OBSERVATIONS:

DEPRESSIONAL WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

	Points (only 1 score per box)
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland:	
Wetland has no surface water outlet — points = 5	
☑ Wetland has an intermittently flowing outlet — points = 3	3
☐ Wetland has a highly constricted permanently flowing outlet — points = 3	
Wetland has a permanently flowing, unconstricted, surface outlet — points = 1	
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions of soils*) Yes = 3 No = 0	0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes)	
Wetland has persistent, ungrazed, vegetation for > $^2/_3$ of area — points = 5	
Wetland has persistent, ungrazed, vegetation from $^1/_3$ to $^2/_3$ of area — points = 3	5
Wetland has persistent, ungrazed vegetation from $^1/_{10}$ to < $^1/_3$ of area — points = 1	
Wetland has persistent, ungrazed vegetation < $^1/_{10}$ of area — points = 0	
D 1.4. Characteristics of seasonal ponding or inundation:	
This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.	
Area seasonally ponded is > ½ total area of wetland — points = 3	1
Area seasonally ponded is ¼ - ½ total area of wetland — points = 1	
Area seasonally ponded is < ¼ total area of wetland — points = 0	
Total for D 1 — Add the points in the boxes above	**9**

Rating of Site Potential If score is: ☐ **12 - 16 = H** ☑ **6 - 11 = M** ☐ **0 - 5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1 - D 2.3?	1
Source Yes = 1 No = 0	
Total for D 2 — Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: ☑ **3 or 4 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2.Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list, eutrophic lakes, problems with nuisance and toxic algae]? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the drainage or basin in which the wetland is found*)? Yes = 2 No = 0	2
Total for D 3 — Add the points in the boxes above	**4**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

DEPRESSIONAL WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion

Points (only 1 score per box)

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:

- Wetland has no surface water outlet — points = 8
- ☐ Wetland has an intermittently flowing outlet — points = 4
- ☐ Wetland has a highly constricted permanently flowing outlet — points = 4
- Wetland has a permanently flowing unconstricted surface outlet — points = 0

(*If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing"*)

4

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).*

- Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding — points = 8
- Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent ponding — points = 6
- ☐ The wetland is a headwater wetland — points = 4
- ☐ Seasonal ponding: 1 ft - < 2 ft — points = 4
- Seasonal ponding: 6 in - < 1 ft — points = 2
- Seasonal ponding: < 6 in or wetland has only saturated soils — points = 0

6

Total for D 4 — Add the points in the boxes above: **10**

Rating of Site Potential If score is: ☐ **12 - 16 = H** ☑ **6 - 11 = M** ☐ **0 - 5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is > 10% of the area within 150 ft of the wetland in land uses that generates runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses ? Yes = 1 No = 0	0
Total for D 5 — Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ☐ **3 = H** ☑ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The wetland is in a landscape that has flooding problems.

Choose the description that best matches conditions around the wetland being rated. *Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds), AND

- Flooding occurs in sub-basin that is immediately down-gradient of wetland — points = 2
- Surface flooding problems are in a sub-basin farther down-gradient — points = 1

☐ The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. — points = 0

Explain why

☑ There are no problems with flooding downstream of the wetland — points = 0

0

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 — Add the points in the boxes above	**0**

Rating of Value If score is: ☐ **2 - 4 = H** ☐ **1 = M** ☑ **0 = L** *Record the rating on the first page*

These questions apply to wetlands of all HGM classes. (only 1 score per box)

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the wetland have the potential to provide habitat for many species?

H 1.1. Structure of plant community:

Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is > = ¼ ac or > = 10% of the wetland if wetland is < 2.5 ac.

- ☑ Aquatic bed
- ☐ Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have > 30% cover
- ☑ Emergent plants > 12 - 40 in (> 30-100 cm) high are the highest layer with >30% cover
- ☑ Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover
- ☐ Scrub-shrub (areas where shrubs have > 30% cover)
- ☐ Forested (areas where trees have > 30% cover)

4 or more checks: points = 3
3 checks: points = 2
2 checks: points - 1
1 check: points = 0

2

H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0 — 1

H 1.3. Surface water

H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? *Answer YES for Lake Fringe wetlands.*

☑ Yes = 3 points & go to H 1.4 No = go to H 1.3.2 — 3

H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No.*

☐ Yes = 3 No = 0

H 1.4. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)*

# of species 5

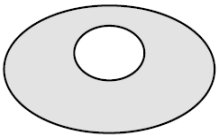
Scoring: > 9 species: points = 2
4 - 9 species: points = 1
< 4 species: points = 0

1

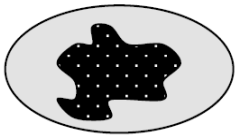
H 1.4. Interspersion of habitats

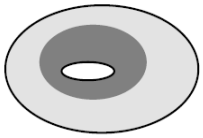
Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*

None = 0 points



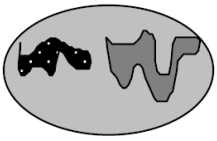
Low = 1 point

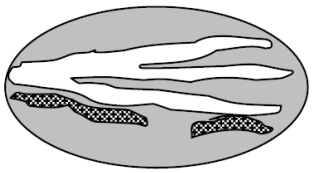




Moderate = 2 points

All three diagrams in this row are **HIGH** = 3 points





Riparian braided channels with 2 classes

1

H 1.6. Special habitat features:	
Check the habitat features that are present in the wetland. The number of checks is the number of points. ☐ Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ☑ Cattails or bulrushes are present within the wetland. ☐ Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge ☐ Emergent or shrub vegetation in areas that are permanently inundated/ponded. ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity ☐ Invasive species cover less than 20% in each stratum of vegetation (*canopy, sub-canopy, shrubs, herbaceous, moss/ground cover*)	1
Total for H 1 — Add the points in the boxes above	**9**

Rating of Site Potential If Score is: ☐ **15 - 18 = H** ☑ **7 - 14 = M** ☐ **0 - 6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1 Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* 0 % undisturbed habitat + (50 % moderate & low intensity land uses / 2) = 25% > 1/3 (33.3%) of 1 km Polygon — points = 3 20 - 33% of 1 km Polygon — points = 2 10 - 19% of 1 km Polygon — points = 1 < 10 % of 1 km Polygon — points = 0	2
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat + (60 % moderate & low intensity land uses / 2) = Undisturbed habitat > 50% of Polygon — points = 3 Undisturbed habitat 10 - 50% and in 1 - 3 patches — points = 2 Undisturbed habitat 10 - 50% and > 3 patches — points = 1 Undisturbed habitat < 10% of 1 km Polygon — points = 0	1
H 2.3 Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use — points = (-2) Does not meet criterion above — points = 0	0
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* Yes = 3 No = 0	0
Total for H 2 — Add the points in the boxes above	**3**

Rating of Landscape Potential If Score is: ☐ **4 - 9 = H** ☑ **1 - 3 = M** ☐ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated*. Site meets ANY of the following criteria: — points = 2 ☐ It has 3 or more priority habitats within 100 m (see Appendix B) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) ☐ It is mapped as a location for an individual WDFW species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats within 100 m (see Appendix B) — points = 1 Site does not meet any of the criteria above — points = 0	0

Rating of Value If Score is: ☐ **2 = H** ☐ **1 = M** ☑ **0 = L** *Record the rating on the first page*

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type	Category
Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.	
SC 1.0. Vernal Pools Is the wetland **less than 4000 ft²**, and does it meet at least **two** of the following criteria? ☐ Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. ☐ Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.* ☐ The soil in the wetland is shallow [< 1 ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay. ☐ Surface water is present for less than 120 days during the wet season. ☐ Yes - Go to **SC 1.1** ☐ No = **Not vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? ☐ Yes – Go to **SC 1.2** ☐ No = **Not a vernal pool with special characteristics**	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? ☐ Yes = **Category II** ☐ No = **Category III**	
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? ☐ The wetland has a conductivity > 3.0 mS/cm. ☐ The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as “alkali” species (see Table 4 for list of plants found in alkali systems). ☐ If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? ☐ Salt encrustations around more than 75% of the edge of the wetland ☐ More than ¾ of the plant cover consists of species listed on Table 4 ☐ A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. ☐ Yes = **Category I** ☐ No = **Not an alkali wetland**	
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 3.2** ☐No - Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 3.4** ☐ No = **Not WHCV** SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not WHCV**	

SC 4.0. Bogs and Calcareous Fens

Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? Use the key below to identify if the wetland is a bog or calcareous fen. ***If you answer yes you will still need to rate the wetland based on its functions.***

SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils.*

☐ Yes - Go to **SC 4.3** ☐ No - Go to **SC 4.2**

SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?

☐ Yes - Go to **SC 4.3** ☐ No = **Is not a bog for rating**

SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5?

☐ Yes = **Category I bog** ☐ No - Go to **SC 4.4**

NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog.

SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy?

☐ Yes = **Category I bog** ☐ No - Go to **SC 4.5**

SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks?

☐ Yes = **Is a Calcareous Fen for purpose of rating** ☐ No - Go to **SC 4.6**

SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met:

☐ Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems

☐ The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland

☐ Yes = **Is a Category I calcareous fen** ☐ No = **Is not a calcareous fen**

SC 5.0. Forested Wetlands

Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H*

☐ The wetland is within the 100 year floodplain of a river or stream

☐ Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species

☐ There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW (*see definitions in question H3.1*)

☐ Yes - Go to **SC 5.1** ☐ No = **Not a forested wetland with special characteristics**

SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)?

☐ Yes = **Category I** ☐ No - Go to **SC 5.2**

SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species?

☐ Yes = **Category I** ☐ No - Go to **SC 5.3**

SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)?

☐ Yes = **Category II** ☐ No - Go to **SC 5.4**

SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream?

☐ Yes = **Category II** ☐ No = **Not a forested wetland with special characteristics**

Category of wetland based on Special Characteristics

Choose the highest rating if wetland falls into several categories

If you answered No for all types, enter "Not Applicable" on Summary Form

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.
http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here:
http://wdfw.wa.gov/conservation/phs/list/

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE**: This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Old-growth/Mature forests**: Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- ☐ **Shrub-steppe**: A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).
- ☐ **Eastside Steppe**: Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).
- ☐ **Juniper Savannah**: All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

EXHIBIT C-1

Whipple Consulting Engineers

Spokane, WA

TRAFFIC IMPACT ANALYSIS
FOR

Latah Glen Residential
Community

Spokane, Washington
Updated April, 2022
2020-2564

21 South Pines Rd. • Spokane Valley, WA 99206
Phone 509-893-2617 • Fax 509-926-0227

TRAFFIC IMPACT ANALYSIS

Latah Glen Residential Community

Spokane, Washington

Updated
March 24, 2022

W.O. No. 2020-2564

Prepared by:

Whipple Consulting Engineers, Inc.
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(509) 893-2617

This report has been prepared by Kyung Min Kim, P.E.(ID) and the staff of Whipple Consulting Engineers, Inc. under the direction of the undersigned professional engineer whose seal and signature appears hereon.

Todd R. Whipple, P.E.

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EXECUTIVE SUMMARY

Supplemental to the SEPA Process for the proposed Latah Glen Residential Community development within the City of Spokane, the following Traffic Impact Analysis applies:

1. The City of Spokane and Washington Department of Transportation (WSDOT) have established Level of Service D as the minimum acceptable level for signalized intersections and Level of Service E for unsignalized intersections.

2. The project proposes to develop 157 space manufactured home residential development on approximately 42.03 ± acres.

3. The project site has been used for multiple land uses over the years. The most recent was an auto wrecker business. The remainder of the property is undeveloped area with trees, field grass and weeds. The project site is proposed upon portions of two parcels. The project proposes to build five (5) new north-south private roads and two (2) new east-west private roads, for a total of 7 new private roads. The projects main access is proposed at the east end of the project with a connection to Inland Empire Way, and its connection to SR 195. The project also proposes a Fire Access to Marshall Road. The access is proposed to be gated per local fire requirements, thus reducing the potential for cut through traffic on private roads. Please see Figure 2 preliminary site plan.

4. The project site is currently listed on the city land use map and zoned as Residential Single Family (RSF). The subject property is located on a portion of E ½ of Section 36, T 24 N., R 42 E., W.M within the City of Spokane, Washington. The parcel numbers for the project are 25364.0001, and 25361.0004. The surrounding area is residential, commercial and rural land uses.

5. The project study area intersections were identified through conversations with the City of Spokane and WSDOT. The study also includes the level of service analysis of the AM and PM peak hours of the following intersections:

    - SR 195 & 16th Avenue
    - SR 195 & Thorpe Avenue
    - SR 195 & Inland Empire Way
    - Cheney-Spokane Road & SR 195 NB on/off Ramps
    - Cheney-Spokane Road & SR 195 SB on/off Ramps
    - SR 195 & Meadowlane Drive
    - SR 195 & Hatch Road
    - The scope also included an additional analysis of highway segment and queue length at the I-90/SR 195 EB Ramp, as well as the right turn lane warrant at the intersection of Inland Empire Way & SR 195.

6. The proposed land use is anticipated to generate 36 new trips in the AM peak hour with 10 new trips entering the site and 26 new trips exiting the site. In the PM peak hour, the proposed development is anticipated to generate 66 new trips with 42 new trips entering the site and 24 new trips exiting the site. The proposed land use is anticipated to generate

785 average daily trips to/from the project site.

7. **Conclusions**
   This Traffic Impact Analysis (TIA) has reviewed and analyzed the study area per the scope established by the City of Spokane and WSDOT. Based upon the analysis, field observations, assumptions, methodologies and results which are provided in the body of this report, it is concluded that the development of the proposed project will generate new trips on the existing transportation system and that those trips will have an impact on the transportation system. This conclusion was reached and has been documented within the body of this report.

   - Under the **existing** conditions, all intersections are currently operating at an acceptable level of service.
   - For the **year 2026 with background growth rate** scenario, all intersections are anticipated to continue to operate at an acceptable level of service except the intersections of SR 195 & 16th Avenue and SR 195 & Hatch Road. With the mitigation provided by the Spangle-Wheatland project at SR 195 & 16th Avenue (Right Out only on eastbound approach) and the reconfiguration on westbound approach to a right out only with the proposed J-turn at SR 195 & Meadowlane Road, all intersections are anticipated to operate at an acceptable level of service.
   - For the **year 2026 with background growth rate plus background projects and without this project** scenario, with the mitigation provided by the Spangle-Wheatland project (Right Out only on eastbound approach) at SR 195 & 16th Avenue, the reconfiguration on westbound approach to a right out only at SR 195 & Hatch Road, and a new access on Eagle Ridge Boulevard with a ½ J turn at SR 195 & Meadowlane Road, all intersections are anticipated to continue to operate at an acceptable level of service.
   - For the **year 2026 with background growth rate plus background projects and with this project** scenario, with the mitigation provided by the Spangle-Wheatland project (Right Out only on eastbound approach) at SR 195 & 16th Avenue, the reconfiguration on westbound approach to a right out only at SR 195 & Hatch Road, and a new access on Eagle Ridge Boulevard with a ½ J turn at SR 195 & Meadowlane Road, all intersections are anticipated to continue to operate at an acceptable level of service. (Please see Wheatland Estates Proposed Traffic/Transportation Conditions of Approval letter in Background Project section of Appendix).

8. As shown in the Additional Analysis - Right Turn Lane Warrant Analysis section, it is concluded that the intersection of Inland Empire Way & SR 195 meets the WSDOT right turn lane warrant. However, the intersection level of service remains at an acceptable level through the buildout period. Additionally, there is also a sight distance concern associated with a dedicated right turn lane, as a vehicle within the turn lane blocks the view of oncoming traffic. We propose additional consultation with the WSDOT that this be reevaluated after the 100th home site has received an occupancy permit.

9. As shown in the additional analysis section – SR 195 Corridor Improvement Projects, it was concluded that with the EB Turn Restrictions at 16th Avenue, Flashing Beacon and Sign at Thorpe Road Exit, and Connection to Inland Empire Way at Cheney-Spokane Road Ramp projects (by other projects, yet to be approved but in the pipeline) that a significant number of trips would be redirected away from the NB US 195 to EB I-90 ramp, and that the net result would be no additional trips to the I-90 Ramps.

10. As shown in the additional analysis Highway Segment LOS and Queue Analysis section, based upon the analysis provided it is concluded that the addition of the 13 AM and the 5 PM project trips will have an impact upon the SR 195 & 1-90 Interchange, by adding 4 vehicles with a calculated 107 ft addition at queue for AM and 1 vehicle with a calculated 6 ft addition at queue for PM with SR 195 Corridor Improvement Projects.

11. As shown in the additional analysis, based upon the LOS Analysis on the intersection of 23rd Avenue & Inland Empire Way, it is concluded that the addition of the project trips will have a minimal impact upon the intersection of 23rd Avenue (Thorpe Road) & Inland Empire Way, by increasing 0.1 seconds in delay for AM and 0.2 seconds in delay for PM.

12. As shown in the additional analysis, based upon the Queue Analysis on the intersection of 16th Avenue & SR 195, it is concluded that the diverted trips will have a minimal impact upon the northbound left-turn lane at the intersection of 16th Avenue and SR 195, by adding 1 vehicle (2 ft) in queue for AM and 1 vehicle (5 ft) in queue for PM.

13. ***Recommendations***

    It is recommended that the project be conditioned to participate in the Corridor Improvement projects as described within this document. The proposed conditions are as follows.

    A. *Vehicular traffic from this project is expected to add 13 AM trips and 5 PM trips to the NB US 195 to EB I-90 ramp. WSDOT has commented that no additional peak hour trips may be added to the ramp due to safety concerns. Latah Glen is therefore required to contribute funds to complete an improvement to the US 195 corridor that will reduce the impact of its traffic on NB US 195 to EB I-90 ramp ("Mitigation Project"). Latah Glen may receive plan approval after a financial commitment is in place (secured by a letter of credit or bond), which has been approved by the City, providing for the funding of the design and the construction for the Mitigation Project(s), which shall be under contract for construction within one year from issuance of the plan approval. The details of the mitigation project(s) will be agreed upon by the developers, City and WSDOT. The applicant's contributions to funding the design and construction of the mitigation project(s) will qualify for a credit against transportation impact fees per SMC 17D.075.070*
    B. *Latah Glenn may receive plan approval once a financial commitment is in place (secured by a letter of credit or bond), which has been approved by the City, providing for a.) the construction of the 16th Avenue improvements with SR 195, and b.) Cheney-Spokane Road Ramp – Connection to Inland Empire Way Improvement.*

This commitment may be defined as an agreement between several developers to fund and construct the 16th Avenue, and the Cheney-Spokane Road Ramp – Connection to Inland Empire Way Improvement projects within a specified time frame, not to exceed six years, as agreed upon by city staff and WSDOT. The applicant's contributions to funding the design and construction of the Improvement projects will qualify for a credit against transportation impact fees per SMC 17D.075.070.

i. *The 16th Avenue and SR 195, improvement project will consist of the following:*
   - *Install a raised curb island*
   - *Channelize the turn lane*
   - *Add a southbound acceleration lane.*

ii. *The Cheney-Spokane Road Ramp – Connection to Inland Empire Way Improvement project will consist of the following:*
   - *Extend the northbound ramp to Inland Empire Way,*
   - *One or Two-way connection to Inland Empire Way,*
   - *Install ramp with acceleration lane*
   - *Install ramp meter signal*
   - *Relocate existing sign bridge*

iii. *Latah Glen Financial Commitment*
*The financial commitment for Latah Glen development based upon the rate of participation is as follows for the Cheney-Spokane Road Ramp improvement with 157 PM peak hour trips at $1,910.64 per PM peak hour trip. The participation percentage is anticipated to total $299,970.48(157 trips * $1,910.64). In summary the total financial commitment due is $299,970.48 or greater depending upon final cost, less a 25% contribution to the construction of improvements at 16th and SR-195 as proposed in the Spangle-Wheatland Estate mitigation proposal.*

iv. *The applicant's contributions to funding the design and construction of the Improvement projects will qualify for a credit against transportation impact fees per SMC 17D.075.070.*

v. *It should be noted that the Latah Glen Community commitment to this improvement has been set tentatively at $299,970.48 this commitment along with the value of $776,630.48 from Marshall Creek would result in a beginning commitment of $1,076,600± to the Inland Empire Way access, Phase 1. It is understood that this is an approximated commitment may increase due to actual construction costs for the improvements proposed.*

vi. *Lastly, the current impact fee credit of $1160.64 would occur at time of building permit which results in an effective developer contribution of $750/unit ($1910.64-$1160.64).*

14. Based upon the conclusions within this study, the proposed project is recommended to complete all required conditions of approval and should be allowed to move forward without further traffic analysis, or offsite mitigation.

INTRODUCTION

Introduction, Purpose of Report and Study Area

This traffic impact analysis is required by the City of Spokane as part of the SEPA process for the proposed Latah Glen Residential Community. The project proposes to develop 157 spaces for manufactured homes residential development on approximately 42.03 ± acres. Please see Figure 1 Vicinity Map and Figure 2 Preliminary Site Plan.

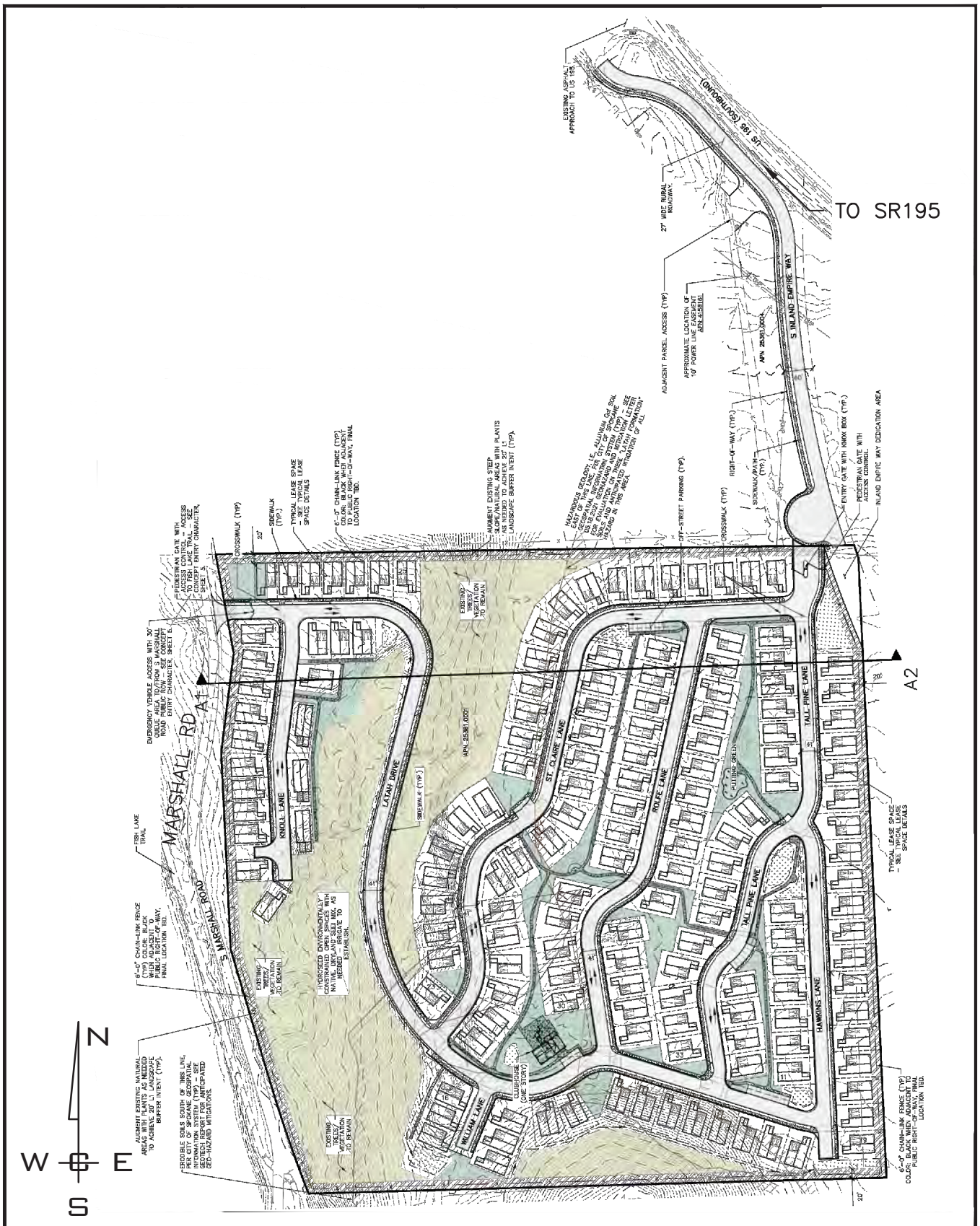
The purpose of this analysis is to review, assess, and identify the potential traffic related impacts that the proposed project may have on the transportation network and where possible minimize and/or mitigate any impact. This TIA will be completed in accordance with the current traffic guidelines from the City of Spokane and the Institute of Transportation Engineers (A Recommended Practice – Traffic Access and Impact Studies for Site Development, 2010) as well as their respective requirements.

Site Location and Development Description

The subject property is located on a portion of the E ½ of Section 36, T 24 N., R 42 E., W.M. within the City of Spokane, Washington. The project proposes to develop 157 spaces for manufactured homes residential development on approximately 42.03 ± acres. The project site has been used for multiple land uses over the years. The most recent was an auto wrecker/ auto repair business within the 2,000 sf +/- (2.0 ksf) shop onsite. The remainder of the property is undeveloped area with trees, field grass and weeds.

The project site is proposed upon portions of two parcels. The project proposes to build six (6) new north-south private roads and three (3) new east-west private roads, for a total of 9 new private roads. The projects main access is proposed at the east end of the project with a connection to Inland Empire Way, and its connection to SR 195. The project also proposes a Fire Access to Marshall Road. The access is proposed to be gated per local fire requirements, thus reducing the potential for cut through traffic on private roads. Please see Figure 2 preliminary site plan.

PROJ #: 20-2564 DATE: 03/17/22 DRAWN: KMK APPROVED: TRW	TRAFFIC IMPACT ANALYSIS **LATAH GLEN RESIDENTIAL** 3504 S INLAND EMPIRE WAY SPOKANE, WASHINGTON	WCE WHIPPLE CONSULTING ENGINEERS CIVIL AND TRANSPORTATION ENGINEERING 21 SOUTH PINES ROAD SPOKANE VALLEY, WASHINGTON 99206 PH: 509-893-2617 FAX: 509-926-0227
FIGURE 1	VICINITY MAP	



NOT TO SCALE

DRAWN BY STORHAUG ENGINEERING

PROJ #: 20-2564
DATE: 03/17/22
DRAWN: KMK
APPROVED: TRW

TRAFFIC IMPACT ANALYSIS
LATAH GLEN RESIDENTIAL
3504 S INLAND EMPIRE WAY
SPOKANE, WASHINGTON

FIGURE 2

PRELIMINARY SITE PLAN

WCE
WHIPPLE CONSULTING ENGINEERS
CIVIL AND TRANSPORTATION ENGINEERING
21 SOUTH PINES ROAD
SPOKANE VALLEY, WASHINGTON 99206
PH: 509-893-2617 FAX: 509-926-0227

Existing and Proposed Conditions within the Study Area

Land Use & Zoning

The project site is currently listed on the City land use map and zoned as Residential Single Family (RSF). The subject property is located on a portion of the E ½ of Section 36, T 24 N., R 42 E., W.M within the City of Spokane, Washington. The parcel numbers for the project are 25364.0001, and 25361.0004. The surrounding area is residential, commercial and rural land uses.

Existing Roadways

The overall transportation network in this area consists of a State Route, arterials, and local access roads. The project is proposed to be accessed via Inland Empire Way. The proposed project trips are anticipated to use the following roadways:

Marshall Road is generally a two-way, 2-lane north/south, local access road. Marshall Road extends northwest from Cheney-Spokane Road and crosses over the railroad track before turning sharply northeast and passing under Fish Lake Trail. Marshall Road continues through 44th Avenue and along the west side of the project site before terminating at Thorpe Road. Marshall Road primarily serves large lot residential uses. The speed limit on Marshall Road within the study area is 25 MPH.

Inland Empire Way is generally a two-way, 2-lane north/south, local access road that extends west from SR 195 and turns sharply south along the railroad track along the east side of the project area before terminating at Victoria Lane. Inland Empire Way primarily serves rural land use. The speed limit on Inland Empire Way within the study area is 25 MPH.

State Route 195 is generally a north/south, two-way, 4-lane highway. State Route 195 extends south from Interstate 90 at Exit 279 and goes through 16th Avenue, Thorpe Road and the Cities of Spangle, Freedom, Plaza, Rosalia, Thornton, Cashup, Steptoe, Colfax, Pullman, Johnson, Colton, and Uniontown before merging with State Route 95.

Study Area Intersections (TIA Scope)

The project study area intersections were identified through public traffic scoping meeting on September 23rd, 2020 and finalized in conversations with the City of Spokane and WSDOT. The study encompasses the AM and PM peak hour analysis of the following intersections:

- SR 195 & 16th Avenue
- SR 195 & Thorpe Avenue
- SR 195 & Inland Empire Way
- Cheney-Spokane Road & SR 195 NB on/off Ramps
- Cheney-Spokane Road & SR 195 SB on/off Ramps
- SR 195 & Meadowlane Drive
- SR 195 & Hatch Road

The scope also included an additional analysis of highway segment and Queue length at the I-90/SR195 EB Ramp, as well as the Right turn lane Warrant at the intersection of Inland Empire Way & SR 195

Traffic Control and Descriptions

SR 195 & 16th Avenue is an unsignalized 4-leg two-way-stop-controlled intersection with stop control on the east and westbound approaches with the following lane configuration: the east and westbound approaches have one receiving lane and one left-through-right lane. The north and southbound approaches have two receiving lanes, a left turn lane, a through lane, and a through-right lane. With the separated highway there is space for 1 vehicle within the median

SR 195 & Thorpe Road (J-Turns) The J-turn design redirects left turns away from the central intersection and reduces conflicts. The central intersection is an unsignalized 4-leg two-way-stop-controlled intersection with stop control on the east and westbound approaches with the following lane configuration: the east and westbound approaches have one receiving lane and a right turn lane. The westbound right turn lane is channelized into an acceleration lane. The northbound approach has two receiving lanes, two through lanes, and a right turn pocket. The southbound approach has one acceleration lane, two receiving lanes, two through lanes, and a right turn lane.

SR 195 & Inland Empire Way is an unsignalized stop-controlled intersection with stop control on the eastbound approach of Inland Empire Way, with the following lane configuration: the eastbound approach has one receiving lane and one right turn lane. The northbound approach has two receiving lanes and two through lanes. The southbound approach has two receiving lanes, a through lane, and a through-right lane with a right turn taper.

Cheney-Spokane Road & SR 195 NB on/off Ramps is an unsignalized two-way-stop-controlled intersection with stop control on the north and southbound approaches, with the following lane configuration: the eastbound approach has one receiving lane and one left turn lane. The northbound approach has no receiving lane and one left-through lane. The southbound approach has one receiving lane and a right turn lane.

Cheney-Spokane Road & SR 195 SB on/off Ramps (1) is an unsignalized -stop-controlled intersection with stop control on the southbound on/off one-way ramps with the following lane configuration: the eastbound approach has one receiving lane and a through-right lane. The westbound approach has one receiving lane and a left-through lane. The northbound approach has one receiving lane. The southbound approach has one left-through-right lane.

Cheney-Spokane Road & SR 195 SB off Ramp (2) is an unsignalized -stop-controlled intersection with stop control on the westbound approach with the following lane configuration: The westbound approach has one receiving lane and a left turn lane that stops for the southbound lane. The northbound approach has one receiving lane and a channelized right turn lane. The southbound approach has one through lane.

SR 195 & Meadow Lane Road is an unsignalized two-way-stop-controlled intersection with stop control on the east and westbound approaches with the following lane configuration: the east and westbound approaches have one receiving lane and a left-through-right lane. The northbound approach has two receiving lanes, a left turn lane, a through lane, and a through-right lane. The southbound approach has two receiving lanes, a left turn lane, two through lanes and a right turn lane.

SR 195 & Hatch Road is an unsignalized one-way-stop-controlled intersection with stop control on the westbound approach with the following lane configuration: the westbound approach has one receiving lane and a left -right turn lane. The northbound approach has two receiving lanes, one through lane, and a through-right lane. The southbound approach has two receiving lanes, a left turn lane, and two through lanes.

Traffic Safety

For the intersections within the study area accident report summaries were received from the City of Spokane and WSDOT. Generally, accidents are documented by type of occurrence, such as property damage or injury. No fatalities were reported for the study intersections during the last three years.

ITE MEV Method

$$Rate\ per\ MEV = \frac{number\ of\ accidents\ in\ three\ years\ X\ 1\ million}{PM\ Peak\ hour\ volume\ X\ PM\ Peak\ Factor\ \ X\ 365\ X\ 3\ years}$$

Equation 4-2 of ITE manual of traffic engineering studies (fourth edition) (modified given the available data, for 3 years and utilizes PM peak hour volumes ~ 10% of ADT)

In this analysis accidents are measured based on frequency per million entering vehicles (MEV). This ratio is a function of the average daily traffic entering the intersection and the annual frequency of accidents. This method of analysis is also considered as an "exposure" analysis. This method of analysis is used to identify areas that need further review. A typical review threshold for accidents at an intersection is 1.00 accidents per MEV. The accident data for the intersections within the study area are shown in Table 1.

Table 1 – Accident Data for Intersections within the Study Area

ACCIDENT DATA										
Intersection	2017		2018		2019		2020		INTX	Per MEV
	PDO	INJ	PDO	INJ	PDO	INJ	PDO	INJ	ADT	
SR 195 & 16th Ave	4	3	2	0	2	2			23,100	0.514
SR 195 & Thorpe Ave(Before J-turn)*	7	2	3	5	0	2			24,150	0.761
SR 195 & Thorpe Ave(After J-turn)*							3	0	24,150	0.292
SR 195 & Inland Empire Way	1	1	0	0	0	1			14,190	0.193
Ch-Sp Rd & SR 195 NB Ramps	0	0	0	0	0	0			4,860	0
Ch-Sp Rd & SR 195 SB Ramps	0	1	0	0	0	0			11,430	0.080
SR 195 & Meadowlane Rd	0	4	3	0	1	3			17,040	0.590
SR 195 & Hatch Rd	1	3	2	1	1	1			14,730	0.558

***Per the WSDOT request, the crash analysis includes the year 2020 to reflect the recent J-turn improvement project (Before J-turn – Jan 2017 ~ Oct 2019, After J-turn – Nov 2019 ~ Dec 2020).**

As shown in the table above, all intersections within the study area do not meet or exceed the threshold for further review.

WSDOT HSM Method

The existing traffic safety assessment at the scoped intersections on State Route 195 were estimated using the methods from the *Safety Analysis Guide* published by WSDOT as implemented in HSM spreadsheet tool, version 9.0 placed at http://safetyperformance.org/tools/.

The term crash frequency refers to the number of crashes per year. Crash frequency is used to describe:

- **Observed (Table 1)** average crash frequency: the historic average of the number of crashes per year. When the HSM predictive method is used with crash history, the expected average crash frequency replaces the observed average crash frequency as a more reliable value of actual average historic performance.

- **Predicted (Based upon; Geometry & Traffic Volume)** average crash frequency is an output from the HSM predictive analysis using only geometry and existing traffic volumes. It is the average safety performance of similar intersections in crashes per year. The predicted analysis provides a base level for the intersection.

- **Expected (Based upon; Geometry, Traffic Volume & Observed Crash Data)** average crash frequency using geometry, existing traffic volumes and reported crash data. This analysis is considered a more reliable metric of existing or actual average crash performance, measured in crashes per year. This analysis uses the predicted average crash frequency, and the observed crash history as input to the empirical Bayes method in the HSM predictive methods. Results from the empirical Bayes method is calculated by weighting the observed crash history against the predicted number of crashes per year. Note that the analysis result values are averages, and should not be interpreted as point values. Values are also rounded to one decimal place.

- **Potential for Improvement (Difference between Predicted & Expected Crash Frequencies)** average crash frequency is strictly a difference between the Predicted and Expected crash frequencies to identify and determine what locations have the highest potential for improvement and the reduction of fatal and serious injury crashes, and return the greatest benefit for the cost of a safety project.

The results of the predictive analysis within the study area are shown in Table 2. The worksheets for the analysis are included in Appendix.

Table 2 - Accident Analysis for Intersections on SR 195 (Existing Volumes)

ACCIDENT ANALYSIS				
Intersection		Crash Frequency (crashes/yr)		
		Predicted (Geometry/Volume)	Expected (Geometry/Volume/ Accident history)	Potential for Improvement (Difference)
SR 195 & 16th Avenue	FT & INJ	0.7	1.3	0.6
	PDO	1.0	1.9	0.9
	Total	1.8	3.3	1.5
SR 195 & Thorpe Avenue	FT & INJ	0.7	2.0	1.2
	PDO	1.0	2.8	1.8
	Total	1.8	4.8	3.0
SR 195 & Inland Empire Way	FT & INJ	0.2	0.3	0.1
	PDO	0.1	0.2	0.1
	Total	0.3	0.5	0.2
Cheney-Spokane Road & SR 195 NB on/off Ramps	FT & INJ	0.2	0.1	0
	PDO	0.2	0.2	0
	Total	0.4	0.3	0
Cheney-Spokane Road & SR 195 SB on/off Ramps	FT & INJ	0.6	0.3	0
	PDO	1.0	0.6	0
	Total	1.6	0.9	0
SR 195 & Meadowlane Drive	FT & INJ	1.0	1.3	0.4
	PDO	1.5	2.0	0.6
	Total	2.4	3.4	0.9
SR 195 & Hatch Road	FT & INJ	0.6	1.0	0.4
	PDO	1.1	1.8	0.8
	Total	1.6	2.8	1.2

FT & INJ = Fatal and Injury, PDO = Property Damage Only

As shown on Table 2, based upon the HSM analysis, it is anticipated that the intersections of State Route 195 & 16th Avenue, State Route 195 & Thorpe Avenue, State Route 195 & Meadowlane Drive, and State Route 195 & Hatch Road in the study area may experience more crashes than intersections with similar roadway characteristics and traffic volumes. It is anticipated that the intersections of State Route 195 & Inland Empire Way and Cheney-Spokane Road & State Route 195 NB on/off Ramps will have a safety performance similar to other intersections that have the same roadway characteristics and traffic volumes. It is also anticipated that the intersection of Cheney-Spokane Road & State Route 195 SB on/off Ramps will experience fewer crashes than intersections with similar roadway characteristics and traffic volumes.

Note: There is currently no warrant standard established, that requires that a safety project be implemented by this analysis.

Traffic Volumes and Peak Hours of Operation

Traffic counts were collected in 2018, 2019, 2020, & 2021 under the direction of Whipple Consulting Engineers (WCE) and Idax Data Solutions (IDAX)*, at the following intersection:

- SR 195 & 16th Avenue (August 2019)
- SR 195 & Thorpe Avenue (November 2018)
- SR 195 & Inland Empire Way (January 2021)
- Cheney-Spokane Road & SR 195 NB on/off Ramps (May 2019)
- Cheney-Spokane Road & SR 195 SB on/off Ramps (May 2019)
- SR 195 & Meadowlane Drive (November 2018)
- SR 195 & Hatch Road (February 2020 - IDAX) *

The AM & PM peak hours from these counts are shown on Figures 3 & 4. The raw data for these counts are located in the technical appendix.

Traffic Counts Adjustment Factor

For the effect of the Covid Pandemic, the study area is anticipated to have experienced a decrease in traffic volumes. This effect applies to the year 2021 traffic counts at the intersection of SR 195 & Inland Empire Way. It is the intention of this study to apply a Covid Pandemic Factor to the collected traffic volume, as allowed, to adjust them to the volumes experienced before the effect of the Covid Pandemic, which would be a "normal" baseline year. Based upon the traffic counts on the intersection of SR 195 & Thorpe Avenue before the effect of the Covid Pandemic, the adjustment factors for Covid Pandemic at the intersection of SR 195 & Inland Empire Way have been calculated. The methodology has been summarized below and the calculation and analysis are included in the Traffic Adjustment Calculation of the Appendix.

The method

1. The expected volume for the year 2021 is calculated by taking the southbound traffic volume on SR 195 from a recent pre pandemic count (2018) at the intersection of SR 195 & Thorpe Avenue and multiplying it by the background growth rate for year 2021 (1.03).
2. An adjustment ratio is then calculated by dividing the expected traffic volume on SR 195 of SR 195 & Thorpe Avenue by the actual traffic volume on SR 195 of SR 195 & Inland Empire Way.
3. The adjusted volumes are then calculated by multiplying the actual volume by the adjustment ratio.

LEVEL OF SERVICE

Level of Service (LOS) is an empirical premise developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles afforded to drivers who utilize the transportation network. It has been defined by the Transportation Research Board in the *Highway Capacity Manual 6th Edition*. This document has quantified level of service into a range from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion that may lead to system breakdown due to volumes that may exceed capacity.

Signalized Intersections

For signalized intersections, research has determined that average stopped delay per vehicle is the best available measure of Level of Service. The following tables identify the relationships between level of service and average stopped delay per vehicle. The City of Spokane and WSDOT have adopted level of service D as the minimum acceptable level for all signalized intersections.

Level of Service Criteria and Descriptions - Signalized

LOS	Delay Range (sec)	General Description
A	10	• Very low delay at intersection. • All signal cycles clear. • No vehicles wait through more than one signal cycle.
B	10 to 20	• Operating speeds beginning to be affected by other traffic. • Short traffic delays at intersections. • Higher average intersections delays resulting from more vehicles stopping.
C	20 to 35	• Operating speeds and maneuverability closely controlled by other traffic. • Higher delays at intersections than for LOS B due to a significant number of vehicles stopping. • Not all signal cycles clear the waiting vehicles.
D	35 to 55	• Tolerable operating speeds, but long traffic delays occur at intersections • The influence of congestion is noticeable. • Many vehicles stop and the proportion of vehicles not stopping declines. • The number of signal cycle failures, for which vehicles must wait through more than one signal cycle are noticeable.
E	55 to 80	• Speeds are restricted, very long traffic delays are experienced and traffic volumes are near capacity. • Traffic flow is unstable, any interruption, no matter how minor, will cause queues to form and service to deteriorate. • Traffic signal cycle failures are frequent occurrences.
F	80	• Extreme delays resulting in long queues which may interfere with other traffic movements • Stoppages of long duration and speeds may drop to zero. • Vehicle arrival rates are greater than capacity. • Considered unacceptable by most drivers.

Unsignalized Intersections

The calculation of Level of Service (LOS) at an unsignalized one/two-way stop-controlled intersection is examined in the Transportation Research Board's *Highway Capacity Manual 6th Edition*. For unsignalized intersections, Level of Service is based on the delay experienced by each movement and approach within the intersection. The concept of delay as presented for unsignalized intersections in the Highway Capacity Manual is based on the amount of time a vehicle must spend at the intersection. Vehicles passing straight through the intersection on the major (uncontrolled) street experience no delay at the intersection. On the other hand, vehicles which are turning left from the minor street, because they must yield the right of way to all right turning vehicles, all left turning vehicles from the major street and all through vehicles on both the minor and major streets, must spend more time at the intersection. Levels of Service are assigned to individual movements within the intersection, and are based upon the delay experienced by each movement or approach.

The Transportation Research Board has determined what Levels of Service for unsignalized intersections should be, by designating Level of Service A through F, where Level of Service A represents a facility where no vehicle in any movement is delayed very long and Level of Service F which represents a facility where there is excessive delay for the average vehicle in at least one movement in the intersection. The City of Spokane and WSDOT have adopted level of service E for all unsignalized intersections within the study area.

Level of Service Criteria and Descriptions - Unsignalized

LOS	Delay Range (sec)	Expected Delay to Minor Street Traffic	General Description
A	10	Little to No Delay	• Nearly all drivers find freedom of operation. • Very seldom is there more than one vehicle in the queue.
B	10 to 15	Short Traffic Delays	• Some drivers begin to consider the delay an inconvenience • Occasionally there is more than one vehicle in the queue.
C	15 to 25	Average Traffic Delays	• Many times, there is more than one vehicle in the queue. • Most drivers feel restricted, but not objectionably so.
D	25 to 35	Long Traffic Delays	• Often there is more than one vehicle in the queue. • Drivers feel quite restricted.
E	35 to 50	Very Long Traffic Delays	• Represents conditions in which, demand is near or equal capacity. • There is almost always more than one vehicle in the queue. • Drivers find the delays approaching intolerable levels.
F	50	Stop-and-Go Condition Delays Generally Longer than Acceptable	• Forced flow. • Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection

All Level of Service analyses described in this report were performed in accordance with the procedures described above. As a final note, the Highway Capacity Manual (HCM) analysis and procedures are based upon worst case conditions. Therefore, most of each weekday and the weekends will experience traffic conditions better than those described within this document, which are only for the peak hours of operation

Existing Level of Service and Traffic Analysis

The existing Levels of Service at the scoped intersections were calculated using the methods from the *6th Edition Highway Capacity Manual* as implemented in Synchro*, version 10 - Build 122*. The existing Levels of Service for the intersection within the study area are summarized on the following tables. The existing traffic volumes used for this report are shown on Figures 3 & 4.

Table 3 – 2021 Existing Intersections Levels of Service (Figure 3&4)

INTERSECTION (S)ignalized (U)nsignalized		AM Peak Hour Delay (sec)	AM Peak Hour LOS	PM Peak Hour Delay (sec)	PM Peak Hour LOS
SR 195 & 16th Avenue	U	39.2	E	42.9	E
SR 195 & Thorpe Avenue	U	12.5	B	19.4	C
• SR 195 & North J-Turn Crossover*	U	9.1	A	16.7	C
○ (Merge – Average Density (pc/mi/ln))	(U)	(8.5)	(A)	(19.7)	(B)
• SR 195 & South J-Turn Crossover**	U	20.8	C	9.9	A
○ (Merge – Average Density (pc/mi/ln))	(U)	(21.9)	(B)	(10.5)	(A)
SR 195 & Inland Empire Way	U	10.7	B	15.1	C
Ch-Sp Road & SR 195 NB on/off Ramps	U	9.0	A	9.0	A
Ch-Sp Road & SR 195 SB on/off Ramps (1)	U	21.5	C	13.7	B
Ch-Sp Road & SR 195 SB on/off Ramps (2)	U	10.7	B	15.7	C
SR 195 & Meadowlane Drive***	U	31.4	D	31.4	D
SR 195 & Hatch Road****	U	21.0	C	46.7	E

***North J-Turn: 95th %tile Q on WBL – AM: 0.2 veh (5 ft), PM: 1.1 veh (28 ft)**
****South J-Turn: 95th %tile Q on WBL – AM: 1.7 veh (43 ft), PM: 0.4 veh (10 ft)**
*****Left-Turn Movement on EB Approach**
******Left-Turn Movement on WB Approach: 95th %tile Q on WB – AM: 3.6 veh (90 ft), PM: 2.7 veh (68 ft)**

The City of Spokane and WSDOT have adopted level of service D as the minimum acceptable level for signalized intersections and level of service E as the minimum acceptable level for unsignalized intersections.

As shown in Table 3, the intersections are currently operating at an acceptable level of service.

Engineer's Note

The crossover movement of the "J-turn" has been modeled to follow the left turn movement as described within the HCM and includes a complimentary right turn movement that models the acceleration and merge of the redirected traffic. It is my professional opinion that this methodology most accurately matches the actual operation and delay experienced by drivers of the J-turn movement. For this model, the default value of 4.5 seconds of gap acceptance was used. For this study, the default value has proved sufficient. However, per the recommendation of Chapter 20 of the HCM, if local value of gap acceptance is determined, then the local data should be used. The result of a lower value would be a decrease in average delay and an improvement to the intersection level of service.

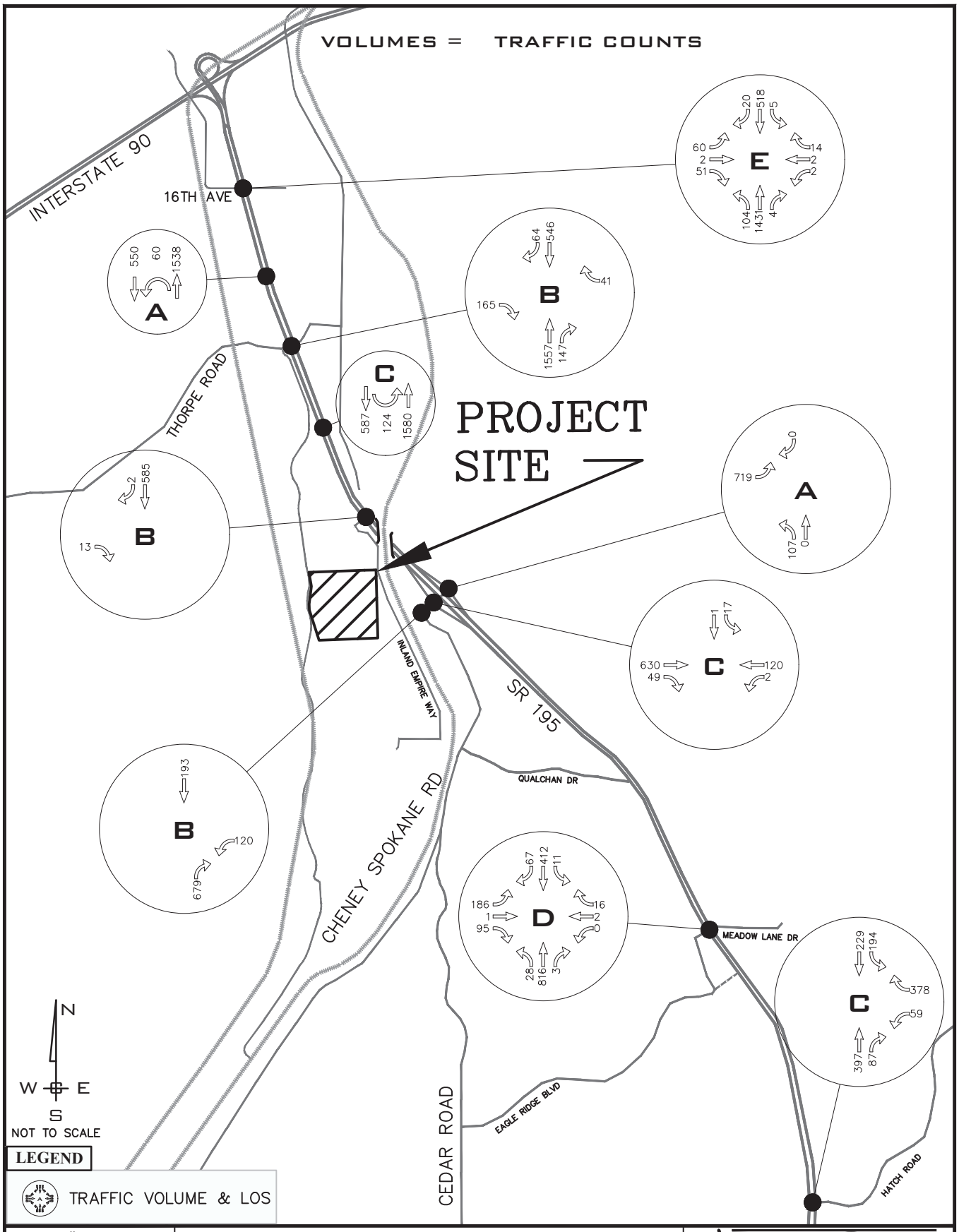


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FIGURE 3

2021 AM EXISTING TRAFFIC VOL. & LOS

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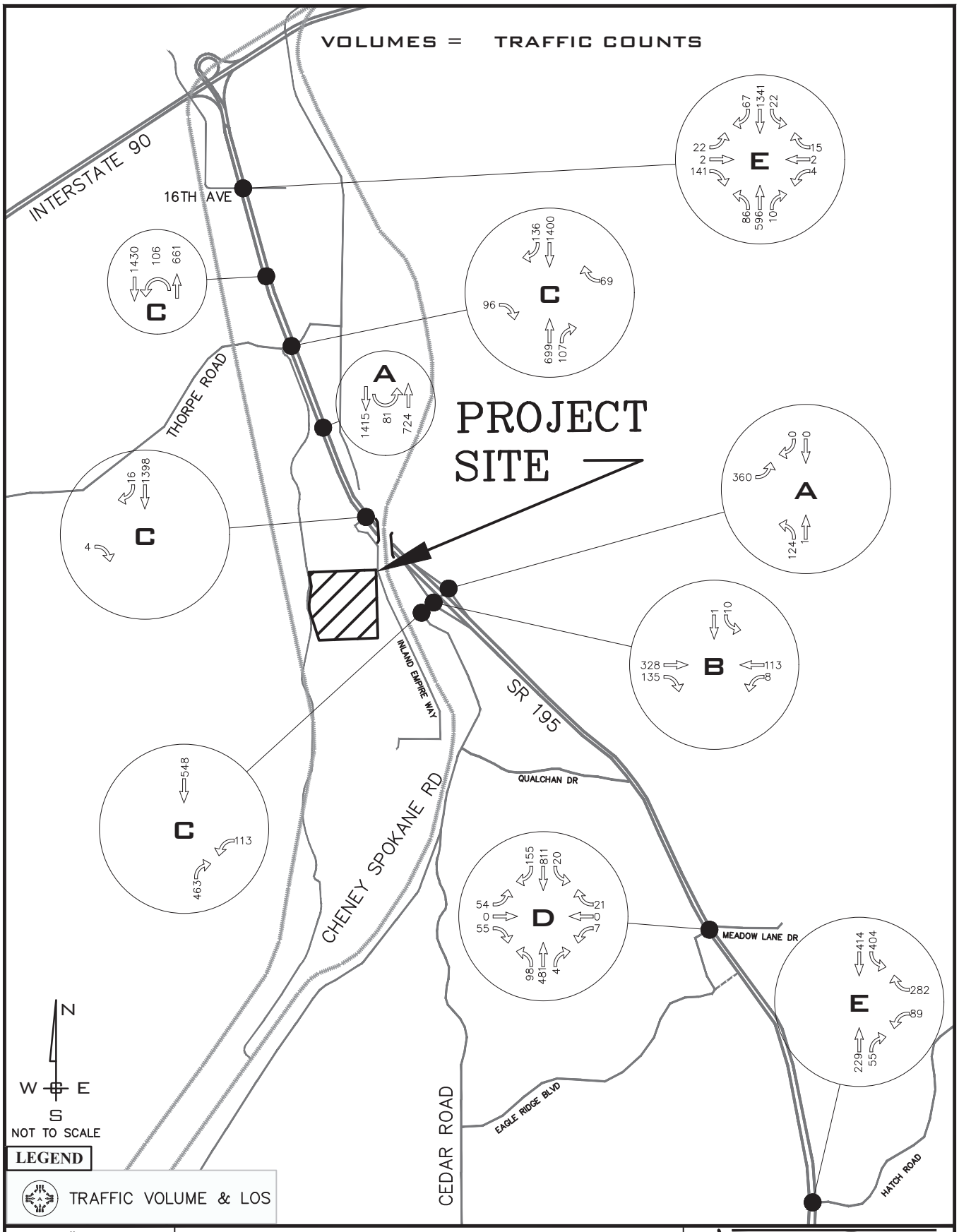

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FIGURE 4

2021 PM EXISTING TRAFFIC VOL. & LOS

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Future Year Traffic Impact Analysis

The build out year (2026) analysis are requirement, per the scope of TIA meeting. Three scenarios were examined for the build out year (2026) analysis. The first scenario assumes that the existing traffic volumes as shown on Figures 3 & 4 experience an increase above the existing volumes at the established background rate. The second scenario assumes that the development has not moved forward and analyzes the scoped intersections with the background growth rate and the background project trips as shown on Figures 7 & 8. The third scenario assumes that the development has moved forward and analyzes the scoped intersection with the background growth rate, the background projects, and the project trips as shown on Figures 11 & 12. These scenarios will allow a determination to be made as to what the future conditions may be both with/without the background project trips and with/without the project trips.

Background Traffic Growth

Background traffic growth is an anticipated increase in traffic volume from year to year. As the existing land uses that surround a transportation facility mature, an increase in traffic results and may be due to either an increase in drivers per household or a household's purchase of an additional vehicle. Many things can cause an increase in the traffic volumes of a facility. The objective of the background traffic growth rate is to anticipate what the traffic volumes may be in the future. The background traffic growth rate for an area or street is determined by means of physical counts collected by local governmental agencies. The counts are compared on a yearly basis and a rate of increase is calculated from the data.

The background growth rate was determined to be 1.0% per year. Based on a five-year build out, compounded annually, the total increase in traffic rate for the year 2026 is anticipated to be 1.051.

Public/Private Improvement Projects

Within the SR 195 Corridor there are multiple improvement projects proposed and conditioned within the decisions of the background projects. These improvements are anticipated to maintain acceptable level of service, promote the redirection of trips from the 1-90/SR 195 Eastbound ramp and also repair a bridge which will have the result of widening the roadway, which will allow for a separation of lanes. These improvement projects are listed here by position from the north to the south along the corridor:

SR 195 & 16th Avenue

As a part of the Wheatland Estates Study the intersection of SR 195 & 16th Avenue is an at grade intersection with SR 195. The improvement project proposes restricting the eastbound movement from a left-through-right lane to a channelized right turn only lane, with an acceleration lane. This project improves safety by removing competing and conflicting movements within the median, improves intersection level of service to an acceptable level and promotes the redistribution of I-90 bound trips as those trips must travel south past Thorpe Rd to the J-turn to then return to 16th Avenue and then to I-90.

SR 195 & Thorpe Rd

As a part of the Summit Development and the Tangle Ridge Development the intersection of SR 195 & Thorpe Road is an at grade intersection with SR 195 with north and south J-turns. The improvement project consists of a directional sign with flashing beacons. The sign provides drivers alternate routes to the downtown core and the South Hill. The flashing beacons are to be activated when the ramp meter signal at the I-90/SR 195 Eastbound Ramp is active, providing additional driver information prior to the Thorpe Exit. The project promotes the redirection of I-90 eastbound trips by offering alternative time saving routes.

SR 195 & Inland Empire Way

This is a temporary solution to connect just a Northbound route of Cheney-Spokane Road to Inland Empire Way. This project has not been conditioned by a project yet. This improvement projects extends the SR 195 northbound onramp at Cheney-Spokane Road further along SR 195 under the railroad bridge. The on ramp is separated from SR 195 by a barrier wall. After the railroad bridge the inland Empire way Exit would be restored, thus creating the northbound link. For SR 195 bound trips they would proceed on the ramp that would then merge onto SR 195. A secondary component would be the installation of a ramp meter just before this junction. The project promotes the redistribution of downtown and south hill destination trips to the alternative route of Inland Empire Way. The installation of the ramp meter further encourages the alternate route by increasing travel time.

SR 195 & Meadowlane

The improvement project as describe within the traffic analysis for the Summit and Wheatland Estates Developments has been revised with a recent application for a federal grant by the City of Spokane and WSDOT. The concept improvement project would mitigate the current safety concerns of this at grade crossing, as documented within this study. As shown in Exhibit A provided by the City of Spokane, the western access with its short roadway connection and the northbound left turn lane are proposed to be closed and the pavement surface removed per WSDOT standards. Eagle Ridge Boulevard is proposed to be extended to SR 195 and creates a new at grade connection that includes a channelized southbound right turn lane with deceleration lane that sweeps away from the highway to then become part of the westbound approach of the intersection of Eagle Ridge Boulevard & Meadowlane. The eastbound approach includes a left and right turn lane. The eastbound left turn movement is proposed to enter an acceleration lane located within the median. The eastern approach of Meadowlane is to remain and rearranged. At the north end of the intersection is proposed as a J-turn crossover. The crossover of the J-turn not only provides for the original northbound left turn trips of the intersection but would also provide for the directional redirection of the Hatch Road westbound left turns. This project improves safety by removing competing and conflicting movements within the median and improves intersection level of service to an acceptable level.

SR 195 & Hatch Road

Per the Six Year Comprehensive Street Program (2021 - 2026), the City of Spokane includes the reconstruction of the Hatch Bridge deck to perpetuate the existing functionality. The project expands the roadway width and increases the storage length of the westbound right turn lane. This improvement is anticipated to increase intersection capacity and improve intersection level of service. This improvement however is not anticipated to alleviate the growing safety concerns

of the at grade crossing as expressed by WSDOT and the City of Spokane. With the installation of a J-turn crossover north of Meadowlane it is anticipated that the westbound approach would be restricted to a right-out movement with the reconfiguration of the median to deny the westbound left turn movement while maintaining the southbound left turn movement. With this improvement, the westbound left turns would be redirected to travel north a distance before crossing over the median at the proposed J-turn of Meadowlane. These trips would then travel south back through the intersection.

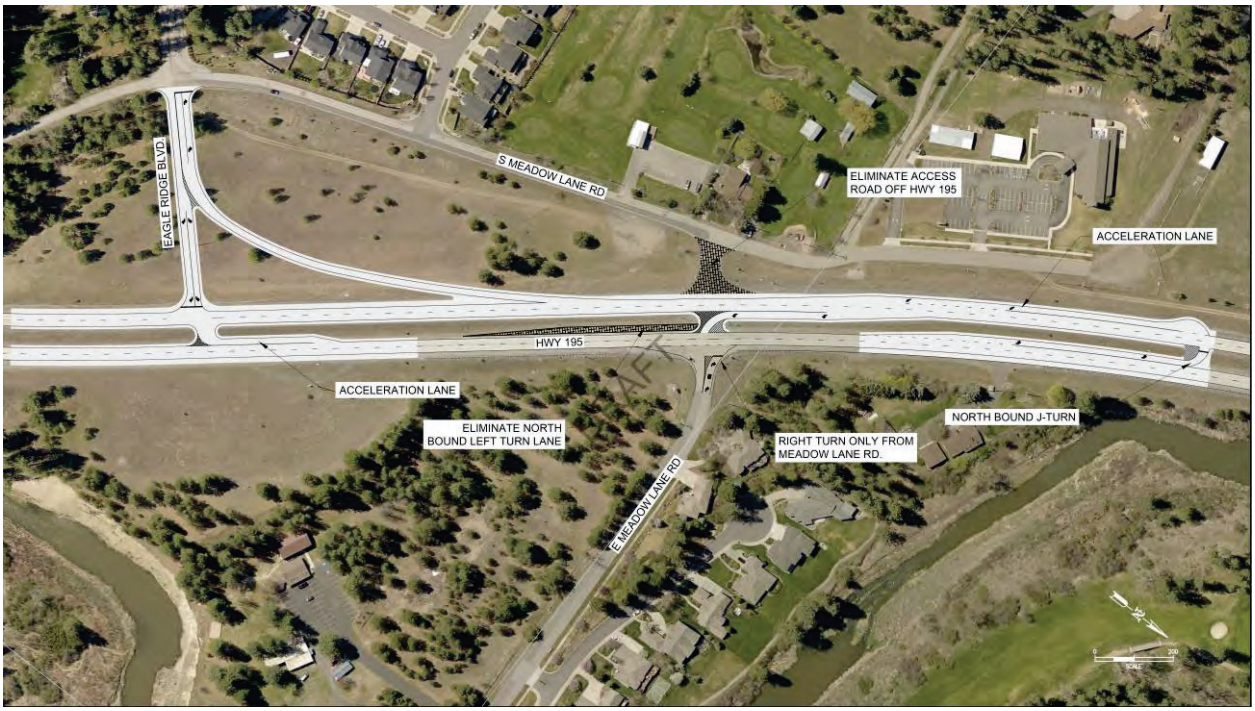

Exhibit A – SR 195 & Meadowlane Road/Eagle Ridge Boulevard (Proposed by COS)

Year 2026 with Background Traffic Growth

This scenario assumes that the existing traffic volumes experience an increase above the existing volumes at the established background rate. The traffic volumes for this condition include the existing traffic, as shown on Figures 3 & 4, multiplied by the background growth rate for year 2026(1.051). Please see Figures 5 & 6 for the traffic volumes used for this scenario. A summary of the Level of Service results is shown in the following table. This scenario creates a future year baseline that allows for a direct comparison of the with background project scenario.

Table 4 – Year 2026 Level of Service, with Background Traffic Growth (Figure 5&6)

INTERSECTION	(S)ignalized (U)nsignalized	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
SR 195 & 16th Avenue	U	48.4	E	**58.6**	**F**
• RO only on EB Approach	(U)	(23.4)	(C)	(14.5)	(B)
SR 195 & Thorpe Avenue	U	13.0	B	21.0	C
• SR 195 & North J-Turn Crossover*	U	9.2	A	18.2	C
o (Merge – Average Density (pc/mi/ln))	(U)	(9.0)	(A)	(20.7)	(B)
• SR 195 & South J-Turn Crossover**	U	23.5	C	10.1	B
o (Merge – Average Density (pc/mi/ln))	(U)	(23.1)	(B)	(11.1)	(A)
SR 195 & Inland Empire Way	U	10.8	B	15.7	C
Ch-Sp Road & SR 195 NB on/off Ramps	U	9.1	A	9.1	A
Ch-Sp Road & SR 195 SB on/off Ramps (1)	U	23.0	C	14.2	B
Ch-Sp Road & SR 195 SB on/off Ramps (2)	U	10.9	B	16.6	C
SR 195 & Meadowlane Drive***	U	37.5	E	35.1	E
• Eagle Ridge Blvd Connection w/ SR 195					
o North J-Turn****	(U)	(9.0)	(A)	(12.5)	(B)
- (Merge – Average Density (pc/mi/ln))	(U)	(8.3)	(A)	(14.8)	(B)
o SR 195 & Meadowlane Road	(U)	(14.6)	(B)	(12.0)	(B)
o SR 195 & Eagle Ridge Boulevard	(U)	(16.8)	(C)	(21.5)	(C)
SR 195 & Hatch Road*****	U	22.7	C	58.5	**F**
• RO only on WB Approach******	(U)	(20.2)	(C)	(12.1)	(B)

***North J-Turn: 95th %tile Q on WBL – AM: 0.2 veh (5 ft), PM: 1.3 veh (33 ft)**
****South J-Turn: 95th %tile Q on WBL – AM: 2.0 veh (50 ft), PM: 0.4 veh (10 ft)**
*****Left-Turn Movement on EB Approach**
******North J-Turn: 95th %tile Q on WBL – AM: 0.3 veh (8 ft), PM: 0.7 veh (18 ft)**
*******Left-Turn Movement on WB Approach: 95th %tile Q on WB LT–AM:4.2 veh (105ft), PM:3.3 veh (83ft)**
********Right-Turn Movement on WB Approach: 95th %tile Q on WB RT–AM:5.9veh(148ft), PM:2.3veh(58ft)**

The City of Spokane and WSDOT have adopted level of service D as the minimum acceptable level for signalized intersections and level of service E as the minimum acceptable level for unsignalized intersections.

As shown in Table 4, the intersections are anticipated to operate at an acceptable level of service except the intersections of SR 195 & 16th Avenue and SR 195 & Hatch Road. With the reconfiguration on eastbound approach to a right out only, the intersection of SR 195 & 16th Avenue is anticipated to operate at an acceptable level of service. With the reconfiguration on westbound approach to a right out only with the proposed J turn at Meadowlane Road, the intersection of SR 195 & Hatch Road is anticipated to operate at an acceptable level of service.

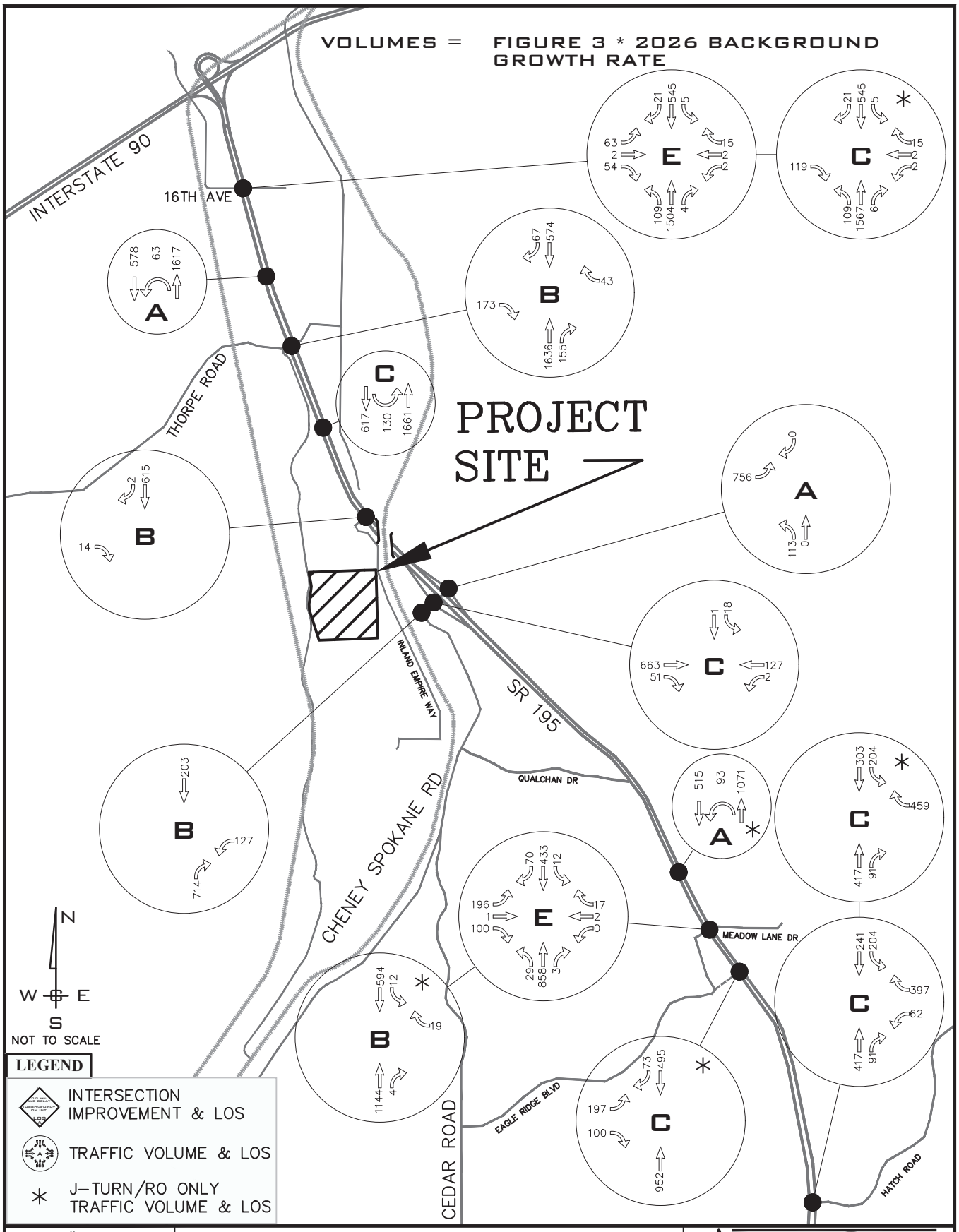

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FIGURE 5

2026 AM VOL. W GROWTH RATE & LOS

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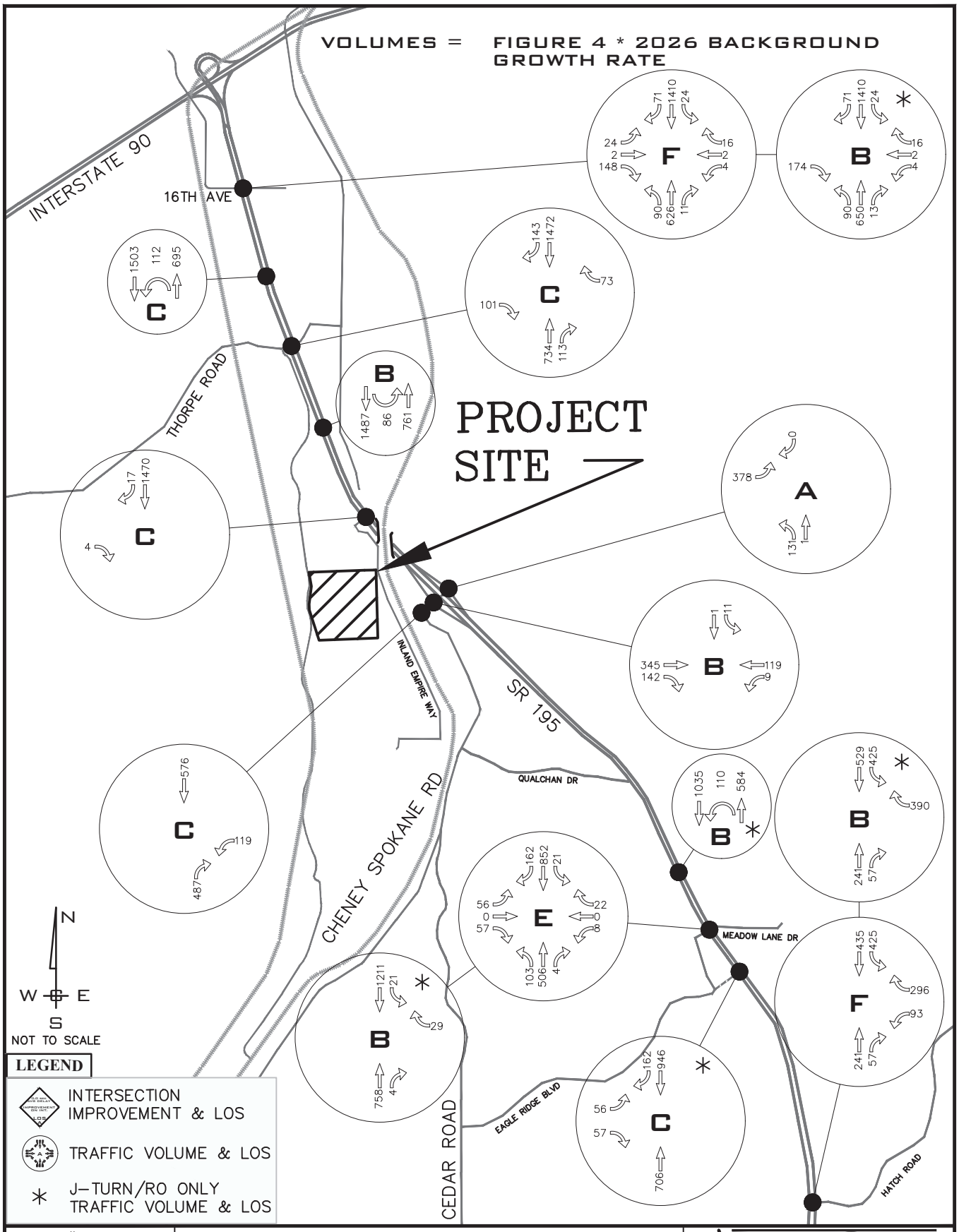

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FIGURE 6

2026 PM VOL. W GROWTH RATE & LOS

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Background Project Traffic

In addition to the natural increase in background growth, background projects that have already been approved or have made application and have been vested before this project have been included. The summary of background project traffic volumes used for this report are shown on Table 5. Please see Figures 7 & 8 for a graphical representation of this distribution.

Table 5 – Summary of the Background Project Trip Generation (Figure 7&8)

Background Projects	Land Use (ITE LUC)	Unit	AM Peak Hour Trips			PM Peak Hour Trips		
			Vol. / LUC	Directional Distribution		Vol. / LUC	Directional Distribution	
				In	Out		In	Out
Eagle Ridge 13th Addition	Single-Family (210)	104	77	19	58	103	65	38
The Summit	Single-Family (210)	99	74	19	55	99	62	37
Tangle Ridge	Single-Family (210)	45	34	8	26	45	28	17
Wheatland Estates	Single-Family (210)	200	148	37	111	198	125	73
Total			333	83	250	445	280	165

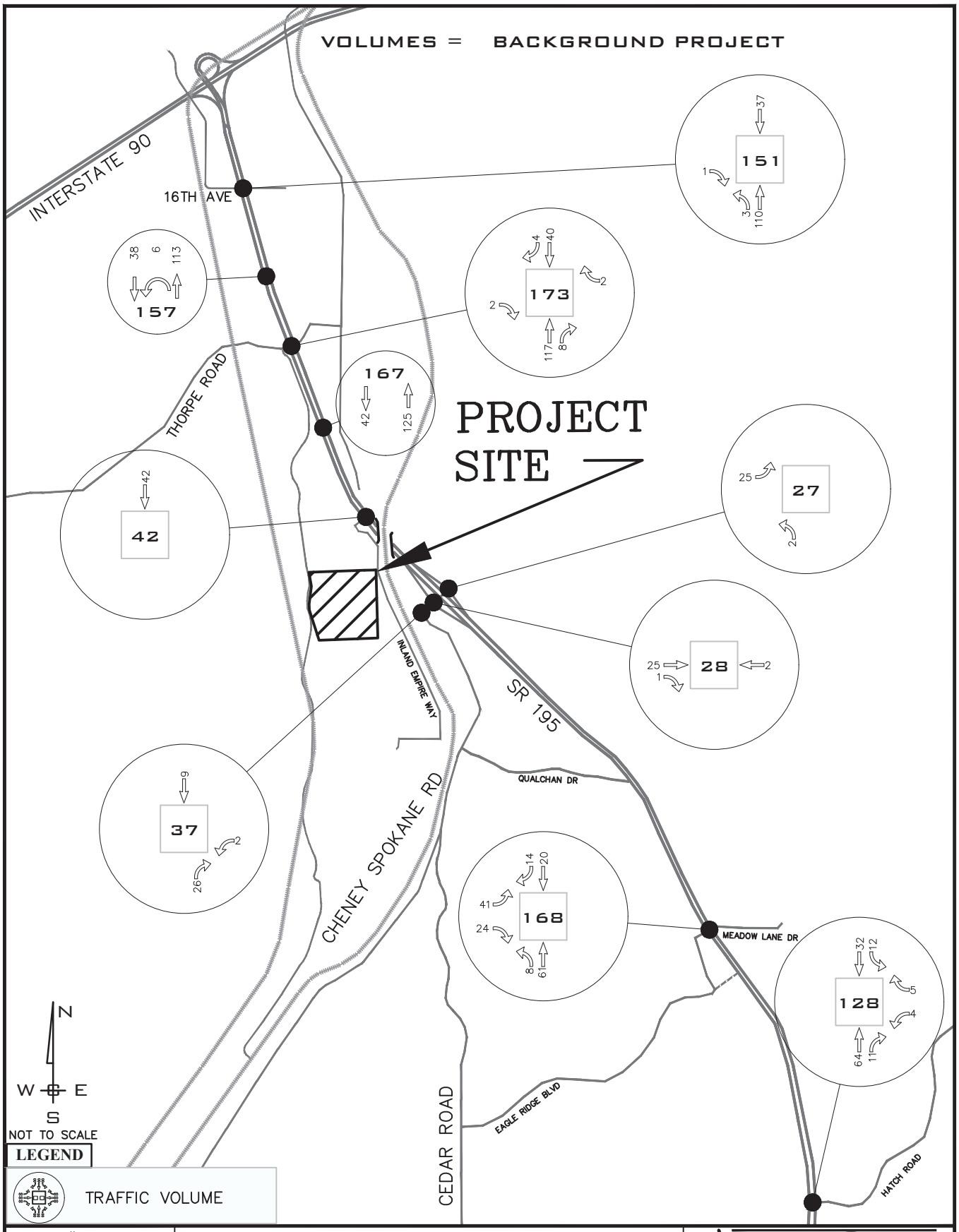

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FIGURE 7

AM BACKGROUND TRIPS

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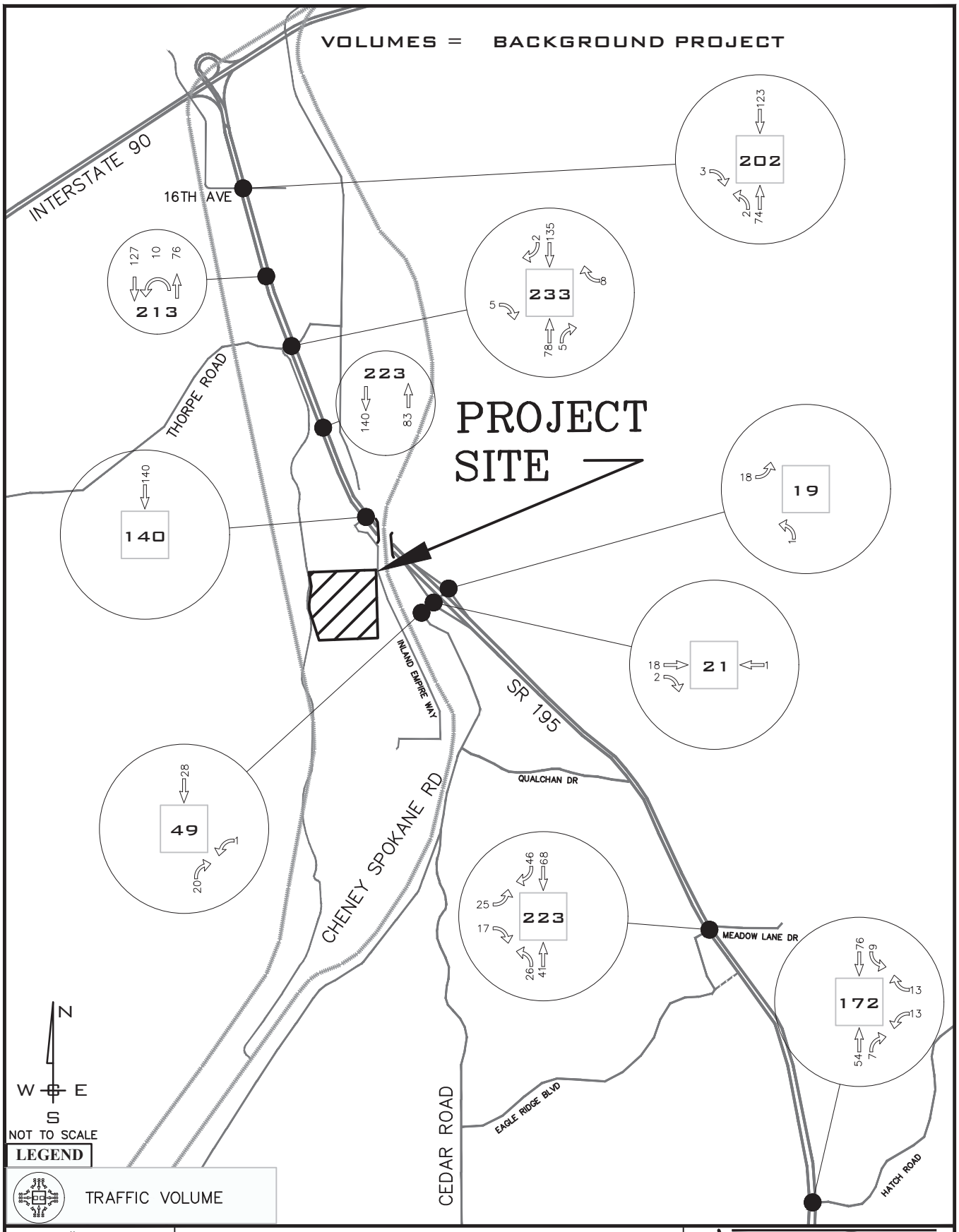

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FIGURE 8

PM BACKGROUND TRIPS

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Year 2026 with the Background Projects and without the Project

This scenario assumes that the development has not moved forward. The traffic volumes for this condition include the traffic volumes shown on Figures 5 & 6 and adds the traffic from the background projects as shown on Figures 7 & 8. Please see Figures 9 & 10 for the traffic volumes used for this scenario. A summary of the Level of Service results is shown in the following table.

Table 6 – Year 2026 LOS, with the Background Projects and without the Project (Fig. 9&10)

INTERSECTION		**AM Peak Hour**		**PM Peak Hour**	
(S)ignalized (U)nsignalized		**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**
SR 195 & 16th Avenue	U	59.9	**F**	93.1	**F**
• RO only on EB Approach	(U)	(26.1)	(D)	(15.7)	(C)
SR 195 & Thorpe Avenue	U	13.4	B	24.5	C
• SR 195 & North J-Turn Crossover*	U	9.4	A	21.6	C
o (Merge – Average Density (pc/mi/ln))	(U)	(9.6)	(A)	(22.5)	(B)
• SR 195 & South J-Turn Crossover**	U	27.9	D	10.6	B
o (Merge – Average Density (pc/mi/ln))	(U)	(24.7)	(B)	(12.2)	(B)
SR 195 & Inland Empire Way	U	11.0	B	17.0	C
Ch-Sp Road & SR 195 NB on/off Ramps	U	9.1	A	9.1	A
Ch-Sp Road & SR 195 SB on/off Ramps (1)	U	24.1	C	14.5	B
Ch-Sp Road & SR 195 SB on/off Ramps (2)	U	11.1	B	17.4	C
SR 195 & Meadowlane Drive***	U	65.2	**F**	59.8*	**F**
• Eagle Ridge Blvd Connection w/ SR 195					
o North J-Turn****	(U)	(9.2)	(A)	(14.2)	(B)
- (Merge – Average Density (pc/mi/ln))	(U)	(8.9)	(A)	(16.6)	(B)
o SR 195 & Meadowlane Road	(U)	(15.7)	(C)	(12.7)	(B)
o SR 195 & Eagle Ridge Boulevard	(U)	(19.6)	(C)	(27.4)	(D)
SR 195 & Hatch Road*****	U	26.6	D	88.4	**F**
• RO only on WB Approach******	(U)	(24.0)	(C)	(13.1)	(B)

***North J-Turn: 95th %tile Q on WBL – AM: 0.3 veh (8 ft), PM: 1.7 veh (43 ft)**
****South J-Turn: 95th %tile Q on WBL – AM: 2.4 veh (60 ft), PM: 0.4 veh (10 ft)**
*****Left-Turn Movement on EB Approach**
******North J-Turn: 95th %tile Q on WBL – AM: 0.4 veh (10 ft), PM: 1.1 veh (28 ft)**
*******Left-Turn Movement on WB Approach: 95th %tile Q on WB – AM: 4.8 veh(120ft), PM: 4.8 veh(120ft)**
********Left-Turn Movement on WB Approach: 95th %tile Q on WB – AM: 7.1 veh(180ft), PM: 2.8 veh(70ft)**

The City of Spokane and WSDOT have adopted level of service D as the minimum acceptable level for signalized intersections and level of service E as the minimum acceptable level for unsignalized intersections.

As shown in Table 6, all intersections are anticipated to operate at an acceptable level of service except the intersections of SR 195 & 16th Avenue, SR 195 & Meadowlane Drive, and SR 195 & Hatch Road. As discussed in the with background traffic growth scenario, with the improvements, the intersections of SR 195 & 16th Avenue, SR 195 & Meadowlane Drive, and SR 195 & Hatch Road are anticipated to operate at an acceptable level of service.

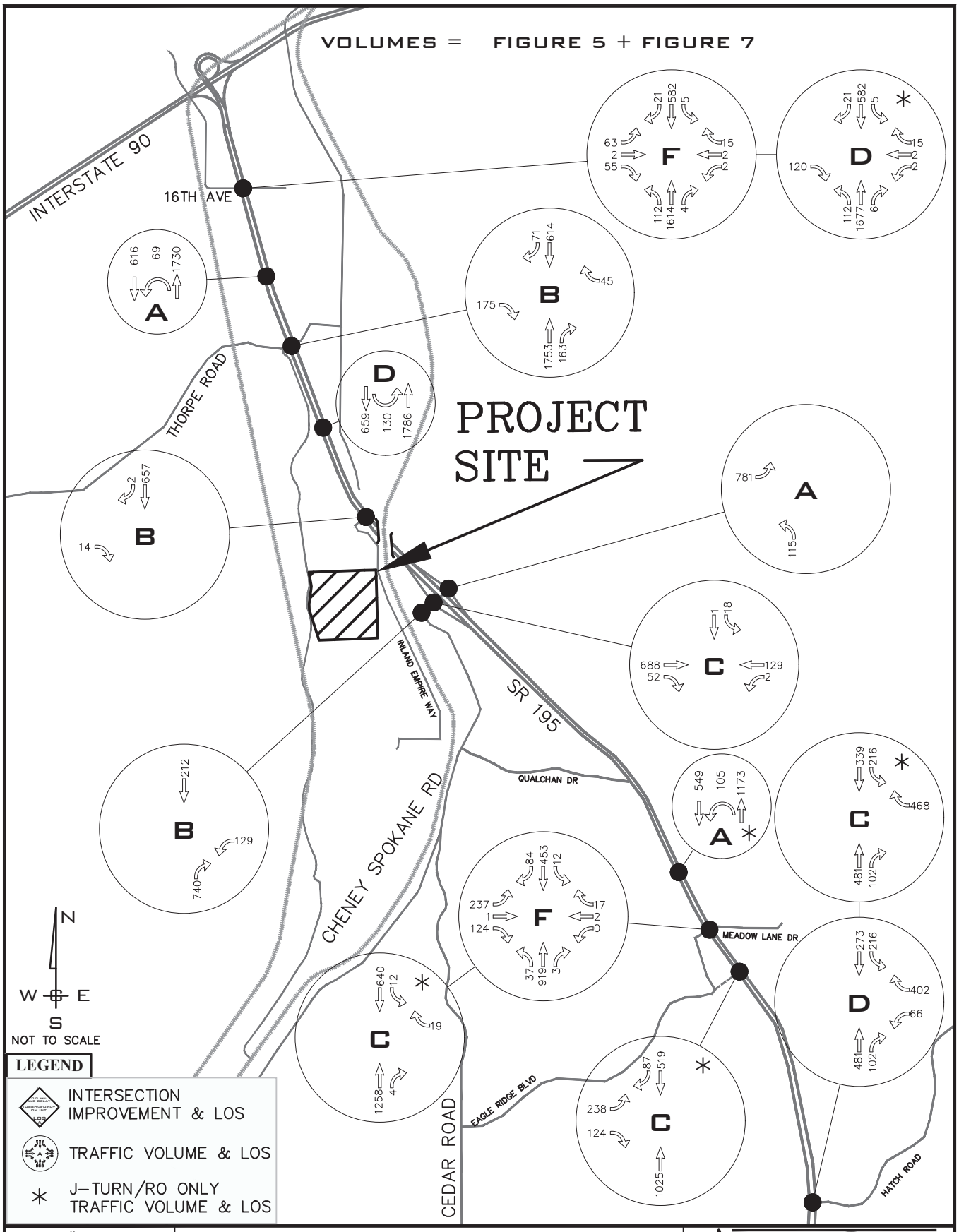

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FIGURE 9

2026 AM VOL. W/ BACKGROUND
W-O PROJECT & LOS

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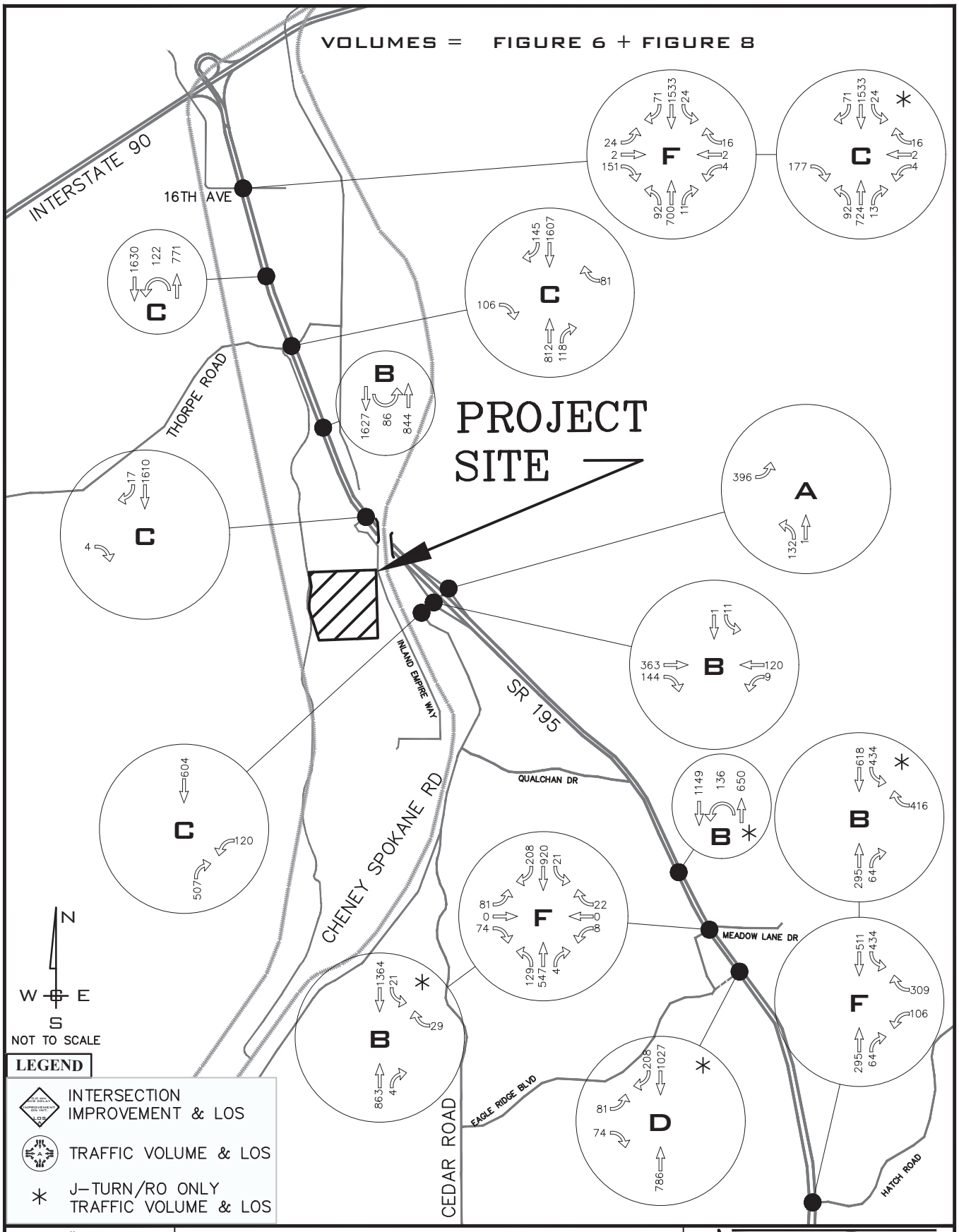

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FIGURE 10

2026 PM VOL. W/ BACKGROUND
W-O PROJECT & LOS

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Trip Generation and Distribution

As noted earlier, trip generation rates for the AM and PM peak hours are determined by the use of the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE). The purpose of the *Trip Generation Manual* is to compile and quantify empirical data into trip generation rates for specific land uses within the US, UK and Canada.

Existing Land Use

For the existing former salvage yard, a recommended average rate by the City of Spokane was used to establish the number of potential trips generated by the existing land use. The trip generation rates and the anticipated number of AM and PM peak hour trips for the existing land use are shown on Table 7.

Table 7 **-Trip Generation Rates – Former Salvage Yard**

KSF	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 1.00 trips per Unit	Directional Distribution		Vol. @ 1.00 trips per Unit	Directional Distribution	
		50% In	50% Out		50% In	50% Out
2.0	2	1	1	2	1	1

Average Daily Trip Ends (ADT)			Per the TIA Comments Dated April 6, 2021, the Average Rate Was Recommended by the City of Spokane
Units	Average Rate	ADT	
2.0	-	-	

Proposed Land Use

For the proposed 157 units of a manufactured housing development, Land Use Code (LUC) #240, Mobile Home Park was used to establish the number of potential trips generated by the proposed land use. The trip generation rates and the anticipated number of AM and PM peak hour trips for the land use are shown on Table 8.

Table 8 **-Trip Generation Rates for LUC # 240 – Mobile Home Park**

Dwelling Units	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 0.26 trips/units	Directional Distribution		Vol. @ 0.46 trips / Units	Directional Distribution	
		31% In	69% Out		62% In	38% Out
157	41	13	28	73	45	28

Average Daily Trip Ends (ADT)		
Units	Rate	ADT
157	5.00	785

Trip Generation Summary

Since the existing automobile care center use is proposed to be replaced by the proposed project, the existing land use subtracted from the proposed land use with the difference in trips generated is shown on Table 9.

Table 9 **- Trip Generation Summary (Figure 11 & 12)**

Land Use Code (LUC)	AM Peak Hour			PM Peak Hour		
	Vol. per LUC	Directional Distribution		Vol. per LUC	Directional Distribution	
		In	Out		In	Out
LUC 240 Mobile Home Park (Proposed)	41	13	28	73	45	28
LUC 942 Automobile Care Center (Existing)	<2>	<1>	<1>	<2>	<1>	<1>
New Trips	**39**	**12**	**27**	**71**	**44**	**27**

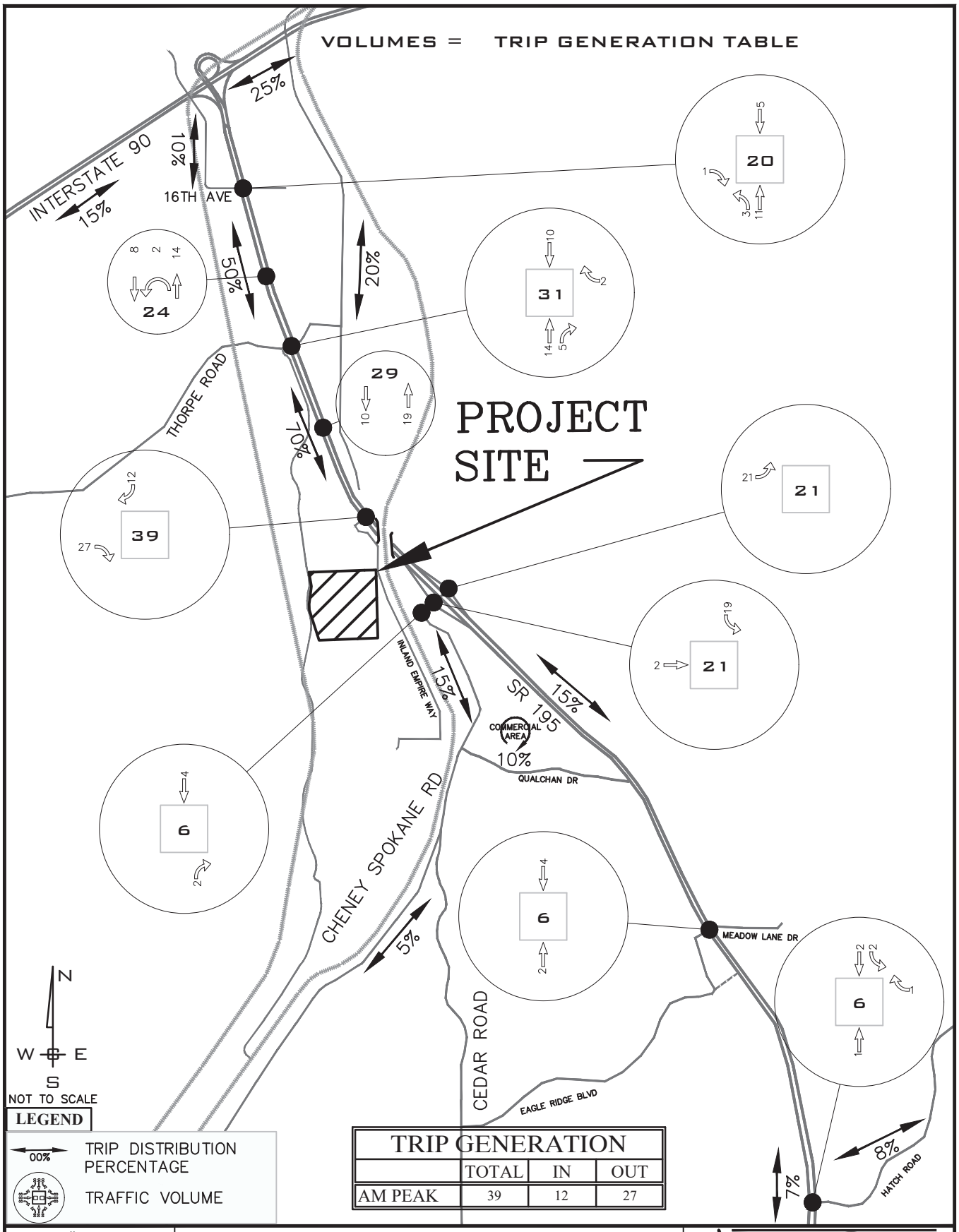
Average Daily Trip Ends (ADT)		
Land Use Code (LUC)	**Rate**	**ADT**
LUC 240 Mobile Home Park (Proposed)		785
LUC 942 Automobile Care Center (Existing)		-
New Trips		**-**

< > indicates Subtraction of number

As shown in Table 9, the proposed land use is anticipated to generate 36 additional trips in the AM peak hour with 10 additional trips entering the site and 26 additional trips exiting the site. In the PM peak hour, the proposed land use is anticipated to generate a total of 66 additional trips, with 42 additional trips entering the site and 24 additional trips exiting the site. Please see Figure 11 & 12 for Trip Distribution.

Trip Distribution Characteristics of the Proposed Project

Considering many factors such as the surrounding transportation facilities, typical commuting patterns, existing development in the area, and Average Daily Traffic counts, traffic for the proposed development is anticipated as follows: 70% of trips will go to/from the north via SR 195, 15% of trips will go to/from the south via SR 195, and 15% of trips will go to/from the southwest via Cheney Spokane Road. Of the 70% trips to/from the north via SR 195, 20% of these trips will go to/from the east and north via Thorpe Road, 10% of these trips will go to/from the west and north via 16th Avenue, 15% of these trips will go to/from the west via I-90 and 25% of these trips will go to/from the east via I-90. Of the 15% of trips to/from the south via SR 195, 8% of trips will travel to/from the east via Hatch Road and 7% of trips will travel to/from the south via SR 195. Of the 15% to/from the southwest on Cheney-Spokane Road, 10% of trips will get captured by the shopping areas along Cheney-Spokane Road and 5% of trips will continue to/from the southwest via Cheney-Spokane Road.



TRIP GENERATION			
	TOTAL	IN	OUT
AM PEAK	39	12	27

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DATE: 03/17/22
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APPROVED: TRW

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FIGURE 11

AM PROJECT TRIP DISTRIBUTION

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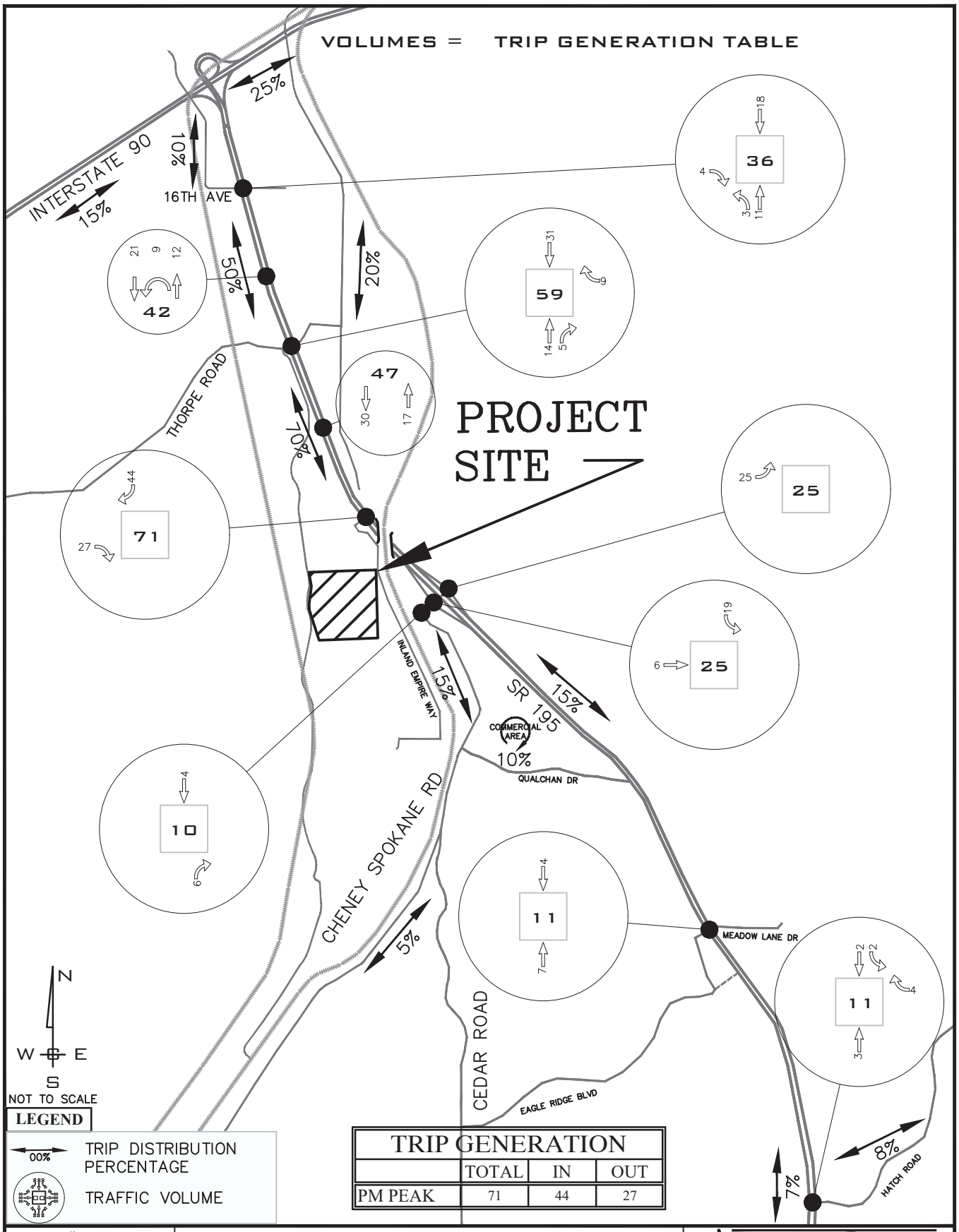
SPOKANE VALLEY, WASHINGTON 99206
PH: 509-893-2617 FAX: 509-926-0227



TRIP GENERATION			
	TOTAL	IN	OUT
PM PEAK	71	44	27

PROJ #: 20-2564
DATE: 03/17/22
DRAWN: KMK
APPROVED: TRW

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FIGURE 12

PM PROJECT TRIP DISTRIBUTION

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Year 2026 with the Background Projects and the Project

This scenario assumes that the project has moved forward and is added to the previously established baseline. The traffic volume for this condition includes the traffic volumes shown on Figures 9 & 10 and adds the project trips as shown on Figures 11 & 12. Please see Figures 13 & 14 for the traffic volumes used for this scenario. A summary of the Level of Service results is shown in the following table.

Table 10 – Year 2026 LOS, with the Background Projects and with the Project (Fig. 13&14)

INTERSECTION	**(S)ignalized (U)nsignalized**	**AM Peak Hour**		**PM Peak Hour**	
		Delay (sec)	**LOS**	**Delay (sec)**	**LOS**
SR 195 & 16th Avenue	U	64.5	F	102.3	**F**
• RO only on EB Approach	(U)	(26.3)	(D)	(15.9)	(C)
SR 195 & Thorpe Avenue	U	13.5	B	25.2	D
• SR 195 & North J-Turn Crossover*	U	9.4	A	23.0	C
o (Merge – Average Density (pc/mi/ln))	(U)	(9.7)	(A)	(22.9)	(B)
• SR 195 & South J-Turn Crossover**	U	28.8	D	10.7	B
o (Merge – Average Density (pc/mi/ln))	(U)	(24.9)	(B)	(12.4)	(B)
SR 195 & Inland Empire Way	U	11.4	B	18.2	C
Spring Creek Lane & Inland Empire Way	U	9.3	A	8.8	A
Access & Inland Empire Way	U	8.7	A	8.7	A
Ch-Sp Road & SR 195 NB on/off Ramps	U	9.1	A	9.1	A
Ch-Sp Road & SR 195 SB on/off Ramps (1)	U	26.9	D	15.2	C
Ch-Sp Road & SR 195 SB on/off Ramps (2)	U	11.1	B	17.5	C
SR 195 & Meadowlane Drive***	U	65.9	**F**	60.6*	**F**
• Eagle Ridge Blvd Connection w/ SR 195					
o North J-Turn****	(U)	(9.2)	(A)	(14.3)	(B)
- (Merge – Average Density (pc/mi/ln))	(U)	(8.9)	(A)	(16.6)	(B)
o SR 195 & Meadowlane Road	(U)	(15.7)	(C)	(12.7)	(B)
o SR 195 & Eagle Ridge Boulevard	(U)	(19.7)	(C)	(27.6)	(D)
SR 195 & Hatch Road*****	U	26.6	D	91.4	**F**
• RO only on WB Approach******	(U)	(24.1)	(C)	(13.3)	(B)

***North J-Turn: 95th %tile Q on WBL – AM: 0.3 veh (8 ft), PM: 2.0 veh (50 ft)**
****South J-Turn: 95th %tile Q on WBL – AM: 2.5 veh (63 ft), PM: 0.4 veh (10 ft)**
*****Left-Turn Movement on EB Approach**
******North J-Turn: 95th %tile Q on WBL – AM: 0.4 veh (10 ft), PM: 1.1 veh (28 ft)**
*******Left-Turn Movement on WB Approach: 95th %tile Q on WB – AM: 4.8 veh(120ft), PM: 4.9 veh(123ft)**
********Left-Turn Movement on WB Approach: 95th %tile Q on WB – AM: 7.1 veh(178ft), PM: 2.9 veh(73ft)**

The City of Spokane and WSDOT have adopted level of service D as the minimum acceptable level for signalized intersections and level of service E as the minimum acceptable level for unsignalized intersections.

As shown in Table 10, with the improvements at SR 195 & 16th Avenue, SR 195 & Meadowlane Drive, and SR 195 & Hatch Road, all intersections are anticipated to operate at an acceptable level of service.

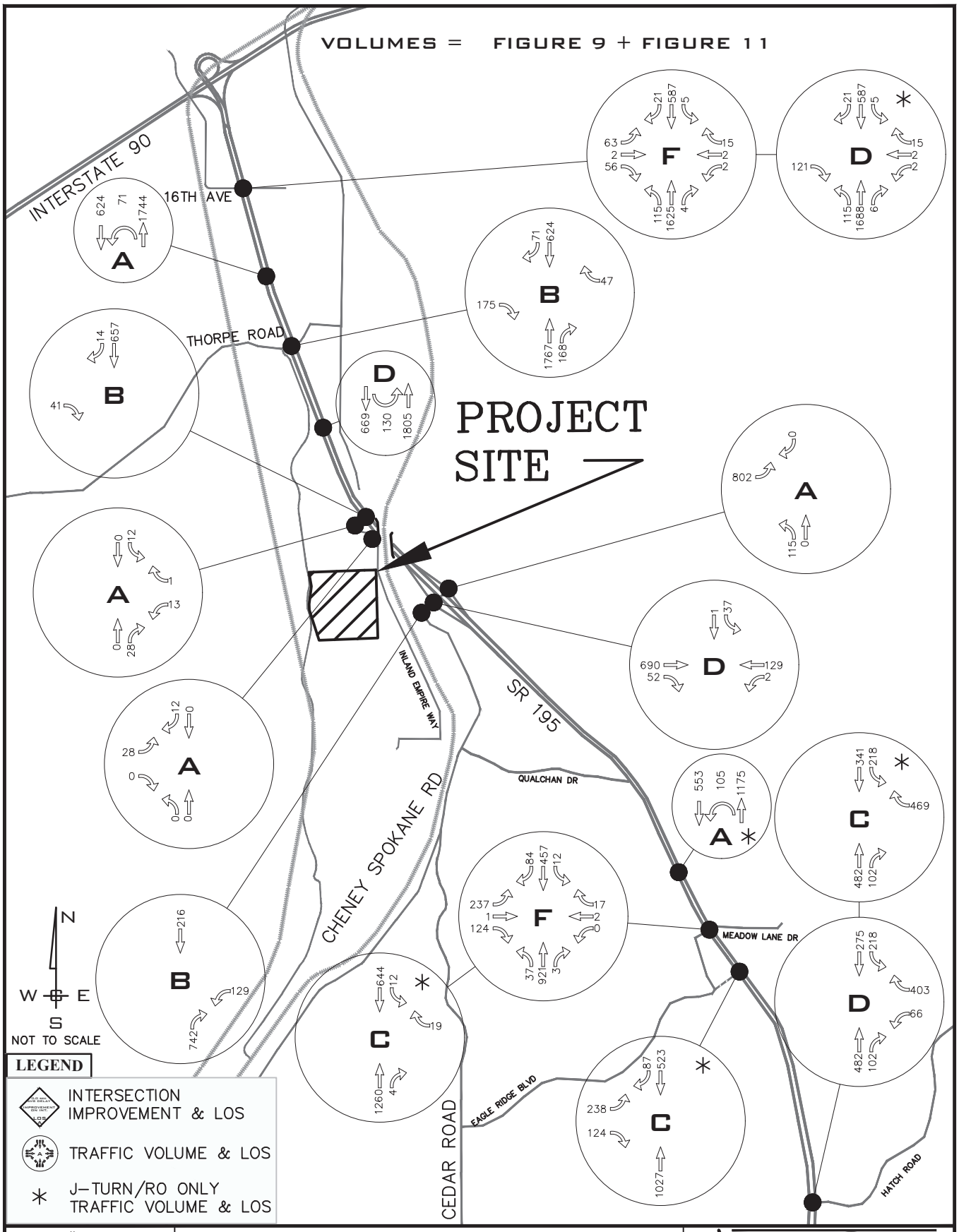

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FIGURE 13

2026 AM VOL. W/ BACKGROUND W/ PROJECT & LOS

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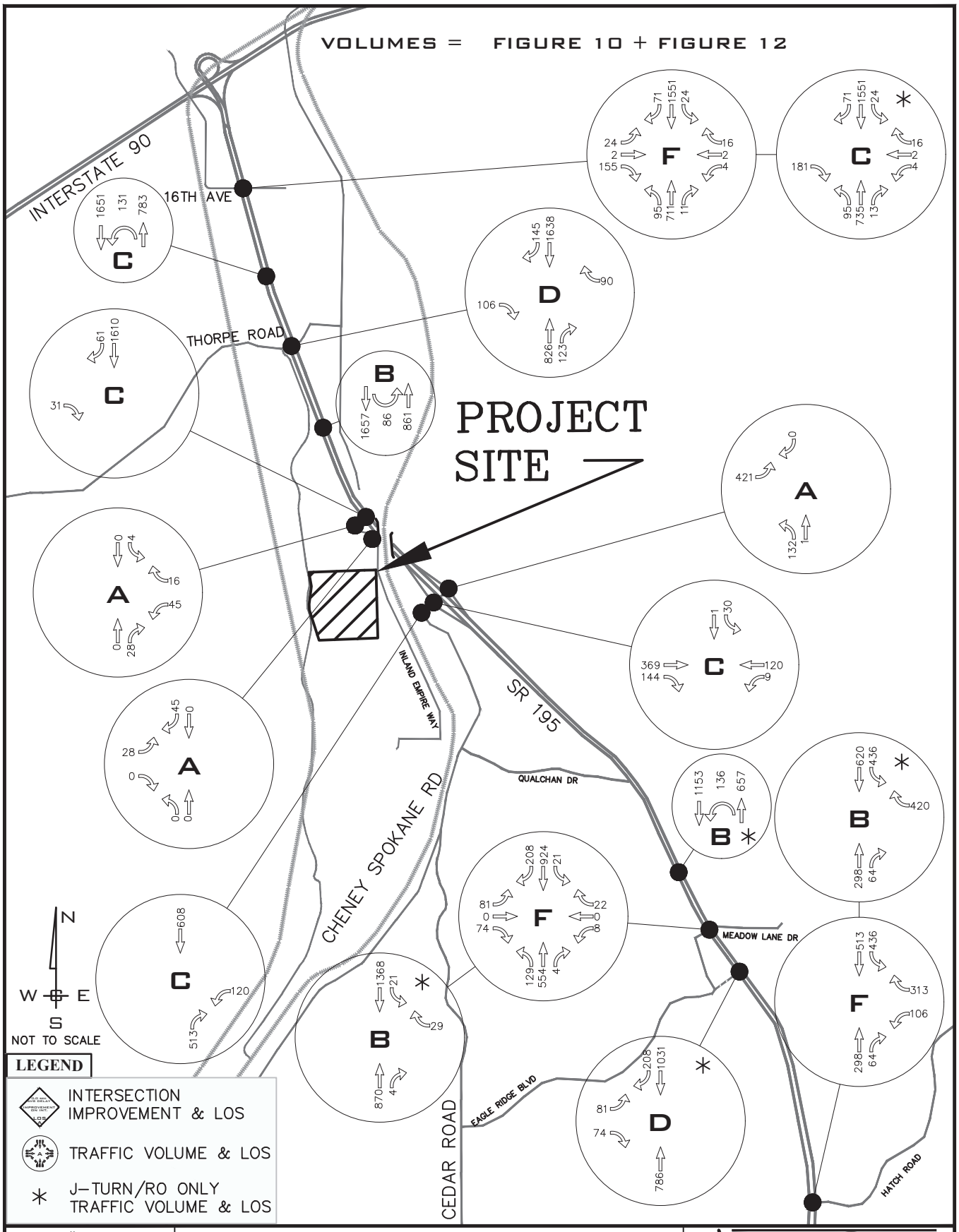

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APPROVED: TRW

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FIGURE 14

2026 PM VOL. W/ BACKGROUND W/ PROJECT & LOS

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Right-Turn Lane Warrant Analysis

Per the request of WSDOT, we have analyzed the intersection of Inland Empire Way & SR 195 to determine if a right turn is warranted based upon the WSDOT design manual Exhibit 1310-7a and Exhibit 1310-11. The results are summarized here and the exhibits are shown in the appendix:

Future Traffic Volumes with the Project

For right-turn lane warrant analysis, the traffic volumes for 2026 with background projects and project scenario as shown in Figure 13 & 14 have been used. The summary of traffic volumes for 2021 & 2026 scenarios are shown in following tables.

***Table 11* - Existing Traffic Volumes on SR 195 Southbound**

Time	Southbound (Veh/hour)		
	Through	Right-Turn	Right-lane (Through + Right) *
AM Peak Hour	492	2	-
PM Peak Hour	1038	12	774

***Per 1310.03 Right-Turn Lanes in WSDOT Design Manual, for multilane, high-speed highways (posted speed 45 mph or above), it is noted to use the right-lane peak hour approach volume (through + right-turn). Since the traffic volumes in PM peak hour for the project trips and existing traffic volumes are the most critical, only traffic volumes for right-lane in PM peak hour have been counted.**

***Table 12* - Summary of 2026 Southbound Traffic Volumes at Inland Empire Way & SR 195**

Time	Southbound (Veh/hour)		
	Through	Right-Turn	Right-lane (Through + Right) *
AM Peak Hour	657	14	-
PM Peak Hour	1610	61	1,232

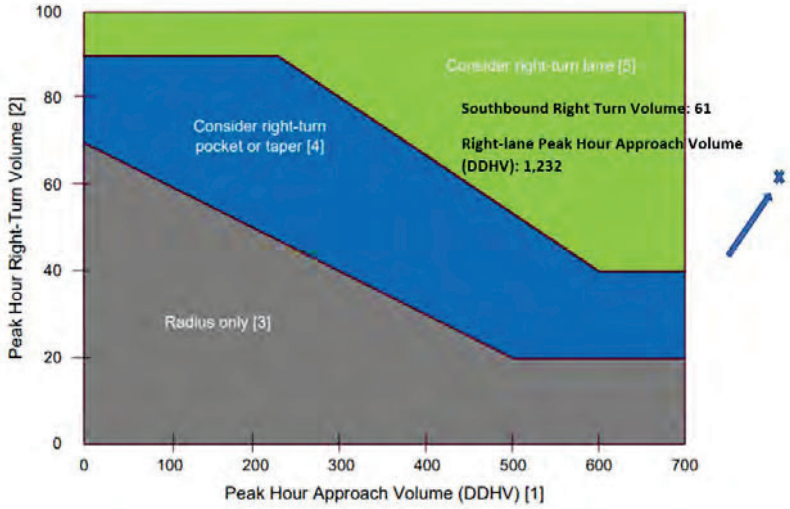
***Based upon the 2021 ratio between the total SB volumes and right-lane volumes (774/ (1,038+12) =0.737), 2026 right-lane volume has been calculated ((1,610+61) x 0.737 = 1,232).**

Right-Turn Lane Warrant Analysis

Per 1310.03 Right-Turn Lanes in WSDOT Design Manual, the intersection of Inland Empire Way & SR 195 has been analyzed to determine if a right turn lane is warranted. The result and exhibit are shown below:

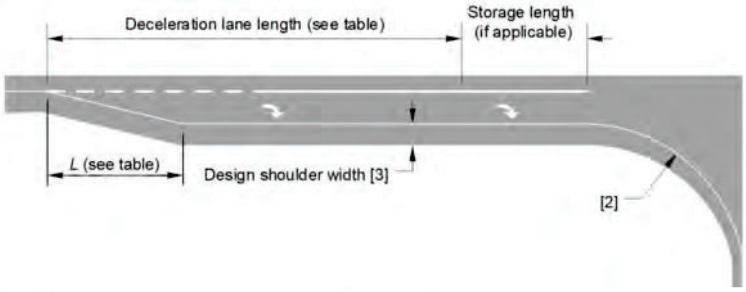
Intersection:	Results
SR 195 & Inland Empire Way • Right Turn Lane Warrant Analysis	Plots above the line – The right-turn lane warrant is met

Exhibit 1310-11 Right-Turn Lane Guidelines



[5] For right-turn lane design, see Exhibit 1310-13.

Exhibit 1310-13 Right-Turn Lane



Highway Design Speed (mph)	Deceleration Lane Length (ft)
30	160 [1]
35	220
40	275
45	350
50	425
55	515
60	605
65	715
70	820

Minimum Deceleration Lane Length (ft)

Posted Speed Limit	L
Below 40 mph	40 ft
40 mph or above	100 ft

Grade	Upgrade	Downgrade
3% to less than 5%	0.9	1.2
5% or more	0.8	1.35

Adjustment Multiplier for Grades 3% or Greater

Notes:
[1] When adjusting for grade, do not reduce the deceleration lane to less than 150 ft.
[2] For right-turn corner design, see Exhibit 1310-6.
[3] See 1310.03(6) and Chapter 1230.

Conclusion

Based upon the right-turn lane warrant analysis provided, it is concluded that the intersection meets the WSDOT right turn lane warrant. However, the intersection level of service remains at an acceptable level through the buildout period. Additionally, there is also a sight distance concern associated with a dedicated right turn lane, as a vehicle within the turn lane blocks the view of oncoming traffic. We propose additional consultation with the WSDOT that this be reevaluated after the 100th homesite.

SR 195 Corridor Improvement Projects.

Within the SR 195 Corridor for the past two years development projects have been conditioned by WSDOT to construct an improvement project(s) along the corridor with the goal to achieve a net zero balance in trips at the I-90/SR 195 Eastbound on ramp. The projects would essentially redirect existing and future traffic from the mainline, or as in the case of 16th Avenue redirect trips before they even get onto SR 195. This redirection of trips would reduce traffic volumes so that there would be room for the future I-90 Eastbound trips. Typically, those trips that have a destination to the east of the City of Spokane, and is truly an intra state trip.

As shown in the previous analysis section the Northbound SR 195 to Eastbound I-90 Ramp it was concluded that the project trips would have a minimal impact on the ramp as the capacity of the ramp, with the ramp meter has been reached. So, these improvement projects would have an additional improvement to the operation of the corridor as a whole. The following are descriptions of the improvement projects:

16th Avenue – EB Turn restrictions. The improvement project places a raised island, that channelizes all eastbound trips as a right turn, southbound movement onto SR 195. The project also includes an acceleration lane before a merge section. By restricting the eastbound left turn movement, a portion of the trips that originate from the intersection of Sunset Highway & Government Way and 14th Avenue & Lindke Street, would by an increase in time and effort would be redirected toward sunset highway or seek I-90 connections outside of the downtown core. This improvement project has currently been included as a condition in the Wheatland Estates project.

Thorpe Road Exit – Flashing Beacon and Sign. The improvement project places a directional sign before the Thorpe Road Northbound Exit. The Sign provides direction toward the City Center and the South Hill via Inland Empire Way. There is also a flashing beacon sign that is activated when the ramp meter signal is operating. The flashing beacon provides drivers with advance warning of additional delay. It is believed that with advance warning, drivers bound for the City Center or the South Hill would opt to exit at Thorpe Road and take this alternate route to their destination. It is anticipated that the presence and operation of this improvement would redirect **5%** of traffic volumes from the mainline volumes. This improvement project is a condition of the Summit and Tangle Ridge Projects, the project has been privately funded, with an approved WSDOT design. The improvement is scheduled to be completed in the spring of 2021.

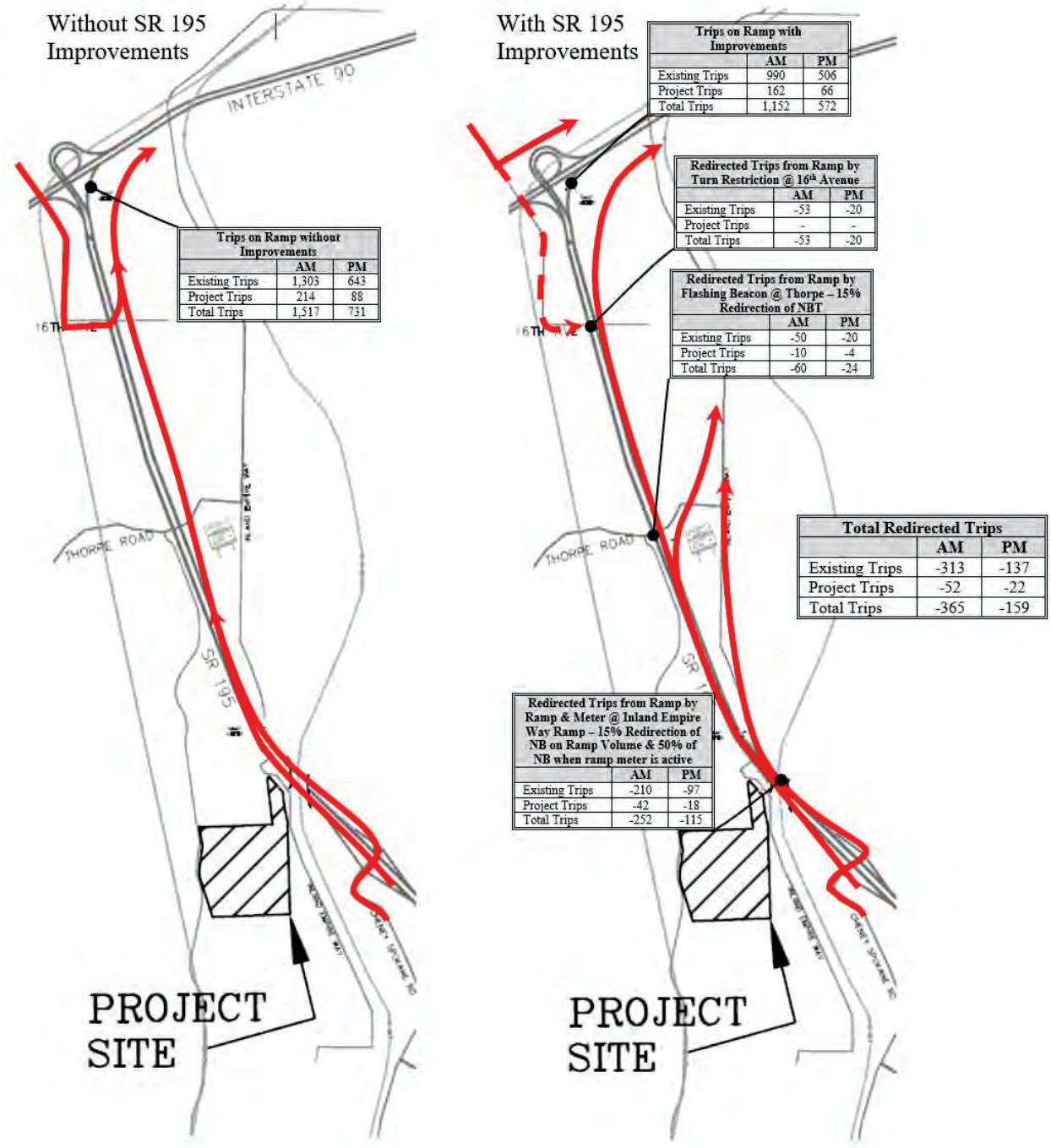
Cheney-Spokane Road Ramp – Connection to Inland Empire Way. This improvement project proposes to extend the northbound ramp further north along SR 195, underneath the existing railroad bridge to the original Inland Empire Way & Sr 195 intersection. From the original intersection the northbound on ramp will begin. For the extension SR 195 and the ramp will be separated by a WSDOT approved barrier wall. At the old intersection the connection to Inland Empire Way would be reestablished, providing an alternate route for traffic. It is anticipated that the presence of the route with appropriate signage would redirect **20%** of traffic volumes from the on-ramp volumes.

In addition to the connection, it is proposed that a ramp meter signal be installed at the ramp with an appropriate queue length. Like the ramp meter at I-90, the additional time delay would redirect drivers bound for the City Center or the South Hill to the alternative route of Inland Empire Way. The improvement is anticipated to create better local connections and preserve the state facilities for intra City travel (City to City) as opposed to inter City travel (travel within the City) It is anticipated that the presence and operation of the ramp meter redirect **50%** of traffic volumes from the on-ramp volumes when in operation. It is anticipated that the ramp meter would operate at similar times as the ramp meter at I-90, thus preserving the capacity of both. As the Thorpe Road Sign project establishes a virtual link for operations, the two meters could be tied together to provide drivers with additional advance warning.

There has also been discussion of utilizing the WSDOT reader board to provide additional driver information. The sign is currently north of the Cheney Spokane Road Interchange. Its relocation south of the interchange may redirect trips bound for the City Center and the South Hill to exit at Cheney Spokane Road.

The following is an Exhibit of the anticipated trips that would be redirected by these improvement projects.

Exhibit B – Redirected Trips



As shown in the Exhibit based upon the anticipated percentages of redistribution, the three improvement projects have the potential to remove 363 existing AM peak hour and 157 PM peak hour trips from the I-90/ SR 195 Northbound to Eastbound Ramp. This redirection of trips forms the basis for no additional trips on the ramp. For convenience the anticipated trips from this project (Latah Glen Residential) that may be redirected is highlighted in yellow.

***Table 13* – Corridor Project Trip Redirection Summary with Improvement Credit**

	Original Trips on Ramp		Redirected Trips from Ramp by SR 195 Projects								Trips on Ramp after Redirection	
			Turn Restriction @ 16th		Flashing Beacon @ Thorpe		Inland Empire Way Ramp & Meter		Total			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Existing Trips on Ramp	1,303	643	-53	-20	-50	-20	-210	-97	**-313**	**-137**	990	506
Summit	22	17	-	-	-1	-1	-4	-3	-5	-4	17	13
Wheatland	50	9	-	-	-2	0	-10	-2	-12	-2	38	7
Tangle Ridge	10	7	-	-	-1	0	-2	-1	-3	-1	7	6
Latah Glen	13	5	-	-	-1	0	-3	-1	-4	-1	9	4
Qualchan View	42	14	-	-	-2	-1	-8	-3	-10	-4	32	10
Greens @ Meadowlane	5	3	-	-	0	0	-1	-1	-1	-1	4	2
Marshall Creek	72	33	-	-	-3	-2	-14	-7	-17	-9	55	24
Project Total	214	88	0	0	-10	-4	-42	-18	-52	-22	**162**	**66**
Total	1,517	731	-53	-20	-60	-24	-252	-115	-365	-159	1,152	572
Difference between Redirected Existing Trips & Total Project Trips on Ramp after Redirection											**-151**	**-71**

***The credit is applied to each contributing project. See Table 24.**

As shown in Table 13 the corridor projects after redirection from the improvement projects are anticipated to total 162 AM Trips and 66 PM peak hour trips. With the credit from the improvement projects there would no additional trips on the ramps and also still be additional capacity for future projects within the corridor.

Improvement Project Timing

In regard to the timing of each improvement project a separate report is anticipated to be completed. This report considers that the corridor projects buildout schedule by year, the anticipated credit of each improvement, and when each improvement project would need to be implemented to maintain no additional trips on the ramp.

Conclusion

It is concluded that with the improvement projects that a significant number of trips would be redirected away from the NB US 195 to EB I-90 ramp, and that the net result would be no additional trips to the ramp.

Highway Segment LOS and Queue Analysis

WSDOT has requested within the scope that an analysis of the SR 195 NB Ramp and I-90 Interchange be included. For a highway interchange there is not a single level of service model like a standard intersection but the analysis of multiple elements, and then the review by a transportation professional to determine acceptance and/or impact. These elements include the ramp queue length, the ramp merge area, and the I-90 freeway segment. These elements have been analyzed for the current condition, the future year 2026 without the project with the 1.0% background growth rate and the background projects, and the future year 2026 with the project, with the 1.0% background growth rate and the background projects.

NB SR 195 Ramp Configurations

NB SR 195 Ramp has 2-lanes, each with 500 ft (20 vehicles per lane) of storage. The vehicle release method is alternating green phases. The WSDOT recommended maximum hourly rate and minimum hourly rate to avoid ramp queuing on NB SR 195 Ramp are maximum of 1200 vph (AM) & 800 vhp (PM) and minimum of 800 vph (AM) & 300 vph (PM).

Traffic Volumes Statement

With WSDOT's Open Bid to install Ramp Meters along I-90 at Hwy 2 as well as other ramps within the downtown core. These projected volumes are subject to change, to an unpredictable value. Also, with the change in volumes all analysis that utilizes these volumes will also be subject to change.

Traffic volumes for the year 2019 conditions were provided by WSDOT. Traffic volumes for the year 2021 existing conditions assumed that the 2019 traffic volumes experience an increase above the 2019 traffic volumes at the established background rate. Two scenarios were examined for the year 2026 analysis. The first scenario assumes that the development has not moved forward and analyzes the scoped intersections with the background growth rate & background projects (Amazon, The Summit, Tangle Ridge, Latah Glen, Greens at Meadowlane, Qualchan View, & Wheatland Estates). The second scenario assumes the same, but adds the project trips. These scenarios will allow a determination to be made as to what the future conditions may be both with and without the project. The redirection of traffic volumes from SR 195 EB ramp by SR 195 Corridor Improvement projects were also included for the with project and the without project scenarios. The volumes used for this analysis are shown on the following Tables.

Table 14 – AM Traffic Volumes (vehicles per hour)

	2021 Existing*		2026 W/ Background Projects**		Latah Glen Project	2026 W/ Background Projects & This Project**	
	W/O SR 195 Corridor IMP	W/ SR 195 Corridor IMP	W/O SR 195 Corridor IMP	W/ SR 195 Corridor IMP		W/O SR 195 Corridor IMP	W/ SR 195 Corridor IMP
I-90 Main	3,627	3,627	3,821	3,821	-	3,821	3,821
SR 195 EB	1,303	990	1,570	1,193	13	1,583	1,202

Table 15 – PM Traffic Volumes (vehicles per hour)

	2021 Existing*		2026 W/ Background Projects**		Latah Glen Project	2026 W/ Background Projects & This Project**	
	W/O SR 195 Corridor IMP	W/ SR 195 Corridor IMP	W/O SR 195 Corridor IMP	W/ SR 195 Corridor IMP		W/O SR 195 Corridor IMP	W/ SR 195 Corridor IMP
I-90 Main	4,409	4,409	5,353	5,353	-	5,353	5,353
SR 195 EB	643	506	758	594	5	763	598

*** Please see Table 9 for 2021 existing volumes on SR 195 EB**
**** 2026 traffic volumes adjusted from year 2021 to year 2026 via eastablish background growth rate(1.051)**

NB SR 195 Ramp Queue Length Analysis without SR 195 Corridor Improvement Projects

Based upon the spreadsheet provided by WSDOT, the queue length analysis on NB SR 195 Ramp for the without SR 195 Corridor Improvement Projects scenario has been updated. The summary of this scenario is shown in Table 16.

Table 16 - EB SR 195 Ramps-Queue length analysis without SR 195 IMP

Scenario			A 2021 Existing	B 2026 without Project	C 2026 with Project	C - B
Traffic Volumes* (VPH)	AM		1,303	1,570	1,583	13
	PM		643	758	763	5
WSDOT Ramp Existing Metering Rate (VPH) {Future Meter Rate}	AM		1,200	1,200	1,200	-
	PM		800	800 {500}	800 {500}	-
Vehicles in the Queue / Max. Queue Length/ Queue Exceedance/ Times of Exceedance	AM	Max. Vehicles in Queue (Veh)	135	446	466	20
		Max. Queue Length (ft)	3,377	11,146	11,646	500
		Queue Length Available (ft)	1,000	1,000	1,000	-
		Excess Queue Length (ft)	2,377	10,146	10,646	500
		Time of Day 1,000 ft Queue Length is Exceeded (Max. Time of Exceedance)	7:35 AM – 8:29 AM (7:54 AM)	6:46 AM – 8:59 AM (8:18 AM)	6:46 AM – 8:59 AM (8:18 AM)	-
	PM (Metering Rate: 800 VPH)	Max. Vehicles in Queue (Veh)	12	24	24	1
		Max. Queue Length (ft)	304	600	611	11
		Queue Length Available (ft)	1,000	1,000	1,000	-
		Excess Queue Length (ft)	0	0	0	0
		Time of Day 1,000 ft Queue Length is Exceeded (Max. Time of Exceedance))	-	-	-	-
	PM (Metering Rate: 500 VPH)	Max. Vehicles in Queue (Veh)	-	661	675	14
		Max. Queue Length (ft)	-	16,520	16,887	367
		Queue Length Available (ft)	1,000	1,000	1,000	-
		Excess Queue Length (ft)	-	15,520	15,887	367
		Time of Day 1,000 ft Queue Length is Exceeded (Max. Time of Exceedance)	-	3:12 PM – 5:59 PM (5:59 PM or After)	3:11 PM – 5:59 PM (5:59 PM or After)	-

***Traffic volumes without SR 195 IMP from Table 14 & 15**

As shown in Table 16, the maximum queue length for all scenarios without SR 195 Improvement Project in AM peak are anticipated to exceed the current storage space (1,000 ft) and the durations with queue beyond the storage for all scenarios are anticipated to continue to after AM peak hour. In PM peak, maximum queue length for all scenarios are anticipated to stay within the current storage space (1,000 ft), however, with 500 vph metering rate (to improve LOS on I-90 segment), the maximum queue length for all future scenarios in PM peak are anticipated to exceed the current storage space and the durations with queue beyond the storage for all future scenarios in PM peak are anticipated to continue to after PM peak hour, as the demand volumes used for the future year are only a projection of future traffic volumes, we recommend that the volumes and the queue length be monitored over time.

NB SR 195 Ramp Queue Length Analysis with SR 195 Corridor Improvement Projects

Based upon the spreadsheet provided by WSDOT, the queue length analysis on NB SR 195 Ramp for the with SR 195 Corridor Improvement Projects scenario has been updated. The summary of this scenario is shown in Table 17.

Table 17 - EB SR 195 Ramps-Queue length analysis with SR 195 IMP

Scenario			A 2021 Existing	B 2026 without Project	C 2026 with Project	C - B
Traffic Volumes* (VPH)	AM		990	1,193	1,202	9
	PM		506	594	598	4
WSDOT Ramp Existing Metering Rate (VPH) {Future Meter Rate}	AM		1,200	1,200	1,200	-
	PM		800	800 {500}	800 {500}	-
Vehicles in the Queue / Max. Queue Length/ Queue Exceedance/ Times of Exceedance	AM	Max. Vehicles in Queue (Veh)	8	76	80	4
		Max. Queue Length (ft)	196	1,903	2,010	107
		Queue Length Available (ft)	1,000	1,000	1,000	-
		Excess Queue Length (ft)	-	903	1,010	107
		Time of Day 1,000 ft Queue Length is Exceeded (Max. Time of Exceedance)	-	7:47 AM – 8:02 AM (7:53 AM)	7:43 AM – 8:05 AM (7:53 AM)	-
	PM (Metering Rate: 800 VPH)	Max. Vehicles in Queue (Veh)	8	11	11	1
		Max. Queue Length (ft)	190	281	287	6
		Queue Length Available (ft)	1,000	1,000	1,000	-
		Excess Queue Length (ft)	-	0	0	0
		Time of Day 1,000 ft Queue Length is Exceeded (Max. Time of Exceedance))	-	-	-	-
	PM (Metering Rate: 500 VPH)	Max. Vehicles in Queue (Veh)	-	193	206	13
		Max. Queue Length (ft)	-	4,826	5,147	321
		Queue Length Available (ft)	1,000	1,000	1,000	-
		Excess Queue Length (ft)	-	3,826	4,147	321
		Time of Day 1,000 ft Queue Length is Exceeded (Max. Time of Exceedance)	-	3:36 PM – 5:59 PM (5:59 PM or After)	3:36 PM – 5:59 PM (5:59 PM or After)	-

***Traffic volumes with SR 195 IMP from Table 14 & 15**

As shown in Table 17, the maximum queue length for the 2026 with & without project scenarios with SR 195 Improvement Project in AM peak are anticipated to exceed the current storage space (1,000 ft) and the durations with queue beyond the storage are anticipated to be 15 minutes (7:47 AM – 8:02 AM) for the 2026 without project scenario and 22 minutes (7:43 AM – 8:05 AM) for the 2026 with project scenario. In PM peak, maximum queue length for all scenarios are anticipated to stay within the current storage space (1,000 ft), however, with 500 vph metering rate (to improve LOS on I-90 segment), the maximum queue length for all future scenarios in PM peak are anticipated to exceed the current storage space and the durations with queue beyond the storage for all future scenarios in PM peak are anticipated to continue to after PM peak hour, as the demand volumes used for the future year are only a projection of future traffic volumes, we recommend that the volumes and the queue length be monitored over time.

Based upon the analysis provided in Tables 16 and 17, it is anticipated that the SR 195 Corridor Improvement Project will improve NB SR 195 Ramp metering operation, by reducing 386 vehicles (466 vehicles – 80 vehicles) in maximum queue for AM and 13 vehicles (24 vehicles – 11 vehicles) in maximum queue for PM peak.

I-90 Segments LOS Analysis

The future Levels of Service at the freeway segments were calculated using the methods from the *Highway Capacity Manual 6th Edition* as implemented in *HCS7*, version 7.7. The Levels of Service for I-90 segments within the study area for both of the with and without SR 195 Corridor Improvement Projects scenario are summarized on the following tables.

Table 18- I-90 Freeway Levels of Service without SR 195 IMP (AM: 1,200 vph, PM: 800 vph)

I-90 SEGMENT		2021 Existing		2026 W/O Project		2026 W/ Project	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Ramp Merge Area	AM	37.4	E	39.8	E	39.8	E
(NB SR 195 to EB I-90)	PM	37.1	E	Exceed 50.0 (47.3)	**F** (E)	Exceed 50.0 (47.3)	**F** (E)
• With 500 vph metering rate at PM							
Basic Area	AM	34.7	D	36.8	E	36.8	E
(NB SR 195 to Walnut St.)	PM	34.5	D	Exceed 45.0 (44.0)	**F** (E)	Exceed 45.0 (44.0)	**F** (E)
• With 500 vph metering rate at PM							
Ramp Diverge Area	AM	25.3	C	26.4	C	26.4	C
(EB I-90 to Walnut St.)	PM	24.3	C	29.8	C	29.8	C

Table 19- I-90 Freeway Levels of Service with SR 195 IMP (AM: 1,200 vph, PM: 800 vph)

I-90 SEGMENT		2021 Existing		2026 W/O Project		2026 W/ Project	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Ramp Merge Area	AM	34.9	E	39.8	E	39.8	E
(NB SR 195 to EB I-90)	PM	35.6	E	Exceed 50.0 (47.3)	**F** (E)	Exceed 50.0 (47.3)	**F** (E)
• With 500 vph metering rate at PM							
Basic Area	AM	32.7	D	36.7	E	36.8	E
(NB SR 195 to Walnut St.)	PM	33.3	D	Exceed 45.0 (44.0)	**F** (E)	Exceed 45.0 (44.0)	**F** (E)
• With 500 vph metering rate at PM							
Ramp Diverge Area	AM	24.1	C	26.3	C	26.4	C
(EB I-90 to Walnut St.)	PM	23.6	B	28.9	C	29.0	C

As shown in Table 18 & 19, the change of the density & level of Service on I-90 segments by adding new trips of the project were minimal considering. For 2026 PM peak hour at current metering rates, the level of service at Ramp Merge area and Basic area is anticipated to operate at "F". With 500 vph ramp metering rates in PM peak hour, it is anticipated to operate at level of service "E".

Conclusion

Based upon the analysis provided it is concluded that the addition of the project trips will have an impact upon the SR 195 & 1-90 Interchange, by adding 4 vehicles (107 ft) in queue for AM and 1 vehicle (6 ft) in queue for PM.

LOS Analysis on the Intersection of 23rd Avenue (Thorpe Road) & Inland Empire Way

Per the WSDOT comments dated on May 28, 2021, the additional analysis at the intersection of 23rd Avenue (Thorpe Road) & Inland Empire Way has been performed. Seven scenarios were considered for this analysis;

1. 2021 existing
2. 2026 with background growth rate and without SR 195 IMP projects
3. 2026 with background growth rate and with SR 195 IMP projects
4. 2026 with background projects, without this project (Qualchan View Estates), and without SR 195 IMP projects
5. 2026 with background projects, without this project, and with SR 195 IMP
6. 2026 with background projects, with this project, and without SR 195 IMP
7. 2026 with background projects, with this project, and with SR 195 IMP

A summary of the Level of Service results is shown in the following table.

Table 20 – LOS on the Intersection of 23rd Avenue (Thorpe Road) & Inland Empire Way

Scenario **(A)ll way stop control** **(T)wo way stop control**		**AM Peak Hour**		**PM Peak Hour**	
		Delay (sec)	**LOS**	**Delay (sec)**	**LOS**
2021 Existing Condition	A	8.0	A	7.5	A
2026 w/ Growth Rate w/o SR 195 IMP Projects	A	8.1	A	7.5	A
2026 w/ Growth Rate w/ SR 195 IMP Projects • Stop Control on 23rd Avenue (Thorpe Road)*	A (T)	10.1 (12.8)	B (B)	8.1 (10.4)	A (B)
2026 w/o Project w/o SR 195 IMP Projects	A	8.1	A	7.5	A
2026 w/o Project w/ SR 195 IMP Projects • Stop Control on 23rd Avenue (Thorpe Road)*	A (T)	10.6 (13.6)	B (B)	8.1 (10.5)	A (B)
2026 w/ Project w/o SR 195 IMP Projects	A	8.2	A	7.6	A
2026 w/ Project w/ SR 195 IMP Projects • Stop Control on 23rd Avenue (Thorpe Road)*	A (T)	10.7 (13.8)	B (B)	8.3 (10.7)	A (B)

***In case of the predomination of traffic volume on Inland Empire Way, the intersection has been analyzed based upon the stop control on 23rd Avenue only.**

As shown Table 20, the intersection of Thorpe Road (23rd Avenue) & SR 195 is anticipated to operate at an acceptable level of service with all scenarios.

Conclusion

Based upon the analysis provided, it is concluded that the addition of the project trips will have a minimal impact upon the intersection of 23rd Avenue (Thorpe Road) & Inland Empire Way, by increasing 0.1 seconds in delay for AM and 0.2 seconds in delay for PM.

Queue Analysis on the Intersection of 16th Avenue & SR 195

Per the WSDOT comments dated on May 28, 2021, the Northbound Left-Turn queue length at the intersection of 16th Avenue & SR 195 has been analyzed. The methodology for this analysis is as shown below:

1. Using WSDOT Ramp Queuing Analysis spreadsheet, evaluate the maximum volumes on SR 195 NB Ramp with the current storage length (2-lanes, each with 500 ft (20 vehicle per lane – total of 40 vehicle)).

2. Calculate the overflow traffic volumes (2026 Projected traffic volumes on SR 195 NB Ramp – the Maximum volumes on SR 195 NB Ramp)

3. Based upon the calculated overflow traffic volumes, modify the 2026 projected traffic volumes on the intersection of 16th Avenue & SR 195 (NB Thru Traffic Volume: 2026 projected traffic volume – the overflow traffic volume, NB Left-Turn Traffic Volume: 2026 projected traffic volume + the overflow traffic volume).

4. Evaluate the queue length (NB Left-Turn) and LOS at the intersection.

The summary of this analysis is shown below tables.

Table 21 – 2026 Diverted Traffic Volume from SR 195 NB Ramp to 16th NB LT by Queuing

Scenario	Peak Hour	Metering Rate (Veh/hr)	Storage Capacity (ft)	A. Maximum Supportable Traffic Volume (Veh/hr)**	B. 2026 Traffic Volume (Veh/hr)***		C. Overflow Traffic B-A (Veh/hr)	
					WO Project	W Project	WO Project	W Project
WO SR 195 IMP	AM	1,200	1,000 (40 veh)	1,108	1,570	1,583	462	475
	PM	500*	1,000 (40 veh)	521	758	763	237	242
W SR 195 IMP	AM	1,200	1,000 (40 veh)	1,108	1,193	1,202	85	94
	PM	500*	1,000 (40 veh)	521	594	598	73	77

500 vph Metering (to improve LOS on I-90 segment)
Evaluated by WSDOT Ramp Queuing Analysis Spreadsheet
****2026 Traffic Volumes with SR 195 IMP Projects (Tables 14 & 15)***

Table 22 – Queue & LOS Analysis for NB Left-turn for 2026 without Project Scenario

Scenario	Peak	Movement	2026 without Diversion				2026 with Diversion			
			D. Vol. (Veh/hr)	95th Queue (ft)	LOS - Delay (s)	Int. LOS&Delay (s)	Vol. (Veh/hr)*	95th Queue(ft)	LOS - Delay (s)	Int.LOS &Delay (s) **
WO SR 195 IMP	AM	NB LT	112	13 (1veh)	A-9.5	D-26.1	574	143(6veh)	C-16.9	**F-67.5**
		NB TH	1,677	-	-		1,215	-	-	
	PM	NB LT	92	25 (1veh)	C-17.6	C-17.6	329	**233 (10veh)**	**F-58.3**	**F-140.7**
		NB TH	724	-	-		487	-	-	
W SR 195 IMP	AM	NB LT	112	13 (1veh)	A-9.5	D-26.1	197	23(1veh)	B-10.1	D-27.5
		NB TH	1,677	-	-		1,592	-	-	
	PM	NB LT	92	25 (1veh)	C-17.6	C-17.6	165	58(3veh)	C-22.0	C-18.2
		NB TH	724	-	-		651	-	-	

NB LT: D (Table 22: NB LT) + C (Table 21), NB TH: D (Table 22: NB TH) – C (Table 21)
****Intersection LOS & Delay based upon Critical Movement***

Table 23 – Queue & LOS Analysis for NB Left-turn for 2026 with Project Scenario

Scenario	Peak	Movement	2026 without Diversion				2026 with Diversion			
			D. Vol. (Veh/hr)	95th Queue (ft)	LOS - Delay (s)	Int. LOS&Delay (s)	Vol. (Veh/hr)*	95th Queue(ft)	LOS - Delay (s)	Int.LOS &Delay (s) **
WO SR 195 IMP	AM	NB LT	115	13 (1veh)	A-9.5	D-26.3	590	155(7veh)	C-17.7	**F-83.3**
		NB TH	1,688	-	-		1,213	-	-	
	PM	NB LT	95	28 (2veh)	C-18.0	C-18.0	337	**255 (11veh)**	**F-66.2**	**F-66.2**
		NB TH	735	-	-		493	-	-	
W SR 195 IMP	AM	NB LT	115	13 (1veh)	A-9.5	D-26.3	209	25(1veh)	B-10.2	D-28.1
		NB TH	1,688	-	-		1,594	-	-	
	PM	NB LT	95	28 (2veh)	C-18	C-18.0	172	63(3veh)	D-23.1	D-23.1
		NB TH	735	-	-		658	-	-	

NB LT: D (Table 19: NB LT) + C (Table 17), NB TH: D (Table 19: NB TH) – C (Table 17)
****Intersection LOS & Delay based upon Critical Movement***

As shown in Table 22 & 23, with the diversion traffic volume caused by queueing on SR 195 NB Ramp, it is anticipated that the NB left-turn queue length will exceed the available storage (240 ft) for PM peak hour and the intersection will operate at an unacceptable level of service for both AM & PM peak hours. With the SR 195 Improvements projects, it is anticipated that the NB left-turn queue length will stay within the available storage and the intersection will operate at an acceptable level of service.

Conclusion

Based upon the analysis provided, it is concluded that the diverted trips will have a minimal impact upon the northbound left-turn lane at the intersection of 16th Avenue and SR 195, by adding 1 vehicle (2 ft) in queue for AM and 1 vehicle (5 ft) in queue for PM.

DEVELOPMENT PARTICIPATION IN SR 195 IMPROVEMENT PROJECTS

Per the comments by WSDOT dated February 17, 2022, a summary of the development community participation in SR 195 improvement projects is shown in Table 24.

Table 24 – Development Participation in SR 195 IMP

Development	Units	Safety Projects		SR 195 Ramp Redirection Projects		
		Hatch	Meadowlane	16th	Thorpe	Inland Empire Way
The Summit	98		X		X	
Tangle Ridge	45		X		X	
Wheatland Estates	189		X	X		
Greens at Meadowlane	36		X			X*
Greens at Meadowlane 2	25	X	X			X*
Grandview Addition	89			X		
Crystal Ridge	30			X		
Qualchan View Estates	160	X	X			X
Latah Glen	135	X				X
Marshall Creek	425	X				X

***The Greens participation at Inland Empire Way is impact fee monies only.**

Conclusions

This Traffic Impact Analysis (TIA) has reviewed and analyzed the study area per the scope established by the City of Spokane and WSDOT. Based upon the analysis, field observations, assumptions, methodologies and results which are provided in the body of this report, it is concluded that the development of the proposed project will generate new trips on the existing transportation system and that those trips will have an impact on the transportation system. This conclusion was reached and has been documented within the body of this report.

- Under the **existing** conditions, all intersections are currently operating at an acceptable level of service.
- For the **year 2026 with background growth rate** scenario, all intersections are anticipated to continue to operate at an acceptable level of service except the intersections of SR 195 & 16th Avenue and SR 195 & Hatch Road. With the mitigation provided by the Spangle-Wheatland project at SR 195 & 16th Avenue (Right Out only on eastbound approach) and the reconfiguration on westbound approach to a right out only with the proposed J-turn at SR 195 & Meadowlane Road, all intersections are anticipated to operate at an acceptable level of service.
- For the **year 2026 with background growth rate plus background projects and without this project** scenario, with the mitigation provided by the Spangle-Wheatland project (Right Out only on eastbound approach) at SR 195 & 16th Avenue, the reconfiguration on westbound approach to a right out only at SR 195 & Hatch Road, and a new access on Eagle Ridge Boulevard with a ½ J turn at SR 195 & Meadowlane Road, all intersections are anticipated to continue to operate at an acceptable level of service.
- For the **year 2026 with background growth rate plus background projects and with this project** scenario, with the mitigation provided by the Spangle-Wheatland project (Right Out only on eastbound approach) at SR 195 & 16th Avenue, the reconfiguration on westbound approach to a right out only at SR 195 & Hatch Road, and a new access on Eagle Ridge Boulevard with a ½ J turn at SR 195 & Meadowlane Road, all intersections are anticipated to continue to operate at an acceptable level of service. (Please see Wheatland Estates Proposed Traffic/Transportation Conditions of Approval letter in Background Project section of Appendix).

As shown in the Additional Analysis - Right Turn Lane Warrant Analysis section, it is concluded that the intersection of Inland Empire Way & SR 195 meets the WSDOT right turn lane warrant. However, the intersection level of service remains at an acceptable level through the buildout period. Additionally, there is also a sight distance concern associated with a dedicated right turn lane, as a vehicle within the turn lane blocks the view of oncoming traffic. We propose additional consultation with the WSDOT that this be reevaluated after the 100th home site has received an occupancy permit.

As shown in the additional analysis section – SR 195 Corridor Improvement Projects, it was concluded that with the EB Turn Restrictions at 16th Avenue, Flashing Beacon and Sign at Thorpe Road Exit, and Connection to Inland Empire Way at Cheney-Spokane Road Ramp projects (by other projects, yet to be approved but in the pipeline) that a significant number of trips would be redirected away the NB US 195 to EB I-90 ramp, and that the net result would be no additional trips to the I-90 Ramps.

As shown in the additional analysis Highway Segment LOS and Queue Analysis section, based upon the analysis provided it is concluded that the addition of the 13 AM and the 5 PM project trips will have an impact upon the SR 195 & 1-90 Interchange, by adding 4 vehicles with a calculated 107 ft addition at queue for AM and 1 vehicle with a calculated 6 ft addition at queue for PM with SR 195 Corridor Improvement Projects.

As shown in the additional analysis, based upon the LOS Analysis on the intersection of 23rd Avenue & Inland Empire Way, it is concluded that the addition of the project trips will have a minimal impact upon the intersection of 23rd Avenue (Thorpe Road) & Inland Empire Way, by increasing 0.1 seconds in delay for AM and 0.2 seconds in delay for PM.

As shown in the additional analysis, based upon the Queue Analysis on the intersection of 16th Avenue & SR 195, it is concluded that the diverted trips will have a minimal impact upon the northbound left-turn lane at the intersection of 16th Avenue and SR 195, by adding 1 vehicle (2 ft) in queue for AM and 1 vehicle (5 ft) in queue for PM.

Recommendations

It is recommended that the project be conditioned to participate in the Corridor Improvement projects as described within this document. The proposed conditions are as follows.

A. *Vehicular traffic from this project is expected to add 13 AM trips and 5 PM trips to the NB US 195 to EB I-90 ramp. WSDOT has commented that no additional peak hour trips may be added to the ramp due to safety concerns. Latah Glen is therefore required to contribute funds to complete an improvement to the US 195 corridor that will reduce the impact of its traffic on NB US 195 to EB I-90 ramp ("Mitigation Project"). Latah Glen may receive plan approval after a financial commitment is in place (secured by a letter of credit or bond), which has been approved by the City, providing for the funding of the design and the construction for the Mitigation Project(s), which shall be under contract for construction within one year from issuance of the plan approval. The details of the mitigation project(s) will be agreed upon by the developers, City and WSDOT. The applicant's contributions to funding the design and construction of the mitigation project(s) will qualify for a credit against transportation impact fees per SMC 17D.075.070*
B. *Latah Glenn may receive plan approval once a financial commitment is in place (secured by a letter of credit or bond), which has been approved by the City, providing for a.) the construction of the 16th Avenue improvements with SR 195, and b.) Cheney-Spokane Road Ramp – Connection to Inland Empire Way Improvement.*

This commitment may be defined as an agreement between several developers to fund and construct the 16th Avenue, and the Cheney-Spokane Road Ramp – Connection to Inland Empire Way Improvement projects within a specified time frame, not to exceed six years, as agreed upon by city staff and WSDOT. The applicant's contributions to funding the design and construction of the Improvement projects will qualify for a credit against transportation impact fees per SMC 17D.075.070.

i. *The 16th Avenue and SR 195, improvement project will consist of the the following:*
   - *Install a raised curb island*
   - *Channelize the turn lane*
   - *Add a southbound acceleration lane.*

ii. *The Cheney-Spokane Road Ramp – Connection to Inland Empire Way Improvement project will consist of the following:*
   - *Extend the northbound ramp to Inland Empire Way,*
   - *One or Two-way connection to Inland Empire Way,*
   - *Install ramp with acceleration lane*
   - *Install ramp meter signal*
   - *Relocate existing sign bridge*

iii. *Latah Glen Financial Commitment*
*The financial commitment for Latah Glen development based upon the rate of participation is as follows for the Cheney-Spokane Road Ramp improvement with 157 PM peak hour trips at $1,910.64 per PM peak hour trip. The participation percentage is anticipated to total $299,970.48(157 trips * $1,910.64). In summary the total financial commitment due is $299,970.48 or greater depending upon final cost, less a 25% contribution to the construction of improvements at 16th and SR-195 as proposed in the Spangle-Wheatland Estate mitigation proposal.*

iv. *The applicant's contributions to funding the design and construction of the Improvement projects will qualify for a credit against transportation impact fees per SMC 17D.075.070.*

v. *It should be noted that the Latah Glen Community commitment to this improvement has been set tentatively at $299,970.48 this commitment along with the value of $776,630.48 from Marshall Creek would result in a beginning commitment of $1,076,600± to the Inland Empire Way access, Phase 1. It is understood that this is an approximated commitment may increase due to actual construction costs for the improvements proposed.*

vi. *Lastly, the current impact fee credit of $1160.64 would occur at time of building permit which results in an effective developer contribution of $750/unit ($1910.64-$1160.64).*

Based upon the conclusions within this study, the proposed project is recommended to complete all required conditions of approval and should be allowed to move forward without further traffic analysis, or offsite mitigation.

EXHIBIT C-2

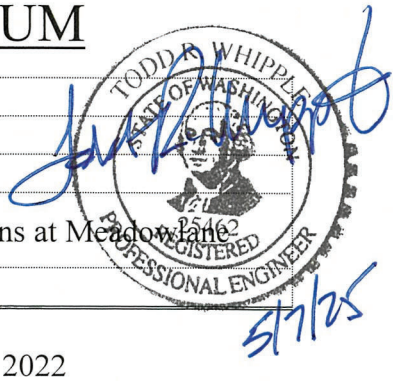
WCE

Whipple Consulting Engineers, Inc.

21 S. Pines Road
Spokane Valley, WA 99206
Ph 509-893-2617 Fax 509-926-0227

TECHNICAL MEMORANDUM

TO:	File		
FROM:	Ben Goodmansen, E.I.T. Todd R. Whipple, P.E.		
DATE:	May 7, 2025		
PROJECT NO:	20-2564 20-2699	**NAME:**	Latah Glenn/ Greens at Meadowlane
REGARDING:	16th Avenue Redirection Project		



Approved Latah Glenn Residential Community TIA Dated March 24, 2022
Excerpt Table 13.

Table 13 **– Corridor Project Trip Redirection Summary with Improvement Credit**

	Original Trips on Ramp		Redirected Trips from Ramp by SR 195 Projects								Trips on Ramp after Redirection	
			Turn Restriction @ 16th		Flashing Beacon @ Thorpe		Inland Empire Way Ramp & Meter		Total			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Existing Trips on Ramp	1,303	643	-53	-20	-50	-20	-210	-97	**-313**	**-137**	990	506
Summit	22	17	-	-	-1	-1	-4	-3	-5	-4	17	13
Wheatland	50	9	-	-	-2	0	-10	-2	-12	-2	38	7
Tangle Ridge	10	7	-	-	-1	0	-2	-1	-3	-1	7	6
Latah Glen	13	5	-	-	-1	0	-3	-1	-4	-1	9	4
Qualchan View	42	14	-	-	-2	-1	-8	-3	-10	-4	32	10
Greens @ Meadowlane	5	3	-	-	0	0	-1	-1	-1	-1	4	2
Marshall Creek	72	33	-	-	-3	-2	-14	-7	-17	-9	55	24
Project Total	214	88	0	0	-10	-4	-42	-18	-52	-22	**162**	**66**
Total	1,517	731	-53	-20	-60	-24	-252	-115	-365	-159	1,152	572
Difference between Redirected Existing Trips & Total Project Trips on Ramp after Redirection											**-151**	**-71**

The 16th Avenue redirection project was completed by Latah Glenn and Greens @ Meadowlane developments the 16th Avenue project redirected 53 AM Peak hour Trips and 20 PM Peak hour Trips. Thus providing credit to be applied to these development projects. The Highlighted project value is changed with the change of use described in this memo.

The Greens at Meadowlane received credit for 5 AM Trips and 3 PM Trips. The Greens at Meadowlane 2 also received credit for 5 AM Trips and 3 PM Trips. As the Greens at Meadowlane 2 proceeded after the final Latah Glen TIA it was not included in the Table.

The Latah Glen Project is proposing a change of conditions to change the 157 mobile home park units into 142 single family dwelling units.

Existing Land use per Table 8 of the approved study

Table 8 -Trip Generation Rates for LUC # 240 – Mobile Home Park

Dwelling Units	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 0.26 trips/units	Directional Distribution		Vol. @ 0.46 trips / Units	Directional Distribution	
		31% In	69% Out		62% In	38% Out
157	41	13	28	73	45	28

Average Daily Trip Ends (ADT)		
Units	Rate	ADT
157	5.00	785

Proposed Land Uses

For the 142 units of single-family, Land Use Code (LUC) 210 Single Family detached housing will be used to establish the number of potential trips generated by the proposed land use. Per the ITE Trip Generation handbook there are two means to calculate trip generation: Average Rate and Fitted Curve. Both methods are shown in the table with the most conservative selected. The anticipated trip generated per this method is shown in Table 1.

Table 1- Trip Generation Rates for LUC #210 Single-Family Detached Housing

Dwelling Units	AM Peak Hour			PM Peak Hour		
	Vol. per Average Rate	Directional Distribution		Vol. per Average Rate	Directional Distribution	
		25% In	75% Out		63% In	37% Out
142	99	25	74	133	84	49

Average Daily Trip Ends (ADT)		Average Rate Equations (Adj. Street):	Fitted Curve Equations (Adj. Street):
Dwelling Units	Vol. per Average Rate	AM: T = 0.70 * x = 99 PM: T = 0.94 * x = 133 ADT: T = 9.43 * x = 1339 T = Trips/units, x = Dwelling Units	AM: Ln(T) = 0.91 Ln(x) + 0.12 = 102 PM: Ln(T) = 0.94 Ln(x) + 0.27 = 138 ADT: Ln(T) = 0.92 Ln(x) + 2.68 = 1393 T = Trips/units, x = Dwelling Units
142	1,339		

Table 2- Net New Trip Generation Summary

Land Use Code	AM Peak Hour			PM Peak Hour		
	Vol. per LUC	Directional Distribution		Vol. per LUC	Directional Distribution	
		In	Out		In	Out
LUC #210 Single-Family Detached Housing (Table 1)	99	25	74	133	84	49
LUC #240 Mobile Home (Table 8)	<41>	<13>	<28>	<73>	<45>	<28>
Difference	**58**	**12**	**46**	**60**	**39**	**21**

Average Daily Trip Ends (ADT)	< > indicates subtraction
Land Use Code	**Vol. per LUC**
LUC #210 Single-Family Detached Housing (Table 1)	1,339
LUC #240 Mobile Home (Table 8)	<785>
Difference	**554**

As shown in Table 2, the proposed change in land use is anticipated to generate 58 additional trips in the AM peak hour with 12 additional trips entering the site and 46 additional trips exiting the site. In the PM peak hour, the proposed change in land use is anticipated to generate 60 additional trips, with 39 additional trips entering the site and 21 additional trips exiting the site. The proposed change in land use is anticipated to generate a total of 554 additional average daily trip ends to/from the site.

Trip Distribution
Per the Approved TIA Trip distribution is anticipated to remain the same

At the SR195 to I-90 EB Ramp 25% of outbound project trips are anticipated to utilize the route. Per Table 1 that equates to 19 (74*0.25) AM trips and 12 (49*0.25) PM trips.

When taking the 16th redirection trips and applying trips from Meadow Lane (Phase 1 & 2), and Latah Glen, there would still be a remaining credit of 24 AM trips and a remaining deficit of 2 PM Trips per Table 3.

Table 3 – Remaining Credit

	AM	PM
16th Redirect (Table 13)	-53	-20
Greens at Meadow Lane	5	3
Greens at Meadow Lane 2	5	3
Latah Glen (Table 1)	19	12
Remaining Credit	**24**	**2**

EXBHIBIT C-3

WCE

Whipple Consulting Engineers, Inc.

21 S. Pines Road
Spokane Valley, WA 99206
Ph 509-893-2617 Fax 509-926-0227

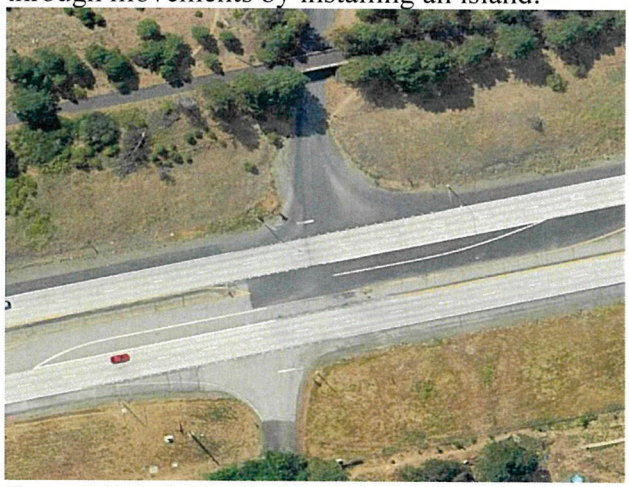
TECHNICAL MEMORANDUM

TO:	File		
FROM:	Ben Goodmansen, E.I.T. Todd R. Whipple, P.E.		
DATE:	June 10, 2025		
PROJECT NO:	20-2564 20-2699	**NAME:**	Latah Glenn/ Greens at Meadowlane
REGARDING:	16th Avenue Redirection Project – Traffic Comparison		

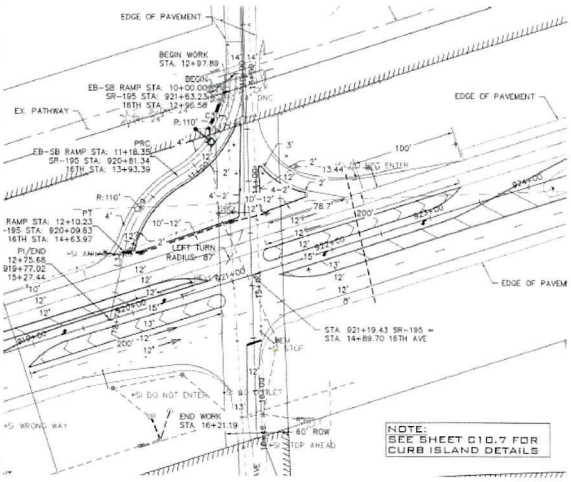
TODD R. WHIPPLE STATE OF WASHINGTON 25462 REGISTERED PROFESSIONAL ENGINEER

6/10/25

The 16th Avenue redirection project was intended to restrict the eastbound left and eastbound through movements by installing an island.



Source Google earth



Source As Built Drawings

To measure the effectiveness of the restriction the eastbound traffic volumes from previous counts are compared to post construction counts. The counts are attached, listed below, and excerpts included within.

4-23-24 WSDOT Pre Count AM & PM Peak Hour

Start Time	EB 16th Eastbound					
	Right	Thru	Left	U-Turn	Peds	App. Total
7:00 AM	11	0	21	0	0	32
7:15 AM	16	1	25	0	0	42
7:30 AM	20	0	33	0	0	53
7:45 AM	21	0	14	0	0	35
Total	68	1	93	0	0	162

Start Time	EB 16th Eastbound					
	Right	Thru	Left	U-Turn	Peds	App. Total
4:15 PM	43	0	12	0	0	55
4:30 PM	48	1	12	0	1	61
4:45 PM	33	0	14	0	0	47
5:00 PM	52	1	10	0	0	63
Total	176	2	48	0	1	226

5-27-25 WCE Post Count - AM & PM Peak Hour

6:30 AM			6:45 AM			7:00 AM			7:15 AM			Mvmt	TOTAL	
BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV		HV	Veh
0	0	0	0	0	0	0	0	0	0	0	0	EBU	0	0
0	0	0	0	0	0	0	0	0	0	0	0	EBL	0	0
0	0	0	0	0	0	0	0	0	0	0	0	EBT	0	0
0	18	3	0	28	0	0	17	0	0	37	1	EBR	4	104
0	18	3	0	28	0	0	17	0	0	37	1	Total	4	104

3:30 PM			3:45 PM			4:00 PM			4:15 PM			Mvmt	TOTAL	
BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV		HV	Veh
0	0	0	0	0	0	0	0	0	0	0	0	EBU	0	0
0	0	0	0	0	0	0	0	0	0	0	0	EBL	0	0
0	0	0	0	0	0	0	0	0	0	0	0	EBT	0	0
0	22	1	0	50	0	0	30	0	0	30	0	EBR	1	133
0	22	1	0	50	0	0	30	0	0	30	0	Total	1	133

General observations identify a shift in the peak hours. Indicating a shift in the general commuter trips in the area. This may be due to the ramp meter at I-90 and US 195 or other changes in the area.

Table 1 – Count Comparison Eastbound Approach

	5-27-25 Post Count	4-23-24 Pre Count	Difference
AM Peak Hour	104	162	-58
PM Peak Hour	133	226	-93

As shown in Table 1 in the 2024 to 2025 comparison there are 58 less AM peak hour, and 93 less PM Peak Hour trips. Based upon this analysis it can be concluded that with the reduction in traffic volumes on the eastbound approach that the redirection project was successful.

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_AM
Site Code: 195-09555
Start Date: 04/23/2024

Turning Movement Data

	WB 16th Westbound						NB US 195 Northbound						EB 16th Eastbound						
App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
72	2	0	0	0	0	2	0	118	2	0	0	120	5	0	16	0	0	21	215
81	1	0	2	0	0	3	0	160	9	0	0	169	5	0	15	0	0	20	273
91	6	0	0	0	0	6	1	213	8	0	0	222	11	0	24	0	0	35	354
119	1	0	0	0	0	1	0	232	22	0	0	254	15	0	19	0	0	34	408
363	10	0	2	0	0	12	1	723	41	0	0	765	36	0	74	0	0	110	1250
122	5	1	1	0	0	7	0	283	14	0	0	297	11	0	21	0	0	32	458
153	4	0	1	0	1	5	0	311	16	0	0	327	16	1	25	0	0	42	527
145	4	1	0	0	0	5	0	355	26	0	0	381	20	0	33	0	0	53	584
135	4	1	0	0	0	5	1	302	44	0	0	347	21	0	14	0	0	35	522
555	17	3	2	0	1	22	1	1251	100	0	0	1352	68	1	93	0	0	162	2091
127	6	0	0	0	0	6	1	206	45	0	0	252	19	0	24	0	0	43	428
126	3	2	0	0	0	5	1	204	37	0	0	242	30	1	20	0	0	51	424
134	7	1	1	0	0	9	1	196	19	0	0	216	34	0	24	0	0	58	417
154	1	0	1	0	0	2	0	216	14	0	0	230	22	0	11	0	0	33	419
541	17	3	2	0	0	22	3	822	115	0	0	940	105	1	79	0	0	185	1688
1459	44	6	6	0	1	56	5	2796	256	0	0	3057	209	2	246	0	0	457	5029
-	78.6	10.7	10.7	0.0	-	-	0.2	91.5	8.4	0.0	-	-	45.7	0.4	53.8	0.0	-	-	-
29.0	0.9	0.1	0.1	0.0	-	1.1	0.1	55.6	5.1	0.0	-	60.8	4.2	0.0	4.9	0.0	-	9.1	-
2	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	5
0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
1275	42	5	6	0	-	53	2	2725	253	0	-	2980	202	2	246	0	-	450	4758
87.4	95.5	83.3	100.0	-	-	94.6	40.0	97.5	98.8	-	-	97.5	96.7	100.0	100.0	-	-	98.5	94.6
16	2	1	0	0	-	3	3	7	1	0	-	11	6	0	0	0	-	6	36
1.1	4.5	16.7	0.0	-	-	5.4	60.0	0.3	0.4	-	-	0.4	2.9	0.0	0.0	-	-	1.3	0.7
97	0	0	0	0	-	0	0	29	2	0	-	31	1	0	0	0	-	1	129
6.6	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.8	-	-	1.0	0.5	0.0	0.0	-	-	0.2	2.6
69	0	0	0	0	-	0	0	32	0	0	-	32	0	0	0	0	-	0	101
4.7	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	2.0
0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WSDOT Eastern Region : Spokane
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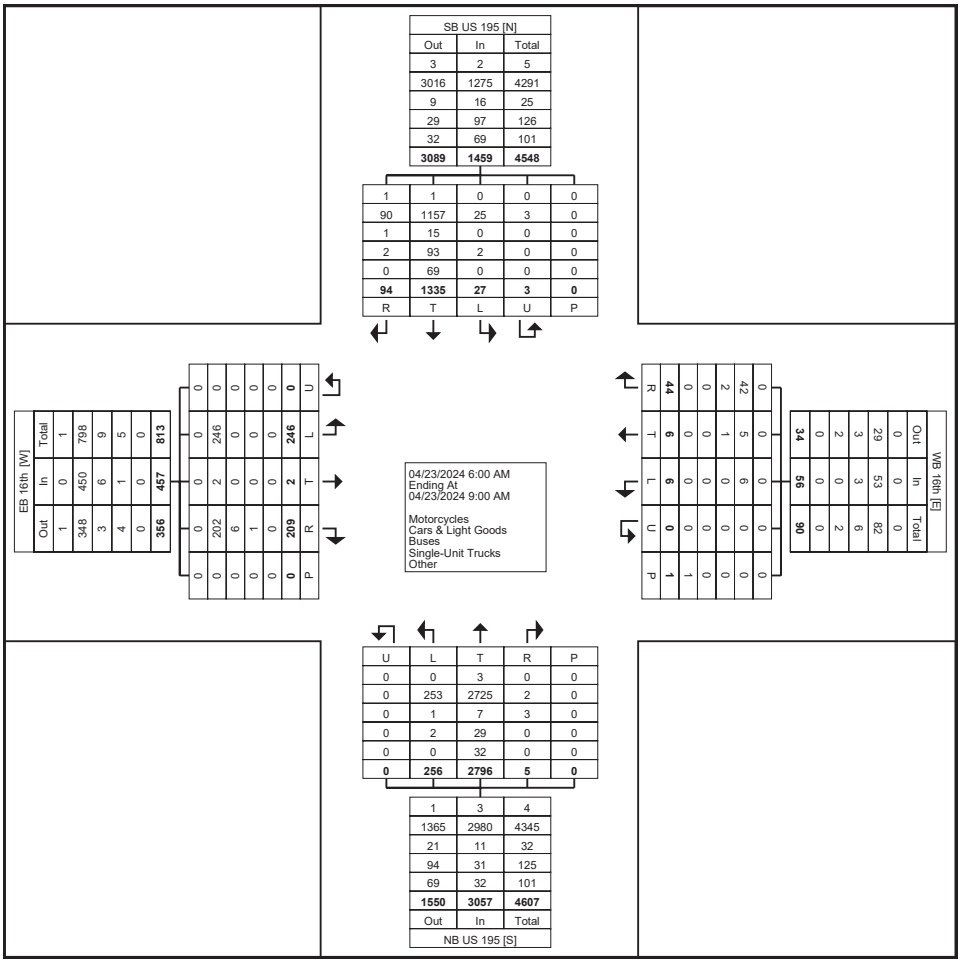
Count Name: 195-09555_16th_2024-04-23_AM
Site Code: 195-09555
Start Date: 04/23/2024



Turning Movement Data Plot

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_AM
Site Code: 195-09555
Start Date: 04/23/2024

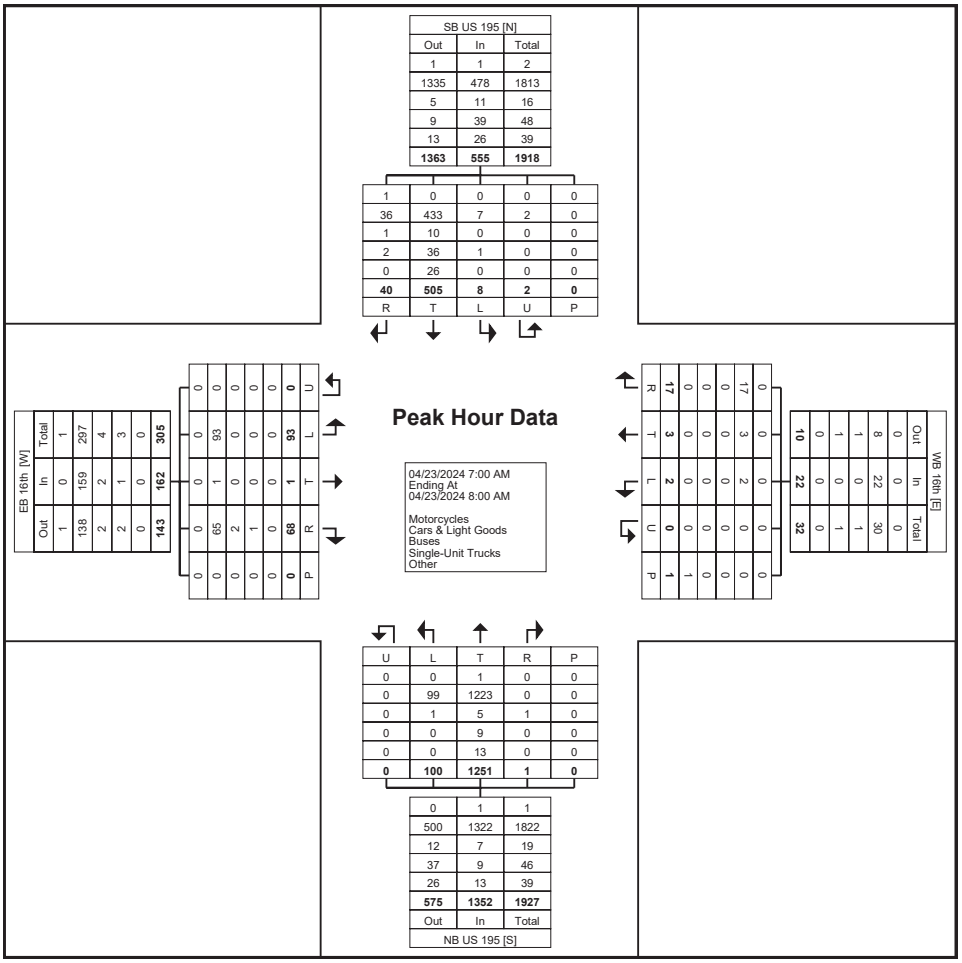
Turning Movement Peak Hour Data (7:00 AM)

	WB 16th Westbound						NB US 195 Northbound						EB 16th Eastbound						
App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
122	5	1	1	0	0	7	0	283	14	0	0	297	11	0	21	0	0	32	458
153	4	0	1	0	1	5	0	311	16	0	0	327	16	1	25	0	0	42	527
145	4	1	0	0	0	5	0	355	26	0	0	381	20	0	33	0	0	53	584
135	4	1	0	0	0	5	1	302	44	0	0	347	21	0	14	0	0	35	522
555	17	3	2	0	1	22	1	1251	100	0	0	1352	68	1	93	0	0	162	2091
-	77.3	13.6	9.1	0.0	-	-	0.1	92.5	7.4	0.0	-	-	42.0	0.6	57.4	0.0	-	-	-
26.5	0.8	0.1	0.1	0.0	-	1.1	0.0	59.8	4.8	0.0	-	64.7	3.3	0.0	4.4	0.0	-	7.7	-
0.907	0.850	0.750	0.500	0.000	-	0.786	0.250	0.881	0.568	0.000	-	0.887	0.810	0.250	0.705	0.000	-	0.764	0.895
1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
478	17	3	2	0	-	22	0	1223	99	0	-	1322	65	1	93	0	-	159	1981
86.1	100.0	100.0	100.0	-	-	100.0	0.0	97.8	99.0	-	-	97.8	95.6	100.0	100.0	-	-	98.1	94.7
11	0	0	0	0	-	0	1	5	1	0	-	7	2	0	0	0	-	2	20
2.0	0.0	0.0	0.0	-	-	0.0	100.0	0.4	1.0	-	-	0.5	2.9	0.0	0.0	-	-	1.2	1.0
39	0	0	0	0	-	0	0	9	0	0	-	9	1	0	0	0	-	1	49
7.0	0.0	0.0	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.7	1.5	0.0	0.0	-	-	0.6	2.3
26	0	0	0	0	-	0	0	13	0	0	-	13	0	0	0	0	-	0	39
4.7	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	1.9
0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_AM
Site Code: 195-09555
Start Date: 04/23/2024



Turning Movement Peak Hour Data Plot (7:00 AM)

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_PM
Site Code: 195-09555
Start Date: 04/23/2024

Turning Movement Data

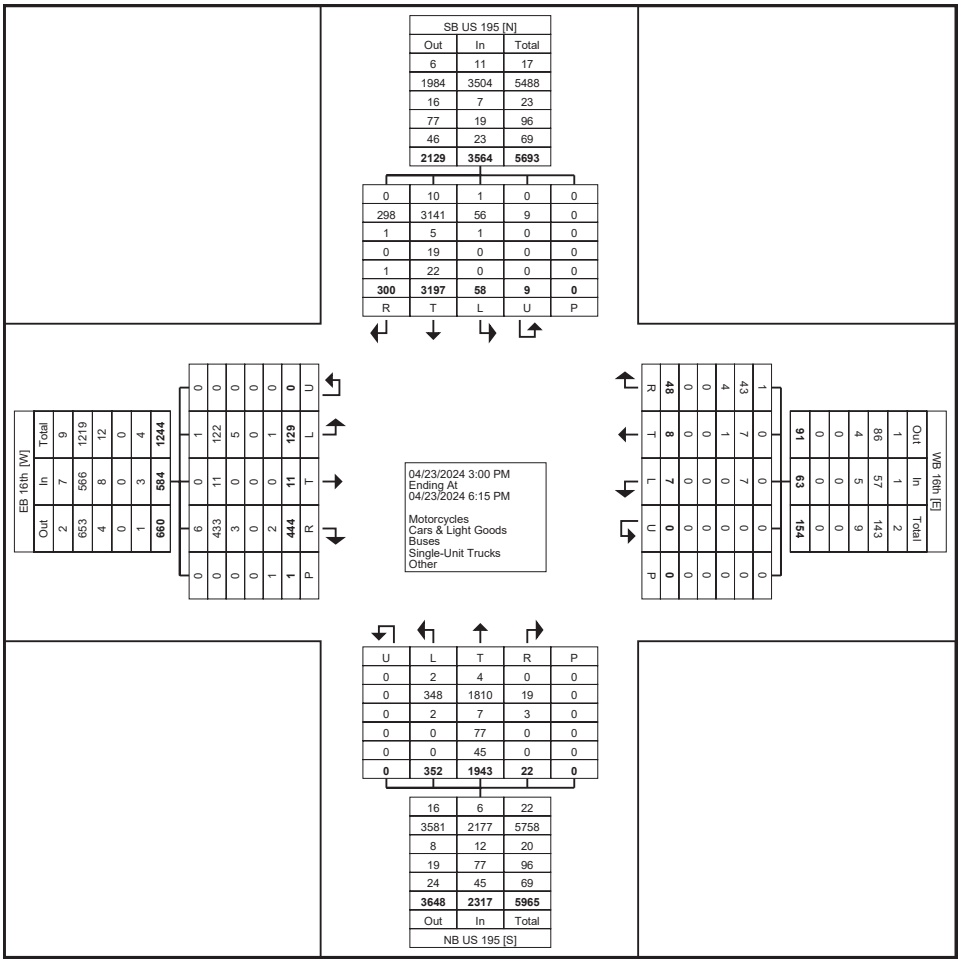
	WB 16th Westbound						NB US 195 Northbound						EB 16th Eastbound						
App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
249	2	0	0	0	0	2	2	146	23	0	0	171	25	3	11	0	0	39	461
276	2	1	1	0	0	4	1	168	25	0	0	194	39	0	8	0	0	47	521
303	3	0	3	0	0	6	0	151	23	0	0	174	26	0	6	0	0	32	515
291	3	2	0	0	0	5	3	154	27	0	0	184	44	0	12	0	0	56	536
1119	10	3	4	0	0	17	6	619	98	0	0	723	134	3	37	0	0	174	2033
277	7	1	0	0	0	8	3	163	28	0	0	194	35	3	13	0	0	51	530
332	7	1	0	0	0	8	4	176	32	0	0	212	43	0	12	0	0	55	607
307	2	0	0	0	0	2	2	149	26	0	0	177	48	1	12	0	1	61	547
323	6	0	0	0	0	6	0	185	29	0	0	214	33	0	14	0	0	47	590
1239	22	2	0	0	0	24	9	673	115	0	0	797	159	4	51	0	1	214	2274
338	6	0	1	0	0	7	4	139	37	0	0	180	52	1	10	0	0	63	588
336	1	2	0	0	0	3	1	161	36	0	0	198	39	2	9	0	0	50	587
296	5	0	1	0	0	6	0	183	33	0	0	216	32	0	10	0	0	42	560
236	4	1	1	0	0	6	2	168	32	0	0	202	28	1	12	0	0	41	485
1206	16	3	3	0	0	22	7	651	138	0	0	796	151	4	41	0	0	196	2220
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
3564	48	8	7	0	0	63	22	1943	352	0	0	2317	444	11	129	0	1	584	6528
-	76.2	12.7	11.1	0.0	-	-	0.9	83.9	15.2	0.0	-	-	76.0	1.9	22.1	0.0	-	-	-
54.6	0.7	0.1	0.1	0.0	-	1.0	0.3	29.8	5.4	0.0	-	35.5	6.8	0.2	2.0	0.0	-	8.9	-
11	1	0	0	0	-	1	0	4	2	0	-	6	6	0	1	0	-	7	25
0.3	2.1	0.0	0.0	-	-	1.6	0.0	0.2	0.6	-	-	0.3	1.4	0.0	0.8	-	-	1.2	0.4
3504	43	7	7	0	-	57	19	1810	348	0	-	2177	433	11	122	0	-	566	6304
98.3	89.6	87.5	100.0	-	-	90.5	86.4	93.2	98.9	-	-	94.0	97.5	100.0	94.6	-	-	96.9	96.6
7	4	1	0	0	-	5	3	7	2	0	-	12	3	0	5	0	-	8	32
0.2	8.3	12.5	0.0	-	-	7.9	13.6	0.4	0.6	-	-	0.5	0.7	0.0	3.9	-	-	1.4	0.5
19	0	0	0	0	-	0	0	77	0	0	-	77	0	0	0	0	-	0	96
0.5	0.0	0.0	0.0	-	-	0.0	0.0	4.0	0.0	-	-	3.3	0.0	0.0	0.0	-	-	0.0	1.5
22	0	0	0	0	-	0	0	45	0	0	-	45	0	0	0	0	-	0	67
0.6	0.0	0.0	0.0	-	-	0.0	0.0	2.3	0.0	-	-	1.9	0.0	0.0	0.0	-	-	0.0	1.0
1	0	0	0	0	-	0	0	0	0	0	-	0	2	0	1	0	-	3	4
0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.5	0.0	0.8	-	-	0.5	0.1
-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-

-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-		
-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-		

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_PM
Site Code: 195-09555
Start Date: 04/23/2024
Page No: 3



Turning Movement Data Plot

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_PM
Site Code: 195-09555
Start Date: 04/23/2024

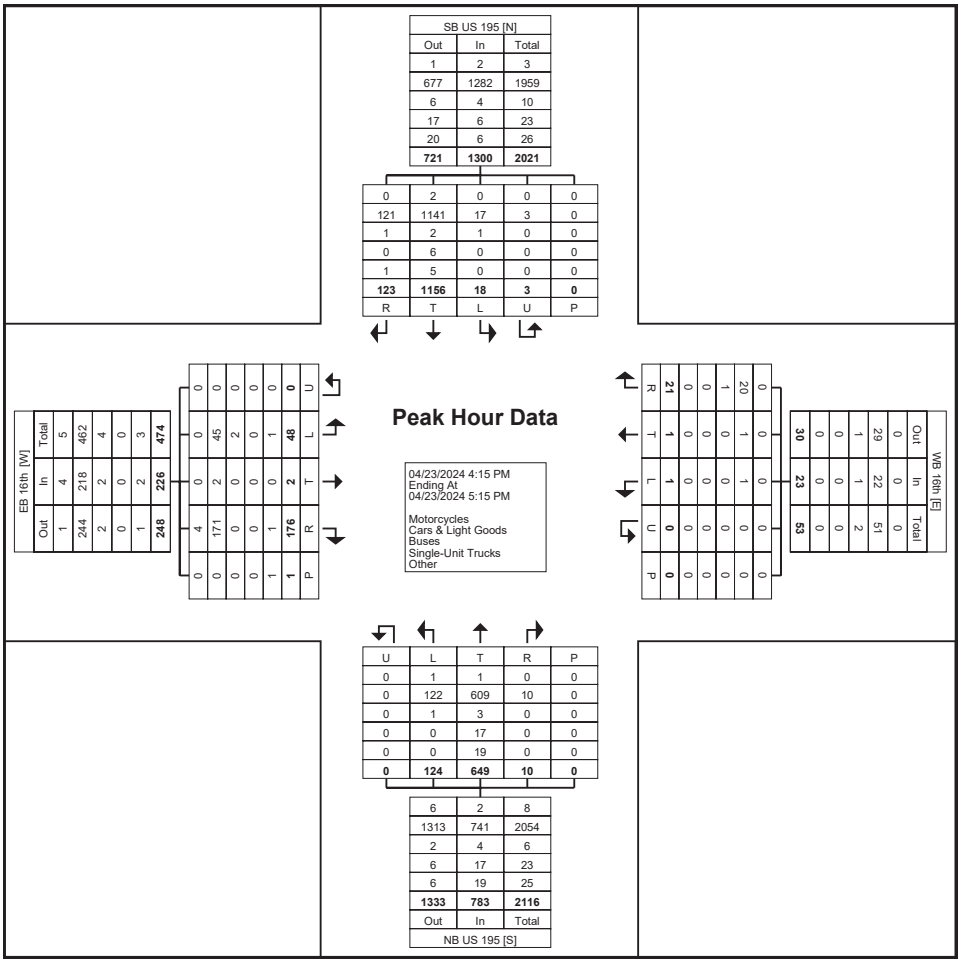
Turning Movement Peak Hour Data (4:15 PM)

	WB 16th Westbound						NB US 195 Northbound						EB 16th Eastbound						
App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
332	7	1	0	0	0	8	4	176	32	0	0	212	43	0	12	0	0	55	607
307	2	0	0	0	0	2	2	149	26	0	0	177	48	1	12	0	1	61	547
323	6	0	0	0	0	6	0	185	29	0	0	214	33	0	14	0	0	47	590
338	6	0	1	0	0	7	4	139	37	0	0	180	52	1	10	0	0	63	588
1300	21	1	1	0	0	23	10	649	124	0	0	783	176	2	48	0	1	226	2332
-	91.3	4.3	4.3	0.0	-	-	1.3	82.9	15.8	0.0	-	-	77.9	0.9	21.2	0.0	-	-	-
55.7	0.9	0.0	0.0	0.0	-	1.0	0.4	27.8	5.3	0.0	-	33.6	7.5	0.1	2.1	0.0	-	9.7	-
0.962	0.750	0.250	0.250	0.000	-	0.719	0.625	0.877	0.838	0.000	-	0.915	0.846	0.500	0.857	0.000	-	0.897	0.960
2	0	0	0	0	-	0	0	1	1	0	-	2	4	0	0	0	-	4	8
0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.8	-	-	0.3	2.3	0.0	0.0	-	-	1.8	0.3
1282	20	1	1	0	-	22	10	609	122	0	-	741	171	2	45	0	-	218	2263
98.6	95.2	100.0	100.0	-	-	95.7	100.0	93.8	98.4	-	-	94.6	97.2	100.0	93.8	-	-	96.5	97.0
4	1	0	0	0	-	1	0	3	1	0	-	4	0	0	2	0	-	2	11
0.3	4.8	0.0	0.0	-	-	4.3	0.0	0.5	0.8	-	-	0.5	0.0	0.0	4.2	-	-	0.9	0.5
6	0	0	0	0	-	0	0	17	0	0	-	17	0	0	0	0	-	0	23
0.5	0.0	0.0	0.0	-	-	0.0	0.0	2.6	0.0	-	-	2.2	0.0	0.0	0.0	-	-	0.0	1.0
5	0	0	0	0	-	0	0	19	0	0	-	19	0	0	0	0	-	0	24
0.4	0.0	0.0	0.0	-	-	0.0	0.0	2.9	0.0	-	-	2.4	0.0	0.0	0.0	-	-	0.0	1.0
1	0	0	0	0	-	0	0	0	0	0	-	0	1	0	1	0	-	2	3
0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6	0.0	2.1	-	-	0.9	0.1
-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

WSDOT Eastern Region : Spokane
2714 N Mayfair St

Spokane, Washington, United States 99207
509.324.6556 robertsl@wsdot.wa.gov

Count Name: 195-09555_16th_2024-04-23_PM
Site Code: 195-09555
Start Date: 04/23/2024



Turning Movement Peak Hour Data Plot (4:15 PM)

Phone: (509) 951-1851
email: beng@trfcnts.com

INTERSECTION

len

16th Avenue
&
Highway 195

AM PEAK HOURS

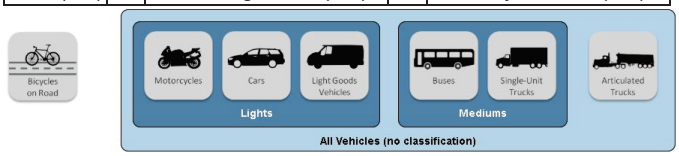
15 Minute Period Beginning @

6:45 AM			7:00 AM			7:15 AM			7:30 AM			7:45 AM			8:00 AM			8:15 AM			8:30 AM			8:45 AM			9:00 AM			9:15 AM		
BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	28	0	0	17	0	0	37	1	0	28	1	0	34	0	0	14	1	0	21	2	0	19	0	0	22	0	0	20	1	0	12	1
0	28	0	0	17	0	0	37	1	0	29	1	0	34	0	0	14	1	0	21	2	0	19	0	0	22	0	0	20	1	0	12	1
0%			0%			3%			3%			0%			7%			9%			0%			0%			5%			8%		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
0	4	1	0	3	1	0	6	0	0	6	0	0	4	0	0	7	0	0	7	1	0	4	0	0	7	1	0	6	1	0	5	0
0	8	1	0	3	1	0	9	0	0	7	0	0	5	0	0	7	0	0	8	1	0	5	0	0	7	1	0	8	1	0	6	0
11%			25%			0%			0%			0%			0%			11%			0%			13%			11%			0%		
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
0	32	0	0	26	0	0	51	0	0	8	0	0	16	0	0	30	0	0	20	0	0	19	0	0	16	0	0	17	0	0	13	0
0	329	9	0	207	9	0	255	9	0	215	4	0	254	9	0	157	9	0	157	11	0	157	15	0	154	14	0	150	7	0	176	12
0	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
0	361	9	0	233	9	0	306	9	0	227	4	0	274	9	0	188	9	0	177	11	0	178	15	0	171	14	0	168	7	0	189	12
2%			4%			3%			2%			3%			5%			6%			8%			8%			4%			6%		
0	1	0	0	3	0	0	2	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1
0	1	0	0	2	0	0	2	0	0	5	0	0	2	0	0	4	0	0	5	1	0	3	0	0	3	1	0	4	1	0	5	2
0	112	14	0	117	19	0	130	27	0	125	12	0	115	12	0	122	15	0	112	12	0	108	16	0	128	11	0	107	10	0	139	11
0	16	1	0	17	0	0	11	0	0	11	0	0	12	0	0	15	0	0	13	0	0	12	0	0	11	0	0	9	0	0	16	0
0	130	15	0	139	19	0	145	27	0	142	12	0	129	12	0	142	15	0	131	13	0	123	16	0	142	12	0	121	11	0	161	14
10%			12%			16%			8%			9%			10%			9%			12%			8%			8%			8%		
0	527	25	0	392	29	0	497	37	0	405	17	0	442	21	0	351	25	0	337	27	0	325	31	0	342	27	0	317	20	0	368	27
552			421			534			422			463			376			364			356			369			337			395		
5%			7%			7%			4%			5%			7%			7%			9%			7%			6%			7%		

5 Minute Period Beginning @

7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15
0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0

Miovision Vehicle Classification		
Bike (BK)	Passenger Car (PC)	Heavy Vehicle (HV)



Intersection Total One Hour Volumes		Pct HV
6:30 AM	**2,041**	**5.6%**
6:45 AM	1,929	5.6%
7:00 AM	1,840	5.7%
7:15 AM	1,795	5.6%
7:30 AM	1,625	5.5%
7:45 AM	1,559	6.7%
8:00 AM	1,465	7.5%
8:15 AM	1,426	7.4%
8:30 AM	1,457	7.2%

Phone: (509) 951-1851
email: beng@trfcnts.com

INTERSECTION

n | 16th Avenue | & | Highway 195

AM PEAK HOURS

6:45 AM				7:00 AM				7:15 AM			
HV	BK	PC	HV	BK	PC	HV	BK	PC	HV
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
3	0	28	0	0	17	0	0	37	1
3	0	28	0	0	17	0	0	37	1
		0%			0%			3%	
0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	0	2	0
0	0	1	0	0	0	0	0	1	0
1	0	4	1	0	3	1	0	6	0
1	0	8	1	0	3	1	0	9	0
		11%			25%			0%	
0	0	0	0	0	0	0	0	0	0
0	0	32	0	0	26	0	0	51	0
6	0	329	9	0	207	9	0	255	9
0	0	0	0	0	0	0	0	0	0
6	0	361	9	0	233	9	0	306	9
		2%			4%			3%	
0	0	1	0	0	3	0	0	2	0
0	0	1	0	0	2	0	0	2	0
13	0	112	14	0	117	19	0	130	27
1	0	16	1	0	17	0	0	11	0
14	0	130	15	0	139	19	0	145	27
		10%			12%			16%	
24	0	527	25	0	392	29	0	497	37
		552			421			534	
		5%			7%			7%	

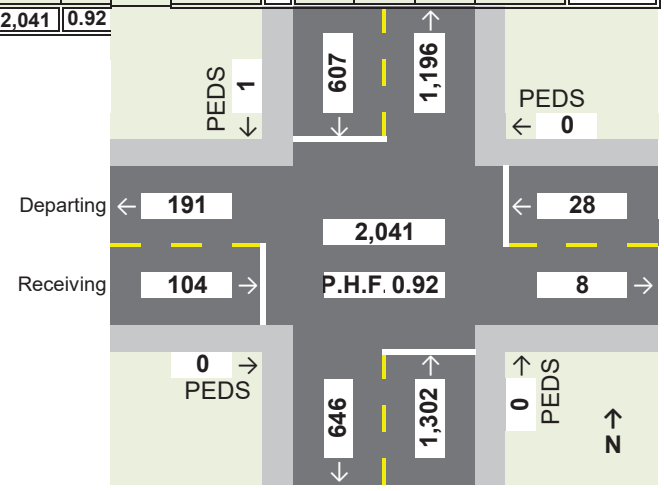
Approach — Receiving							
Mvmt	TOTAL HV	TOTAL Veh	PHF	Percentage of: HV	Percentage of: Approach	App.
EBU	0	0			0.00%	Eastbound
EBL	0	0			0.00%	
EBT	0	0			0.00%	
EBR	4	104		4%	100.00%	
Total	4	104	0.68	4%	100.00%	
WBU	0	0			0.00%	Westbound
WBL	0	6		0%	21.43%	
WBT	0	2		0%	7.14%	
WBR	3	20		15%	71.43%	
Total	3	28	0.78	11%	100.00%	
NBU	0	0			0.00%	Northbound
NBL	0	133		0%	10.22%	
NBT	33	1169		3%	89.78%	
NBR	0	0			0.00%	
Total	33	1302	0.87	3%	100.00%	
SBU	0	7		0%	1.15%	Southbound
SBL	0	8		0%	1.32%	
SBT	73	536		14%	88.30%	
SBR	2	56		4%	9.23%	
Total	75	607	0.88	12%	100.00%	
Total	**115**	**2,041**	**0.92**			

Approach — Departing				
Mvmt	Total	Percentage of: HV	Percentage of: Approach	App.
EBU	0		0.00%	Eastbound
NBL	133	0%	69.63%	
WBT	2	0%	1.05%	
SBR	56	4%	29.32%	
Total	191	1%	100.00%	
WBU	0		0.00%	Westbound
SBL	8	0%	100.00%	
EBT	0		0.00%	
NBR	0		0.00%	
Total	8	0%	100.00%	
NBU	0		0.00%	Northbound
WBL	6	0%	0.93%	
SBT	536	14%	82.97%	
EBR	104	4%	16.10%	
Total	646	12%	100.00%	
SBU	7	0%	0.59%	Southbound
EBL	0		0.00%	
NBT	1169	3%	97.74%	
WBR	20	15%	1.67%	
Total	1196	3%	100.00%	
Total	**2,041**			

7:00	7:15	Confli. Ped TOTAL
0	0	**0**
0	0	**0**
0	0	**0**
0	0	**1**
0	0	

our Factor
ach
t

Traffic Counts & Surveys Inc.



Phone: (509) 951-1851
email: beng@trfcnts.com

INTERSECTION

en

16th Avenue
&
Highway 195

PM PEAK HOURS

15 Minute Period Beginning @

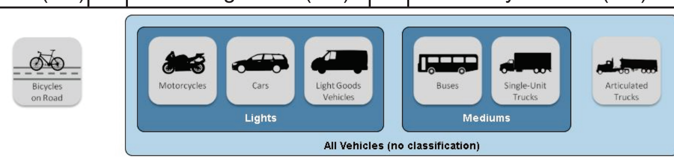
3:45 PM			4:00 PM			4:15 PM			4:30 PM			4:45 PM			5:00 PM			5:15 PM			5:30 PM			5:45 PM			6:00 PM			6:15 PM		
BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV	BK	PC	HV
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	50	0	0	30	0	0	30	0	0	36	0	0	26	1	0	22	0	0	26	0	0	8	0	0	19	0	0	19	0	0	17	0
0	50	0	0	30	0	0	30	0	0	36	0	0	26	1	0	22	0	0	26	0	0	8	0	0	19	0	0	19	0	0	17	0
	0%			0%			0%			0%			4%			0%			0%			0%			0%			0%			0%	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0	1	0	0	0	0
0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
0	1	0	0	2	0	0	4	0	0	5	1	0	5	0	0	1	0	0	4	0	0	0	0	0	4	0	0	2	0	0	5	0
0	2	0	0	2	0	0	5	0	0	5	2	0	6	0	0	1	0	0	6	0	0	4	0	0	6	0	0	3	0	0	5	0
	0%			0%			0%			29%			0%			0%			0%			0%			0%			0%			0%	
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	22	0	0	32	0	0	41	0	0	25	0	0	22	1	0	15	0	0	18	0	0	14	0	0	13	0	0	12	0	0	12	0
0	151	12	0	146	12	0	144	13	0	144	3	0	155	6	0	154	6	0	146	4	0	101	4	0	97	2	0	83	7	0	67	4
0	2	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	1	0
0	175	12	0	178	12	0	187	13	0	169	3	0	179	7	0	170	6	0	166	4	0	116	4	0	110	2	0	95	7	0	80	4
	6%			6%			7%			2%			4%			3%			2%			3%			2%			7%			5%	
0	2	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
0	5	0	0	6	0	0	5	1	0	9	0	0	3	0	0	5	0	0	3	0	0	4	0	0	5	0	0	3	0	0	8	0
0	315	5	0	310	5	0	291	2	0	246	5	0	221	4	0	192	4	0	183	0	0	127	0	0	124	4	0	129	4	0	124	1
0	34	0	0	18	0	0	29	0	0	22	0	0	10	0	0	13	0	0	13	0	0	9	0	0	7	0	0	9	0	0	10	0
0	356	5	0	334	5	0	325	3	0	278	5	0	236	4	0	210	4	0	199	0	0	140	0	0	136	4	0	141	5	0	143	1
	1%			1%			1%			2%			2%			2%			0%			0%			3%			3%			1%	
0	583	17	0	544	17	0	547	16	0	488	10	0	447	12	0	403	10	0	397	4	0	268	4	0	271	6	0	258	12	0	245	5
	600			561			563			498			459			413			401			272			277			270			250	
	3%			3%			3%			2%			3%			2%			1%			1%			2%			4%			2%

5 Minute Period Beginning @

4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00	6:15
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	0

Miovision Vehicle Classification

Bike (BK)	Passenger Car (PC)	Heavy Vehicle (HV)



Intersection Total One Hour Volumes		Pct HV
3:30 PM	2,299	2.7%
3:45 PM	2,222	2.7%
4:00 PM	2,081	2.6%
4:15 PM	1,933	2.5%
4:30 PM	1,771	2.0%
4:45 PM	1,545	1.9%
5:00 PM	1,363	1.8%
5:15 PM	1,220	2.1%
5:30 PM	1,069	2.5%

`

Phone: (509) 951-1851
email: beng@trfcnts.com

INTERSECTION

16th Avenue & Highway 195

PM PEAK HOURS

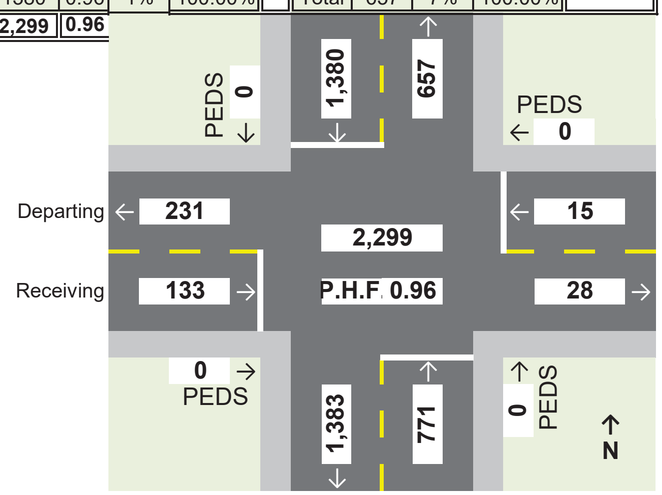
(cut) HV	3:45 PM BK	3:45 PM PC	3:45 PM HV	4:00 PM BK	4:00 PM PC	4:00 PM HV	4:15 PM BK	4:15 PM PC	4:15 PM HV
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
1	0	50	0	0	30	0	0	30	0
1	0	50	0	0	30	0	0	30	0
		0%			0%			0%	
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1	0
0	0	1	0	0	2	0	0	4	0
0	0	2	0	0	2	0	0	5	0
		0%			0%			0%	
0	0	0	0	0	0	0	0	0	0
0	0	22	0	0	32	0	0	41	0
9	0	151	12	0	146	12	0	144	13
0	0	2	0	0	0	0	0	2	0
9	0	175	12	0	178	12	0	187	13
		6%			6%			7%	
0	0	2	0	0	0	0	0	0	0
0	0	5	0	0	6	0	0	5	1
2	0	315	5	0	310	5	0	291	2
0	0	34	0	0	18	0	0	29	0
2	0	356	5	0	334	5	0	325	3
		1%			1%			1%	
12	0	583	17	0	544	17	0	547	16
		600			561			563	
		3%			3%			3%	

Approach

Receiving Mvmt	TOTAL HV	TOTAL Veh	PHF	Percentage of: HV	Percentage of: Approach	Departing Mvmt	Total	Percentage of: HV	Percentage of: Approach	App.
EBU	0	0			0.00%	EBU	0		0.00%	Eastbound
EBL	0	0			0.00%	NBL	121	0%	52.38%	
EBT	0	0			0.00%	WBT	3	0%	1.30%	
EBR	1	133		1%	100.00%	SBR	107	0%	46.32%	
Total	1	133	0.67	1%	100.00%	Total	231	0%	100.00%	
WBU	0	0			0.00%	WBU	0		0.00%	Westbound
WBL	0	3		0%	20.00%	SBL	23	4%	82.14%	
WBT	0	3		0%	20.00%	EBT	0		0.00%	
WBR	0	9		0%	60.00%	NBR	5	0%	17.86%	
Total	0	15	0.63	0%	100.00%	Total	28	4%	100.00%	
NBU	0	0			0.00%	NBU	0		0.00%	Northbound
NBL	0	121		0%	15.69%	WBL	3	0%	0.22%	
NBT	46	645		7%	83.66%	SBT	1247	1%	90.17%	
NBR	0	5		0%	0.65%	EBR	133	1%	9.62%	
Total	46	771	0.96	6%	100.00%	Total	1383	1%	100.00%	
SBU	0	3		0%	0.22%	SBU	3	0%	0.46%	Southbound
SBL	1	23		4%	1.67%	EBL	0		0.00%	
SBT	14	1247		1%	90.36%	NBT	645	7%	98.17%	
SBR	0	107		0%	7.75%	WBR	9	0%	1.37%	
Total	15	1380	0.96	1%	100.00%	Total	657	7%	100.00%	
Total	62	2,299	0.96							
2,299										
3%										

4:00	4:15	Confli. Ped TOTAL
0	0	0
0	0	0
0	0	0
0	0	0
0	0	

Traffic Counts & Surveys Inc.



our Factor
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