



## Public Hearing

**November 28, 2022, at 5:00 pm**  
**City Hall**  
**210 East 4th Street, La Center, WA 98629**

### **Public Hearing: Asa's View Subdivision**

Preliminary Plat, Variance, SEPA Mitigated Determination of Non-significance (MDNS), Critical Areas Permits, Legal Lot Determination, and Tree Cutting Permit: Type III Review

**Hearings Examiner:** Joe Turner

**Applicant:** Troy Johns  
Urban NW Homes, LLC  
1004 W. 13<sup>th</sup> Street, Suite 220  
Vancouver, WA 98660  
360.600.4425, troy@urbannw.com

### **Hearing Materials:**

#### **Exhibit A – Application Materials**

1. [Table of Contents](#)
2. [Master Land Use Application](#)
3. [Current Deed](#)
4. [Pre-Application Conference Notes](#)
5. [Narrative](#)
6. [Mailing Labels](#)
7. [State Environmental Review \(SEPA\)](#)
8. [Traffic Impact Study](#)
9. [Geotechnical Report](#)
10. Archaeological Report - Contact Jessica Nash 360-263-7665
11. [Preliminary Technical Information Report](#)
12. [Proposed Development Plan Set](#)

11/21/2022

Asa's View Subdivision 2022-022-SUB/SEPA/CAR/LLD/VAR/TRE

13. [Critical Areas Letter](#)
14. [Critical Areas Letter – Oak Tree](#)
15. [Critical Areas Letter – Offsite Stream](#)
16. [Asa’s Tract B](#)
17. [Offsite Features Exhibit](#)
18. [Arborist Letter – Oak Tree](#)

**Exhibit B – SEPA**

1. [Mitigated DNS Notice and Checklist](#)
2. [Combined SEPA Comments](#)

**Exhibit C – [Staff Report](#)**

1. [Technical Completeness Review](#)
2. [Hearing Examiner Public Hearing Notice](#)



**DRAFT Staff Report & Recommendations**

**Asa’s View Subdivision: Type III**

**Preliminary Plat, Variance, SEPA, Critical Areas Permits, Legal Lot Determination, and Tree Cutting Permit.**

(#2022-022-SUB/SEPA/CAR/LLD/VAR/TRE) November 21, 2022

|                             |  |
|-----------------------------|--|
| <b>PROPOSAL:</b>            | Preliminary plat of two parcels totaling 16.47 gross acres to create 68 lots for single-family residences. Development would also include a park with trail, public streets, and utilities. Reviews for a variance, critical areas permit, legal lot determination, tree cutting permit, and SEPA MDNS apply.  |
| <b>LOCATION:</b>            | <ul style="list-style-type: none"> <li>▪ 2313 Northeast Lockwood Creek Road, La Center, WA 98629</li> <li>▪ SE 1/4 and NE 1/4 of Section 2 T4N R1E Willamette Meridian. PIN: 209064000, 209121000</li> </ul>   |
| <b>HEARING:</b>             | The La Center Hearing Examiner will conduct a public hearing on November 28, 2022, beginning at 5:00 PM at La Center City Hall, 210 East 4th Street, La Center, WA   |
| <b>APPLICABLE STANDARDS</b> | La Center Municipal Code (LCMC): Impact Fees, 3.35; Sign Regulations, 8.60; Title 12, Streets, Sidewalks, and Public Ways; Title 13, Public Utilities; Title 18, Development Code; Type III Procedure, 18.30.100; Notices, 18.30.120; Low Density Residential (LDR-7.5), 18.130; Parks and Open Space, 18.147; Subdivision Provisions, 18.210; Legal Lot Determinations, 18.225; Monumentation, Survey, and Drafting Standards, 18.230; Mitigation of Adverse Impacts, 18.240; Supplementary Development Standards, 18.245; Variances, 18.260; Off-Street Parking and Loading Requirements, 18.280; Outdoor Lighting, 18.282; Critical Areas, 18.300; Environmental Policy, 18.310; Stormwater and Erosion Control, 18.320; Native Plant List, 18.340; Tree Protection, 18.350; Archeological Resource Protection, 18.360. |
| <b>RECOMMENDATION:</b>      | <b>APPROVAL</b> , subject to conditions  |

## I. CONTACT LIST

### APPLICANT

Troy Johns  
Urban NW Homes, LLC  
1004 W. 13<sup>th</sup> Street, Suite 220  
Vancouver, WA 98660  
360.600.4425, [troy@urbannw.com](mailto:troy@urbannw.com)

### OWNER

Michael Parker  
Gravitate Capital, LLC  
13563 NW Fuller Lane  
Portland, OR 97229

### APPLICANT'S REPRESENTATIVE

Shawn Ellis  
NW Consilio, LLC  
2410 NE 22<sup>nd</sup> Avenue  
Portland, OR 97212  
503.415.0425, [sellispx@gmail.com](mailto:sellispx@gmail.com)

### LA CENTER STAFF

Bryan Kast, PE, Public Works Director  
City of La Center  
210 East 4th Street  
La Center, WA 98629  
360.263.5189  
[bkast@ci.lacenter.wa.us](mailto:bkast@ci.lacenter.wa.us)

Ethan Spoo, AICP, Consulting Planner  
WSP, USA Inc.  
210 East 13th Street, Suite 300  
Vancouver, WA 98660  
360.823.6138  
[ethan.spoo@wsp.com](mailto:ethan.spoo@wsp.com)

Anthony Cooper, PE, City Engineer  
City of La Center  
210 East 4th Street  
La Center, WA 98629  
360.263.7665  
[acooper@ci.lacenter.wa.us](mailto:acooper@ci.lacenter.wa.us)

Alec Egurrola, Consulting Planner  
WSP, USA Inc.  
210 East 13th Street, Suite 300  
Vancouver, WA 98660  
360.823.6133  
[alec.egurrola@wsp.com](mailto:alec.egurrola@wsp.com)

## II. OVERVIEW

The project site is located at the eastern side of La Center, directly east of the newly built La Center Middle School and south of Northeast Lockwood Creek Road, comprising two parcels totaling 16.47 acres (Figures 1 and 2). The applicant is proposing to subdivide the site to create 68 lots for detached single-family residences in the Low Density Residential (LDR-7.5) zone (See Figure 3). All buildable lots would be between 7,500 and 11,000 square feet as required by LCMC 18.130.080. The applicant is providing a 0.25-acre publicly accessible park in Tract B of the development in compliance with the park and open space standards of LCMC 18.147, which requires that residential developments exceeding 40 dwelling units provide 0.25 acres of park space for each 40 units in excess of 40 units. The 68-unit development requires a 0.18-acre park, and the proposed park is 0.25 acres.

The site contains regulated critical areas in the form of geologically hazardous areas and fish and wildlife habitat conservation areas (Priority Oregon white oak habitat). In addition, potential wetlands and associated riparian habitats were mapped on the site by Clark County Maps Online; however, the wetlands have been determined as manmade roadside ditches by the provided critical areas report and do not meet the requirements to be classified as a wetland under the definition in LCMC 18.300.030. The applicant is proposing to fill these ditches. The critical areas documentation also confirmed that no riparian habitats were found on the site. The applicant proposes to preserve a 40-inch diameter at breast height (dbh) Oregon white oak, a regulated fish and wildlife habitat critical area per LCMC 18.300.090(2), near the southeast corner of the site. This tree is located within the proposed park in Tract B. As indicated in the applicant's narrative and critical areas report, the applicant is not proposing to impact the tree or its root zone. Also, the provided geotechnical report indicates the site soils are classified as Site Class D for ground shaking amplification. This is a regulated geologically hazardous critical area under LCMC 18.300.090(4). Both the fish and wildlife habitat and geological hazard critical areas require critical areas permits.

Other trees on the site are proposed to be removed. However, a tree protection plan has not been provided in accordance with LCMC 18.350.060 and the applicant will be conditioned to comply with tree protection measures as discussed later in this staff report, including a tree cutting permit for the other trees to be removed on site.

A variance (LCMC 18.260.020) application has been submitted concurrently with the preliminary plat as the applicant is seeking variance approval for ten residential lots. These lots have reduced lot widths approximately 7.5% less than required by LCMC 18.130.080(8).

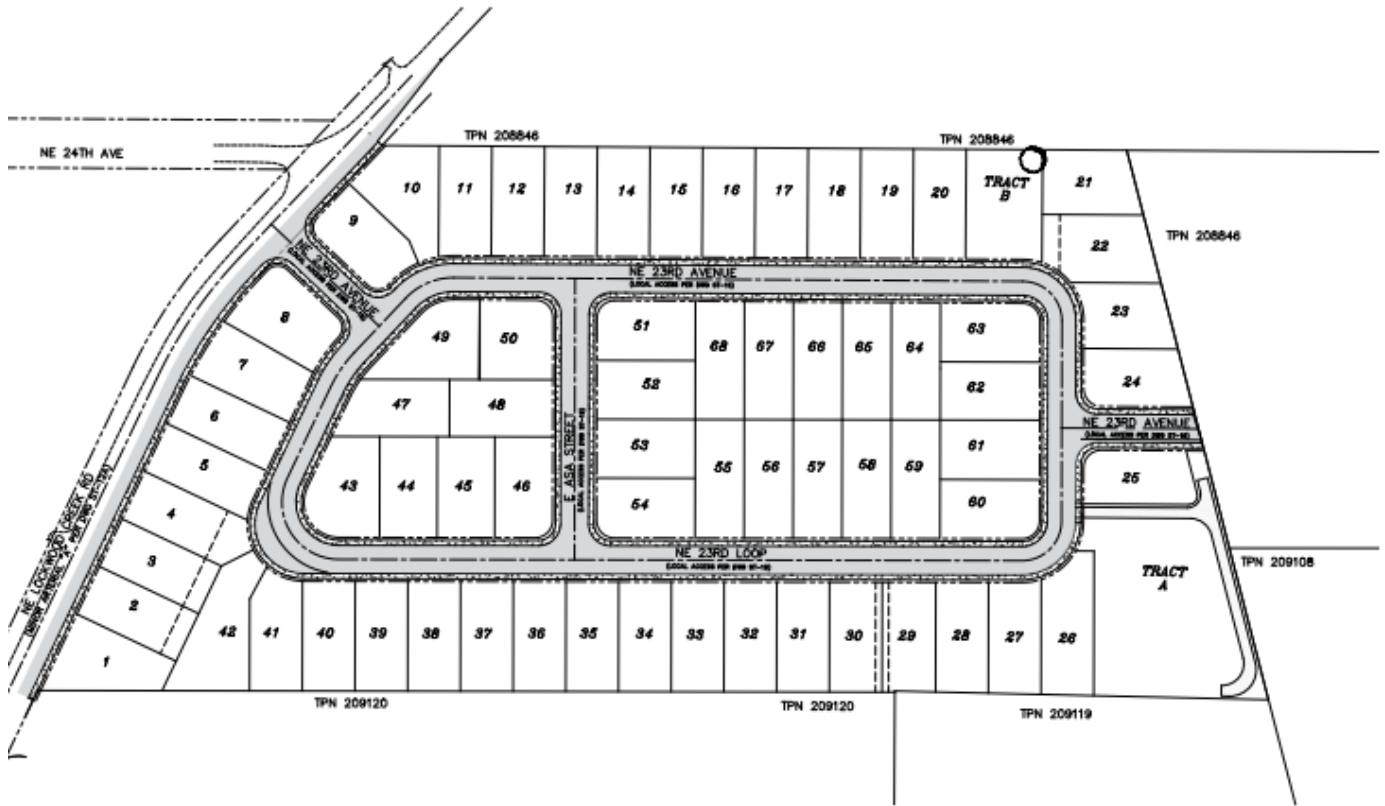
The applicant is proposing a system of public streets to serve the lots. The site would be accessed from Northeast Lockwood Creek Road at Northeast 23rd Avenue. The main access at Northeast 23rd Avenue is near alignment with the existing Northeast 24th Avenue to the north of the site. Upon development of the parcel(s) north of Northeast Lockwood Creek Rd, Northeast 24th Avenue will be realigned with Northeast 23rd Avenue. The applicant is also proposing a stub to the south property boundary, Northeast 23rd Avenue, for future connectivity and to preserve access to properties south of the site. In addition, the applicant is proposing half street improvements along NE Lockwood Creek Road.

Each lot will be served by public utilities including sanitary sewer (City of La Center) and potable water (Clark Public Utilities).

The application requests concurrent reviews under a Type III process for the preliminary subdivision, variance, legal lot determination, SEPA, tree cutting permit, and critical areas review for fish and wildlife habitat and geologically hazardous areas.



Figure 3 – Proposed Preliminary Plat



### III. REVIEW

#### III. A Jurisdiction

The site is within La Center City limits and is zoned Low Density Residential (LDR-7.5). The City of La Center provides sanitary sewer service and public streets. Clark Public Utilities provides potable water service. The project is within the La Center School District and the Clark-Cowlitz Fire Rescue service area.

#### III.B Public Notice

On November 11, 2022, The Columbian published legal notice of the land use application, variance, critical areas permits, legal lot determination, and SEPA MDNS and public hearing scheduled for November 28, 2022. The City entered the SEPA Checklist and Optional Mitigated Determination of Non-Significance (MDNS) in the Ecology SEPA Register on September 30, 2022. (Ecology SEPA # 202204955.) The notice of application and SEPA comment period closed on October 14, 2022, and the City received two comments (Exhibit B.2).

Mr. Isaac Holowatz, WDFW

Mr. Isaac Holowatz, a Habitat Biologist at Washington Department of Fish and Wildlife (WDFW), provided comments on October 14, 2022. A summary of his comments are as follows:

- Primary concerns are with the Oregon white oak.
- City's Technical Completeness Review identifies one Oregon white oak on the site, whereas WDFW mapping indicates several other oaks in the area which are afforded same protections as the identified Oregon white oak.
- These trees are disappearing at an alarming rate, they are slow growing, and the tree on site could be upwards of 500 years old.
- Tree provides food and habitat for many native Washington wildlife species including Columbia White Tailed Deer, elk, squirrels, migratory birds, nuthatches, woodpeckers, raptors, and a wide array of invertebrates.
- Proper protections shall be placed on the tree during and after construction activities.
- Identified BMPs (best management practices) to follow during and after construction of the subdivision.
- Emphasized that the death and dropping of limbs provides critical food and habitat resources and should be left in place. Limit or prohibit infrastructure under or near the tree to avoid conflicts with this natural process.
- Request that at least 10 meters beyond the dripline be undeveloped to avoid impacting the ecological functions of the Oregon white oak.

**Response:** The applicant inventoried all trees on the site and has found only one Oregon white oak. The City has recognized the ecological function and importance of this tree and has requested the applicant to protect the tree from any improvements at its dripline consistent with how the City has requested oak trees be preserved in the past. The applicant supports isolating and protecting the Oregon white oak with adequate protections during and after construction activities take place.

At the time of this staff report, a tree protection plan has not been provided, however, the Applicant is conditioned to provide a plan in conformance with LCMC 18.350.060. Also, the applicant will be conditioned to adhere to management practices as provided by the critical areas report on August 24, 2022, for the Oregon white oak including prohibiting any surface or below surface disturbances in the tree's dripline.

State of Washington Department of Ecology (Ecology)

Ecology provided comments on October 14, 2022. A summary of their comments is provided below:

- Solid Waste Management
  - All grading and filling of land must utilize only clean fill
  - Other materials may be considered solid waste and requires permit approval with local health department prior to filling
  - Contact local health department or Ecology for proper management of these materials
- Toxics Cleanup
  - La Center Middle School, adjacent to the site, has been found to be impacted by halogenated pesticides with suspected impact to groundwater and this cleanup has started.
  - If contamination is suspected, discovered, or occurs during construction, testing of the suspected media must be conducted.
  - Ecology must be notified if contamination of soil or groundwater is found



- Water Quality/Watershed Resources Unit
  - Erosion control measures must be in place prior to any clearing, grading, or construction.
  - Control measures must effectively prevent stormwater runoff from carrying soil and other pollutants into surface water or storm drains leading to waters of the state.
  - Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW and WAC 173-201A and is subject to enforcement.
  - Construction activities require coverage under the Construction Stormwater General Permit
- If there are known soil/ground water contaminants present on-site, additional information will be required to be submitted
- Sites that discharge to waterbodies segments listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a total maximum daily load (TMDL) may need to meet additional sampling and record keeping requirements.

**Response:** The applicant has provided a geotechnical report, a preliminary technical information report, and preliminary grading and erosion control plan for review. Section III.F addresses public works and engineering comments for the site and includes conditions of approval regarding solid waste management, toxics cleanup, and water quality prior to final engineering approval. The Applicant will be conditioned to follow on-site BMPs, including field sampling, in compliance with Ecology comments.

### III.C Key Issues

The relevant issues to consider for a successful public hearing review include:

1. **Variance:** The applicant is seeking a variance approval to decrease minimum lot width standards for lots 55 - 59 and lots 64 - 68 due to a combination of factors including the shape of the lot. Reductions are 7.5 percent or less for each lot. Staff are recommending approval of this variance.
2. **Critical Areas (Fish & Wildlife Habitat):** There is a priority habitat Oregon white oak tree onsite. The applicant's plans and narrative indicate plans to isolate and protect the tree and its dripline, which is a critical area.
3. **Critical Areas (Geological Hazards):** The geotechnical report provided by the client indicates the site is classified as Site Class D for ground shaking amplification which is a regulated critical area under LCMC 18.300.030 and 18.300.090(4). Staff are recommending approval of a critical areas permit for development within the seismic hazard and the applicant is conditioned to implement the requirements of the geotechnical report by Soil and Water Technologies Inc. (Exhibit A.9).
4. **Tree preservation:** The applicant provided an inventory of trees indicating health conditions and those for removal with an onsite tree planting plan that exceeds mitigation requirements. As indicated in the applicant narrative, measures will be taken, including construction fencing, to protect the Oregon white oak and its dripline from construction activities in compliance with LCMC 18.350. The applicant did not provide a tree protection plan showing trees to be removed in relation to project improvements as required by LCMC 18.350 and is being conditioned to do so prior to engineering plan approval.

### III.D Land Use Analysis

#### ***LCMC 8.60 Sign Requirements***

No entry monument signs are proposed with the preliminary development plans; however, the applicant has indicated in the submitted narrative that there may be a subdivision entrance sign and would be provided with the Final Landscape Plan. Signs in residential zones, per LCMC 8.60.060, are limited to an illuminated sign at the entrance to the subdivision of 32 square feet.

As a **condition of approval**, the applicant shall apply for and receive approval of a sign permit and building permit (if applicable) for a subdivision entrance sign prior to sign construction in accordance with LCMC 8.60.

#### ***LCMC Title 18, Development Code.***

##### **LCMC 18.30 Procedures**

A pre-application conference was held with the applicant and other interested parties on February 2, 2022. The application was deemed technically complete on September 30, 2022. The City publicly noticed the application on September 30, 2022 for 14 days and received two comments (see section III.B of this staff report). The City published the staff report on November 21, 2022, seven days before the public hearing. Public hearings shall be conducted in accordance with the rules of procedure adopted by the hearings examiner. Public comments may be submitted either prior to or during the public hearing in writing or orally during the hearing. The City has not received any public comments on the proposal at the time of publication of this staff report.

##### **LCMC 18.130 (Low Density Residential District)**

The applicant is proposing 68 lots for detached single-family residences. Detached single-family dwellings are a permitted use in the LDR-7.5 zone (LCMC 18.130.030). Buildings are limited to 35 feet in height. The applicant isn't proposing buildings at this time. A condition of approval will require that building height be met at time of building permit issuance. The applicant is proposing a number of lots which falls within the density requirements of the LDR-7.5 zone which requires a minimum of four dwelling units per net acre. A net acre is defined to exclude public rights-of-way, private streets, public utility easements, public parks, and undeveloped critical areas and required buffers. The gross site area is 16.47 acres. Rights-of-way total 3.27 acres, sensitive lands (Oregon white oak dripline) total 0.09 acres, public park area outside of sensitive lands total 0.21 acres, and area for stormwater total 0.90 acres resulting in a net acreage of 12.02 acres. With 68 proposed lots, the applicant is providing 5.74 units per net acre meeting the minimum density requirements of the zone. Lots within the LDR-7.5 zone must be a minimum of 7,500 square feet and a maximum of 11,000 square feet. All lots fall within the minimum and maximum lot size requirements of the code. Maximum building lot coverage and maximum impervious surface area are 35 percent and 50 percent, respectively, in the LDR-7.5 zone. Since no buildings are proposed at this time, a condition of approval will require that each lot to not exceed the maximum building lot coverage and maximum impervious surface area prior to issuance of building permits. The following table highlights the required lot dimensions and setback standards for the LDR-7.5 zone.

*Table 18.130.080  
– Lot Coverage and Dimensions (feet)*

| <i>District</i> | <i>Minimum Lot Width</i> | <i>Minimum Lot Depth</i> | <i>Minimum Front Yard Setback</i> | <i>Minimum Side Yard Setback</i> | <i>Minimum Street Side Yard Setback</i> | <i>Minimum Rear Yard</i> |
|-----------------|--------------------------|--------------------------|-----------------------------------|----------------------------------|---|--------------------------|
| LDR-7.5         | 60                       | 90                       | 20                                | 7.5                              | 10                                      | 20                       |

Most lots will meet the minimum dimensional requirements of the zone. LCMC 18.40 defines “lot width” as “the horizontal distance measured at the building setback line between the two opposite side lot lines. Average lot width shall be the average of the front and rear lot lines.” The applicant is not showing proposed building footprints and elevations at this time but is depicting setback areas. Lots 55-59 and 64-68 are less than the 60-foot minimum requirement of the front and rear building setback lines. These lots range from 55.75 feet to 55.87 feet wide or about 7.5 percent less than the required minimum lot width. The applicant is requesting variance approval for the substandard lot widths, as further discussed in this staff report in response to LCMC 18.260. The applicant elected not to transfer density and reduce lots sizes to less than 7,500 square feet as further discussed in LCMC 18.300.

LCMC 18.130.100 states that developments in the LDR-7.5 zone must provide street trees spaced 30 feet on center in planter strips along each street frontage. Type, location, and planting method shall be approved by the public works director. The applicant’s preliminary landscape plan (Exhibit A.12 Sheet 11) shows street trees on all street frontages, but the trees do not meet the spacing requirement. A condition of approval will require that, prior to engineering approval, the applicant provide a final landscape plan by a registered landscaped architect with street trees spaced at an average of 30 feet on center throughout the subdivision along all streets with spacing not to exceed 60 feet with planting methods specified for these trees.

As a **condition of approval**, the applicant shall demonstrate that building height requirements are met prior to issuance of a building permit for each lot.

As a **condition of approval**, the applicant shall submit engineering, construction, final plat, and building permit documents in compliance with the preliminary plat documents unless otherwise modified by conditions of approval in this staff report or as approved by the City through subsequent approvals.

As a **condition of approval**, the applicant shall demonstrate that the maximum building coverage and maximum impervious surface area requirements are met prior to issuance of a building permit for each lot.

As a **condition of approval**, prior to engineering approval, the applicant shall provide a final landscape plan by a registered landscape architect with street trees spaced at an average of 30 feet on center throughout the subdivision along all streets with spacing not to exceed 60 feet. Planting methods shall be specified for these trees.

**LCMC 18.147 Parks and Open Spaces**

The purpose of this chapter is to ensure implementation of the 2017 La Center Parks, Recreation, and Open Space Master Plan (Parks Plan) in new residential development by requiring developers to dedicate, develop, and maintain family parks, trails, and open space based on the size of their development.

According to LCMC 18.147.020(1)(a), any development in an LDR-7.5 zoning district that includes 40 or more dwelling units must dedicate or develop parkland, open space, and/or trails. As 68 lots are proposed, this applicant is obligated to dedicate or develop parkland, open space trails at the ratio of 0.25 acres for each 40 dwelling units after the first 40 dwelling units (see 18.147.030[1][a]). The applicant is required to provide 0.18 acres of parks. The applicant is providing a 0.25-acre park in Tract B exceeding this requirement. The applicant is also utilizing this park space to preserve the 40-inch Oregon white oak tree on the site.

LCMC 18.147.030(1)(b) contain park design standards which require that:

- Parks meet ADA accessibility regulations
- Parks be designed by a landscape architect
- Parks be one contiguous space
- The minimum contiguous park size be 0.25 acres
- Parks not be located on a street of minor collector or higher classification
- Parks be fronted by a road on 40 percent or more of their perimeter or a pedestrian pathway or other design element approved by the review authority to assure free and open public accessibility shall be established through a dedication or perpetual easement with a minimum width of 20 feet.
- Parks must have 75 percent of their area as usable active play areas and improved open space.
- Parks must contain certain amenities including: a paved pedestrian path, two sitting benches, one trash receptacle, one bike rack for six bikes, and one picnic table (all amenities to be provided per 0.25 acres) and one play structure for children ages 2-12.
- Undeveloped play space must be provided by live vegetation and have underground irrigation
- There be a low fence or vegetative barrier between abutting residential lots that is 3.5 to six feet high that is not fully sight obscuring.
- Safety requirements of LCMC 18.147.030(1)(b)(xi) must be meet.
- Trail linkages be provided to the existing La Center and regional trail system.
- Passive open spaces such as wetlands shall be combined with active open spaces and improved with trails, where feasible.
- Parks must be completed prior to issuance of occupancy of the 25<sup>th</sup> dwelling unit.
- Parks must be dedicated or have public access easements.

The applicant's proposed park and open space in Tract B meet or can be conditioned to meet the above requirements as follows:

- The applicant does not provide details on ADA accessibility for the park. A condition of approval will require that the applicant demonstrate that the park meets ADA accessibility requirements prior to final engineering plan approval.
- The park plan provided at this time was not designed by a landscape architect. A condition of approval will require that the applicant provide a final landscape plan prior to engineering plan approval that is designed by a registered landscape architect.
- Tract B is 0.25 acres, meeting the 0.25-acre minimum contiguous park size.
- The park is located on and accessed from a local road.

- The park perimeter is 428 feet. A road must front 40 percent of the park perimeter equivalent to 171 feet or a pedestrian pathway within an easement 20 feet wide or through the dedication of a perpetual public easement must be provided. The park is fronted by road for 87 feet and does not meet the 40 percent road frontage requirement. However, the Applicant has indicated in the submitted narrative that they intend to place the park in a public access easement. A condition of approval will require that the applicant place the park in a public access easement.
- Staff cannot confirm if at least 75 percent of Tract B is usable active play area and improved open space. A condition of approval will require the applicant to verify that at least 75 percent of Tract B is usable active play area and improved open space prior to final engineering plan approval.
- Since Tract B is 0.25 acres, it must contain: one paved pedestrian path, two benches, one trash receptacle, one bike rack to accommodate six bikes, one picnic table and one play structure. The applicant's proposed park design shows all required amenities.
- The undeveloped play space includes the Oregon white oak; however, no vegetation and irrigation plans are shown. A condition of approval will require that applicant's final park plan show vegetation in the undeveloped play space and an underground irrigation system for all vegetated areas, except within the dripline of the Oregon white oak as specified in the critical areas report.
- The applicant's park plans show a fence adjacent to lots 20, 21, and 22. However, this proposed fence crosses through the drip line of the White Oak tree, which is a designated critical area. The provided critical areas report states that it's recommended that no below the surface improvements of any kind occur within the tree's dripline, including fence posts, as conditioned in LCMC 18.300 in this staff report.
- The La Center Police Department reviewed the proposed park design (see Exhibit T) in conformance with LCMC 18.147.030(1)(b)(xi). A condition of approval will require: (1) lighting within the park in Tract B to deter criminal activity, including along the pathway and around the playground equipment (2) all proposed trees and street trees adjacent to the park must be limbed up to provide clear line of site along the pathways in Tract B (3) an address for the park for emergency response and (4) provide video security of the playground area, obscured away from the backyards of adjacent homes.
- The proposed park and loop trail in Tract B will connect to the sidewalk system of Asa's View subdivision. The sidewalk system of Asa's View subdivision will connect to the La Center trail system via the Lockwood Creek Road on-road trail identified in the City's adopted 2017 Parks, Recreation, and Open Space Plan.
- The park will include the Oregon white oak tree and its dripline thereby combining active and passive open spaces.
- A condition of approval will require that the park be constructed prior to the 25th dwelling unit.
- As a previously stated condition of approval, the applicant shall place the park in a public access easement.

As a **condition of approval**, prior to engineering plan approval, the applicant shall demonstrate that the park meets ADA accessibility regulations.

As a **condition of approval**, the applicant shall provide a final park plan designed by a registered landscape architect.

As a **condition of approval**, the applicant shall place the park in a public access easement.

As a **condition of approval**, the applicant shall verify that at least 75 percent of Tract B is usable active play area and improved open space prior to final engineering plan approval.

As a **condition of approval**, the applicant's final park plan must provide the required park amenities as shown on the provided park plan and must be designed by a registered landscape architect.

As a **condition of approval**, the applicant's final park plan shall show vegetation in the undeveloped play space and an underground irrigation system for all vegetated areas except within the dripline of the Oregon white oak as specified in the critical areas report.

As a **condition of approval**, the applicant's final park plan shall show a low fence or vegetative barrier that is not sight obscuring where the park abuts residential lots.

As a **condition of approval**, prior to final engineering approval, the applicant shall provide a final park plan that: (1) provides lighting within the park in Tract B to deter criminal activity, including along the pathway and around the playground equipment (2) contains maintenance notes that requires that all proposed trees and street trees within and adjacent Tract B (with the exception of the Oregon white oak) must be limbed up to provide clear line of site along the pathways (3) assigns an address for the park for emergency response and (4) provide video security of the playground area, obscured away from the backyards of adjacent homes.

As a **condition of approval**, the applicant shall complete the required park improvements or provide the City with a bond or other financial security bond, in an amount of at least 125 percent of the estimated cost of construction of the Tract B improvements with surety and conditions satisfactory to the Public Work Department providing for and securing to the City the actual construction and installation of such improvements prior to final plat approval.

As a **condition of approval**, the applicant shall construct the park prior to the issuance of occupancy for the building permit of the 25th dwelling unit.

### ***LCMC 18.210 Subdivisions***

A preliminary plat is subject to pre-application review (LCMC 18.210.010). A technically complete review of a plat application is subject to a Type I process. After a preliminary subdivision application is deemed to be technically complete, the review of the application for a preliminary plat approval is subject to a Type III review process (LCMC 18.210.020) with the City's hearing examiner making the final decision.

The City conducted a pre-application conference for the proposed project on February 2<sup>nd</sup>, 2022 (2022-003-PAC). The City received an application for preliminary plat on May 12, 2022. The City found the application "technically complete" on September 30, 2022. Type III applications are required to have a public hearing within 78 days after the application is deemed complete. The La Center Hearing Examiner will consider the preliminary plat application on November 28, 2022 at La Center City Hall beginning at 6:00 PM – 59 days after the application was deemed complete.

**18.210.040 Approval criteria for a preliminary plat.**

- (1) *The review authority shall approve a preliminary plat if he or she finds:*
- (a) *The applicant has sustained the burden of proving that the application complies with the following regulations of the La Center Municipal Code to the extent relevant:*
    - (i) *Chapter 12.05 LCMC, Sidewalks, and Chapter 12.10 LCMC, Public and Private Road Standards;*
    - (ii) *Chapter 18.300 LCMC, Critical Areas;*
    - (iii) *Chapter 18.310 LCMC, Environmental Policy;*
    - (iv) *Chapter 18.320 LCMC, Stormwater and Erosion Control;*
    - (v) *Chapter 15.05 LCMC, Building Code and Specialty Codes;*
    - (vi) *Chapter 15.35 LCMC, School Impact Fees; and*
    - (vii) *LCMC Title 18, Development Code.*

LCMC 18.210.040(1) requires the La Center review authority to approve a preliminary plat if they find:

- (b) *That the application can comply with those regulations by complying with certain conditions of approval, and those conditions are adopted; or that necessary adjustments, exceptions, modifications or variations have been approved or are required to be approved before the final plat is approved;*
- (c) *The subdivision makes appropriate provision for parks, trails, potable water supplies and disposal of sanitary wastes; and*
- (d) *The subdivision complies with Chapter 58.17 RCW.*

Refer to the appropriate sections in this staff report that address the aforementioned chapters of the LCMC. Conditions of approval are outlined throughout the document and listed in Section IV of this staff report. A condition of approval will require that, prior to construction, the applicant obtain building permits in compliance with LCMC 15.05. A condition of approval will also require that the applicant pay all system development fees and park, traffic, and school impact fees in effect at the time of the building permit issuance.

The applicant is also proposing a stub to the south property boundary, Northeast 23rd Avenue, for future connectivity and to preserve access to properties south of the site. An existing 60-foot private road and utility easement runs through the site for access to the properties south of the site. Upon research, Staff have identified termination of access easement agreements between the subject property owner and nearly all the property owner's who use this access. The easements will relinquish upon construction of the development's public streets, including the stub to the southern property boundary. A condition of approval will require the applicant to complete and provide to the City all access easement relinquishments with affected property owners prior to final plat approval.

As a **condition of approval**, the applicant shall obtain building permits in compliance with LCMC 15.05 prior to construction.

As a **condition of approval**, prior to the issuance of building permits, the applicant shall pay all system development fees, park, school, and traffic impact fees in effect at the time.

**LCMC 18.210.050 Expiration and extension of preliminary plat approval.**

- (1) *Approval of a preliminary plat expires five years from the effective date of the decision approving it unless, within that time, an applicant files with the city clerk an application for a final plat for a subdivision or given phases of a subdivision or for an extension.*

As a **condition of approval**, the preliminary plat shall expire five years from the date of approval by the hearing examiner, unless an application for final plat is submitted or an extension is approved per LCMC 18.210.050(2) and (3).

As a **condition of approval**, the applicant shall complete and provide to the City all access easement relinquishments with affected property owners prior to final plat approval.

**LCMC 18.225 Legal Lot Determinations**

According to LCMC 18.225.010(2), the legal lot determination standards apply to all subdivision applications. Per 18.225.010(3)(a), the lot of record status may be formally determined as part of a development request for parcels that are not part of a platted land division and shall be reviewed by the City for compliance with the criteria standards of this section.

*(4) Application and Submittal Requirements. The following shall be submitted with all applications for lot determination, or applications for other development review in which a lot determination is involved. Applicants are encouraged to submit material as necessary to demonstrate compliance with this section:*

- (a) Prior city/county short plat, subdivision, lot determination or other written approvals, if any, in which the parcel was formally created or determined to be a lot of record;*
- (b) Sales or transfer deed history dating back to 1969;*
- (c) Prior segregation request, if any;*
- (d) Prior recorded survey, if any;*
- (e) At the discretion of the applicant, any other information demonstrating compliance with criteria of this section.*

*(5) Approval Criteria.*

*(b) Exceptions*

*(iii) Public Interest Exception, Discretionary. The responsible official may, but is not obligated to, determine that parcels meeting the following criteria are legal lots of record:*

*(A) Zoning. The parcel lacks sufficient area or dimension to meet current zoning requirements but meets minimum zoning dimensional requirements, including lot size, dimensions and frontage width, in effect at the time the parcel was created; and*

*(B) Platting.*

*(II) The property owner completes conditions of approval which the responsible official determines would otherwise be imposed if the parcel had been established through platting under current standards. Preliminary and final submittal plans shall be required where applicable.*

*(C) The responsible official shall apply the following factors in making a lot of record determination under the discretionary public interest exception:*

- (I) The parcel size is generally consistent with surrounding lots of record within 1,000 feet;*
- (II) Recognition of the parcel does not adversely impact public health or safety;*
- (III) Recognition of the parcel does not adversely affect or interfere with the implementation of the comprehensive plan; and*



- (IV) *The parcel purchase value and subsequent tax assessments are consistent with a buildable lot of record.*
- (V) *Recognition of lot of record status based on the public interest exception shall be valid for five years from the date of lot determination or review in which the determination was made. If a building or other development permit is not sought within that time, the determination will expire. Applications for development or lot recognition submitted after five years shall require compliance with applicable standards at that time.*

The subject site is comprised of two tax lots that are 7.39 acres and 9.08 acres. Staff's research, including reviewing a recorded survey from October of 1993 and a sales history provided by the applicant, does not reveal whether the lots were legally created under LCMC 18.225.010(5)(a). Therefore, Staff recommends approving a legal lot determination under the public interest exception as listed in LCMC 18.225.010(5)(b). Both parcels meet the minimum zoning dimensional requirements currently in effect for the LDR-7.5 zone which is 7,500 square feet (Criteria A above). The applicant and property owner will be subject to conditions of approval from this Type III preliminary subdivision application and will therefore be required to meet conditions of approval pertaining to subdivision as would have been required if the lots were legally created (criteria B). The current parcel sizes are generally consistent with the surrounding lots of record within 1,000 feet in the county to the east and north of the site. An informal survey by City staff revealed that parcels are generally sized between 5 and 10 acres to the north of Lockwood Creek Road in Clark County in the immediate vicinity of the site and the subject parcels are 9-10 acres in size. The recognition of these parcels has no known adverse impacts to public health or safety; to wit the subject parcels will be further subdivided to meet LDR-7.5 zoning standards concurrently with this legal lot determination. Recognition of the parcel does not adversely affect or interfere with the implemented comprehensive plan as this site is designated as urban low density residential and will be subdivided in accordance with LDR-7.5 zoning standards. Approving the site with a subdivision in LDR-7.5 zoning is supported by the comprehensive plan. The parcel purchase value and subsequent tax assessments, according to Clark County MapsOnline, are consistent with a buildable lot of record.

As a **condition of approval**, the recognition of a lot of record status based on the public interest exception shall be valid concurrently with the preliminary plat for five years from the date of approval in accordance with LCMC 18.225.010(5)(b)(iii)(C)(V).

***LCMC 18.230 Monumentation, Survey, and Drafting Standards***

- *18.230.010 Imprinted Monumentation*
- *18.230.020 Centerline Monumentation*
- *18.230.030 Property Line Monumentation*
- *18.230.040 Postmonumentation*
- *18.230.050 Postmonumentation Bonds*
- *18.230.060 Survey Standards*
- *18.230.070 Elevations or Vertical Information*
- *18.230.080 Preferred Scale Proportions*

All sections apply to the applicant's development.

**Chapter 18.230 Monumentation, Survey, and Drafting Standards**

As a **condition of approval**, the applicant shall comply with all provisions regarding monumentation outlined in Chapter 18.230 prior to final plat approval.

As a **condition of approval**, as outlined in LCMC 18.230.090, the final plat shall be drawn with ink upon three-millimeter Mylar film, or equivalent; said sheets are to be 30 inches by 21 inches, with a one-inch border on each side or as otherwise directed by the Clark County recording agency.

**LCMC 18.240 Mitigation of Adverse Impacts**

**Chapter 18.240.010 Purpose**

This chapter provides the City with the authority to require prospective developers to mitigate the direct impacts the City has specifically identified as a consequence of proposed development, and to make provisions for mitigation for impacts including, but not limited to, impacts upon the public health, safety and general welfare, for open spaces, drainage ways, streets, other public ways, parks, playgrounds, and sites for schools and school grounds.

**Chapter 18.240.020 Determination of Direct Impacts**

*(1) Before any development is given the required approval or is permitted to proceed, the review authority shall determine all impacts, if any, that are a direct consequence of the proposed development and which require mitigation, considering but not limited to the following factors:*

- (a) Predevelopment versus post development demands upon city streets, drainage facilities, parks, playgrounds, recreation facilities, schools, police services, and other municipal facilities or services;*
- (b) Likelihood that a direct impact of a proposed development would require mitigation due to the cumulative effect of such impact when aggregated with the similar impacts of future development in the immediate vicinity of the proposed development;*
- (c) Size, number, condition and proximity of existing facilities to be affected by the proposed development;*
- (d) Nature and quantity of capital improvements reasonably necessary to mitigate specific direct impacts identified as a consequence of the proposed development;*
- (e) Likelihood that the users of the proposed development will benefit from any mitigating capital improvements;*
- (f) Any significant adverse environmental impacts of the proposed development;*
- (g) Consistency with the city's comprehensive plan;*
- (h) Likelihood of city growth by annexation into areas immediately adjacent to the proposed development;*
- (i) Appropriateness of financing necessary capital improvements by means of local improvement districts;*
- (j) Whether the designated capital improvement furthers the public health, safety or general welfare;*
- (k) Any other facts deemed by the review authority to be relevant.*

*(2) The cost of any investigations, analysis or reports necessary for a determination of direct impact shall be borne by the applicant. [Ord. 2006-17 § 1, 2006.]*

**Chapter 18.240.030 Mitigation of Direct Impacts**

*(1) The review authority shall review an applicant's proposal for mitigating any identified direct impacts and determine whether such proposal is an acceptable mitigation measure considering the cost and land requirements of the required improvement and the extent to which the necessity for the improvement is attributable to the direct impacts of the proposed development. Such developments will not be approved*

*by the review authority until provisions have been made to mitigate identified direct impacts that are consequences of such development.*

*(2) The methods of mitigating identified direct impacts required as a condition to any development approval may include, but are not limited to, dedication of land to any public body and/or off-site improvements.*

The proposed project has the potential to impact public services, traffic, critical areas, and other elements of the environment. Mitigations proposed by the applicant are reviewed in this staff report for conformance with applicable standards and any additional mitigations and conditions addressing said impacts are highlighted throughout this report. How the project impacts public facilities and mitigations to these impacts are addressed in the following sections of this staff report.

- **Parks:** Section III.D, 18.147
- **Critical Areas:** Section III.E, 18.300
- **Trees:** Section III.E, 18.350
- **Sewer:** Section III.F
- **Water:** Section III.F
- **Stormwater:** Section III.F
- **Streets, sidewalks, and traffic:** Section III.F
- **Police, fire, and schools:** Section III.F
- **Street lighting:** Section III.F
- **Impact fees:** Section III.F

### ***Chapter 18.245 Supplementary Development Standards***

*The standards in this chapter apply to development generally within the city of La Center. They can be used in any review process where applicable to evaluate or condition approval of an application.*

According to the submitted narrative, individual lots and the stormwater facility in Tract A are likely to be fenced. As a **condition of approval**, if any fences or hedges are proposed prior to the final plat, the applicant must provide information demonstrating that the fences comply with LCMC 18.245.020.

The applicant is proposing street lighting with the project but has not submitted a preliminary lighting plan. LCMC 18.282 (Outdoor Lighting) also applies to the development as discussed and conditioned later in this staff report. **As a condition of approval**, the applicant shall provide a photometric plan prior to final engineering plan approval showing how the proposed lights will not cause more than a one foot-candle measure at any property line in conformance with 18.245.040 and LCMC 18.282.

The site is zoned LDR-7.5. Properties to the west are zoned UP and are zoned LRD-7.5 to the north. Properties to the immediate south and east are zoned AG-20 in Clark County. According to Table 18.245.060, LDR sites abutting Clark County lots and abutting other LDR sites do not require any landscape screening. However, LDR sites directly abutting a UP zone require a L-3, 5-foot-wide buffer. LCMC 19.245.060(3) indicates that existing vegetation may fulfill landscaping and screening requirements if the existing landscaping requirements is at least equal to the level of screening standard required for the development in question. In this case, the new La Center Middle School provided a 20-foot-wide buffer landscaped to an L5 standard. Therefore, staff finds that an additional 20-foot buffer is not required on the subject property as existing landscaping exceeds minimum screening requirements

along the shared property boundary. However, the school may have its own fencing requirements other than sight-obscuring fencing due to security and sight-distance concerns, affect proposed lots adjacent to the school's property. A condition of approval will require the applicant to coordinate and approve fencing with the La Center School District for lots adjacent to the school property prior to building permit approval.

LCMC 18.245.060(8) requires that ground-level exterior equipment be screened from adjoining property used or zoned for residential purposes or from an adjoining public road right-of way to at least an F2 or L3 standard, if visible. A condition of approval will require this be met.

LCMC 18.245.060(10) requires all landscaping be installed prior to issuance of occupancy or final inspection within six months after issuance of occupancy or final inspection if it would increase the likely survival of plants. A condition of approval will require this be met.

LCMC 18.245.060(11-16) contain plant material size and quality requirements. The applicant's final landscape plan must comply with these requirements.

LCMC 18.245.060(18) contains irrigation requirements. All required landscape areas including within the park in Tract B and planter strip along public roadways must meet the City's irrigation requirements.

As a **condition of approval**, the applicant shall provide a photometric plan prior to final engineering plan approval showing how the proposed lights will not cause more than a one foot-candle measure at any property line in conformance with 18.245.040 and LCMC 18.282.

As a **condition of approval**, ground-level exterior equipment such as air condition units, must be screened from view to an F2 or L3 standard prior to issuance of final inspection for each dwelling unit.

As a **condition of approval**, the applicant shall install all landscaping prior to issuance of final inspection for each dwelling unit or no more than six months after final inspection if it will increase plant survival. Installation after occupancy requires City notification and approval.

As a **condition of approval**, the applicant's final landscape plan shall comply with the requirements of LCMC 18.245.060(11-16) for plant size and spacing prior to issuance of final inspection for each dwelling unit.

As a **condition of approval**, all required landscape areas including within the park in Tract B and planter strip along public roadways must meet the City's irrigation requirements in LCMC 18.245.060(18). The applicant shall provide irrigation plans prior to final engineering approval.

As a **condition of approval**, the applicant shall coordinate and approve fencing with the La Center School District for lots adjacent to the school property prior to building permit approval.

### ***LCMC 18.260 Variances***

The applicant is applying for a variance to the minimum building lot width for Lots 55—59 and Lots 64—68 within the development. The code sets a minimum lot width at 60 feet. The applicant is requesting to decrease the minimum lot width of these lots to 55 feet or roughly 7.5% less than the minimum requirement, which otherwise qualifies as a Type I variance. However, the variance review is grouped with the Type III preliminary plat review under a single, concurrent review process.

LCMC 18.260.040 contains approval criteria for variances. The applicant provided a narrative addressing the variance criteria. A summary of the applicant's justification and staff's recommendation for denial of the variance follows each variance criterion.

*(1) Unusual circumstances or conditions, such as size, shape or topography of a site, or the location of an existing legal development apply to the property and/or the intended use that do not generally apply to other properties in the vicinity or zone. An unusual circumstance could also include another obligation under a different municipal code section or a state or federal requirement;*

**Finding:** The applicant states that preexisting conditions have created a triangular geometry to the site. This effect can be avoided for most of the lots in the proposed development, however, the overall site's geometry doesn't allow for standard lot widths per LDR 7.5 zoning throughout the plat when applying other required lot dimensions (setbacks, lot size). Also, road patterns and required right-of-way widths limit north/south direction of the site's design and this limitation is made-up by east-west direction site design. Further, the dimensions of the lots on the north and south side cannot be reduced without bringing them below the 7,500 square feet lot size minimum. Therefore, there is not any additional lot area that can be used to widen the substandard lots. This has resulted in slightly narrower and deeper lots for Lots 55-59 and 64-68. This was in best efforts to keep the plat design uniform and efficient where the area for lots is available, but the required dimensions are not.

Staff agrees that the combined effect of the site's preexisting geometry and site design requirements creates an unusual circumstance for lot layouts and dimensions. Staff recognizes the Applicant's effort to best create a feasible layout while meeting roadway and most lot dimensional requirements of the underlying zone.

*(2) The unusual circumstance cannot be a result of actions taken by the applicant;*

**Finding:** Property dimensions were not determined by the Applicant and the slight deviations to the standards were the Applicant's best efforts to comply with La Center Municipal Code requirements.

The City requires that developments are to comply with the La Center Municipal Code, including lot dimensions. These are determined to facilitate functional and consistent design across the City. Staff recognizes the Applicant's best efforts to comply to standards with the combined challenge of preexisting geometry and site design requirements and agrees that the existing lot shapes are not the result of applicant actions.

*(3) The variance request is necessary for the preservation of a substantial property right of the applicant which is possessed by the owners of other properties in the vicinity or zone;*

**Finding:** The Applicant states this request is based on the Applicant's efforts to efficiently provide lots that meet the minimum lot size of 7,500 square feet. All property owners in the residential zones have right to subdivide and meet the minimum lot size and maximize density, although the Applicant is not proposing to maximize density.

Staff recognizes the applicant's efforts to best accommodate code requirements with the site design. Property owners do have the right to subdivide and maximize density including providing duplexes, if that were their preference, to meet maximum density requirements. Staff also recognizes that the Applicant is eligible for a density transfer and lot reduction to as little as 6,000 square feet for up to 10

percent of the lots as per LCMC 18.130.080(2) due to the Oregon white oak critical area on site. However, the Applicant elected not to transfer density and reduce lot sizes to less than 7,500 square feet but chose to best comply with typical LDR-7.5 standards with lots of 7,500 square feet and as close to 60 feet in width as possible for the lots for which a variance is requested.

*(4) The variance request is the least necessary to relieve the unusual circumstances or conditions identified in subsection (1) of this section;*

**Finding:** The applicant argues that this request is the least necessary to address the unique shape and dimensions of the property. There is enough area with the proposed lots to have two additional lots, but there would be many more irregular lots to achieve this. The proposed lots are as near to the standard as the Applicant could achieve while still providing roadways, park space, and stormwater facilities.

Staff have determined that this variance request is the least necessary to relieve the unusual circumstances or conditions as the Applicant was eligible for a density transfer and lot reduction as discussed earlier, which would allow for 10 percent of the lots to be a 6,000 square foot minimum and less than the LDR-7.5 standard. The applicant is proposing a less drastic change in lot dimensions than would be permitted outright if applying the density transfer code. Staff recognizes the Applicant's best efforts to comply with typical standards for the underlying zoning and that the lots with substandard widths are the least necessary to address the site's unusual circumstances.

*(5) Any impacts resulting from the variance are mitigated to the extent practical; and*

**Finding:** The applicant states that there are no adverse impacts anticipated with this request, and the overall design ensures uniformity with the neighborhood.

Staff agrees that no unforeseen adverse impacts are anticipated with the request. The reduced width lots will have detached single-family residences and the lots will continue to meet setback requirements. The houses on the reduced width lots will largely resemble those on larger lots. There are no critical areas, traffic, or public facilities impacts associated with the reduced width lots.

*(6) The granting of the variance will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity and zone in which the property is situated.*

**Finding:** The applicant states that the granting of this variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity as it will be providing homes similar to what are built in the area, on proposed lots that conform to the minimum lot size of 7,500 square feet.

Staff find that the requested variance would not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity and zone where the property is situated. The City's comprehensive plan and zoning map designate the property for detached single-family residential development and the applicant is proposing to develop within prescribed density ranges.

Based on the analysis above, staff find that the variance criteria are met and recommend approval.

### ***LCMC 18.280 Off-Street Parking and Loading Requirements***

Each dwelling unit shall be provided with at least two (2) off-street parking spaces per LCMC Table 18.280.010 for developments of four or more units.

The narrative states that “each future home will provide at least 4 off-street parking spaces within garage and driveway areas.”

As a **condition of approval**, the applicant shall demonstrate that each dwelling unit has at least two (2) off-street parking spaces per LCMC Table 18.280.010 prior to building permit approval.

### III.E Critical Areas Review / SEPA Analysis

#### ***LCMC 18.300, Critical Areas***

Mapped critical areas on the site by Clark County include wetlands, category II critical aquifer recharge areas (CARA), and fish and wildlife habitat conservation areas, (riparian habitat and priority oak habitat). Additionally, the applicant’s geotechnical engineering study (Exhibit A.9) documents that the site soils are consistent with Class D for groundshaking amplification.

- **Wetlands:** According to the applicant’s critical areas documentation (Exhibit A.13, A.14, A.15), the mapped wetland does not exist along NE 23<sup>rd</sup> Avenue through the center of the site and along the southern boundary because the ditch that runs north and south through the site and along the southern boundary has seasonal water in the bottom during the growing season but is a man-made feature which does not meet the definition of a wetland in LCMC 18.300.030.
- **Fish and wildlife habitat conservation areas (riparian habitat):** Clark County maps riparian areas through the center of the site and along the southern boundary of the site. The applicant’s critical areas documentation (Exhibit A.13, A.14, A.15) indicates that no riparian areas exist onsite. In follow-up correspondence with the applicant, staff requested additional information on the channel which runs along the southern boundary, which the applicant provided (Exhibit A.13, A.14, A.15) and indicates that the channel is a manmade ditch. Under LCMC 18.300.030 “artificial features” are not fish and wildlife habitat conservation areas. Staff agree that neither area (center of the site or to the south) qualify as riparian habitat.
- **Fish and wildlife habitat conservation areas (priority oak habitat):** The 40-inch Oregon white oak near the southeast side of the site qualifies as priority oak habitat, which is a protected critical area under the City’s critical areas ordinance. The applicant is proposing to preserve the Oak habitat as further discussed below.
- **CARAs:** Although category II CARAs are mapped critical areas, LCMC 18.300.090(1) only protects category I CARAs. In addition, the critical areas report states that there are no riparian areas or buffers on site.

Therefore, the only critical areas onsite are wildlife habitat conservation areas (priority oak habitat) and geologically hazardous areas.

The applicant is isolating and protecting 0.09 acres of land for the Oregon white oak and its dripline, which allows them to be eligible for a lot size reduction per LCMC 18.130.080 and density transfer per LCMC 18.300.130. However, the applicant has indicated their preference in meetings with Staff and provided site plans that they are to conform with standard lot size and dimensions for LDR-7.5 developments, except for lot widths as further discussed in LCMC 18.260, Variances.

## 1) Fish and Wildlife Habitat Conservation Areas

### Priority Habitat (Oregon white oak)

A 40-inch diameter Oregon white oak is located in the far southeastern corner of the site and is considered priority habitat by the applicant's consultant, Environmental Technology Consultants, and WDFW. WDFW considers individual Oregon white oak trees to be priority habitat when found to be particularly valuable to wildlife (i.e. contains many cavities, has a large diameter at breast height, is used by priority species, or has a large canopy). Priority habitats and species require a 300-foot buffer or a threshold based upon consultation with WDFW (see LCMC 18.300.090(2)(a) and in accordance with best available science (see LCMC 18.300.090(2)(e)). WDFW has further supported protection of the Oregon white oak with provided BMPs during and after construction of the site as discussed earlier in this staff report. Initial guidance provided by WDFW requested that the tree to be protected at its dripline plus an additional 10 meters. Upon Staff discussion with WDFW, they provided additional guidance that an additional 5 meters (instead of 10) from the dripline would be acceptable. However, Staff does not believe that the guidance provided by WDFW meets the standard of best available science and is recommending the oak tree be protected to the extent of its dripline as recommended by the conditioned critical areas documentation (Exhibit X).

The approximate dripline of the priority habitat Oregon white oak is shown on sheet 11 of the applicant's plans in Exhibit A.12. The oak's dripline extends onto the undeveloped property to the east, onto Lot 21 to the south, and onto the proposed park area in Tract B to the west and north. The applicant does not propose construction activities such as grading or utilities within the dripline of the Oregon white oak, but are proposing a fence along the property line, which crosses the tree's dripline. As confirmed with the Applicant, fencing within the tree's dripline will not have posts or any soil disturbances that would affect the tree's roots within the dripline as indicated in the critical areas documentation (Exhibit A.13, A.14, A.15). The applicant states in the narrative they are isolating and protecting the Oregon white oak but did not provide a tree protection plan in accordance with LCMC 18.350.060, as further discussed later in this staff report. A condition of approval will require that the applicant adhere to the protection methods provided in their critical areas documentation (Exhibit A.13, A.14, A.15).

As a **condition of approval**, the applicant shall adhere to all of the management practices contained in the critical areas letter dated August 24, 2022 (Exhibit X) including:

- There should be no development within the dripline of the Oak. The Oak on the property is older in age and therefore the dripline should be the root extent.
- The placement of a fence around the Oak tree or in the dripline needs to not have holes dug or no fence in the dripline.
- Porous materials (grasses, bark) should try to be used above nonporous (turf) around the tree and in the dripline.
- Manage invasive weeds preferably hand pulling, or spot herbicide spraying if necessary.
- Do not overwater the oak. Maintain management of water around the oak tree as it has been historically.



In the case that the applicant later proposes fence posts within the drip line, the applicant shall obtain a critical areas permit prior to the impact.

As a **condition of approval**, the applicant shall record a conservation covenant around the dripline of the Oregon white oak prior to final plat approval. This shall be in a form approved by the city attorney in accordance with LCMC 18.300.090(2)(n)(iii).

As a **condition of approval**, the applicant shall include the boundary of Oregon white oak's dripline and a reference to the recorded conservation covenant on the face of the final plat.

Because the applicant proposes to preserve the oak tree and stay outside its buffer (the dripline), a critical areas permit is not necessary at this time.

## 2) Geological Hazard Areas

As indicated in the geotechnical report (Exhibit A.9) provided by the applicant, the site is classified as Site Class D for ground shaking amplification and is a seismic hazard, which is a type of regulated critical area. A condition of approval will require that the applicant adhere to all recommendations contained with the geotechnical report by Soil and Water Technologies, Inc. dated May, 2022 (Exhibit A.9).

As a **condition of approval**, the applicant shall adhere to all recommendations contained in the geotechnical report by Soil and Water Technologies, Inc. dated May, 2022 (Exhibit A.9).

### **Chapter 18.310 LCMC Environmental Policy**

The Applicant provided a SEPA Checklist. The City reviewed the checklist and relevant materials, including an archaeological pre-determination report, and the Responsible Official issued an optional Mitigated Determination of Non-Significance (MDNS) Threshold Determination in conformance with Washington Administrative Code 197-11-355 on September 30, 2022. The City published notice of the MDNS in Ecology SEPA Register and issued a final SEPA determination on November 10, 2022, at least 15-days prior the public hearing as required by WAC 197-11-310. Proposed mitigation measures under SEPA are as follows:

1. Earth: The applicant must comply with the design recommendations of the geotechnical site investigation by Soil and Water Technologies, Inc. dated May 2022.
2. Earth: All grading and filling of land must utilize only clean fill, i.e., dirt or gravel from an approved source;
3. Earth: All debris removed offsite must be disposed of at an approved location;
4. Air: The applicant is required to sprinkle the site with water during construction to reduce dust.
5. Air: The applicant shall use vehicles fitted with standard manufacturer's emission's control equipment to reduce construction-period emissions. Construction vehicles shall not be permitted to idle when not in use.
6. Air: The applicant shall use vehicles fitted with standard manufacturer's emission's control equipment to reduce construction-period emissions. Construction vehicles shall not be permitted to idle when not in use.

7. Water: The applicant must comply with the recommendations of the Preliminary Technical Information Report dated July, 2022.
8. Water: The applicant must use approved erosion control best management practices during construction.
9. Water: A City stormwater permit and Stormwater Pollution Prevention Plan (SWPPP) shall be required for the proposed project and shall be approved prior to construction.
10. Plants: The applicant shall retain the on-site priority habitat Oregon white oak with protection measures as provided by Environmental Technology Consultants dated August 24, 2022 per LCMC 18.300. The applicant shall also plant street trees spaced 30-feet on center, and plant landscaping as required by LCMC 18.245.
11. Environmental Health (Noise): All construction equipment shall have muffled exhaust and construction activities are only permitted during City-approved construction hours. Contractors are required to comply with the maximum noise level provisions of WAC 173-60 during construction.
12. Light and Glare: The applicant shall comply with the requirements of LCMC 18.282 (Outdoor Lighting).
13. Recreation: The applicant shall comply with LCMC 18.147 (Parks and Open Space).
14. Recreation: The applicant is required to pay park impact fees prior to issuance of building permits.
15. Historic and cultural preservation: In the event any archaeological or historic materials are encountered during project activity, work in the immediate area (initially allowing for a 100' buffer; this number may vary by circumstance) must stop and the following actions taken:
  - a. Implement reasonable measures to protect the discovery site, including any appropriate stabilization or covering;
  - b. Take reasonable steps to ensure confidentiality of the discovery site; and,
  - c. Take reasonable steps to restrict access to the site of discovery.

The applicant shall notify the concerned Tribes and all appropriate county, city, state, and federal agencies, including the Washington Department of Archaeology and Historic Preservation and the City of La Center. The agencies and Tribe(s) will discuss possible measures to remove or avoid cultural material, and will reach an agreement with the applicant regarding actions to be taken and disposition of material. If human remains are uncovered, appropriate law enforcement agencies shall be notified first, and the above steps followed. If the remains are determined to be Native, consultation with the affected Tribes will take place in order to mitigate the final disposition of said remains.

See the Revised Code of Washington, Chapter 27.53, "Archaeological Sites and Resources," for applicable state laws and statutes. See also Washington State Executive Order 05-05, "Archaeological and Cultural Resources." Additional state and federal law(s) may also apply.

Copies of the above inadvertent discovery language shall be retained on-site while project activity is underway.

| Contact   | Information   |
|---|---|
| Cowlitz Indian Tribe, Nathan Reynolds, Interim Cultural Resources Manager | Phone: 360-575-6226; email: nreynolds@cowlitz.org         |
| City of La Center, Bryan Kast, Public Works Director                      | Phone: 360-263-2889; email: bkast@ci.lacenter.wa.us       |
| Office of the Clark County Medical Examiner (for human remains)           | Phone: 564-397-8405; email: medical.examiner@clark.wa.gov |
| Washington DAHP, Dr. Allison Brooks, Ph.D, Director                       | Phone: 360-586-3066; email: Allyson.Brooks@dahp.wa.gov    |

16. Transportation: The applicant shall comply with the recommendations of the Traffic Analysis Report (Kelly Engineering, February 2022).
17. Transportation: The applicant is required to pay transportation impact fees prior to issuance of building permits.
18. Utilities: The applicant shall pay the applicable sewer system development charge for each residential unit. Applicable fees will be assessed at the time of building permit application and are due prior to issuance of final occupancy for each unit.
19. Public Services: The applicant shall pay school, and park impact fees prior to the issuance of building permits for the onsite units. Applicable impact fees will be assessed at the time of building permit application and are due prior to issuance of final occupancy for each unit.

**LCMC 18.340 Native Plant List**

**Findings:** All property owners throughout the city are required to avoid the use of plants from the nuisance plan list and shall not landscape with any plants on the prohibited plant list. The applicant’s preliminary landscape plan (Exhibit T) does not include any nuisance or prohibited species.

As a **condition of approval**, the final Landscape Plan, once submitted, shall avoid the use of plants from the nuisance plant list and the prohibited plants list per Table 18.340.040(3) and Table 18.340.040(4).

**LCMC 18.350 Tree Protection**

**Findings:** The applicant provided an existing tree inventory for the site. There are five fir trees along Lockwood Creek Road ranging from thirteen to seventeen inches dbh. Also, fifteen cottonwood trees were identified on the site and range in size from ten to twelve inches dbh, as well as the 40-inch dbh Oregon white oak. The Applicant states in the narrative that all identified trees, except the Oregon white oak, are to be removed as it is necessary to accommodate for site improvements for the development, which requires approval of a tree cutting permit. LCMC 18.350.050 requires each removed tree of ten inches dbh or greater to be mitigated by means as listed.

The Applicant is proposing to remove twenty trees onsite of ten inches dbh or greater and planting 109 street trees. They have provided a narrative addressing the tree cutting permit approval criteria. Staff agrees the applicant has met the burden of proving the approval criteria and are recommending the tree

cutting permit to be approved as conditioned. The following is the Applicant's response to tree cutting approval criteria as outlined in LCMC 18.350.080.

*(1) Removal of the tree will not have a significant negative impact on erosion, soil stability, flow of surface waters, protection of adjacent trees, or existing wetlands.*

The Applicant states that the entire site will be graded the installation of roads, utilities, and future homes. The tree removal will be part of the grading that will be included in an erosion control plan and geotechnical oversight throughout the entire development process. Surface water is to be directed by an approved stormwater facility for quantity and quality control. The removal of these trees will not affect adjacent trees or existing windbreaks.

**Findings:** Staff agrees these trees are in areas to be improved for roads, utilities, and future homes and that these areas will have approved erosion control plans, stormwater facilities, and improvement plans to reduce negative impacts to erosion, soil stability, and flow of surface waters. Also, the applicant is conditioned to protect the Oregon white oak on the site, the only tree to remain. Any trees proposed for removal shall be identified on the tree protection plan and shall be flagged in the field consistent with LCMC 18.350.060 so that the City can verify trees to be removed and preserved consistent with 18.350.070(3). In addition, the applicant shall install construction fencing around the Oregon white oak's dripline, so it is not inadvertently removed, and grading does not occur within its root zones.

*(2) Removal of the tree is not for the sole purpose of providing or enhancing views.*

Tree removal is for the sole purpose of constructing the proposed improvements.

**Findings:** Staff agrees the Applicant's intent is to not remove trees for the sole purpose of providing or enhancing views as discussed in the previous criterion.

*(3) The tree is proposed for removal for landscaping purposes or in order to construct development approved or allowed pursuant to La Center Municipal Code or other applicable development regulations. The city planner may require the building footprint of the development to be staked to allow for accurate verification of the permit application.*

**Findings:** Staff finds that the tree removal is to construct the proposed development, pending its approval.

*(4) Removal of the tree will not have a significant negative impact on the character, aesthetics, or property values of the neighborhood. The City may grant an exception to this criterion when alternatives to the tree removal have been considered and no reasonable alternative exist to allow the property to be used as permitted in the zone. In making this determination, the city may consider alternative site plans or placement of structures or alternate landscaping designs that would lessen the impact on trees, so long as the alternatives continue to comply with other provisions of the La Center Municipal Code.*

The Applicant states that the cottonwood trees do not provide aesthetic value, and when the firs are removed, the improvements to Northwest Lockwood Creek Road will provide additional safety and sight distance. Property values are not expected to be affected.

**Findings:** It is supported by Staff that tree removal will not have a significant negative impact on the character, aesthetic, or property values of the neighborhood as well as the additional roadway safety measures discussed by the Applicant. The project will provide 109 street trees that will aesthetically contribute to the neighborhood.

*(5) The city shall require the applicant to mitigate for the removal of each tree pursuant to LCMC 18.350.050. Such mitigation requirements shall be a condition of approval of the permit.*

109 street trees are to be planted throughout the site as mitigation for the removal of the trees.

**Findings:** Staff finds that the Applicant's proposal is exceeding the tree mitigation requirements of LCMC 18.350.050 and shall condition the approval of the permit to provide this mitigation.

The Applicant intends to preserve and protect the Oregon white oak tree onsite. However, their plans do not meet the requirements of the City tree protection ordinance, because they do not have a tree protection plan which meets the requirements of 18.350.060. This tree protection plan is also subject the critical areas ordinance for the Oregon white oak as discussed in LCMC 18.300.

Staff has determined, per the above responses to the approval criteria and the provided submittal materials, a recommendation for approval for the tree cutting permit with conditions as listed below.

As a **condition of approval**, any trees proposed for removal shall be flagged in the field consistent with LCMC 18.350.060 so that the City can verify trees to be removed and preserved consistent with 18.350.070(3). In addition, the applicant shall install construction fencing around the Oregon white oak's dripline, so it is not inadvertently removed, and grading does not occur within its root zones.

As a **condition of approval**, trees regulated by chapter 18.350 that are proposed to be removed shall be mitigated consistent with LCMC 18.350.

### ***LCMC 18.360 Archeological Resource Protection***

**Response:** According to the Clark County Maps Online archaeological predictive model, the subject site is located in areas containing a moderate high and high risk of encountering archaeological resources. Per 18.360.030(12), an archeological predetermination is required for projects which will have a high impact defined to include excavation of 12 inches below the ground surface and more than 10,000 square feet in moderate high and high-risk areas. The applicant's proposal will include excavation of more than 12 inches below grade for construction of roads and utilities which exceed 10,000 square feet in area and for grading on some areas of the site. Therefore, an archeological predetermination is required for the proposed project.

An archeological predetermination report was completed by Applied Archaeological Research, Inc and included in the submittal package. Applied Archaeological Research, Inc. recommends that no further

archaeological work is necessary in association with the proposed project aside from adherence to an inadvertent discovery plan.

A SEPA mitigation measure requires the applicant implement an inadvertent discovery plan.

Based off the information included in the submitted archeological predetermination, staff concludes that an archeological resource survey, as detailed in LCMC 18.360.090, is not required for the proposed project.

See Section IV for a condition of approval regarding inadvertent discovery of archeological or historical materials during project construction.

### III.F Public Works and Engineering Analysis

***Chapter 12.05 LCMC, Sidewalks’ Chapter 12.10 LCMC, Public and Private Road Standards; Chapter 18.320 LCMC, Stormwater and Erosion Control; and Chapter 15.05 LCMC, Building Code and Specialty Codes, Chapter 15.35 LCMC, School Impact Fees;***

#### Transportation Impact Analysis

The applicant conducted a transportation impact study for the Asa’s View Subdivision, prepared by Kelly Engineering, dated February, 2022. The proposed development will construct a 69-lot subdivision south of Lockwood Creek Road west of NE 24<sup>th</sup> Avenue.

The City of La Center has adopted mobility standards for transportation facilities during the highest one-hour period on an average weekday. The City’s Transportation Capital Facilities Plan requires all un-signalized or roundabout controlled intersections must operate with a Level of Service (LOS) “E” or better.

The traffic impact analysis provided operations for existing conditions, year (2025) without the project, and (2025) with the project conditions during the AM peak hour and PM peak hour at the following study intersections:

- NE Lockwood Creek Road NE 24<sup>th</sup> Avenue/site access
- Lockwood Creek Road & Spruce Avenue
- Northeast Lockwood Creek Road & John Storm Avenue
- 4<sup>th</sup> Street/Northeast Lockwood Creek Road & Highland Avenue (Mitigated in the future)
- Aspen Avenue & 4<sup>th</sup> Street
- NW Pacific Highway & E. 4<sup>th</sup> Street
- NW La Center Road & NW Timmen Road

The Asa’s View Subdivision is anticipated to generate 50 trips in the AM peak hour and 67 trips during the PM peak hour.

All of the study area intersection are operating at acceptable levels, with the exception of the Highland Avenue/ 4<sup>th</sup> Street intersection. The traffic report provided by the applicant identifies that the intersection is operating at LOS “F” during the AM peak hour for vehicles approaching E. 4<sup>th</sup> Street from the south. The traffic report completed by PBS Engineering for the 4<sup>th</sup> Street widening project

shows that the future northbound left turn will operate at an LOS “F” in the future. In addition, the report also states that the westbound traffic at Ivy & 4<sup>th</sup> Street, will operate at an LOS “F” in the future.

The report by the applicant indicates that the Asa’s View traffic will not add any traffic this approach. **However, the city disagrees with that logic. The future traffic added to the intersection to the south will increase the LOS of northbound left turns at 4<sup>th</sup> Street.**

However, the PBS, the city’s consultant for 4<sup>th</sup> Street widening project has completed 100% design of the project, which includes a traffic signal at 4<sup>th</sup> Street & Highland Avenue intersection. The City is currently looking for funding to complete this project, and construction is anticipated in 2024 to 2025. This signal will result in an LOS “B” of this intersection for northbound left turns, and LOS “A” for westbound traffic from Ivy Avenue.

**Therefore, no mitigation is required by the Asa’s View development, due the future mitigation of added traffic by added a signal at 4<sup>th</sup> Street and Highland Road.**

The access to Lockwood Creek Road shall be justified by a traffic report. The CFP and Engineering Standards require a minimum spacing of 600-feet between streets and driveway connections to an Arterial. The applicant located the new access road to Lockwood Creek Road, between NE 24<sup>th</sup> Avenue and the new driveway for the middle school. The new intersection is located less than 75 feet away from NE 24<sup>th</sup> Avenue. Although the spacing of this new access road, NE 23<sup>rd</sup> Avenue, is less than 600-feet, the consultant’s Traffic Engineer analyzed the line of site to the east and west along Lockwood Creek Road and found that there is adequate sight distance, based on a 25 MPH speed. The applicant is required to move the 25 MPH zone east of NE 23<sup>rd</sup> Avenue to allow enough site distance as designed.

#### **Chapter 12.10 -- Public and Private Road Standards**

*City of La Center Engineering Standards for Construction* shall apply to all public road improvements unless modified by the director. LCMC 12.10.040.

*City of La Center Engineering Standards for Construction* shall apply to all public road improvements unless modified by the director.

Lockwood Creek Road is classified as a Minor Arterial per the updated Capital Facilities Plan. The city has designated Lockwood Creek Road as a Minor Arterial “A” per the Engineering Standards. General roadway and right-of-way standards shall apply and provide half street improvements per LCMC 12.10.090.

Half street improvements will need to be constructed along the frontage improvements for a plat per the Minor Arterial “A” Standard Detail. The streets within the development shall be either a Neighborhood or Local Street Standard per the Engineering Standards depending on the ADT.

All pedestrian path of travel in public right of way including; sidewalks, curb ramps and street pedestrian crossings shall comply with the American Disabilities Act.

The city will monitor the condition of the road prior to and during construction, and may require improvements to the entire width of the road following construction.

The applicant shall provide full street improvements on interior streets according to the City of La Center Local Access standard ST-15.

The development shall incorporate interior street improvements, street lights, street trees, and stormwater improvements per LCMC 12.10.190. Street lighting shall be LED and shall comply with the City Engineering Standards for the type and spacing of the lights.

For driveways to each lot the applicant will need to comply with maximum driveway width as shown on standard detail ST-4.

All pedestrian path of travel in public right of way including; sidewalks, curb ramps and street pedestrian crossings shall comply with the American Disabilities Act.

Fire hydrants shall be spaced per the IFC or as otherwise approved by the Fire District. The location of all the hydrants must be approved by the Fire District. The Fire District must approve access to all the lots per the IFC.

Clark Public Utilities must approve the water pipe system and service to all lots.

The final plat shall contain street names and addresses as provided by the City.

Monumentation shall be as directed by the City and shall be inside a cast iron monument case flush with the final street grade and shall be a brass cap, in a 30-inch-long pipe as set by the surveyor of record and shown on the final subdivision plat map.

**Grading**

The applicant shall submit final grading and erosion control permit as part of the subdivision plans showing the proposed contours on the plans.

The City Erosion Control Standards require that any activity disturbance over 500 SF must comply with the City standards. As part of these standards a construction stormwater permit is required from the Department of Ecology and an SWPPP will be necessary as part of the plan submittal to the City. All erosion control measures shall be designed, approved, installed and maintained consistent with Chapter 18.320 LCMC and the applicant's Construction Stormwater Permit. Per the City Erosion Control Manual, from October 1 through April 30, no soils shall remain exposed for more than two (2) days. From May 1 through September 30, no soils shall remain exposed more than seven (7) days.

Site development earthwork for site grading and construction of sewer, storm drain, water and street systems shall be limited to the dry weather season between May 1 and October 31 with planting and seeding erosion control measures completed by October 1 to become established before the onset of wet weather.

**Geotechnical Study.**

A complete application will include a geotechnical study and report, prepared by a geotechnical engineer or geologist, licensed in the state of Washington. The report shall include at a minimum, testing to support the structural section of the roadway, site building construction, grading, retaining-wall design, as applicable, and subsurface drainage. LCMC 18.212.050.

The applicant shall follow all recommendations by the report prepared by Soil and Water Technologies, Inc. Engineering dated May 2<sup>nd</sup>, 2022.

These are as follows:

Site Drainage During earthwork construction, a plan for the collection and conveyance of surface water to an appropriate management facility should be in place to control runoff. Final site grading should direct surface water off the site to prevent standing/ponding water and away from proposed buildings, structures and/or roadway.



We suggest that a foundation footing drain be installed around the perimeter of all buildings. The drain should consist of a 4-inch diameter perforated pipe and installed in an envelope of clean drain rock or pea gravel wrapped with free draining filter fabric.

Pavement Areas Hot mix asphalt (HMA) and crushed rock base (CRB) materials should conform to WSDOT specifications.

The subgrade conditions should be assessed and tested by SWT prior to the placement of the roadway aggregate section. They recommend that a minimum of 4 inches of AC underlain by 12 inches of compacted CRB. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

### **Chapter 13.10 -- Sewer System Rules and Regulations**

Connection to public sewer is required. LCMC 13.10. All work is to be performed by a duly licensed contractor in the City of La Center. LCMC 13.10.230. Work will be performed using an open trench method unless otherwise approved. LCMC 13.10.200. All costs associated with installing the side sewer shall be borne by the applicant. LCMC 13.10.110.

Per the City Engineering Standards, sanitary sewers should be designed to care for future loads that may reasonably be expected from full development upstream, consistent with the La Center Comprehensive Plan, Capital Facilities Plan, LCMC Title 13, and the Sewer Master Plan (General Sewer Plan).

The applicant is proposing to connect the sanitary sewer piping to the existing Middle School pump station. An 8-inch pipe stub was provided to the east school property line from the pump station wet well for future connection to the parcels east of the school property. A public sewer main is shown on the preliminary plans for Asa's that traverses through the development lots. A minimum of a 15-foot wide public easement has been shown on the plans on private property with vehicle access to the easement. The easement will have to be accessible the -ity and no structure or fence can be placed within this easement preventing the city access to the pubic sewer.

The General Sewer Plan shows a gravity sewer main extending on the applicant's property to the north, to allow future connection of gravity sewer service for parcels north of Lockwood Creek Road. As part of the LCMC requirements, extension of a public sewer main will need to be provided to applicant's north property boundary and east property line for future connection.

The applicant's plans include extending the public sewer on NE 23<sup>rd</sup> Avenue onto Lockwood Creek Road with a manhole. This satisfies the condition of providing sewer to the north end of the proposed development.

### **Chapter 18.320 (Stormwater and Erosion Control)**

Section 18.320.120 (1) LCMC states that ground-disturbing activities of more than 500 square feet are subject to the requirements of *City of La Center Erosion Control Guidelines*. Section 18.320.120 (2)(a) LCMC states that the creation of more than 2,000 square feet of impervious surface is subject to stormwater regulation.

The applicant proposes to create new impervious public interior streets, that will be public Per LCMC 18.320.210. Treatment BMPs shall be sized to the treat the water quality design storm, defined as the six-month, 24-hour storm runoff volume.

A Technical Information Report (TIR) will need to be submitted by the applicant and must comply with LCMC 18.320.

The LCMC section 18.320.220 states that if surface water leaves the site, stormwater must be detained per LCMC. Runoff calculations need to consider undisturbed forest as the pre-developed condition in determining runoff curve numbers or a downstream analysis of the existing conveyance system is required. The design must meet the LCMC 18.320 and the 1992 Puget Sound Manual for the design of the system.

The collection system shall be designed by the rational method using HEC-12 1984 edition standards for gutter and storm pipe capacity. As an alternate, WSDOT Hydraulics Manual can be used for inlet capacity design. The 100-year rainfall intensity must be used for pipe capacity design using the rational method.

Downspouts connections from the houses must connect directly into the site stormwater system. Laterals from the storm main in the street must be shown to serve each lot.

The applicant proposes a three-cell stormwater pond. The cells will treat for water quality and for water quantity (detention), based on the elevation of the water surface.

The applicant's stormwater report includes the following language, "Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements have the potential to saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer".

**The report recommends that the subgrade of the pavement area be sloped toward an outlet. A perforated subsurface drainage pipe will need to be placed in the subgrade with drainage rock and connecting it to the storm system draining to the detention pond. The location of the perforated or subsurface drain pipe within the roads, will need to be determined during Engineering design.**

#### **Maintenance of Stormwater Facility**

The applicant shall be responsible for maintenance of the stormwater facility until an HOA is established to maintain the facility. When the HOA assumes responsibility of the facility, the developer will establish monetary funding of a reserve fund, for maintenance of the stormwater facility, when at least 50 percent of development of the housing units has occurred or at minimum two years after completion and acceptance of the subdivision by the City, whichever is more. The applicant and future owners will be responsible for maintaining the stormwater facility. An operations manual must be submitted for City review approval for the maintenance of the facility in all cases. Adequate bonding is required to guarantee maintenance of the facility for a period of two years following final plat. The minimum bond amount shall be 10 percent of the construction cost of the stormwater facility. Stormwater facilities must be located in a separate tract.

Prior to initiation of any construction or final plat approval, the developer shall demonstrate to the City's satisfaction the following.

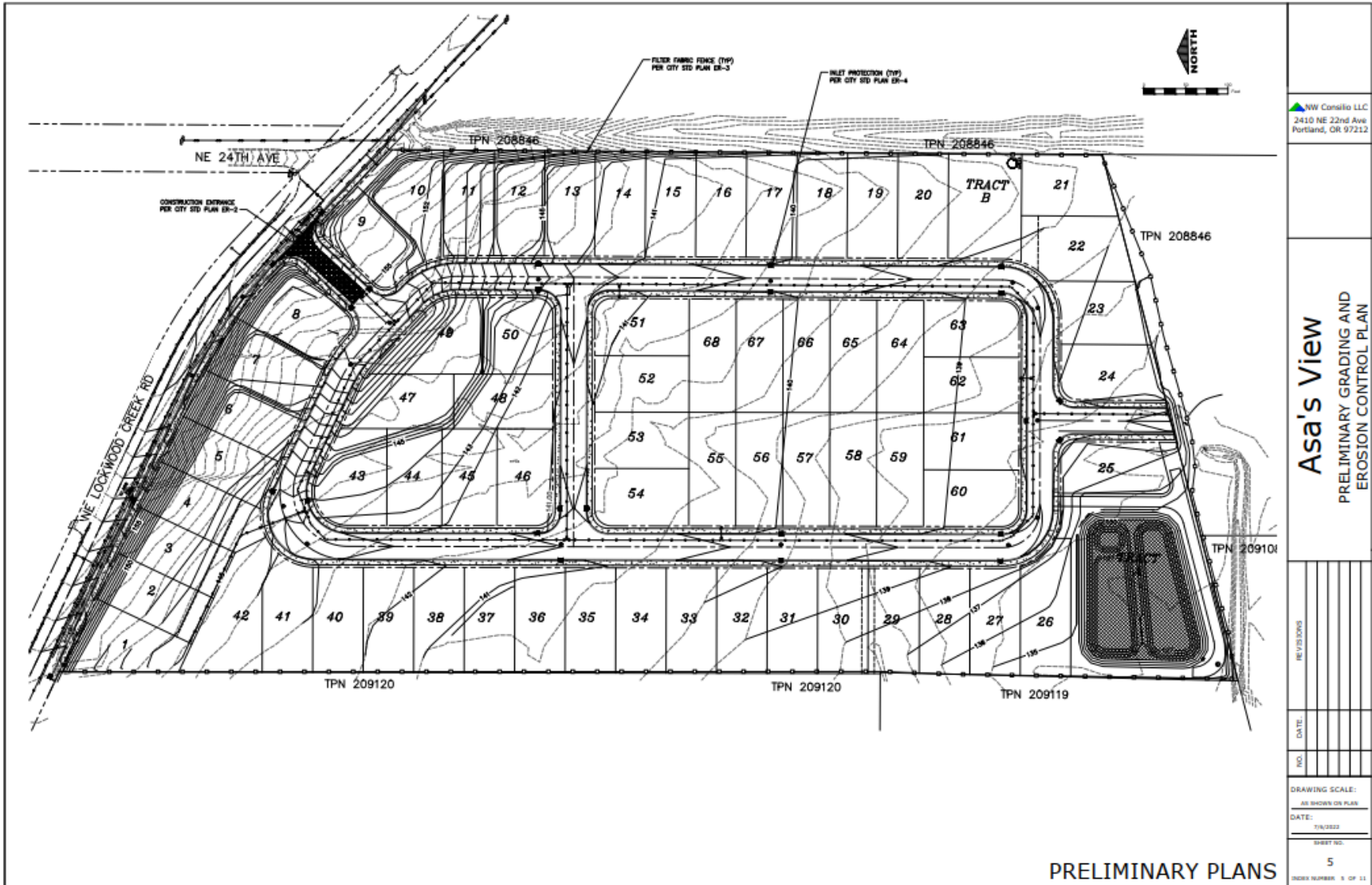
1. The developer shall establish a homeowner's association (HOA) and Articles of Incorporation, By-laws and CC&Rs of the HOA shall reflect that the HOA's operation and maintenance costs for stormwater facilities shall be borne by the HOA. The applicant will provide a "Stormwater Covenant" that shall

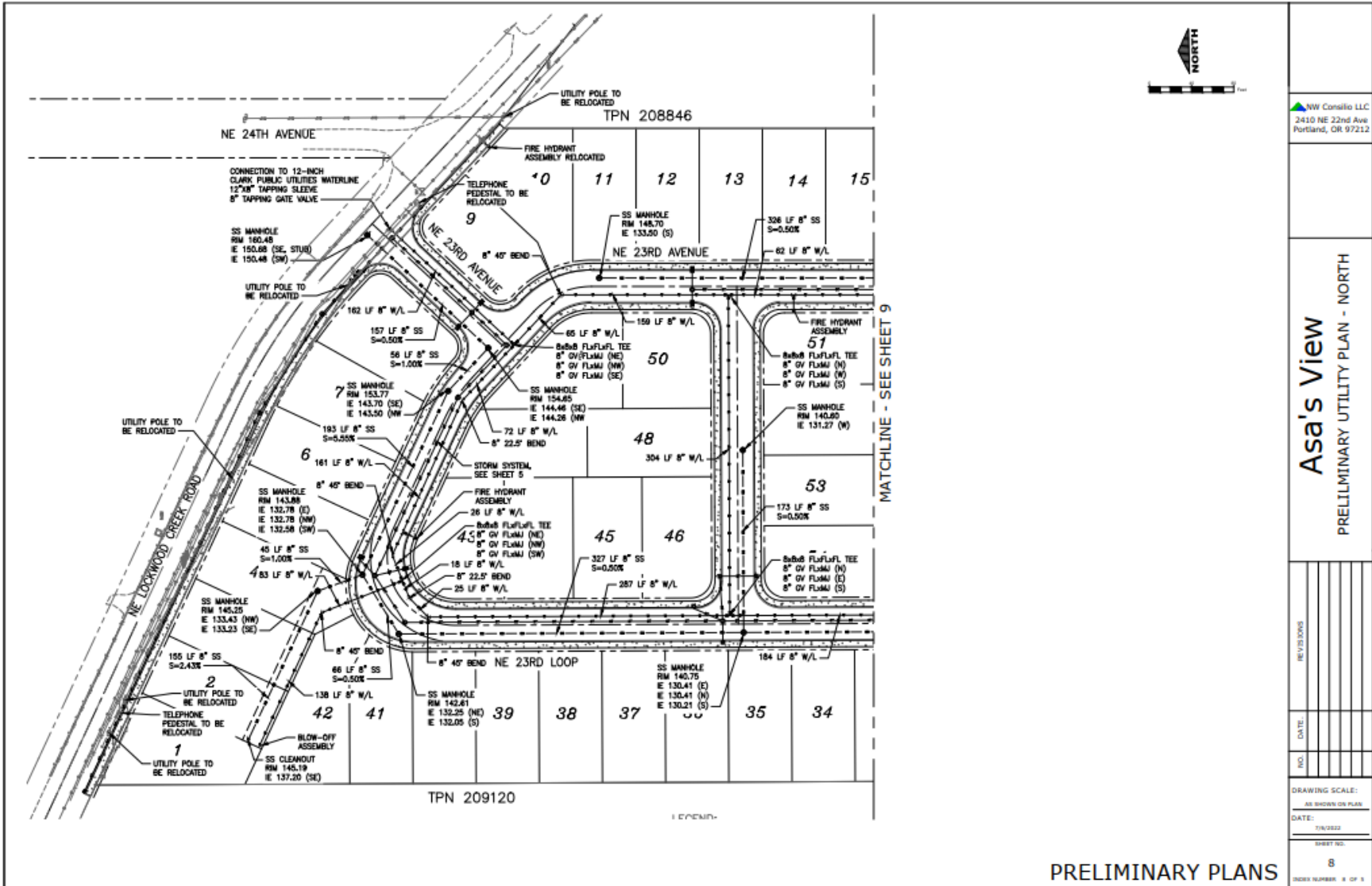
describe the scope of maintenance of the stormwater facility and it shall be recorded and incorporated in the CC&Rs.

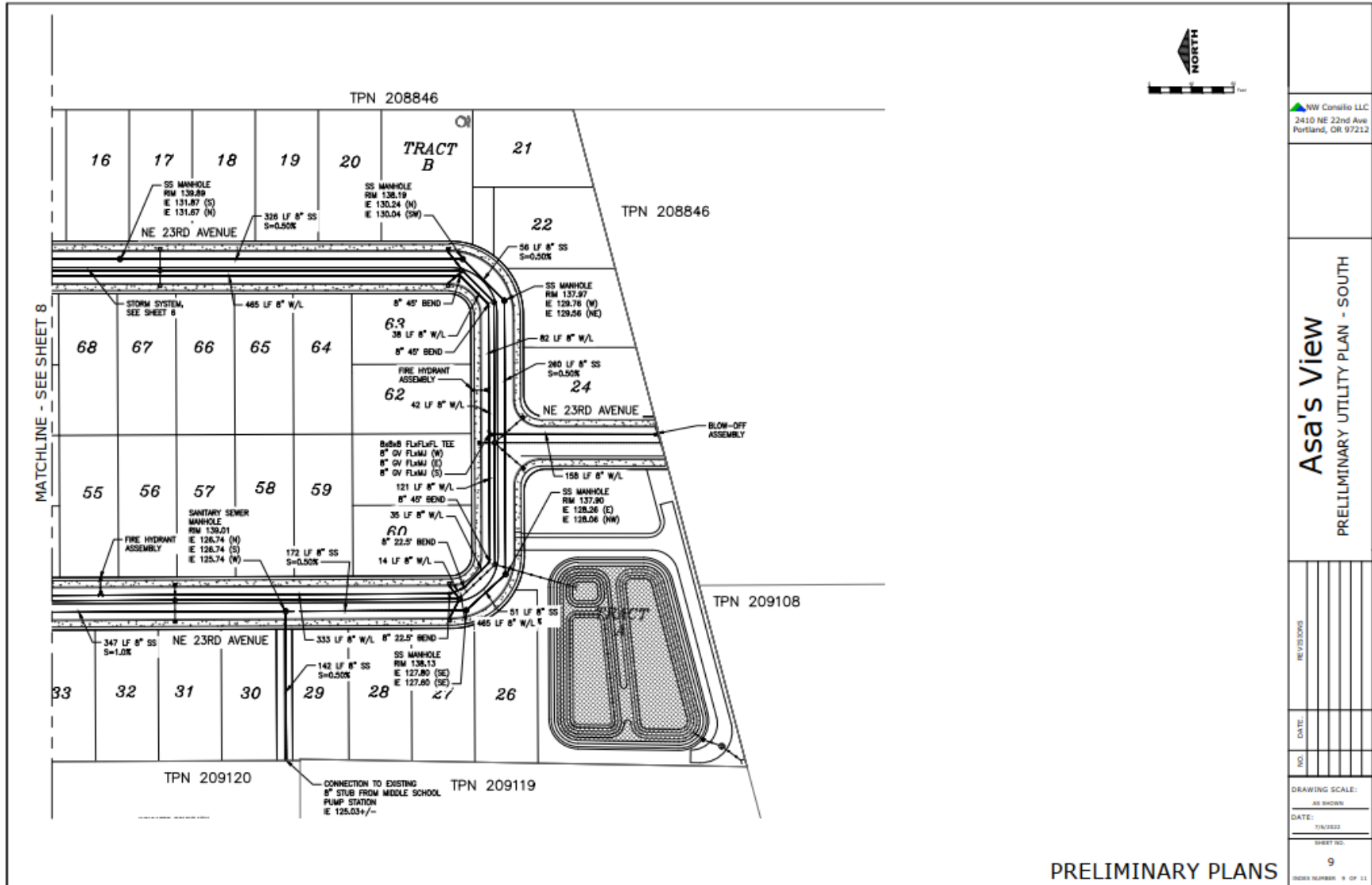
2. The HOA shall be empowered to assess its members' fees to be reserved and used to reimburse the City for the operation and maintenance of the facilities, if enforcement becomes necessary.
3. The City shall have the right of a third-party enforcement to ensure that the HOA remains intact and collects the fees and the City shall have the right to recapture any fees and costs associated with enforcement actions. Further, the following language is to be placed on the face of the plat: The City shall be granted the right, but not the duty, to access and maintain the stormwater facility consistent with 18.320.230 LCMC.

**Street Lighting**

Street light design and installation is reviewed and approved by the City of La Center. Street lighting on local streets shall be Acorn full-cutoff, single-fixture on a black decorative fiberglass pole per the Engineering Standards. The applicant shall submit a photometric analysis along with the street light design to verify compliance with the Engineering Standards.







NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212

**Asa's View**  
PRELIMINARY UTILITY PLAN - SOUTH

| NO.                     | DATE | REVISIONS |
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| DRAWING SCALE: AS SHOWN |      |           |
| DATE: 1/16/2022         |      |           |
| SHEET NO. 9             |      |           |
| INDEX NUMBER 9 OF 11    |      |           |

PRELIMINARY PLANS

**Chapter 15.35 LCMC, School Impact Fees;**

As a **Condition of Approval**, for each dwelling the City shall assess and charge the builder School, Park and Traffic impact fees in effect at the time of building permit application.

**IV. CONCLUSIONS & RECOMMENDATION**

The review authority finds the applicant has sustained the burden of proving the application complies with the applicable provisions of the La Center Municipal Code. The subject application should be **APPROVED, SUBJECT TO THE FOLLOWING CONDITIONS.**

**IV.A Planning Conditions**

1. The applicant shall apply for and receive approval of a sign permit and building permit (if applicable) for a subdivision entrance sign prior to sign construction in accordance with LCMC 8.60.
2. The applicant shall demonstrate that building height requirements are met prior to issuance of a building permit for each lot.
3. The applicant shall submit engineering, construction, final plat, and building permit documents in compliance with the preliminary plat documents unless otherwise modified by conditions of approval in this staff report or as approved by the City through subsequent approvals.
4. The applicant shall demonstrate that the maximum building coverage and maximum impervious surface area requirements are met prior to issuance of a building permit for each lot.
5. Prior to engineering approval, the applicant shall provide a final landscape plan by a registered landscape architect with street trees spaced at an average of 30 feet on center throughout the subdivision along all streets with spacing not to exceed 60 feet. Planting methods shall be specified for these trees.
6. Prior to engineering plan approval, the applicant shall demonstrate that the park meets ADA accessibility regulations.
7. The applicant shall provide a final park plan designed by a registered landscape architect.
8. The applicant shall place the park in a public access easement.
9. The applicant shall verify that at least 75 percent of Tract B is usable active play area and improved open space prior to final engineering plan approval.
10. The applicant's final park plan must provide the required park amenities as shown on the provided park plan and must be designed by a registered landscape architect.

11. The applicant's final park plan shall show vegetation in the undeveloped play space and an underground irrigation system for all vegetated areas except within the dripline of the Oregon white oak as specified in the critical areas report.
12. The final park plan shall show a low fence or vegetative barrier that is not sight obscuring where the park abuts residential lots.
13. Prior to final engineering approval, the applicant shall provide a final park plan that: (1) provides lighting within the park in Tract B to deter criminal activity, including along the pathway and around the playground equipment (2) contains maintenance notes that requires that all proposed trees and street trees within and adjacent Tract B (with the exception of the Oregon white oak) must be limbed up to provide clear line of site along the pathways (3) assigns an address for the park for emergency response and (4) provide video security of the playground area, obscured away from the backyards of adjacent homes.
14. The applicant shall complete the required park improvements or provide the City with a bond or other financial security bond, in an amount of at least 125 percent of the estimated cost of construction of the Tract B improvements with surety and conditions satisfactory to the Public Work Department providing for and securing to the City the actual construction and installation of such improvements prior to final plat approval.
15. The applicant shall construct the park prior to the issuance of occupancy for the building permit of the 25th dwelling unit.
16. The applicant shall obtain building permits in compliance with LCMC 15.05 prior to construction.
17. Prior to the issuance of building permits, the applicant shall pay all system development fees, park, school, and traffic impact fees in effect at the time.
18. The preliminary plat shall expire five years from the date of approval by the hearing examiner, unless an application for final plat is submitted or an extension is approved per LCMC 18.210.050(2) and (3).
19. The applicant shall complete and provide to the City all access easement relinquishments with affected property owners prior to final plat approval.
20. The recognition of a lot of record status based on the public interest exception shall be valid concurrently with the preliminary plat for five years from the date of approval in accordance with LCMC 18.225.010(5)(b)(iii)(C)(V).
21. The applicant shall comply with all provisions regarding monumentation outlined in Chapter 18.230 prior to final plat approval.



22. As outlined in LCMC 18.230.090, the final plat shall be drawn with ink upon three-millimeter Mylar film, or equivalent; said sheets are to be 30 inches by 21 inches, with a one-inch border on each side or as otherwise directed by the Clark County recording agency.
23. The applicant shall provide a photometric plan prior to final engineering plan approval showing how the proposed lights will not cause more than a one foot-candle measure at any property line in conformance with 18.245.040 and LCMC 18.282.
24. Ground-level exterior equipment such as air condition units, must be screened from view to an F2 or L3 standard prior to issuance of final inspection for each dwelling unit.
25. The applicant shall install all landscaping prior to issuance of final inspection for each dwelling unit or no more than six months after final inspection if it will increase plant survival. Installation after occupancy requires City notification and approval.
26. The applicant's final landscape plan shall comply with the requirements of LCMC 18.245.060(11-16) for plant size and spacing prior to issuance of final inspection for each dwelling unit.
27. All required landscape areas including within the park in Tract B and planter strip along public roadways must meet the City's irrigation requirements in LCMC 18.245.060(18). The applicant shall provide irrigation plans prior to final engineering approval.
28. The applicant shall coordinate and approve fencing with the La Center School District for lots adjacent to the school property prior to building permit approval.
29. The applicant shall demonstrate that each dwelling unit has at least two (2) off-street parking spaces per LCMC Table 18.280.010 prior to building permit approval.
30. The applicant shall adhere to all of the management practices contained in the critical areas letter dated August 24, 2022 (Exhibit A.13, A.14, A.15) including:
  - (a) There should be no development within the dripline of the Oak. The Oak on the property is older in age and therefore the dripline should be the root extent.
  - (b) The placement of a fence around the Oak tree or in the dripline needs to not have holes dug or no fence in the dripline.
  - (c) Porous materials (grasses, bark) should try to be used above nonporous (turf) around the tree and in the dripline.
  - (d) Manage invasive weeds preferably hand pulling, or spot herbicide spraying if necessary.
  - (e) Do not overwater the oak. Managing water around the oak tree as it has historically been watered.

In the case that the applicant later proposes fence posts within the drip line, the applicant shall obtain a critical areas permit prior to the impact.

31. The applicant shall record a conservation covenant around the dripline of the Oregon white oak prior to final plat approval. This shall be in a form approved by the city attorney in accordance with LCMC 18.300.090(2)(n)(iii).
32. The applicant shall include the boundary of Oregon white oak's dripline and a reference to the recorded conservation covenant on the face of the final plat.
33. The applicant shall adhere to all recommendations contained in the geotechnical report by Soil and Water Technologies, Inc. dated May, 2022 (Exhibit A.9).
34. The final Landscape Plan, once submitted, shall avoid the use of plants from the nuisance plant list and the prohibited plants list per Table 18.340.040(3) and Table 18.340.040(4).
35. Any trees proposed for removal shall be flagged in the field consistent with LCMC 18.350.060 so that the City can verify trees to be removed and preserved consistent with 18.350.070(3). In addition, the applicant shall install construction fencing around the Oregon white oak's dripline, so it is not inadvertently removed, and grading does not occur within its root zones.
36. Trees regulated by chapter 18.350 that are proposed to be removed shall be mitigated consistent with LCMC 18.350.

#### **IV.B Public Works and Engineering Conditions**

Public and Private Road Standards City of La Center Engineering Standards for Construction shall apply to all public road improvements unless modified by the director. LCMC 12.10.040. Lockwood Creek Road is classified as a Minor Arterial per the updated Capital Facilities Plan.

The city has designated Lockwood Creek Road as a Minor Collector "A" per the Engineering Standards. General roadway and right-of-way standards shall apply and provide half street improvements. The streets within the development shall be either a Neighborhood or Local Street Standard per the Engineering Standards depending on the ADT.

1. The applicant will implement all recommendations from the Traffic Report from Kelly Engineering, dated February, 2022. The applicant shall submit final grading and erosion control plan as part of the subdivision plans showing the proposed contours on the plans.
2. The City Erosion Control Standards require that any activity disturbance over 500 SF must comply with the city standards. As part of these standards a construction stormwater permit is required from the Department of Ecology and an SWPPP will be necessary as part of the plan submittal to the city. All erosion control measures shall be designed, approved, installed and maintained consistent with Chapter 18.320 LCMC and the applicant's Construction Stormwater Permit. Per the City Erosion Control Manual, from October 1 through April 30th, no soils shall remain exposed for more than two (2) days. From May 1st through September 30th, no soils shall remain exposed more than seven (7) days. **The city reserves the right to determine the**

**appropriate time grading needs to be stopped to prevent grading from extending past the October 1<sup>st</sup> deadline.**

The applicant shall follow all recommendations by the report prepared by Soil and Water Technologies, Inc. dated May 2<sup>nd</sup>, 2022.

These are as follows:

3. Over-excavation and stabilization of pipe trenches or other excavations with imported crushed aggregate or gabion rock may also be necessary to provide adequate subgrade support.
  
4. The Geotechnical Report discusses recommends foundation footing drains be installed around the perimeter of all buildings. The drain should consist of a 4-inch diameter perforated pipe and installed in an envelope of clean drain rock or pea gravel wrapped with free draining filter fabric. The report includes the following language, "Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements have the potential to saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer".

The report recommends that the subgrade of the pavement area be sloped toward an outlet. **A perforated subsurface drainage pipe will need to be placed in the subgrade with drainage rock and connecting it to the storm system draining to the detention pond. The location of the perforated or subsurface drain pipe within the roads, will need to be determined during Engineering design.**

**The report recommends that a minimum road section consist of 4-inches of HMAC over 12-inches of crushed. This will need to be included in the Engineering design.**

5. LCMC 18.212.050. Chapter 13.10 -- Sewer System Rules and Regulations Connection to public sewer is required. LCMC 13.10. All work is to be performed by a duly licensed contractor in the City of La Center. LCMC 13.10.230. Work will be performed using an open trench method unless otherwise approved. LCMC 13.10.200. All costs associated with installing the side sewer shall be borne by the applicant. LCMC 13.10.110. Per the City Engineering Standards, sanitary sewers should be designed to care for future loads that may reasonably be expected from full development upstream, consistent with the La Center Comprehensive Plan, Capital Facilities Plan, LCMC Title 13, and the Sewer Master Plan (General Sewer Plan).
  
6. The applicant is proposing to connect the sanitary sewer piping to the existing Middle School pump station. An 8-inch pipe stub was provided to the east school property line from the pump station wet well for future connection to the parcels east of the school property. A public sewer

main is shown on the preliminary plans for Asa's that traverses through the development lots. A minimum of a 15-foot wide public easement has been shown on the plans on private property with vehicle access to the easement. The easement will have to be accessible the city and no structure or fence can be placed within this easement preventing the city access to the public sewer.

7. The applicant will need to extend the public sewer from the site, on NE 23<sup>rd</sup> Avenue, onto Lockwood Creek Road with a manhole, for future extension north.
8. The applicant will need to verify the condition of existing 8-inch downstream sewer with video prior to connecting to the system.

Chapter 18.320 (Stormwater and Erosion Control) Section 18.320.120 (1) LCMC states that ground-disturbing activities of more than 500 square feet are subject to the requirements of City of La Center Erosion Control Guidelines. Section 18.320.120 (2)(a) LCMC states that the creation of more than 2,000 square feet of impervious surface is subject to stormwater regulation. The applicant proposes to create new impervious interior streets in the subdivision. The applicant proposes a 3-cell stormwater pond to treat and detain stormwater. Per LCMC 18.320.210, treatment BMPs shall be sized to the treat the water quality design storm, defined as the six-month, 24-hour storm runoff volume. A Technical Information Report (TIR) will need to be submitted by the applicant and must comply with LCMC 18.320.

The collection system shall be designed by the rational method using HEC-12 1984 edition standards for gutter and storm pipe capacity. As an alternate, WSDOT Hydraulics Manual can be used for inlet capacity design. The 100-year rainfall intensity must be used for pipe capacity design using the rational method.

9. Downspouts connections from the houses must connect directly into the site stormwater system. Laterals from the storm main in the street must be shown to serve each lot.  
Maintenance of Stormwater Facility The applicant shall be responsible for maintenance of the stormwater facility until an HOA is established to maintain the facility. When the HOA assumes responsibility of the facility, they will establish monetary funding of a reserve fund, for maintenance of the stormwater facility, when at least 50% of development of the housing units has occurred or at minimum 2-years after completion and acceptance of the subdivision by the City, whichever is more. The applicant and future owners will be responsible for maintaining the stormwater facility. An operations manual must be submitted for City review approval for the maintenance of the facility in all cases. Adequate bonding is required to guarantee maintenance of the facility for a period of two years following final plat. Stormwater facilities must be located in a separate tract. Prior to initiation of any construction or final plat approval, the developer shall demonstrate to the City's satisfaction that:  
1. The developer shall establish a homeowner's association (HOA) and Articles of Incorporation, By-laws and CC&Rs of the HOA shall reflect that the HOA's operation and maintenance costs for stormwater facilities shall be borne by the HOA.  
2. The HOA shall be empowered to access its members' fees to be reserved and used to

reimburse the City for the operation and maintenance of the facilities, if enforcement becomes necessary. 3. The City shall have the right of a third-party enforcement to ensure that the HOA remains intact and collects the fees and the City shall have the right to recapture any fees and costs associated with enforcement actions. Further, the following language is to be placed on the face of the plat: The City shall be granted the right, but not the duty, to access and maintain the stormwater facility consistent with 18.320.230 LCMC.

10. **Street Lighting** Street light design and installation is reviewed and approved by the City of La Center. Street lighting on local streets shall be Acorn full cutoff single fixture on a black decorative fiberglass pole and the frontage improvements will need to have Cobra Head LED light per the Engineering Standards. The applicant shall submit a Photometric analysis along with the street light design to verify compliance with the Engineering Standards.

#### **IV.C SEPA (MDNS) Documentation and Mitigation Conditions**

20. **Earth:** The applicant must comply with the design recommendations of the geotechnical site investigation by Soil and Water Technologies, Inc. dated May 2022.
21. **Earth:** All grading and filling of land must utilize only clean fill, i.e., dirt or gravel from an approved source;
22. **Earth:** All debris removed offsite must be disposed of at an approved location;
23. **Air:** The applicant is required to sprinkle the site with water during construction to reduce dust.
24. **Air:** The applicant shall use vehicles fitted with standard manufacturer's emission's control equipment to reduce construction-period emissions. Construction vehicles shall not be permitted to idle when not in use.
25. **Air:** The applicant shall use vehicles fitted with standard manufacturer's emission's control equipment to reduce construction-period emissions. Construction vehicles shall not be permitted to idle when not in use.
26. **Water:** The applicant must comply with the recommendations of the Preliminary Technical Information Report dated July, 2022.
27. **Water:** The applicant must use approved erosion control best management practices during construction.
28. **Water:** A City stormwater permit and Stormwater Pollution Prevention Plan (SWPPP) shall be required for the proposed project and shall be approved prior to construction.
29. **Plants:** The applicant shall retain the on-site priority habitat Oregon white oak with protection measures as provided by Environmental Technology Consultants dated August 24, 2022 per LCMC 18.300. The applicant shall also plant street trees spaced 30-feet on center, and plant landscaping as required by LCMC 18.245.
30. **Environmental Health (Noise):** All construction equipment shall have muffled exhaust and construction activities are only permitted during City-approved construction hours. Contractors are required to comply with the maximum noise level provisions of WAC 173-60 during construction.

- 31. Light and Glare: The applicant shall comply with the requirements of LCMC 18.282 (Outdoor Lighting).
- 32. Recreation: The applicant shall comply with LCMC 18.147 (Parks and Open Space).
- 33. Recreation: The applicant is required to pay park impact fees prior to issuance of building permits.
- 34. Historic and cultural preservation: In the event any archaeological or historic materials are encountered during project activity, work in the immediate area (initially allowing for a 100' buffer; this number may vary by circumstance) must stop and the following actions taken:
  - d. Implement reasonable measures to protect the discovery site, including any appropriate stabilization or covering;
  - e. Take reasonable steps to ensure confidentiality of the discovery site; and,
  - f. Take reasonable steps to restrict access to the site of discovery.

The applicant shall notify the concerned Tribes and all appropriate county, city, state, and federal agencies, including the Washington Department of Archaeology and Historic Preservation and the City of La Center. The agencies and Tribe(s) will discuss possible measures to remove or avoid cultural material, and will reach an agreement with the applicant regarding actions to be taken and disposition of material. If human remains are uncovered, appropriate law enforcement agencies shall be notified first, and the above steps followed. If the remains are determined to be Native, consultation with the affected Tribes will take place in order to mitigate the final disposition of said remains.

See the Revised Code of Washington, Chapter 27.53, "Archaeological Sites and Resources," for applicable state laws and statutes. See also Washington State Executive Order 05-05, "Archaeological and Cultural Resources." Additional state and federal law(s) may also apply.

Copies of the above inadvertent discovery language shall be retained on-site while project activity is underway.

| Contact   | Information   |
|---|---|
| Cowlitz Indian Tribe, Nathan Reynolds, Interim Cultural Resources Manager | Phone: 360-575-6226; email: nreynolds@cowlitz.org         |
| City of La Center, Bryan Kast, Public Works Director                      | Phone: 360-263-2889; email: bkast@ci.lacenter.wa.us       |
| Office of the Clark County Medical Examiner (for human remains)           | Phone: 564-397-8405; email: medical.examiner@clark.wa.gov |
| Washington DAHP, Dr. Allison Brooks, Ph.D, Director                       | Phone: 360-586-3066; email: Allyson.Brooks@dahp.wa.gov    |

- 35. Transportation: The applicant shall comply with the recommendations of the Traffic Analysis Report (Kelly Engineering, February 2022).
- 36. Transportation: The applicant is required to pay transportation impact fees prior to issuance of building permits.

37. Utilities: The applicant shall pay the applicable sewer system development charge for each residential unit. Applicable fees will be assessed at the time of building permit application and are due prior to issuance of final occupancy for each unit.
38. Public Services: The applicant shall pay school, and park impact fees prior to the issuance of building permits for the onsite units. Applicable impact fees will be assessed at the time of building permit application and are due prior to issuance of final occupancy for each unit.

#### IV.D CCFR Fire Conditions

1. Applicant must comply with all applicable requirements and receive approval through Clark Cowlitz Fire & Rescue.

#### IV.E CPU Conditions

1. Applicant must comply with all applicable requirements and receive approval through Clark Public Utilities.

#### V. APPEALS

The applicant, applicant's representative, or any person, agency or firm with an interest in the matter may appeal the Critical area decision. The appellant shall file the appeal together with the requisite fee and information within 14 calendar days of the date of the decision being appealed. (18.030.130 LCMC.)

  
Bryan Kast, P.E.,  
Public Works Director  
City of La Center

  
Anthony Cooper, P.E.  
City Engineer  
City of La Center

#### Exhibit A – Application Materials

1. [Table of Contents](#)
2. [Master Land Use Application](#)
3. [Current Deed](#)
4. [Pre-Application Conference Notes](#)
5. [Narrative](#)
6. [Mailing Labels](#)
7. [State Environmental Review \(SEPA\)](#)
8. [Traffic Impact Study](#)
9. [Geotechnical Report](#)
10. Archaeological Report - Contact Jessica Nash 360-263-7665
11. [Preliminary Technical Information Report](#)
12. [Proposed Development Plan Set](#)
13. [Critical Areas Letter](#)

14. [Critical Areas Letter – Oak Tree](#)
15. [Critical Areas Letter – Offsite Stream](#)
16. [Asa’s Tract B](#)
17. [Offsite Features Exhibit](#)
18. [Arborist Letter – Oak Tree](#)

**Exhibit B – SEPA**

1. [Mitigated DNS Notice and Checklist](#)
2. [Combined SEPA Comments](#)

**Exhibit C – Staff Report**

1. [Technical Completeness Review](#)
2. [Hearing Examiner Public Hearing Notice](#)



# Exhibit A.1

**Asa's View**  
**A Subdivision of  $\approx$  16.46 acres**  
**into 68 individual lots for**  
**Single-Family Detached Housing**

**Applicant/Contact: Troy Johns**  
**1004 W. 13<sup>th</sup> Street**  
**Ste: 220**  
**Vancouver, WA 98660**  
**(360) 600-4425**  
**troyajohns@gmail.com**

**Owner: Gravitare Capital**  
**13563 NW Fuller Lane**  
**Portland OR 97229**

**TABLE OF CONTENTS:**

1. Table of Contents
2. Master Land Use Application
3. Current Deed
4. Pre-application Conference Report
5. Narrative
6. Mailing Labels
7. SEPA Checklist
8. Traffic Impact Study
9. Geotechnical Report
10. Archaeological Predetermination
11. Preliminary Technical Information Report
12. Proposed Development Plan Set
13. Critical Areas Letter
14. Offsite Features Exhibit

# Exhibit A.2

# Master Land Use Application



City of La Center, Planning Services  
305 NW Pacific Highway  
La Center, WA 98629

[www.ci.lacenter.wa.us](http://www.ci.lacenter.wa.us)

Ph. 360.263.7665 Fax: 360.263.7666

[www.ci.lacenter.wa.us](http://www.ci.lacenter.wa.us)

## Property Information

Site Address 2313 NE Lockwood Creek Road

Legal Description #102 and #39 of Section 2, T4N R1E WM

Assessor's Serial Number 209121000 & 209064000

Lot Size (square feet) 7,500 TYP.

Zoning/Comprehensive Plan Designation Low Density Residential (LDR-7.5)

Existing Use of Site Single family residence

## Contact Information

### APPLICANT:

Contact Name Troy Johns

Company \_\_\_\_\_

Phone 360-600-4425

Email troy@urbannw.com

Complete Address 1004 W. 13th Street, St. Suite 220 Vancouver, WA 98660

Signature \_\_\_\_\_

*(Original Signature Required)*

### APPLICANT'S REPRESENTATIVE:

Contact Name Shawn Ellis

Company NW Consilio LLC

Phone 503-415-0424

Email sellisidx@gmail.com

Complete Address 2410 NE 22nd Avenue, Portland, OR 97212

Signature \_\_\_\_\_

*(Original Signature Required)*

### PROPERTY OWNER:

Contact Name ~~Michael Parker - Gravitate Capital~~ William Rostowski

Company Gravitate Capital, LLC

Phone 503-201-1208

Email william@rostowski.com

Complete Address 13563 NW Fuller Lane, Portland OR 97229

Signature WM Rostowski

*(Original Signature Required)*

## Development Proposal

**Project Name** \_\_\_\_\_

**Type(s) of Application** Subdivision, Critical Areas Permit – Geologically Hazardous areas,

Critical Areas Permit – Wildlife Habitat Conservation areas

Tree Removal Permit

**Previous Project Name and File Number(s), if known** NA

**Pre-Application Conference Date and File Number** TBD

**Description of Proposal** Subdivide 16.56 acres into 68 single-family residential lots, park and stormwater facilities in the LDR-7.5 zone

### Office Use Only

File # \_\_\_\_\_

Planner \_\_\_\_\_

Received By \_\_\_\_\_

Fees: \$ \_\_\_\_\_

Date Received: \_\_\_\_\_

Date Paid: \_\_\_\_\_

Procedure:  Type I  
 Type II  
 Type III  
 Type IV

Receipt # \_\_\_\_\_

Notes \_\_\_\_\_



**AGREEMENT TO PAY PROFESSIONAL, PROJECT REVIEW, INSPECTION AND RELATED EXPENSES**

THIS AGREEMENT is entered into by and between the City of La Center, a Washington municipal corporation, and Applicant Troy Johns concerning the following Project:

Project address: Parcel #: 2313 NE Lockwood Creek Road

Parcel #s 209121000 and 209064000

Project/permit review: Preliminary Subdivision Review


Applicant recognizes that the City is obligated by state law and the La Center Municipal Code to provide a complete review of land use and development applications, including all technical support documents, to determine compliance with all applicable approval standards. The City is also authorized to recover from applicants the actual cost of performing land use and technical plan and project reviews, including engineering, project inspections, planning and legal peer review. The costs of internal and outsourced review will be charged on an actual time and materials basis plus administrative fees as approved by City Council Resolution No. 13-372. To recover actual costs, the City will invoice the Applicant monthly for the costs of all internal and all outsourced review for this project. Payment is due by the Applicant within 30 days.

Applicant hereby agrees to pay the City's actual (time and materials) pertaining to reviews associated with the above named for land use review, engineering review, plan review, peer review, inspection and associated fees associated with or for the above-mentioned project. The Applicant further agrees to any delay in the issuance of a final decision on the Project until the Applicant has paid or kept current all of the City's review costs as provided and billed.

Any dispute that arises over the interpretation or application of this Agreement shall be resolved by the City Council through a public hearing process. The City Council's decision in such a matter shall be final.

**IT IS SO AGREED:**

**Applicant**

By:   
William Roskowski  
Title: Member  
Date: ~~12/21/21~~ 9/21/2022

**City of La Center**

By: \_\_\_\_\_  
\_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

# Exhibit A.3

5354714 D

Total Pages: 3 Rec Fee: \$75.00  
eRecorded in Clark County, WA 12/07/2016 10:45 AM  
CLARK COUNTY TITLE COMPANY  
SIMPLIFILE LC E-RECORDING

When recorded return to:

Gravitate Capital, LLC  
1012 WASHINGTON STREET  
VANCOUVER, WA 98660

**STATUTORY WARRANTY DEED**

CL2679

**THE GRANTOR Excelsior Mortgage Equity Fund II LLC, an Oregon Limited Liability Company**

for and in consideration of ~~Ten Dollars~~ and other valuable consideration  
in hand paid, conveys, and warrants to Gravitate Capital, LLC, a Washington Limited Liability Company

the following described real estate, situated in the County of Clark, State of Washington:

**SEE ATTACHED EXHIBIT "A"**

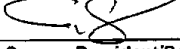
**Abbreviated Legal: EAST 1/2 SECTION 2, T4N, R1E WM**

**SUBJECT TO** covenants, conditions, restrictions, reservations, easements and agreement of record, if any.

Tax Parcel Number(s): **209121-000, 209064-000**

Dated: **December 01, 2016**

**Excelsior Mortgage Equity Fund II LLC**

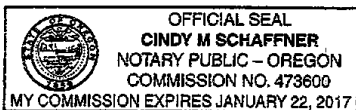
by   
**Craig Sayers, President/Secretary**

by   
**Ben Wiltgen, Treasurer/Senior Vice Pres**

STATE OF Oregon } ss.  
COUNTY OF Clackamas

I certify that I know or have satisfactory evidence that **Craig Sayers and Ben Wiltgen** (is/are) the person(s) who appeared before me, and said person(s) acknowledged that they signed this instrument, on oath stated that they are authorized to execute the instrument and acknowledge it as the **President/Secretary and Treasurer/Senior Vice President of Excelsior Mortgage Equity Fund II LLC** to be the free and voluntary act of such party(ies) for the uses and purposes mentioned in this instrument.

Dated: 12/6/16



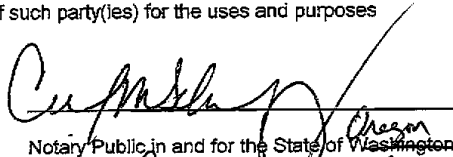
  
Notary Public in and for the State of ~~Washington~~ Oregon  
Residing at Canas  
My appointment expires: 1/22/17



EXHIBIT "A"

PARCEL I

THAT PORTION OF THE EAST HALF OF SECTION 2, TOWNSHIP 4 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 2; THENCE NORTH 01°49'28" EAST ALONG THE WEST LINE THEREOF, 3264.11 FEET TO THE SOUTHERLY RIGHT OF WAY LINE OF COUNTY ROAD NO. 42, ALSO KNOWN AS NE LOCKWOOD CREEK ROAD; THENCE SOUTH 63°36'37" EAST, ALONG SAID SOUTHERLY LINE, 1130.65 FEET TO THE CENTERLINE OF A 60 FOOT ROAD EASEMENT, SAID POINT BEING THE TRUE POINT OF BEGINNING HEREOF; THENCE ALONG SAID CENTERLINE THE FOLLOWING COURSES AND DISTANCES, SOUTH 08°24'30" WEST 117.51 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 530.91 FEET, THROUGH A CENTRAL ANGLE OF 19°09'08" FOR AN ARC LENGTH OF 177.47 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 385.79 FEET, THROUGH A CENTRAL ANGLE OF 26°08'30" FOR AN ARC LENGTH OF 176.02 FEET; THENCE SOUTH 01°24'41" WEST TO THE NORTH LINE OF THE TRACT CONVEYED TO ELLIS F. DUNN BY DEED RECORDED UNDER AUDITOR'S FILE NO. 9302020095; THENCE LEAVING SAID CENTERLINE, NORTH 76°32'33" EAST, ALONG THE NORTH LINE OF SAID DUNN TRACT, TO THE EAST LINE OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 2; THENCE NORTH 01°38'23" EAST, ALONG SAID EAST LINE 863.55 FEET TO THE SOUTHERLY RIGHT OF WAY LINE OF SAID NE LOCKWOOD CREEK ROAD; THENCE NORTH 45°34'26" WEST, ALONG SAID SOUTHERLY LINE, 188.05 FEET; THENCE ALONG SAID SOUTHERLY LINE ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 500.00 FEET, THROUGH A CENTRAL ANGLE OF 18°02'11" FOR AN ARC LENGTH OF 157.40 FEET; THENCE NORTH 68°36'37" WEST, ALONG SAID SOUTHERLY LINE, 15.39 FEET TO THE TRUE POINT OF BEGINNING HEREOF.

PARCEL II

THAT PORTION OF THE EAST HALF OF SECTION 2, TOWNSHIP 4 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 2; THENCE NORTH 01°49'28" EAST ALONG THE WEST LINE THEREOF, 1469.11 FEET TO THE NORTHWEST CORNER OF THE TRACT CONVEYED TO BLUFORD W. BIRDSONG BY DEED RECORDED UNDER AUDITOR'S FILE NO. 9212180144; THENCE CONTINUING NORTH 01°49'28" EAST, ALONG SAID WEST LINE, 515.00 FEET TO THE TRUE POINT OF BEGINNING HEREOF; THENCE CONTINUING NORTH 01°49'28" EAST ALONG SAID WEST LINE 1280.00 FEET TO THE SOUTHERLY RIGHT OF WAY LINE OF COUNTY ROAD NO. 42, ALSO KNOWN AS NE LOCKWOOD CREEK ROAD; THENCE SOUTH 63°36'37" EAST, ALONG SAID SOUTHERLY LINE, 1130.65 FEET TO THE CENTERLINE OF A 60 FOOT ROAD EASEMENT; THENCE SOUTHERLY ALONG SAID CENTERLINE THE FOLLOWING COURSES AND DISTANCES, SOUTH 08°24'03" WEST 117.51 FEET; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 530.91 FEET, THROUGH A CENTRAL ANGLE OF 19°09'08" FOR AN ARC LENGTH OF 177.47 FEET; THENCE ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 385.79 FEET, THROUGH A CENTRAL ANGLE OF 26°08'30" FOR AN ARC LENGTH OF 176.02 FEET; THENCE SOUTH 01°24'41" WEST TO A POINT WHICH BEARS SOUTH 88°23'54" EAST FROM THE TRUE POINT OF BEGINNING HEREOF; THENCE NORTH 88°23'54" WEST 840 FEET, MORE OR LESS, TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PORTION THEREOF CONVEYED TO MYRON PROUTY AND HOPE PROUTY UNDER AUDITOR'S FILE NO. 9702260226, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 300.96 FEET SOUTH OF THE CENTER OF COUNTY ROAD NO. 42 ON THE EAST LINE OF THE NORTHWEST QUARTER, IN SECTION 2, TOWNSHIP 4 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON, SAID POINT BEING THE SOUTHEAST CORNER OF THAT PROPERTY CONVEYED TO DAVID T. MEECHAN AS RECORDED UNDER AUDITOR'S FILE NO. 8911290124, RECORDS OF CLARK COUNTY, WASHINGTON; THENCE SOUTH 979.03 FEET TO A POINT 515 FEET NORTH OF THE NORTHWEST CORNER OF THAT PROPERTY CONVEYED TO BLUFORD W. BIRDSONG AS RECORDED UNDER AUDITOR'S FILE NO. 9212180144, RECORDS OF CLARK COUNTY, WASHINGTON; THENCE EAST 254.63 FEET; THENCE NORTHWESTERLY TO A POINT 233.01 FEET EAST OF THE POINT OF BEGINNING; THENCE WEST 233.01 FEET TO

THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION THEREOF CONVEYED TO MYRON PROUTY AND HOPE PROUTY UNDER AUDITOR'S FILE NO. 9705070212, DESCRIBED AS FOLLOWS:

THAT PORTION OF THE EAST HALF OF SECTION 2, TOWNSHIP 4 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 2; THENCE NORTH 01°49'28" EAST, ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 2, A DISTANCE OF 366.30 FEET TO THE SOUTHEAST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO DAVID T. MEECHAN BY DEED RECORDED UNDER AUDITOR'S FILE NO. 8911290124, RECORDS OF CLARK COUNTY, WASHINGTON, SAID POINT BEING THE NORTHWEST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO MYRON PROUTY, ET UX, BY DEED RECORDED UNDER AUDITOR'S FILE NO. 9702260226, RECORDS OF SAID COUNTY; THENCE NORTH 88°10'32" EAST, ALONG THE NORTH LINE OF SAID PROUTY TRACT, 233.01 FEET TO THE NORTHEAST CORNER THEREOF AND THE TRUE POINT OF BEGINNING; THENCE SOUTH 00°34'45" WEST, ALONG THE EAST LINE OF SAID PROUTY TRACT, 994.86 FEET TO THE SOUTHEAST CORNER THEREOF; THENCE NORTH 88°10'32" WEST, ALONG THE SOUTH LINE OF SAID PROUTY TRACT, 254.63 FEET TO THE SOUTHWEST CORNER THEREOF; THENCE SOUTH 01°49'28" WEST, ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 2, A DISTANCE OF 13.32 FEET TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO M & S PROPERTIES, INC., BY DEED RECORDED UNDER AUDITOR'S FILE NO. 9702250071, RECORDS OF CLARK COUNTY, WASHINGTON; THENCE SOUTH 88°05'00" EAST, ALONG THE NORTH LINE OF SAID M & S PROPERTIES, INC., TRACT 679.37 FEET; THENCE NORTH 01°07'20" EAST, 989.48 FEET TO A POINT 30.00 FEET FROM, AS MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF COUNTY ROAD NO. 42; THENCE NORTH 63°36'37" WEST, PARALLEL TO SAID CENTERLINE, A DISTANCE OF 47.23 FEET; THENCE NORTH 88°10'32" WEST, 391.28 FEET TO THE NORTHEAST CORNER OF THE AFOREMENTIONED PROUTY TRACT AND THE TRUE POINT OF BEGINNING.

PARCEL III

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 4 NORTH RANGE 1 EAST OF THE WILLAMETTE MERIDIAN IN CLARK COUNTY, WASHINGTON, SAID PORTION BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTH QUARTER CORNER OF SAID SECTION 2; THENCE NORTH 01°49'28" EAST A DISTANCE OF 1469.11 FEET ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 2 TO THE NORTHWEST CORNER OF THAT TRACT OF LAND DESCRIBED IN DEED TO BLUFORD W. BIRDSONG AS RECORDED UNDER AUDITOR'S FILE NO. 9212180144, RECORDS OF CLARK COUNTY, WASHINGTON AND THE TRUE POINT OF BEGINNING OF THE TRACT TO BE DESCRIBED HEREIN; THENCE CONTINUING NORTH 01°49'28" EAST A DISTANCE OF 515.00 FEET ALONG SAID WEST LINE; THENCE SOUTH 88°23'54" EAST A DISTANCE OF 930.00 FEET TO THE CENTERLINE OF AN EASEMENT HEREINAFTER DESCRIBED; THENCE SOUTH 01°24'41" WEST A DISTANCE OF 381.82 FEET ALONG THE CENTERLINE OF SAID EASEMENT; THENCE SOUTH 76°32'33" WEST A DISTANCE OF 55.69 FEET TO THE NORTHEAST CORNER OF THAT TRACT OF LAND DESCRIBED IN A REAL ESTATE CONTRACT OF M & S PROPERTIES AS RECORDED UNDER AUDITOR'S FILE NO. 9303310237, RECORDS OF CLARK COUNTY, WASHINGTON; THENCE CONTINUING SOUTH 76°32'33" WEST A DISTANCE OF 456.90 FEET ALONG THE NORTH LINE OF SAID M & S PROPERTIES TRACT TO THE NORTHWEST CORNER THEREOF, SAID POINT ALSO BEING THE NORTHEAST CORNER OF SAID BIRDSONG TRACT; THENCE NORTH 88°23'54" WEST A DISTANCE OF 438.29 FEET ALONG THE NORTH LINE OF SAID BIRDSONG TRACT TO THE POINT OF BEGINNING.

EXCEPT THAT PORTION CONVEYED TO M & S PROPERTIES, INC. BY AUDITOR'S FILE NO. 9702250071.

ALSO EXCEPT THAT PORTION THEREOF CONVEYED TO MYRON PROUTY AND HOPE PROUTY UNDER AUDITOR'S FILE NO. 9705070212.

# Exhibit A.4



305 NW Pacific Highway,  
 La Center, Washington 98629  
 T/360.263.7661 F/360.263.7666

**PRE-APPLICATION CONFERENCE  
 Asa's View (2022-003-PAC)**

Meeting conducted on February 2, 2022 at 11:00 AM PST

**PROJECT INFORMATION**

|                            |  |
|----------------------------|--|
| Site Address               | 2313 NE Lockwood Creek Road  |
| Legal Description          | #102 and #39 of Section 2, T4N R1E WM  |
| Applicant                  | Troy Johns<br>(360) 600-4425<br><a href="mailto:Troy@urbannw.com">Troy@urbannw.com</a><br>1004 W. 13 <sup>th</sup> Street. St. Suite 220 Vancouver, WA 98660                 |
| Applicant's Representative | Shawn Ellis<br>NW Consillo LLC<br>(503) 415-0424<br><a href="mailto:Sellispx@gmail.com">Sellispx@gmail.com</a><br>2410 NE 22 <sup>nd</sup> Avenue, Portland, OR 97212        |
| Property Owner             | William Roskowski<br>Gravitare Capital LLC<br>(503) 201-1208<br><a href="mailto:William@roskowski.com">William@roskowski.com</a><br>13563 NW Fuller Road, Portland, OR 97229 |
| Proposal                   | Subdivide 16.56 acres into 71 single-family residential lots in the LDR 7.5 zone   |
| Date of Issue              | 10 February, 2022  |

**SUMMARY**

The applicant is proposing a 69-lot subdivision on the approximate 18.57-acre site. Lot sizes would generally range from 7500 sf to 8732 sf with one lot proposed at 11,110 square feet. The property is located on the south edge of NE Lockwood Creek Rd at the eastern limits of the City of La Center. It is adjacent to La Center Middle School located to the west. La Center Elementary School, Holley Park, La Center Community Library, and a post office are located on NE Lockwood Creek Road within one mile. The East Fork Lewis River lies three-quarters of a mile south of the development. Agricultural properties lie to the east/southeast.

The site is zoned LDR-7.5 and the comprehensive plan designation for the site is Urban Residential (UR). All proposed lots can meet the minimum lot size of 7,500 square feet and minimum dimensional standards (lot width and depth) of the Zone. One lot, Lot #46, is around 11,100 square feet and exceeds the maximum lot size standard.

Access to the property would be from a public street entrance from NE Lockwood Creek Road. This proposal would extend residential roadways through the site and to the southern boundary to provide access to the properties. All road, sidewalk and driveway construction within this development will meet City of La Center and ADA standards. All proposed streets within the subdivision would be public.

Clark County shows an area of potential wetlands in the man-made ditch along the side of the driveway. These have been mapped as shown on the topographic survey. It is thought that these potential wetlands are man-made and non-jurisdictional. The applicant states that a critical areas report will be prepared and submitted for review with the preliminary application. Clark County also maps the majority of the property as moderate to moderate-high risk of encountering archaeological resources. Development activities on the property will be subject to the City's archaeological protection ordinance in LCMC 18.360 including the requirement to provide an archaeological predetermination report.

### **PRELIMINARY REVIEW**

#### **Development Standards**

Subsequent application(s) shall address the following development standards. Failure of the City to cite specific requirements of the La Center Municipal Code (LCMC) in this report does not relieve the applicant of the responsibility to meet all applicable criteria. If the proposal changes from what was presented in the pre-application conference, it may trigger other review standards and processes than what is identified in this report.

**Applicable Criteria:** The application will be reviewed for compliance with the La Center Municipal Code (LCMC): 3.35 Impact Fees; Chapter 8.60 Sign Regulations; Title 12, Streets, Sidewalks & Public Ways; Title 13, Public Utilities; Title 18, Development Code Chapters: 18.30 Procedures; 18.130 Low Density Residential District; 18.147 Parks and Open Spaces; ; 18.210 Subdivisions; 18.245 Supplementary Development Standards; 18.280 Off-Street Parking Requirements; 18.282 Outdoor Lighting; 18.300 Critical Areas; 18.310 Environmental Policy; 18.320 Stormwater and Erosion Control; 18.340 Native Plant List; 18.350 Tree Protection; 18.360 Archaeological Resource Protection.

## Public Works and Engineering Analysis

### **LCMC: 3.35 Impact Fees;**

Per LCMC 3.35, impact fees will be collected for traffic, sewer, park and school impacts. These fees will be imposed at the time when building permits are issued.

### **Chapter 12.10 -- Public and Private Road Standards**

*City of La Center Engineering Standards for Construction* shall apply to all public road improvements unless modified by the director. **See Attachment B.**

Lockwood Creek Road is classified as a Minor Arterial per the updated Capital Facilities Plan. The city has designated Lockwood Creek Road as a Minor Arterial "A" per the Engineering Standards. General roadway and right-of-way standards shall apply and provide half street improvements per LCMC 12.10.090.

Half street improvements will need to be constructed along the frontage improvements for a plat per the Minor Arterial "A" Standard Detail. The streets within the development shall be either a Neighborhood or Local Street Standard per the Engineering Standards depending on the ADT,

All pedestrian path of travel in public right of way including; sidewalks, curb ramps and street pedestrian crossings shall comply with the American Disabilities Act.

**Comments**

***Streets and Circulation***

The access to Lockwood Creek Road shall be justified by a traffic report. The CFP and Engineering Standards require a minimum spacing of 600-feet between streets and driveway connections to an Arterial. The access to Asa's development may need to align with NE 24<sup>th</sup> recommendations.

For dead end streets that serve more than one lot, a hammerhead or cul-de-sac if required. The street stub to the south end of the site, as shown on the site plan, appears to be approximately 200-feet in length and will either need to be a hammerhead or cul-de-sac.

A Traffic Engineer, licensed in Washington State, will need to assess the impacts to Lockwood Creek Road resulting trips from the development.

***Grading***

The applicant shall submit final grading and erosion control permit as part of the subdivision plans showing the proposed contours on the plans.

The City Erosion Control Standards require that any activity disturbance over 500 SF must comply with the city standards. As part of these standards a construction stormwater permit is required from the Department of Ecology and an SWPPP will be necessary as part of the plan submittal to the city. All erosion control measures shall be designed, approved, installed and maintained consistent with Chapter 18.320 LCMC and the applicant's Construction Stormwater Permit. Per the City Erosion Control Manual, from October 1 through April 30<sup>th</sup>, no soils shall remain exposed for more than two (2) days. From May 1<sup>st</sup> through September 30<sup>th</sup>, no soils shall remain exposed more than seven (7) days.

Geotechnical Study. A complete application will include a geotechnical study and report, prepared by a geotechnical engineer or geologist, licensed in the state of Washington. The report shall include at a minimum, testing to support the structural section of the roadway, site building construction, grading, retaining wall design, as applicable, and subsurface drainage. LCMC 18.212.050.

**Chapter 13.10 -- Sewer System Rules and Regulations**

Connection to public sewer is required. LCMC 13.10. All work is to be performed by a duly licensed contractor in the City of La Center. LCMC 13.10.230. Work will be performed using an open trench method unless otherwise approved. LCMC 13.10.200. All costs associated with installing the side sewer shall be borne by the applicant. LCMC 13.10.110.

Per the City Engineering Standards, sanitary sewers should be designed to care for future loads that may reasonably be expected from full development upstream, consistent with the La Center Comprehensive Plan, Capital Facilities Plan, LCMC Title 13, and the Sewer Master Plan (General Sewer Plan).

The applicant is proposing to connect the sanitary sewer piping to the existing Middle School pump station. An 8-inch pipe stub was provided to the east school property line from the pump station wet well for future connection to the parcels east of the school property. A public sewer main is shown on the preliminary plans for Asa's that traverses through the development lots. A minimum of a 15-

feet wide public easement will need to be provided on private property with vehicle access to the easement. **See Attachment A.**

The General Sewer Plan shows a gravity sewer main extending on the applicant's property to the north, to allow future connection of gravity sewer service for parcels north of Lockwood Creek Road. As part of the LCMC requirements, extension of a public sewer main will need to be provided to applicant's north property boundary and east property line for future connection.

#### **Chapter 18.320 (Stormwater and Erosion Control)**

Section 18.320.120 (1) LCMC states that ground-disturbing activities of more than 500 square feet are subject to the requirements of *City of La Center Erosion Control Guidelines*. Section 18.320.120 (2)(a) LCMC states that the creation of more than 2,000 square feet of impervious surface is subject to stormwater regulation.

The applicant proposes to create new impervious public interior streets, that will be public Per LCMC 18.320.210. Treatment BMPs shall be sized to the treat the water quality design storm, defined as the six-month, 24-hour storm runoff volume.

A Technical Information Report (TIR) will need to be submitted by the applicant and must comply with LCMC 18.320.

The LCMC section 18.320.220 states that if surface water leaves the site, stormwater must be detained per LCMC. Runoff calculations need to consider undisturbed forest as the pre-developed condition in determining runoff curve numbers or a downstream analysis of the existing conveyance system is required. The design must meet the LCMC 18.320 and the 1992 Puget Sound Manual for the design of the system.

The collection system shall be designed by the rational method using HEC-12 1984 edition standards for gutter and storm pipe capacity. As an alternate, WSDOT Hydraulics Manual can be used for inlet capacity design. The 100-year rainfall intensity must be used for pipe capacity design using the rational method.

Downspouts connections from the houses must connect directly into the site stormwater system. Laterals from the storm main in the street must be shown to serve each lot.

#### **Maintenance of Stormwater Facility**

The applicant shall be responsible for maintenance of the stormwater facility. An operations manual must be submitted for City review approval for the maintenance of the facility in all cases. Adequate bonding is required to guarantee maintenance of the facility for a period of two years following final plat.

#### **Street Lighting**

Street light design and installation is reviewed and approved by the City of La Center. Street lighting on local streets shall be Acorn full cutoff single fixture on a black decorative fiberglass pole and the frontage improvements will need to have Cobra Head LED light per the Engineering Standards. The applicant shall submit a Photometric analysis along with the street light design to verify compliance with the Engineering Standards.

### **Potable Water**

Water system connections are regulated by Clark Public Utility (CPU) and a permit and plan approval will be required for City plan approval.

Clark Public Utilities must approve the water pipe system and service to all lots. CPU needs to be contacted about the existing water system pressure and the applicant must meet CPU approval for the new water system.

Coordinate with Clark Cowlitz Fire & Rescue regarding hydrant spacing and related fire flow and fire protections issues.

## Land Use Analysis

### **Chapter 8.60 Sign Requirements**

If proposed, signs must comply with this chapter including the general requirements (8.60) and requirements for signs in residential zones (8.60.060). Signs in residential zones are limited to illuminated sign at the entrance to the subdivision of 32 square feet.

### **Chapter 18.30.100 Type III procedure**

(1) Hearing. An application subject to a Type III process will be considered at one or more public hearings before a city hearings examiner. The city clerk shall schedule a public hearing for an application within 78 calendar days after the date the city found the application was technically complete.

(2) Notice of Hearing. At least 14 calendar days before the date of the hearing, the city clerk shall mail public notice of the hearing as provided in LCMC 18.30.120. At least 10 days before the date of the hearing, the city clerk shall cause notice of the hearing to be published and posted as provided in LCMC 18.30.120.

(3) Staff Report. At least seven calendar days before the date of the hearing, the director shall issue a written staff report regarding the application(s). The staff report shall set out the relevant facts and applicable standards for the application and a summary of how the application complies with those standards based on the facts and evidence, including any conditions of approval. The city clerk shall mail a copy of the staff report to the hearings examiner, the applicant, and the applicant's representative(s) and other parties who request it. Copies of the staff report also shall be available at City Hall seven days prior to the hearing and at the public hearing.

(5) Decision. Within 14 calendar days after the date the record closes regarding a given application(s), the hearings examiner shall submit to the city clerk a written decision regarding that application(s). The decision shall set out the relevant facts and applicable standards for the application(s) and a summary of how the application(s) complies with those standards based on the facts and evidence, including any conditions of approval.



(6) Notice of Decision. Within seven calendar days of the date of the decision, the city clerk shall mail a notice of decision as provided in LCMC 18.30.120.

(7) Appeal and Post-Decision Review. A final decision regarding an application subject to Type III process can be appealed pursuant to LCMC 18.30.130 and can be amended by post-decision changes pursuant to LCMC 18.30.150. [Ord. 2006-17 § 1, 2006.]

**Chapter 18.130 (Low Density Residential)**

The site is zoned LDR-7.5, low density residential, with a minimum lot size of 7,500 feet. Single-family detached residential dwelling units are a permitted use within the zoning district. The development must meet a minimum of 4 units per net acre. Net acre is defined as gross area minus area for public rights-of-way, private streets, utility easements, public parks, and undeveloped critical areas and buffers. Density can be transferred from undeveloped critical areas and buffers under the provisions 18.300.130 and reduce lot sizes for up to 10 percent of the lots on the site to 6,000 square feet. Individual parcels may not be smaller than 6,000 S.F. or larger than 11,000 S.F. LCMC 18.130.180.

The applicant’s proposed conceptual plan shows lots generally ranging in size from 7,500 square feet to 8,750 square feet. They applicant has not indicated that they are using the density transfer provisions in the critical areas ordinance. A single lot (lot #46) exceeds 11,000 square feet, above the City’s maximum lot size. The applicant will need to reduce this lot to be no larger than 11,000 square feet or apply for a variance.

| Minimum Lot Width (feet) | Minimum Lot Depth (feet) | Minimum Front Yard Setback (feet) <sup>1, 2</sup> | Minimum Side Yard Setback (feet) <sup>2</sup> | Minimum Street Side Yard Setback (feet) <sup>2</sup> | Minimum Rear Yard (feet) <sup>2, 3</sup> |
|--------------------------|--------------------------|---|---|--|--|
| 60                       | 90                       | 20  | 7.5   | 10   | 20                                       |

<sup>1</sup>If there are dwellings on both adjoining lots with front yard setbacks less than the required depth for the district, the minimum front setback for the lot is the average of the front setbacks of the adjoining dwellings. If there is a dwelling on only one adjoining lot with a front yard setback less than the required depth for the district, the minimum front setback for the lot in question is the average of the adjoining front yard setback and 15 feet.

<sup>2</sup>Cornices, eaves, belt courses, sills, canopies, or other similar architectural features (not including bay windows or vertical projections) may extend or project into a required yard not more than 30 inches. Chimneys may not project into a required yard more than 24 inches. A deck not more than 30 inches in height (measured from the lowest grade in the setback to the deck surface) and not covered by a roof or canopy may extend up to 10 feet into a front yard setback, seven and one-half feet into a street side yard setback and is permitted in a side or rear yard regardless of the setback requirements.

<sup>3</sup>A detached accessory structure, other than a garage or carport, may be situated in a rear and/or side yard provided it is at least six feet from the primary structure on a lot or parcel and it is set back from interior side and rear lot lines by at least five feet and from street side lot lines by at least 10 feet. A garage or carport may be situated in a rear and/or side yard provided it is at least 20 feet from the front and street side lot lines

Maximum building lot coverage shall not exceed 35 percent. Maximum impervious surface area shall not exceed 50 percent. Your proposed plat should calculate building lot coverage per lot and total amount of impervious surface area to be created.

**Chapter 18.147 Parks and Open Spaces**

LCMC 18.147 requires single-family residential development of 40 or more dwelling units to provide publicly accessible park space at a ratio of 0.25 acres per 40 dwelling units in excess of the first 40 units. Based on the 69 units proposed, the applicant is required to provide 0.18 acres of park space. However

the minimum contiguous park sizes is 0.25 acres. The applicant's conceptual plan indicates that 0.35 acres of usable park spaces is proposed. Parks must contain the required elements in LCMC 18.147.030(1)(b). The preliminary plat application shall include a preliminary park site plan and landscape plan showing the location of elements. The property owner or home owner's association is responsible for park maintenance.

### **Chapter 18.210 Subdivisions**

#### **Review Process for Subdivisions (LCMC 18.210.020)**

Subdivision applications are processed as a Type III land use review requiring a public hearing before the La Center Hearing Examiner. Within 14 days after the City finds the application technically complete, the Clerk shall mail a Notice of Application the applicant and adjacent property owners. The comment period shall remain open for a minimum of 14 days. The City will schedule a hearing within 78 days after the City finds the application to be technically complete. The City shall issue a staff report a minimum of seven calendar days prior to the hearing date. An appeal of the Hearing Examiner's decision must be made to the City Council within 14 days after the date of issuance of the decision.

**Submittal Requirements (LCMC 18.210.030):** A completed application form and the following materials will be required, prior to a determination of technical completeness:

1. The information listed in LCMC 18.210.010(2), provided an environmental checklist is required for a technically complete application unless categorically exempt.
2. Written authorization to file the application signed by the owner of the property that is the subject of the application, if the applicant is not the same as the owner as listed by the Clark County assessor.
3. Proof of ownership document, such as copies of deeds and/or a policy or satisfactory commitment for title insurance.
4. A legal description of the property proposed to be divided.
5. If a subdivision contains large lots or tracts which at some future time are likely to be re-subdivided, the application shall include a master plan of all land under common ownership in order to provide for extension and opening of streets at intervals which will permit a subsequent division of each divisible parcel into lots of smaller size.
6. A copy of the pre-application conference summary and all information required to address issues, comments and concerns in the summary.
7. A written description of how the proposed preliminary plat does or can comply with each applicable approval criterion for the preliminary plat, and basic facts and other substantial evidence that support the description.
8. The names and addresses of owners of land within a radius of 300 feet of the site. Owner names and addresses shall be printed on mailing labels.
  - a. The applicant shall submit a statement by the assessor's office or a title company certifying that the list is complete and accurate, based on the records of the Clark County assessor within 30 days of when the list is submitted.
  - b. If the applicant owns property adjoining or across a right-of-way or easement from the property that is the subject of the application, then notice shall be mailed to owners of property within a 300-foot radius, as provided above, of the edge of the property owned by the applicant adjoining or across a right-of-way or easement from the property that is the subject of the application.

9. Applications associated with the preliminary plat, such as exceptions, adjustments or variances to dimensional requirements of the base or overlay zones or for modifications to the road standards in Chapter 12.10 LCMC that are required to approve the preliminary plat application as proposed.
10. A wetland delineation and assessment is required by Chapter 18.300 LCMC and an application for a critical area permit, if wetlands are present and will be impacted. The wetlands on site must be classified using the 2014 Ecology wetland rating system. A wetland mitigation report is required, if wetlands will be impacted.
11. A geotechnical study is required if the site will contain substantial fill or there are steep or unstable slopes on the site.
12. Preliminary grading, erosion control and drainage plans, which may be a single plan, consistent with applicable provisions of Chapter 18.320 LCMC.
13. Evidence that potable water will be provided to each lot from a public water system, and that each lot will be connected to public sewer.
14. A phasing plan, if proposed.
15. An archaeological predetermination
16. Additional information:
  - a. A traffic study (please consult with the City Engineer regarding intersections to be studied.)
  - b. A signed *Agreement to Pay Outside Professional Review Expenses Related to Land Use Application*. (Provided during the meeting.)

**Vesting:** Applications are vested on the date the City deems the application to be technically complete.

**Subdivision Approval criteria (LCMC 18.210.040):** The applicant carries the burden of proof to demonstrate that the proposal complies with the following City regulations and standards:

- Chapter 12.05 LCMC, Sidewalks;
- Chapter 12.10 LCMC, Public and Private Road Standards;
- Chapter 15.05 LCMC, Building Code and Specialty Codes;
- Chapter 15.35 LCMC, Impact Fees;
- Chapter 18.245 LCMC, Supplemental Development Standards;
- Chapter 18.300 LCMC, Critical Areas;
- Chapter 18.310 LCMC, Environmental Policy;
- Chapter 18.320 LCMC, Stormwater and Erosion Control;
- The subdivision must make appropriate provision for parks, trails, potable water supplies and disposal of sanitary wastes; and
- The subdivision complies with Chapter 58.17 RCW.

**Subdivision General Issues:**

1. To approve the preliminary plat, the Hearing Examiner must make an affirmative finding that “appropriate provision for potable water supplies and for the disposal of sanitary wastes”.
2. All existing wells and septic systems must be properly decommissioned prior to final plat.
3. The City may refuse bonds in lieu of improvements at the time of final platting if such bonding has not been previously discussed and documented.
4. Flag lots are discouraged.
5. The preliminary plat shall expire five years from the date of the Final Order. RCW 17.58.140(3)(a).
6. Phasing is permitted. All phases must be identified on the preliminary plat and be consistent with the lot number sequencing.

### **18.245 Supplementary Development Standards**

The applicant did not include specific information regarding the fencing, hedging, solid waste, lighting, noise, and landscaping requirements regulated by Chapter 18.245. The subsequent application must address these specific issues. According to LCMC 18.245.060, because the parcel is not separated from the school facility by a street, the landscaping must meet the standards of “L5 – 20 feet” landscaping. However, 18.245.060(4) indicates that the City can require a different amount of landscaping as part of development review. In this case, the new middle school provided a 30-foot wide buffer landscaped to an L1 standard. Staff finds that an additional 20-foot buffer is not required on the subject property. Fences constructed to the F2 standard (six-foot high and sight obscuring) are sufficient in this case.

### **18.260 Variances**

No variances have been requested. If any variances are requested, please fully address the variance approval criteria in LCMC 18.260.

### **Chapter 18.280 Off-Street Parking and Loading Requirements**

Each dwelling unit shall be provided with two off-street parking spaces per Table 18.280.010 plus one space for guests. This may be accommodated with a note on the plat requiring each lot to provide three off-street parking spaces. Parking spaces within garages, carports and driveways serve to meet this requirement. The front plane of the garage must be setback a minimum of 18 feet from the interior edge of the sidewalk.

### **18.300 Critical Areas**

Early review of Clark County mapping resources has identified three resources categorized under “critical areas” (1) wetlands, (2) category II aquifer recharge areas, and (3) fish and wildlife habitat conservation areas. The intention of the critical areas overlay is to achieve “no net loss” of these important resources. This strategy can include an assortment of mitigation measures, such as buffers, and restoration or other preservation measures. A preliminary biological/wetlands survey has yet to be conducted. Therefore, it is unclear if the resources identified by Clark County mapping resources are present on site, specifically the wetlands and fish and wildlife habitat conservation area. If resources are found, a critical area report will be necessary. If wetlands are present onsite, a wetland delineation may also be required.

Found wetland resources will be subject to 18.300.090 (5). Clark County has 0.40 acres of potential wetlands and 9.78 acres of hydric soils mapped on their mapping portal. Wetlands are categorized from Class I-IV (I being the most critical to protect, IV being least critical to protect/often disturbed). Criteria for wetlands that are exempt from avoidance measures can be found in 18.300.090 (5)(d)(i). A critical areas report (wetland delineation) will be required and if wetlands or buffers are impacted, a mitigation plan is also necessary. The applicant’s critical areas report must address the applicable provisions of 18.300.080(5), 18.300.110, and 18.300.120 for development of non-excluded wetlands. If mitigation is proposed onsite (preferred), it needs to meet the mitigation ratios of Table 18.300.090(5)(l). General wetland development standards can be found in 18.300.090(5)(k).

Clark County maps the entire 18.57 acres of Asa’s View in a category II aquifer. However, the LCMC does not have specific requirements for residential development in category II aquifers. A Level 1 or Level 2 Hydrogeological Report will not be required for this development.

Fish and wildlife habitat conservation areas are subject to 18.300.090(2). Riparian areas, of which 4.53 acres are mapped by Clark County on the southern edge of the proposed development, are discussed

under 18.300.090(2)(a)(i). This code suggests the “use of riparian buffers of adequate size to maintain healthy, productive fish and wildlife habitat”. Best practices and regulations for new developments for riparian areas can be found in 18.030.090(2)(h). The riparian area also encompasses a DNR non-fish bearing stream. A biologist will determine if it is perennial or seasonal at a later date. Non-fish-bearing streams are required to have buffers ranging from 75-150 feet. Mitigation measures can be found in 18.300.090(2), and include no net loss strategies (18.300.090(2)(j)), buffer reduction (18.300.090(2)(l)), and more.

**18.310 Environmental Policy**

The project review application must include a SEPA checklist and appropriate processing fees.

The City will run the SEPA comment and land use comment period concurrently and will not make a decision on the land use application until after the close of the SEPA comment period.

**18.340 Native Plant List:** a preliminary biological survey has yet to be conducted. Therefore, native plant presence on site will be assessed at a later date. Any mitigation required shall use native plants in accordance with LCMC 18.340.

**18.350 Tree Protection:** If any tree greater than 5” DHA is proposed to be removed, a tree cutting permit and mitigation will be required. A tree protection plan will also be required in accordance with LCMC 18.350.060. Mitigation may consist of replanting on or off-site or payment in lieu of planting. LCMC 18.350.050.

**18.360 Archeological Resource Protection:** Clark County mapping resources identify the site as having moderate-high to high risk of containing archaeological resources and must file an archaeological predetermination report as per Table 18.360.020-1. Predetermination reports must contain the information in 18.360.080(4). Based on the findings of the predetermination report, further archaeological work or a full archaeological survey may be required.

**Application Fees**

An estimated fee schedule was provided during the meeting. Based upon the information provided to date, we estimate that the land use application fees will include:

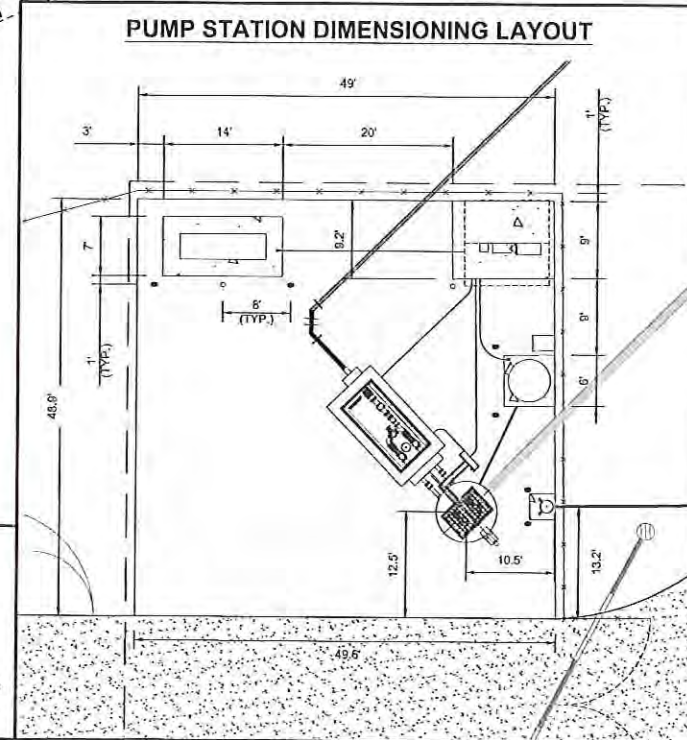
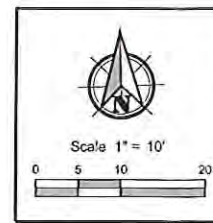
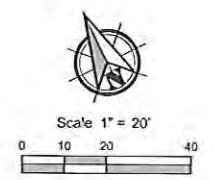
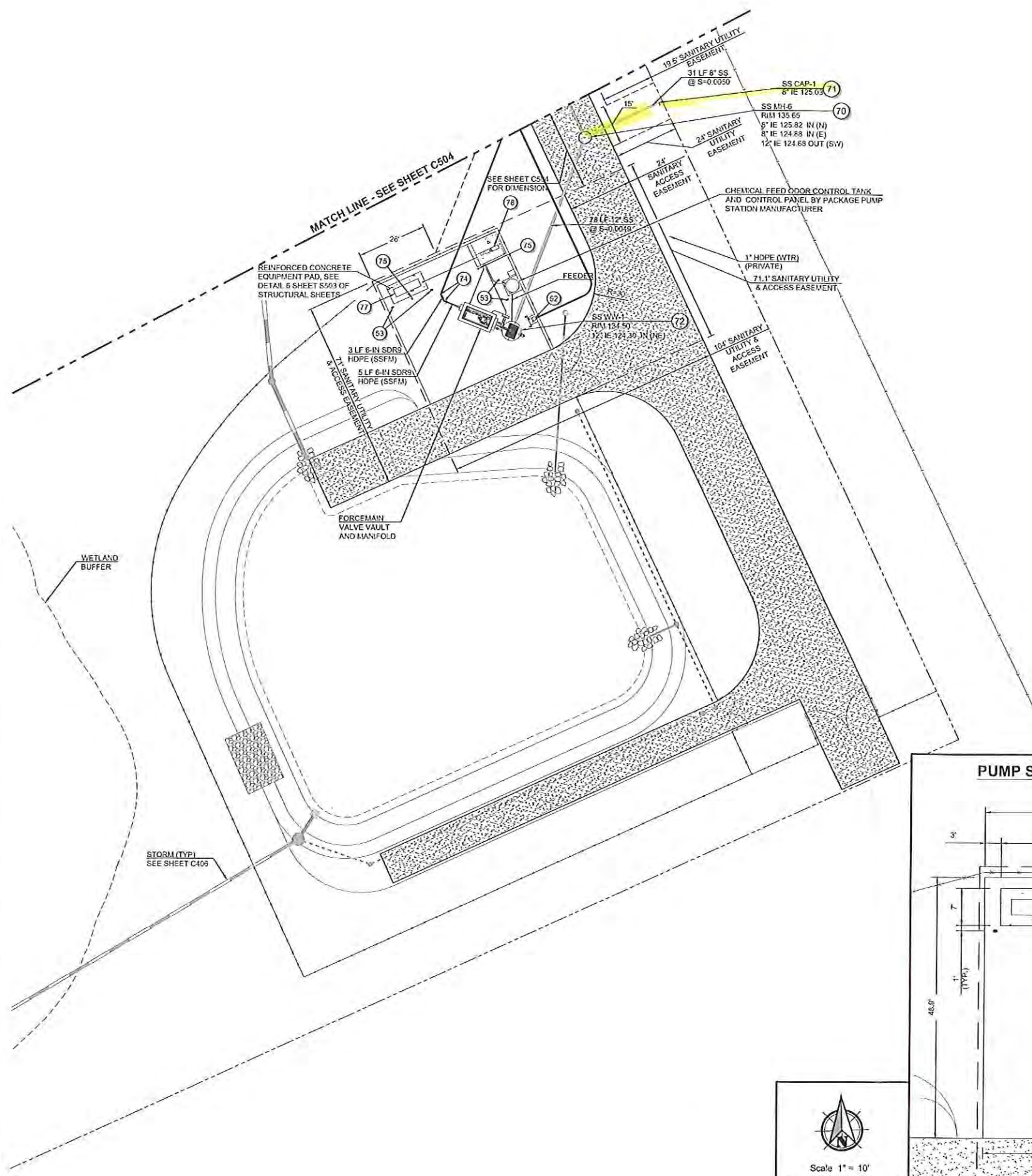
- Preliminary subdivision plat (\$3,400 +\$125/lot);
- SEPA (\$170 x 3);
- Critical Area review (\$340 per critical area);

The City requires an applicant pay actual costs of outside professional services including engineering, legal, and planning. Impact fees shall be assessed against each lot at time of building permit. (La Center Resolution No. 13-372). A copy of the agreement was provided at pre-application conference. Please include a signed agreement with the application.

Please note that the City is due to update its land use fees. Timeline for that is uncertain, but the fees listed above could change.

# **Attachment A**

Filename: I:\Projects\71000171\20171202-000\ChelCACAD\Working\Sheet\C500-C505.dwg  
 User: Dorian Kovalston  
 CAD Plot Date/Time: 9/22/2019 5:24:10 PM  
 Layout Tab: C505



**GENERAL NOTES**

1. SEE SHEET C001 FOR ABBREVIATIONS AND MASTER LEGEND. SEE SHEET C002-C003 FOR GENERAL NOTES.
2. SEE SHEET C923 FOR RESTRAINT LENGTH TABLES AND DETAILS FOR THRUST BLOCKS.
3. SEE SHEET C924 FOR CLARK PUD GENERAL WATER CONSTRUCTION NOTES.

**WATER NOTES:**

29. INSTALL 11-1/4" MJ BEND. RESTRAIN ALL JOINTS AND INSTALL THRUST BLOCK.
30. INSTALL 22-1/2" MJ BEND. RESTRAIN ALL JOINTS AND INSTALL THRUST BLOCK.
31. INSTALL 45" MJ BEND. RESTRAIN ALL JOINTS AND INSTALL THRUST BLOCK.
32. INSTALL 90" MJ BEND. RESTRAIN ALL JOINTS AND INSTALL THRUST BLOCK.
33. NOT USED.
34. INSTALL 8" X 6" MJ X SIDE FLG TEE. RESTRAIN ALL JOINTS AND INSTALL THRUST BLOCK. (1) 6" FLG X MJ GV W/ MJ RESTRAINTS.
35. INSTALL 8" X 8" FLG X FLG TEE. RESTRAIN ALL JOINTS. (1) 6" FLG X MJ ADAPTOR.
36. INSTALL 8" CAP. RESTRAIN ALL JOINTS.
37. INSTALL 6" FLG X MJ GATE VALVE WITH MJ RESTRAINT.
38. INSTALL 8" FLG X MJ GATE VALVE WITH MJ RESTRAINT.
39. INSTALL BLOW OFF ASSEMBLY, SEE DETAIL SHEET C924.
40. INSTALL STANDARD FIRE HYDRANT ASSEMBLY W/ MIN. 4" X 4" CONCRETE PAD, SEE DETAIL SHEET C924.
41. AFTER TESTING AND APPROVAL, HOT TAP TO EXISTING 6" WATER MAIN. SEE DETAIL SHEET C924.
42. CONNECT TO WATER INSIDE BUILDING. SEE PLUMBING PLANS. WA DOH APPROVED BACKFLOW DEVICE INSIDE BUILDING.
43. INSTALL 4" WATER METER BOX W/ TRAFFIC RATED LID & 4" METER. SEE DETAIL SHEET C923. COORDINATE WITH CLARK PUBLIC UTILITIES FOR METER INSTALLATION. SERVICE LATERAL SHALL BE FULLY RESTRAINED FROM TEE CONNECTION TO BUILDING.
44. INSTALL 8" X 8" FLG X FLG TEE. W/ TRUST BLOCK. ADDITIONALLY INSTALL (2) 8" FLG X MJ GV W/ MJ REST & (1) 8" FLG X FLG GV.
45. INSTALL FDC, SEE DETAIL SHEET C912.
46. FDC CONNECTION, PER BIDDER DESIGN.
47. INSTALL 2" WATER METER BOX AND METER FOR IRRIGATION. SEE DETAIL SHEET C923. SEE LANDSCAPE PLANS FOR CONNECTION AND BACKFLOW PREVENTION.
48. INSTALL 8" X 4" FLG X MJ REDUCER WITH MJ RESTRAINT.
49. INSTALL 1" WATER METER, SEE DETAIL SHEET C923. COORDINATE WITH CLARK PUBLIC UTILITIES FOR METER INSTALLATION.
50. INSTALL WA DOH APPROVED 1" REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) DEVICE, SEE DETAIL SHEET C912.
51. INSTALL 1" WATER SERVICE PER CLARK PUBLIC UTILITIES STANDARD DETAILS.
52. INSTALL PRIVATE YARD HYDRANT. SEE DETAIL SHEET C912.
53. INSTALL PRIVATE FIXED BOLLARD, SEE DETAIL SHEET C912.
54. INSTALL 4" FLG X MJ GATE VALVE WITH MJ RESTRAINT.

**SANITARY SEWER NOTES:**

70. INSTALL PRECAST MANHOLE, SEE DETAIL SS-7 SHEET C920.
71. INSTALL LATERAL STUB MARKER, SEE DETAIL SS-2 SHEET C920.
72. PROVIDE PACKAGED PUMP STATION 72-IN WETWELL WITH DISCONNECT PANEL, ODORHOG VENT, AND 612 VALVE VAULT, SEE DETAIL SHEETS C925-C926.
73. INSTALL RESTRAINED 11-1/4" BEND IN FORCE MAIN.
74. INSTALL RESTRAINED 45" BEND IN FORCE MAIN.
75. INSTALL BOLLARD TYPE 1 PER WSDOT STANDARD PLAN H-60.10, SHEET C917.
76. WALL OR FOUNDATION PIPE PENETRATION. SEE STRUCTURAL DETAILS.
77. 40 KW PAD-MOUNTED EMERGENCY GENERATOR WITH 24-HR DIESEL TANK, SUPPLIED BY PACKAGED PUMP STATION MANUFACTURER. SEE STRUCTURAL PLANS FOR PAD AND ANCHORAGE DETAILS.
78. PUMP CONTROL PANEL, AUTOMATIC TRANSFER SWITCH, AND ELEC SERVICE DISCONNECT WITH 2-POST CONTROL SHELTER BY PACKAGED PUMP STATION MANUFACTURER.
79. INSTALL 1,500 GALLON GREASE INTERCEPTOR, SEE DETAIL SHEET C912.
80. INSTALL SANITARY CLEANOUT, SEE DETAIL SS-14 SHEET C921.
81. SANITARY CONNECTION TO BUILDING. SEE MECHANICAL PLANS.
82. INSTALL 4" X 6" 45" SANITARY WYE.
83. INSTALL 6" X 8" 45" SANITARY WYE.
84. APPROXIMATE LOCATION OF GREASE INTERCEPTOR VENT PIPE, SEE MECHANICAL PLANS FOR CONNECTION.
85. INSTALL 2" AIR & VACUUM VALVE ASSEMBLY PER CITY OF LA CENTER STANDARD DETAIL SS-17, SEE SHEET C921.

REVISIONS

AGENCY REVIEW SET  
 2ND SUBMITTAL

PBS Engineering and Environmental Inc.  
 415 W. 10th Street, Suite 201  
 30057-2406  
 pbse.com



LA CENTER SCHOOL DISTRICT  
 LA CENTER NEW MIDDLE SCHOOL  
 2001 NE LOCKWOOD CREEK ROAD, LA CENTER, WA 98620

LA CENTER SCHOOL DISTRICT  
 LA CENTER NEW MIDDLE SCHOOL  
 2001 NE LOCKWOOD CREEK ROAD, LA CENTER, WA 98620



**NAC**  
 ARCHITECTURE  
 nacarchitecture.com  
 2025 FIRST AVENUE, SUITE 300  
 SEATTLE, WA 98101  
 P 206.441.4522

NO. 121-18009  
 DRAWN JAB/JRM  
 CHECKED EAP  
 DATE 08-19-2019

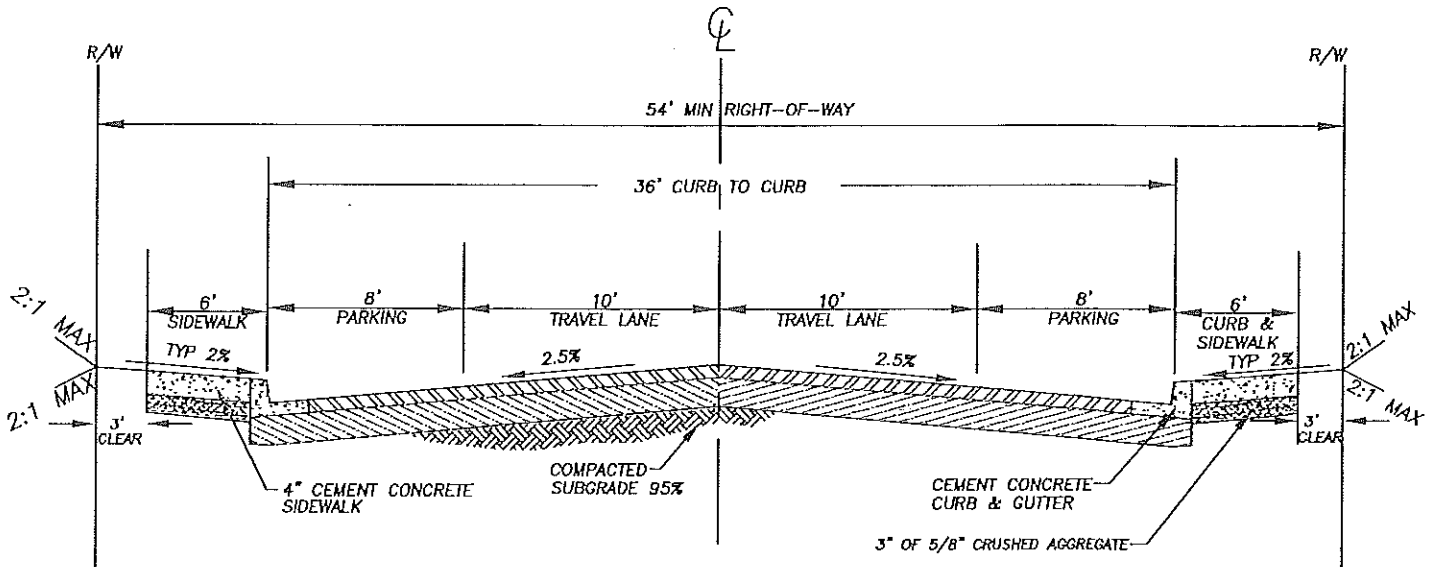
SANITARY SEWER AND WATER PLANS

CD SUBMITTAL

**C505**

# **Attachment B**





| CONVENTIONAL CONSTRUCTION |                   |                     | THICK ASPHALT CONSTRUCTION |                   |                     |
|---------------------------|-------------------|---------------------|----------------------------|-------------------|---------------------|
| AASHTO SOIL TYPE          | ASPHALT THICKNESS | BASE ROCK THICKNESS | AASHTO SOIL TYPE           | ASPHALT THICKNESS | BASE ROCK THICKNESS |
| A-1                       | 0.35'             | 0.50'               | A-1                        | 0.42'             | 0.25'               |
| A-2                       | 0.35'             | 0.50'               | A-2                        | 0.42'             | 0.25'               |
| A-3                       | 0.35'             | 0.50'               | A-3                        | 0.42'             | 0.25'               |
| A-4                       | 0.35'             | 0.60'               | A-4                        | 0.45'             | 0.25'               |
| A-5                       | 0.35'             | 0.90'               | A-5                        | 0.55'             | 0.25'               |
| A-6                       | 0.35'             | 1.20'               | A-6                        | 0.62'             | 0.25'               |
| A-7                       | 0.40'             | 1.60'               | A-7                        | 0.80'             | 0.25'               |
| OTHER                     | NO SECTION        | ESTIMATED           | OTHER                      | NO SECTION        | ESTIMATED           |

**NOTES:**

1. WIDER SIDEWALKS MAY BE REQUIRED BY REVIEWING AUTHORITY UNDER CERTAIN CIRCUMSTANCES.
2. SUBGRADE REINFORCEMENT GEOTEXTILES SHALL BE INSTALLED OVER A-6 AND A-7 SOILS PRIOR TO CONSTRUCTING THE BASE AND SURFACING.
3. ASPHALT SURFACE FOR ALL ROADS SHALL BE CLASS 1/2 PG 64-22 HMA PER WSDOT STANDARD SPECIFICATIONS.
4. THE PAVEMENT STRUCTURE THICKNESSES IDENTIFIED FOR THESE SOIL TYPES ARE REQUIRED UNLESS A SITE SPECIFIC PAVEMENT DESIGN IS DONE. THE TOTAL PAVEMENT STRUCTURE SHALL NOT EXCEED 2.5 FEET.
4. EITHER CONVENTIONAL OR THICK ASPHALT CONSTRUCTION IS ALLOWED.
5. BASE ROCK SECTION SHALL BE TWO (2) INCHES OF 5/8" - 0" TOP COURSE, OVER REMAINING DEPTH OF BASE ROCK PER WSDOT STANDARD SPECIFICATION SECTION 9-03.10. TOTAL BASE ROCK SECTION THICKNESS AS INDICATED IN THE TABLES.

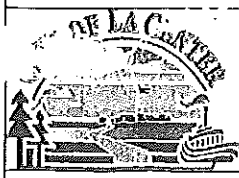
# NEIGHBORHOOD ACCESS

PLAN #

CITY OF LA CENTER APPROVED

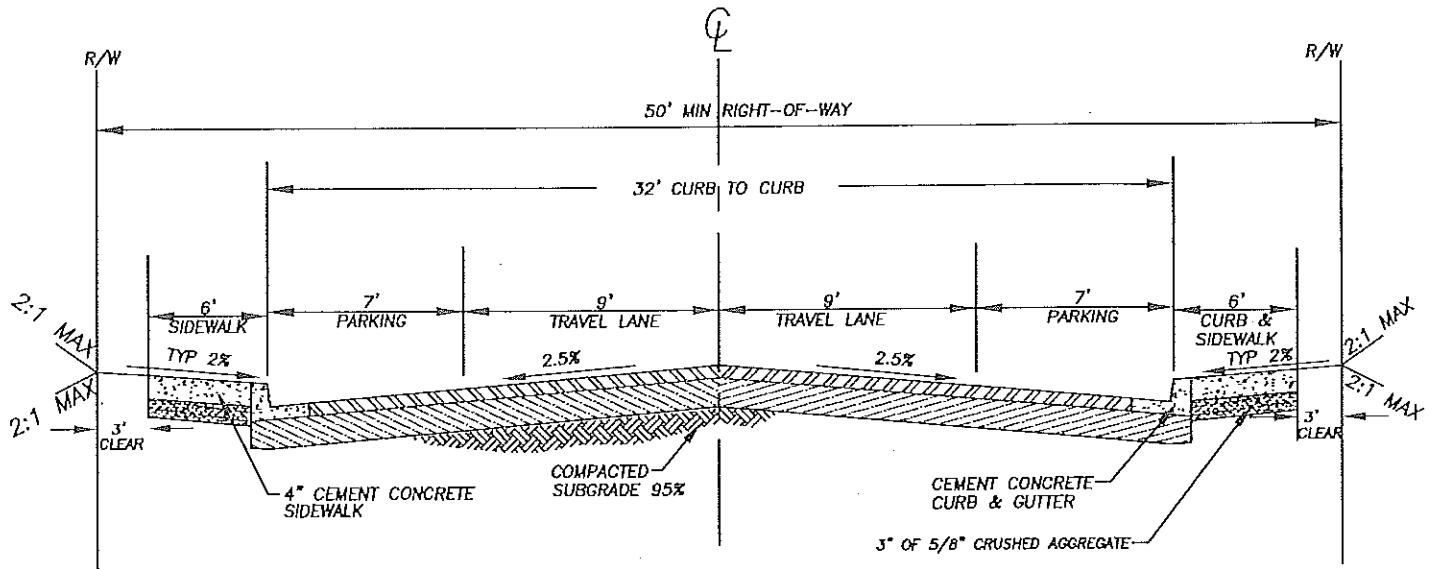
REVISIONS:      DATE:      DRAWN:      DESIGNED:

ST-14



CITY ENGINEER

DATE



| CONVENTIONAL CONSTRUCTION |                   |                     | THICK ASPHALT CONSTRUCTION |                   |                     |
|---------------------------|-------------------|---------------------|----------------------------|-------------------|---------------------|
| AASHTO SOIL TYPE          | ASPHALT THICKNESS | BASE ROCK THICKNESS | AASHTO SOIL TYPE           | ASPHALT THICKNESS | BASE ROCK THICKNESS |
| A-1                       | 0.35'             | 0.50'               | A-1                        | 0.42'             | 0.25'               |
| A-2                       | 0.35'             | 0.50'               | A-2                        | 0.42'             | 0.25'               |
| A-3                       | 0.35'             | 0.50'               | A-3                        | 0.42'             | 0.25'               |
| A-4                       | 0.35'             | 0.60'               | A-4                        | 0.45'             | 0.25'               |
| A-5                       | 0.35'             | 0.90'               | A-5                        | 0.55'             | 0.25'               |
| A-6                       | 0.35'             | 1.20'               | A-6                        | 0.62'             | 0.25'               |
| A-7                       | 0.40'             | 1.60'               | A-7                        | 0.80'             | 0.25'               |
| OTHER                     | NO SECTION        | ESTIMATED           | OTHER                      | NO SECTION        | ESTIMATED           |

**NOTES:**

1. WIDER SIDEWALKS MAY BE REQUIRED BY REVIEWING AUTHORITY UNDER CERTAIN CIRCUMSTANCES.
2. SUBGRADE REINFORCEMENT GEOTEXTILES SHALL BE INSTALLED OVER A-6 AND A-7 SOILS PRIOR TO CONSTRUCTING THE BASE AND SURFACING.
3. ASPHALT SURFACE FOR ALL ROADS SHALL BE CLASS 1/2" PG 64-22 HMA PER WSDOT STANDARD SPECIFICATIONS.
4. THE PAVEMENT STRUCTURE THICKNESSES IDENTIFIED FOR THESE SOIL TYPES ARE REQUIRED UNLESS A SITE SPECIFIC PAVEMENT DESIGN IS DONE. THE TOTAL PAVEMENT STRUCTURE SHALL NOT EXCEED 2.5 FEET.
4. EITHER CONVENTIONAL OR THICK ASPHALT CONSTRUCTION IS ALLOWED.
5. BASE ROCK SECTION SHALL BE TWD (2) INCHES OF 5/8"- 0" TOP COURSE, OVER REMAINING DEPTH OF BASE ROCK PER WSDOT STANDARD SPECIFICATION SECTION 9-03.10. TOTAL BASE ROCK SECTION THICKNESS AS INDICATED IN THE TABLES.

# LOCAL ACCESS

PLAN #



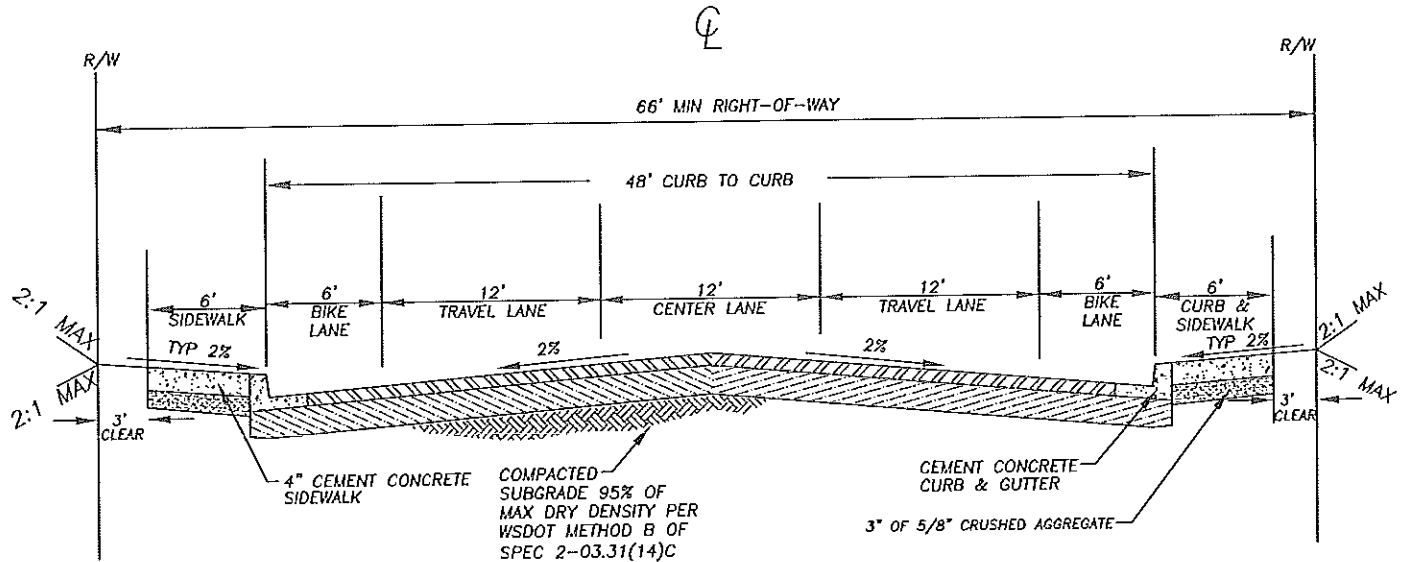
CITY OF LA CENTER APPROVED

REVISIONS:    DATE:    DRAWN:    DESIGNED:

ST-15

CITY ENGINEER

DATE



| CONVENTIONAL CONSTRUCTION |                   |                     | THICK ASPHALT CONSTRUCTION |                   |                     |
|---------------------------|-------------------|---------------------|----------------------------|-------------------|---------------------|
| AASHTO SOIL TYPE          | ASPHALT THICKNESS | BASE ROCK THICKNESS | AASHTO SOIL TYPE           | ASPHALT THICKNESS | BASE ROCK THICKNESS |
| A-1                       | 0.45'             | 0.45'               | A-1                        | 0.52'             | 0.25'               |
| A-2                       | 0.45'             | 0.45'               | A-2                        | 0.52'             | 0.25'               |
| A-3                       | 0.45'             | 0.55'               | A-3                        | 0.55'             | 0.25'               |
| A-4                       | 0.45'             | 0.85'               | A-4                        | 0.62'             | 0.25'               |
| A-5                       | 0.45'             | 1.15'               | A-5                        | 0.72'             | 0.25'               |
| A-6                       | 0.45'             | 1.55'               | A-6                        | 0.82'             | 0.25'               |
| A-7                       | 0.50'             | 2.00'               | A-7                        | 1.00'             | 0.25'               |
| OTHER                     | NO SECTION        | ESTIMATED           | OTHER                      | NO SECTION        | ESTIMATED           |

**NOTES:**

1. WIDER SIDEWALKS MAY BE REQUIRED BY REVIEWING AUTHORITY UNDER CERTAIN CIRCUMSTANCES.
2. SUBGRADE REINFORCEMENT GEOTEXTILES SHALL BE INSTALLED OVER A-6 AND A-7 SOILS PRIOR TO CONSTRUCTING THE BASE AND SURFACING.
3. ASPHALT SURFACE FOR ALL ROADS SHALL BE CLASS 1/2" PG 64-22 HMA PER WSDOT STANDARD SPECIFICATIONS.
4. THE PAVEMENT STRUCTURE THICKNESSES IDENTIFIED FOR THESE SOIL TYPES ARE REQUIRED UNLESS A SITE SPECIFIC PAVEMENT DESIGN IS DONE. THE TOTAL PAVEMENT STRUCTURE SHALL NOT EXCEED 2.5 FEET.
4. EITHER CONVENTIONAL OR THICK ASPHALT CONSTRUCTION IS ALLOWED.
5. BASE ROCK SECTION SHALL BE TWO (2) INCHES OF 5/8" - 0" TOP COURSE, OVER REMAINING DEPTH OF BASE COURSE PER WSDOT STANDARD SPECIFICATION SECTION 9-03.9(3). TOTAL BASE ROCK SECTION THICKNESS AS INDICATED IN THE TABLES.

**MINOR ARTERIAL "A"**

PLAN #



CITY OF LA CENTER APPROVED

REVISIONS    DATE:    DRAWN:    DESIGNED:

1    8/23/16    ALC    ALC

ST-12A

8/23/16

CITY ENGINEER

DATE

# Exhibit A.5

**PROJECT NARRATIVE  
FOR:**

**Asa's View  
Preliminary Subdivision**

**SUBMITTED TO:  
City of La Center, Washington**

**FOR:  
Gravitate Capital LLC**

**July 2022**

## **Introduction**

This proposal is to subdivide Tax Lots 39 and 102, Tax Assessor's serial numbers 209064-000 and 209121-000 into 68 single-family residential lots in the LDR-7.5 zone. The property is located at 2313 NE Lockwood Creek Road. The current use is agricultural and access from Lockwood Creek Rd is via a private road/driveway. The site is bordered to the east with a vacant parcel, to the south with a single-family residence and to the west by La Center School District property.

## **Utilities**

There is a septic system on-site which will be decommissioned prior to site development. If any wells or additional septic systems are discovered at the time of development they will be properly abandoned.

Public sanitary sewer and public water services will be extended to the individual lots during site development. Public water will be provided by the Clark Public Utilities. Public Sewer will be provided by City of La Center. Each of the new homes will be required to connect to public sanitary sewer and public water prior to issuance of occupancy permits.

NW Consilio LLC has prepared Preliminary Engineering Plans for the project. Please see their plans included with this application for specific details.

## **Transportation**

The vehicle access to this site is currently from a private driveway from NE Lockwood Creek Road. Proposed access will continue to connect to NE Lockwood Creek Road and there will be an internal road network providing access to the individual homes and providing future cross circulation to the south. Pedestrian circulation is provided with sidewalks along the proposed roads throughout the site. All road, sidewalk and driveway construction within this development will meet City of La Center and ADA standards.

NW Consilio LLC has prepared Preliminary Engineering Plans for the project. Please see their plans included with this application for specific details.

## **Traffic Generation**

This development will create 68 new single-family residential lots for detached housing. Kelly Engineering has prepared a Traffic Impact Study for the project. Their report identifies 642 net new trips generated by this development at the time of full buildout, including 50 new A.M peak hour trips and 67 new P.M. peak hour trips. Their report also found that all of the intersections within the study area will meet the City's level of service standards in both the A.M and P.M. peak hours in the 2025 conditions except Highland Avenue and E. 4<sup>th</sup> Street, which is currently failing and will be failing in 2025 with or without the added trips from this project. Please see the Traffic Impact Study included with this application for specific information.

### **12.10 Public and Private Road Standards**

NE Lockwood Creek Road is classified as a Minor Arterial and this development will construct half-street improvements along the property's frontage of NE Lockwood Creek Road per the Minor Arterial 'A' Standards. Interior roads will be built to the Local Access Standards.

The proposed access to the site from NE Lockwood Creek Road is aligned as close to NE 24<sup>th</sup> Avenue to the north of Lockwood Creek Road as possible while maintaining Sight Distance for the intersection. The Applicant proposes that with future development to the north, NE 24<sup>th</sup> Avenue be slightly realigned to be perpendicular to NE Lockwood Creek Road, instead of the oblique angle it

has currently, bringing it into alignment with this proposed intersection. This alignment will be safer, will have adequate Sight Distance, and will allow for more efficient movements and queuing.

All sidewalks, paths, ramps and street crossings will comply with ADA Standards.

**18.130 Low Density Residential District**

The site is zoned LDR-7.5 and the comprehensive plan designation for the site is UL. This application proposes 68 lots for residential construction, which is a permitted use in the LDR-7.5 zone.

The following are the lot requirements for the LDR-7.5 zoning district.

| Lot Requirements          |                   |                   |                 |                  |                        |                         |
|---------------------------|-------------------|-------------------|-----------------|------------------|------------------------|-------------------------|
| Zoning District           | Minimum Lot Width | Minimum Lot Depth |                 | Minimum Lot Area | Max. Height            |                         |
| LDR-7.5                   | 60'               | 90'               |                 | 7,500sf          | 35 ft                  |                         |
| Setbacks and Lot Coverage |                   |                   |                 |                  |                        |                         |
| Zoning District           | Minimum Setbacks  |                   |                 |                  | Max. Building Coverage | Max. Impervious Surface |
|                           | Front (feet)      | Side              |                 | Rear (feet)      |                        |                         |
|                           |                   | Street (feet)     | Interior (feet) |                  |                        |                         |
| LDR-7.5                   | 20                | 10                | 7.5             | 20               | 35%                    | 50%                     |

All of the proposed Lots meet or can meet these standards when combined with the Variance Request included with this Application.

Density calculation for the proposal is as follows:

- Total Land Area = 16.47 acres
- Total ROW = 3.25 acres
- Total Sensitive Lands = 0.09 acres
- Total Park Area outside of sensitive lands = 0.21 acres
- Total area for Stormwater = 0.90 acres
- Total Net Area = 12.02 acres
- Total Proposed Lots = 68
  
- $68du/12.02ac = 5.74du/ac$
- $68du/13.13ac = 5.18du/ac$  without subtracting Park or Stormwater areas

This satisfies the Minimum Density requirement of the zone of 4du/ac.

**Phasing**

This development is proposed in one phase.

**LCMC 18.60 Sign Requirements**

There may be a subdivision entrance sign proposed for this development. There may also be a small sign proposed for the Park within this development. If these signs are desired at a later date,

they will be shown on the Final Landscape Plan and will adhere to the requirements of this chapter of the LCMC.

### **LCMC 18.245 Supplementary Development Standards**

This Single-Family Residential Development will comply with this Chapter with regards to Fences, and Hedges, Solid Waste, Lighting, Noise and Landscaping.

Fencing is proposed around the Stormwater facility. The design will be finalized with the Final Engineering Plans. It is likely that all the individual yards in the development will be fenced. These fences will be addressed at the time of individual building permits and will conform to City Code.

### **LCMC 18.30 Procedures**

This application for this proposal will be processed using the Type III process. A pre-application conference was held for this proposal on February 2nd, 2022. This application has been prepared utilizing the feedback from the pre-application conference and it is understood that the application will be checked for completeness and that the final decision on the application will be made by a Hearings Examiner at a public hearing.

### **LCMC 18.147 Parks and Open Space**

A park is required in the LDR zone for any development of more than 40 residential units. This development is providing a 0.25 acre park near the southeast portion of the site. This park will have public road frontage and will include the required two (2) benches, one (1) picnic table, playground equipment, trash receptacles, pathway and serve as Open Space and preservation of the Oregon White Oak tree that is present. There will be a public access easement over the entire park as it is impractical to provide public ROW fronting 40% of the park boundary.

Please see the Conceptual Landscape Plan included in the Application Plan Set. The actual park design will be finalized with the final Landscape Plan.

### **LCMC 18.210 Subdivisions**

This proposed subdivision is subject to review under this chapter of the La Center Municipal Code. Through the Application materials submitted for Preliminary Subdivision approval, the Applicant has shown compliance with the Approval Criteria as outlined in this Chapter.

### **RCW 58.17 (Platting)**

Under the provisions of RCW 58.17.110, the legislative body must find that the proposed subdivision is in the public interest and that adequate public services can be provided. The following findings address this requirement.

- This project implements existing Comprehensive Plan designations and zoning.
- This project can be adequately served by emergency services. Fire flow will be adequate to serve the site. Fire hydrants will be installed as required by the Fire Marshal.
- The applicant proposes to extend public water to the site. Clark Public Utilities has completed a utility review and indicates that water service is available to the site.
- The applicant proposes to extend public sewer to the site. The City of La Center indicates that sewer service is available to the site.
- This project manages stormwater runoff from the site. A preliminary stormwater design has been prepared and included in this application.
- Improvements will be constructed in compliance with City of La Center development regulations.



- This project will generate park, school and traffic impact fees to offset impacts.
- This project will contribute to an increased tax base.
- This proposed land division will promote the general welfare of City of La Center by complying with all applicable statutes, regulations and ordinances.

### **LCMC 18.280 Off-Street Parking Regulations**

Two (2) off-street parking spaces per residence are required by the LCMC. It is anticipated that most of the new homes will have four (4) off-street parking spaces per new residence, 2 in a garage and 2 driveway spaces. There are no additional off-street parking areas proposed for this development.

### **LCMC 18.282 Outdoor Lighting**

Street lights are proposed within the development. A final Street Lighting Plan will be prepared by an electrical engineer and approved through Clark Public Utilities as part of the final engineering plans.

It is possible that there will be exterior lighting within the development on individual homes and lots. All lighting will be shielded and placed per this chapter.

### **LCMC 18.310 Environmental Policy**

A SEPA Checklist is required for this proposal and is included with this application

### **LCMC 18.320 Stormwater and Erosion Control**

Stormwater facilities have been designed to the City of La Center and State of Washington Standards. Erosion Control practices will be in-place and functioning prior to construction activities. NW Consilio LLC has prepared Preliminary Engineering Plans for the project. Please see their plans included with this application for specific details.

### **LCMC 18.340 Native Plant List**

All street trees and any other required landscaping will conform to the City's list of allowed, preferred, and prohibited plant species.

### **LCMC 18.350 Tree Protection**

There are very few trees on the property. There is one Oregon White Oak tree that will be preserved and protected in the Open Space/Park Tract, and the remaining trees will be removed to accommodate grading and construction of the proposed infrastructure. A permit for tree removal will be obtained prior to the removal of any other trees during site development.

There are 5 fir trees along Lockwood Creek Road ranging from 13" to 17" diameter. There are also 15 cottonwood trees/cottonwood clumps in the northern center of the site, near where the home used to be located. These trees/clumps range in size from 10" to 12" diameter with one cottonwood tree having a diameter of 25". Currently, these trees are generally in good health but are all in conflict with the improvements planned and required of the proposed development

Below is a discussion on the approval criteria for a tree removal permit as outlined in LCMC 18.350.080

*(1) Removal of the tree will not have a significant negative impact on erosion, soil stability, flow of surface waters, protection of adjacent trees, or existing windbreaks;*

Almost the entire site will be graded for the installation of roads, utilities and future homes. The removal of the trees on site will be part of the grading that will be covered in an erosion control plan and geotechnical oversight throughout the development process. Surface waters are proposed to be directed into an approved stormwater facility for quantity and quality control. The removal of these trees will not affect adjacent trees or existing windbreaks.

*(2) Removal of the tree is not for the sole purpose of providing or enhancing views;*

The removal of these trees is for the sole purpose of constructing the proposed improvements

*(3) The tree is proposed for removal for landscaping purposes or in order to construct development approved or allowed pursuant to the La Center Municipal Code or other applicable development regulations. The city planner may require the building footprint of the development to be staked to allow for accurate verification of the permit application; and*

The proposed tree removal is in order to construct the proposed development

*(4) Removal of the tree will not have a significant negative impact on the character, aesthetics, or property values of the neighborhood. The city may grant an exception to this criterion when alternatives to the tree removal have been considered and no reasonable alternative exists to allow the property to be used as permitted in the zone. In making this determination, the city may consider alternative site plans or placement of structures or alternate landscaping designs that would lessen the impact on trees, so long as the alternatives continue to comply with other provisions of the La Center Municipal Code.*

The clumps of cottonwood trees are not providing much aesthetically, and when the firs are removed, the improvements to Lockwood Creek Road will provide additional safety and sight distance. Property values are not expected to be affected.

*(5) The city shall require the applicant to mitigate for the removal of each tree pursuant to LCMC [18.350.050](#). Such mitigation requirements shall be a condition of approval of the permit.*

As mitigation for the removal of the trees, the applicant is proposing to plant 109 street trees throughout the development. Please see the Landscaping Plan included with this application for specific details.

### **LCMC 18.360 Archaeological Resource Protection**

According to the Clark County Developer's GIS Packet the property is in an area of high and moderate-high archaeological predictive. An Archaeological Predetermination has been performed on the property and no artifacts were discovered. A recommendation of no further study needed has been recommended and the report has been sent to DAHP.

### **LCMC 18.300 Critical Areas**

A Critical Areas Letter Report for this property has been prepared by Environmental Technologies Consultants (ETC). Their report details wetlands present at the bottom of a man-made ditch along the driveway, and an Oregon White Oak tree. Please see ETC's letter report included with this application for specific information.

As mentioned, these wetlands are at the bottom of a shallow man-made ditch that was created to collect storm runoff from the driveway that provides access to and through the site. The applicant is not surprised that there are wet conditions in a ditch that was utilized for capturing storm runoff and believes that these wetlands were created through farm engineered stormwater collection. It is likely that the newly engineered and constructed stormwater facilities will display similar characteristics in the future. The applicant also believes that re-engineering the current stormwater system to capture the runoff from the new road configuration and future homes is no different from the farm engineering runoff solution, other than the newly engineered stormwater facilities will provide a much greater ability to treat and detain the runoff and provide clean and measured discharges. The Applicant's proposal is to redesign the current access and stormwater collection to reflect what is shown on the Preliminary Engineering Plans and Preliminary Subdivision Plat.

There is an Oregon White Oak tree on the property that will be retained, isolated and protected in Park Tract 'B'. Measures will be taken, including construction fencing, to make sure that no grading or construction activities will occur within the dripline of this oak tree.

### **LCMC 18.260 Variances**

#### **Variance Request to Lot Width**

The Applicant is requesting a Variance to the Lot Width standard of 60', as shown in Table 18.130.080 – Lot Coverage and Dimensions, for 10 of the proposed lots.

This request includes Lots 55, 56, 57, 58, 59, 64, 65, 66, 67, and 68. These lots have a proposed width reduction of approximately 7.0%, though the widths all vary slightly.

Below is a discussion outlining how this request can comply with the approval criteria for Variance Requests per LCMC18.260

*Unusual circumstances or conditions, such as size, shape or topography of a site, or the location of an existing legal development apply to the property and/or the intended use that do not generally apply to other properties in the vicinity or zone. An unusual circumstance could also include another obligation under a different municipal code section or a state or federal requirement;*

The north boundary of this parcel is the Right-of-Way of Lockwood Creek Road, and it angles in a southeasterly direction from the west boundary. The south boundary of this site angles to the northeast from the west boundary. These two trajectories essentially create a

triangular effect from the parallel west and east boundaries. The triangular aspects can be avoided for most of the proposed lots in the proposed development.

The overall dimensions of the property don't perfectly allow for a standard 60'x125' or 75'x100' lot to meet the 7,500sf minimum lot size of the zone throughout the plat. Ultimately, the 60'x125' lot template worked much better for the efficiency of road patterns but short-changed the north/south direction and left spare change on the east/west direction. This resulted in a slightly more narrow and deeper proposal for lots 55-59 and 64-68.

The lots along the southern boundary of the plat lose depth as the angular south line progresses to the east. There is very little available room to take depth from these lots before we run into the minimum lot depth on them. There is also no room to spare on the lots along Lockwood Creek Road on the north boundary as the depth of those lots is needed to account for grading and the topographic differences between Lockwood Creek Road and the property, which is significantly lower in elevation.

The Applicant's efforts to transition from the north and south areas of the proposal have minimized irregularly shaped lots and maximized uniformity in the bulk of the plat. This variance request helps to keep the plat design uniform and efficient where the area for lots is available, but the required dimensions are not.

*The unusual circumstance cannot be a result of actions taken by the applicant;*

The property dimensions were not determined by the applicant and the slight deviation to the standards were the Applicant's best efforts to efficiently comply with Code.

*The variance request is necessary for the preservation of a substantial property right of the applicant which is possessed by the owners of other properties in the vicinity or zone;*

This request is based on the Applicant's efforts to efficiently provide lots that meet the minimum lot size of 7,500sf. All property owners in the residential zones have the right to subdivide and meet the minimum lot size and maximize density, although the Applicant is not proposing to maximize density.

*The variance request is the least necessary to relieve the unusual circumstances or conditions identified in subsection (1) of this section;*

The Applicant believes that this request least necessary to address the unique shape and dimensions of the property. There is enough area within the proposed lots to have 2 additional lots, but there would be many more irregular lots to achieve that. The proposed lots are as near the standard as the Applicant could achieve while still providing roadways, park space and stormwater facilities

*Any impacts resulting from the variance are mitigated to the extent practical; and*

There are no adverse impacts anticipated with this request, and the overall design to ensures uniformity within the neighborhood.

*The granting of the variance will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity and zone in which the property is situated.*

The granting of this variance request will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity as it will be providing homes similar to what is built in the area, on proposed lots that conform to the minimum lot size of 7,500sf.

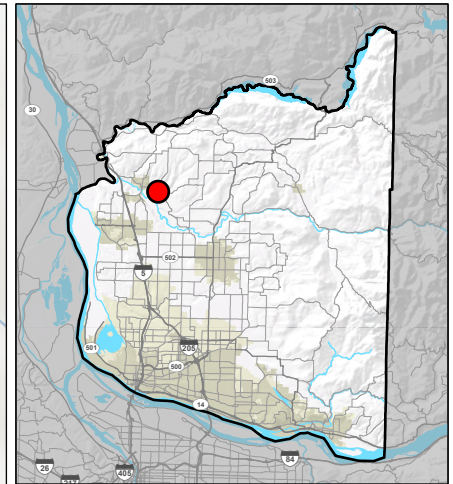
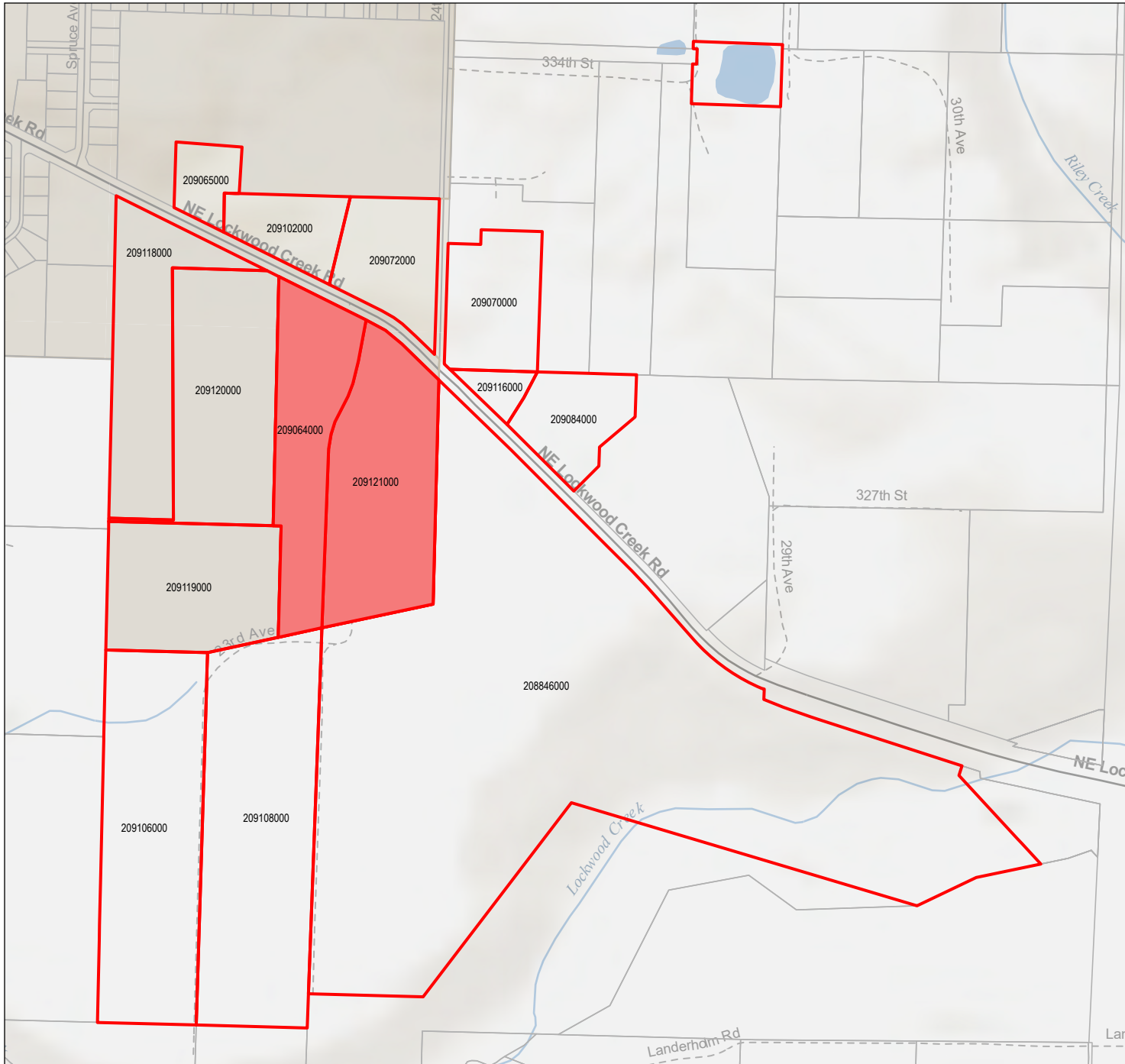
### **LCMC 3.35 Impact Fees**

All newly constructed homes will be required to pay school, park and transportation impact fees at the time of building permit issuance. These fees are collected to ensure that adequate facilities are available to serve new growth and development, promote orderly growth and development by requiring that new development pay a proportionate share of the cost of new facilities, and ensure that impact fees are imposed through established procedures and criteria so that specific developments do not pay arbitrary fees or duplicate fees for the same impact.

### **Summary**

The development of this site into 68 single-family residential lots will meet the proposed density and development goals for this site. The development will extend roads and public utilities to the individual lots, will provide improved emergency vehicle access to the area, will provide for adequate fire protection, and will not restrict the future development of adjacent parcels. The full build-out of this development will provide housing consistent with that planned for the area and will not encourage urban sprawl.

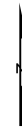
# Exhibit A.6



**PID(s): 209121000,  
209064000,  
300-Foot Buffer**

**KEY**

- Subject Property
- Buffer Selection
- Parcels



*NOTE: Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.*



| Owner Name                              | Mailing Address                                |
|---|--|
| FOSTER GREGORY PAUL & FOSTER MARYANN E  | 17101 NE STONEY MEADOW DR,VANCOUVER,WA, 98682  |
| GRAUER-STEWART CICELY                   | 2414 NE LOCKWOOD CREEK RD, LA CENTER,WA, 98629 |
| GRAVITATE CAPITAL LLC                   | 13563 NW FULLER LN, PORTLAND, OR, 97229        |
| HONL LISA R & HONL MICHAEL G TRUSTEES   | PO BOX 733, LA CENTER,WA, 98629                |
| HORNSBY THOMAS O                        | PO BOX 854, LACENTER,WA, 98629                 |
| LACENTER SCHOOL DIST #101               | PO BOX 1840, LACENTER,WA, 98629                |
| MARUGG JOHN M & MARUGG MICHAEL          | 33006 NE 24TH AVE, LA CENTER,WA, 98629         |
| MCDONALD JANINE                         | 32409 NE 23RD AVE, LACENTER,WA, 98629          |
| STUMPER GARY L & STUMPER JANICE TRUSTEE | 2514 NE LOCKWOOD CREEK RD, LACENTER,WA, 98629  |
| WEIL RICK & WEIL ROBIN L                | PO BOX 1808, LACENTER,WA, 98629                |

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**Number of Pages** 1  
**Date Created** 5/6/2022  
**Employee** *Bob Pool*  
**Employee Name** Bob Pool



HORNSBY THOMAS O  
PO BOX 854  
LACENTER, WA 98629

MARUGG JOHN M & MARUGG  
MICHAEL  
33006 NE 24TH AVE  
LA CENTER, WA 98629

FOSTER GREGORY PAUL & FOSTER  
MARYANN E  
17101 NE STONEY MEADOW DR  
VANCOUVER, WA 98682

WEIL RICK & WEIL ROBIN L  
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LACENTER, WA 98629

GRAVITATE CAPITAL LLC  
13563 NW FULLER LN  
PORTLAND, OR 97229

# Exhibit A.7

# SEPA ENVIRONMENTAL CHECKLIST

## ***Purpose of checklist:***

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

## ***Instructions for applicants:***

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

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 help 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.

## ***Instructions for Lead Agencies:***

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

## ***Use of checklist for nonproject proposals:*** [\[help\]](#)

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

## **A. Background** [\[help\]](#)

1. Name of proposed project, if applicable: [\[help\]](#)

Asa's View Subdivision

2. Name of applicant: [\[help\]](#)

Troy Johns

3. Address and phone number of applicant and contact person: [\[help\]](#)

Troy Johns  
1004 W. 13th Street STE 240  
Vancouver WA 98660  
(360) 600-4425

4. Date checklist prepared: [\[help\]](#)

March 15, 2022

5. Agency requesting checklist: [\[help\]](#)

La Center WA

6. Proposed timing or schedule (including phasing, if applicable): [\[help\]](#)

Full buildout is anticipated by 2023

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [\[help\]](#)

Not at this time

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [\[help\]](#)

There has been a Critical Areas Report for this proposal

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. [\[help\]](#)

None known

10. List any government approvals or permits that will be needed for your proposal, if known. [\[help\]](#)

- Preliminary Subdivision
- Preliminary Engineering
- Sewer Review
- Water Review
- Final Engineering and Construction Plans
- Final health Department Review
- Final Plat

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. (Lead agencies may modify this form to include additional specific information on project description.) [\[help\]](#)

Construct a 68 lot subdivision on  $\approx$  16.46 acres for single-family detached housing. Public roads, sewer and water will be extended to the individual residential lots

12. Location of the proposal. Give sufficient information for 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 applications related to this checklist. [\[help\]](#)

Located at 2313 NE Lockwood Creek Road in La Center WA. Parcel #s 209064000 & 209121000, in a portion of Section 02, T4N, R1E WM

## **B. ENVIRONMENTAL ELEMENTS** [\[help\]](#)

### **1. Earth** [\[help\]](#)

a. General description of the site: [\[help\]](#)

(circle one): **Flat**, rolling, hilly, steep slopes, mountainous, **other- gently sloping to southwest**

b. What is the steepest slope on the site (approximate percent slope)? [\[help\]](#)

The steepest slopes at the Site are from Lockwood Creek Road

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 agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [\[help\]](#)

Soils on-site consist of Gee Silt Loam 0-8% slopes and Odne Silt Loam 0-5% slopes

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [\[help\]](#)

No

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [\[help\]](#)

Grading will be for construction as needed to install utilities, build roads, provide building sites and construct the stormwater facility. It is anticipated that up to 50,000 cy of grading will occur.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [\[help\]](#)

Yes. Standard erosion control measures will be followed during all phases of construction on this site.

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

Approximately 50%

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [\[help\]](#)

Follow standard erosion control measures during site development.

## 2. Air [\[help\]](#)

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [\[help\]](#)

Construction equipment emissions and dust on the short term. Long term emissions would be produced by automobile and normal household activities.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [\[help\]](#)

None known

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [\[help\]](#)

NONE

## 3. Water [\[help\]](#)

a. Surface Water:

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. [\[help\]](#)

No. However, there is a man-made farm ditch that runs through the property along the driveway toward the southern boundary of the property.

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. [\[help\]](#)

N/A. However, the man-made ditch will be filled and stormwater will be directed into a facility for treatment and detention

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

The man-made ditches will be filled and stormwater will be directed into a facility for treatment and detention

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

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [\[help\]](#)

No

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

No

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [\[help\]](#)

No, water will be provided from a public source

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [\[help\]](#)

NONE

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) 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. [\[help\]](#)

There will be stormwater run-off produced from roadways, sidewalks, driveways, and buildings. That runoff will contain material washed from those surfaces.

2) Could waste materials enter ground or surface waters? If so, generally describe. [\[help\]](#)

No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [\[help\]](#)

No. Stormwater on-site will be directed to the approved system for quantity and quality control.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [\[help\]](#)

The design and approval of a stormwater system and the use of approved erosion control measures will protect the surface and groundwater systems in this area.

#### 4. Plants [\[help\]](#)

- a. Check the types of vegetation found on the site: [\[help\]](#)

deciduous tree: alder, maple, aspen, other  
 evergreen tree: fir, cedar, pine, other  
 shrubs  
 grass  
 pasture  
 crop or grain  
 Orchards, vineyards or other permanent crops.  
 wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other  
 water plants: water lily, eelgrass, milfoil, other  
 other types of vegetation

- b. What kind and amount of vegetation will be removed or altered? [\[help\]](#)

Most of the vegetation at the site will be removed for grading, extension of utilities, construction of roadways and parking.

- c. List threatened and endangered species known to be on or near the site. [\[help\]](#)

None known

- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [\[help\]](#)

Landscaping will be done by the individual homeowners as they prefer. This will provide diversity in the area for song birds etc.

- e. List all noxious weeds and invasive species known to be on or near the site. [\[help\]](#)

None known

#### 5. Animals [\[help\]](#)

- a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [\[help\]](#)

Examples include:

**birds:** hawk, heron, eagle, songbirds, other:  
Local birds are observed on the site and in the area

**mammals:** deer, bear, elk, beaver, other:



There are small mammals, such as mice and rabbits located on and near the site. This site is also in an area where larger mammals, such as deer, coyotes, and mammals indigenous to the Cowlitz County area are sometimes located.

fish: bass, salmon, trout, herring, shellfish, other \_\_\_\_\_  
None

b. List any threatened and endangered species known to be on or near the site. [\[help\]](#)

None known

c. Is the site part of a migration route? If so, explain. [\[help\]](#)

no

d. Proposed measures to preserve or enhance wildlife, if any: [\[help\]](#)

None.

e. List any invasive animal species known to be on or near the site. [\[help\]](#)

None known

## 6. Energy and Natural Resources [\[help\]](#)

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [\[help\]](#)

The development of housing on this site will result in the use of electricity for lighting and heating. It is possible that solar, natural gas, or other fuels may be used by future home owners. There are no house plans available at this time.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [\[help\]](#)

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: [\[help\]](#)

No plans for the buildings are available at this time. All future construction will be in conformance with the City of La Center Building Codes and the State of Washington Energy Codes.

## 7. Environmental Health [\[help\]](#)

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. [\[help\]](#)

No

Describe any known or possible contamination at the site from present or past uses. [\[help\]](#)

None known

1) Describe existing hazardous chemicals/conditions that might affect project development

and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [\[help\]](#)

None known

- 2) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [\[help\]](#)

None

- 3) Describe special emergency services that might be required. [\[help\]](#)

None

- 4) Proposed measures to reduce or control environmental health hazards, if any: [\[help\]](#)

None

b. Noise [\[help\]](#)

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

There is existing traffic and neighborhood noise in the area.

- 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. [\[help\]](#)

There will be construction equipment noise during the short term, while the project is being constructed. Noise associated with an residential development will be created upon full build-out of this site.

- 3) Proposed measures to reduce or control noise impacts, if any: [\[help\]](#)

Construction on the site will take place during normal working hours as allowed by the City of La Center

**8. Land and Shoreline Use** [\[help\]](#)

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [\[help\]](#)

The current use of the site is vacant land and agricultural. The properties to the south and east are rural/residential. There is a school adjacent to the west of the site. There should be no impacts to the surrounding properties other than additional traffic on the adjacent road network

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [\[help\]](#)

not known, but the site has been agricultural in the past

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [\[help\]](#)

No.

c. Describe any structures on the site. [\[help\]](#)

none, the structures that were present at the site have been removed

d. Will any structures be demolished? If so, what? [\[help\]](#)

NA

e. What is the current zoning classification of the site? [\[help\]](#)

LDR-7.5

f. What is the current comprehensive plan designation of the site? [\[help\]](#)

UL

g. If applicable, what is the current shoreline master program designation of the site? [\[help\]](#)

NA

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [\[help\]](#)

No, however there is a man-made agricultural ditch along the driveway at the site

i. Approximately how many people would reside or work in the completed project? [\[help\]](#)

There are 68 lots proposed for this development. Therefore, at approximately 2.53 persons per household (per 2020 US Census) there would be 172 people residing within this development at the time of full build-out.

j. Approximately how many people would the completed project displace? [\[help\]](#)

none

k. Proposed measures to avoid or reduce displacement impacts, if any: [\[help\]](#)

None

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [\[help\]](#)

Meet the requirements that are agreed upon between the

Developer of this site and the City of La Center and the current Washington State and City of La Center Codes.

- m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [\[help\]](#)

None

**9. Housing** [\[help\]](#)

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [\[help\]](#)

There will be 68 residential lots provided for medium income housing

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [\[help\]](#)

none

- c. Proposed measures to reduce or control housing impacts, if any: [\[help\]](#)

Meet zoning and comprehensive plan goals for the site by meeting minimum and maximum density requirements, providing public utilities and improving public roadways. This site will provide 68 single-family lots. Each new home constructed will be required to pay school, traffic, and park impact fees prior to issuance of building permits.

**10. Aesthetics** [\[help\]](#)

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [\[help\]](#)

There are no plans for structures at this time, however the current Code restricts a building's height to 35'.

- b. What views in the immediate vicinity would be altered or obstructed? [\[help\]](#)

None

- b. Proposed measures to reduce or control aesthetic impacts, if any: [\[help\]](#)

The proposed development is in compliance with the zoning and comprehensive plan goals for the area and will provide lots for construction of single-family detached residential housing units similar to those in the area or those that can be developed on adjacent parcels in the future as allowed by City of Ridgefield Code

**11. Light and Glare** [\[help\]](#)

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [\[help\]](#)

When fully developed there may be light produced from building and signs.

- b. Could light or glare from the finished project be a safety hazard or interfere with views? [\[help\]](#)  
The proposed level of lighting produced by full build-out of this development is consistent with that produced within the MF zone.
- c. What existing off-site sources of light or glare may affect your proposal? [\[help\]](#)  
None known
- d. Proposed measures to reduce or control light and glare impacts, if any: [\[help\]](#)  
All exterior lighting will conform to the County's standards

## 12. Recreation [\[help\]](#)

- a. What designated and informal recreational opportunities are in the immediate vicinity? [\[help\]](#)  
There are many recreational opportunities in the vicinity including the East Fork Lewis River and several parks.
- b. Would the proposed project displace any existing recreational uses? If so, describe. [\[help\]](#)  
No. This proposal will enhance the recreational opportunities in the area
- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [\[help\]](#)  
This development will enhance the existing recreational uses by providing an open space park and connecting trail. Each of the new homes will pay park impact fees at the time of building permit issuance. Those fees will be used to offset the impact to parks made by new homeowners within this development. Impact fees are used to develop existing park sites or purchase additional park lands. The increased property tax collected from the future developed lots will also help offset impacts created by this development on recreation areas. Each of the proposed lots will have small private yard areas.

## 13. Historic and cultural preservation [\[help\]](#)

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe. [\[help\]](#)  
no
- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [\[help\]](#)  
No. An archaeological predetermination study was conducted and no further study was recommended.
- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [\[help\]](#)

An archaeological predetermination study was conducted and no further study was recommended.

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [\[help\]](#)

If any historic or archaeological materials are uncovered during construction on this site, the appropriate agencies will be contacted and construction will be stopped until further investigation can be made.

**14. Transportation** [\[help\]](#)

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [\[help\]](#)

The vehicle access to this site is currently from NE Lockwood Creek Road.

This proposal would construct new roadways and connection with NE Lockwood Creek Road

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [\[help\]](#)

The site is not served with public transportation.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [\[help\]](#)

There will be parking provided on each lot with future garages and driveways.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [\[help\]](#)

Yes. There will be improvements to NE Lockwood Creek Road and the interior access roads.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [\[help\]](#)

No

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [\[help\]](#)

This development will generate approximately 650 new daily trips including 68 AM Peak Hour trips, and 68 PM Peak Hour trips.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [\[help\]](#)

It is not anticipated that this proposal would interfere with or be affected by the movement of agricultural products.

- h. Proposed measures to reduce or control transportation impacts, if any: [\[help\]](#)

Dedication and improvement to public road standards of interior access roads and NE Lockwood Creek Road, payment of traffic impact fees at the time of building permit issuance, and the construction of interior streets and parking to ADA standards will help reduce and control traffic impacts from this development.

**15. Public Services** [\[help\]](#)

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

Yes. The completion of this development will increase the need for public services in the area.

- b. Proposed measures to reduce or control direct impacts on public services, if any. [\[help\]](#)

The proposed development provides for extension of public sanitary sewer and public water service to each of the new lots, and the abandonment of any exiting septic systems and/or wells located on the site. The development will improve existing public roadways and construct new public roads for circulation. This project will install new fire hydrants as reviewed and approved by the District Fire Chief to provide for improved fire protection in the area. The proposed road improvements will provide for emergency vehicle access to each of the lots. The payment of impact fees for traffic, schools and park facilities will aid in offsetting the impact this development has on those public services. This development will increase the tax base in the area and thereby contribute funds for public services. The residences of this development will bring in sales tax revenue to the area and the need for new businesses. The proposed development meets the zoning and comprehensive plan goals for the area by providing residential housing lots at the density targeted by those plans.

**16. Utilities** [\[help\]](#)

- a. Circle utilities currently available at the site: [\[help\]](#)

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. [\[help\]](#)

Electricity: Clark Public Utilities

Water: Clark Public Utilities

Telephone: Century Link

Sanitary Sewer: CRWWD

Refuse: Private

**C. Signature** [\[help\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:     *Troy Johns*    

Name of signee \_\_\_\_\_

Position and Agency/Organization \_\_\_\_\_

Date Submitted:     3/17/22



# Exhibit A.8

**TRANSPORTATION IMPACT STUDY**

**FOR**

**ASA'S VIEW SUBDIVISION**

**2313 NE LOCKWOOD CREEK ROAD**

**CITY OF LA CENTER, WASHINGTON**



*2/21/2022*

**PREPARED BY**

**KELLY ENGINEERING**

**February 2022**

# TRANSPORTATION IMPACT STUDY

## Asa's View Subdivision

### City of La Center, Washington

February 21, 2022

Prepared for:

Troy Johns, David Rosenberger  
1004 W. 13<sup>th</sup> St., Ste. 220  
Vancouver, WA 98660

Prepared by:

Kelly Engineering  
1805 NE 94<sup>th</sup> St. No. 19  
Vancouver, WA 98665  
Phone: 360-433-7530  
e-mail: Kellyengineer@comcast.net

#### Table of Contents

Traffic Analysis Report  
Figure 1a - Vicinity Map  
Figure 1b - Aerial Photograph  
Figure 1c - Proposed Development Plan  
Figure 2 - Lane Configurations  
Figures 3a, 3b - Existing Traffic Volumes  
Figures 4a, 4b - Adjusted Existing Traffic Volumes  
Figures 5a, 5b - In-Process Traffic  
Figures 6a, 6b - Year 2025 Traffic Volumes w/o Project  
Figures 7a, 7b - Site Traffic Distribution/Assignment  
Figures 8a, 8b - Year 2025 Traffic Volumes with Project  
Appendix A - Raw Traffic Count Data  
Appendix B - Collision Data  
Appendix C - In-Process Traffic  
Appendix D - Breeze Creek Project  
Appendix E - Level of Service Computer Printouts  
Appendix F - References

# TRANSPORTATION IMPACT STUDY

## ASA'S VIEW SUBDIVISION

February 21, 2022

### INTRODUCTION

A transportation impact study (TIS) for the Asa's View Subdivision was conducted to determine the potential traffic related impacts of the development to the surrounding roadway system. The development will consist of 69 single family detached homes. The site is located at 2313 NE Lockwood Creek Road (Tax Lots 39 and 102 of Section 2, T4N R1E WM) in La Center, Washington. The zoning designation for the 16.56 acre site is LDR-7.5.

The site consists of one home that is served by a private road/driveway. The home will be demolished. Land uses within the vicinity of the site consist of undeveloped land and single family homes. The La Center Middle School is adjacent to the site and to the west. The La Center Elementary School, Holley Park, La Center Community Library and a post office are located within one mile of the site on NE Lockwood Creek Road. A vicinity map, aerial photograph and proposed development plan are shown in Figures 1a, 1b and 1c.

### *Roadway Characteristics*

The site will have access onto NE Lockwood Creek Road through a public street that will align with NE 24<sup>th</sup> Avenue to the north. NE Lockwood Creek Road along the site frontage is a two lane paved roadway with no shoulders. Double yellow striping is along the centerline of the roadway indicating that passing is prohibited. The posted speed limit is 25 mph. The roadway is classified as a Minor Arterial.

Half street improvements will be constructed along the site frontage of NE Lockwood Creek Road for a plat per the Minor Arterial "A" Standard Detail. The streets within the development will be either a Neighborhood or Local Street Standard per the Engineering Standards depending on the average daily traffic (ADT) of the roadways.

The study area intersections in this report are controlled by stop signs on the minor street approaches and a roundabout at the Pacific Highway/W 4<sup>th</sup> Street intersection. The lane configurations for the intersections are shown in Figure 2.

### ***Traffic Volumes***

The traffic counts in this report were conducted from 7:00 to 9:00 am and 4:00 to 6:00 pm during September 2018, July 2021 and February 2022. The traffic counts were conducted to determine the peak hours. The peak hour at an intersection is the one hour time period when traffic on the adjacent streets are the highest and congestion is most likely to occur. The traffic counts conducted during September 2018 were factored by a rate of 3.9% per year to current year 2022 volumes as based on annual population growth. The existing traffic volumes are shown in Figures 3a and 3b. The adjusted existing traffic volumes are shown in Figures 4a and 4b. The raw traffic count data is included in Appendix A.

### ***Trip Generation/Distribution***

The Asa's View Subdivision will generate approximately 642 new trips per day. A trip is a one directional vehicle movement. 50 trips will occur during the weekday AM peak hour and 67 trips will occur during the PM peak hour, ITE Trip Generation Manual, 10<sup>th</sup> edition. Credits were given for the existing home to be demolished. The trip generation rates are shown in Table 1.

**Table 1**  
**Site Traffic Generation**  
**Asa's View Subdivision**

| Land Use                                       | ITE code | Dwelling Units | Daily Trips | AM Peak Hour Trips | PM Peak Hour Trips |
|--|----------|----------------|-------------|--------------------|--------------------|
| <i>Proposed Single Family Detached Housing</i> | 210      | 69             | 651         | 51 (in-13, out-38) | 68 (in-43, out-25) |
| <i>Existing Single Family Detached Housing</i> | 210      | 1              | 9           | 1 (in-0, out-1)    | 1 (in-1, out-0)    |
| <i>Net New Trips</i>                           |          |                | 642         | 50 (in-13, out-37) | 67 (in-42, out-25) |

The directional distribution of traffic generated by the development was assigned to the study area intersections. The distribution was based on the existing traffic volumes and previous traffic studies conducted in the area. The site traffic distribution and assignment diagrams are shown in Figures 7a and 7b.

### *Year 2025 Traffic Volumes*

The year 2025 traffic volumes included a 3.0 percent per year compounded growth factor over the adjusted existing traffic volumes and in-process traffic. In-process traffic is traffic from developments that have been approved, but are not generating full build out traffic volumes. The in-process traffic was obtained from the City of La Center and is shown in Figures 5a, 5b and Appendix C. The in-process traffic from the La Center Middle School, Heritage Bldg. 'B' and Minit Management sites were added to the existing traffic counts that were conducted prior to 2022. In-process traffic from the Lockwood Meadows Subdivision was added to all of the existing traffic counts. The year 2025 traffic volumes without the project are shown in Figures 6a and 6b. The year 2025 traffic volumes with the project are shown in Figures 8a and 8b.

### *Peak Hour Traffic Operations*

The scope of the transportation impact study was based on discussions with representatives from the City of La Center. Based on the discussions an analysis was conducted at the following intersections during the weekday AM and PM peak hours:

- (1) NE Lockwood Creek Road & NE 24<sup>th</sup> Avenue/site access
- (2) NE Lockwood Creek Road & E Spruce Avenue
- (3) NE Lockwood Creek Road & John Storm Avenue
- (4) NE Lockwood Creek Road & Highland Avenue
- (5) Aspen Avenue & E 4<sup>th</sup> Street
- (6) NW Pacific Hwy. & W 4<sup>th</sup> Street
- (7) NW La Center Road & NW Timmen Road

The study area intersections were analyzed to determine existing, year 2025 without project and year 2025 with project conditions. The assumption was made that the Asa's View Subdivision will be built out and occupied within a three year time period.

The intersection operational analysis was conducted using the procedures in the 2010 Highway Capacity Manual. These procedures describe the operation of an intersection in terms of its level of service (LOS). The LOS criteria ranges from "A", which indicates little, if any, delay to "F", which indicates that vehicles experience very long delays. The LOS criteria with the corresponding delay in seconds per vehicle is shown in Table 2 on page 4. The capacity analysis summary is shown in Table 3a on page 4 and Table 3b on page 5.

**Table 2**  
**Level of Service Criteria**

| Level of Service (LOS)              | A   | B        | C        | D        | E        | F   |
|-------------------------------------|-----|----------|----------|----------|----------|-----|
| <i>Roundabouts</i>                  |     |          |          |          |          |     |
| Control Delay (seconds per vehicle) | ≤10 | >10 - 15 | >15 - 25 | >25 - 35 | >35 - 50 | >50 |
| <i>Unsignalized intersections</i>   |     |          |          |          |          |     |
| Average Delay (seconds per vehicle) | ≤10 | >10 - 15 | >15 - 25 | >25 - 35 | >35 - 50 | >50 |

**Table 3a**  
**Capacity Analysis Summary**

|   | AM Peak Hour |                    | PM Peak Hour |                    |
|---|--------------|--------------------|--------------|--------------------|
|   | LOS          | Delay<br>(sec/veh) | LOS          | Delay<br>(sec/veh) |
| <i>NE Lockwood Creek Road &amp; NE 24<sup>th</sup> Avenue/site access</i> |              |                    |              |                    |
| Existing  | A            | 9.5                | B            | 10.6               |
| Year 2025 w/o Project   | A            | 9.9                | B            | 10.6               |
| Year 2025 with Project  | B            | 11.3               | B            | 10.7               |
| <i>NE Lockwood Creek Road &amp; E Spruce Avenue</i>                       |              |                    |              |                    |
| Existing  | A            | 9.2                | A            | 9.4                |
| Year 2025 w/o Project   | B            | 10.9               | B            | 10.1               |
| Year 2025 with Project  | B            | 11.4               | B            | 10.3               |
| <i>NE lockwood Creek Road &amp; John Storm Avenue</i>                     |              |                    |              |                    |
| Existing  | B            | 10.8               | B            | 11.0               |
| Year 2025 w/o Project   | B            | 14.9               | B            | 12.5               |
| Year 2025 with Project  | C            | 15.7               | B            | 13.2               |
| <i>Highland Avenue &amp; E 4<sup>th</sup> Street</i>                      |              |                    |              |                    |
| Existing  | F            | 83.7               | C            | 20.7               |
| Year 2025 w/o Project   | F            | >83.7              | D            | 26.2               |
| Year 2025 with Project  | F            | >83.7              | D            | 28.6               |
| <i>Aspen Avenue &amp; E 4<sup>th</sup> Street</i>                         |              |                    |              |                    |
| Existing  | C            | 16.7               | B            | 11.5               |
| Year 2025 w/o Project   | C            | 19.3               | B            | 12.7               |
| Year 2025 with Project  | C            | 20.6               | B            | 13.5               |
| <i>NW Pacific Avenue &amp; W 4<sup>th</sup> Street</i>                    |              |                    |              |                    |
| Existing  | A            | 6.4                | A            | 4.0                |
| Year 2025 w/o Project   | A            | 7.6                | A            | 4.4                |
| Year 2025 with Project  | A            | 8.2                | A            | 4.5                |

**Table 3b**  
**Capacity Analysis Summary (cont.)**

|   | AM Peak Hour |                    | PM Peak Hour |                    |
|---|--------------|--------------------|--------------|--------------------|
|   | LOS          | Delay<br>(sec/veh) | LOS          | Delay<br>(sec/veh) |
| <i>NW La Center Road &amp; NW Timmen Road</i> |              |                    |              |                    |
| Existing                                      | B            | 12.4               | C            | 18.4               |
| Year 2025 w/o Project                         | B            | 13.5               | C            | 20.3               |
| Year 2025 with Project                        | B            | 13.8               | C            | 21.4               |

The City of La Center has adopted LOS “E” as the minimum acceptable performance at city intersections for stop controlled intersections. Based on the results of the capacity analysis this LOS will be met with build out of the Asa’s View Subdivision with the exception of the NE Lockwood Creek Road/Highland Avenue intersection. This intersection is operating at LOS “F” during the AM peak hour. The LOS is attributed to vehicles on the northbound approach. The LOS computer printouts are included in Appendix E.

***Pedestrian/Bicycle/Transit Considerations***

Sidewalks will be provided for along the site frontage of Lockwood Creek Road. There are no existing or planned bike lanes. The site is not served by public transit service.

***Sight Distance***

Sight distance was measured at the site access onto Lockwood Creek Road. The measured intersection sight distance was over 300 feet when looking towards the east. Based on the criteria in AASHTO, A Policy on Geometric Design of Highways and Streets, 2011 and the posted speed limit of 25 mph on Lockwood Creek Road the recommended intersection sight distance is 280 feet. Therefore, the sight distance requirement is met. The measured intersection sight distance when looking towards the west was 225 feet and is obstructed by vegetation along the site frontage. The removal of the vegetation would improve the sight lines to over 300 feet meeting the criteria in AASHTO. This will occur with development of the site.



**Turn Lanes**

A left turn lane improves safety and increases the capacity of the roadway by reducing the speed differential between the through and left turning vehicles. Based on the low volume of vehicles entering the site from the east during the AM and PM peak hours a left turn lane is not justified as based on volumes.

**Transportation Improvements**

The Breeze Creek Culvert Replacement and 4<sup>th</sup> Street Widening Project is identified in the City of La Center’s Capital Facilities Plan. Discussions are ongoing regarding improvements at the Highland Avenue/E 4<sup>th</sup> Street intersection. This intersection is operating at LOS “F” during the AM peak hour when school is in session. The main discussions involve installing a traffic signal or roundabout. The project is discussed in Appendix D.

**Traffic Signal Warrant Analysis**

A traffic signal warrant analysis using the tables and charts from the 2009 Manual on Uniform Traffic Control Devices (MUTCD) was conducted at the Highland Avenue/E 4<sup>th</sup> Street intersection. This intersection is operating at LOS “F” under existing conditions during the AM peak hour for vehicles approaching from the south. The signal warrant analysis was based on the year 2025 traffic conditions with project. Based on the traffic signal warrant analysis a traffic signal is not justified. The signal warrant analysis is shown in Table 4.

**Table 4  
Traffic Signal Warrant Analysis  
Highland Avenue & E 4<sup>th</sup> Street, Year 2025 with Project Conditions, AM Peak hour**

| MUTCD<br>Traffic Signal Warrant (1)                     | Required Volumes<br>(Veh./Hr.)  |                 | Projected Volumes<br>(Veh./Hr.) |                 | Warrant<br>Met |
|---|---------------------------------|-----------------|---------------------------------|-----------------|----------------|
|   | Major<br>Street                 | Minor<br>Street | Major<br>Street                 | Minor<br>Street |                |
| 1. Condition A – Minimum Vehicular Volume (3)           | 500                             | 200             | 350 (2)                         | 179 (2)         | NO             |
| 2. Condition B – Interruption of Continuous Traffic (3) | 750                             | 100             | 525 (2)                         | 179 (2)         | NO             |
| 3. Peak Hour  | Figure 4C-3. Warrant 3, (MUTCD) |                 |                                 |                 | NO             |

- (1) Assumption made that two lanes are on minor street approach prior to traffic signal considerations.
- (2) Volumes assumed to be 70% of the AM Peak Hour volumes.
- (3) Warrant met if 1A or 1B is met.

### *Collision Data*

Collision data was obtained from the Washington State Department of Transportation (WSDOT) for the most recent three years of available data. Based on the data only two accidents have been reported at the study area intersections. One accident occurred at the NE Lockwood Creek Road/Spruce Avenue intersection and involved a vehicle making an improper passing maneuver. The other accident was at the NW Pacific Avenue/W 4<sup>th</sup> street intersection and involved a vehicle going in the wrong direction. There were no injuries in either accident. The collision data is included in Appendix B.

## CONCLUSIONS AND RECOMMENDATIONS

The Asa's View Subdivision is anticipated to generate 50 trips during the AM peak hour and 67 trips during the PM peak hour. This is based on a development consisting of 69 single family homes.

All of the study area intersections are operating at acceptable levels with the exception of the Highland Avenue/E 4<sup>th</sup> Street intersection. This intersection is operating at LOS "F" during the AM peak hour for vehicles approaching E 4<sup>th</sup> Street from the south. The failing condition would be mitigated by installing a traffic signal or roundabout. However, mitigating the failing condition is not proposed with the development of the Asa's View Subdivision for several reasons:

1. The failing approach is the northbound approach and the Asa's View Subdivision will add no traffic to this approach.
2. The issue of installing a roundabout or traffic signal has been identified, however funding is not available. The comments in the PBS report as identified in Appendix D stated that a do nothing alternative should be chosen until funds are available.
3. The Capital Facilities Plan suggested that future street connections in the area will alleviate motor vehicle demand in the area and improve the operation of the intersection.
4. A traffic signal is not warranted at the intersection.

Adequate sight distance should be maintained at the site access onto Lockwood Creek Road. Obstructions by vegetation, signs or other objects should not be allowed.

No additional transportation improvements or traffic control devices were identified to accommodate the development.

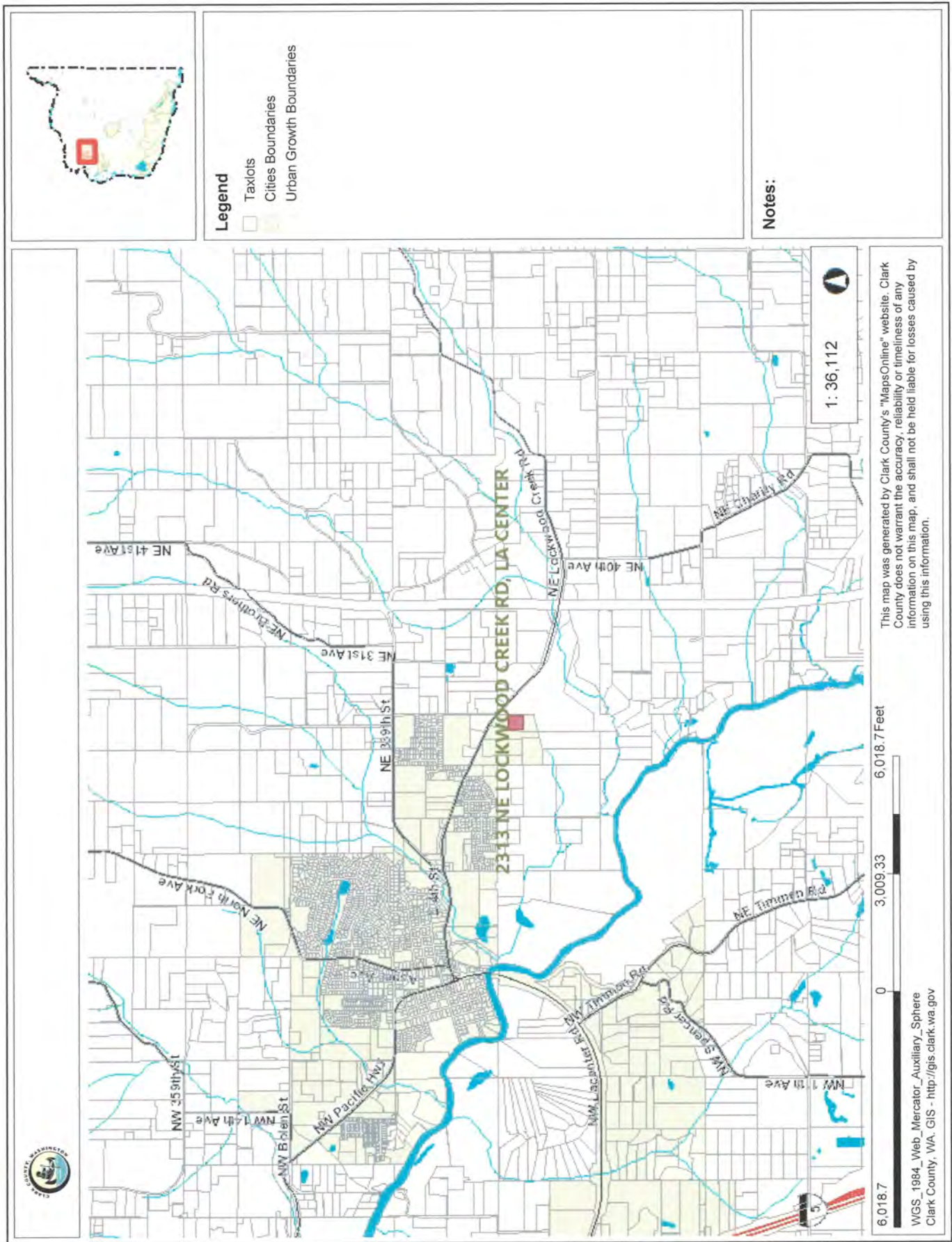


FIGURE 1a



FIGURE 1b

VICINITY MAP  
(NOT TO SCALE)



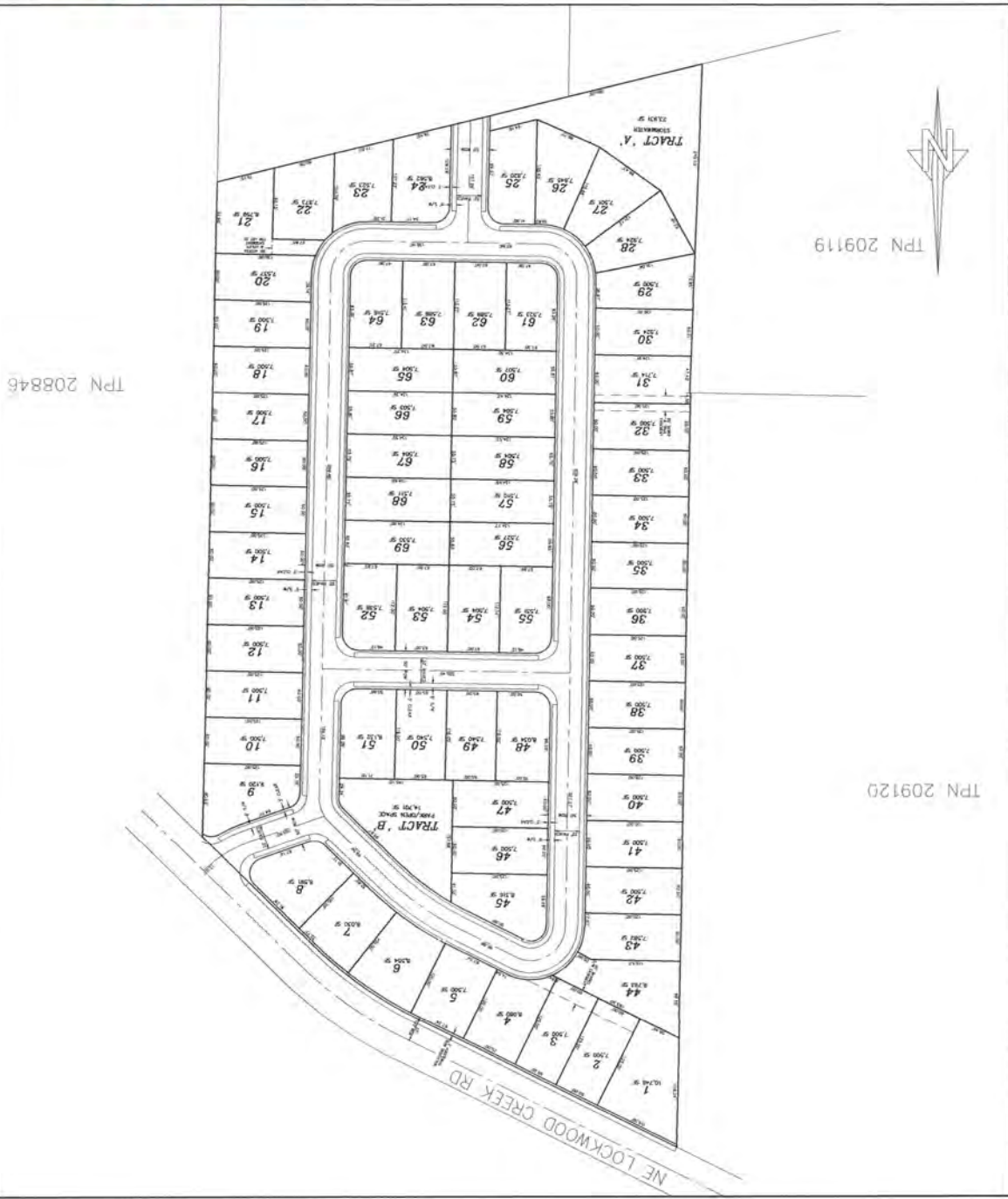
SITE DATA:  
TAX LOT: 6  
OWNER: THOMPSON & THOMPSON  
SITE ADDRESS: 2313 NE LOCKWOOD CREEK ROAD  
APPLICANT: THOMPSON & THOMPSON  
ZONING: LU-7  
COMPREHENSIVE PLAN DESIGNATION: U-1

PROPOSED DEVELOPMENT PLAN:  
**ASA S VIEW**

IN A PORTION OF THE  
SE & NE 1/4 OF SECTION 02, T. 4 N., R. 1 E., W.M.,  
CLARK COUNTY, WASHINGTON



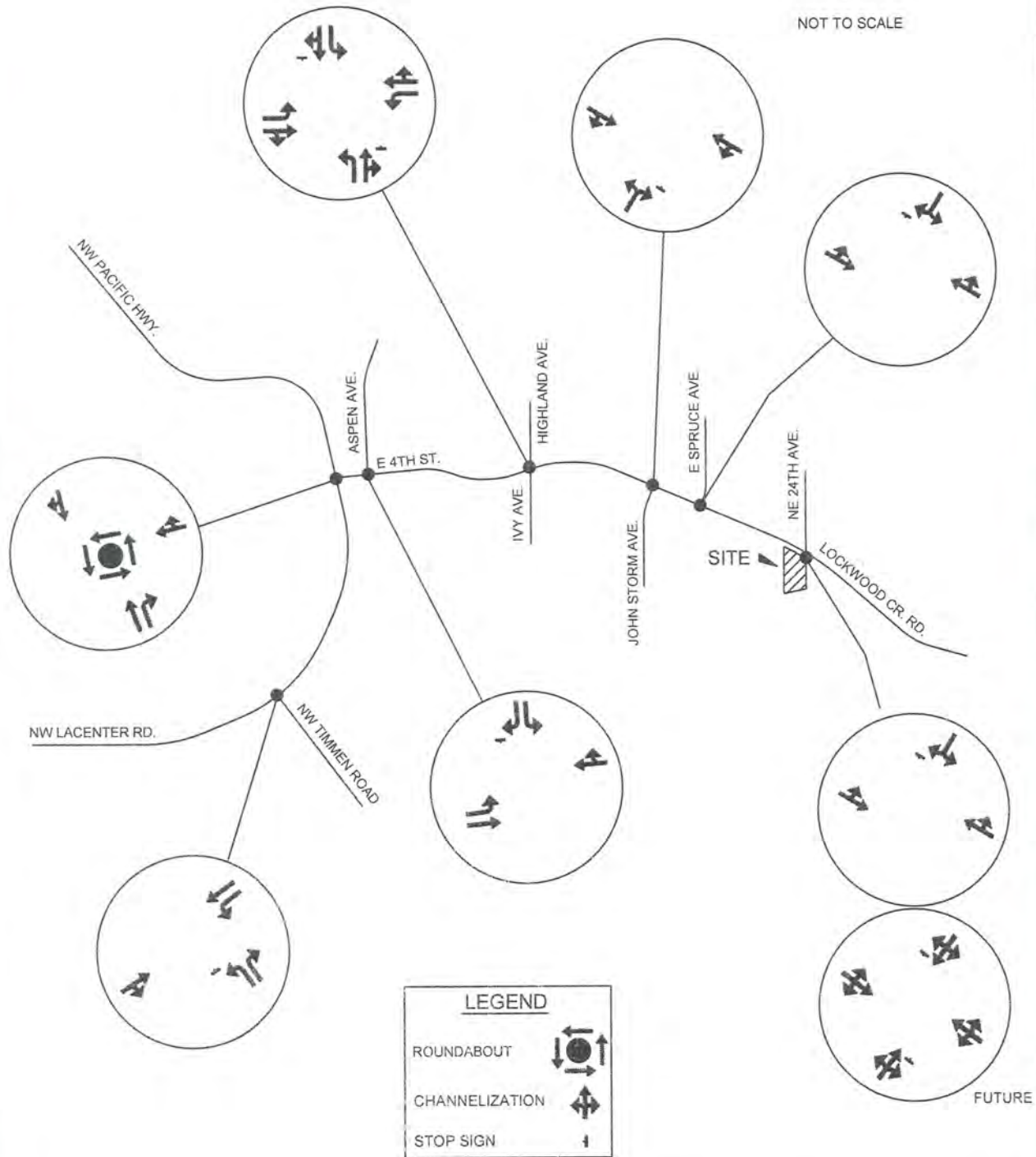
DRAWING DATE: 11-15-23



**FIGURE 1c**



NOT TO SCALE



EXISTING CONDITIONS UNLESS NOTED

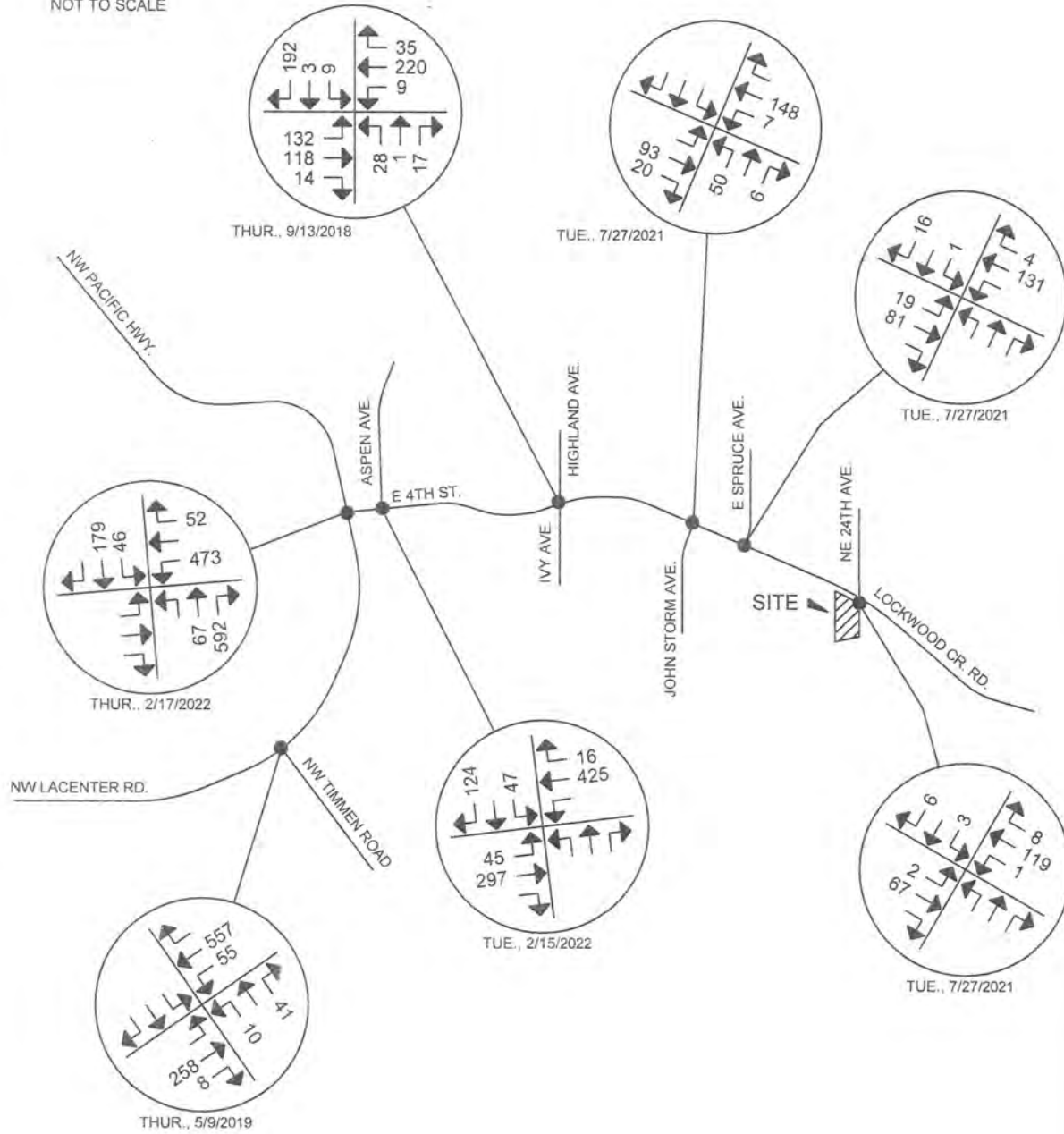
ASA'S VIEW SUBDIVISION

**FIGURE 2**  
**LANE CONFIGURATIONS**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530



NOT TO SCALE



ASA'S VIEW SUBDIVISION

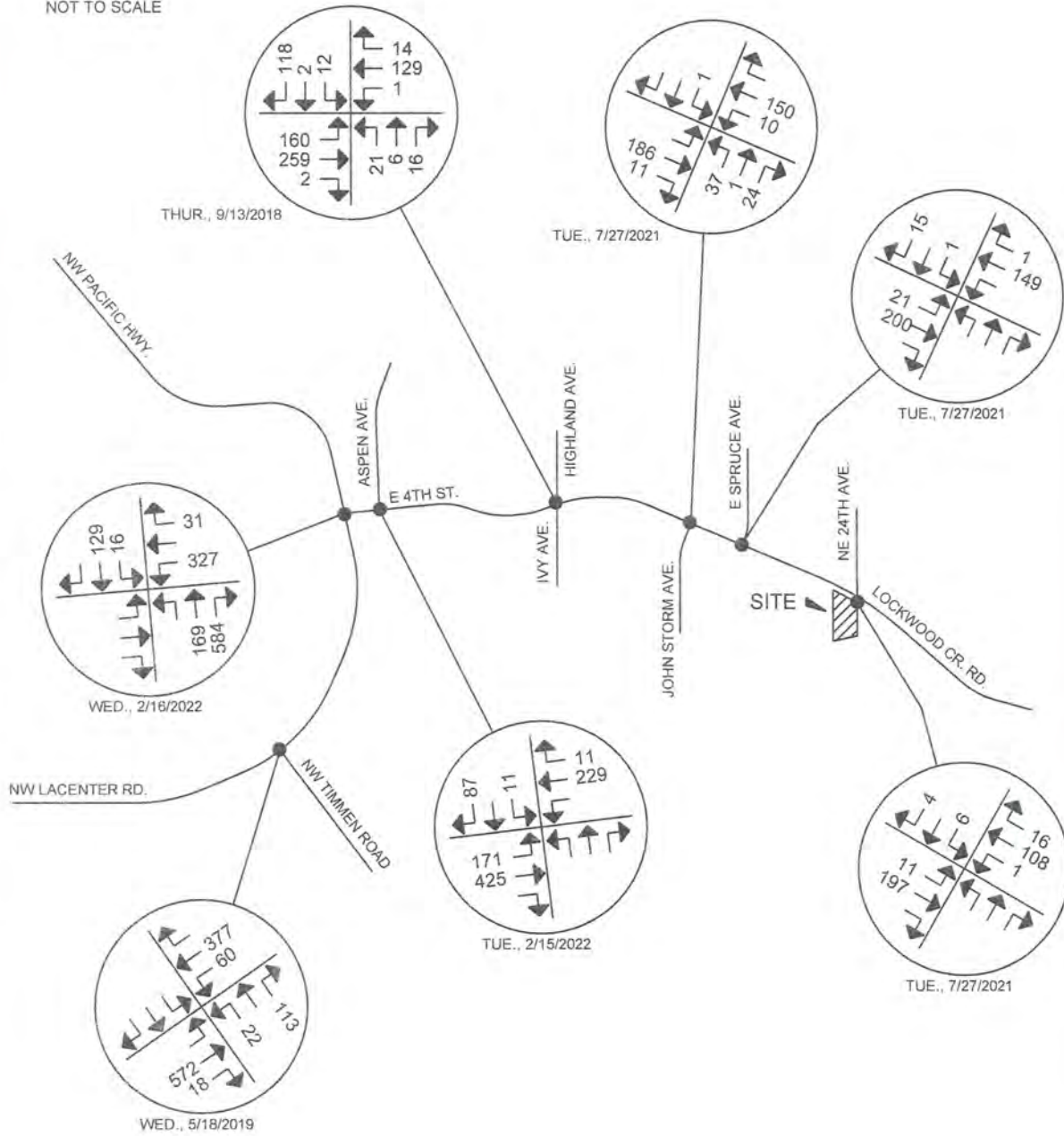
**FIGURE 3a**  
**EXISTING TRAFFIC VOLUMES**  
**AM PEAK HOUR**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530





NOT TO SCALE



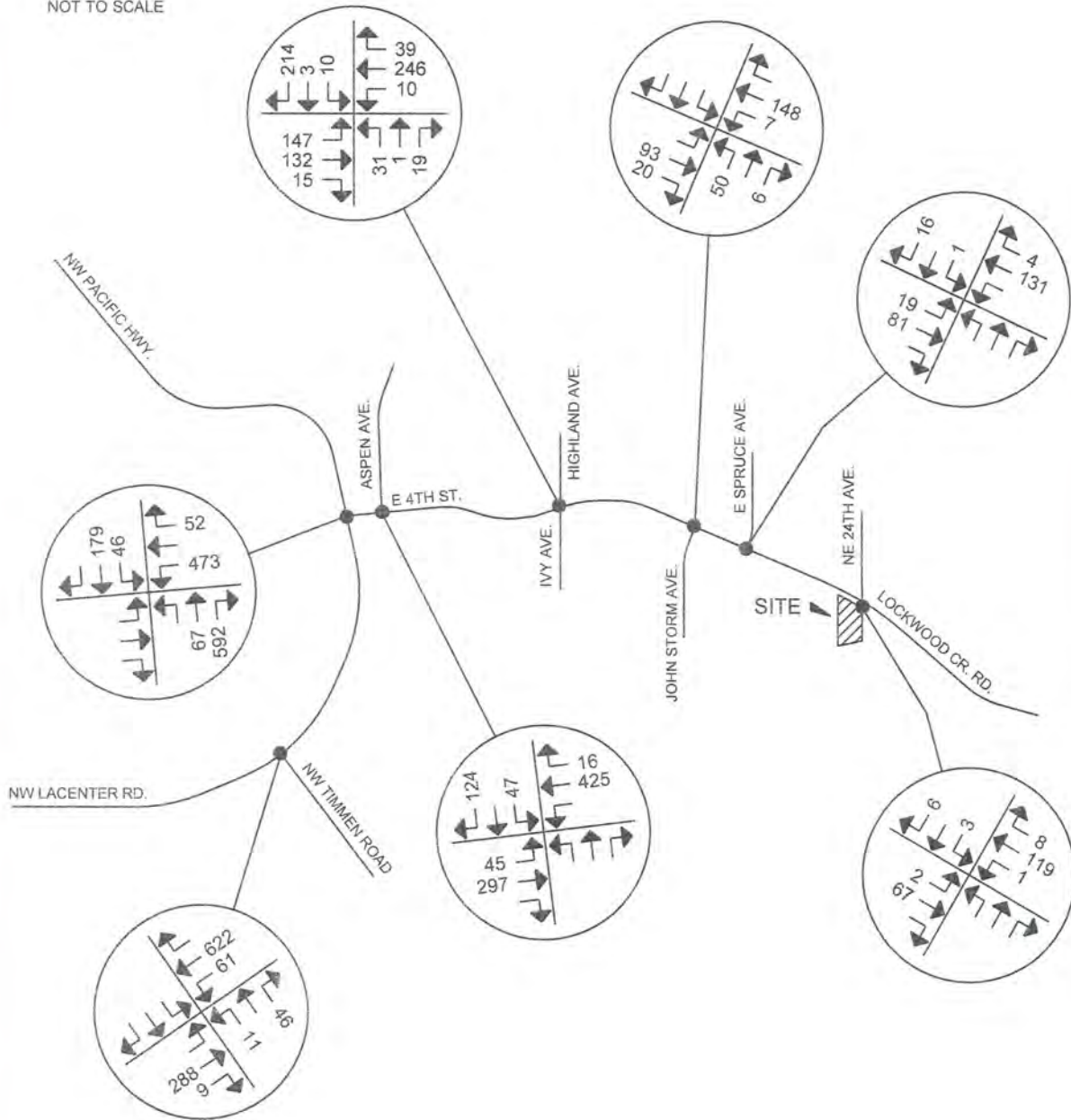
ASA'S VIEW SUBDIVISION

**FIGURE 3b**  
**EXISTING TRAFFIC VOLUMES**  
**PM PEAK HOUR**

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NOT TO SCALE



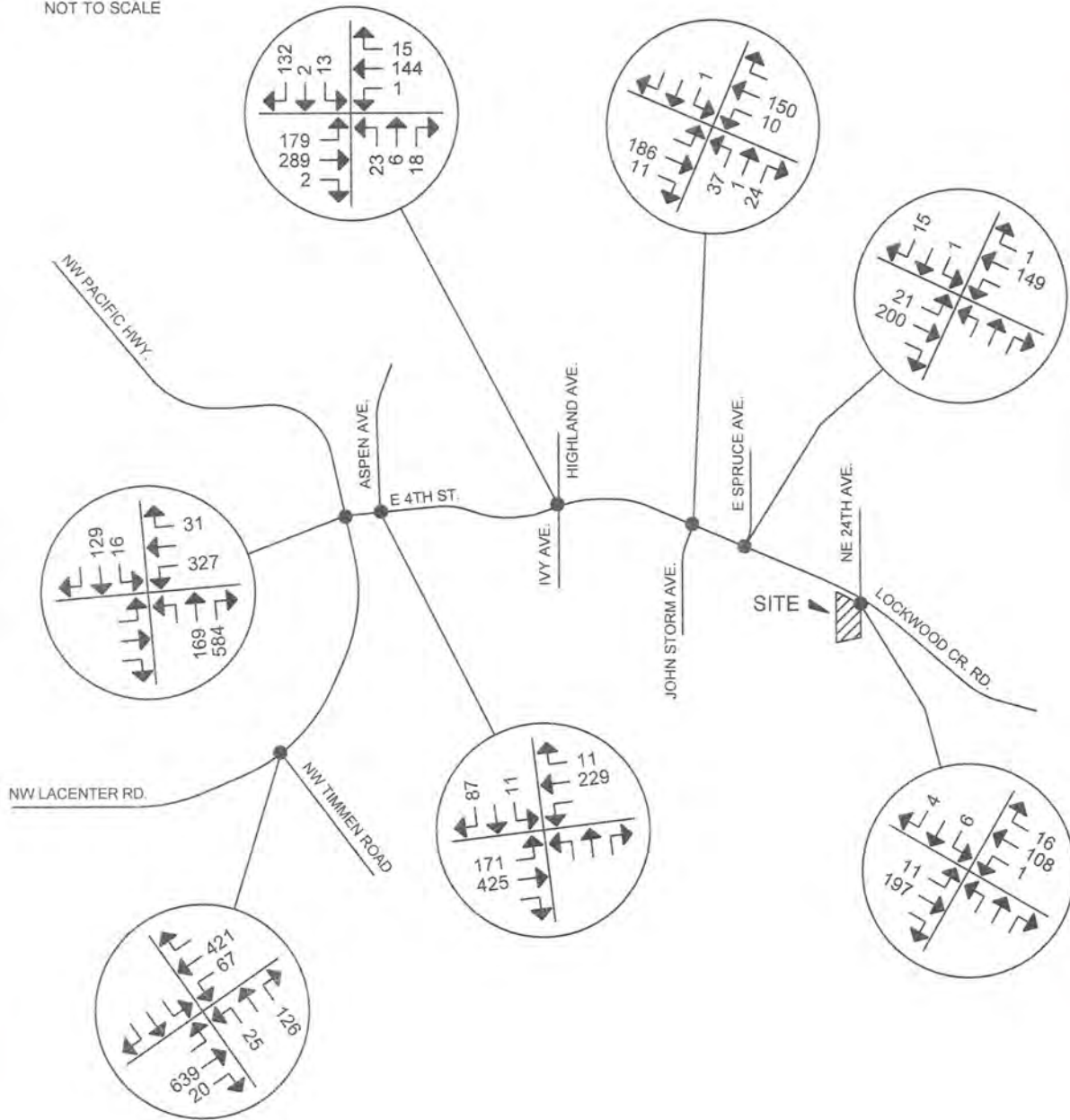
ASA'S VIEW SUBDIVISION

**FIGURE 4a**  
**ADJUSTED EXISTING TRAFFIC VOLUMES**  
**AM PEAK HOUR**

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NOT TO SCALE



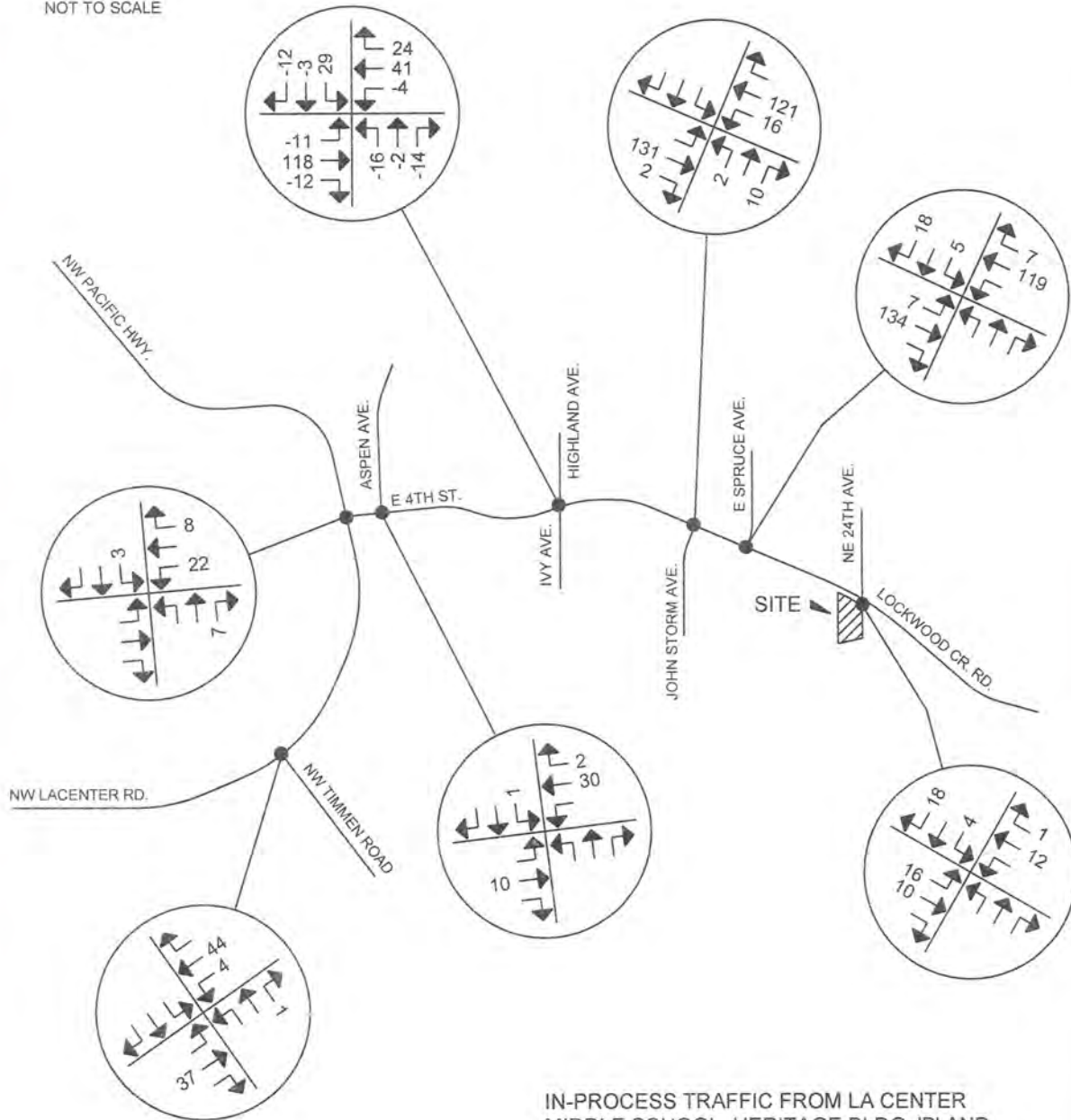
ASA'S VIEW SUBDIVISION

**FIGURE 4b**  
**ADJUSTED EXISTING TRAFFIC VOLUMES**  
**PM PEAK HOUR**

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Phone: 360-433-7530



NOT TO SCALE



IN-PROCESS TRAFFIC FROM LA CENTER MIDDLE SCHOOL, HERITAGE BLDG. 'B' AND MINIT MANAGEMENT SITES ADDED TO TRAFFIC COUNTS CONDUCTED PRIOR TO 2022.

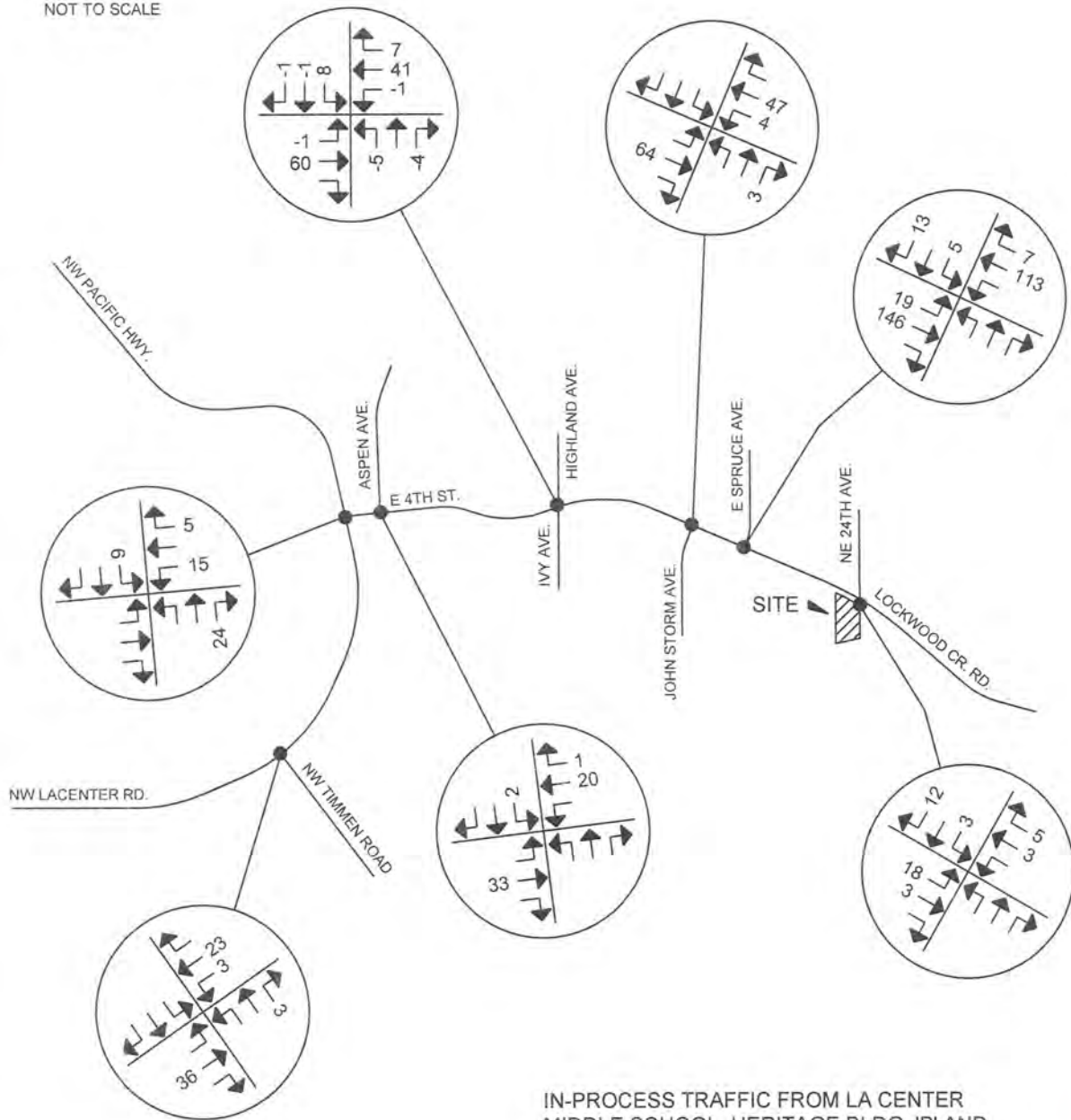
ASA'S VIEW SUBDIVISION

**FIGURE 5a**  
**IN-PROCESS TRAFFIC**  
**AM PEAK HOUR**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530



NOT TO SCALE



IN-PROCESS TRAFFIC FROM LA CENTER MIDDLE SCHOOL, HERITAGE BLDG. 'B' AND MINIT MANAGEMENT SITES ADDED TO TRAFFIC COUNTS CONDUCTED PRIOR TO 2022.

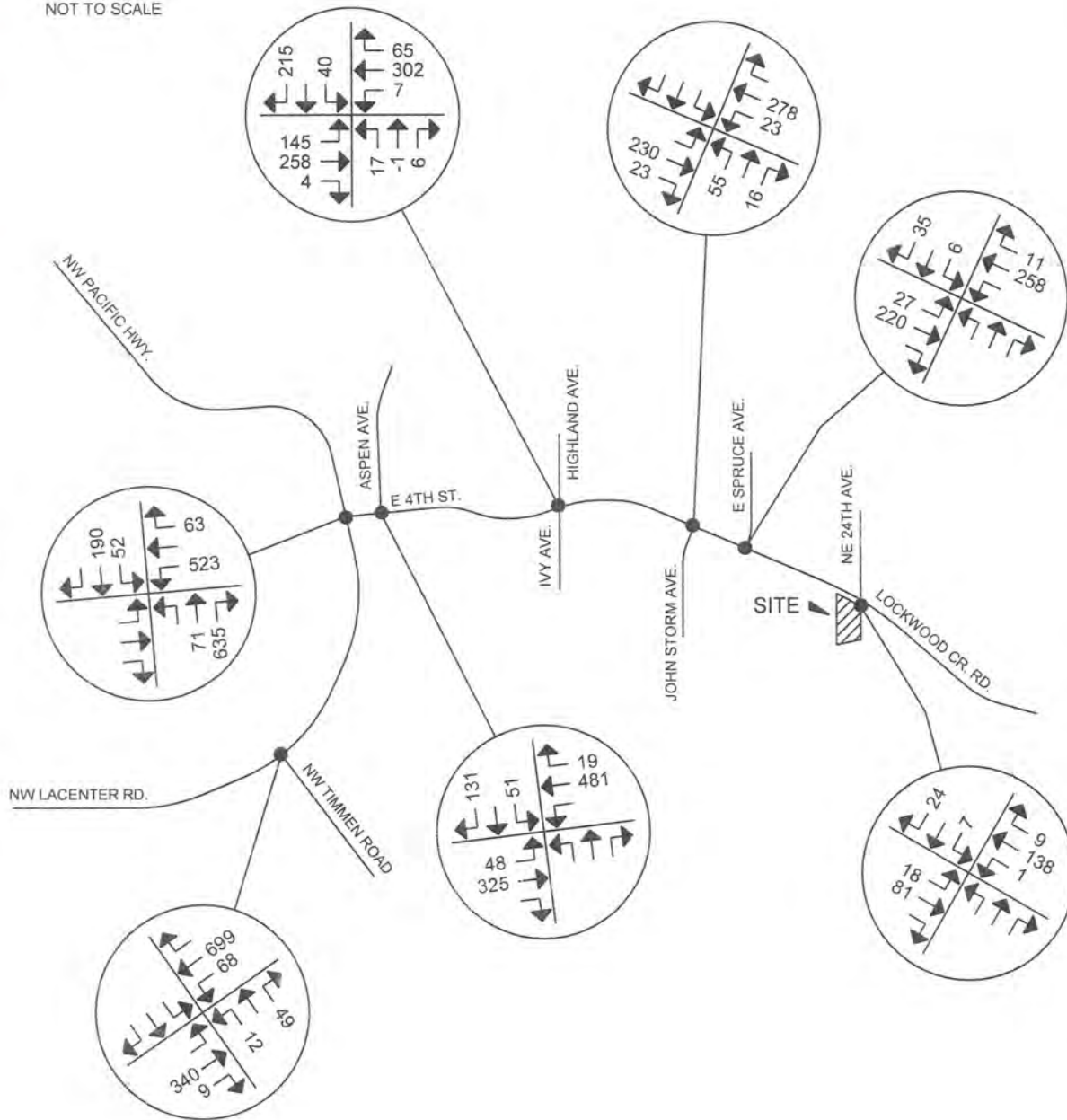
ASA'S VIEW SUBDIVISION

**FIGURE 5b**  
**IN-PROCESS TRAFFIC**  
**PM PEAK HOUR**

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Phone: 360-433-7530



NOT TO SCALE



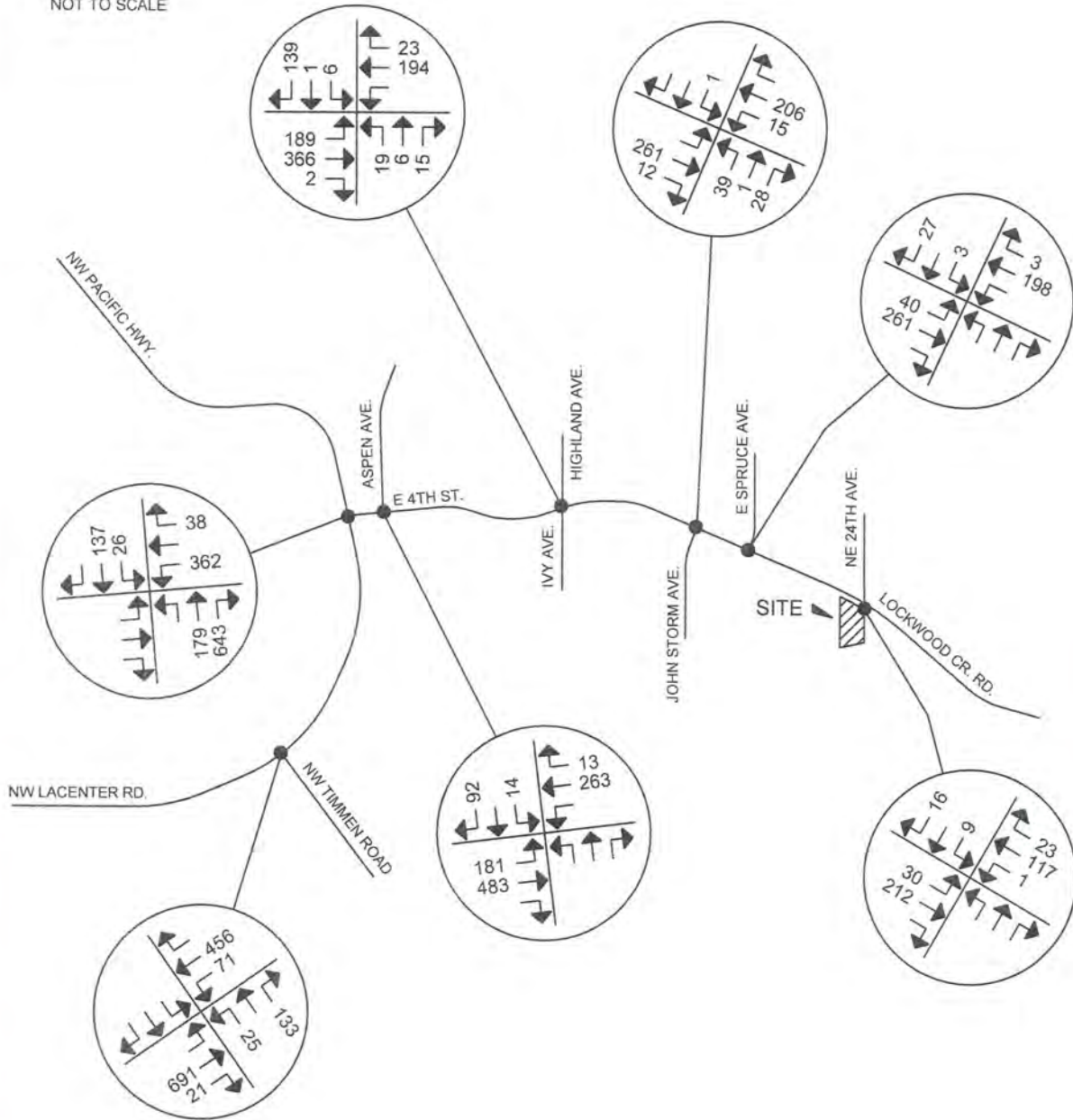
ASA'S VIEW SUBDIVISION

**FIGURE 6a**  
**YEAR 2025 TRAFFIC VOLUMES**  
**W/O PROJECT, AM PEAK HOUR**

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Phone: 360-433-7530



NOT TO SCALE



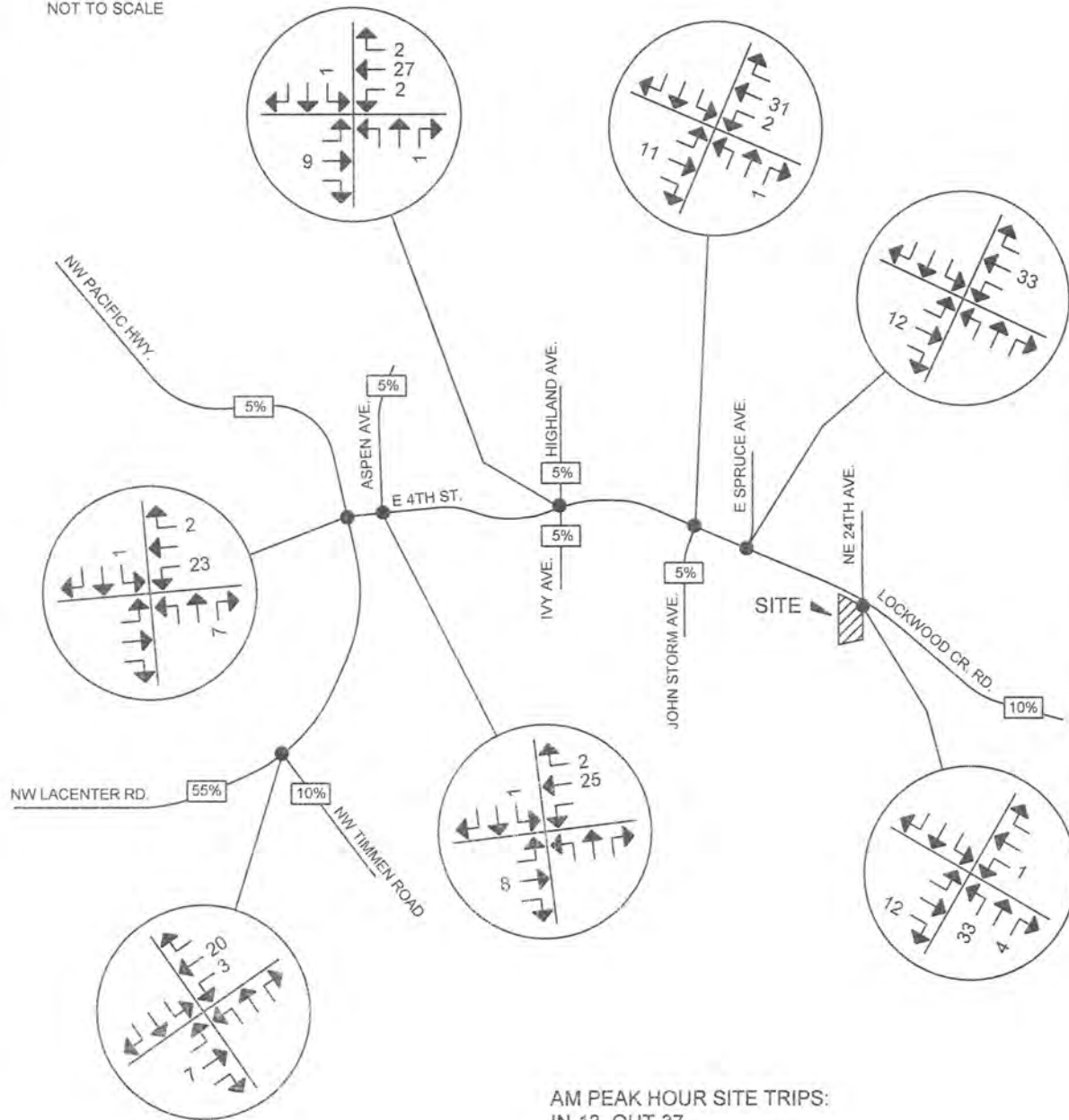
ASA'S VIEW SUBDIVISION

**FIGURE 6b**  
**YEAR 2025 TRAFFIC VOLUMES**  
**W/O PROJECT, PM PEAK HOUR**

**KELLY ENGINEERING**  
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Phone: 360-433-7530



NOT TO SCALE



ASA'S VIEW SUBDIVISION

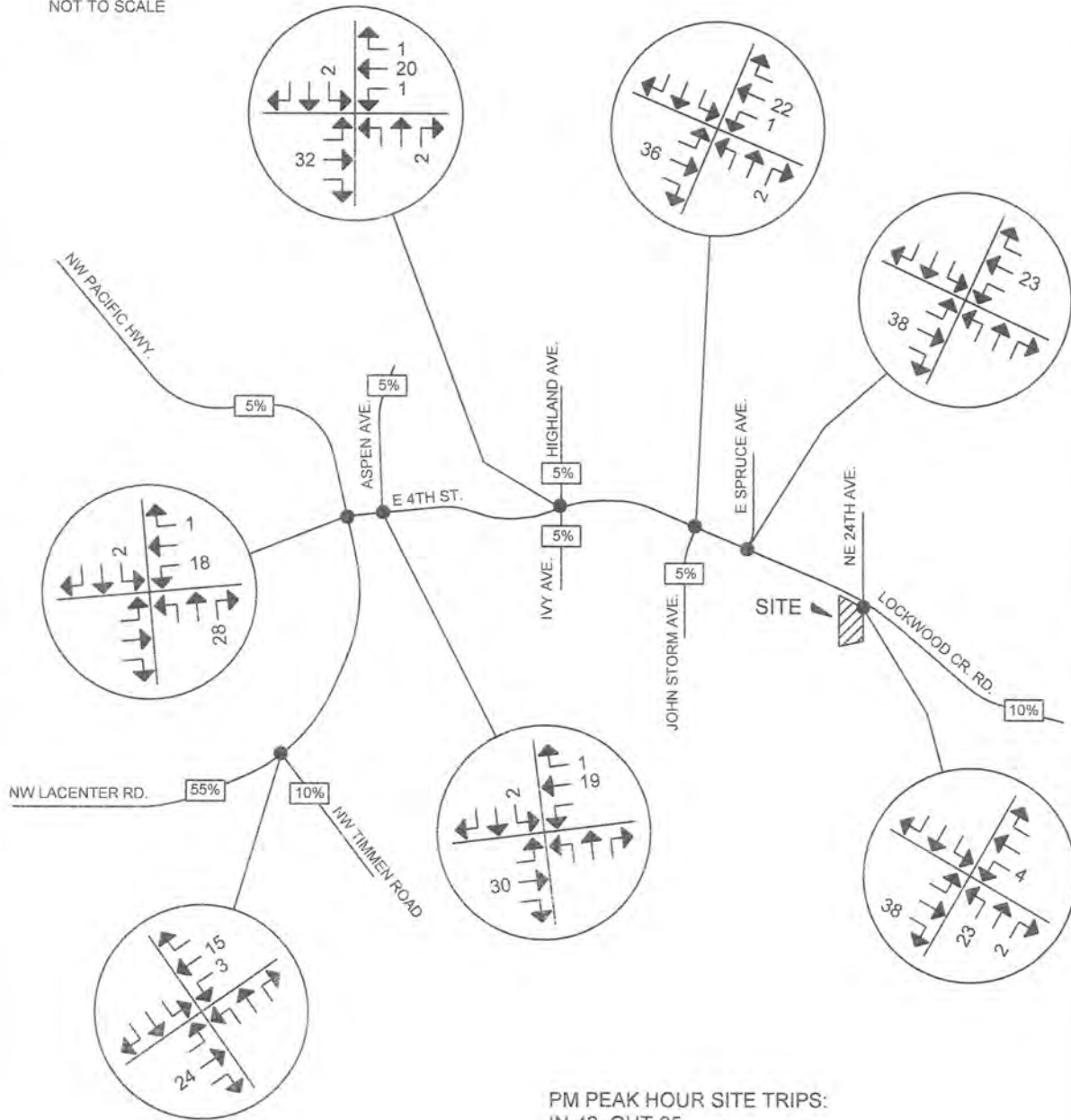
**FIGURE 7a**  
**SITE TRAFFIC DISTRIBUTION/ASSIGNMENT**  
**AM PEAK HOUR**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530





NOT TO SCALE



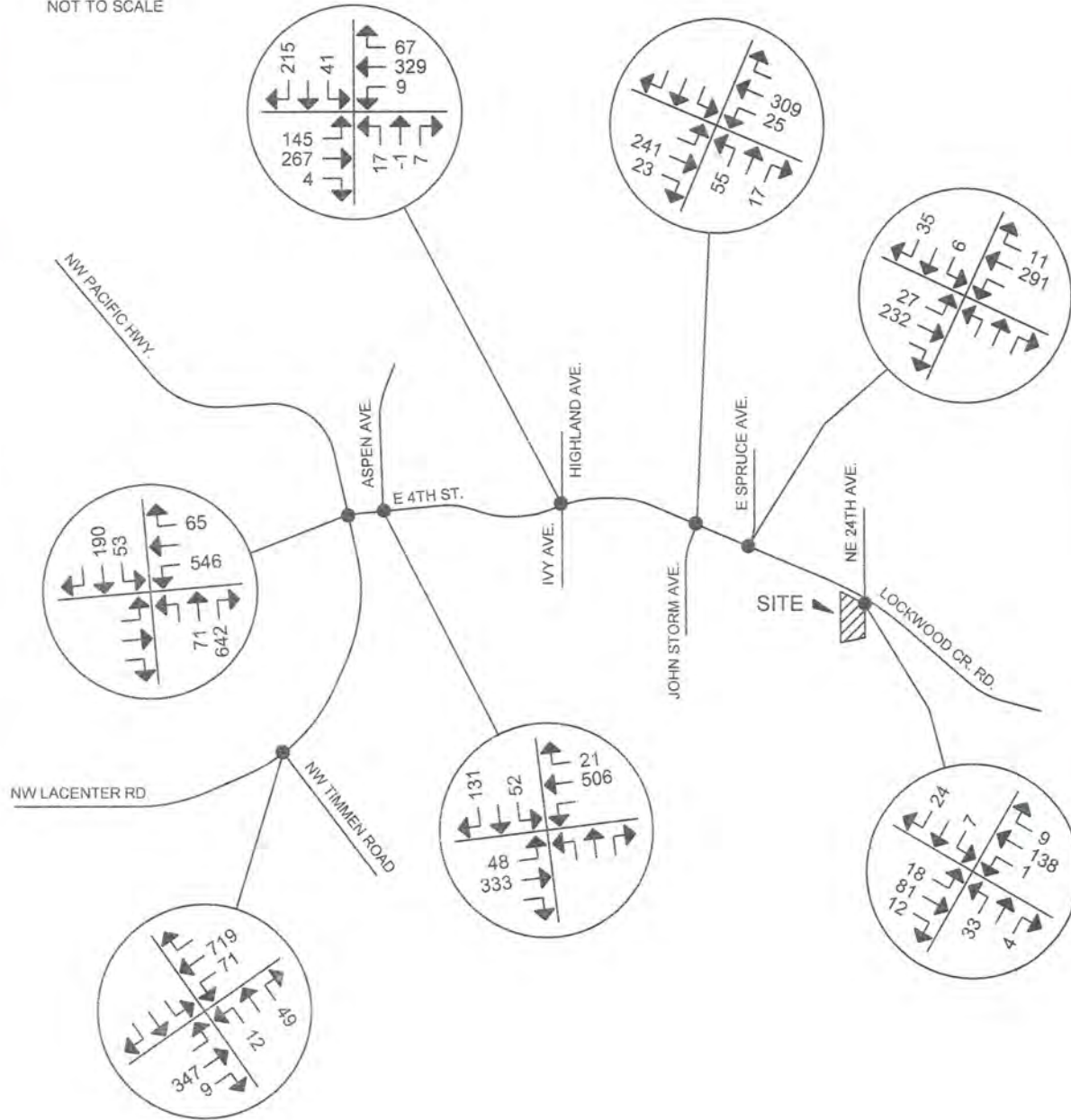
ASA'S VIEW SUBDIVISION

**FIGURE 7b**  
**SITE TRAFFIC DISTRIBUTION/ASSIGNMENT**  
**PM PEAK HOUR**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530



NOT TO SCALE



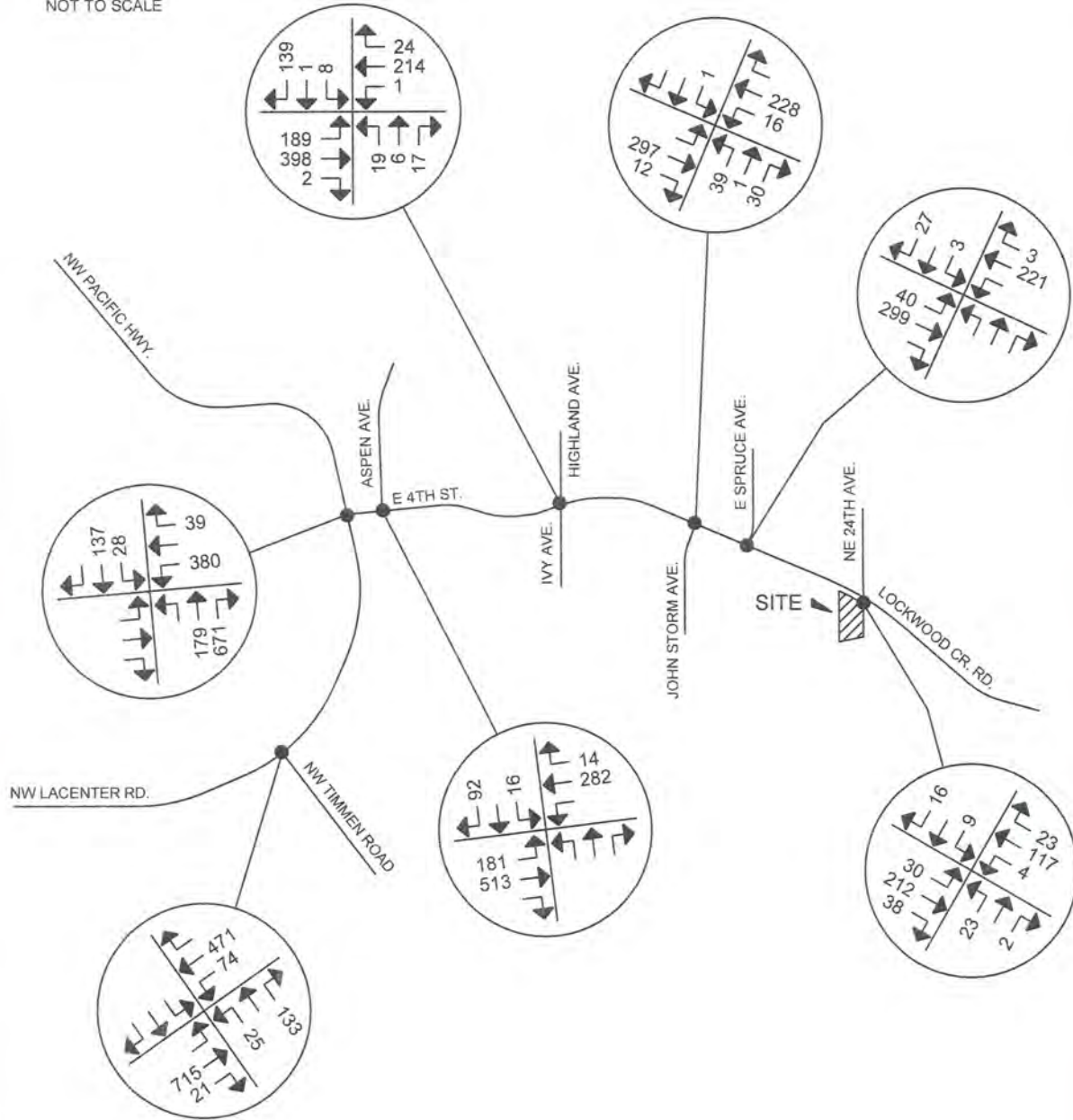
ASA'S VIEW SUBDIVISION

**FIGURE 8a**  
**YEAR 2025 TRAFFIC VOLUMES**  
**WITH PROJECT, AM PEAK HOUR**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530



NOT TO SCALE



ASA'S VIEW SUBDIVISION

**FIGURE 8b**  
**YEAR 2025 TRAFFIC VOLUMES**  
**WITH PROJECT, PM PEAK HOUR**

**KELLY ENGINEERING**  
1805 NE 94th St. No. 19, Vancouver, WA 98665  
Phone: 360-433-7530

**APPENDIX A**  
**RAW TRAFFIC COUNT DATA**



ALL TRAFFIC DATA SERVICES

(303) 216-2439

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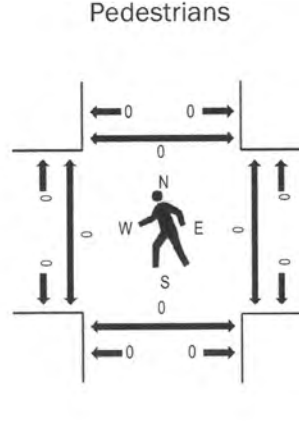
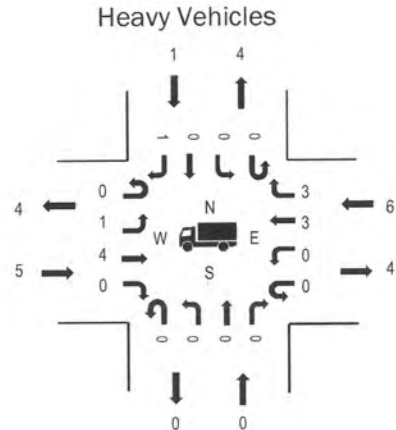
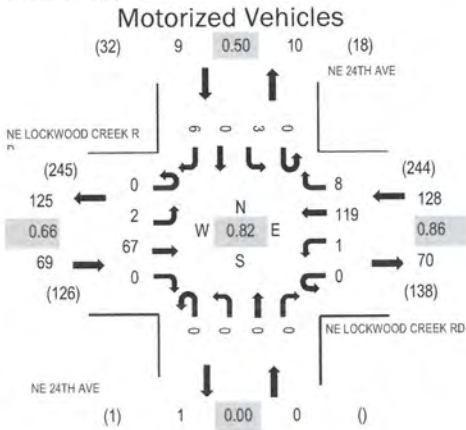
Location: 3 NE 24TH AVE & NE LOCKWOOD CREEK RD AM

Date: Tuesday, July 27, 2021

Peak Hour: 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:35 AM - 08:50 AM

Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%   | PHF  |
|-----|-------|------|
| EB  | 7.2%  | 0.66 |
| WB  | 4.7%  | 0.86 |
| NB  | 0.0%  | 0.00 |
| SB  | 11.1% | 0.50 |
| All | 5.8%  | 0.82 |

Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | NE LOCKWOOD CREEK RD<br>Eastbound |      |      |       | NE LOCKWOOD CREEK RD<br>Westbound |      |      |       | NE 24TH AVE<br>Northbound |      |      |       | NE 24TH AVE<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|-----------------------------------|------|------|-------|-----------------------------------|------|------|-------|---------------------------|------|------|-------|---------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                            | Left | Thru | Right | U-Turn                            | Left | Thru | Right | U-Turn                    | Left | Thru | Right | U-Turn                    | Left | Thru | Right |       |                 |
| 7:00 AM                | 0                                 | 0    | 4    | 0     | 0                                 | 0    | 6    | 0     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 11    | 196             |
| 7:05 AM                | 0                                 | 0    | 3    | 0     | 0                                 | 0    | 6    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 9     | 200             |
| 7:10 AM                | 0                                 | 0    | 1    | 0     | 0                                 | 0    | 13   | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 14    | 202             |
| 7:15 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 0    | 6    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 14    | 202             |
| 7:20 AM                | 0                                 | 1    | 4    | 0     | 0                                 | 0    | 20   | 0     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 26    | 199             |
| 7:25 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 0    | 7    | 0     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 1     | 16    | 197             |
| 7:30 AM                | 0                                 | 0    | 2    | 0     | 0                                 | 0    | 9    | 1     | 0                         | 0    | 0    | 0     | 0                         | 3    | 0    | 2     | 17    | 203             |
| 7:35 AM                | 0                                 | 0    | 12   | 0     | 0                                 | 0    | 11   | 0     | 0                         | 0    | 0    | 0     | 0                         | 3    | 0    | 1     | 27    | 197             |
| 7:40 AM                | 0                                 | 0    | 2    | 0     | 0                                 | 0    | 8    | 0     | 0                         | 0    | 0    | 0     | 0                         | 2    | 0    | 1     | 13    | 190             |
| 7:45 AM                | 0                                 | 1    | 4    | 0     | 0                                 | 0    | 10   | 1     | 0                         | 0    | 0    | 0     | 0                         | 3    | 0    | 0     | 19    | 195             |
| 7:50 AM                | 0                                 | 0    | 3    | 0     | 0                                 | 0    | 10   | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 14    | 201             |
| 7:55 AM                | 0                                 | 1    | 5    | 0     | 0                                 | 0    | 7    | 1     | 0                         | 0    | 0    | 0     | 0                         | 2    | 0    | 0     | 16    | 202             |
| 8:00 AM                | 0                                 | 0    | 5    | 0     | 0                                 | 0    | 9    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 15    | 206             |
| 8:05 AM                | 0                                 | 0    | 3    | 0     | 0                                 | 0    | 7    | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 11    |                 |
| 8:10 AM                | 0                                 | 0    | 3    | 0     | 0                                 | 0    | 10   | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 14    |                 |
| 8:15 AM                | 0                                 | 0    | 2    | 0     | 0                                 | 1    | 6    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 2     | 11    |                 |
| 8:20 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 0    | 16   | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 24    |                 |
| 8:25 AM                | 0                                 | 0    | 7    | 0     | 0                                 | 0    | 12   | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 2     | 22    |                 |
| 8:30 AM                | 0                                 | 0    | 5    | 0     | 0                                 | 0    | 6    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 11    |                 |
| 8:35 AM                | 0                                 | 0    | 10   | 0     | 0                                 | 0    | 9    | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 20    |                 |
| 8:40 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 0    | 11   | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 18    |                 |
| 8:45 AM                | 0                                 | 0    | 9    | 0     | 0                                 | 0    | 13   | 1     | 0                         | 0    | 0    | 0     | 0                         | 2    | 0    | 0     | 25    |                 |
| 8:50 AM                | 0                                 | 0    | 4    | 0     | 0                                 | 0    | 9    | 1     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 15    |                 |
| 8:55 AM                | 0                                 | 0    | 7    | 0     | 0                                 | 0    | 11   | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 20    |                 |
| Count Total            | 0                                 | 7    | 119  | 0     | 0                                 | 1    | 232  | 11    | 0                         | 0    | 0    | 0     | 0                         | 19   | 0    | 13    | 402   |                 |
| Peak Hour              | 0                                 | 2    | 67   | 0     | 0                                 | 1    | 119  | 8     | 0                         | 0    | 0    | 0     | 0                         | 3    | 0    | 6     | 206   |                 |

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 7:00 AM                | 0              | 0  | 0  | 0  | 0     | 7:00 AM                | 0                   | 0  | 0  | 0  | 0     | 7:00 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:05 AM                | 0              | 0  | 2  | 0  | 2     | 7:05 AM                | 0                   | 0  | 0  | 0  | 0     | 7:05 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:10 AM                | 0              | 0  | 0  | 0  | 0     | 7:10 AM                | 0                   | 0  | 0  | 0  | 0     | 7:10 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:15 AM                | 0              | 0  | 0  | 0  | 0     | 7:15 AM                | 0                   | 0  | 0  | 0  | 0     | 7:15 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:20 AM                | 1              | 0  | 1  | 0  | 2     | 7:20 AM                | 0                   | 0  | 0  | 0  | 0     | 7:20 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:25 AM                | 0              | 0  | 0  | 0  | 0     | 7:25 AM                | 0                   | 0  | 0  | 0  | 0     | 7:25 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:30 AM                | 0              | 0  | 0  | 0  | 0     | 7:30 AM                | 0                   | 0  | 0  | 0  | 0     | 7:30 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:35 AM                | 1              | 0  | 0  | 0  | 1     | 7:35 AM                | 0                   | 0  | 0  | 0  | 0     | 7:35 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:40 AM                | 0              | 0  | 0  | 0  | 0     | 7:40 AM                | 0                   | 0  | 0  | 0  | 0     | 7:40 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:45 AM                | 0              | 0  | 0  | 0  | 0     | 7:45 AM                | 0                   | 0  | 0  | 0  | 0     | 7:45 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:50 AM                | 0              | 0  | 0  | 0  | 0     | 7:50 AM                | 0                   | 0  | 0  | 0  | 0     | 7:50 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:55 AM                | 0              | 0  | 0  | 0  | 0     | 7:55 AM                | 0                   | 0  | 0  | 0  | 0     | 7:55 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:00 AM                | 1              | 0  | 0  | 0  | 1     | 8:00 AM                | 0                   | 0  | 0  | 0  | 0     | 8:00 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:05 AM                | 0              | 0  | 1  | 0  | 1     | 8:05 AM                | 0                   | 0  | 0  | 0  | 0     | 8:05 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:10 AM                | 0              | 0  | 1  | 0  | 1     | 8:10 AM                | 0                   | 0  | 0  | 0  | 0     | 8:10 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:15 AM                | 0              | 0  | 0  | 1  | 1     | 8:15 AM                | 0                   | 0  | 0  | 0  | 0     | 8:15 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:20 AM                | 1              | 0  | 0  | 0  | 1     | 8:20 AM                | 0                   | 0  | 0  | 0  | 0     | 8:20 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:25 AM                | 0              | 0  | 2  | 0  | 2     | 8:25 AM                | 0                   | 0  | 0  | 0  | 0     | 8:25 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:30 AM                | 0              | 0  | 0  | 0  | 0     | 8:30 AM                | 0                   | 0  | 0  | 0  | 0     | 8:30 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:35 AM                | 1              | 0  | 1  | 0  | 2     | 8:35 AM                | 0                   | 0  | 0  | 0  | 0     | 8:35 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:40 AM                | 1              | 0  | 0  | 0  | 1     | 8:40 AM                | 1                   | 0  | 0  | 0  | 1     | 8:40 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:45 AM                | 0              | 0  | 0  | 0  | 0     | 8:45 AM                | 0                   | 0  | 0  | 0  | 0     | 8:45 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:50 AM                | 1              | 0  | 1  | 0  | 2     | 8:50 AM                | 0                   | 0  | 0  | 0  | 0     | 8:50 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:55 AM                | 0              | 0  | 0  | 0  | 0     | 8:55 AM                | 0                   | 0  | 0  | 0  | 0     | 8:55 AM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 7              | 0  | 9  | 1  | 17    | Count Total            | 1                   | 0  | 0  | 0  | 1     | Count Total            | 0                                 | 0  | 0  | 0  | 0     |
| Peak Hour              | 5              | 0  | 6  | 1  | 12    | Peak Hour              | 1                   | 0  | 0  | 0  | 1     | Peak Hour              | 0                                 | 0  | 0  | 0  | 0     |



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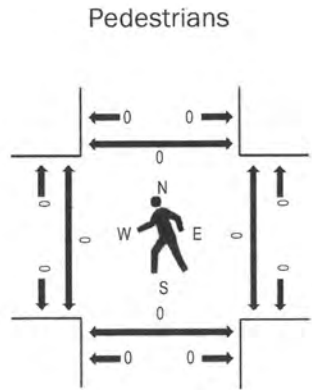
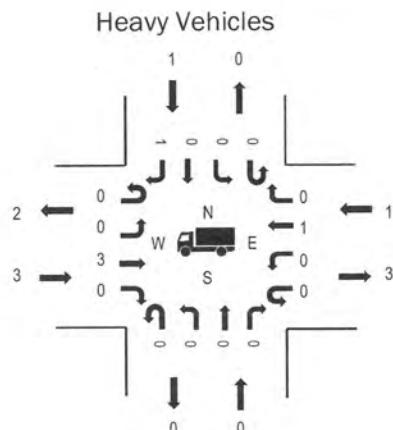
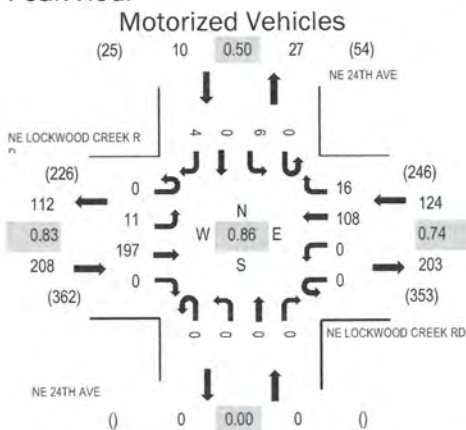
Location: 3 NE 24TH AVE & NE LOCKWOOD CREEK RD PM

Date: Tuesday, July 27, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 04:35 PM - 04:50 PM

Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%   | PHF  |
|-----|-------|------|
| EB  | 1.4%  | 0.83 |
| WB  | 0.8%  | 0.74 |
| NB  | 0.0%  | 0.00 |
| SB  | 10.0% | 0.50 |
| All | 1.5%  | 0.86 |

Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | NE LOCKWOOD CREEK RD<br>Eastbound |      |      |       | NE LOCKWOOD CREEK RD<br>Westbound |      |      |       | NE 24TH AVE<br>Northbound |      |      |       | NE 24TH AVE<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|-----------------------------------|------|------|-------|-----------------------------------|------|------|-------|---------------------------|------|------|-------|---------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                            | Left | Thru | Right | U-Turn                            | Left | Thru | Right | U-Turn                    | Left | Thru | Right | U-Turn                    | Left | Thru | Right |       |                 |
| 4:00 PM                | 0                                 | 2    | 14   | 0     | 0                                 | 0    | 11   | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 28    | 313             |
| 4:05 PM                | 0                                 | 2    | 10   | 0     | 0                                 | 0    | 10   | 1     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 24    | 316             |
| 4:10 PM                | 0                                 | 0    | 11   | 0     | 0                                 | 0    | 15   | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 27    | 316             |
| 4:15 PM                | 0                                 | 0    | 12   | 0     | 0                                 | 0    | 4    | 0     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 17    | 308             |
| 4:20 PM                | 0                                 | 1    | 11   | 0     | 0                                 | 0    | 9    | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 22    | 322             |
| 4:25 PM                | 0                                 | 0    | 12   | 0     | 0                                 | 0    | 6    | 2     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 20    | 334             |
| 4:30 PM                | 0                                 | 0    | 22   | 0     | 0                                 | 0    | 5    | 1     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 29    | 342             |
| 4:35 PM                | 0                                 | 0    | 19   | 0     | 0                                 | 0    | 15   | 2     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 37    | 335             |
| 4:40 PM                | 0                                 | 0    | 15   | 0     | 0                                 | 0    | 12   | 3     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 31    | 329             |
| 4:45 PM                | 0                                 | 0    | 19   | 0     | 0                                 | 0    | 9    | 2     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 31    | 328             |
| 4:50 PM                | 0                                 | 1    | 17   | 0     | 0                                 | 0    | 8    | 2     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 29    | 319             |
| 4:55 PM                | 0                                 | 3    | 6    | 0     | 0                                 | 0    | 6    | 1     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 1     | 18    | 317             |
| 5:00 PM                | 0                                 | 0    | 19   | 0     | 0                                 | 0    | 9    | 2     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 31    | 320             |
| 5:05 PM                | 0                                 | 0    | 12   | 0     | 0                                 | 0    | 11   | 0     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 24    |                 |
| 5:10 PM                | 0                                 | 1    | 11   | 0     | 0                                 | 0    | 6    | 0     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 0     | 19    |                 |
| 5:15 PM                | 0                                 | 3    | 20   | 0     | 0                                 | 0    | 8    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 31    |                 |
| 5:20 PM                | 0                                 | 1    | 20   | 0     | 0                                 | 0    | 10   | 3     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 34    |                 |
| 5:25 PM                | 0                                 | 2    | 17   | 0     | 0                                 | 0    | 9    | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 28    |                 |
| 5:30 PM                | 0                                 | 1    | 11   | 0     | 0                                 | 0    | 6    | 1     | 0                         | 0    | 0    | 0     | 0                         | 2    | 0    | 1     | 22    |                 |
| 5:35 PM                | 0                                 | 2    | 15   | 0     | 0                                 | 0    | 14   | 0     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 31    |                 |
| 5:40 PM                | 0                                 | 1    | 12   | 0     | 0                                 | 0    | 10   | 2     | 0                         | 0    | 0    | 0     | 0                         | 1    | 0    | 4     | 30    |                 |
| 5:45 PM                | 0                                 | 3    | 9    | 0     | 0                                 | 0    | 5    | 1     | 0                         | 0    | 0    | 0     | 0                         | 4    | 0    | 0     | 22    |                 |
| 5:50 PM                | 0                                 | 1    | 13   | 0     | 0                                 | 0    | 11   | 2     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 0     | 27    |                 |
| 5:55 PM                | 0                                 | 0    | 11   | 0     | 0                                 | 0    | 7    | 2     | 0                         | 0    | 0    | 0     | 0                         | 0    | 0    | 1     | 21    |                 |
| Count Total            | 0                                 | 24   | 338  | 0     | 0                                 | 0    | 216  | 30    | 0                         | 0    | 0    | 0     | 0                         | 15   | 0    | 10    | 633   |                 |
| Peak Hour              | 0                                 | 11   | 197  | 0     | 0                                 | 0    | 108  | 16    | 0                         | 0    | 0    | 0     | 0                         | 6    | 0    | 4     | 342   |                 |

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 0                   | 0  | 0  | 0  | 0     | 4:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:05 PM                | 1              | 0  | 0  | 0  | 1     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0     | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 0              | 0  | 0  | 0  | 0     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0     | 4:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0     | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 0  | 0  | 0  | 0     | 4:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:25 PM                | 0              | 0  | 0  | 0  | 0     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0     | 4:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:30 PM                | 0              | 0  | 0  | 1  | 1     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0     | 4:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:35 PM                | 0              | 0  | 0  | 0  | 0     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0     | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 1              | 0  | 0  | 0  | 1     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0     | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 0  | 0  | 0     | 4:45 PM                | 0                   | 0  | 0  | 0  | 0     | 4:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:50 PM                | 1              | 0  | 0  | 0  | 1     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0     | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0     | 4:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0     | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 0  | 0  | 0  | 0     | 5:05 PM                | 1                   | 0  | 0  | 0  | 1     | 5:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:10 PM                | 1              | 0  | 0  | 0  | 1     | 5:10 PM                | 0                   | 0  | 0  | 0  | 0     | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0     | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 1  | 0  | 1     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0     | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 0  | 0  | 0     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0     | 5:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0     | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0     | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0     | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0     | 5:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0     | 5:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0     | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 4              | 0  | 1  | 1  | 6     | Count Total            | 1                   | 0  | 0  | 0  | 1     | Count Total            | 0                                 | 0  | 0  | 0  | 0     |
| Peak Hour              | 3              | 0  | 1  | 1  | 5     | Peak Hour              | 1                   | 0  | 0  | 0  | 1     | Peak Hour              | 0                                 | 0  | 0  | 0  | 0     |





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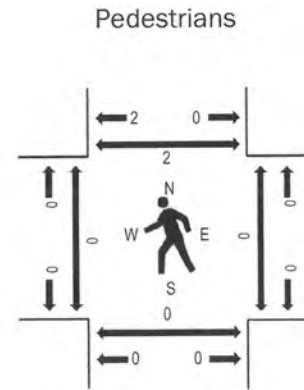
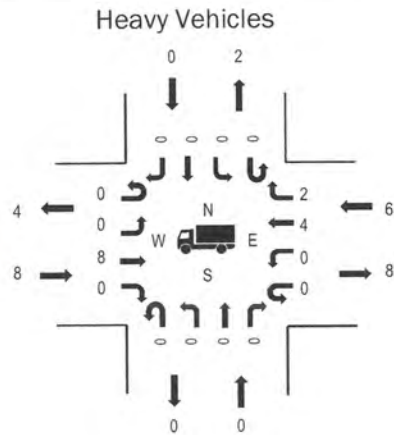
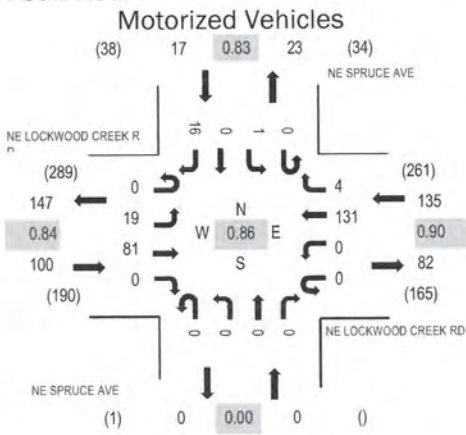
Location: 2 NE SPRUCE AVE & NE LOCKWOOD CREEK RD AM

Date: Tuesday, July 27, 2021

Peak Hour: 07:10 AM - 08:10 AM

Peak 15-Minutes: 07:50 AM - 08:05 AM

Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 8.0% | 0.84 |
| WB  | 4.4% | 0.90 |
| NB  | 0.0% | 0.00 |
| SB  | 0.0% | 0.83 |
| All | 5.6% | 0.86 |

Traffic Counts - Motorized Vehicles

| Interval<br>Start Time | NE LOCKWOOD CREEK RD<br>Eastbound |      |      |       | NE LOCKWOOD CREEK RD<br>Westbound |      |      |       | NE SPRUCE AVE<br>Northbound |      |      |       | NE SPRUCE AVE<br>Southbound |      |      |       | Total | Rolling<br>Hour |
|------------------------|-----------------------------------|------|------|-------|-----------------------------------|------|------|-------|-----------------------------|------|------|-------|-----------------------------|------|------|-------|-------|-----------------|
|                        | U-Turn                            | Left | Thru | Right | U-Turn                            | Left | Thru | Right | U-Turn                      | Left | Thru | Right | U-Turn                      | Left | Thru | Right |       |                 |
| 7:00 AM                | 0                                 | 3    | 11   | 0     | 0                                 | 0    | 7    | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 3     | 24    | 249             |
| 7:05 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 1    | 3    | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 13    | 251             |
| 7:10 AM                | 0                                 | 4    | 4    | 0     | 0                                 | 0    | 11   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 20    | 252             |
| 7:15 AM                | 0                                 | 0    | 6    | 0     | 0                                 | 0    | 10   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 18    | 250             |
| 7:20 AM                | 0                                 | 2    | 5    | 0     | 0                                 | 0    | 13   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 21    | 247             |
| 7:25 AM                | 0                                 | 0    | 4    | 0     | 0                                 | 0    | 18   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 23    | 244             |
| 7:30 AM                | 0                                 | 0    | 8    | 0     | 0                                 | 0    | 7    | 0     | 0                           | 0    | 0    | 0     | 0                           | 1    | 0    | 2     | 18    | 246             |
| 7:35 AM                | 0                                 | 2    | 13   | 0     | 0                                 | 0    | 13   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 29    | 249             |
| 7:40 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 0    | 10   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 18    | 238             |
| 7:45 AM                | 0                                 | 3    | 4    | 0     | 0                                 | 0    | 9    | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 18    | 241             |
| 7:50 AM                | 0                                 | 2    | 6    | 0     | 0                                 | 0    | 12   | 2     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 23    | 243             |
| 7:55 AM                | 0                                 | 2    | 11   | 0     | 0                                 | 0    | 7    | 2     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 24    | 241             |
| 8:00 AM                | 0                                 | 2    | 8    | 0     | 0                                 | 0    | 15   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 26    | 240             |
| 8:05 AM                | 0                                 | 1    | 6    | 0     | 0                                 | 0    | 6    | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 14    |                 |
| 8:10 AM                | 0                                 | 2    | 3    | 0     | 0                                 | 0    | 11   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 18    |                 |
| 8:15 AM                | 0                                 | 1    | 2    | 0     | 0                                 | 0    | 11   | 1     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 0     | 15    |                 |
| 8:20 AM                | 0                                 | 0    | 6    | 0     | 0                                 | 0    | 10   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 18    |                 |
| 8:25 AM                | 0                                 | 0    | 8    | 0     | 0                                 | 0    | 13   | 0     | 0                           | 0    | 0    | 0     | 0                           | 1    | 0    | 3     | 25    |                 |
| 8:30 AM                | 0                                 | 0    | 8    | 0     | 0                                 | 0    | 13   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 0     | 21    |                 |
| 8:35 AM                | 0                                 | 1    | 9    | 0     | 0                                 | 0    | 7    | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 18    |                 |
| 8:40 AM                | 0                                 | 0    | 8    | 0     | 0                                 | 0    | 12   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 21    |                 |
| 8:45 AM                | 0                                 | 0    | 9    | 0     | 0                                 | 0    | 10   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 1     | 20    |                 |
| 8:50 AM                | 0                                 | 0    | 5    | 0     | 0                                 | 0    | 14   | 0     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 2     | 21    |                 |
| 8:55 AM                | 0                                 | 0    | 7    | 0     | 0                                 | 0    | 11   | 2     | 0                           | 0    | 0    | 0     | 0                           | 0    | 0    | 3     | 23    |                 |
| Count Total            | 0                                 | 27   | 163  | 0     | 0                                 | 1    | 253  | 7     | 0                           | 0    | 0    | 0     | 0                           | 2    | 0    | 36    | 489   |                 |
| Peak Hour              | 0                                 | 19   | 81   | 0     | 0                                 | 0    | 131  | 4     | 0                           | 0    | 0    | 0     | 0                           | 1    | 0    | 16    | 252   |                 |

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 7:00 AM                | 1              | 0  | 0  | 0  | 1     | 7:00 AM                | 0                   | 0  | 0  | 0  | 0     | 7:00 AM                | 0                                 | 0  | 1  | 0  | 1     |
| 7:05 AM                | 0              | 0  | 1  | 0  | 1     | 7:05 AM                | 0                   | 0  | 0  | 0  | 0     | 7:05 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:10 AM                | 1              | 0  | 1  | 0  | 2     | 7:10 AM                | 0                   | 0  | 0  | 0  | 0     | 7:10 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:15 AM                | 0              | 0  | 0  | 0  | 0     | 7:15 AM                | 0                   | 0  | 0  | 0  | 0     | 7:15 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:20 AM                | 1              | 0  | 0  | 0  | 1     | 7:20 AM                | 0                   | 0  | 0  | 0  | 0     | 7:20 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:25 AM                | 0              | 0  | 1  | 0  | 1     | 7:25 AM                | 0                   | 0  | 0  | 0  | 0     | 7:25 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:30 AM                | 1              | 0  | 1  | 0  | 2     | 7:30 AM                | 0                   | 0  | 0  | 0  | 0     | 7:30 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:35 AM                | 2              | 0  | 0  | 0  | 2     | 7:35 AM                | 0                   | 0  | 0  | 0  | 0     | 7:35 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:40 AM                | 0              | 0  | 0  | 0  | 0     | 7:40 AM                | 0                   | 0  | 0  | 0  | 0     | 7:40 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:45 AM                | 0              | 0  | 0  | 0  | 0     | 7:45 AM                | 0                   | 0  | 0  | 0  | 0     | 7:45 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:50 AM                | 1              | 0  | 1  | 0  | 2     | 7:50 AM                | 0                   | 0  | 0  | 0  | 0     | 7:50 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:55 AM                | 1              | 0  | 1  | 0  | 2     | 7:55 AM                | 0                   | 0  | 0  | 0  | 0     | 7:55 AM                | 0                                 | 0  | 0  | 2  | 2     |
| 8:00 AM                | 1              | 0  | 1  | 0  | 2     | 8:00 AM                | 0                   | 0  | 0  | 0  | 0     | 8:00 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:05 AM                | 0              | 0  | 0  | 0  | 0     | 8:05 AM                | 0                   | 0  | 0  | 0  | 0     | 8:05 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:10 AM                | 0              | 0  | 1  | 0  | 1     | 8:10 AM                | 0                   | 0  | 0  | 0  | 0     | 8:10 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:15 AM                | 0              | 0  | 2  | 0  | 2     | 8:15 AM                | 0                   | 0  | 0  | 0  | 0     | 8:15 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:20 AM                | 1              | 0  | 0  | 0  | 1     | 8:20 AM                | 0                   | 0  | 0  | 0  | 0     | 8:20 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:25 AM                | 0              | 0  | 0  | 0  | 0     | 8:25 AM                | 0                   | 0  | 0  | 0  | 0     | 8:25 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:30 AM                | 0              | 0  | 1  | 0  | 1     | 8:30 AM                | 0                   | 0  | 0  | 0  | 0     | 8:30 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:35 AM                | 2              | 0  | 1  | 0  | 3     | 8:35 AM                | 0                   | 0  | 0  | 0  | 0     | 8:35 AM                | 2                                 | 0  | 0  | 2  | 4     |
| 8:40 AM                | 2              | 0  | 1  | 0  | 3     | 8:40 AM                | 1                   | 0  | 0  | 0  | 1     | 8:40 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:45 AM                | 0              | 0  | 0  | 0  | 0     | 8:45 AM                | 0                   | 0  | 0  | 0  | 0     | 8:45 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:50 AM                | 1              | 0  | 0  | 0  | 1     | 8:50 AM                | 0                   | 0  | 0  | 0  | 0     | 8:50 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:55 AM                | 0              | 0  | 0  | 1  | 1     | 8:55 AM                | 0                   | 0  | 0  | 0  | 0     | 8:55 AM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 15             | 0  | 13 | 1  | 29    | Count Total            | 1                   | 0  | 0  | 0  | 1     | Count Total            | 2                                 | 0  | 1  | 4  | 7     |
| Peak Hour              | 8              | 0  | 6  | 0  | 14    | Peak Hour              | 0                   | 0  | 0  | 0  | 0     | Peak Hour              | 0                                 | 0  | 0  | 2  | 2     |



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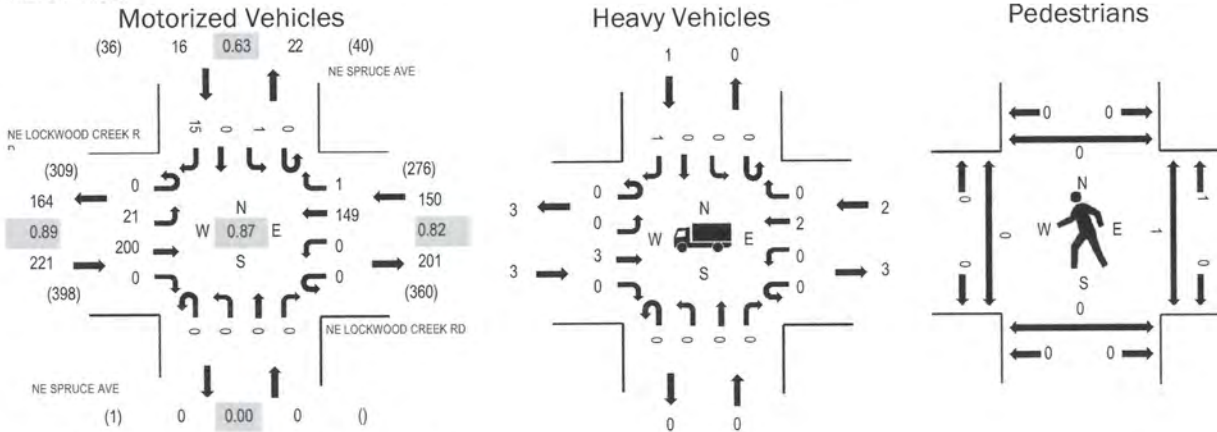
Location: 2 NE SPRUCE AVE & NE LOCKWOOD CREEK RD PM

Date: Tuesday, July 27, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 1.4% | 0.89 |
| WB  | 1.3% | 0.82 |
| NB  | 0.0% | 0.00 |
| SB  | 6.3% | 0.63 |
| All | 1.6% | 0.87 |

Traffic Counts - Motorized Vehicles

| Interval Start Time | NE LOCKWOOD CREEK RD Eastbound |      |      |       | NE LOCKWOOD CREEK RD Westbound |      |      |       | NE SPRUCE AVE Northbound |      |      |       | NE SPRUCE AVE Southbound |      |      |       | Total | Rolling Hour |
|---------------------|--------------------------------|------|------|-------|--------------------------------|------|------|-------|--------------------------|------|------|-------|--------------------------|------|------|-------|-------|--------------|
|                     | U-Turn                         | Left | Thru | Right | U-Turn                         | Left | Thru | Right | U-Turn                   | Left | Thru | Right | U-Turn                   | Left | Thru | Right |       |              |
| 4:00 PM             | 0                              | 3    | 14   | 0     | 0                              | 0    | 10   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 27    | 355          |
| 4:05 PM             | 0                              | 2    | 10   | 0     | 0                              | 0    | 8    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 3     | 23    | 361          |
| 4:10 PM             | 0                              | 1    | 15   | 0     | 0                              | 0    | 18   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 34    | 369          |
| 4:15 PM             | 0                              | 0    | 15   | 0     | 0                              | 0    | 8    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 3     | 26    | 360          |
| 4:20 PM             | 0                              | 1    | 13   | 0     | 0                              | 0    | 8    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 3     | 25    | 367          |
| 4:25 PM             | 0                              | 1    | 7    | 0     | 0                              | 0    | 11   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 4     | 23    | 380          |
| 4:30 PM             | 0                              | 2    | 22   | 0     | 0                              | 0    | 10   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 35    | 387          |
| 4:35 PM             | 0                              | 1    | 18   | 0     | 0                              | 0    | 25   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 2     | 46    | 380          |
| 4:40 PM             | 0                              | 0    | 16   | 0     | 0                              | 0    | 10   | 1     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 3     | 30    | 363          |
| 4:45 PM             | 0                              | 3    | 13   | 0     | 0                              | 0    | 10   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 3     | 29    | 359          |
| 4:50 PM             | 0                              | 3    | 21   | 0     | 0                              | 0    | 13   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 38    | 360          |
| 4:55 PM             | 0                              | 1    | 10   | 0     | 0                              | 0    | 8    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 19    | 350          |
| 5:00 PM             | 0                              | 3    | 19   | 0     | 0                              | 0    | 9    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 2     | 33    | 355          |
| 5:05 PM             | 0                              | 2    | 11   | 0     | 0                              | 0    | 17   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 1    | 0     | 31    |              |
| 5:10 PM             | 0                              | 3    | 11   | 0     | 0                              | 0    | 10   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 25    |              |
| 5:15 PM             | 0                              | 1    | 21   | 0     | 0                              | 0    | 11   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 33    |              |
| 5:20 PM             | 0                              | 2    | 24   | 0     | 0                              | 0    | 11   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 38    |              |
| 5:25 PM             | 0                              | 0    | 14   | 0     | 0                              | 0    | 15   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 30    |              |
| 5:30 PM             | 0                              | 0    | 18   | 0     | 0                              | 0    | 7    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 3     | 28    |              |
| 5:35 PM             | 0                              | 0    | 16   | 1     | 0                              | 0    | 11   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 29    |              |
| 5:40 PM             | 0                              | 0    | 10   | 0     | 0                              | 0    | 15   | 0     | 0                        | 0    | 0    | 0     | 0                        | 1    | 0    | 0     | 26    |              |
| 5:45 PM             | 0                              | 5    | 11   | 0     | 0                              | 0    | 13   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 30    |              |
| 5:50 PM             | 0                              | 3    | 15   | 0     | 0                              | 0    | 10   | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 0     | 28    |              |
| 5:55 PM             | 0                              | 2    | 14   | 0     | 0                              | 0    | 7    | 0     | 0                        | 0    | 0    | 0     | 0                        | 0    | 0    | 1     | 24    |              |
| Count Total         | 0                              | 39   | 358  | 1     | 0                              | 0    | 275  | 1     | 0                        | 0    | 0    | 0     | 0                        | 2    | 0    | 34    | 710   |              |
| Peak Hour           | 0                              | 21   | 200  | 0     | 0                              | 0    | 149  | 1     | 0                        | 0    | 0    | 0     | 0                        | 1    | 0    | 15    | 387   |              |

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |             | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total       |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 0                   | 0  | 0  | 0  | 0           | 4:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:05 PM                | 0              | 0  | 0  | 0  | 0     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0           | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 1              | 0  | 0  | 0  | 1     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0           | 4:10 PM                | 1                                 | 0  | 0  | 0  | 1     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0           | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 0  | 0  | 0  | 0           | 4:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:25 PM                | 0              | 0  | 0  | 2  | 2     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0           | 4:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:30 PM                | 0              | 0  | 0  | 0  | 0     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0           | 4:30 PM                | 0                                 | 0  | 1  | 0  | 1     |
| 4:35 PM                | 0              | 0  | 1  | 0  | 1     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0           | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 1              | 0  | 0  | 0  | 1     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0           | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 0  | 1  | 1     | 4:45 PM                | 0                   | 0  | 0  | 0  | 0           | 4:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:50 PM                | 1              | 0  | 0  | 0  | 1     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0           | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0           | 4:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0           | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 0  | 0  | 0  | 0     | 5:05 PM                | 0                   | 0  | 0  | 0  | 0           | 5:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:10 PM                | 1              | 0  | 0  | 0  | 1     | 5:10 PM                | 1                   | 0  | 0  | 0  | 1           | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0           | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 1  | 0  | 1     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0           | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 0  | 0  | 0     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0           | 5:25 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0           | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0           | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0           | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0           | 5:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0           | 5:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0           | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 4              | 0  | 2  | 3  | 9     | Count Total            | 1                   | 0  | 0  | 1  | Count Total | 1                      | 0                                 | 1  | 0  | 2  |       |
| Peak Hour              | 3              | 0  | 2  | 1  | 6     | Peak Hour              | 1                   | 0  | 0  | 1  | Peak Hour   | 0                      | 0                                 | 1  | 0  | 1  |       |



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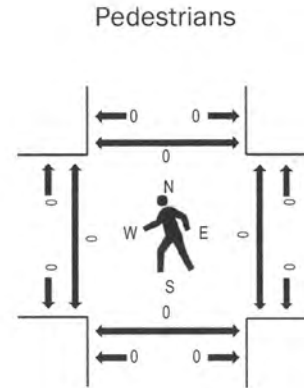
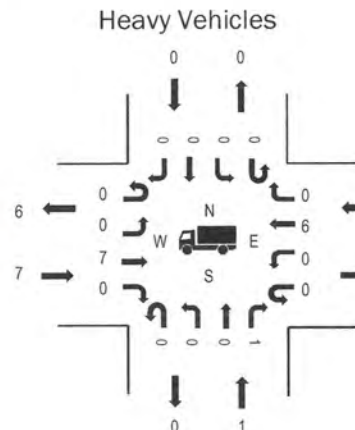
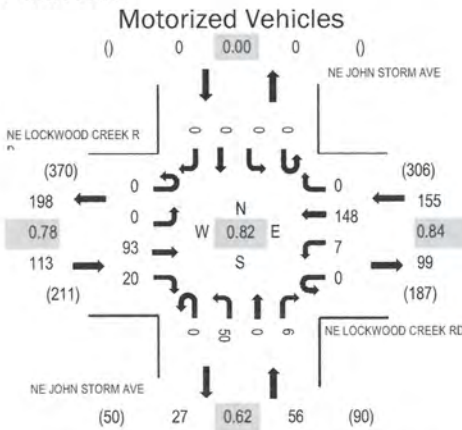
Location: 1 NE JOHN STORM AVE & NE LOCKWOOD CREEK RD AM

Date: Tuesday, July 27, 2021

Peak Hour: 07:10 AM - 08:10 AM

Peak 15-Minutes: 07:25 AM - 07:40 AM

Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 6.2% | 0.78 |
| WB  | 3.9% | 0.84 |
| NB  | 1.8% | 0.62 |
| SB  | 0.0% | 0.00 |
| All | 4.3% | 0.82 |

Traffic Counts - Motorized Vehicles

| Interval Start Time | NE LOCKWOOD CREEK RD Eastbound |      |      |       | NE LOCKWOOD CREEK RD Westbound |      |      |       | NE JOHN STORM AVE Northbound |      |      |       | NE JOHN STORM AVE Southbound |      |      |       | Total | Rolling Hour |
|---------------------|--------------------------------|------|------|-------|--------------------------------|------|------|-------|------------------------------|------|------|-------|------------------------------|------|------|-------|-------|--------------|
|                     | U-Turn                         | Left | Thru | Right | U-Turn                         | Left | Thru | Right | U-Turn                       | Left | Thru | Right | U-Turn                       | Left | Thru | Right |       |              |
| 7:00 AM             | 0                              | 0    | 12   | 4     | 0                              | 0    | 8    | 0     | 0                            | 1    | 0    | 1     | 0                            | 0    | 0    | 0     | 26    | 319          |
| 7:05 AM             | 0                              | 0    | 6    | 0     | 0                              | 0    | 8    | 0     | 0                            | 2    | 0    | 0     | 0                            | 0    | 0    | 0     | 16    | 314          |
| 7:10 AM             | 0                              | 0    | 6    | 2     | 0                              | 1    | 12   | 0     | 0                            | 1    | 0    | 0     | 0                            | 0    | 0    | 0     | 22    | 324          |
| 7:15 AM             | 0                              | 0    | 8    | 5     | 0                              | 0    | 10   | 0     | 0                            | 3    | 0    | 0     | 0                            | 0    | 0    | 0     | 26    | 324          |
| 7:20 AM             | 0                              | 0    | 4    | 0     | 0                              | 0    | 21   | 0     | 0                            | 3    | 0    | 1     | 0                            | 0    | 0    | 0     | 29    | 315          |
| 7:25 AM             | 0                              | 0    | 7    | 3     | 0                              | 0    | 11   | 0     | 0                            | 4    | 0    | 1     | 0                            | 0    | 0    | 0     | 26    | 314          |
| 7:30 AM             | 0                              | 0    | 8    | 1     | 0                              | 1    | 17   | 0     | 0                            | 6    | 0    | 0     | 0                            | 0    | 0    | 0     | 33    | 319          |
| 7:35 AM             | 0                              | 0    | 15   | 4     | 0                              | 1    | 13   | 0     | 0                            | 7    | 0    | 0     | 0                            | 0    | 0    | 0     | 40    | 304          |
| 7:40 AM             | 0                              | 0    | 3    | 0     | 0                              | 1    | 10   | 0     | 0                            | 10   | 0    | 0     | 0                            | 0    | 0    | 0     | 24    | 290          |
| 7:45 AM             | 0                              | 0    | 10   | 0     | 0                              | 1    | 10   | 0     | 0                            | 3    | 0    | 2     | 0                            | 0    | 0    | 0     | 26    | 290          |
| 7:50 AM             | 0                              | 0    | 9    | 1     | 0                              | 0    | 10   | 0     | 0                            | 2    | 0    | 0     | 0                            | 0    | 0    | 0     | 22    | 289          |
| 7:55 AM             | 0                              | 0    | 8    | 2     | 0                              | 0    | 14   | 0     | 0                            | 3    | 0    | 2     | 0                            | 0    | 0    | 0     | 29    | 288          |
| 8:00 AM             | 0                              | 0    | 7    | 0     | 0                              | 2    | 8    | 0     | 0                            | 4    | 0    | 0     | 0                            | 0    | 0    | 0     | 21    | 288          |
| 8:05 AM             | 0                              | 0    | 8    | 2     | 0                              | 0    | 12   | 0     | 0                            | 4    | 0    | 0     | 0                            | 0    | 0    | 0     | 26    |              |
| 8:10 AM             | 0                              | 0    | 5    | 2     | 0                              | 0    | 13   | 0     | 0                            | 2    | 0    | 0     | 0                            | 0    | 0    | 0     | 22    |              |
| 8:15 AM             | 0                              | 0    | 2    | 0     | 0                              | 0    | 12   | 0     | 0                            | 3    | 0    | 0     | 0                            | 0    | 0    | 0     | 17    |              |
| 8:20 AM             | 0                              | 0    | 8    | 1     | 0                              | 0    | 17   | 0     | 0                            | 1    | 0    | 1     | 0                            | 0    | 0    | 0     | 28    |              |
| 8:25 AM             | 0                              | 0    | 7    | 1     | 0                              | 1    | 18   | 0     | 0                            | 4    | 0    | 0     | 0                            | 0    | 0    | 0     | 31    |              |
| 8:30 AM             | 0                              | 0    | 6    | 2     | 0                              | 0    | 8    | 0     | 0                            | 2    | 0    | 0     | 0                            | 0    | 0    | 0     | 18    |              |
| 8:35 AM             | 0                              | 0    | 13   | 0     | 0                              | 2    | 10   | 0     | 0                            | 0    | 0    | 1     | 0                            | 0    | 0    | 0     | 26    |              |
| 8:40 AM             | 0                              | 0    | 2    | 0     | 0                              | 0    | 14   | 0     | 0                            | 5    | 0    | 3     | 0                            | 0    | 0    | 0     | 24    |              |
| 8:45 AM             | 0                              | 0    | 5    | 2     | 0                              | 1    | 15   | 0     | 0                            | 2    | 0    | 0     | 0                            | 0    | 0    | 0     | 25    |              |
| 8:50 AM             | 0                              | 0    | 8    | 2     | 0                              | 0    | 10   | 0     | 0                            | 0    | 0    | 1     | 0                            | 0    | 0    | 0     | 21    |              |
| 8:55 AM             | 0                              | 0    | 6    | 4     | 0                              | 1    | 13   | 0     | 0                            | 4    | 0    | 1     | 0                            | 0    | 0    | 0     | 29    |              |
| Count Total         | 0                              | 0    | 173  | 38    | 0                              | 12   | 294  | 0     | 0                            | 76   | 0    | 14    | 0                            | 0    | 0    | 0     | 607   |              |
| Peak Hour           | 0                              | 0    | 93   | 20    | 0                              | 7    | 148  | 0     | 0                            | 50   | 0    | 6     | 0                            | 0    | 0    | 0     | 324   |              |

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 7:00 AM                | 1              | 0  | 0  | 0  | 1     | 7:00 AM                | 0                   | 0  | 0  | 0  | 0     | 7:00 AM                | 0                                 | 1  | 0  | 0  | 1     |
| 7:05 AM                | 1              | 0  | 2  | 0  | 3     | 7:05 AM                | 0                   | 0  | 0  | 0  | 0     | 7:05 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:10 AM                | 0              | 0  | 0  | 0  | 0     | 7:10 AM                | 0                   | 0  | 0  | 0  | 0     | 7:10 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:15 AM                | 0              | 0  | 0  | 0  | 0     | 7:15 AM                | 0                   | 0  | 0  | 0  | 0     | 7:15 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:20 AM                | 1              | 0  | 1  | 0  | 2     | 7:20 AM                | 0                   | 0  | 0  | 0  | 0     | 7:20 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:25 AM                | 0              | 0  | 0  | 0  | 0     | 7:25 AM                | 0                   | 0  | 0  | 0  | 0     | 7:25 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:30 AM                | 1              | 0  | 1  | 0  | 2     | 7:30 AM                | 0                   | 0  | 0  | 0  | 0     | 7:30 AM                | 0                                 | 1  | 0  | 0  | 1     |
| 7:35 AM                | 2              | 0  | 1  | 0  | 3     | 7:35 AM                | 0                   | 0  | 0  | 0  | 0     | 7:35 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:40 AM                | 0              | 0  | 0  | 0  | 0     | 7:40 AM                | 0                   | 0  | 0  | 0  | 0     | 7:40 AM                | 0                                 | 1  | 0  | 0  | 1     |
| 7:45 AM                | 0              | 1  | 0  | 0  | 1     | 7:45 AM                | 0                   | 0  | 0  | 0  | 0     | 7:45 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:50 AM                | 2              | 0  | 0  | 0  | 2     | 7:50 AM                | 0                   | 0  | 0  | 0  | 0     | 7:50 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 7:55 AM                | 0              | 0  | 1  | 0  | 1     | 7:55 AM                | 0                   | 0  | 0  | 0  | 0     | 7:55 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:00 AM                | 1              | 0  | 1  | 0  | 2     | 8:00 AM                | 0                   | 0  | 0  | 0  | 0     | 8:00 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:05 AM                | 0              | 0  | 1  | 0  | 1     | 8:05 AM                | 0                   | 0  | 0  | 0  | 0     | 8:05 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:10 AM                | 1              | 0  | 1  | 0  | 2     | 8:10 AM                | 0                   | 0  | 0  | 0  | 0     | 8:10 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:15 AM                | 0              | 0  | 0  | 0  | 0     | 8:15 AM                | 0                   | 0  | 0  | 0  | 0     | 8:15 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:20 AM                | 1              | 0  | 0  | 0  | 1     | 8:20 AM                | 0                   | 0  | 0  | 0  | 0     | 8:20 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:25 AM                | 0              | 0  | 2  | 0  | 2     | 8:25 AM                | 0                   | 0  | 0  | 0  | 0     | 8:25 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:30 AM                | 0              | 0  | 0  | 0  | 0     | 8:30 AM                | 0                   | 0  | 0  | 0  | 0     | 8:30 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:35 AM                | 2              | 1  | 1  | 0  | 4     | 8:35 AM                | 1                   | 0  | 0  | 0  | 1     | 8:35 AM                | 0                                 | 2  | 0  | 0  | 2     |
| 8:40 AM                | 0              | 0  | 1  | 0  | 1     | 8:40 AM                | 0                   | 0  | 0  | 0  | 0     | 8:40 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:45 AM                | 0              | 0  | 0  | 0  | 0     | 8:45 AM                | 0                   | 0  | 0  | 0  | 0     | 8:45 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:50 AM                | 1              | 0  | 0  | 0  | 1     | 8:50 AM                | 0                   | 0  | 0  | 0  | 0     | 8:50 AM                | 0                                 | 0  | 0  | 0  | 0     |
| 8:55 AM                | 0              | 0  | 0  | 0  | 0     | 8:55 AM                | 0                   | 0  | 0  | 0  | 0     | 8:55 AM                | 0                                 | 1  | 0  | 0  | 1     |
| Count Total            | 14             | 2  | 13 | 0  | 29    | Count Total            | 1                   | 0  | 0  | 0  | 1     | Count Total            | 0                                 | 6  | 0  | 0  | 6     |
| Peak Hour              | 7              | 1  | 6  | 0  | 14    | Peak Hour              | 0                   | 0  | 0  | 0  | 0     | Peak Hour              | 0                                 | 2  | 0  | 0  | 2     |



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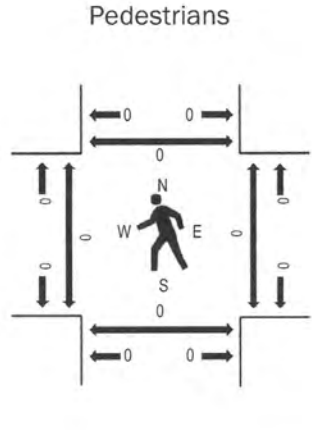
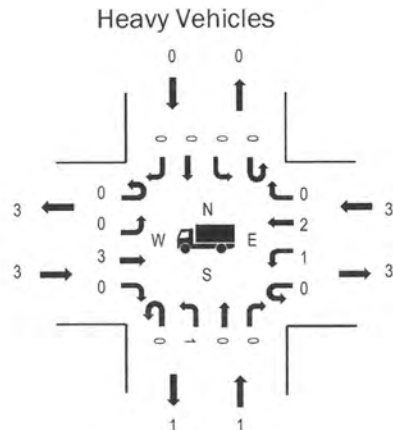
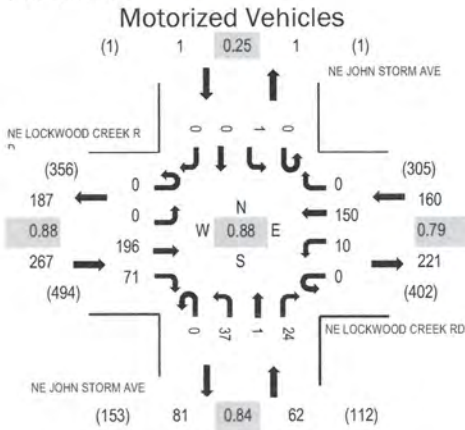
Location: 1 NE JOHN STORM AVE & NE LOCKWOOD CREEK RD PM

Date: Tuesday, July 27, 2021

Peak Hour: 04:25 PM - 05:25 PM

Peak 15-Minutes: 04:25 PM - 04:40 PM

Peak Hour



Note: Total study counts contained in parentheses.

|     | HV%  | PHF  |
|-----|------|------|
| EB  | 1.1% | 0.88 |
| WB  | 1.9% | 0.79 |
| NB  | 1.6% | 0.84 |
| SB  | 0.0% | 0.25 |
| All | 1.4% | 0.88 |

Traffic Counts - Motorized Vehicles

| Interval Start Time | NE LOCKWOOD CREEK RD Eastbound |      |      |       | NE LOCKWOOD CREEK RD Westbound |      |      |       | NE JOHN STORM AVE Northbound |      |      |       | NE JOHN STORM AVE Southbound |      |      |       | Total | Rolling Hour |
|---------------------|--------------------------------|------|------|-------|--------------------------------|------|------|-------|------------------------------|------|------|-------|------------------------------|------|------|-------|-------|--------------|
|                     | U-Turn                         | Left | Thru | Right | U-Turn                         | Left | Thru | Right | U-Turn                       | Left | Thru | Right | U-Turn                       | Left | Thru | Right |       |              |
| 4:00 PM             | 0                              | 0    | 13   | 5     | 0                              | 0    | 9    | 0     | 0                            | 5    | 0    | 2     | 0                            | 0    | 0    | 0     | 34    | 474          |
| 4:05 PM             | 0                              | 0    | 11   | 4     | 0                              | 1    | 16   | 0     | 0                            | 2    | 0    | 2     | 0                            | 0    | 0    | 0     | 36    | 474          |
| 4:10 PM             | 0                              | 0    | 14   | 10    | 0                              | 2    | 15   | 0     | 0                            | 4    | 0    | 1     | 0                            | 0    | 0    | 0     | 46    | 477          |
| 4:15 PM             | 0                              | 0    | 13   | 5     | 0                              | 0    | 7    | 0     | 0                            | 4    | 0    | 1     | 0                            | 0    | 0    | 0     | 30    | 467          |
| 4:20 PM             | 0                              | 0    | 10   | 7     | 0                              | 0    | 12   | 0     | 0                            | 3    | 0    | 0     | 0                            | 0    | 0    | 0     | 32    | 480          |
| 4:25 PM             | 0                              | 0    | 12   | 9     | 0                              | 1    | 11   | 0     | 0                            | 5    | 0    | 4     | 0                            | 0    | 0    | 0     | 42    | 490          |
| 4:30 PM             | 0                              | 0    | 19   | 5     | 0                              | 0    | 16   | 0     | 0                            | 4    | 0    | 1     | 0                            | 0    | 0    | 0     | 45    | 485          |
| 4:35 PM             | 0                              | 0    | 18   | 6     | 0                              | 3    | 18   | 0     | 0                            | 3    | 0    | 4     | 0                            | 0    | 0    | 0     | 52    | 474          |
| 4:40 PM             | 0                              | 0    | 13   | 5     | 0                              | 1    | 13   | 0     | 0                            | 8    | 0    | 2     | 0                            | 0    | 0    | 0     | 42    | 458          |
| 4:45 PM             | 0                              | 0    | 19   | 5     | 0                              | 2    | 13   | 0     | 0                            | 1    | 0    | 2     | 0                            | 0    | 0    | 0     | 42    | 456          |
| 4:50 PM             | 0                              | 0    | 16   | 7     | 0                              | 0    | 8    | 0     | 0                            | 3    | 0    | 1     | 0                            | 0    | 0    | 0     | 35    | 452          |
| 4:55 PM             | 0                              | 0    | 12   | 6     | 0                              | 0    | 8    | 0     | 0                            | 6    | 0    | 6     | 0                            | 0    | 0    | 0     | 38    | 448          |
| 5:00 PM             | 0                              | 0    | 17   | 5     | 0                              | 2    | 10   | 0     | 0                            | 0    | 0    | 0     | 0                            | 0    | 0    | 0     | 34    | 438          |
| 5:05 PM             | 0                              | 0    | 12   | 5     | 0                              | 1    | 18   | 0     | 0                            | 1    | 0    | 2     | 0                            | 0    | 0    | 0     | 39    |              |
| 5:10 PM             | 0                              | 0    | 18   | 6     | 0                              | 0    | 8    | 0     | 0                            | 2    | 1    | 1     | 0                            | 0    | 0    | 0     | 36    |              |
| 5:15 PM             | 0                              | 0    | 23   | 6     | 0                              | 0    | 9    | 0     | 0                            | 3    | 0    | 1     | 0                            | 1    | 0    | 0     | 43    |              |
| 5:20 PM             | 0                              | 0    | 17   | 6     | 0                              | 0    | 18   | 0     | 0                            | 1    | 0    | 0     | 0                            | 0    | 0    | 0     | 42    |              |
| 5:25 PM             | 0                              | 0    | 16   | 3     | 0                              | 0    | 14   | 0     | 0                            | 3    | 0    | 1     | 0                            | 0    | 0    | 0     | 37    |              |
| 5:30 PM             | 0                              | 0    | 14   | 8     | 0                              | 1    | 9    | 0     | 0                            | 1    | 0    | 1     | 0                            | 0    | 0    | 0     | 34    |              |
| 5:35 PM             | 0                              | 0    | 10   | 3     | 0                              | 2    | 14   | 0     | 0                            | 5    | 0    | 2     | 0                            | 0    | 0    | 0     | 36    |              |
| 5:40 PM             | 0                              | 0    | 15   | 6     | 0                              | 1    | 16   | 0     | 0                            | 1    | 0    | 1     | 0                            | 0    | 0    | 0     | 40    |              |
| 5:45 PM             | 0                              | 0    | 21   | 4     | 0                              | 0    | 8    | 0     | 0                            | 2    | 0    | 3     | 0                            | 0    | 0    | 0     | 38    |              |
| 5:50 PM             | 0                              | 0    | 14   | 3     | 0                              | 2    | 9    | 0     | 0                            | 0    | 0    | 3     | 0                            | 0    | 0    | 0     | 31    |              |
| 5:55 PM             | 0                              | 0    | 13   | 5     | 0                              | 0    | 7    | 0     | 0                            | 3    | 0    | 0     | 0                            | 0    | 0    | 0     | 28    |              |
| Count Total         | 0                              | 0    | 360  | 134   | 0                              | 19   | 286  | 0     | 0                            | 70   | 1    | 41    | 0                            | 1    | 0    | 0     | 912   |              |
| Peak Hour           | 0                              | 0    | 196  | 71    | 0                              | 10   | 150  | 0     | 0                            | 37   | 1    | 24    | 0                            | 1    | 0    | 0     | 490   |              |

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

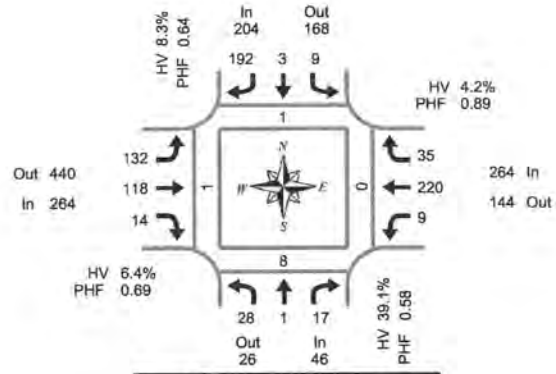
| Interval<br>Start Time | Heavy Vehicles |    |    |    |       | Interval<br>Start Time | Bicycles on Roadway |    |    |    |       | Interval<br>Start Time | Pedestrians/Bicycles on Crosswalk |    |    |    |       |
|------------------------|----------------|----|----|----|-------|------------------------|---------------------|----|----|----|-------|------------------------|-----------------------------------|----|----|----|-------|
|                        | EB             | NB | WB | SB | Total |                        | EB                  | NB | WB | SB | Total |                        | EB                                | NB | WB | SB | Total |
| 4:00 PM                | 0              | 0  | 0  | 0  | 0     | 4:00 PM                | 0                   | 0  | 0  | 0  | 0     | 4:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:05 PM                | 1              | 0  | 0  | 0  | 1     | 4:05 PM                | 0                   | 0  | 0  | 0  | 0     | 4:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:10 PM                | 0              | 0  | 0  | 0  | 0     | 4:10 PM                | 0                   | 0  | 0  | 0  | 0     | 4:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:15 PM                | 0              | 0  | 0  | 0  | 0     | 4:15 PM                | 0                   | 0  | 0  | 0  | 0     | 4:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:20 PM                | 0              | 0  | 0  | 0  | 0     | 4:20 PM                | 0                   | 0  | 0  | 0  | 0     | 4:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:25 PM                | 0              | 0  | 0  | 0  | 0     | 4:25 PM                | 0                   | 0  | 0  | 0  | 0     | 4:25 PM                | 0                                 | 1  | 0  | 0  | 1     |
| 4:30 PM                | 0              | 0  | 1  | 0  | 1     | 4:30 PM                | 0                   | 0  | 0  | 0  | 0     | 4:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:35 PM                | 1              | 0  | 0  | 0  | 1     | 4:35 PM                | 0                   | 0  | 0  | 0  | 0     | 4:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:40 PM                | 0              | 0  | 0  | 0  | 0     | 4:40 PM                | 0                   | 0  | 0  | 0  | 0     | 4:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:45 PM                | 0              | 0  | 1  | 0  | 1     | 4:45 PM                | 0                   | 0  | 0  | 0  | 0     | 4:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:50 PM                | 1              | 0  | 0  | 0  | 1     | 4:50 PM                | 0                   | 0  | 0  | 0  | 0     | 4:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 4:55 PM                | 0              | 0  | 0  | 0  | 0     | 4:55 PM                | 0                   | 0  | 0  | 0  | 0     | 4:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:00 PM                | 0              | 0  | 0  | 0  | 0     | 5:00 PM                | 0                   | 0  | 0  | 0  | 0     | 5:00 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:05 PM                | 0              | 1  | 0  | 0  | 1     | 5:05 PM                | 1                   | 0  | 0  | 0  | 1     | 5:05 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:10 PM                | 1              | 0  | 0  | 0  | 1     | 5:10 PM                | 0                   | 0  | 0  | 0  | 0     | 5:10 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:15 PM                | 0              | 0  | 0  | 0  | 0     | 5:15 PM                | 0                   | 0  | 0  | 0  | 0     | 5:15 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:20 PM                | 0              | 0  | 1  | 0  | 1     | 5:20 PM                | 0                   | 0  | 0  | 0  | 0     | 5:20 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:25 PM                | 0              | 0  | 1  | 0  | 1     | 5:25 PM                | 0                   | 0  | 0  | 0  | 0     | 5:25 PM                | 0                                 | 1  | 0  | 0  | 1     |
| 5:30 PM                | 0              | 0  | 0  | 0  | 0     | 5:30 PM                | 0                   | 0  | 0  | 0  | 0     | 5:30 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:35 PM                | 0              | 0  | 0  | 0  | 0     | 5:35 PM                | 0                   | 0  | 0  | 0  | 0     | 5:35 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:40 PM                | 0              | 0  | 0  | 0  | 0     | 5:40 PM                | 0                   | 0  | 0  | 0  | 0     | 5:40 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:45 PM                | 0              | 0  | 0  | 0  | 0     | 5:45 PM                | 0                   | 0  | 0  | 0  | 0     | 5:45 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:50 PM                | 0              | 0  | 0  | 0  | 0     | 5:50 PM                | 0                   | 0  | 0  | 0  | 0     | 5:50 PM                | 0                                 | 0  | 0  | 0  | 0     |
| 5:55 PM                | 0              | 0  | 0  | 0  | 0     | 5:55 PM                | 0                   | 0  | 0  | 0  | 0     | 5:55 PM                | 0                                 | 0  | 0  | 0  | 0     |
| Count Total            | 4              | 1  | 4  | 0  | 9     | Count Total            | 1                   | 0  | 0  | 0  | 1     | Count Total            | 0                                 | 2  | 0  | 0  | 2     |
| Peak Hour              | 3              | 1  | 3  | 0  | 7     | Peak Hour              | 1                   | 0  | 0  | 0  | 1     | Peak Hour              | 0                                 | 1  | 0  | 0  | 1     |



# Total Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary**  
7:30 AM to 8:30 AM

## E Ivy St & E 4th St

Thursday, September 13, 2018  
7:00 AM to 9:00 AM

### 15-Minute Interval Summary

7:00 AM to 9:00 AM

| Interval Start Time | Northbound E Ivy St |   |    |       | Southbound E Ivy St |   |     |       | Eastbound E 4th St |     |    |       | Westbound E 4th St |     |    |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|---------------------|---|----|-------|---------------------|---|-----|-------|--------------------|-----|----|-------|--------------------|-----|----|-------|----------------|-----------------------|-------|------|------|
|                     | L                   | T | R  | Bikes | L                   | T | R   | Bikes | L                  | T   | R  | Bikes | L                  | T   | R  | Bikes |                | North                 | South | East | West |
| 7:00 AM             | 0                   | 0 | 0  | 0     | 0                   | 0 | 33  | 0     | 8                  | 21  | 2  | 1     | 0                  | 45  | 0  | 0     | 109            | 0                     | 0     | 0    | 0    |
| 7:15 AM             | 1                   | 1 | 0  | 0     | 1                   | 0 | 27  | 0     | 21                 | 23  | 0  | 0     | 1                  | 48  | 4  | 0     | 127            | 0                     | 4     | 0    | 0    |
| 7:30 AM             | 0                   | 0 | 0  | 0     | 0                   | 0 | 36  | 0     | 23                 | 20  | 0  | 0     | 0                  | 55  | 2  | 0     | 136            | 0                     | 2     | 0    | 1    |
| 7:45 AM             | 2                   | 1 | 3  | 0     | 1                   | 0 | 47  | 0     | 41                 | 23  | 2  | 0     | 3                  | 62  | 12 | 0     | 187            | 0                     | 4     | 0    | 0    |
| 8:00 AM             | 13                  | 0 | 7  | 0     | 8                   | 3 | 69  | 0     | 51                 | 36  | 9  | 0     | 4                  | 53  | 17 | 0     | 270            | 1                     | 2     | 0    | 0    |
| 8:15 AM             | 13                  | 0 | 7  | 0     | 0                   | 0 | 40  | 0     | 17                 | 39  | 3  | 0     | 2                  | 60  | 4  | 0     | 185            | 0                     | 0     | 0    | 0    |
| 8:30 AM             | 3                   | 0 | 2  | 0     | 1                   | 0 | 23  | 0     | 10                 | 20  | 2  | 0     | 0                  | 32  | 2  | 0     | 95             | 0                     | 3     | 0    | 0    |
| 8:45 AM             | 1                   | 1 | 1  | 0     | 0                   | 0 | 18  | 0     | 12                 | 27  | 0  | 0     | 1                  | 34  | 0  | 0     | 95             | 0                     | 0     | 0    | 0    |
| Total Survey        | 33                  | 3 | 20 | 0     | 11                  | 3 | 293 | 0     | 183                | 209 | 18 | 1     | 11                 | 379 | 41 | 0     | 1,204          | 1                     | 15    | 0    | 1    |

### Peak Hour Summary

7:30 AM to 8:30 AM

| By Approach | Northbound E Ivy St |     |       |       | Southbound E Ivy St |     |       |       | Eastbound E 4th St |     |       |       | Westbound E 4th St |     |       |       | Total | Pedestrians Crosswalk |       |      |      |
|-------------|---------------------|-----|-------|-------|---------------------|-----|-------|-------|--------------------|-----|-------|-------|--------------------|-----|-------|-------|-------|-----------------------|-------|------|------|
|             | In                  | Out | Total | Bikes | In                  | Out | Total | Bikes | In                 | Out | Total | Bikes | In                 | Out | Total | Bikes |       | North                 | South | East | West |
| Volume      | 46                  | 26  | 72    | 0     | 204                 | 168 | 372   | 0     | 264                | 440 | 704   | 0     | 264                | 144 | 408   | 0     | 778   | 1                     | 8     | 0    | 1    |
| %HV         | 39.1%               |     |       |       | 8.3%                |     |       |       | 6.4%               |     |       |       | 4.2%               |     |       |       | 8.1%  |                       |       |      |      |
| PHF         | 0.58                |     |       |       | 0.64                |     |       |       | 0.69               |     |       |       | 0.89               |     |       |       | 0.72  |                       |       |      |      |

| By Movement | Northbound E Ivy St |      |      |       | Southbound E Ivy St |      |      |       | Eastbound E 4th St |      |      |       | Westbound E 4th St |      |      |       | Total |
|-------------|---------------------|------|------|-------|---------------------|------|------|-------|--------------------|------|------|-------|--------------------|------|------|-------|-------|
|             | L                   | T    | R    | Total | L                   | T    | R    | Total | L                  | T    | R    | Total | L                  | T    | R    | Total |       |
| Volume      | 28                  | 1    | 17   | 46    | 9                   | 3    | 192  | 204   | 132                | 118  | 14   | 264   | 9                  | 220  | 35   | 264   | 778   |
| %HV         | 60.7%               | 0.0% | 5.9% | 39.1% | 11.1%               | 0.0% | 8.3% | 8.3%  | 6.1%               | 7.6% | 0.0% | 6.4%  | 0.0%               | 3.6% | 8.6% | 4.2%  | 8.1%  |
| PHF         | 0.54                | 0.25 | 0.61 | 0.58  | 0.28                | 0.25 | 0.70 | 0.64  | 0.65               | 0.76 | 0.39 | 0.69  | 0.56               | 0.92 | 0.51 | 0.89  | 0.72  |

### Rolling Hour Summary

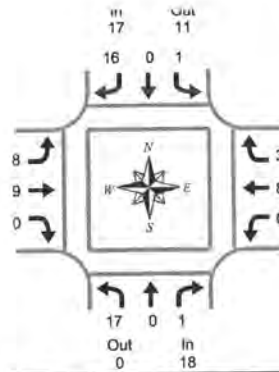
7:00 AM to 9:00 AM

| Interval Start Time | Northbound E Ivy St |   |    |       | Southbound E Ivy St |   |     |       | Eastbound E 4th St |     |    |       | Westbound E 4th St |     |    |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|---------------------|---|----|-------|---------------------|---|-----|-------|--------------------|-----|----|-------|--------------------|-----|----|-------|----------------|-----------------------|-------|------|------|
|                     | L                   | T | R  | Bikes | L                   | T | R   | Bikes | L                  | T   | R  | Bikes | L                  | T   | R  | Bikes |                | North                 | South | East | West |
| 7:00 AM             | 3                   | 2 | 3  | 0     | 2                   | 0 | 143 | 0     | 93                 | 87  | 4  | 1     | 4                  | 200 | 18 | 0     | 559            | 0                     | 10    | 0    | 1    |
| 7:15 AM             | 16                  | 2 | 10 | 0     | 10                  | 3 | 179 | 0     | 136                | 102 | 11 | 0     | 8                  | 208 | 35 | 0     | 720            | 1                     | 12    | 0    | 1    |
| 7:30 AM             | 28                  | 1 | 17 | 0     | 9                   | 3 | 192 | 0     | 132                | 118 | 14 | 0     | 9                  | 220 | 35 | 0     | 778            | 1                     | 8     | 0    | 1    |
| 7:45 AM             | 31                  | 1 | 19 | 0     | 10                  | 3 | 179 | 0     | 119                | 118 | 16 | 0     | 9                  | 197 | 35 | 0     | 737            | 1                     | 9     | 0    | 0    |
| 8:00 AM             | 30                  | 1 | 17 | 0     | 9                   | 3 | 150 | 0     | 90                 | 122 | 14 | 0     | 7                  | 179 | 23 | 0     | 645            | 1                     | 5     | 0    | 0    |

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary  
7:30 AM to 8:30 AM**

## E Ivy St & E 4th St

Thursday, September 13, 2018  
7:00 AM to 9:00 AM

### Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

| Interval Start Time | Northbound E Ivy St |   |   |       | Southbound E Ivy St |   |    |       | Eastbound E 4th St |    |   |       | Westbound E 4th St |    |   |       | Interval Total |
|---------------------|---------------------|---|---|-------|---------------------|---|----|-------|--------------------|----|---|-------|--------------------|----|---|-------|----------------|
|                     | L                   | T | R | Total | L                   | T | R  | Total | L                  | T  | R | Total | L                  | T  | R | Total |                |
| 7:00 AM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1  | 1     | 1                  | 8  | 0 | 9     | 0                  | 1  | 0 | 1     | 11             |
| 7:15 AM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 0  | 0     | 1                  | 6  | 0 | 7     | 0                  | 0  | 0 | 0     | 7              |
| 7:30 AM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 0  | 0     | 0                  | 1  | 0 | 1     | 0                  | 1  | 0 | 1     | 2              |
| 7:45 AM             | 0                   | 0 | 1 | 1     | 0                   | 0 | 2  | 2     | 3                  | 2  | 0 | 5     | 0                  | 4  | 0 | 4     | 12             |
| 8:00 AM             | 12                  | 0 | 0 | 12    | 1                   | 0 | 14 | 15    | 4                  | 3  | 0 | 7     | 0                  | 2  | 2 | 4     | 38             |
| 8:15 AM             | 5                   | 0 | 0 | 5     | 0                   | 0 | 0  | 0     | 1                  | 3  | 0 | 4     | 0                  | 1  | 1 | 2     | 11             |
| 8:30 AM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 0  | 0     | 1                  | 2  | 0 | 3     | 0                  | 2  | 0 | 2     | 5              |
| 8:45 AM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1  | 1     | 0                  | 1  | 0 | 1     | 0                  | 4  | 0 | 4     | 6              |
| Total Survey        | 17                  | 0 | 1 | 18    | 1                   | 0 | 18 | 19    | 11                 | 26 | 0 | 37    | 0                  | 15 | 3 | 18    | 92             |

### Heavy Vehicle Peak Hour Summary 7:30 AM to 8:30 AM

| By Approach | Northbound E Ivy St |     |       | Southbound E Ivy St |     |       | Eastbound E 4th St |      |       | Westbound E 4th St |      |       | Total |      |      |
|-------------|---------------------|-----|-------|---------------------|-----|-------|--------------------|------|-------|--------------------|------|-------|-------|------|------|
|             | In                  | Out | Total | In                  | Out | Total | In                 | Out  | Total | In                 | Out  | Total |       |      |      |
| Volume      | 18                  | 0   | 18    | 17                  | 11  | 28    | 17                 | 41   | 58    | 11                 | 11   | 22    | 63    |      |      |
| PHF         | 0.25                |     |       | 0.25                |     |       | 0.25               | 0.15 | 0.00  | 0.25               | 0.00 | 0.29  | 0.25  | 0.28 | 0.26 |

| By Movement | Northbound E Ivy St |      |      |       | Southbound E Ivy St |      |      |       | Eastbound E 4th St |      |      |       | Westbound E 4th St |      |      |       | Total |
|-------------|---------------------|------|------|-------|---------------------|------|------|-------|--------------------|------|------|-------|--------------------|------|------|-------|-------|
|             | L                   | T    | R    | Total | L                   | T    | R    | Total | L                  | T    | R    | Total | L                  | T    | R    | Total |       |
| Volume      | 17                  | 0    | 1    | 18    | 1                   | 0    | 16   | 17    | 8                  | 9    | 0    | 17    | 0                  | 8    | 3    | 11    | 63    |
| PHF         | 0.25                | 0.00 | 0.25 | 0.25  | 0.25                | 0.00 | 0.25 | 0.25  | 0.25               | 0.15 | 0.00 | 0.25  | 0.00               | 0.29 | 0.25 | 0.28  | 0.26  |

### Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

| Interval Start Time | Northbound E Ivy St |   |   |       | Southbound E Ivy St |   |    |       | Eastbound E 4th St |    |   |       | Westbound E 4th St |   |   |       | Interval Total |
|---------------------|---------------------|---|---|-------|---------------------|---|----|-------|--------------------|----|---|-------|--------------------|---|---|-------|----------------|
|                     | L                   | T | R | Total | L                   | T | R  | Total | L                  | T  | R | Total | L                  | T | R | Total |                |
| 7:00 AM             | 0                   | 0 | 1 | 1     | 0                   | 0 | 3  | 3     | 5                  | 17 | 0 | 22    | 0                  | 6 | 0 | 6     | 32             |
| 7:15 AM             | 12                  | 0 | 1 | 13    | 1                   | 0 | 16 | 17    | 8                  | 12 | 0 | 20    | 0                  | 7 | 2 | 9     | 59             |
| 7:30 AM             | 17                  | 0 | 1 | 18    | 1                   | 0 | 16 | 17    | 8                  | 9  | 0 | 17    | 0                  | 8 | 3 | 11    | 63             |
| 7:45 AM             | 17                  | 0 | 1 | 18    | 1                   | 0 | 16 | 17    | 9                  | 10 | 0 | 19    | 0                  | 9 | 3 | 12    | 66             |
| 8:00 AM             | 17                  | 0 | 0 | 17    | 1                   | 0 | 15 | 16    | 6                  | 9  | 0 | 15    | 0                  | 9 | 3 | 12    | 60             |

# Peak Hour Summary

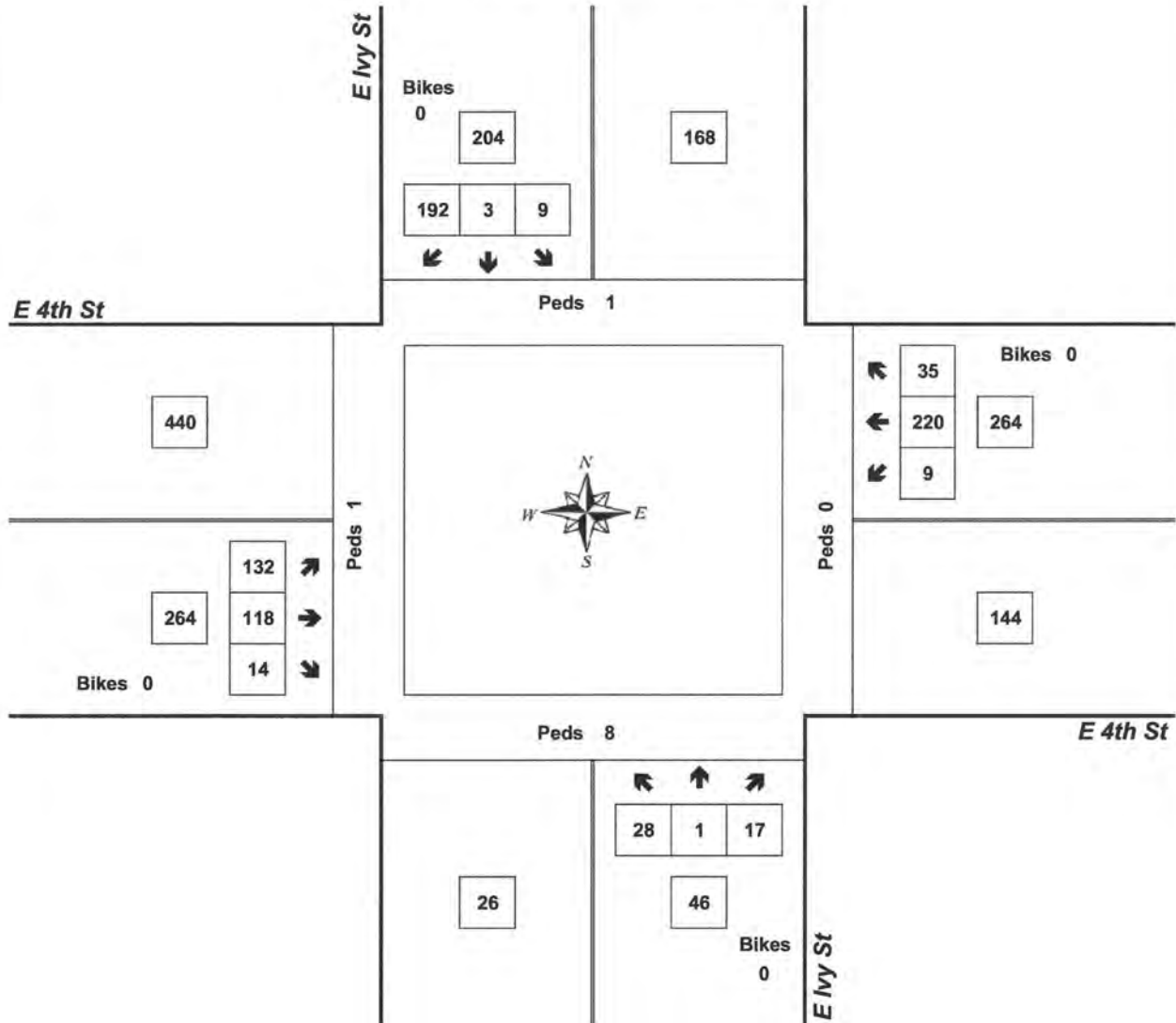


Clay Carney  
(503) 833-2740

## E Ivy St & E 4th St

7:30 AM to 8:30 AM

Thursday, September 13, 2018



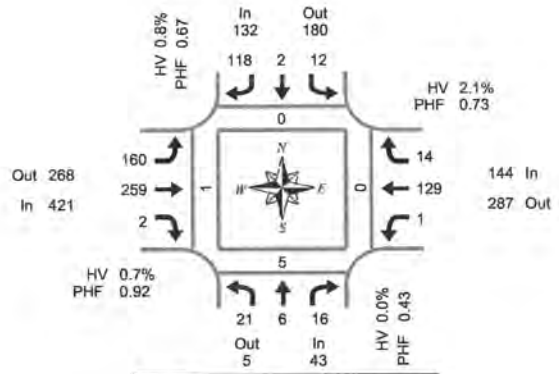
| Approach            | PHF         | HV%         | Volume     |
|---------------------|-------------|-------------|------------|
| EB                  | 0.69        | 6.4%        | 264        |
| WB                  | 0.89        | 4.2%        | 264        |
| NB                  | 0.58        | 39.1%       | 46         |
| SB                  | 0.64        | 8.3%        | 204        |
| <b>Intersection</b> | <b>0.72</b> | <b>8.1%</b> | <b>778</b> |

Count Period: 7:00 AM to 9:00 AM

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary  
5:00 PM to 6:00 PM**

## E Ivy St & E 4th St

Thursday, September 13, 2018  
4:00 PM to 6:00 PM

### 15-Minute Interval Summary 4:00 PM to 6:00 PM

| Interval Start Time | Northbound E Ivy St |   |    |       | Southbound E Ivy St |   |     |       | Eastbound E 4th St |     |    |       | Westbound E 4th St |     |    |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|---------------------|---|----|-------|---------------------|---|-----|-------|--------------------|-----|----|-------|--------------------|-----|----|-------|----------------|-----------------------|-------|------|------|
|                     | L                   | T | R  | Bikes | L                   | T | R   | Bikes | L                  | T   | R  | Bikes | L                  | T   | R  | Bikes |                | North                 | South | East | West |
| 4:00 PM             | 2                   | 0 | 1  | 0     | 2                   | 0 | 31  | 0     | 24                 | 46  | 2  | 0     | 0                  | 39  | 1  | 0     | 148            | 0                     | 21    | 0    | 0    |
| 4:15 PM             | 5                   | 0 | 3  | 0     | 2                   | 1 | 20  | 0     | 39                 | 64  | 4  | 0     | 0                  | 46  | 1  | 0     | 185            | 0                     | 20    | 0    | 0    |
| 4:30 PM             | 6                   | 1 | 4  | 0     | 0                   | 0 | 17  | 0     | 39                 | 57  | 1  | 0     | 0                  | 44  | 3  | 0     | 172            | 0                     | 32    | 0    | 0    |
| 4:45 PM             | 0                   | 0 | 0  | 0     | 3                   | 1 | 18  | 0     | 49                 | 76  | 2  | 0     | 1                  | 45  | 5  | 0     | 200            | 0                     | 11    | 0    | 0    |
| 5:00 PM             | 1                   | 0 | 0  | 0     | 5                   | 1 | 22  | 0     | 46                 | 59  | 0  | 0     | 0                  | 28  | 7  | 0     | 169            | 0                     | 1     | 0    | 0    |
| 5:15 PM             | 1                   | 1 | 0  | 0     | 1                   | 0 | 22  | 0     | 30                 | 61  | 0  | 0     | 0                  | 46  | 3  | 0     | 165            | 0                     | 0     | 0    | 0    |
| 5:30 PM             | 14                  | 4 | 7  | 0     | 0                   | 0 | 32  | 0     | 45                 | 68  | 2  | 0     | 0                  | 30  | 3  | 0     | 205            | 0                     | 1     | 0    | 0    |
| 5:45 PM             | 5                   | 1 | 9  | 0     | 6                   | 1 | 42  | 0     | 39                 | 71  | 0  | 0     | 1                  | 25  | 1  | 0     | 201            | 0                     | 3     | 0    | 1    |
| Total Survey        | 34                  | 7 | 24 | 0     | 19                  | 4 | 204 | 0     | 311                | 502 | 11 | 0     | 2                  | 303 | 24 | 0     | 1,445          | 0                     | 89    | 0    | 1    |

### Peak Hour Summary 5:00 PM to 6:00 PM

| By Approach | Northbound E Ivy St |     |       |       | Southbound E Ivy St |     |       |       | Eastbound E 4th St |     |       |       | Westbound E 4th St |     |       |       | Total | Pedestrians Crosswalk |       |      |      |
|-------------|---------------------|-----|-------|-------|---------------------|-----|-------|-------|--------------------|-----|-------|-------|--------------------|-----|-------|-------|-------|-----------------------|-------|------|------|
|             | In                  | Out | Total | Bikes | In                  | Out | Total | Bikes | In                 | Out | Total | Bikes | In                 | Out | Total | Bikes |       | North                 | South | East | West |
| Volume      | 43                  | 5   | 48    | 0     | 132                 | 180 | 312   | 0     | 421                | 268 | 689   | 0     | 144                | 287 | 431   | 0     | 740   | 0                     | 5     | 0    | 1    |
| %HV         | 0.0%                |     |       |       | 0.8%                |     |       |       | 0.7%               |     |       |       | 2.1%               |     |       |       | 0.9%  |                       |       |      |      |
| PHF         | 0.43                |     |       |       | 0.67                |     |       |       | 0.92               |     |       |       | 0.73               |     |       |       | 0.90  |                       |       |      |      |

| By Movement | Northbound E Ivy St |      |      |       | Southbound E Ivy St |      |      |       | Eastbound E 4th St |      |      |       | Westbound E 4th St |      |      |       | Total |
|-------------|---------------------|------|------|-------|---------------------|------|------|-------|--------------------|------|------|-------|--------------------|------|------|-------|-------|
|             | L                   | T    | R    | Total | L                   | T    | R    | Total | L                  | T    | R    | Total | L                  | T    | R    | Total |       |
| Volume      | 21                  | 6    | 16   | 43    | 12                  | 2    | 118  | 132   | 160                | 259  | 2    | 421   | 1                  | 129  | 14   | 144   | 740   |
| %HV         | 0.0%                | 0.0% | 0.0% | 0.0%  | 0.0%                | 0.0% | 0.8% | 0.8%  | 0.6%               | 0.8% | 0.0% | 0.7%  | 0.0%               | 2.3% | 0.0% | 2.1%  | 0.9%  |
| PHF         | 0.38                | 0.38 | 0.44 | 0.43  | 0.50                | 0.50 | 0.70 | 0.67  | 0.87               | 0.91 | 0.25 | 0.92  | 0.25               | 0.70 | 0.50 | 0.73  | 0.90  |

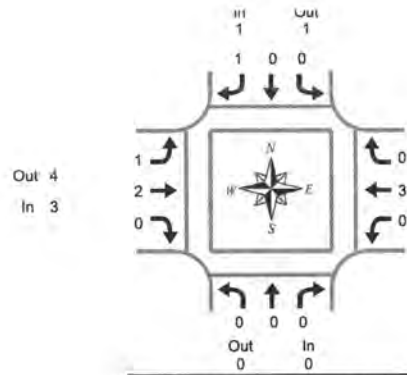
### Rolling Hour Summary 4:00 PM to 6:00 PM

| Interval Start Time | Northbound E Ivy St |   |    |       | Southbound E Ivy St |   |     |       | Eastbound E 4th St |     |   |       | Westbound E 4th St |     |    |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|---------------------|---|----|-------|---------------------|---|-----|-------|--------------------|-----|---|-------|--------------------|-----|----|-------|----------------|-----------------------|-------|------|------|
|                     | L                   | T | R  | Bikes | L                   | T | R   | Bikes | L                  | T   | R | Bikes | L                  | T   | R  | Bikes |                | North                 | South | East | West |
| 4:00 PM             | 13                  | 1 | 8  | 0     | 7                   | 2 | 86  | 0     | 151                | 243 | 9 | 0     | 1                  | 174 | 10 | 0     | 705            | 0                     | 84    | 0    | 0    |
| 4:15 PM             | 12                  | 1 | 7  | 0     | 10                  | 3 | 77  | 0     | 173                | 256 | 7 | 0     | 1                  | 163 | 16 | 0     | 726            | 0                     | 64    | 0    | 0    |
| 4:30 PM             | 8                   | 2 | 4  | 0     | 9                   | 2 | 79  | 0     | 164                | 253 | 3 | 0     | 1                  | 163 | 18 | 0     | 706            | 0                     | 44    | 0    | 0    |
| 4:45 PM             | 16                  | 6 | 7  | 0     | 9                   | 2 | 94  | 0     | 170                | 264 | 4 | 0     | 1                  | 149 | 18 | 0     | 739            | 0                     | 13    | 0    | 0    |
| 5:00 PM             | 21                  | 6 | 16 | 0     | 12                  | 2 | 118 | 0     | 160                | 259 | 2 | 0     | 1                  | 129 | 14 | 0     | 740            | 0                     | 5     | 0    | 1    |

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



## E Ivy St & E 4th St

Thursday, September 13, 2018

4:00 PM to 6:00 PM

**Peak Hour Summary**  
5:00 PM to 6:00 PM

### Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

| Interval Start Time | Northbound E Ivy St |   |   |       | Southbound E Ivy St |   |   |       | Eastbound E 4th St |   |   |       | Westbound E 4th St |    |   |       | Interval Total |
|---------------------|---------------------|---|---|-------|---------------------|---|---|-------|--------------------|---|---|-------|--------------------|----|---|-------|----------------|
|                     | L                   | T | R | Total | L                   | T | R | Total | L                  | T | R | Total | L                  | T  | R | Total |                |
| 4:00 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1 | 1     | 0                  | 2 | 0 | 2     | 0                  | 4  | 0 | 4     | 7              |
| 4:15 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1 | 1     | 0                  | 2 | 0 | 2     | 0                  | 2  | 0 | 2     | 5              |
| 4:30 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1 | 1     | 0                  | 1 | 0 | 1     | 0                  | 1  | 0 | 1     | 3              |
| 4:45 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 2 | 2     | 0                  | 2 | 0 | 2     | 0                  | 1  | 0 | 1     | 5              |
| 5:00 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 0 | 0     | 0                  | 0 | 0 | 0     | 0                  | 0  | 0 | 0     | 0              |
| 5:15 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 0 | 0     | 0                  | 1 | 0 | 1     | 0                  | 2  | 0 | 2     | 3              |
| 5:30 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 0 | 0     | 0                  | 1 | 0 | 1     | 0                  | 1  | 0 | 1     | 2              |
| 5:45 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1 | 1     | 1                  | 0 | 0 | 1     | 0                  | 0  | 0 | 0     | 2              |
| Total Survey        | 0                   | 0 | 0 | 0     | 0                   | 0 | 6 | 6     | 1                  | 9 | 0 | 10    | 0                  | 11 | 0 | 11    | 27             |

### Heavy Vehicle Peak Hour Summary

5:00 PM to 6:00 PM

| By Approach | Northbound E Ivy St |     |       | Southbound E Ivy St |     |       | Eastbound E 4th St |     |       | Westbound E 4th St |     |       | Total |
|-------------|---------------------|-----|-------|---------------------|-----|-------|--------------------|-----|-------|--------------------|-----|-------|-------|
|             | In                  | Out | Total | In                  | Out | Total | In                 | Out | Total | In                 | Out | Total |       |
| Volume      | 0                   | 0   | 0     | 1                   | 1   | 2     | 3                  | 4   | 7     | 3                  | 2   | 5     | 7     |
| PHF         | 0.00                |     |       | 0.06                |     |       | 0.15               |     |       | 0.11               |     |       | 0.12  |

| By Movement | Northbound E Ivy St |      |      |       | Southbound E Ivy St |      |      |       | Eastbound E 4th St |      |      |       | Westbound E 4th St |      |      |       | Total |
|-------------|---------------------|------|------|-------|---------------------|------|------|-------|--------------------|------|------|-------|--------------------|------|------|-------|-------|
|             | L                   | T    | R    | Total | L                   | T    | R    | Total | L                  | T    | R    | Total | L                  | T    | R    | Total |       |
| Volume      | 0                   | 0    | 0    | 0     | 0                   | 0    | 1    | 1     | 1                  | 2    | 0    | 3     | 0                  | 3    | 0    | 3     | 7     |
| PHF         | 0.00                | 0.00 | 0.00 | 0.00  | 0.00                | 0.00 | 0.06 | 0.06  | 0.25               | 0.10 | 0.00 | 0.15  | 0.00               | 0.11 | 0.00 | 0.11  | 0.12  |

### Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

| Interval Start Time | Northbound E Ivy St |   |   |       | Southbound E Ivy St |   |   |       | Eastbound E 4th St |   |   |       | Westbound E 4th St |   |   |       | Interval Total |
|---------------------|---------------------|---|---|-------|---------------------|---|---|-------|--------------------|---|---|-------|--------------------|---|---|-------|----------------|
|                     | L                   | T | R | Total | L                   | T | R | Total | L                  | T | R | Total | L                  | T | R | Total |                |
| 4:00 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 5 | 5     | 0                  | 7 | 0 | 7     | 0                  | 8 | 0 | 8     | 20             |
| 4:15 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 4 | 4     | 0                  | 5 | 0 | 5     | 0                  | 4 | 0 | 4     | 13             |
| 4:30 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 3 | 3     | 0                  | 4 | 0 | 4     | 0                  | 4 | 0 | 4     | 11             |
| 4:45 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 2 | 2     | 0                  | 4 | 0 | 4     | 0                  | 4 | 0 | 4     | 10             |
| 5:00 PM             | 0                   | 0 | 0 | 0     | 0                   | 0 | 1 | 1     | 1                  | 2 | 0 | 3     | 0                  | 3 | 0 | 3     | 7              |

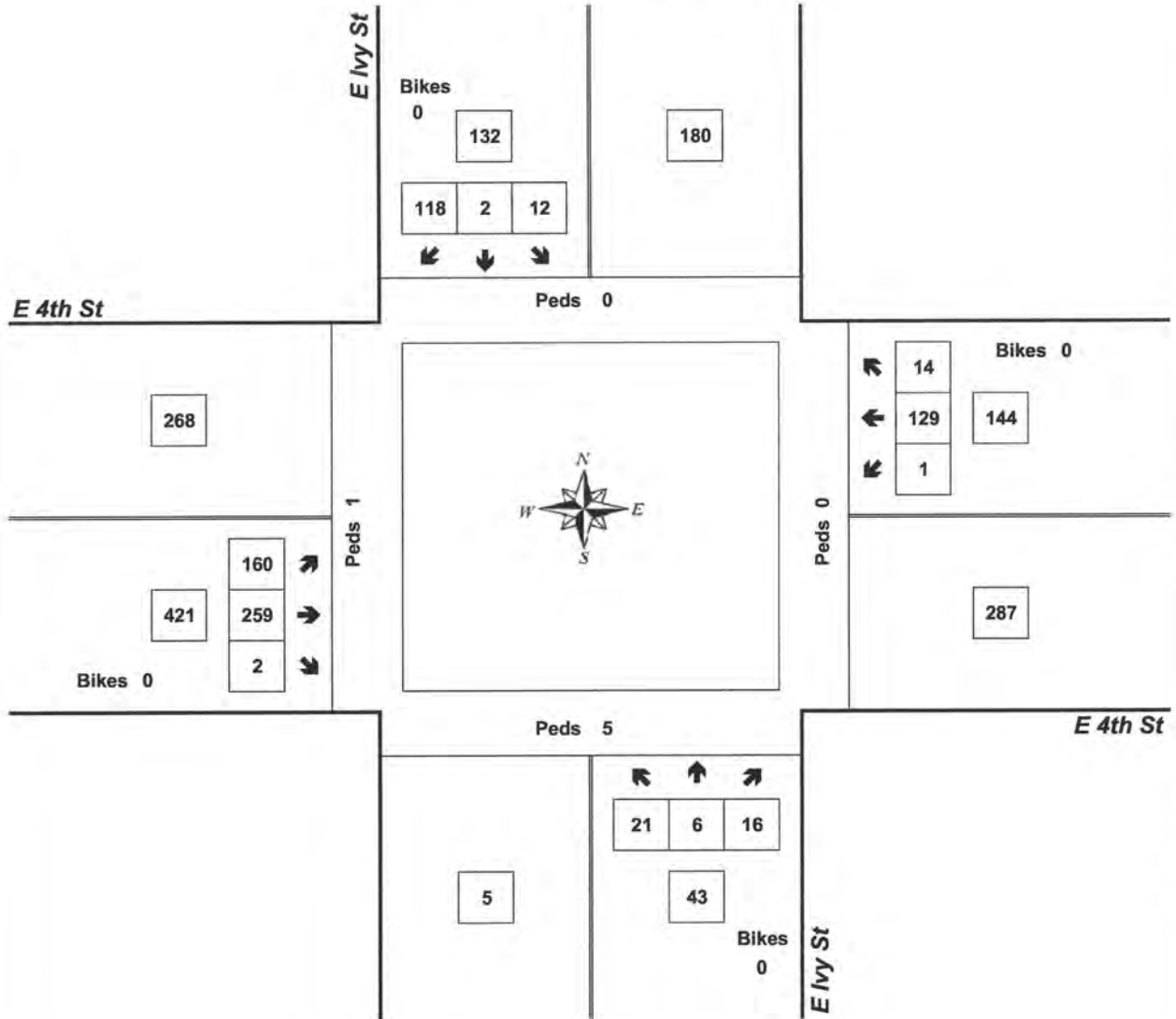
# Peak Hour Summary



Clay Carney  
(503) 833-2740

## E Ivy St & E 4th St

5:00 PM to 6:00 PM  
Thursday, September 13, 2018



| Approach            | PHF         | HV%         | Volume     |
|---------------------|-------------|-------------|------------|
| EB                  | 0.92        | 0.7%        | 421        |
| WB                  | 0.73        | 2.1%        | 144        |
| NB                  | 0.43        | 0.0%        | 43         |
| SB                  | 0.67        | 0.8%        | 132        |
| <b>Intersection</b> | <b>0.90</b> | <b>0.9%</b> | <b>740</b> |

Count Period: 4:00 PM to 6:00 PM

**INTERSECTION TURN MOVEMENT SURVEY  
ASPEN AVENUE & E 4<sup>TH</sup> STREET**

DATE OF COUNT: 2/15/2022, 07:00-09:00  
 DAY OF WEEK: TUE.  
 WEATHER: CLOUDY  
 COUNTER: KAK

| Time Period<br>From - To | FROM NORTH |          |            | FROM EAST |            |           | FROM SOUTH |          |          | FROM WEST |            |          | TOTAL      |
|--------------------------|------------|----------|------------|-----------|------------|-----------|------------|----------|----------|-----------|------------|----------|------------|
|                          | L          | T        | R          | L         | T          | R         | L          | T        | R        | L         | T          | R        |            |
| 07:00-07:05              | 1          | 0        | 15         | 0         | 33         | 0         | 0          | 0        | 0        | 2         | 12         | 0        | 63         |
| 07:05-07:10              | 1          | 0        | 10         | 0         | 23         | 1         | 0          | 0        | 0        | 1         | 10         | 0        | 46         |
| 07:10-07:15              | 0          | 0        | 9          | 0         | 30         | 0         | 0          | 0        | 0        | 3         | 19         | 0        | 61         |
| 07:15-07:20              | 0          | 0        | 14         | 0         | 24         | 0         | 0          | 0        | 0        | 2         | 15         | 0        | 55         |
| <b>07:20-07:25</b>       | <b>2</b>   | <b>0</b> | <b>12</b>  | <b>0</b>  | <b>20</b>  | <b>1</b>  | <b>0</b>   | <b>0</b> | <b>0</b> | <b>2</b>  | <b>14</b>  | <b>0</b> | <b>51</b>  |
| 07:25-07:30              | 1          | 0        | 14         | 0         | 41         | 1         | 0          | 0        | 0        | 1         | 23         | 0        | 81         |
| 07:30-07:35              | 0          | 0        | 12         | 0         | 21         | 1         | 0          | 0        | 0        | 0         | 18         | 0        | 52         |
| 07:35-07:40              | 4          | 0        | 10         | 0         | 16         | 0         | 0          | 0        | 0        | 8         | 17         | 0        | 55         |
| 07:40-07:45              | 8          | 0        | 14         | 0         | 35         | 0         | 0          | 0        | 0        | 3         | 29         | 0        | 89         |
| 07:45-07:50              | 6          | 0        | 9          | 0         | 33         | 1         | 0          | 0        | 0        | 4         | 42         | 0        | 95         |
| 07:50-07:55              | 11         | 0        | 4          | 0         | 36         | 1         | 0          | 0        | 0        | 2         | 41         | 0        | 95         |
| 07:55-08:00              | 7          | 0        | 14         | 0         | 35         | 0         | 0          | 0        | 0        | 4         | 42         | 0        | 102        |
| 08:00-08:05              | 3          | 0        | 7          | 0         | 55         | 0         | 0          | 0        | 0        | 6         | 27         | 0        | 98         |
| 08:05-08:10              | 2          | 0        | 6          | 0         | 61         | 6         | 0          | 0        | 0        | 3         | 14         | 0        | 92         |
| 08:10-08:15              | 1          | 0        | 9          | 0         | 43         | 4         | 0          | 0        | 0        | 4         | 13         | 0        | 74         |
| 08:15-08:20              | 2          | 0        | 13         | 0         | 29         | 1         | 0          | 0        | 0        | 8         | 17         | 0        | 70         |
| 08:20-08:25              | 1          | 0        | 8          | 0         | 20         | 1         | 0          | 0        | 0        | 7         | 13         | 0        | 50         |
| 08:25-08:30              | 0          | 0        | 13         | 0         | 25         | 1         | 0          | 0        | 0        | 3         | 12         | 0        | 54         |
| 08:30-08:35              | 1          | 0        | 13         | 0         | 19         | 1         | 0          | 0        | 0        | 2         | 13         | 0        | 49         |
| 08:35-08:40              | 0          | 0        | 5          | 0         | 13         | 0         | 0          | 0        | 0        | 7         | 8          | 0        | 33         |
| 08:40-08:45              | 2          | 0        | 7          | 0         | 17         | 1         | 0          | 0        | 0        | 3         | 9          | 0        | 39         |
| 08:45-08:50              | 0          | 0        | 10         | 0         | 15         | 0         | 0          | 0        | 0        | 4         | 10         | 0        | 39         |
| 08:50-08:55              | 1          | 0        | 9          | 0         | 20         | 2         | 0          | 0        | 0        | 2         | 7          | 0        | 41         |
| 08:55-09:00              | 0          | 0        | 8          | 0         | 16         | 0         | 0          | 0        | 0        | 3         | 11         | 0        | 38         |
| <b>Peak Hour Total</b>   | <b>47</b>  | <b>0</b> | <b>124</b> | <b>0</b>  | <b>425</b> | <b>16</b> | <b>0</b>   | <b>0</b> | <b>0</b> | <b>45</b> | <b>297</b> | <b>0</b> | <b>954</b> |
| % Trucks                 | 4          | 0        | 0          | 0         | 0          | 6         | 0          | 0        | 0        | 7         | 4          | 0        |            |
| Peds                     | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0        | 0        | 0         | 0          | 0        |            |
| Bikes                    | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0        | 0        | 0         | 0          | 0        |            |

**PEAK HOUR: 07:20-08:20**  
 PHF Intersection: 0.81

**INTERSECTION TURN MOVEMENT SURVEY  
ASPEN AVENUE & E 4<sup>TH</sup> STREET**

DATE OF COUNT: 2/15/2022, 16:00-18:00  
 DAY OF WEEK: TUE.  
 WEATHER: CLOUDY  
 COUNTER: KAK

| Time Period<br>From - To | FROM NORTH |          |           | FROM EAST |            |           | FROM SOUTH |          |          | FROM WEST  |            |          | TOTAL      |
|--------------------------|------------|----------|-----------|-----------|------------|-----------|------------|----------|----------|------------|------------|----------|------------|
|                          | L          | T        | R         | L         | T          | R         | L          | T        | R        | L          | T          | R        |            |
| 16:00-16:05              | 1          | 0        | 5         | 0         | 26         | 0         | 0          | 0        | 0        | 14         | 29         | 0        | 75         |
| 16:05-16:10              | 3          | 0        | 6         | 0         | 28         | 3         | 0          | 0        | 0        | 13         | 35         | 0        | 88         |
| 16:15-16:20              | 2          | 0        | 10        | 0         | 13         | 0         | 0          | 0        | 0        | 13         | 39         | 0        | 77         |
| 16:10-16:15              | 2          | 0        | 7         | 0         | 14         | 0         | 0          | 0        | 0        | 14         | 36         | 0        | 73         |
| 16:20-16:25              | 1          | 0        | 4         | 0         | 19         | 1         | 0          | 0        | 0        | 9          | 31         | 0        | 65         |
| 16:25-16:30              | 1          | 0        | 6         | 0         | 20         | 0         | 0          | 0        | 0        | 9          | 26         | 0        | 62         |
| 16:30-16:35              | 0          | 0        | 1         | 0         | 11         | 1         | 0          | 0        | 0        | 8          | 40         | 0        | 61         |
| 16:35-16:40              | 0          | 0        | 5         | 0         | 21         | 0         | 0          | 0        | 0        | 14         | 31         | 0        | 71         |
| 16:40-16:45              | 0          | 0        | 4         | 0         | 17         | 3         | 0          | 0        | 0        | 12         | 36         | 0        | 72         |
| 16:45-16:50              | 0          | 0        | 7         | 0         | 15         | 1         | 0          | 0        | 0        | 15         | 46         | 0        | 84         |
| 16:50-16:55              | 2          | 0        | 5         | 0         | 16         | 0         | 0          | 0        | 0        | 18         | 31         | 0        | 72         |
| 16:55-17:00              | 2          | 0        | 8         | 0         | 21         | 3         | 0          | 0        | 0        | 14         | 26         | 0        | 74         |
| 17:00-17:05              | 2          | 0        | 8         | 0         | 25         | 0         | 0          | 0        | 0        | 17         | 33         | 0        | 85         |
| 17:05-17:10              | 0          | 0        | 5         | 0         | 21         | 0         | 0          | 0        | 0        | 9          | 38         | 0        | 73         |
| 17:10-17:15              | 3          | 0        | 11        | 0         | 16         | 0         | 0          | 0        | 0        | 13         | 41         | 0        | 84         |
| 17:15-17:20              | 1          | 0        | 7         | 0         | 30         | 1         | 0          | 0        | 0        | 13         | 30         | 0        | 82         |
| 17:20-17:25              | 1          | 0        | 7         | 0         | 13         | 0         | 0          | 0        | 0        | 23         | 40         | 0        | 84         |
| 17:25-17:30              | 0          | 0        | 8         | 0         | 18         | 0         | 0          | 0        | 0        | 8          | 47         | 0        | 81         |
| 17:30-17:35              | 0          | 0        | 12        | 0         | 15         | 0         | 0          | 0        | 0        | 12         | 28         | 0        | 67         |
| 17:35-17:40              | 0          | 0        | 5         | 0         | 22         | 3         | 0          | 0        | 0        | 17         | 29         | 0        | 76         |
| 17:40-17:45              | 1          | 0        | 3         | 0         | 15         | 0         | 0          | 0        | 0        | 10         | 30         | 0        | 59         |
| 17:45-17:50              | 0          | 0        | 4         | 0         | 14         | 1         | 0          | 0        | 0        | 9          | 27         | 0        | 55         |
| 17:50-17:55              | 1          | 0        | 2         | 0         | 13         | 0         | 0          | 0        | 0        | 11         | 28         | 0        | 55         |
| 17:55-18:00              | 0          | 0        | 4         | 0         | 12         | 1         | 0          | 0        | 0        | 10         | 31         | 0        | 58         |
| <b>Peak Hour Total</b>   | <b>11</b>  | <b>0</b> | <b>87</b> | <b>0</b>  | <b>229</b> | <b>11</b> | <b>0</b>   | <b>0</b> | <b>0</b> | <b>171</b> | <b>425</b> | <b>0</b> | <b>934</b> |
| % Trucks                 | 0          | 0        | 0         | 0         | 1          | 0         | 0          | 0        | 0        | 0          | 0          | 0        | 0          |
| Peds                     | 0          | 2        | 0         | 0         | 0          | 0         | 0          | 2        | 0        | 0          | 5          | 0        | 0          |
| Bikes                    | 0          | 0        | 0         | 0         | 0          | 0         | 0          | 0        | 0        | 0          | 0          | 0        | 0          |

**PEAK HOUR: 16:40-17:40**  
 PHF Intersection: 0.93



**ROUNDBOUT MOVEMENT SURVEY  
PACIFIC AVENUE & W 4<sup>TH</sup> STREET**

DATE OF COUNT: 2/17/2022, 07:00-09:00  
 DAY OF WEEK: THUR.  
 WEATHER: CLOUDY  
 COUNTER: KAK

| Time Period<br>From - To | FROM NORTH |            |          | FROM EAST  |          |           | FROM SOUTH |           |            | FROM WEST |          |          | TOTAL       |
|--------------------------|------------|------------|----------|------------|----------|-----------|------------|-----------|------------|-----------|----------|----------|-------------|
|                          | L          | T          | R        | L          | T        | R         | L          | T         | R          | L         | T        | R        |             |
| 07:00-07:05              | 0          | 12         | 0        | 37         | 0        | 0         | 0          | 2         | 43         | 0         | 0        | 0        | 94          |
| 07:05-07:10              | 0          | 16         | 0        | 26         | 0        | 0         | 0          | 5         | 48         | 0         | 0        | 0        | 95          |
| 07:10-07:15              | 0          | 17         | 0        | 43         | 0        | 2         | 0          | 7         | 52         | 0         | 0        | 0        | 121         |
| 07:15-07:20              | 1          | 13         | 0        | 34         | 0        | 1         | 0          | 3         | 48         | 0         | 0        | 0        | 100         |
| 07:20-07:25              | 0          | 14         | 0        | 35         | 0        | 1         | 0          | 4         | 39         | 0         | 0        | 0        | 93          |
| 07:25-07:30              | 1          | 15         | 0        | 35         | 0        | 1         | 0          | 7         | 34         | 0         | 0        | 0        | 93          |
| <b>07:30-07:35</b>       | <b>0</b>   | <b>16</b>  | <b>0</b> | <b>43</b>  | <b>0</b> | <b>1</b>  | <b>0</b>   | <b>5</b>  | <b>48</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>113</b>  |
| <b>07:35-07:40</b>       | <b>1</b>   | <b>15</b>  | <b>0</b> | <b>38</b>  | <b>0</b> | <b>4</b>  | <b>0</b>   | <b>5</b>  | <b>45</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>108</b>  |
| <b>07:40-07:45</b>       | <b>0</b>   | <b>10</b>  | <b>0</b> | <b>40</b>  | <b>0</b> | <b>1</b>  | <b>0</b>   | <b>8</b>  | <b>48</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>107</b>  |
| <b>07:45-07:50</b>       | <b>6</b>   | <b>10</b>  | <b>0</b> | <b>29</b>  | <b>0</b> | <b>2</b>  | <b>0</b>   | <b>9</b>  | <b>61</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>117</b>  |
| <b>07:50-07:55</b>       | <b>10</b>  | <b>14</b>  | <b>0</b> | <b>31</b>  | <b>0</b> | <b>1</b>  | <b>0</b>   | <b>6</b>  | <b>47</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>109</b>  |
| <b>07:55-08:00</b>       | <b>12</b>  | <b>17</b>  | <b>0</b> | <b>20</b>  | <b>0</b> | <b>4</b>  | <b>0</b>   | <b>7</b>  | <b>38</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>98</b>   |
| <b>08:00-08:05</b>       | <b>8</b>   | <b>15</b>  | <b>0</b> | <b>34</b>  | <b>0</b> | <b>10</b> | <b>0</b>   | <b>4</b>  | <b>48</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>119</b>  |
| <b>08:05-08:10</b>       | <b>3</b>   | <b>22</b>  | <b>0</b> | <b>55</b>  | <b>0</b> | <b>2</b>  | <b>0</b>   | <b>4</b>  | <b>47</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>133</b>  |
| <b>08:10-08:15</b>       | <b>3</b>   | <b>22</b>  | <b>0</b> | <b>44</b>  | <b>0</b> | <b>8</b>  | <b>0</b>   | <b>7</b>  | <b>51</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>135</b>  |
| <b>08:15-08:20</b>       | <b>0</b>   | <b>19</b>  | <b>0</b> | <b>66</b>  | <b>0</b> | <b>5</b>  | <b>0</b>   | <b>3</b>  | <b>42</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>135</b>  |
| <b>08:20-08:25</b>       | <b>2</b>   | <b>12</b>  | <b>0</b> | <b>46</b>  | <b>0</b> | <b>9</b>  | <b>0</b>   | <b>4</b>  | <b>62</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>135</b>  |
| <b>08:25-08:30</b>       | <b>1</b>   | <b>7</b>   | <b>0</b> | <b>27</b>  | <b>0</b> | <b>5</b>  | <b>0</b>   | <b>5</b>  | <b>55</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>100</b>  |
| 08:30-08:35              | 3          | 11         | 0        | 32         | 0        | 0         | 0          | 8         | 40         | 0         | 0        | 0        | 94          |
| 08:35-08:40              | 2          | 8          | 0        | 24         | 0        | 3         | 0          | 7         | 46         | 0         | 0        | 0        | 90          |
| 08:40-08:45              | 1          | 9          | 0        | 31         | 0        | 1         | 0          | 4         | 39         | 0         | 0        | 0        | 85          |
| 08:45-08:50              | 2          | 10         | 0        | 26         | 0        | 2         | 0          | 5         | 46         | 0         | 0        | 0        | 91          |
| 08:50-08:55              | 2          | 9          | 0        | 25         | 0        | 0         | 0          | 4         | 38         | 0         | 0        | 0        | 78          |
| 08:55-09:00              | 1          | 11         | 0        | 31         | 0        | 3         | 0          | 6         | 41         | 0         | 0        | 0        | 93          |
| <b>Peak Hour Total</b>   | <b>46</b>  | <b>179</b> | <b>0</b> | <b>473</b> | <b>0</b> | <b>52</b> | <b>0</b>   | <b>67</b> | <b>592</b> | <b>0</b>  | <b>0</b> | <b>0</b> | <b>1409</b> |
| % Trucks                 | 9          | 1          | 0        | 0          | 0        | 4         | 0          | 3         | 4          | 0         | 0        | 0        |             |
| Peds                     | 0          | 1          | 0        | 0          | 1        | 0         | 0          | 0         | 0          | 0         | 1        | 0        |             |
| Bikes                    | 0          | 0          | 0        | 0          | 0        | 0         | 0          | 0         | 0          | 0         | 0        | 0        |             |

**PEAK HOUR: 07:30-08:30**  
 PHF Intersection: 0.87

**ROUNDBABOUT TURN MOVEMENT SURVEY  
PACIFIC AVENUE & W 4<sup>TH</sup> STREET**

DATE OF COUNT: 2/16/2022, 16:00-18:00  
 DAY OF WEEK: WED.  
 WEATHER: CLOUDY  
 COUNTER: KAK

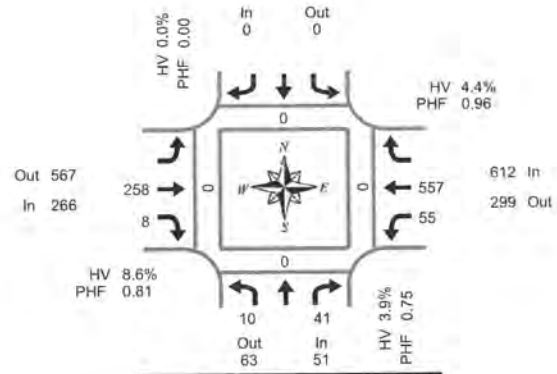
| Time Period<br>From - To | FROM NORTH |            |          | FROM EAST  |          |           | FROM SOUTH |            |            | FROM WEST |          |          | TOTAL       |
|--------------------------|------------|------------|----------|------------|----------|-----------|------------|------------|------------|-----------|----------|----------|-------------|
|                          | L          | T          | R        | L          | T        | R         | L          | T          | R          | L         | T        | R        |             |
| 16:00-16:05              | 2          | 15         | 0        | 29         | 0        | 8         | 0          | 17         | 41         | 0         | 0        | 0        | 112         |
| 16:05-16:10              | 1          | 19         | 0        | 24         | 0        | 8         | 0          | 9          | 47         | 0         | 0        | 0        | 108         |
| 16:15-16:20              | 2          | 14         | 0        | 22         | 0        | 2         | 0          | 13         | 50         | 0         | 0        | 0        | 103         |
| 16:10-16:15              | 1          | 9          | 0        | 29         | 0        | 5         | 0          | 13         | 49         | 0         | 0        | 0        | 106         |
| 16:20-16:25              | 1          | 12         | 0        | 24         | 0        | 4         | 0          | 13         | 39         | 0         | 0        | 0        | 93          |
| 16:25-16:30              | 0          | 6          | 0        | 19         | 0        | 3         | 0          | 16         | 35         | 0         | 0        | 0        | 79          |
| 16:30-16:35              | 0          | 7          | 0        | 27         | 0        | 3         | 0          | 16         | 48         | 0         | 0        | 0        | 101         |
| 16:35-16:40              | 0          | 12         | 0        | 30         | 0        | 2         | 0          | 6          | 45         | 0         | 0        | 0        | 95          |
| 16:40-16:45              | 3          | 8          | 0        | 32         | 0        | 2         | 0          | 13         | 45         | 0         | 0        | 0        | 103         |
| 16:45-16:50              | 3          | 10         | 0        | 23         | 0        | 1         | 0          | 14         | 56         | 0         | 0        | 0        | 107         |
| 16:50-16:55              | 0          | 11         | 0        | 18         | 0        | 1         | 0          | 19         | 49         | 0         | 0        | 0        | 98          |
| 16:55-17:00              | 2          | 9          | 0        | 28         | 0        | 4         | 0          | 18         | 38         | 0         | 0        | 0        | 99          |
| 17:00-17:05              | 1          | 11         | 0        | 24         | 0        | 5         | 0          | 16         | 49         | 0         | 0        | 0        | 106         |
| 17:05-17:10              | 3          | 16         | 0        | 29         | 0        | 4         | 0          | 11         | 43         | 0         | 0        | 0        | 106         |
| 17:10-17:15              | 2          | 16         | 0        | 26         | 0        | 4         | 0          | 12         | 52         | 0         | 0        | 0        | 112         |
| 17:15-17:20              | 1          | 11         | 0        | 38         | 0        | 3         | 0          | 18         | 42         | 0         | 0        | 0        | 113         |
| 17:20-17:25              | 0          | 7          | 0        | 21         | 0        | 1         | 0          | 18         | 63         | 0         | 0        | 0        | 110         |
| 17:25-17:30              | 1          | 11         | 0        | 31         | 0        | 1         | 0          | 8          | 54         | 0         | 0        | 0        | 106         |
| 17:30-17:35              | 0          | 9          | 0        | 17         | 0        | 2         | 0          | 14         | 40         | 0         | 0        | 0        | 82          |
| 17:35-17:40              | 1          | 8          | 0        | 21         | 0        | 1         | 0          | 13         | 45         | 0         | 0        | 0        | 89          |
| 17:40-17:45              | 1          | 6          | 0        | 20         | 0        | 1         | 0          | 10         | 39         | 0         | 0        | 0        | 77          |
| 17:45-17:50              | 2          | 7          | 0        | 19         | 0        | 3         | 0          | 11         | 34         | 0         | 0        | 0        | 76          |
| 17:50-17:55              | 1          | 9          | 0        | 21         | 0        | 2         | 0          | 9          | 38         | 0         | 0        | 0        | 80          |
| 17:55-18:00              | 0          | 10         | 0        | 30         | 0        | 4         | 0          | 9          | 41         | 0         | 0        | 0        | 84          |
| <b>Peak Hour Total</b>   | <b>16</b>  | <b>129</b> | <b>0</b> | <b>327</b> | <b>0</b> | <b>31</b> | <b>0</b>   | <b>169</b> | <b>584</b> | <b>0</b>  | <b>0</b> | <b>0</b> | <b>1256</b> |
| % Trucks                 | 0          | 1          | 0        | 1          | 0        | 0         | 0          | 0          | 0          | 0         | 0        | 0        |             |
| Peds                     | 0          | 0          | 0        | 0          | 13       | 0         | 0          | 0          | 0          | 0         | 10       | 0        |             |
| Bikes                    | 0          | 0          | 0        | 0          | 0        | 0         | 0          | 0          | 0          | 0         | 0        | 0        |             |

**PEAK HOUR: 16:30-17:30**  
 PHF Intersection: 0.94

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary  
7:15 AM to 8:15 AM**

## NW Timmen Rd & NW La Center Rd

Thursday, May 09, 2019  
7:00 AM to 9:00 AM

### 15-Minute Interval Summary 7:00 AM to 9:00 AM

| Interval Start Time | Northbound NW Timmen Rd |    |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |    |       | Westbound NW La Center Rd |       |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|-------------------------|----|-------|-------------------------|--|-------|---------------------------|----|-------|---------------------------|-------|-------|----------------|-----------------------|-------|------|------|
|                     | L                       | R  | Bikes |                         |  | Bikes | T                         | R  | Bikes | L                         | T     | Bikes |                | North                 | South | East | West |
| 7:00 AM             | 3                       | 7  | 0     |                         |  | 0     | 44                        | 2  | 0     | 13                        | 135   | 0     | 204            | 0                     | 0     | 1    | 0    |
| 7:15 AM             | 3                       | 10 | 0     |                         |  | 0     | 53                        | 2  | 0     | 11                        | 148   | 0     | 227            | 0                     | 0     | 0    | 0    |
| 7:30 AM             | 3                       | 8  | 0     |                         |  | 0     | 67                        | 1  | 0     | 22                        | 130   | 0     | 231            | 0                     | 0     | 0    | 0    |
| 7:45 AM             | 2                       | 15 | 0     |                         |  | 0     | 79                        | 3  | 0     | 13                        | 129   | 0     | 241            | 0                     | 0     | 0    | 0    |
| 8:00 AM             | 2                       | 8  | 0     |                         |  | 0     | 59                        | 2  | 0     | 9                         | 150   | 0     | 230            | 0                     | 0     | 0    | 0    |
| 8:15 AM             | 2                       | 5  | 0     |                         |  | 0     | 46                        | 4  | 0     | 14                        | 134   | 0     | 205            | 0                     | 0     | 0    | 0    |
| 8:30 AM             | 5                       | 9  | 0     |                         |  | 0     | 59                        | 2  | 0     | 17                        | 111   | 0     | 203            | 0                     | 0     | 0    | 0    |
| 8:45 AM             | 3                       | 7  | 0     |                         |  | 0     | 45                        | 3  | 0     | 13                        | 100   | 0     | 171            | 0                     | 0     | 0    | 0    |
| Total Survey        | 23                      | 69 | 0     |                         |  | 0     | 452                       | 19 | 0     | 112                       | 1,037 | 0     | 1,712          | 0                     | 0     | 1    | 0    |

### Peak Hour Summary 7:15 AM to 8:15 AM

| By Approach | Northbound NW Timmen Rd |     |       |       | Southbound NW Timmen Rd |     |       |       | Eastbound NW La Center Rd |     |       |       | Westbound NW La Center Rd |     |       |       | Total | Pedestrians Crosswalk |       |      |      |
|-------------|-------------------------|-----|-------|-------|-------------------------|-----|-------|-------|---------------------------|-----|-------|-------|---------------------------|-----|-------|-------|-------|-----------------------|-------|------|------|
|             | In                      | Out | Total | Bikes | In                      | Out | Total | Bikes | In                        | Out | Total | Bikes | In                        | Out | Total | Bikes |       | North                 | South | East | West |
| Volume      | 51                      | 63  | 114   | 0     | 0                       | 0   | 0     | 0     | 266                       | 567 | 833   | 0     | 612                       | 299 | 911   | 0     | 929   | 0                     | 0     | 0    | 0    |
| %HV         | 3.9%                    |     |       |       | 0.0%                    |     |       |       | 8.6%                      |     |       |       | 4.4%                      |     |       |       | 5.6%  |                       |       |      |      |
| PHF         | 0.75                    |     |       |       | 0.00                    |     |       |       | 0.81                      |     |       |       | 0.96                      |     |       |       | 0.96  |                       |       |      |      |

| By Movement | Northbound NW Timmen Rd |      |       |       | Southbound NW Timmen Rd |    |       |       | Eastbound NW La Center Rd |      |       |       | Westbound NW La Center Rd |      |       |       | Total |
|-------------|-------------------------|------|-------|-------|-------------------------|----|-------|-------|---------------------------|------|-------|-------|---------------------------|------|-------|-------|-------|
|             | L                       | R    | Total | Bikes |                         |    | Total | Bikes | T                         | R    | Total | Bikes | L                         | T    | Total | Bikes |       |
| Volume      | 10                      | 41   | 51    | 0     |                         |    | 0     | 0     | 258                       | 8    | 266   | 0     | 55                        | 557  | 612   | 0     | 929   |
| %HV         | 10.0%                   | NA   | 2.4%  | 3.9%  | NA                      | NA | 0.0%  | 0.0%  | NA                        | 8.1% | 25.0% | 8.6%  | 0.0%                      | 4.8% | NA    | 4.4%  | 5.6%  |
| PHF         | 0.83                    | 0.68 | 0.75  | 0.00  |                         |    | 0.00  | 0.00  | 0.82                      | 0.67 | 0.81  | 0.63  | 0.93                      | 0.96 | 0.96  | 0.96  | 0.96  |

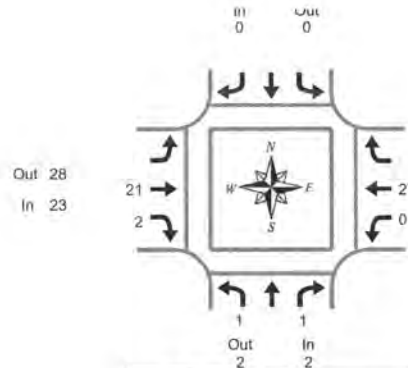
### Rolling Hour Summary 7:00 AM to 9:00 AM

| Interval Start Time | Northbound NW Timmen Rd |    |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |    |       | Westbound NW La Center Rd |     |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|-------------------------|----|-------|-------------------------|--|-------|---------------------------|----|-------|---------------------------|-----|-------|----------------|-----------------------|-------|------|------|
|                     | L                       | R  | Bikes |                         |  | Bikes | T                         | R  | Bikes | L                         | T   | Bikes |                | North                 | South | East | West |
| 7:00 AM             | 11                      | 40 | 0     |                         |  | 0     | 243                       | 8  | 0     | 59                        | 542 | 0     | 903            | 0                     | 0     | 1    | 0    |
| 7:15 AM             | 10                      | 41 | 0     |                         |  | 0     | 258                       | 8  | 0     | 55                        | 557 | 0     | 929            | 0                     | 0     | 0    | 0    |
| 7:30 AM             | 9                       | 36 | 0     |                         |  | 0     | 251                       | 10 | 0     | 58                        | 543 | 0     | 907            | 0                     | 0     | 0    | 0    |
| 7:45 AM             | 11                      | 37 | 0     |                         |  | 0     | 243                       | 11 | 0     | 53                        | 524 | 0     | 879            | 0                     | 0     | 0    | 0    |
| 8:00 AM             | 12                      | 29 | 0     |                         |  | 0     | 209                       | 11 | 0     | 53                        | 495 | 0     | 809            | 0                     | 0     | 0    | 0    |

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary**  
7:15 AM to 8:15 AM

## NW Timmen Rd & NW La Center Rd

Thursday, May 09, 2019

7:00 AM to 9:00 AM

### Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

| Interval Start Time | Northbound NW Timmen Rd |   |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |   |       | Westbound NW La Center Rd |    |       | Interval Total |
|---------------------|-------------------------|---|-------|-------------------------|--|-------|---------------------------|---|-------|---------------------------|----|-------|----------------|
|                     | L                       | R | Total |                         |  | Total | T                         | R | Total | L                         | T  | Total |                |
| 7:00 AM             | 0                       | 0 | 0     |                         |  | 0     | 11                        | 2 | 13    | 1                         | 6  | 7     | 20             |
| 7:15 AM             | 0                       | 0 | 0     |                         |  | 0     | 7                         | 0 | 7     | 0                         | 2  | 2     | 9              |
| 7:30 AM             | 0                       | 1 | 1     |                         |  | 0     | 4                         | 0 | 4     | 0                         | 3  | 3     | 8              |
| 7:45 AM             | 0                       | 0 | 0     |                         |  | 0     | 4                         | 1 | 5     | 0                         | 1  | 1     | 6              |
| 8:00 AM             | 1                       | 0 | 1     |                         |  | 0     | 6                         | 1 | 7     | 0                         | 21 | 21    | 29             |
| 8:15 AM             | 1                       | 0 | 1     |                         |  | 0     | 5                         | 0 | 5     | 1                         | 7  | 8     | 14             |
| 8:30 AM             | 4                       | 1 | 5     |                         |  | 0     | 5                         | 0 | 5     | 0                         | 3  | 3     | 13             |
| 8:45 AM             | 0                       | 0 | 0     |                         |  | 0     | 2                         | 0 | 2     | 1                         | 4  | 5     | 7              |
| Total Survey        | 6                       | 2 | 8     |                         |  | 0     | 44                        | 4 | 48    | 3                         | 47 | 50    | 106            |

### Heavy Vehicle Peak Hour Summary

7:15 AM to 8:15 AM

| By Approach | Northbound NW Timmen Rd |     |       | Southbound NW Timmen Rd |     |       | Eastbound NW La Center Rd |     |       | Westbound NW La Center Rd |     |       | Total |
|-------------|-------------------------|-----|-------|-------------------------|-----|-------|---------------------------|-----|-------|---------------------------|-----|-------|-------|
|             | In                      | Out | Total | In                      | Out | Total | In                        | Out | Total | In                        | Out | Total |       |
| Volume      | 2                       | 2   | 4     | 0                       | 0   | 0     | 23                        | 28  | 51    | 27                        | 22  | 49    | 52    |
| PHF         | 0.07                    |     |       | 0.00                    |     |       | 0.24                      |     |       | 0.21                      |     |       | 0.23  |

| By Movement | Northbound NW Timmen Rd |   |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |      |       | Westbound NW La Center Rd |      |       | Total |
|-------------|-------------------------|---|-------|-------------------------|--|-------|---------------------------|------|-------|---------------------------|------|-------|-------|
|             | L                       | R | Total |                         |  | Total | T                         | R    | Total | L                         | T    | Total |       |
| Volume      | 1                       |   | 1     |                         |  | 0     | 21                        | 2    | 23    | 0                         | 27   | 27    | 52    |
| PHF         | 0.04                    |   | 0.07  |                         |  | 0.00  | 0.24                      | 0.25 | 0.24  | 0.00                      | 0.22 | 0.21  | 0.23  |

### Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

| Interval Start Time | Northbound NW Timmen Rd |   |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |   |       | Westbound NW La Center Rd |    |       | Interval Total |
|---------------------|-------------------------|---|-------|-------------------------|--|-------|---------------------------|---|-------|---------------------------|----|-------|----------------|
|                     | L                       | R | Total |                         |  | Total | T                         | R | Total | L                         | T  | Total |                |
| 7:00 AM             | 0                       | 1 | 1     |                         |  | 0     | 26                        | 3 | 29    | 1                         | 12 | 13    | 43             |
| 7:15 AM             | 1                       | 1 | 2     |                         |  | 0     | 21                        | 2 | 23    | 0                         | 27 | 27    | 52             |
| 7:30 AM             | 2                       | 1 | 3     |                         |  | 0     | 19                        | 2 | 21    | 1                         | 32 | 33    | 57             |
| 7:45 AM             | 6                       | 1 | 7     |                         |  | 0     | 20                        | 2 | 22    | 1                         | 32 | 33    | 62             |
| 8:00 AM             | 6                       | 1 | 7     |                         |  | 0     | 18                        | 1 | 19    | 2                         | 35 | 37    | 63             |

# Peak Hour Summary



Clay Carney  
(503) 833-2740

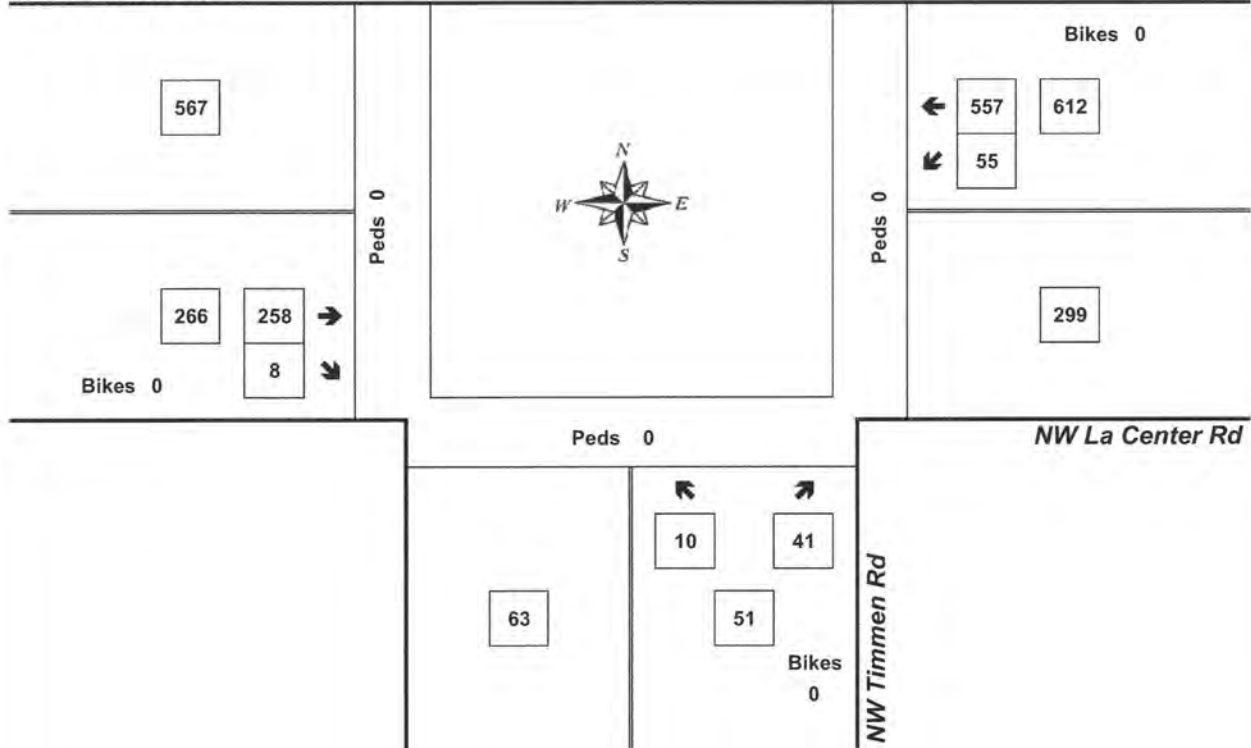
## NW Timmen Rd & NW La Center Rd

7:15 AM to 8:15 AM  
Thursday, May 09, 2019

Bikes  
0

NW La Center Rd

Peds 0



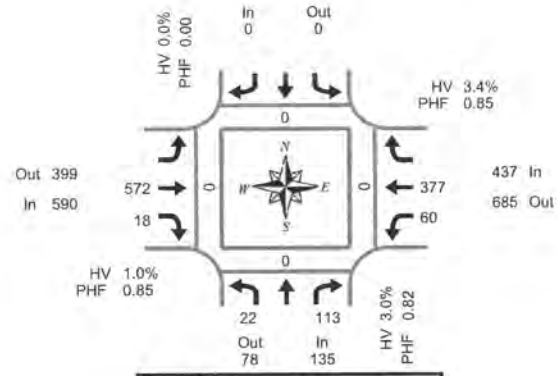
| Approach            | PHF         | HV%         | Volume     |
|---------------------|-------------|-------------|------------|
| EB                  | 0.81        | 8.6%        | 266        |
| WB                  | 0.96        | 4.4%        | 612        |
| NB                  | 0.75        | 3.9%        | 51         |
| SB                  | 0.00        | 0.0%        | 0          |
| <b>Intersection</b> | <b>0.96</b> | <b>5.6%</b> | <b>929</b> |

Count Period: 7:00 AM to 9:00 AM

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



## NW Timmen Rd & NW La Center Rd

Wednesday, May 08, 2019  
4:00 PM to 6:00 PM

**Peak Hour Summary**  
4:30 PM to 5:30 PM

### 15-Minute Interval Summary

4:00 PM to 6:00 PM

| Interval Start Time | Northbound NW Timmen Rd |     |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |    |       | Westbound NW La Center Rd |     |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|-------------------------|-----|-------|-------------------------|--|-------|---------------------------|----|-------|---------------------------|-----|-------|----------------|-----------------------|-------|------|------|
|                     | L                       | R   | Bikes |                         |  | Bikes | T                         | R  | Bikes | L                         | T   | Bikes |                | North                 | South | East | West |
| 4:00 PM             | 4                       | 21  | 0     |                         |  | 0     | 133                       | 6  | 0     | 11                        | 102 | 0     | 277            | 0                     | 0     | 0    | 0    |
| 4:15 PM             | 2                       | 36  | 0     |                         |  | 0     | 138                       | 8  | 0     | 9                         | 97  | 0     | 290            | 0                     | 0     | 0    | 0    |
| 4:30 PM             | 8                       | 33  | 0     |                         |  | 0     | 139                       | 5  | 0     | 11                        | 84  | 0     | 280            | 0                     | 0     | 0    | 0    |
| 4:45 PM             | 4                       | 27  | 0     |                         |  | 0     | 125                       | 7  | 0     | 11                        | 98  | 0     | 272            | 0                     | 0     | 0    | 0    |
| 5:00 PM             | 3                       | 23  | 0     |                         |  | 0     | 138                       | 3  | 0     | 18                        | 111 | 0     | 296            | 0                     | 0     | 0    | 0    |
| 5:15 PM             | 7                       | 30  | 0     |                         |  | 0     | 170                       | 3  | 0     | 20                        | 84  | 0     | 314            | 0                     | 0     | 0    | 0    |
| 5:30 PM             | 5                       | 15  | 0     |                         |  | 0     | 167                       | 3  | 0     | 4                         | 78  | 0     | 272            | 0                     | 0     | 0    | 0    |
| 5:45 PM             | 2                       | 25  | 1     |                         |  | 0     | 126                       | 2  | 0     | 11                        | 58  | 0     | 224            | 0                     | 0     | 0    | 0    |
| Total Survey        | 35                      | 210 | 1     |                         |  | 0     | 1,136                     | 37 | 0     | 95                        | 712 | 0     | 2,225          | 0                     | 0     | 0    | 0    |

### Peak Hour Summary

4:30 PM to 5:30 PM

| By Approach | Northbound NW Timmen Rd |     |       |       | Southbound NW Timmen Rd |     |       |       | Eastbound NW La Center Rd |     |       |       | Westbound NW La Center Rd |     |       |       | Total | Pedestrians Crosswalk |       |      |      |
|-------------|-------------------------|-----|-------|-------|-------------------------|-----|-------|-------|---------------------------|-----|-------|-------|---------------------------|-----|-------|-------|-------|-----------------------|-------|------|------|
|             | In                      | Out | Total | Bikes | In                      | Out | Total | Bikes | In                        | Out | Total | Bikes | In                        | Out | Total | Bikes |       | North                 | South | East | West |
| Volume      | 135                     | 78  | 213   | 0     | 0                       | 0   | 0     | 0     | 590                       | 399 | 989   | 0     | 437                       | 685 | 1,122 | 0     | 1,162 | 0                     | 0     | 0    | 0    |
| %HV         | 3.0%                    |     |       |       | 0.0%                    |     |       |       | 1.0%                      |     |       |       | 3.4%                      |     |       |       | 2.2%  | 0                     | 0     | 0    | 0    |
| PHF         | 0.82                    |     |       |       | 0.00                    |     |       |       | 0.85                      |     |       |       | 0.85                      |     |       |       | 0.93  |                       |       |      |      |

| By Movement | Northbound NW Timmen Rd |      |       |       | Southbound NW Timmen Rd |    |       |       | Eastbound NW La Center Rd |      |       |       | Westbound NW La Center Rd |      |       |       | Total |
|-------------|-------------------------|------|-------|-------|-------------------------|----|-------|-------|---------------------------|------|-------|-------|---------------------------|------|-------|-------|-------|
|             | L                       | R    | Total | Bikes |                         |    | Total | Bikes | T                         | R    | Total | Bikes | L                         | T    | Total | Bikes |       |
| Volume      | 22                      | 113  | 135   | 0     |                         |    | 0     | 0     | 572                       | 18   | 590   | 0     | 60                        | 377  | 437   | 1,162 |       |
| %HV         | 9.1%                    | NA   | 1.8%  | 3.0%  | NA                      | NA | NA    | 0.0%  | NA                        | 1.0% | 0.0%  | 1.0%  | 0.0%                      | 4.0% | NA    | 3.4%  | 2.2%  |
| PHF         | 0.69                    | 0.86 | 0.82  | 0.00  |                         |    | 0.00  | 0.00  | 0.84                      | 0.64 | 0.85  | 0.75  | 0.85                      | 0.85 | 0.85  | 0.93  |       |

### Rolling Hour Summary

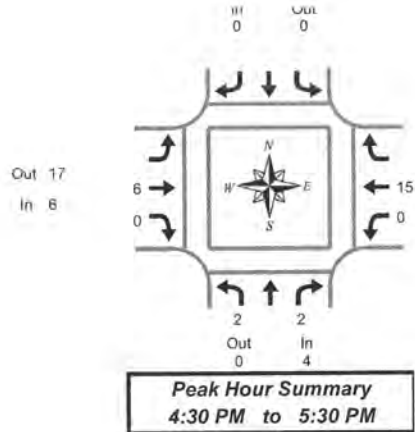
4:00 PM to 6:00 PM

| Interval Start Time | Northbound NW Timmen Rd |     |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |    |       | Westbound NW La Center Rd |     |       | Interval Total | Pedestrians Crosswalk |       |      |      |
|---------------------|-------------------------|-----|-------|-------------------------|--|-------|---------------------------|----|-------|---------------------------|-----|-------|----------------|-----------------------|-------|------|------|
|                     | L                       | R   | Bikes |                         |  | Bikes | T                         | R  | Bikes | L                         | T   | Bikes |                | North                 | South | East | West |
| 4:00 PM             | 18                      | 117 | 0     |                         |  | 0     | 535                       | 26 | 0     | 42                        | 381 | 0     | 1,119          | 0                     | 0     | 0    | 0    |
| 4:15 PM             | 17                      | 119 | 0     |                         |  | 0     | 540                       | 23 | 0     | 49                        | 390 | 0     | 1,138          | 0                     | 0     | 0    | 0    |
| 4:30 PM             | 22                      | 113 | 0     |                         |  | 0     | 572                       | 18 | 0     | 60                        | 377 | 0     | 1,162          | 0                     | 0     | 0    | 0    |
| 4:45 PM             | 19                      | 95  | 0     |                         |  | 0     | 600                       | 16 | 0     | 53                        | 371 | 0     | 1,154          | 0                     | 0     | 0    | 0    |
| 5:00 PM             | 17                      | 93  | 1     |                         |  | 0     | 601                       | 11 | 0     | 53                        | 331 | 0     | 1,106          | 0                     | 0     | 0    | 0    |

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



## NW Timmen Rd & NW La Center Rd

Wednesday, May 08, 2019  
4:00 PM to 6:00 PM

### Heavy Vehicle 15-Minute Interval Summary 4:00 PM to 6:00 PM

| Interval Start Time | Northbound NW Timmen Rd |   |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |   |       | Westbound NW La Center Rd |    |       | Interval Total |
|---------------------|-------------------------|---|-------|-------------------------|--|-------|---------------------------|---|-------|---------------------------|----|-------|----------------|
|                     | L                       | R | Total |                         |  | Total | T                         | R | Total | L                         | T  | Total |                |
| 4:00 PM             | 1                       | 0 | 1     |                         |  | 0     | 4                         | 1 | 5     | 0                         | 4  | 4     | 10             |
| 4:15 PM             | 0                       | 0 | 0     |                         |  | 0     | 4                         | 0 | 4     | 0                         | 6  | 6     | 10             |
| 4:30 PM             | 1                       | 1 | 2     |                         |  | 0     | 4                         | 0 | 4     | 0                         | 4  | 4     | 10             |
| 4:45 PM             | 0                       | 0 | 0     |                         |  | 0     | 2                         | 0 | 2     | 0                         | 3  | 3     | 5              |
| 5:00 PM             | 0                       | 1 | 1     |                         |  | 0     | 0                         | 0 | 0     | 0                         | 6  | 6     | 7              |
| 5:15 PM             | 1                       | 0 | 1     |                         |  | 0     | 0                         | 0 | 0     | 0                         | 2  | 2     | 3              |
| 5:30 PM             | 1                       | 0 | 1     |                         |  | 0     | 1                         | 0 | 1     | 0                         | 2  | 2     | 4              |
| 5:45 PM             | 0                       | 0 | 0     |                         |  | 0     | 1                         | 1 | 2     | 0                         | 1  | 1     | 3              |
| Total Survey        | 4                       | 2 | 6     |                         |  | 0     | 16                        | 2 | 18    | 0                         | 28 | 28    | 52             |

### Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

| By Approach | Northbound NW Timmen Rd |     |       | Southbound NW Timmen Rd |     |       | Eastbound NW La Center Rd |     |       | Westbound NW La Center Rd |     |       | Total |
|-------------|-------------------------|-----|-------|-------------------------|-----|-------|---------------------------|-----|-------|---------------------------|-----|-------|-------|
|             | In                      | Out | Total | In                      | Out | Total | In                        | Out | Total | In                        | Out | Total |       |
| Volume      | 4                       | 0   | 4     | 0                       | 0   | 0     | 6                         | 17  | 23    | 15                        | 8   | 23    | 25    |
| PHF         | 0.33                    |     |       | 0.00                    |     |       | 0.12                      |     |       | 0.27                      |     |       | 0.21  |

| By Movement | Northbound NW Timmen Rd |      |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |      |       | Westbound NW La Center Rd |      |       | Total |
|-------------|-------------------------|------|-------|-------------------------|--|-------|---------------------------|------|-------|---------------------------|------|-------|-------|
|             | L                       | R    | Total |                         |  | Total | T                         | R    | Total | L                         | T    | Total |       |
| Volume      | 2                       | 2    | 4     |                         |  | 0     | 6                         | 0    | 6     | 0                         | 15   | 15    | 25    |
| PHF         | 0.25                    | 0.25 | 0.33  |                         |  | 0.00  | 0.13                      | 0.00 | 0.12  | 0.00                      | 0.27 | 0.27  | 0.21  |

### Heavy Vehicle Rolling Hour Summary 4:00 PM to 6:00 PM

| Interval Start Time | Northbound NW Timmen Rd |   |       | Southbound NW Timmen Rd |  |       | Eastbound NW La Center Rd |   |       | Westbound NW La Center Rd |    |       | Interval Total |
|---------------------|-------------------------|---|-------|-------------------------|--|-------|---------------------------|---|-------|---------------------------|----|-------|----------------|
|                     | L                       | R | Total |                         |  | Total | T                         | R | Total | L                         | T  | Total |                |
| 4:00 PM             | 2                       | 1 | 3     |                         |  | 0     | 14                        | 1 | 15    | 0                         | 17 | 17    | 35             |
| 4:15 PM             | 1                       | 2 | 3     |                         |  | 0     | 10                        | 0 | 10    | 0                         | 19 | 19    | 32             |
| 4:30 PM             | 2                       | 2 | 4     |                         |  | 0     | 6                         | 0 | 6     | 0                         | 15 | 15    | 25             |
| 4:45 PM             | 2                       | 1 | 3     |                         |  | 0     | 3                         | 0 | 3     | 0                         | 13 | 13    | 19             |
| 5:00 PM             | 2                       | 1 | 3     |                         |  | 0     | 2                         | 1 | 3     | 0                         | 11 | 11    | 17             |

# Peak Hour Summary



Clay Carney  
(503) 833-2740

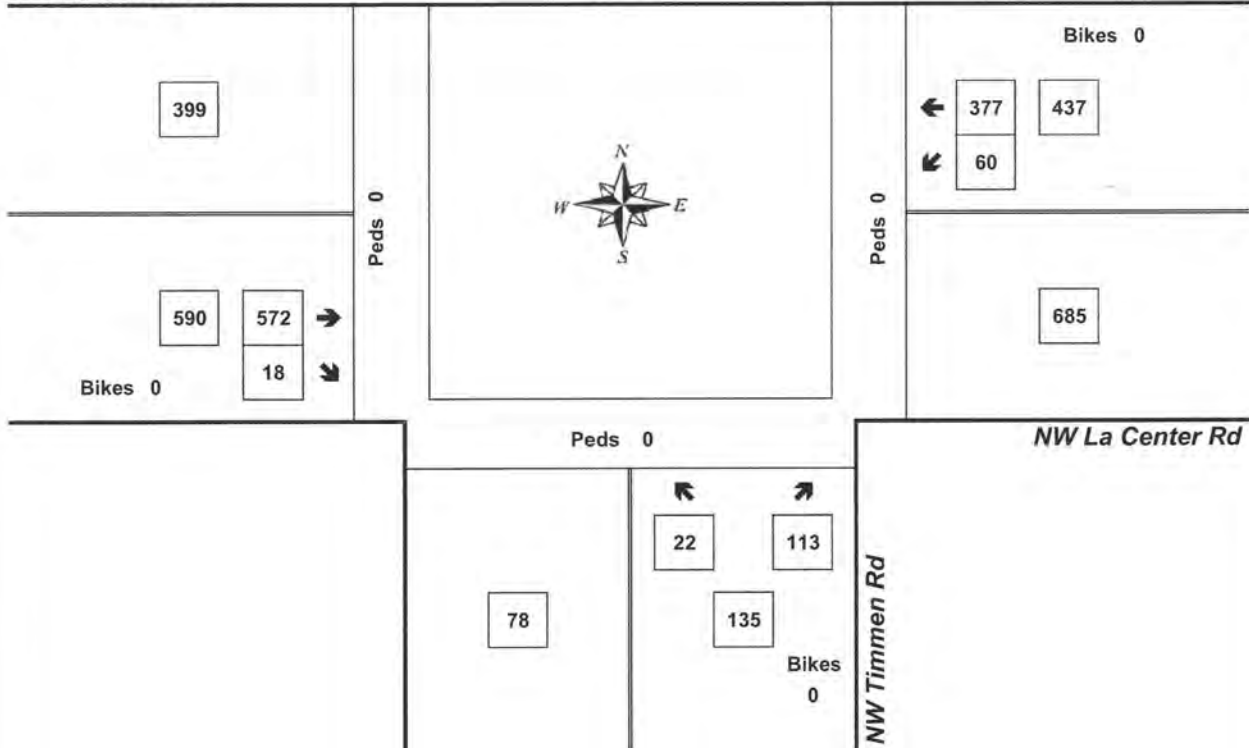
## NW Timmen Rd & NW La Center Rd

4:30 PM to 5:30 PM  
Wednesday, May 08, 2019

Bikes  
0

NW La Center Rd

Peds 0



| Approach            | PHF         | HV%         | Volume       |
|---------------------|-------------|-------------|--------------|
| EB                  | 0.85        | 1.0%        | 590          |
| WB                  | 0.85        | 3.4%        | 437          |
| NB                  | 0.82        | 3.0%        | 135          |
| SB                  | 0.00        | 0.0%        | 0            |
| <b>Intersection</b> | <b>0.93</b> | <b>2.2%</b> | <b>1,162</b> |

Count Period: 4:00 PM to 6:00 PM



**APPENDIX B  
COLLISION DATA**

**CITY STREET INTERSECTIONS**

4th St @ Highland Rd - No Reported Crashes

4th St @ Pacific Highway

LaCenter Rd @ Timmen Rd - No Reported Crashes

Lockwood Creek Rd @ Spruce Ave

Lockwood Creek Rd @ John Storm Rd - No Reported Crashes

**COUNTY ROAD INTERSECTIONS**

Lockwood Creek Rd (Co Rd # 94450, mp 7.360 - 7.380 - East Leg & City St - West Leg ) @ 24th Ave (Co Rd # 60430, mp 0.470 - 0.490) - No Reported Crashes

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of MULTIPLE INTERSECTIONS IN THE CITY OF LA CENTER

11/04/2018 - 11/04/2021 See 2nd tab below for road info

*Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.*

| JURISDICTION | COUNTY | CITY      | PRIMARY TRAFFICWAY   | BLOCK NUMBER | A / B | INTERSECTING TRAFFICWAY | CO ONLY INTERSECTING COUNTY ROAD MILEPOST | DIST FROM REF POINT MI or FT | COMP DIR FROM REF POINT | REFERENCE POINT NAME |
|--------------|--------|-----------|----------------------|--------------|-------|-------------------------|---|------------------------------|-------------------------|----------------------|
| City Street  | Clark  | La Center | NE LOCKWOOD CREEK RD | 1800         |       | E SPRUCE AVE            |   |                              |                         |                      |
| City Street  | Clark  | La Center | W 4TH ST             | 0            |       | NW PACIFIC HWY          |   |                              |                         |                      |

| SR ONLY<br>SUSPENSE<br>IND | REPORT<br>NUMBER | DATE       | TIME  | MOST SEVERE<br>INJURY TYPE | #<br>I<br>N<br>J<br>U<br>R<br>Y | #<br>F<br>A<br>T<br>A<br>L<br>I<br>T<br>Y | #<br>V<br>E<br>H<br>I<br>C<br>L<br>E<br>S | #<br>P<br>E<br>D<br>E<br>S<br>T<br>R<br>I<br>A<br>N<br>S | #<br>B<br>I<br>K<br>E<br>S | VEHICLE 1<br>TYPE | VEHICLE 2<br>TYPE | JUNCTION RELATIONSHIP           |
|----------------------------|------------------|------------|-------|----------------------------|---------------------------------|---|---|--|----------------------------|-------------------|-------------------|---------------------------------|
| No                         | EB67457          | 08/02/2021 | 12:58 | No Apparent Injury         | 0                               | 0   | 1   | 0  | 0                          | Passenger Car     |                   | At Intersection and Not Related |
| No                         | E996098          | 12/14/2019 | 18:21 | No Apparent Injury         | 0                               | 0   | 2   | 0  | 0                          | Passenger Car     | Not Stated        | Circulating Roundabout          |

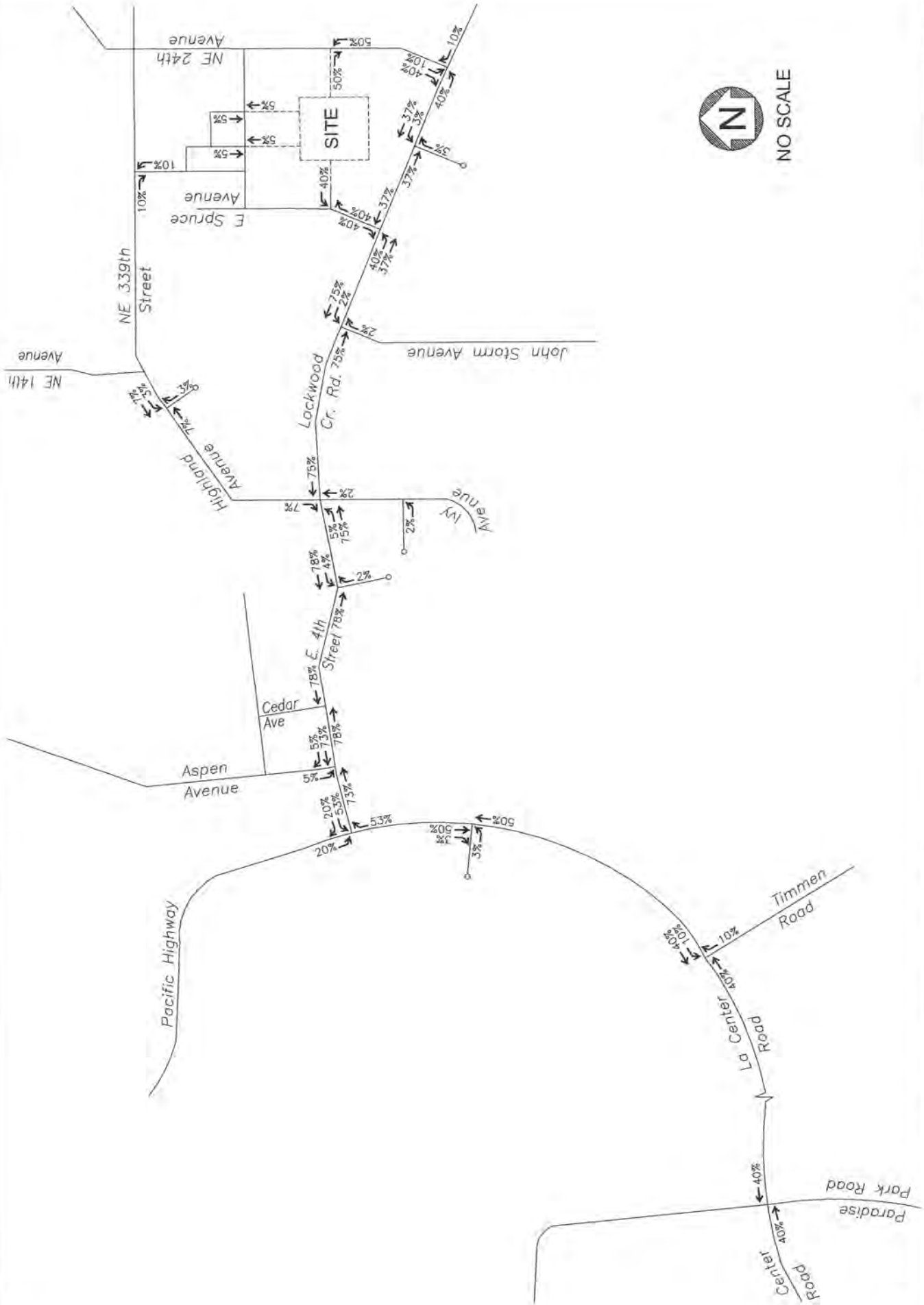
| WEATHER                | ROADWAY SURFACE CONDITION | LIGHTING CONDITION    | FIRST COLLISION TYPE / OBJECT STRUCK | VEHICLE 1 ACTION       |
|------------------------|---------------------------|-----------------------|--------------------------------------|------------------------|
| Clear or Partly Cloudy | Dry                       | Daylight              | Fence                                | Overtaking and Passing |
| Fog or Smog or Smoke   | Wet                       | Dark-Street Lights On | From opposite direction - all others | Making Right Turn      |

| VEHICLE 2 ACTION               | VEHICLE 1 COMPASS DIRECTION FROM | VEHICLE 1 COMPASS DIRECTION TO | VEHICLE 2 COMPASS DIRECTION FROM | VEHICLE 2 COMPASS DIRECTION TO | MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1) | MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2) |
|--------------------------------|----------------------------------|--------------------------------|----------------------------------|--------------------------------|--|--|
| Going Wrong Way on Divided Hwy | West<br>South                    | East<br>Northeast              |                                  |                                | Improper Passing<br>None                       | Other Contributing Circ Not Listed             |

|   | WA STATE<br>PLANE<br>SOUTH - X<br>2010 -<br>FORWARD | WA STATE<br>PLANE<br>SOUTH - Y<br>2010 -<br>FORWARD |
|---|---|---|
| FIRST IMPACT LOCATION (City, County & Misc<br>Trafficways - 2010 forward)     | 1092222.94  | 199937.35   |
| Past the Outside Shoulder of Primary Trafficway<br>Lane of Primary Trafficway | 1087021.99  | 200383.21   |

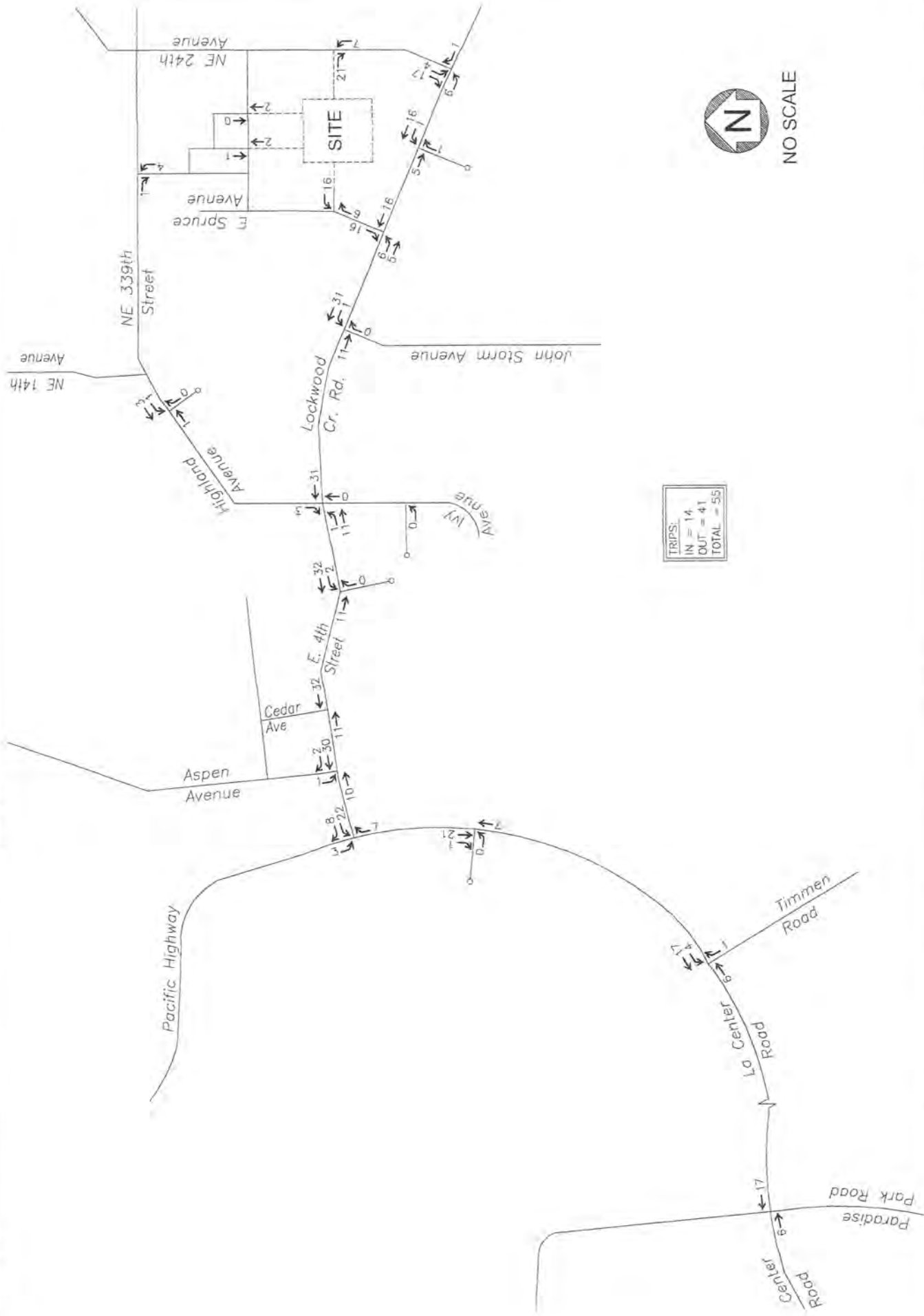
**APPENDIX C**  
**IN-PROCESS TRAFFIC**





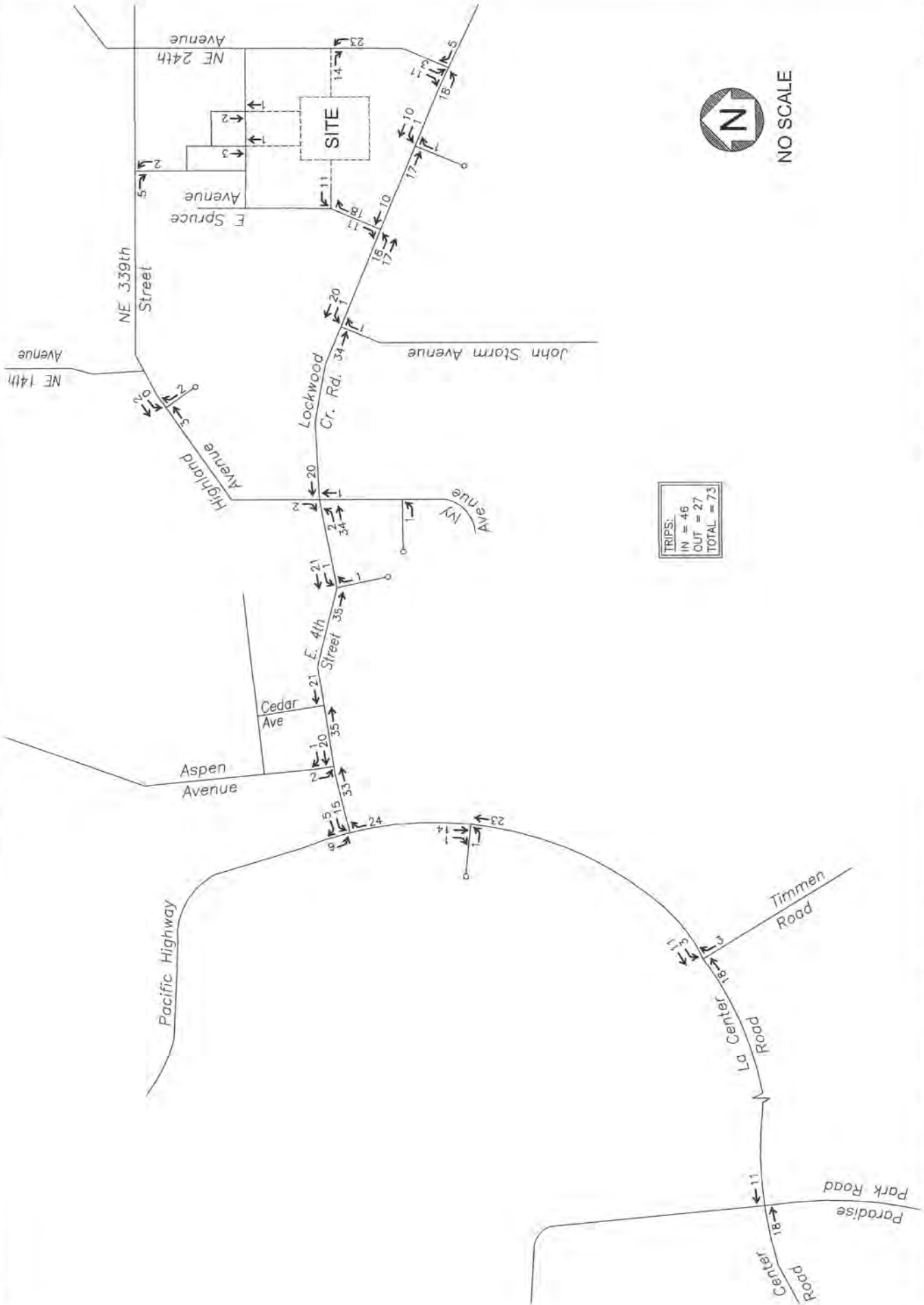
TRIP DISTRIBUTION  
AM PEAK HOUR & PM PEAK HOUR  
LOCKWOOD MEADOWS

NOTES: Trip distribution for the site is based on engineering judgment.



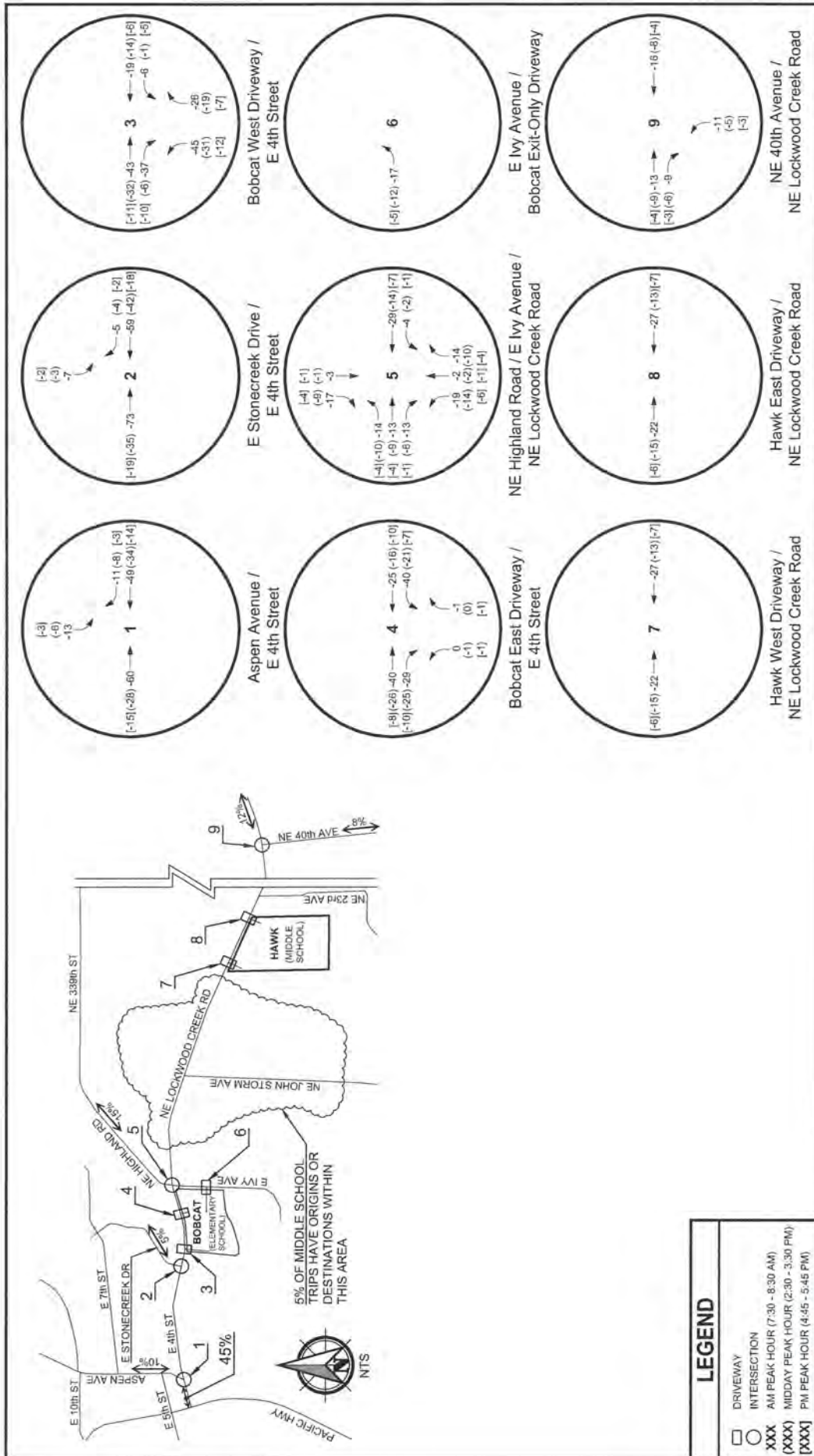
TRIP ASSIGNMENT  
AM PEAK HOUR  
LOCKWOOD MEADOWS

NOTES: Trip generation is based on  
Single-Family Residential (ITE 210) trip rates.



TRIP ASSIGNMENT  
PM PEAK HOUR  
LOCKWOOD MEADOWS

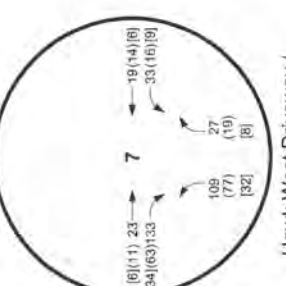
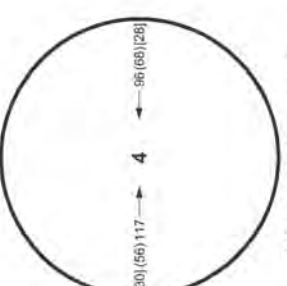
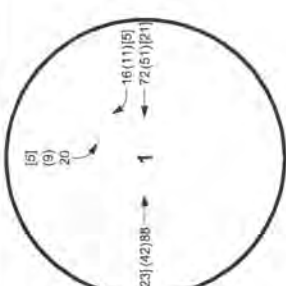
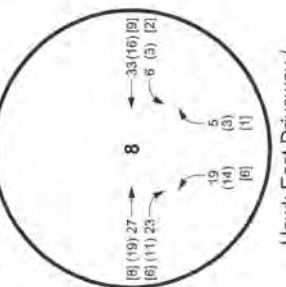
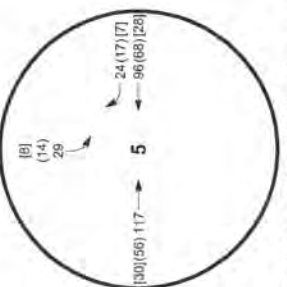
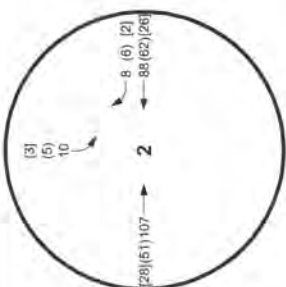
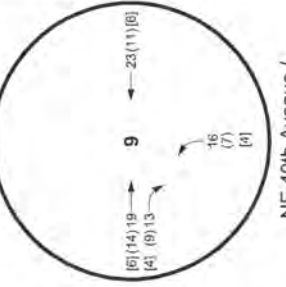
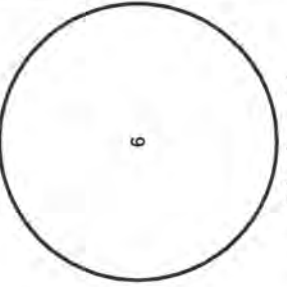
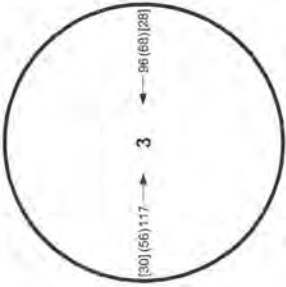
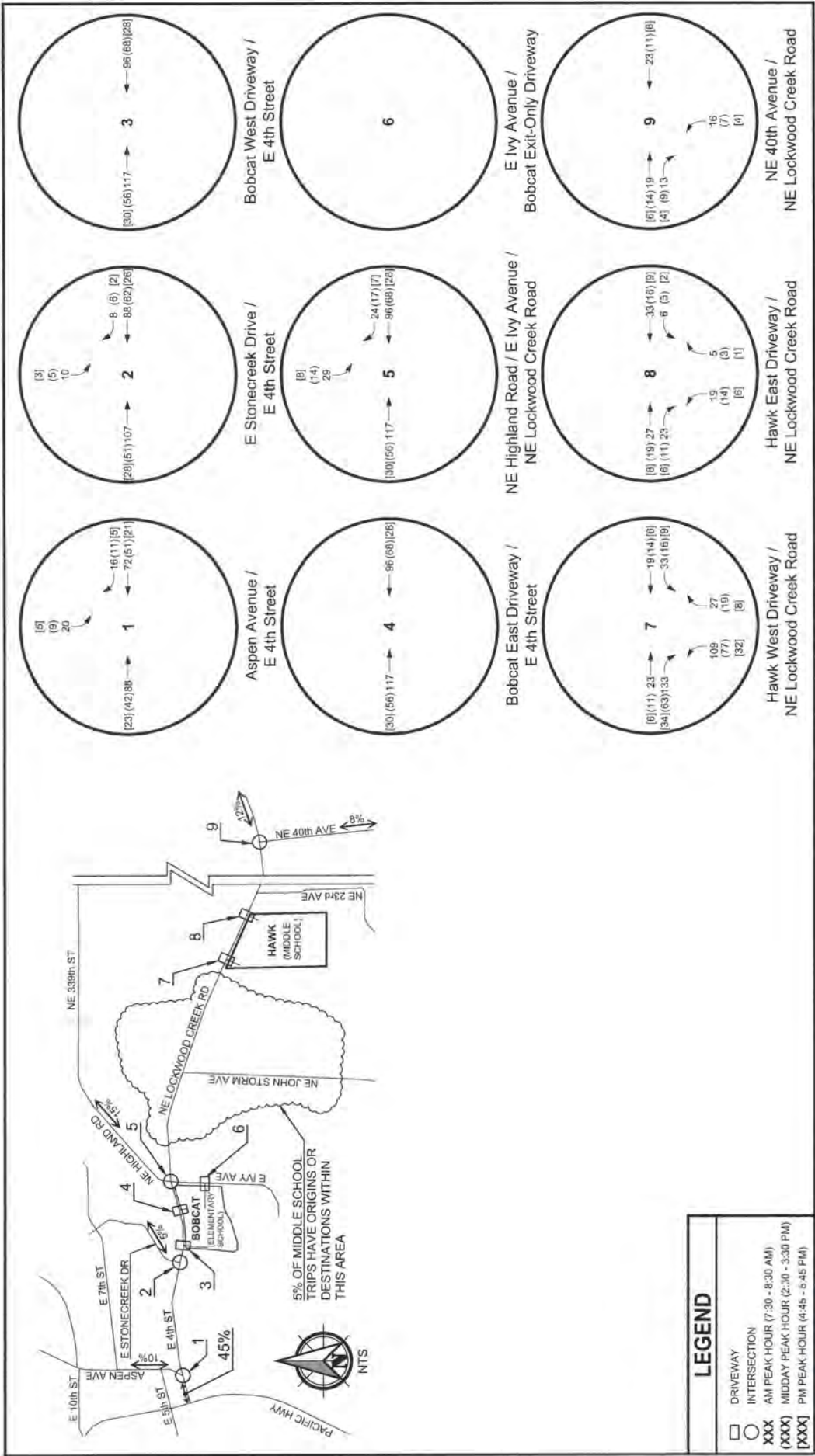
NOTES: Trip generation is based on Single-Family Residential (ITE 210) trip rates.



**Existing Middle School Trip Distribution and Adjustments**  
**La Center Middle School**

NOV/2018  
 FIGURE  
**9**





NOV 2018

**New Middle School Trip Distribution and Trip Assignments**

**La Center Middle School**

FIGURE **8**

**LEGEND**

□ DRIVEWAY

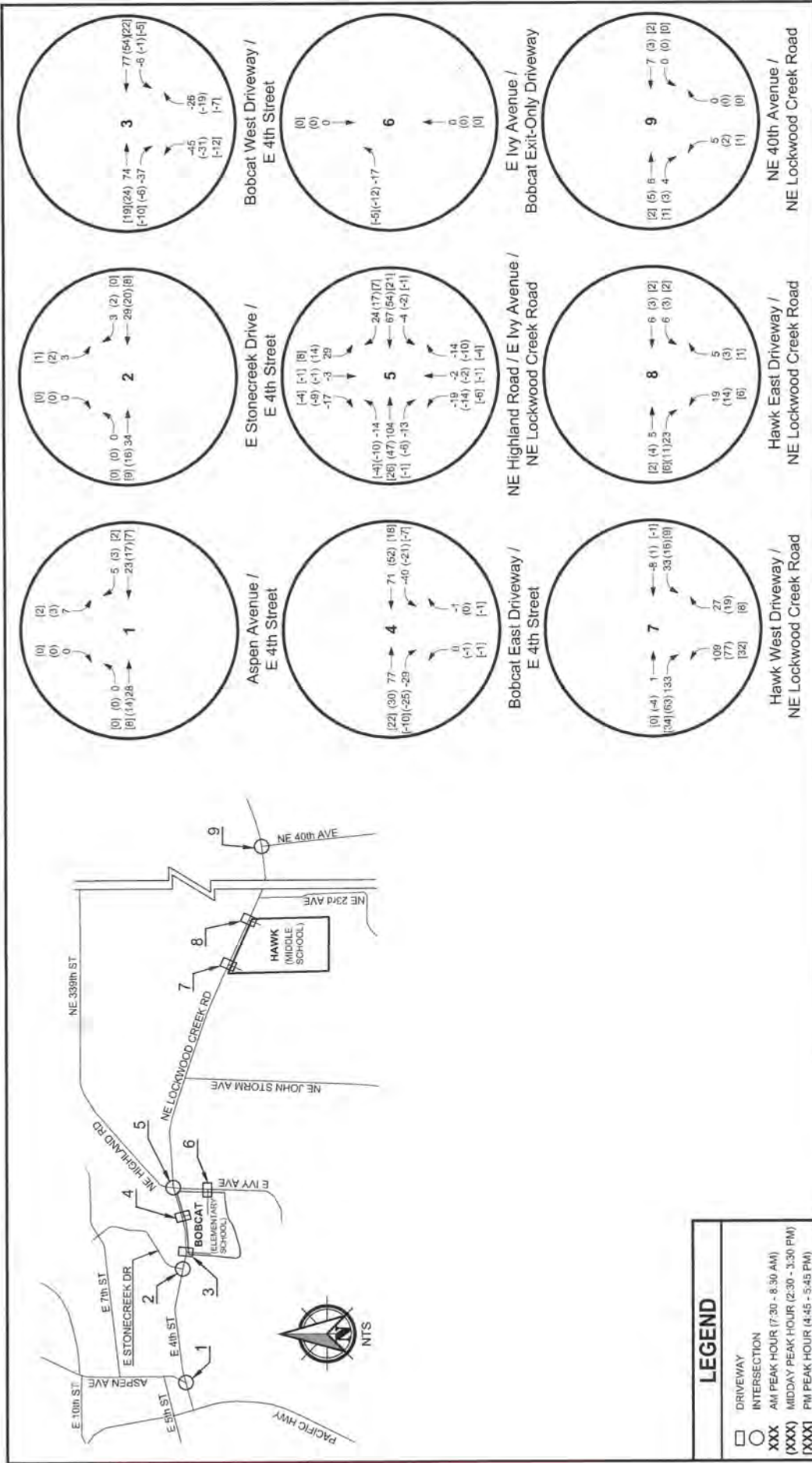
○ INTERSECTION

XXX AM PEAK HOUR (7:30 - 8:30 AM)

(XXX) MIDDAY PEAK HOUR (2:30 - 3:30 PM)

[XXX] PM PEAK HOUR (4:45 - 5:45 PM)





| LEGEND |                                   |
|--------|-----------------------------------|
|        | DRIVEWAY                          |
|        | INTERSECTION                      |
| XXX    | AM PEAK HOUR (7:30 - 8:30 AM)     |
| (XXX)  | MIDDAY PEAK HOUR (2:30 - 3:30 PM) |
| [XXX]  | PM PEAK HOUR (4:45 - 5:45 PM)     |



**Net Trip Impacts**  
**La Center Middle School**



## MEMORANDUM

Date: March 2, 2020

To: Mike Odren, RLA  
Associate Principal  
Olson Engineering, Inc.  
222 East Evergreen Blvd  
Vancouver WA 98660

From: Frank Charbonneau, PE, PTOE

Subject: Trip Generation Assessment FL2024  
**Minit Management Development**  
NW Paradise Park Road, La Center

This memo will serve as the trip generation assessment documenting the number of vehicular trips that will be produced by the proposed Minit Management development. The four acre site at address #2814 NW 319<sup>th</sup> Street is located in the northeast quadrant of NW La Center Road and the I-5 northbound on-ramp.

The development project will demolish the existing convenience store and gas station facilities and construct several new buildings consisting of 11,600 square feet of general retail, fast foot restaurant with drive-through totaling 2,800 square feet, convenience market with coffee drive-through totaling 4,510 square feet, and a 101 unit hotel. Parking on the site for 184 spaces will be provided, including eight ADA parking stalls. A copy of the project's site plan is attached to this memo.

The site will be served by three driveway accesses connecting to the perimeter road (NW Paradise Park Road) on the property's north and east sides. The nearest major intersections include NW La Center Road at the I-5 northbound off-ramp which is configured as a roundabout and NW Paradise Park Road at NW La Center Road. This intersection is controlled by stop signing on the northbound Paradise Park Road approach and on the southbound Paradise Road approach.

The City of La Center issued a pre-application conference report (2019-018-PAC) dated June 11, 2019 documenting the application's process and requirements. The staff report detailed that the development agreement between the City and Minit Management LLC dated March 2016 vested a total of 199 PM peak hour trips for the site. As a result it was necessary to submit a trip generation assessment to verify the trip projection.

The number of trips were calculated based on the proposed building uses and sizes. Trip credits were applied for the existing facilities that will be demolished including the convenience market and gas station and a cardlock fueling station. The trip calculations were determined for the weekday average daily traffic (ADT) and the weekday AM and PM peak hours.

The analysis used the ITE Trip Generation manual (10<sup>th</sup> edition, year 2017).

For the proposed site uses several ITE land use categories were applied including #310 (Hotel), #820 (shopping center), #852 (convenience market), #934 (fast food restaurant with drive-through), and #938 (coffee drive-through). For the existing uses ITE code #853 for convenience market was used and historical rates for Pacific Pride Cardlock were applied for the cardlock fueling station.

A summary of the site's trip generation is provided in the following tables. Table 1 provides the trip generation for the site's existing uses. Table 2 provides the trip generation for the proposed site uses. Table 3 lists the net site trips for the development.

**Table 1 Existing Land Uses Trip Generation Summary**

| ITE Land Use  | Units                   | Weekday                |                     |           |           |                     |           |           |
|---|-------------------------|------------------------|---------------------|-----------|-----------|---------------------|-----------|-----------|
|   |                         | ADT                    | AM Peak Hour        |           |           | PM Peak Hour        |           |           |
|   |                         |                        | Total               | Enter     | Exit      | Total               | Enter     | Exit      |
| Convenience Mkt with Gas (#853)<br>Generation Rate <sup>1</sup><br>Total Driveway Trips | 6 fueling<br>positions  | 322.50<br><b>1,935</b> | 20.76<br><b>125</b> | 50%<br>63 | 50%<br>62 | 23.04<br><b>138</b> | 50%<br>69 | 50%<br>69 |
| Pass-By Trips <sup>2</sup> (AM Peak=63%; PM Peak=66%)<br>New Site Trips                 |                         |                        | 79<br><b>46</b>     | 40<br>23  | 39<br>23  | 91<br><b>47</b>     | 46<br>23  | 45<br>24  |
| Cardlock Fueling Station<br>Generation Rate <sup>3</sup><br>Total Driveway Trips        | 12 fueling<br>positions |                        | 4.44<br><b>53</b>   | 50%<br>27 | 50%<br>26 | 2.96<br><b>36</b>   | 50%<br>18 | 50%<br>18 |
| Pass-By Trips <sup>2</sup> (AM Peak=58%; PM Peak=42%)<br>New Trips                      |                         |                        | 31<br><b>22</b>     | 16<br>11  | 15<br>11  | 15<br><b>21</b>     | 8<br>10   | 7<br>11   |
| <b>Total Site Trips</b>   |                         |                        | <b>178</b>          | 90        | 88        | <b>174</b>          | 87        | 87        |
| <b>Pass-by Trips</b>  |                         |                        | <b>110</b>          | 56        | 54        | <b>106</b>          | 54        | 52        |
| <b>New Trips</b> <sup>4</sup>   |                         | <b>3,380</b>           | <b>68</b>           | 34        | 34        | <b>68</b>           | 33        | 35        |

<sup>1</sup> Source: *Trip Generation*, 10th Edition, ITE, 2017, average rates.

<sup>2</sup> Pass-by percentage based on *Trip Generation Handbook, 3rd Edition*, ITE, 2017.

<sup>3</sup> Source: Independent surveys at Tarr Inc, Pacific Pride. AM trip rate = 1.5x calculated PM trip rate, ADT = 70% of ITE #944 Gas Station Rate

<sup>4</sup> New Trips = Total Trips - Internal Trips - Pass-by Trips.



Table 2 Proposed Land Uses Trip Generation Summary

| ITE Land Use  | Units          | Weekday                |                     |           |           |                     |           |           |
|---|----------------|------------------------|---------------------|-----------|-----------|---------------------|-----------|-----------|
|   |                | ADT                    | AM Peak Hour        |           |           | PM Peak Hour        |           |           |
|   |                |                        | Total               | Enter     | Exit      | Total               | Enter     | Exit      |
| Convenience Mkt [Open 15-16 hours] (#852)<br>Generation Rate <sup>1,2</sup><br>Total Driveway Trips                     | 4,410 sq. ft.  | 345.70<br><b>1,525</b> | 31.02<br><b>137</b> | 50%<br>69 | 50%<br>68 | 34.57<br><b>152</b> | 49%<br>74 | 51%<br>78 |
| Internal Trips <sup>3</sup> (AM Peak=16%; PM Peak=36%)  |                |                        | 22                  | 11        | 11        | 55                  | 27        | 28        |
| Pass-By Trips <sup>4</sup> (AM Peak=63%; PM Peak=66%)   |                |                        | 72                  | 36        | 36        | 64                  | 31        | 33        |
| New Site Trips  |                | <b>1,525</b>           | <b>43</b>           | 22        | 21        | <b>33</b>           | 16        | 17        |
| Shopping Center (#820)<br>Generation Rate <sup>2</sup><br>Total Driveway Trips  | 11,600 sq. ft. | 37.75<br><b>438</b>    | 0.94<br><b>11</b>   | 62%<br>7  | 38%<br>4  | 3.81<br><b>44</b>   | 48%<br>21 | 52%<br>23 |
| Internal Trips <sup>3</sup> (AM Peak=16%; PM Peak=36%)  |                |                        | 2                   | 1         | 1         | 16                  | 8         | 8         |
| Pass-By Trips <sup>4</sup> (AM Peak=N/A; PM Peak=34%)   |                |                        |                     |           |           | 10                  | 5         | 5         |
| New Site Trips <sup>4</sup>   |                | <b>438</b>             | <b>9</b>            | 6         | 3         | <b>18</b>           | 8         | 10        |
| Hotel (#310)<br>Generation Rate <sup>2</sup><br>Total Driveway Trips  | 101 rooms      | 8.36<br><b>844</b>     | 0.47<br><b>47</b>   | 59%<br>28 | 41%<br>19 | 0.60<br><b>61</b>   | 51%<br>31 | 49%<br>30 |
| Internal Trips <sup>3</sup> (AM Peak=16%; PM Peak=36%)  |                |                        | 8                   | 4         | 4         | 22                  | 11        | 11        |
| New Site Trips  |                |                        | 39                  | 24        | 15        | 39                  | 20        | 19        |
| Fast-Food with Drive-Through (#934)<br>Generation Rate <sup>2</sup><br>Total Driveway Trips                             | 2,800 sq. ft.  | 470.95<br><b>1,319</b> | 40.19<br><b>113</b> | 51%<br>58 | 49%<br>55 | 32.67<br><b>91</b>  | 52%<br>48 | 48%<br>43 |
| Internal Trips <sup>3</sup> (AM Peak=16%; PM Peak=36%)  |                |                        | 19                  | 10        | 9         | 33                  | 17        | 16        |
| Pass-By Trips <sup>4</sup> (AM Peak=49%; PM Peak=50%)   |                |                        | 46                  | 24        | 22        | 29                  | 15        | 14        |
| New Trips   |                |                        | <b>48</b>           | 24        | 24        | <b>29</b>           | 16        | 13        |
| Coffee/Donut Shop with Drive-Through & No Indoor Seating (#938)<br>Generation Rate <sup>2</sup><br>Total Driveway Trips | 100 sq. ft.    | 2000.00<br><b>200</b>  | 337.04<br><b>34</b> | 50%<br>17 | 50%<br>17 | 83.33<br><b>8</b>   | 50%<br>4  | 50%<br>4  |
| Internal Trips <sup>3</sup> (AM Peak=16%; PM Peak=36%)  |                | 0                      | 6                   | 3         | 3         | 3                   | 2         | 1         |
| Pass-By Trips <sup>4,5</sup> (AM Peak=83%; PM Peak=83%)   |                | 166                    | 23                  | 12        | 11        | 4                   | 2         | 2         |
| New Site Trips  |                | <b>34</b>              | <b>5</b>            | 2         | 3         | <b>1</b>            | 0         | 1         |
| <b>Total Site Trips</b>   |                | <b>4,326</b>           | <b>342</b>          | 179       | 163       | <b>356</b>          | 178       | 178       |
| <b>Internal Trips</b>   |                |                        | <b>57</b>           | 29        | 28        | <b>129</b>          | 65        | 64        |
| <b>Pass-by Trips</b>  |                |                        | <b>141</b>          | 72        | 69        | <b>107</b>          | 53        | 54        |
| <b>New Trips</b>  |                |                        | <b>144</b>          | 78        | 66        | <b>120</b>          | 60        | 60        |

<sup>1</sup> ADT trip rate estimated as ten times the PM peak hour trip rate.

<sup>2</sup> Source: *Trip Generation*, 10th Edition, ITE, 2017, average rates.

<sup>3</sup> Internal capture calculated with unconstrained internal capture rates presented in the Center for Urban Transportation Research (CUTR) *Trip Internalization in Multi-Use Developments*, April 2014, FDOT.

<sup>4</sup> Pass-by percentage based on *Trip Generation Handbook*, 3rd Edition, ITE, 2017.

<sup>5</sup> The weekday PM peak pass-by rate used to calculate the daily and weekday AM peak pass-by trips.

<sup>6</sup> New Trips = Total Trips - Internal Trips - Pass-by Trips.

Table 3 presents the net trip generation results (proposed site trips – existing site trips) for the development project. When the new facility is developed it is projected that the site will generate a net of 76 trips in the AM peak hour 52 trips in the PM peak hour. The ADT is projected to increase by 946 trips per day.

**Table 3 Net New Trips**

| Site Uses                         | Weekday Peak Hour |       |      |              |       |      | Weekday ADT |
|-----------------------------------|-------------------|-------|------|--------------|-------|------|-------------|
|                                   | AM Peak Hour      |       |      | PM Peak Hour |       |      |             |
|                                   | Total             | Enter | Exit | Total        | Enter | Exit |             |
| Proposed Site <sup>1</sup>        | <b>144</b>        | 78    | 66   | <b>120</b>   | 60    | 60   | 4,326       |
| Existing Site <sup>2</sup>        | <b>-68</b>        | -34   | -34  | <b>-68</b>   | -33   | -35  | 3,380       |
| <b>Net New Trips <sup>3</sup></b> | <b>76</b>         | 44    | 32   | <b>52</b>    | 27    | 25   | 946         |

<sup>1</sup> Refer to Table 2.

<sup>2</sup> Refer to Table 1.

<sup>3</sup> Net New Trips = Proposed Site Trips - Existing Site Trips.

It is recommended that the City of La Center support the proposed development without the application of traffic impact fees as the projected number of site trips falls below the vested number of peak hour trips (199 trips) identified in the City's development agreement with Minit Management.

If you should need any additional traffic engineering support on this project or if there are any further questions, please contact Frank Charbonneau, PE, PTOE at 503.293.1118 or email [Frank@CharbonneauEngineer.com](mailto:Frank@CharbonneauEngineer.com).

#### Attachment

- Site Plan

**APPENDIX D**  
**BREEZE CREEK PROJECT**



## CITY OF LA CENTER | BREZEE CREEK CULVERT REPLACEMENT & 4TH STREET WIDENING FAQ

Thank you for your comments and questions about the Breeze Creek Culvert Replacement and 4th Street Widening Project. The topics listed below reflect feedback received to date during public meetings as well as those regarding the Virtual Open House released the week of October 19, 2020. This document will be updated periodically to address new frequently asked questions.



**For more information, contact:** Tony Cooper, Assistant Public Works Manager/City Engineer, PE | [acooper@ci.lacenter.wa.us](mailto:acooper@ci.lacenter.wa.us) | 360.263.2889



## CITY OF LA CENTER | BREZEE CREEK CULVERT REPLACEMENT & 4TH STREET WIDENING FAQ

### TRAFFIC SIGNAL VS. ROUNDABOUT



**Comment:** Include the roundabout alternative in the scope of the 4th Street widening project. If the budget is unavailable for the roundabout alternative at the time of the 4th Street widening, the do nothing alternative should be chosen until funds are available. Signalization poses a significantly higher statistical risk to pedestrians than a stop sign controlled intersection. An increased risk to pedestrians is unacceptable for a primary intersection connecting the parks and schools of La Center.

#### Background

- Safety is paramount to both the design team and City staff who are working on this project.
- The original realignment of Highland Road and 4th Street, which took place in 2008, was designed to support a future traffic signal at this intersection.
- The posted speed limit of 4th Street is 25 mph with a reduction to 20 mph within the school zone while children are present. For a low-speed corridor of this type, both a signal and roundabout effectively provide a safe configuration for all users.

#### Design Process

- As part of the intersection design process completed during the current Breeze Creek Culvert Replacement/4th Street Widening Project, a traffic study and report were completed.
- Level of Service (LOS) is a measure of vehicular traffic flow, reflecting indicators such as speed, travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.
- The LOS for the Highland Road and 4th Street intersection is projected to be LOS F (failing) by 2040 if left as-is.
- According to LOS guidelines set forth by the City of La Center, if the LOS exceeds D, the intersection fails, and an intersection improvement is required.

#### Comparison

- A decision to use a signal or roundabout to address a deficient intersection, in this case Highland Road and 4th Street, requires numerous factors to be considered. For the Highland Road and 4th Street intersection, both alternatives (roundabout and signalization) would provide the necessary safety and LOS improvements required by City guidelines.
- However, for this specific intersection in a low-speed corridor, a signal provides safe crossing routes for pedestrians and bicyclists, particularly school children by requiring traffic to completely stop, offering visibility, and providing an allotted amount of time for pedestrian and bicyclist passage through the intersection.
- A signal provides safety and LOS improvements with a significantly lower construction cost, reduced property impacts and less right-of-way acquisition (the City purchasing property from private owners or public agencies).
- The analysis of available accident data completed as part of the Project development at this intersection reveals that only a single incident has occurred. The installation of a signal could effectively prevent this type of accident in the future.

**For more information, contact:** Tony Cooper, Assistant Public Works Manager/City Engineer, PE | [acooper@ci.lacenter.wa.us](mailto:acooper@ci.lacenter.wa.us) | 360.263.2889

**APPENDIX E**  
**LEVEL OF SERVICE COMPUTER PRINTOUTS**

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           | Site Information              |                              |      |            |      |    |
|---|-------------------|-----------|-------------------------------|------------------------------|------|------------|------|----|
| Analyst                                   | DSK               |           | Intersection                  | Lockwood Cr. Rd. & 24th Ave. |      |            |      |    |
| Agency/Co.                                | Kelly Engineering |           | Jurisdiction                  | City of La Center            |      |            |      |    |
| Date Performed                            | 2/20/2022         |           | Analysis Year                 | 2022                         |      |            |      |    |
| Analysis Time Period                      | AM Peak Hour      |           |                               |                              |      |            |      |    |
| Project Description Existing              |                   |           |                               |                              |      |            |      |    |
| East/West Street: Lockwood Creek Road     |                   |           | North/South Street: 24th Ave. |                              |      |            |      |    |
| Intersection Orientation: East-West       |                   |           | Study Period (hrs): 0.25      |                              |      |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |                               |                              |      |            |      |    |
| Major Street                              | Eastbound         |           |                               | Westbound                    |      |            |      |    |
| Movement                                  | 1                 | 2         | 3                             | 4                            | 5    | 6          |      |    |
|   | L                 | T         | R                             | L                            | T    | R          |      |    |
| Volume (veh/h)                            | 2                 | 67        | 0                             | 1                            | 119  | 8          |      |    |
| Peak-Hour Factor, PHF                     | 0.82              | 0.82      | 0.82                          | 0.82                         | 0.82 | 0.82       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 2                 | 81        | 0                             | 1                            | 145  | 9          |      |    |
| Percent Heavy Vehicles                    | 50                | --        | --                            | 0                            | --   | --         |      |    |
| Median Type                               | Undivided         |           |                               |                              |      |            |      |    |
| RT Channelized                            |                   |           | 0                             |                              |      | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0                             | 0                            | 1    | 0          |      |    |
| Configuration                             | LTR               |           |                               | LTR                          |      |            |      |    |
| Upstream Signal                           |                   | 0         |                               |                              | 0    |            |      |    |
| Minor Street                              | Northbound        |           |                               | Southbound                   |      |            |      |    |
| Movement                                  | 7                 | 8         | 9                             | 10                           | 11   | 12         |      |    |
|   | L                 | T         | R                             | L                            | T    | R          |      |    |
| Volume (veh/h)                            | 0                 | 0         | 0                             | 3                            | 0    | 6          |      |    |
| Peak-Hour Factor, PHF                     | 0.82              | 0.82      | 0.82                          | 0.82                         | 0.82 | 0.82       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0                             | 3                            | 0    | 7          |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0                             | 0                            | 0    | 17         |      |    |
| Percent Grade (%)                         | 0                 |           |                               | 0                            |      |            |      |    |
| Flared Approach                           |                   | N         |                               |                              | N    |            |      |    |
| Storage                                   |                   | 0         |                               |                              | 0    |            |      |    |
| RT Channelized                            |                   |           | 0                             |                              |      | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0                             | 0                            | 1    | 0          |      |    |
| Configuration                             |                   | LTR       |                               |                              | LTR  |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |                               |                              |      |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound                    |                              |      | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7                             | 8                            | 9    | 10         | 11   | 12 |
| Lane Configuration                        | LTR               | LTR       |                               | LTR                          |      |            | LTR  |    |
| v (veh/h)                                 | 2                 | 1         |                               | 0                            |      |            | 10   |    |
| C (m) (veh/h)                             | 1180              | 1529      |                               |                              |      |            | 812  |    |
| v/c                                       | 0.00              | 0.00      |                               |                              |      |            | 0.01 |    |
| 95% queue length                          | 0.01              | 0.00      |                               |                              |      |            | 0.04 |    |
| Control Delay (s/veh)                     | 8.1               | 7.4       |                               |                              |      |            | 9.5  |    |
| LOS                                       | A                 | A         |                               |                              |      |            | A    |    |
| Approach Delay (s/veh)                    | --                | --        |                               |                              |      |            | 9.5  |    |
| Approach LOS                              | --                | --        |                               |                              |      |            | A    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   | Site Information              |                              |
|---|-------------------|-------------------------------|------------------------------|
| Analyst                                   | DSK               | Intersection                  | Lockwood Cr. Rd. & 24th Ave. |
| Agency/Co.                                | Kelly Engineering | Jurisdiction                  | City of La Center            |
| Date Performed                            | 2/20/2022         | Analysis Year                 | 2025                         |
| Analysis Time Period                      | AM Peak Hour      |                               |                              |
| Project Description Year 2025 w/o Project |                   |                               |                              |
| East/West Street: Lockwood Creek Road     |                   | North/South Street: 24th Ave. |                              |
| Intersection Orientation: East-West       |                   | Study Period (hrs): 0.25      |                              |

| Vehicle Volumes and Adjustments |            |      |      |            |      |      |
|---------------------------------|------------|------|------|------------|------|------|
| Major Street                    | Eastbound  |      |      | Westbound  |      |      |
| Movement                        | 1          | 2    | 3    | 4          | 5    | 6    |
|                                 | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                  | 18         | 81   | 0    | 1          | 138  | 9    |
| Peak-Hour Factor, PHF           | 0.82       | 0.82 | 0.82 | 0.82       | 0.82 | 0.82 |
| Hourly Flow Rate, HFR (veh/h)   | 21         | 98   | 0    | 1          | 168  | 10   |
| Percent Heavy Vehicles          | 50         | --   | --   | 0          | --   | --   |
| Median Type                     | Undivided  |      |      |            |      |      |
| RT Channelized                  |            |      | 0    |            |      | 0    |
| Lanes                           | 0          | 1    | 0    | 0          | 1    | 0    |
| Configuration                   | LTR        |      |      | LTR        |      |      |
| Upstream Signal                 |            | 0    |      |            | 0    |      |
| Minor Street                    | Northbound |      |      | Southbound |      |      |
| Movement                        | 7          | 8    | 9    | 10         | 11   | 12   |
|                                 | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                  | 0          | 0    | 0    | 7          | 0    | 24   |
| Peak-Hour Factor, PHF           | 0.82       | 0.82 | 0.82 | 0.82       | 0.82 | 0.82 |
| Hourly Flow Rate, HFR (veh/h)   | 0          | 0    | 0    | 8          | 0    | 29   |
| Percent Heavy Vehicles          | 0          | 0    | 0    | 0          | 0    | 17   |
| Percent Grade (%)               | 0          |      |      | 0          |      |      |
| Flared Approach                 |            | N    |      |            | N    |      |
| Storage                         |            | 0    |      |            | 0    |      |
| RT Channelized                  |            |      | 0    |            |      | 0    |
| Lanes                           | 0          | 1    | 0    | 0          | 1    | 0    |
| Configuration                   |            | LTR  |      |            | LTR  |      |

| Delay, Queue Length, and Level of Service |           |           |            |     |   |            |      |    |
|---|-----------|-----------|------------|-----|---|------------|------|----|
| Approach                                  | Eastbound | Westbound | Northbound |     |   | Southbound |      |    |
| Movement                                  | 1         | 4         | 7          | 8   | 9 | 10         | 11   | 12 |
| Lane Configuration                        | LTR       | LTR       |            | LTR |   |            | LTR  |    |
| v (veh/h)                                 | 21        | 1         |            | 0   |   |            | 37   |    |
| C (m) (veh/h)                             | 1155      | 1508      |            |     |   |            | 779  |    |
| v/c                                       | 0.02      | 0.00      |            |     |   |            | 0.05 |    |
| 95% queue length                          | 0.06      | 0.00      |            |     |   |            | 0.15 |    |
| Control Delay (s/veh)                     | 8.2       | 7.4       |            |     |   |            | 9.9  |    |
| LOS                                       | A         | A         |            |     |   |            | A    |    |
| Approach Delay (s/veh)                    | --        | --        |            |     |   |            | 9.9  |    |
| Approach LOS                              | --        | --        |            |     |   |            | A    |    |



## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   |           | Site Information              |                              |      |            |      |    |
|--|-------------------|-----------|-------------------------------|------------------------------|------|------------|------|----|
| Analyst                                    | DSK               |           | Intersection                  | Lockwood Cr. Rd. & 24th Ave. |      |            |      |    |
| Agency/Co.                                 | Kelly Engineering |           | Jurisdiction                  | City of La Center            |      |            |      |    |
| Date Performed                             | 2/20/2022         |           | Analysis Year                 | 2025                         |      |            |      |    |
| Analysis Time Period                       | AM Peak Hour      |           |                               |                              |      |            |      |    |
| Project Description Year 2025 with Project |                   |           |                               |                              |      |            |      |    |
| East/West Street: Lockwood Creek Road      |                   |           | North/South Street: 24th Ave. |                              |      |            |      |    |
| Intersection Orientation: East-West        |                   |           | Study Period (hrs): 0.25      |                              |      |            |      |    |
| Vehicle Volumes and Adjustments            |                   |           |                               |                              |      |            |      |    |
| Major Street                               | Eastbound         |           |                               | Westbound                    |      |            |      |    |
| Movement                                   | 1                 | 2         | 3                             | 4                            | 5    | 6          |      |    |
|  | L                 | T         | R                             | L                            | T    | R          |      |    |
| Volume (veh/h)                             | 18                | 81        | 12                            | 1                            | 138  | 9          |      |    |
| Peak-Hour Factor, PHF                      | 0.82              | 0.82      | 0.82                          | 0.82                         | 0.82 | 0.82       |      |    |
| Hourly Flow Rate, HFR (veh/h)              | 21                | 98        | 14                            | 1                            | 168  | 10         |      |    |
| Percent Heavy Vehicles                     | 50                | --        | --                            | 0                            | --   | --         |      |    |
| Median Type                                | Undivided         |           |                               |                              |      |            |      |    |
| RT Channelized                             |                   |           | 0                             |                              |      | 0          |      |    |
| Lanes                                      | 0                 | 1         | 0                             | 0                            | 1    | 0          |      |    |
| Configuration                              | LTR               |           |                               | LTR                          |      |            |      |    |
| Upstream Signal                            |                   | 0         |                               |                              | 0    |            |      |    |
| Minor Street                               | Northbound        |           |                               | Southbound                   |      |            |      |    |
| Movement                                   | 7                 | 8         | 9                             | 10                           | 11   | 12         |      |    |
|  | L                 | T         | R                             | L                            | T    | R          |      |    |
| Volume (veh/h)                             | 33                | 0         | 4                             | 7                            | 0    | 24         |      |    |
| Peak-Hour Factor, PHF                      | 0.82              | 0.82      | 0.82                          | 0.82                         | 0.82 | 0.82       |      |    |
| Hourly Flow Rate, HFR (veh/h)              | 40                | 0         | 4                             | 8                            | 0    | 29         |      |    |
| Percent Heavy Vehicles                     | 0                 | 0         | 0                             | 0                            | 0    | 17         |      |    |
| Percent Grade (%)                          | 0                 |           |                               | 0                            |      |            |      |    |
| Flared Approach                            |                   | N         |                               |                              | N    |            |      |    |
| Storage                                    |                   | 0         |                               |                              | 0    |            |      |    |
| RT Channelized                             |                   |           | 0                             |                              |      | 0          |      |    |
| Lanes                                      | 0                 | 1         | 0                             | 0                            | 1    | 0          |      |    |
| Configuration                              |                   | LTR       |                               |                              | LTR  |            |      |    |
| Delay, Queue Length, and Level of Service  |                   |           |                               |                              |      |            |      |    |
| Approach                                   | Eastbound         | Westbound | Northbound                    |                              |      | Southbound |      |    |
| Movement                                   | 1                 | 4         | 7                             | 8                            | 9    | 10         | 11   | 12 |
| Lane Configuration                         | LTR               | LTR       |                               | LTR                          |      |            | LTR  |    |
| v (veh/h)                                  | 21                | 1         |                               | 44                           |      |            | 37   |    |
| C (m) (veh/h)                              | 1155              | 1490      |                               | 611                          |      |            | 776  |    |
| v/c  | 0.02              | 0.00      |                               | 0.07                         |      |            | 0.05 |    |
| 95% queue length                           | 0.06              | 0.00      |                               | 0.23                         |      |            | 0.15 |    |
| Control Delay (s/veh)                      | 8.2               | 7.4       |                               | 11.3                         |      |            | 9.9  |    |
| LOS  | A                 | A         |                               | B                            |      |            | A    |    |
| Approach Delay (s/veh)                     | --                | --        |                               | 11.3                         |      |            | 9.9  |    |
| Approach LOS                               | --                | --        |                               | B                            |      |            | A    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                               |                              |            |      |    |
|---|-------------------|-----------|------------|-------------------------------|------------------------------|------------|------|----|
| General Information                       |                   |           |            | Site Information              |                              |            |      |    |
| Analyst                                   | DSK               |           |            | Intersection                  | Lockwood Cr. Rd. & 24th Ave. |            |      |    |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                  | City of La Center            |            |      |    |
| Date Performed                            | 2/20/2022         |           |            | Analysis Year                 | 2022                         |            |      |    |
| Analysis Time Period                      | PM Peak Hour      |           |            |                               |                              |            |      |    |
| Project Description Existing              |                   |           |            |                               |                              |            |      |    |
| East/West Street: Lockwood Creek Road     |                   |           |            | North/South Street: 24th Ave. |                              |            |      |    |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25      |                              |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |            |                               |                              |            |      |    |
| Major Street                              | Eastbound         |           |            | Westbound                     |                              |            |      |    |
| Movement                                  | 1                 | 2         | 3          | 4                             | 5                            | 6          |      |    |
|   | L                 | T         | R          | L                             | T                            | R          |      |    |
| Volume (veh/h)                            | 11                | 197       | 0          | 1                             | 108                          | 16         |      |    |
| Peak-Hour Factor, PHF                     | 0.86              | 0.86      | 0.86       | 0.86                          | 0.86                         | 0.86       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 12                | 229       | 0          | 1                             | 125                          | 18         |      |    |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                             | --                           | --         |      |    |
| Median Type                               | Undivided         |           |            |                               |                              |            |      |    |
| RT Channelized                            |                   |           | 0          |                               |                              |            | 0    |    |
| Lanes                                     | 0                 | 1         | 0          | 0                             | 1                            | 0          |      |    |
| Configuration                             | LTR               |           |            | LTR                           |                              |            |      |    |
| Upstream Signal                           |                   | 0         |            |                               | 0                            |            |      |    |
| Minor Street                              | Northbound        |           |            | Southbound                    |                              |            |      |    |
| Movement                                  | 7                 | 8         | 9          | 10                            | 11                           | 12         |      |    |
|   | L                 | T         | R          | L                             | T                            | R          |      |    |
| Volume (veh/h)                            | 0                 | 0         | 0          | 6                             | 0                            | 4          |      |    |
| Peak-Hour Factor, PHF                     | 0.86              | 0.86      | 0.86       | 0.86                          | 0.86                         | 0.86       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 6                             | 0                            | 4          |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                             | 0                            | 25         |      |    |
| Percent Grade (%)                         | 0                 |           |            | 0                             |                              |            |      |    |
| Flared Approach                           |                   | N         |            |                               | N                            |            |      |    |
| Storage                                   |                   | 0         |            |                               | 0                            |            |      |    |
| RT Channelized                            |                   |           | 0          |                               |                              | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0          | 0                             | 1                            | 0          |      |    |
| Configuration                             |                   | LTR       |            |                               | LTR                          |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |            |                               |                              |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound |                               |                              | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7          | 8                             | 9                            | 10         | 11   | 12 |
| Lane Configuration                        | LTR               | LTR       |            | LTR                           |                              |            | LTR  |    |
| v (veh/h)                                 | 12                | 1         |            | 0                             |                              |            | 10   |    |
| C (m) (veh/h)                             | 1452              | 1351      |            |                               |                              |            | 657  |    |
| v/c                                       | 0.01              | 0.00      |            |                               |                              |            | 0.02 |    |
| 95% queue length                          | 0.02              | 0.00      |            |                               |                              |            | 0.05 |    |
| Control Delay (s/veh)                     | 7.5               | 7.7       |            |                               |                              |            | 10.6 |    |
| LOS                                       | A                 | A         |            |                               |                              |            | B    |    |
| Approach Delay (s/veh)                    | --                | --        |            |                               |                              |            | 10.6 |    |
| Approach LOS                              | --                | --        |            |                               |                              |            | B    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                               |                              |            |      |    |
|---|-------------------|-----------|------------|-------------------------------|------------------------------|------------|------|----|
| General Information                       |                   |           |            | Site Information              |                              |            |      |    |
| Analyst                                   | DSK               |           |            | Intersection                  | Lockwood Cr. Rd. & 24th Ave. |            |      |    |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                  | City of La Center            |            |      |    |
| Date Performed                            | 2/20/2022         |           |            | Analysis Year                 | 2025                         |            |      |    |
| Analysis Time Period                      | PM Peak Hour      |           |            |                               |                              |            |      |    |
| Project Description Year 2025 w/o Project |                   |           |            |                               |                              |            |      |    |
| East/West Street: Lockwood Creek Road     |                   |           |            | North/South Street: 24th Ave. |                              |            |      |    |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25      |                              |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |            |                               |                              |            |      |    |
| Major Street                              | Eastbound         |           |            | Westbound                     |                              |            |      |    |
| Movement                                  | 1                 | 2         | 3          | 4                             | 5                            | 6          |      |    |
|   | L                 | T         | R          | L                             | T                            | R          |      |    |
| Volume (veh/h)                            | 30                | 212       | 0          | 1                             | 117                          | 23         |      |    |
| Peak-Hour Factor, PHF                     | 0.86              | 0.86      | 0.86       | 0.86                          | 0.86                         | 0.86       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 34                | 246       | 0          | 1                             | 136                          | 26         |      |    |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                             | --                           | --         |      |    |
| Median Type                               | Undivided         |           |            |                               |                              |            |      |    |
| RT Channelized                            |                   |           | 0          |                               |                              |            | 0    |    |
| Lanes                                     | 0                 | 1         | 0          | 0                             | 1                            | 0          |      |    |
| Configuration                             | LTR               |           |            | LTR                           |                              |            |      |    |
| Upstream Signal                           |                   | 0         |            |                               | 0                            |            |      |    |
| Minor Street                              | Northbound        |           |            | Southbound                    |                              |            |      |    |
| Movement                                  | 7                 | 8         | 9          | 10                            | 11                           | 12         |      |    |
|   | L                 | T         | R          | L                             | T                            | R          |      |    |
| Volume (veh/h)                            | 0                 | 0         | 0          | 9                             | 0                            | 16         |      |    |
| Peak-Hour Factor, PHF                     | 0.86              | 0.86      | 0.86       | 0.86                          | 0.86                         | 0.86       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 10                            | 0                            | 18         |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                             | 0                            | 25         |      |    |
| Percent Grade (%)                         | 0                 |           |            | 0                             |                              |            |      |    |
| Flared Approach                           |                   | N         |            |                               | N                            |            |      |    |
| Storage                                   |                   | 0         |            |                               | 0                            |            |      |    |
| RT Channelized                            |                   |           | 0          |                               |                              | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0          | 0                             | 1                            | 0          |      |    |
| Configuration                             |                   | LTR       |            |                               | LTR                          |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |            |                               |                              |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound |                               |                              | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7          | 8                             | 9                            | 10         | 11   | 12 |
| Lane Configuration                        | LTR               | LTR       |            | LTR                           |                              |            | LTR  |    |
| v (veh/h)                                 | 34                | 1         |            | 0                             |                              |            | 28   |    |
| C (m) (veh/h)                             | 1429              | 1332      |            |                               |                              |            | 676  |    |
| v/c                                       | 0.02              | 0.00      |            |                               |                              |            | 0.04 |    |
| 95% queue length                          | 0.07              | 0.00      |            |                               |                              |            | 0.13 |    |
| Control Delay (s/veh)                     | 7.6               | 7.7       |            |                               |                              |            | 10.6 |    |
| LOS                                       | A                 | A         |            |                               |                              |            | B    |    |
| Approach Delay (s/veh)                    | --                | --        |            |                               |                              |            | 10.6 |    |
| Approach LOS                              | --                | --        |            |                               |                              |            | B    |    |

| TWO-WAY STOP CONTROL SUMMARY               |                   |           |            |                               |                              |            |      |    |  |
|--|-------------------|-----------|------------|-------------------------------|------------------------------|------------|------|----|--|
| General Information                        |                   |           |            | Site Information              |                              |            |      |    |  |
| Analyst                                    | DSK               |           |            | Intersection                  | Lockwood Cr. Rd. & 24th Ave. |            |      |    |  |
| Agency/Co.                                 | Kelly Engineering |           |            | Jurisdiction                  | City of La Center            |            |      |    |  |
| Date Performed                             | 2/20/2022         |           |            | Analysis Year                 | 2025                         |            |      |    |  |
| Analysis Time Period                       | PM Peak Hour      |           |            |                               |                              |            |      |    |  |
| Project Description Year 2025 with Project |                   |           |            |                               |                              |            |      |    |  |
| East/West Street: Lockwood Creek Road      |                   |           |            | North/South Street: 24th Ave. |                              |            |      |    |  |
| Intersection Orientation: East-West        |                   |           |            | Study Period (hrs): 0.25      |                              |            |      |    |  |
| Vehicle Volumes and Adjustments            |                   |           |            |                               |                              |            |      |    |  |
| Major Street                               | Eastbound         |           |            | Westbound                     |                              |            |      |    |  |
| Movement                                   | 1                 | 2         | 3          | 4                             | 5                            | 6          |      |    |  |
|  | L                 | T         | R          | L                             | T                            | R          |      |    |  |
| Volume (veh/h)                             | 30                | 212       | 38         | 4                             | 117                          | 23         |      |    |  |
| Peak-Hour Factor, PHF                      | 0.86              | 0.86      | 0.86       | 0.86                          | 0.86                         | 0.86       |      |    |  |
| Hourly Flow Rate, HFR (veh/h)              | 34                | 246       | 44         | 4                             | 136                          | 26         |      |    |  |
| Percent Heavy Vehicles                     | 0                 | --        | --         | 0                             | --                           | --         |      |    |  |
| Median Type                                | Undivided         |           |            |                               |                              |            |      |    |  |
| RT Channelized                             |                   |           | 0          |                               |                              | 0          |      |    |  |
| Lanes                                      | 0                 | 1         | 0          | 0                             | 1                            | 0          |      |    |  |
| Configuration                              | LTR               |           |            | LTR                           |                              |            |      |    |  |
| Upstream Signal                            |                   | 0         |            |                               | 0                            |            |      |    |  |
| Minor Street                               | Northbound        |           |            | Southbound                    |                              |            |      |    |  |
| Movement                                   | 7                 | 8         | 9          | 10                            | 11                           | 12         |      |    |  |
|  | L                 | T         | R          | L                             | T                            | R          |      |    |  |
| Volume (veh/h)                             | 23                | 0         | 2          | 9                             | 0                            | 16         |      |    |  |
| Peak-Hour Factor, PHF                      | 0.86              | 0.86      | 0.86       | 0.86                          | 0.86                         | 0.86       |      |    |  |
| Hourly Flow Rate, HFR (veh/h)              | 26                | 0         | 2          | 10                            | 0                            | 18         |      |    |  |
| Percent Heavy Vehicles                     | 0                 | 0         | 0          | 0                             | 0                            | 25         |      |    |  |
| Percent Grade (%)                          | 0                 |           |            | 0                             |                              |            |      |    |  |
| Flared Approach                            |                   | N         |            |                               | N                            |            |      |    |  |
| Storage                                    |                   | 0         |            |                               | 0                            |            |      |    |  |
| RT Channelized                             |                   |           | 0          |                               |                              | 0          |      |    |  |
| Lanes                                      | 0                 | 1         | 0          | 0                             | 1                            | 0          |      |    |  |
| Configuration                              |                   | LTR       |            |                               | LTR                          |            |      |    |  |
| Delay, Queue Length, and Level of Service  |                   |           |            |                               |                              |            |      |    |  |
| Approach                                   | Eastbound         | Westbound | Northbound |                               |                              | Southbound |      |    |  |
| Movement                                   | 1                 | 4         | 7          | 8                             | 9                            | 10         | 11   | 12 |  |
| Lane Configuration                         | LTR               | LTR       | LTR        |                               |                              | LTR        |      |    |  |
| v (veh/h)                                  | 34                | 4         |            | 28                            |                              |            | 28   |    |  |
| C (m) (veh/h)                              | 1429              | 1283      |            | 475                           |                              |            | 660  |    |  |
| v/c  | 0.02              | 0.00      |            | 0.06                          |                              |            | 0.04 |    |  |
| 95% queue length                           | 0.07              | 0.01      |            | 0.19                          |                              |            | 0.13 |    |  |
| Control Delay (s/veh)                      | 7.6               | 7.8       |            | 13.1                          |                              |            | 10.7 |    |  |
| LOS  | A                 | A         |            | B                             |                              |            | B    |    |  |
| Approach Delay (s/veh)                     | --                | --        | 13.1       |                               |                              | 10.7       |      |    |  |
| Approach LOS                               | --                | --        | B          |                               |                              | B          |      |    |  |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           | Site Information                |                           |      |            |      |    |
|---|-------------------|-----------|---------------------------------|---------------------------|------|------------|------|----|
| Analyst                                   | DSK               |           | Intersection                    | Lockwood Cr. Rd. & Spruce |      |            |      |    |
| Agency/Co.                                | Kelly Engineering |           | Jurisdiction                    | City of La Center         |      |            |      |    |
| Date Performed                            | 2/21/2022         |           | Analysis Year                   | 2022                      |      |            |      |    |
| Analysis Time Period                      | AM Peak Hour      |           |                                 |                           |      |            |      |    |
| Project Description Existing              |                   |           |                                 |                           |      |            |      |    |
| East/West Street: Lockwood Creek Rd.      |                   |           | North/South Street: Spruce Ave. |                           |      |            |      |    |
| Intersection Orientation: East-West       |                   |           | Study Period (hrs): 0.25        |                           |      |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |                                 |                           |      |            |      |    |
| Major Street                              | Eastbound         |           |                                 | Westbound                 |      |            |      |    |
| Movement                                  | 1                 | 2         | 3                               | 4                         | 5    | 6          |      |    |
|   | L                 | T         | R                               | L                         | T    | R          |      |    |
| Volume (veh/h)                            | 19                | 81        |                                 |                           | 131  | 4          |      |    |
| Peak-Hour Factor, PHF                     | 0.83              | 0.83      | 1.00                            | 1.00                      | 0.83 | 0.83       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 22                | 97        | 0                               | 0                         | 157  | 4          |      |    |
| Percent Heavy Vehicles                    | 0                 | --        | --                              | 0                         | --   | --         |      |    |
| Median Type                               | Undivided         |           |                                 |                           |      |            |      |    |
| RT Channelized                            |                   |           | 0                               |                           |      | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0                               | 0                         | 1    | 0          |      |    |
| Configuration                             | LT                |           |                                 |                           |      | TR         |      |    |
| Upstream Signal                           |                   | 0         |                                 |                           | 0    |            |      |    |
| Minor Street                              | Northbound        |           |                                 | Southbound                |      |            |      |    |
| Movement                                  | 7                 | 8         | 9                               | 10                        | 11   | 12         |      |    |
|   | L                 | T         | R                               | L                         | T    | R          |      |    |
| Volume (veh/h)                            |                   |           |                                 | 1                         |      | 16         |      |    |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00                            | 0.83                      | 1.00 | 0.83       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0                               | 1                         | 0    | 19         |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0                               | 0                         | 0    | 0          |      |    |
| Percent Grade (%)                         | 0                 |           |                                 | 0                         |      |            |      |    |
| Flared Approach                           |                   | N         |                                 |                           | N    |            |      |    |
| Storage                                   |                   | 0         |                                 |                           | 0    |            |      |    |
| RT Channelized                            |                   |           | 0                               |                           |      | 0          |      |    |
| Lanes                                     | 0                 | 0         | 0                               | 0                         | 0    | 0          |      |    |
| Configuration                             |                   |           |                                 |                           | LR   |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |                                 |                           |      |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound                      |                           |      | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7                               | 8                         | 9    | 10         | 11   | 12 |
| Lane Configuration                        | LT                |           |                                 |                           |      |            | LR   |    |
| v (veh/h)                                 | 22                |           |                                 |                           |      |            | 20   |    |
| C (m) (veh/h)                             | 1430              |           |                                 |                           |      |            | 879  |    |
| v/c                                       | 0.02              |           |                                 |                           |      |            | 0.02 |    |
| 95% queue length                          | 0.05              |           |                                 |                           |      |            | 0.07 |    |
| Control Delay (s/veh)                     | 7.6               |           |                                 |                           |      |            | 9.2  |    |
| LOS                                       | A                 |           |                                 |                           |      |            | A    |    |
| Approach Delay (s/veh)                    | --                | --        |                                 |                           |      |            | 9.2  |    |
| Approach LOS                              | --                | --        |                                 |                           |      |            | A    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                                 |                           |            |      |    |
|---|-------------------|-----------|------------|---------------------------------|---------------------------|------------|------|----|
| General Information                       |                   |           |            | Site Information                |                           |            |      |    |
| Analyst                                   | DSK               |           |            | Intersection                    | Lockwood Cr. Rd. & Spruce |            |      |    |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                    | City of La Center         |            |      |    |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                   | 2025                      |            |      |    |
| Analysis Time Period                      | AM Peak Hour      |           |            |                                 |                           |            |      |    |
| Project Description Year 2025 w/o Project |                   |           |            |                                 |                           |            |      |    |
| East/West Street: Lockwood Creek Rd.      |                   |           |            | North/South Street: Spruce Ave. |                           |            |      |    |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25        |                           |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |            |                                 |                           |            |      |    |
| Major Street                              | Eastbound         |           |            | Westbound                       |                           |            |      |    |
| Movement                                  | 1                 | 2         | 3          | 4                               | 5                         | 6          |      |    |
|   | L                 | T         | R          | L                               | T                         | R          |      |    |
| Volume (veh/h)                            | 27                | 220       |            |                                 | 258                       | 11         |      |    |
| Peak-Hour Factor, PHF                     | 0.83              | 0.83      | 1.00       | 1.00                            | 0.83                      | 0.83       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 32                | 265       | 0          | 0                               | 310                       | 13         |      |    |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                               | --                        | --         |      |    |
| Median Type                               | Undivided         |           |            |                                 |                           |            |      |    |
| RT Channelized                            |                   |           | 0          |                                 |                           | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0          | 0                               | 1                         | 0          |      |    |
| Configuration                             | LT                |           |            |                                 |                           | TR         |      |    |
| Upstream Signal                           |                   | 0         |            |                                 | 0                         |            |      |    |
| Minor Street                              | Northbound        |           |            | Southbound                      |                           |            |      |    |
| Movement                                  | 7                 | 8         | 9          | 10                              | 11                        | 12         |      |    |
|   | L                 | T         | R          | L                               | T                         | R          |      |    |
| Volume (veh/h)                            |                   |           |            | 6                               |                           | 35         |      |    |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00       | 0.83                            | 1.00                      | 0.83       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 7                               | 0                         | 42         |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                               | 0                         | 0          |      |    |
| Percent Grade (%)                         | 0                 |           |            | 0                               |                           |            |      |    |
| Flared Approach                           |                   | N         |            |                                 | N                         |            |      |    |
| Storage                                   |                   | 0         |            |                                 | 0                         |            |      |    |
| RT Channelized                            |                   |           | 0          |                                 |                           | 0          |      |    |
| Lanes                                     | 0                 | 0         | 0          | 0                               | 0                         | 0          |      |    |
| Configuration                             |                   |           |            |                                 | LR                        |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |            |                                 |                           |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound |                                 |                           | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7          | 8                               | 9                         | 10         | 11   | 12 |
| Lane Configuration                        | LT                |           |            |                                 |                           |            | LR   |    |
| v (veh/h)                                 | 32                |           |            |                                 |                           |            | 49   |    |
| C (m) (veh/h)                             | 1248              |           |            |                                 |                           |            | 663  |    |
| v/c                                       | 0.03              |           |            |                                 |                           |            | 0.07 |    |
| 95% queue length                          | 0.08              |           |            |                                 |                           |            | 0.24 |    |
| Control Delay (s/veh)                     | 8.0               |           |            |                                 |                           |            | 10.9 |    |
| LOS                                       | A                 |           |            |                                 |                           |            | B    |    |
| Approach Delay (s/veh)                    | --                | --        |            |                                 |                           |            | 10.9 |    |
| Approach LOS                              | --                | --        |            |                                 |                           |            | B    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   |           | Site Information                |                           |      |            |      |    |
|--|-------------------|-----------|---------------------------------|---------------------------|------|------------|------|----|
| Analyst                                    | DSK               |           | Intersection                    | Lockwood Cr. Rd. & Spruce |      |            |      |    |
| Agency/Co.                                 | Kelly Engineering |           | Jurisdiction                    | City of La Center         |      |            |      |    |
| Date Performed                             | 2/21/2022         |           | Analysis Year                   | 2025                      |      |            |      |    |
| Analysis Time Period                       | AM Peak Hour      |           |                                 |                           |      |            |      |    |
| Project Description Year 2025 with Project |                   |           |                                 |                           |      |            |      |    |
| East/West Street: Lockwood Creek Rd.       |                   |           | North/South Street: Spruce Ave. |                           |      |            |      |    |
| Intersection Orientation: East-West        |                   |           | Study Period (hrs): 0.25        |                           |      |            |      |    |
| Vehicle Volumes and Adjustments            |                   |           |                                 |                           |      |            |      |    |
| Major Street                               | Eastbound         |           |                                 | Westbound                 |      |            |      |    |
| Movement                                   | 1                 | 2         | 3                               | 4                         | 5    | 6          |      |    |
|  | L                 | T         | R                               | L                         | T    | R          |      |    |
| Volume (veh/h)                             | 27                | 232       |                                 |                           | 309  | 11         |      |    |
| Peak-Hour Factor, PHF                      | 0.83              | 0.83      | 1.00                            | 1.00                      | 0.83 | 0.83       |      |    |
| Hourly Flow Rate, HFR (veh/h)              | 32                | 279       | 0                               | 0                         | 372  | 13         |      |    |
| Percent Heavy Vehicles                     | 0                 | --        | --                              | 0                         | --   | --         |      |    |
| Median Type                                | Undivided         |           |                                 |                           |      |            |      |    |
| RT Channelized                             |                   |           | 0                               |                           |      | 0          |      |    |
| Lanes                                      | 0                 | 1         | 0                               | 0                         | 1    | 0          |      |    |
| Configuration                              | LT                |           |                                 |                           |      | TR         |      |    |
| Upstream Signal                            |                   | 0         |                                 |                           | 0    |            |      |    |
| Minor Street                               | Northbound        |           |                                 | Southbound                |      |            |      |    |
| Movement                                   | 7                 | 8         | 9                               | 10                        | 11   | 12         |      |    |
|  | L                 | T         | R                               | L                         | T    | R          |      |    |
| Volume (veh/h)                             |                   |           |                                 | 6                         |      | 35         |      |    |
| Peak-Hour Factor, PHF                      | 1.00              | 1.00      | 1.00                            | 0.83                      | 1.00 | 0.83       |      |    |
| Hourly Flow Rate, HFR (veh/h)              | 0                 | 0         | 0                               | 7                         | 0    | 42         |      |    |
| Percent Heavy Vehicles                     | 0                 | 0         | 0                               | 0                         | 0    | 0          |      |    |
| Percent Grade (%)                          | 0                 |           |                                 | 0                         |      |            |      |    |
| Flared Approach                            |                   | N         |                                 |                           | N    |            |      |    |
| Storage                                    |                   | 0         |                                 |                           | 0    |            |      |    |
| RT Channelized                             |                   |           | 0                               |                           |      | 0          |      |    |
| Lanes                                      | 0                 | 0         | 0                               | 0                         | 0    | 0          |      |    |
| Configuration                              |                   |           |                                 |                           | LR   |            |      |    |
| Delay, Queue Length, and Level of Service  |                   |           |                                 |                           |      |            |      |    |
| Approach                                   | Eastbound         | Westbound | Northbound                      |                           |      | Southbound |      |    |
| Movement                                   | 1                 | 4         | 7                               | 8                         | 9    | 10         | 11   | 12 |
| Lane Configuration                         | LT                |           |                                 |                           |      |            | LR   |    |
| v (veh/h)                                  | 32                |           |                                 |                           |      |            | 49   |    |
| C (m) (veh/h)                              | 1185              |           |                                 |                           |      |            | 608  |    |
| v/c  | 0.03              |           |                                 |                           |      |            | 0.08 |    |
| 95% queue length                           | 0.08              |           |                                 |                           |      |            | 0.26 |    |
| Control Delay (s/veh)                      | 8.1               |           |                                 |                           |      |            | 11.4 |    |
| LOS  | A                 |           |                                 |                           |      |            | B    |    |
| Approach Delay (s/veh)                     | --                | --        |                                 |                           |      |            | 11.4 |    |
| Approach LOS                               | --                | --        |                                 |                           |      |            | B    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                                 |                           |            |      |    |
|---|-------------------|-----------|------------|---------------------------------|---------------------------|------------|------|----|
| General Information                       |                   |           |            | Site Information                |                           |            |      |    |
| Analyst                                   | DSK               |           |            | Intersection                    | Lockwood Cr. Rd. & Spruce |            |      |    |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                    | City of La Center         |            |      |    |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                   | 2022                      |            |      |    |
| Analysis Time Period                      | PM Peak Hour      |           |            |                                 |                           |            |      |    |
| Project Description Existing              |                   |           |            |                                 |                           |            |      |    |
| East/West Street: Lockwood Creek Rd.      |                   |           |            | North/South Street: Spruce Ave. |                           |            |      |    |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25        |                           |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |            |                                 |                           |            |      |    |
| Major Street                              | Eastbound         |           |            | Westbound                       |                           |            |      |    |
| Movement                                  | 1                 | 2         | 3          | 4                               | 5                         | 6          |      |    |
|   | L                 | T         | R          | L                               | T                         | R          |      |    |
| Volume (veh/h)                            | 21                | 200       |            |                                 | 149                       | 1          |      |    |
| Peak-Hour Factor, PHF                     | 0.87              | 0.87      | 1.00       | 1.00                            | 0.87                      | 0.87       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 24                | 229       | 0          | 0                               | 171                       | 1          |      |    |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                               | --                        | --         |      |    |
| Median Type                               | Undivided         |           |            |                                 |                           |            |      |    |
| RT Channelized                            |                   |           | 0          |                                 |                           |            | 0    |    |
| Lanes                                     | 0                 | 1         | 0          | 0                               | 1                         | 0          |      |    |
| Configuration                             | LT                |           |            |                                 |                           |            | TR   |    |
| Upstream Signal                           |                   | 0         |            |                                 | 0                         |            |      |    |
| Minor Street                              | Northbound        |           |            | Southbound                      |                           |            |      |    |
| Movement                                  | 7                 | 8         | 9          | 10                              | 11                        | 12         |      |    |
|   | L                 | T         | R          | L                               | T                         | R          |      |    |
| Volume (veh/h)                            |                   |           |            | 1                               |                           | 15         |      |    |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00       | 0.87                            | 1.00                      | 0.87       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 1                               | 0                         | 17         |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                               | 0                         | 7          |      |    |
| Percent Grade (%)                         | 0                 |           |            | 0                               |                           |            |      |    |
| Flared Approach                           |                   | N         |            |                                 | N                         |            |      |    |
| Storage                                   |                   | 0         |            |                                 | 0                         |            |      |    |
| RT Channelized                            |                   |           | 0          |                                 |                           | 0          |      |    |
| Lanes                                     | 0                 | 0         | 0          | 0                               | 0                         | 0          |      |    |
| Configuration                             |                   |           |            |                                 | LR                        |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |            |                                 |                           |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound |                                 |                           | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7          | 8                               | 9                         | 10         | 11   | 12 |
| Lane Configuration                        | LT                |           |            |                                 |                           |            | LR   |    |
| v (veh/h)                                 | 24                |           |            |                                 |                           |            | 18   |    |
| C (m) (veh/h)                             | 1417              |           |            |                                 |                           |            | 834  |    |
| v/c                                       | 0.02              |           |            |                                 |                           |            | 0.02 |    |
| 95% queue length                          | 0.05              |           |            |                                 |                           |            | 0.07 |    |
| Control Delay (s/veh)                     | 7.6               |           |            |                                 |                           |            | 9.4  |    |
| LOS                                       | A                 |           |            |                                 |                           |            | A    |    |
| Approach Delay (s/veh)                    | --                | --        |            |                                 |                           |            | 9.4  |    |
| Approach LOS                              | --                | --        |            |                                 |                           |            | A    |    |



| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                                 |                           |            |      |    |
|---|-------------------|-----------|------------|---------------------------------|---------------------------|------------|------|----|
| General Information                       |                   |           |            | Site Information                |                           |            |      |    |
| Analyst                                   | DSK               |           |            | Intersection                    | Lockwood Cr. Rd. & Spruce |            |      |    |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                    | City of La Center         |            |      |    |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                   | 2025                      |            |      |    |
| Analysis Time Period                      | PM Peak Hour      |           |            |                                 |                           |            |      |    |
| Project Description Year 2025 w/o Project |                   |           |            |                                 |                           |            |      |    |
| East/West Street: Lockwood Creek Rd.      |                   |           |            | North/South Street: Spruce Ave. |                           |            |      |    |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25        |                           |            |      |    |
| Vehicle Volumes and Adjustments           |                   |           |            |                                 |                           |            |      |    |
| Major Street                              | Eastbound         |           |            | Westbound                       |                           |            |      |    |
| Movement                                  | 1                 | 2         | 3          | 4                               | 5                         | 6          |      |    |
|   | L                 | T         | R          | L                               | T                         | R          |      |    |
| Volume (veh/h)                            | 40                | 261       |            |                                 | 198                       | 3          |      |    |
| Peak-Hour Factor, PHF                     | 0.87              | 0.87      | 1.00       | 1.00                            | 0.87                      | 0.87       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 45                | 299       | 0          | 0                               | 227                       | 3          |      |    |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                               | --                        | --         |      |    |
| Median Type                               | Undivided         |           |            |                                 |                           |            |      |    |
| RT Channelized                            |                   |           | 0          |                                 |                           | 0          |      |    |
| Lanes                                     | 0                 | 1         | 0          | 0                               | 1                         | 0          |      |    |
| Configuration                             | LT                |           |            |                                 |                           | TR         |      |    |
| Upstream Signal                           |                   | 0         |            |                                 | 0                         |            |      |    |
| Minor Street                              | Northbound        |           |            | Southbound                      |                           |            |      |    |
| Movement                                  | 7                 | 8         | 9          | 10                              | 11                        | 12         |      |    |
|   | L                 | T         | R          | L                               | T                         | R          |      |    |
| Volume (veh/h)                            |                   |           |            | 3                               |                           | 27         |      |    |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00       | 0.87                            | 1.00                      | 0.87       |      |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 3                               | 0                         | 31         |      |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                               | 0                         | 7          |      |    |
| Percent Grade (%)                         | 0                 |           |            | 0                               |                           |            |      |    |
| Flared Approach                           |                   | N         |            |                                 | N                         |            |      |    |
| Storage                                   |                   | 0         |            |                                 | 0                         |            |      |    |
| RT Channelized                            |                   |           | 0          |                                 |                           | 0          |      |    |
| Lanes                                     | 0                 | 0         | 0          | 0                               | 0                         | 0          |      |    |
| Configuration                             |                   |           |            |                                 | LR                        |            |      |    |
| Delay, Queue Length, and Level of Service |                   |           |            |                                 |                           |            |      |    |
| Approach                                  | Eastbound         | Westbound | Northbound |                                 |                           | Southbound |      |    |
| Movement                                  | 1                 | 4         | 7          | 8                               | 9                         | 10         | 11   | 12 |
| Lane Configuration                        | LT                |           |            |                                 |                           |            | LR   |    |
| v (veh/h)                                 | 45                |           |            |                                 |                           |            | 34   |    |
| C (m) (veh/h)                             | 1350              |           |            |                                 |                           |            | 746  |    |
| v/c                                       | 0.03              |           |            |                                 |                           |            | 0.05 |    |
| 95% queue length                          | 0.10              |           |            |                                 |                           |            | 0.14 |    |
| Control Delay (s/veh)                     | 7.8               |           |            |                                 |                           |            | 10.1 |    |
| LOS                                       | A                 |           |            |                                 |                           |            | B    |    |
| Approach Delay (s/veh)                    | --                | --        |            |                                 |                           | 10.1       |      |    |
| Approach LOS                              | --                | --        |            |                                 |                           | B          |      |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   |           | Site Information                |                           |      |            |      |    |
|--|-------------------|-----------|---------------------------------|---------------------------|------|------------|------|----|
| Analyst                                    | DSK               |           | Intersection                    | Lockwood Cr. Rd. & Spruce |      |            |      |    |
| Agency/Co.                                 | Kelly Engineering |           | Jurisdiction                    | City of La Center         |      |            |      |    |
| Date Performed                             | 2/21/2022         |           | Analysis Year                   | 2025                      |      |            |      |    |
| Analysis Time Period                       | PM Peak Hour      |           |                                 |                           |      |            |      |    |
| Project Description Year 2025 with Project |                   |           |                                 |                           |      |            |      |    |
| East/West Street: Lockwood Creek Rd.       |                   |           | North/South Street: Spruce Ave. |                           |      |            |      |    |
| Intersection Orientation: East-West        |                   |           | Study Period (hrs): 0.25        |                           |      |            |      |    |
| Vehicle Volumes and Adjustments            |                   |           |                                 |                           |      |            |      |    |
| Major Street                               | Eastbound         |           |                                 | Westbound                 |      |            |      |    |
| Movement                                   | 1                 | 2         | 3                               | 4                         | 5    | 6          |      |    |
|  | L                 | T         | R                               | L                         | T    | R          |      |    |
| Volume (veh/h)                             | 40                | 299       |                                 |                           | 221  | 3          |      |    |
| Peak-Hour Factor, PHF                      | 0.87              | 0.87      | 1.00                            | 1.00                      | 0.87 | 0.87       |      |    |
| Hourly Flow Rate, HFR (veh/h)              | 45                | 343       | 0                               | 0                         | 254  | 3          |      |    |
| Percent Heavy Vehicles                     | 0                 | --        | --                              | 0                         | --   | --         |      |    |
| Median Type                                | Undivided         |           |                                 |                           |      |            |      |    |
| RT Channelized                             |                   |           | 0                               |                           |      | 0          |      |    |
| Lanes                                      | 0                 | 1         | 0                               | 0                         | 1    | 0          |      |    |
| Configuration                              | LT                |           |                                 |                           |      | TR         |      |    |
| Upstream Signal                            |                   | 0         |                                 |                           | 0    |            |      |    |
| Minor Street                               | Northbound        |           |                                 | Southbound                |      |            |      |    |
| Movement                                   | 7                 | 8         | 9                               | 10                        | 11   | 12         |      |    |
|  | L                 | T         | R                               | L                         | T    | R          |      |    |
| Volume (veh/h)                             |                   |           |                                 | 3                         |      | 27         |      |    |
| Peak-Hour Factor, PHF                      | 1.00              | 1.00      | 1.00                            | 0.87                      | 1.00 | 0.87       |      |    |
| Hourly Flow Rate, HFR (veh/h)              | 0                 | 0         | 0                               | 3                         | 0    | 31         |      |    |
| Percent Heavy Vehicles                     | 0                 | 0         | 0                               | 0                         | 0    | 7          |      |    |
| Percent Grade (%)                          | 0                 |           |                                 | 0                         |      |            |      |    |
| Flared Approach                            |                   | N         |                                 |                           | N    |            |      |    |
| Storage                                    |                   | 0         |                                 |                           | 0    |            |      |    |
| RT Channelized                             |                   |           | 0                               |                           |      | 0          |      |    |
| Lanes                                      | 0                 | 0         | 0                               | 0                         | 0    | 0          |      |    |
| Configuration                              |                   |           |                                 |                           | LR   |            |      |    |
| Delay, Queue Length, and Level of Service  |                   |           |                                 |                           |      |            |      |    |
| Approach                                   | Eastbound         | Westbound | Northbound                      |                           |      | Southbound |      |    |
| Movement                                   | 1                 | 4         | 7                               | 8                         | 9    | 10         | 11   | 12 |
| Lane Configuration                         | LT                |           |                                 |                           |      |            | LR   |    |
| v (veh/h)                                  | 45                |           |                                 |                           |      |            | 34   |    |
| C (m) (veh/h)                              | 1320              |           |                                 |                           |      |            | 713  |    |
| v/c  | 0.03              |           |                                 |                           |      |            | 0.05 |    |
| 95% queue length                           | 0.11              |           |                                 |                           |      |            | 0.15 |    |
| Control Delay (s/veh)                      | 7.8               |           |                                 |                           |      |            | 10.3 |    |
| LOS  | A                 |           |                                 |                           |      |            | B    |    |
| Approach Delay (s/veh)                     | --                | --        |                                 |                           |      |            | 10.3 |    |
| Approach LOS                               | --                | --        |                                 |                           |      |            | B    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |                                     |                               |      |            |    |    |
|---|-------------------|-----------|-------------------------------------|-------------------------------|------|------------|----|----|
| General Information                       |                   |           | Site Information                    |                               |      |            |    |    |
| Analyst                                   | DSK               |           | Intersection                        | Lockwood Creek Rd. & John St. |      |            |    |    |
| Agency/Co.                                | Kelly Engineering |           | Jurisdiction                        | City of La Center             |      |            |    |    |
| Date Performed                            | 2/21/2022         |           | Analysis Year                       | 2022                          |      |            |    |    |
| Analysis Time Period                      | AM Peak Hour      |           |                                     |                               |      |            |    |    |
| Project Description Existing              |                   |           |                                     |                               |      |            |    |    |
| East/West Street: Lockwood Creek Rd.      |                   |           | North/South Street: John Storm Ave. |                               |      |            |    |    |
| Intersection Orientation: East-West       |                   |           | Study Period (hrs): 0.25            |                               |      |            |    |    |
| Vehicle Volumes and Adjustments           |                   |           |                                     |                               |      |            |    |    |
| Major Street                              | Eastbound         |           |                                     | Westbound                     |      |            |    |    |
| Movement                                  | 1                 | 2         | 3                                   | 4                             | 5    | 6          |    |    |
|   | L                 | T         | R                                   | L                             | T    | R          |    |    |
| Volume (veh/h)                            |                   | 93        | 20                                  | 7                             | 148  |            |    |    |
| Peak-Hour Factor, PHF                     | 0.87              | 0.82      | 0.82                                | 0.82                          | 0.82 | 0.87       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 113       | 24                                  | 8                             | 180  | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | --        | --                                  | 0                             | --   | --         |    |    |
| Median Type                               | Undivided         |           |                                     |                               |      |            |    |    |
| RT Channelized                            |                   |           | 0                                   |                               |      | 0          |    |    |
| Lanes                                     | 0                 | 1         | 0                                   | 0                             | 1    | 0          |    |    |
| Configuration                             |                   |           | TR                                  | LT                            |      |            |    |    |
| Upstream Signal                           |                   | 0         |                                     |                               | 0    |            |    |    |
| Minor Street                              | Northbound        |           |                                     | Southbound                    |      |            |    |    |
| Movement                                  | 7                 | 8         | 9                                   | 10                            | 11   | 12         |    |    |
|   | L                 | T         | R                                   | L                             | T    | R          |    |    |
| Volume (veh/h)                            | 50                |           | 6                                   |                               |      |            |    |    |
| Peak-Hour Factor, PHF                     | 0.82              | 1.00      | 0.82                                | 0.87                          | 1.00 | 0.87       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 60                | 0         | 7                                   | 0                             | 0    | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 17                                  | 0                             | 0    | 7          |    |    |
| Percent Grade (%)                         |                   | 0         |                                     |                               | 0    |            |    |    |
| Flared Approach                           |                   | N         |                                     |                               | N    |            |    |    |
| Storage                                   |                   | 0         |                                     |                               | 0    |            |    |    |
| RT Channelized                            |                   |           | 0                                   |                               |      | 0          |    |    |
| Lanes                                     | 0                 | 0         | 0                                   | 0                             | 0    | 0          |    |    |
| Configuration                             |                   | LR        |                                     |                               |      |            |    |    |
| Delay, Queue Length, and Level of Service |                   |           |                                     |                               |      |            |    |    |
| Approach                                  | Eastbound         | Westbound | Northbound                          |                               |      | Southbound |    |    |
| Movement                                  | 1                 | 4         | 7                                   | 8                             | 9    | 10         | 11 | 12 |
| Lane Configuration                        |                   | LT        |                                     | LR                            |      |            |    |    |
| v (veh/h)                                 |                   | 8         |                                     | 67                            |      |            |    |    |
| C (m) (veh/h)                             |                   | 1459      |                                     | 690                           |      |            |    |    |
| v/c                                       |                   | 0.01      |                                     | 0.10                          |      |            |    |    |
| 95% queue length                          |                   | 0.02      |                                     | 0.32                          |      |            |    |    |
| Control Delay (s/veh)                     |                   | 7.5       |                                     | 10.8                          |      |            |    |    |
| LOS                                       |                   | A         |                                     | B                             |      |            |    |    |
| Approach Delay (s/veh)                    | --                | --        |                                     | 10.8                          |      |            |    |    |
| Approach LOS                              | --                | --        |                                     | B                             |      |            |    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |                                     |                               |      |            |    |    |
|---|-------------------|-----------|-------------------------------------|-------------------------------|------|------------|----|----|
| General Information                       |                   |           | Site Information                    |                               |      |            |    |    |
| Analyst                                   | DSK               |           | Intersection                        | Lockwood Creek Rd. & John St. |      |            |    |    |
| Agency/Co.                                | Kelly Engineering |           | Jurisdiction                        | City of La Center             |      |            |    |    |
| Date Performed                            | 2/21/2022         |           | Analysis Year                       | 2025                          |      |            |    |    |
| Analysis Time Period                      | AM Peak Hour      |           |                                     |                               |      |            |    |    |
| Project Description Year 2025 w/o Project |                   |           |                                     |                               |      |            |    |    |
| East/West Street: Lockwood Creek Rd.      |                   |           | North/South Street: John Storm Ave. |                               |      |            |    |    |
| Intersection Orientation: East-West       |                   |           | Study Period (hrs): 0.25            |                               |      |            |    |    |
| Vehicle Volumes and Adjustments           |                   |           |                                     |                               |      |            |    |    |
| Major Street                              | Eastbound         |           |                                     | Westbound                     |      |            |    |    |
| Movement                                  | 1                 | 2         | 3                                   | 4                             | 5    | 6          |    |    |
|   | L                 | T         | R                                   | L                             | T    | R          |    |    |
| Volume (veh/h)                            |                   | 230       | 23                                  | 23                            | 278  |            |    |    |
| Peak-Hour Factor, PHF                     | 0.87              | 0.82      | 0.82                                | 0.82                          | 0.82 | 0.87       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 280       | 28                                  | 28                            | 339  | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | —         | —                                   | 0                             | —    | —          |    |    |
| Median Type                               | Undivided         |           |                                     |                               |      |            |    |    |
| RT Channelized                            |                   |           | 0                                   |                               |      | 0          |    |    |
| Lanes                                     | 0                 | 1         | 0                                   | 0                             | 1    | 0          |    |    |
| Configuration                             |                   |           | TR                                  | LT                            |      |            |    |    |
| Upstream Signal                           |                   | 0         |                                     |                               | 0    |            |    |    |
| Minor Street                              | Northbound        |           |                                     | Southbound                    |      |            |    |    |
| Movement                                  | 7                 | 8         | 9                                   | 10                            | 11   | 12         |    |    |
|   | L                 | T         | R                                   | L                             | T    | R          |    |    |
| Volume (veh/h)                            | 55                |           | 16                                  |                               |      |            |    |    |
| Peak-Hour Factor, PHF                     | 0.82              | 1.00      | 0.82                                | 0.87                          | 1.00 | 0.87       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 67                | 0         | 19                                  | 0                             | 0    | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | 0         | 17                                  | 0                             | 0    | 7          |    |    |
| Percent Grade (%)                         | 0                 |           |                                     | 0                             |      |            |    |    |
| Flared Approach                           |                   | N         |                                     |                               | N    |            |    |    |
| Storage                                   |                   | 0         |                                     |                               | 0    |            |    |    |
| RT Channelized                            |                   |           | 0                                   |                               |      | 0          |    |    |
| Lanes                                     | 0                 | 0         | 0                                   | 0                             | 0    | 0          |    |    |
| Configuration                             |                   | LR        |                                     |                               |      |            |    |    |
| Delay, Queue Length, and Level of Service |                   |           |                                     |                               |      |            |    |    |
| Approach                                  | Eastbound         | Westbound | Northbound                          |                               |      | Southbound |    |    |
| Movement                                  | 1                 | 4         | 7                                   | 8                             | 9    | 10         | 11 | 12 |
| Lane Configuration                        |                   | LT        |                                     | LR                            |      |            |    |    |
| v (veh/h)                                 |                   | 28        |                                     | 86                            |      |            |    |    |
| C (m) (veh/h)                             |                   | 1264      |                                     | 449                           |      |            |    |    |
| v/c                                       |                   | 0.02      |                                     | 0.19                          |      |            |    |    |
| 95% queue length                          |                   | 0.07      |                                     | 0.70                          |      |            |    |    |
| Control Delay (s/veh)                     |                   | 7.9       |                                     | 14.9                          |      |            |    |    |
| LOS                                       |                   | A         |                                     | B                             |      |            |    |    |
| Approach Delay (s/veh)                    | —                 | —         | 14.9                                |                               |      |            |    |    |
| Approach LOS                              | —                 | —         | B                                   |                               |      |            |    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   |           |            | Site Information                    |                               |            |    |    |
|--|-------------------|-----------|------------|-------------------------------------|-------------------------------|------------|----|----|
| Analyst                                    | DSK               |           |            | Intersection                        | Lockwood Creek Rd. & John St. |            |    |    |
| Agency/Co.                                 | Kelly Engineering |           |            | Jurisdiction                        | City of La Center             |            |    |    |
| Date Performed                             | 2/21/2022         |           |            | Analysis Year                       | 2025                          |            |    |    |
| Analysis Time Period                       | AM Peak Hour      |           |            |                                     |                               |            |    |    |
| Project Description Year 2025 with Project |                   |           |            |                                     |                               |            |    |    |
| East/West Street: Lockwood Creek Rd.       |                   |           |            | North/South Street: John Storm Ave. |                               |            |    |    |
| Intersection Orientation: East-West        |                   |           |            | Study Period (hrs): 0.25            |                               |            |    |    |
| Vehicle Volumes and Adjustments            |                   |           |            |                                     |                               |            |    |    |
| Major Street                               | Eastbound         |           |            | Westbound                           |                               |            |    |    |
| Movement                                   | 1                 | 2         | 3          | 4                                   | 5                             | 6          |    |    |
|  | L                 | T         | R          | L                                   | T                             | R          |    |    |
| Volume (veh/h)                             |                   | 241       | 23         | 23                                  | 309                           |            |    |    |
| Peak-Hour Factor, PHF                      | 0.87              | 0.82      | 0.82       | 0.82                                | 0.82                          | 0.87       |    |    |
| Hourly Flow Rate, HFR (veh/h)              | 0                 | 293       | 28         | 28                                  | 376                           | 0          |    |    |
| Percent Heavy Vehicles                     | 0                 | -         | -          | 0                                   | -                             | -          |    |    |
| Median Type                                | Undivided         |           |            |                                     |                               |            |    |    |
| RT Channelized                             |                   |           | 0          |                                     |                               | 0          |    |    |
| Lanes                                      | 0                 | 1         | 0          | 0                                   | 1                             | 0          |    |    |
| Configuration                              |                   |           | TR         | LT                                  |                               |            |    |    |
| Upstream Signal                            |                   | 0         |            |                                     | 0                             |            |    |    |
| Minor Street                               | Northbound        |           |            | Southbound                          |                               |            |    |    |
| Movement                                   | 7                 | 8         | 9          | 10                                  | 11                            | 12         |    |    |
|  | L                 | T         | R          | L                                   | T                             | R          |    |    |
| Volume (veh/h)                             | 55                |           | 16         |                                     |                               |            |    |    |
| Peak-Hour Factor, PHF                      | 0.82              | 1.00      | 0.82       | 0.87                                | 1.00                          | 0.87       |    |    |
| Hourly Flow Rate, HFR (veh/h)              | 67                | 0         | 19         | 0                                   | 0                             | 0          |    |    |
| Percent Heavy Vehicles                     | 0                 | 0         | 17         | 0                                   | 0                             | 7          |    |    |
| Percent Grade (%)                          | 0                 |           |            | 0                                   |                               |            |    |    |
| Flared Approach                            |                   | N         |            |                                     | N                             |            |    |    |
| Storage                                    |                   | 0         |            |                                     | 0                             |            |    |    |
| RT Channelized                             |                   |           | 0          |                                     |                               | 0          |    |    |
| Lanes                                      | 0                 | 0         | 0          | 0                                   | 0                             | 0          |    |    |
| Configuration                              |                   | LR        |            |                                     |                               |            |    |    |
| Delay, Queue Length, and Level of Service  |                   |           |            |                                     |                               |            |    |    |
| Approach                                   | Eastbound         | Westbound | Northbound |                                     |                               | Southbound |    |    |
| Movement                                   | 1                 | 4         | 7          | 8                                   | 9                             | 10         | 11 | 12 |
| Lane Configuration                         |                   | LT        |            | LR                                  |                               |            |    |    |
| v (veh/h)                                  |                   | 28        |            | 86                                  |                               |            |    |    |
| C (m) (veh/h)                              |                   | 1250      |            | 422                                 |                               |            |    |    |
| v/c  |                   | 0.02      |            | 0.20                                |                               |            |    |    |
| 95% queue length                           |                   | 0.07      |            | 0.75                                |                               |            |    |    |
| Control Delay (s/veh)                      |                   | 7.9       |            | 15.7                                |                               |            |    |    |
| LOS  |                   | A         |            | C                                   |                               |            |    |    |
| Approach Delay (s/veh)                     | -                 | -         | 15.7       |                                     |                               |            |    |    |
| Approach LOS                               | -                 | -         | C          |                                     |                               |            |    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           | Site Information                    |                               |      |            |    |    |
|---|-------------------|-----------|-------------------------------------|-------------------------------|------|------------|----|----|
| Analyst                                   | DSK               |           | Intersection                        | Lockwood Creek Rd. & John St. |      |            |    |    |
| Agency/Co.                                | Kelly Engineering |           | Jurisdiction                        | City of La Center             |      |            |    |    |
| Date Performed                            | 2/21/2022         |           | Analysis Year                       | 2022                          |      |            |    |    |
| Analysis Time Period                      | PM Peak Hour      |           |                                     |                               |      |            |    |    |
| Project Description Existing              |                   |           |                                     |                               |      |            |    |    |
| East/West Street: Lockwood Creek Rd.      |                   |           | North/South Street: John Storm Ave. |                               |      |            |    |    |
| Intersection Orientation: East-West       |                   |           | Study Period (hrs): 0.25            |                               |      |            |    |    |
| Vehicle Volumes and Adjustments           |                   |           |                                     |                               |      |            |    |    |
| Major Street                              | Eastbound         |           |                                     | Westbound                     |      |            |    |    |
| Movement                                  | 1                 | 2         | 3                                   | 4                             | 5    | 6          |    |    |
|   | L                 | T         | R                                   | L                             | T    | R          |    |    |
| Volume (veh/h)                            |                   | 186       | 11                                  | 10                            | 150  |            |    |    |
| Peak-Hour Factor, PHF                     | 0.88              | 0.88      | 0.88                                | 0.88                          | 0.88 | 0.88       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 211       | 12                                  | 11                            | 170  | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | -         | -                                   | 0                             | -    | -          |    |    |
| Median Type                               | Undivided         |           |                                     |                               |      |            |    |    |
| RT Channelized                            |                   |           | 0                                   |                               |      | 0          |    |    |
| Lanes                                     | 0                 | 1         | 0                                   | 0                             | 1    | 0          |    |    |
| Configuration                             |                   |           | TR                                  | LT                            |      |            |    |    |
| Upstream Signal                           |                   | 0         |                                     |                               | 0    |            |    |    |
| Minor Street                              | Northbound        |           |                                     | Southbound                    |      |            |    |    |
| Movement                                  | 7                 | 8         | 9                                   | 10                            | 11   | 12         |    |    |
|   | L                 | T         | R                                   | L                             | T    | R          |    |    |
| Volume (veh/h)                            | 37                |           | 24                                  |                               |      |            |    |    |
| Peak-Hour Factor, PHF                     | 0.88              | 0.88      | 0.88                                | 0.88                          | 0.88 | 0.88       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 42                | 0         | 27                                  | 0                             | 0    | 0          |    |    |
| Percent Heavy Vehicles                    | 3                 | 0         | 0                                   | 0                             | 0    | 7          |    |    |
| Percent Grade (%)                         |                   | 0         |                                     |                               | 0    |            |    |    |
| Flared Approach                           |                   | N         |                                     |                               | N    |            |    |    |
| Storage                                   |                   | 0         |                                     |                               | 0    |            |    |    |
| RT Channelized                            |                   |           | 0                                   |                               |      | 0          |    |    |
| Lanes                                     | 0                 | 0         | 0                                   | 0                             | 0    | 0          |    |    |
| Configuration                             |                   | LR        |                                     |                               |      |            |    |    |
| Delay, Queue Length, and Level of Service |                   |           |                                     |                               |      |            |    |    |
| Approach                                  | Eastbound         | Westbound | Northbound                          |                               |      | Southbound |    |    |
| Movement                                  | 1                 | 4         | 7                                   | 8                             | 9    | 10         | 11 | 12 |
| Lane Configuration                        |                   | LT        |                                     | LR                            |      |            |    |    |
| v (veh/h)                                 |                   | 11        |                                     | 69                            |      |            |    |    |
| C (m) (veh/h)                             |                   | 1358      |                                     | 666                           |      |            |    |    |
| v/c                                       |                   | 0.01      |                                     | 0.10                          |      |            |    |    |
| 95% queue length                          |                   | 0.02      |                                     | 0.35                          |      |            |    |    |
| Control Delay (s/veh)                     |                   | 7.7       |                                     | 11.0                          |      |            |    |    |
| LOS                                       |                   | A         |                                     | B                             |      |            |    |    |
| Approach Delay (s/veh)                    | -                 | -         |                                     | 11.0                          |      |            |    |    |
| Approach LOS                              | -                 | -         |                                     | B                             |      |            |    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           |            | Site Information                    |                               |            |    |    |
|---|-------------------|-----------|------------|-------------------------------------|-------------------------------|------------|----|----|
| Analyst                                   | DSK               |           |            | Intersection                        | Lockwood Creek Rd. & John St. |            |    |    |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                        | City of La Center             |            |    |    |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                       | 2025                          |            |    |    |
| Analysis Time Period                      | PM Peak Hour      |           |            |                                     |                               |            |    |    |
| Project Description Year 2025 w/o Project |                   |           |            |                                     |                               |            |    |    |
| East/West Street: Lockwood Creek Rd.      |                   |           |            | North/South Street: John Storm Ave. |                               |            |    |    |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25            |                               |            |    |    |
| Vehicle Volumes and Adjustments           |                   |           |            |                                     |                               |            |    |    |
| Major Street                              | Eastbound         |           |            | Westbound                           |                               |            |    |    |
| Movement                                  | 1                 | 2         | 3          | 4                                   | 5                             | 6          |    |    |
|   | L                 | T         | R          | L                                   | T                             | R          |    |    |
| Volume (veh/h)                            |                   | 261       | 12         | 15                                  | 206                           |            |    |    |
| Peak-Hour Factor, PHF                     | 0.88              | 0.88      | 0.88       | 0.88                                | 0.88                          | 0.88       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 296       | 13         | 17                                  | 234                           | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | --        | -          | 0                                   | -                             | -          |    |    |
| Median Type                               | Undivided         |           |            |                                     |                               |            |    |    |
| RT Channelized                            |                   |           | 0          |                                     |                               | 0          |    |    |
| Lanes                                     | 0                 | 1         | 0          | 0                                   | 1                             | 0          |    |    |
| Configuration                             |                   |           | TR         | LT                                  |                               |            |    |    |
| Upstream Signal                           |                   | 0         |            |                                     | 0                             |            |    |    |
| Minor Street                              | Northbound        |           |            | Southbound                          |                               |            |    |    |
| Movement                                  | 7                 | 8         | 9          | 10                                  | 11                            | 12         |    |    |
|   | L                 | T         | R          | L                                   | T                             | R          |    |    |
| Volume (veh/h)                            | 39                |           | 28         |                                     |                               |            |    |    |
| Peak-Hour Factor, PHF                     | 0.88              | 0.88      | 0.88       | 0.88                                | 0.88                          | 0.88       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 44                | 0         | 31         | 0                                   | 0                             | 0          |    |    |
| Percent Heavy Vehicles                    | 3                 | 0         | 0          | 0                                   | 0                             | 7          |    |    |
| Percent Grade (%)                         |                   | 0         |            |                                     | 0                             |            |    |    |
| Flared Approach                           |                   | N         |            |                                     | N                             |            |    |    |
| Storage                                   |                   | 0         |            |                                     | 0                             |            |    |    |
| RT Channelized                            |                   |           | 0          |                                     |                               | 0          |    |    |
| Lanes                                     | 0                 | 0         | 0          | 0                                   | 0                             | 0          |    |    |
| Configuration                             |                   | LR        |            |                                     |                               |            |    |    |
| Delay, Queue Length, and Level of Service |                   |           |            |                                     |                               |            |    |    |
| Approach                                  | Eastbound         | Westbound | Northbound |                                     |                               | Southbound |    |    |
| Movement                                  | 1                 | 4         | 7          | 8                                   | 9                             | 10         | 11 | 12 |
| Lane Configuration                        |                   | LT        |            | LR                                  |                               |            |    |    |
| v (veh/h)                                 |                   | 17        |            | 75                                  |                               |            |    |    |
| C (m) (veh/h)                             |                   | 1263      |            | 558                                 |                               |            |    |    |
| v/c                                       |                   | 0.01      |            | 0.13                                |                               |            |    |    |
| 95% queue length                          |                   | 0.04      |            | 0.46                                |                               |            |    |    |
| Control Delay (s/veh)                     |                   | 7.9       |            | 12.5                                |                               |            |    |    |
| LOS                                       |                   | A         |            | B                                   |                               |            |    |    |
| Approach Delay (s/veh)                    | --                | -         |            | 12.5                                |                               |            |    |    |
| Approach LOS                              | -                 | -         |            | B                                   |                               |            |    |    |

| TWO-WAY STOP CONTROL SUMMARY                     |                   |           |            |                                     |                               |            |    |    |
|--|-------------------|-----------|------------|-------------------------------------|-------------------------------|------------|----|----|
| <b>General Information</b>                       |                   |           |            | <b>Site Information</b>             |                               |            |    |    |
| Analyst  | DSK               |           |            | Intersection                        | Lockwood Creek Rd. & John St. |            |    |    |
| Agency/Co.                                       | Kelly Engineering |           |            | Jurisdiction                        | City of La Center             |            |    |    |
| Date Performed                                   | 2/21/2022         |           |            | Analysis Year                       | 2025                          |            |    |    |
| Analysis Time Period                             | PM Peak Hour      |           |            |                                     |                               |            |    |    |
| Project Description Year 2025 with Project       |                   |           |            |                                     |                               |            |    |    |
| East/West Street: Lockwood Creek Rd.             |                   |           |            | North/South Street: John Storm Ave. |                               |            |    |    |
| Intersection Orientation: East-West              |                   |           |            | Study Period (hrs): 0.25            |                               |            |    |    |
| <b>Vehicle Volumes and Adjustments</b>           |                   |           |            |                                     |                               |            |    |    |
| <b>Major Street</b>                              | Eastbound         |           |            | Westbound                           |                               |            |    |    |
| Movement   | 1                 | 2         | 3          | 4                                   | 5                             | 6          |    |    |
|  | L                 | T         | R          | L                                   | T                             | R          |    |    |
| Volume (veh/h)                                   |                   | 297       | 12         | 15                                  | 228                           |            |    |    |
| Peak-Hour Factor, PHF                            | 0.88              | 0.88      | 0.88       | 0.88                                | 0.88                          | 0.88       |    |    |
| Hourly Flow Rate, HFR (veh/h)                    | 0                 | 337       | 13         | 17                                  | 259                           | 0          |    |    |
| Percent Heavy Vehicles                           | 0                 | —         | —          | 0                                   | —                             | —          |    |    |
| Median Type                                      | Undivided         |           |            |                                     |                               |            |    |    |
| RT Channelized                                   |                   |           | 0          |                                     |                               | 0          |    |    |
| Lanes  | 0                 | 1         | 0          | 0                                   | 1                             | 0          |    |    |
| Configuration                                    |                   |           | TR         | LT                                  |                               |            |    |    |
| Upstream Signal                                  |                   | 0         |            |                                     | 0                             |            |    |    |
| <b>Minor Street</b>                              | Northbound        |           |            | Southbound                          |                               |            |    |    |
| Movement   | 7                 | 8         | 9          | 10                                  | 11                            | 12         |    |    |
|  | L                 | T         | R          | L                                   | T                             | R          |    |    |
| Volume (veh/h)                                   | 39                |           | 28         |                                     |                               |            |    |    |
| Peak-Hour Factor, PHF                            | 0.88              | 0.88      | 0.88       | 0.88                                | 0.88                          | 0.88       |    |    |
| Hourly Flow Rate, HFR (veh/h)                    | 44                | 0         | 31         | 0                                   | 0                             | 0          |    |    |
| Percent Heavy Vehicles                           | 3                 | 0         | 0          | 0                                   | 0                             | 7          |    |    |
| Percent Grade (%)                                |                   | 0         |            |                                     | 0                             |            |    |    |
| Flared Approach                                  |                   | N         |            |                                     | N                             |            |    |    |
| Storage  |                   | 0         |            |                                     | 0                             |            |    |    |
| RT Channelized                                   |                   |           | 0          |                                     |                               | 0          |    |    |
| Lanes  | 0                 | 0         | 0          | 0                                   | 0                             | 0          |    |    |
| Configuration                                    |                   | LR        |            |                                     |                               |            |    |    |
| <b>Delay, Queue Length, and Level of Service</b> |                   |           |            |                                     |                               |            |    |    |
| Approach   | Eastbound         | Westbound | Northbound |                                     |                               | Southbound |    |    |
| Movement   | 1                 | 4         | 7          | 8                                   | 9                             | 10         | 11 | 12 |
| Lane Configuration                               |                   | LT        |            | LR                                  |                               |            |    |    |
| v (veh/h)  |                   | 17        |            | 75                                  |                               |            |    |    |
| C (m) (veh/h)                                    |                   | 1220      |            | 516                                 |                               |            |    |    |
| v/c  |                   | 0.01      |            | 0.15                                |                               |            |    |    |
| 95% queue length                                 |                   | 0.04      |            | 0.51                                |                               |            |    |    |
| Control Delay (s/veh)                            |                   | 8.0       |            | 13.2                                |                               |            |    |    |
| LOS  |                   | A         |            | B                                   |                               |            |    |    |
| Approach Delay (s/veh)                           | —                 | —         | 13.2       |                                     |                               |            |    |    |
| Approach LOS                                     | —                 | —         | B          |                                     |                               |            |    |    |



## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           |            | Site Information             |                             |            |    |      |
|---|-------------------|-----------|------------|------------------------------|-----------------------------|------------|----|------|
| Analyst                                   | DSK               |           |            | Intersection                 | Lockwood Cr. Rd. & Ivy Ave. |            |    |      |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                 | City of La Center           |            |    |      |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                | 2022                        |            |    |      |
| Analysis Time Period                      | AM Peak Hour      |           |            |                              |                             |            |    |      |
| Project Description Existing              |                   |           |            |                              |                             |            |    |      |
| East/West Street: Lockwood Creek Road     |                   |           |            | North/South Street: Ivy Ave. |                             |            |    |      |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25     |                             |            |    |      |
| Vehicle Volumes and Adjustments           |                   |           |            |                              |                             |            |    |      |
| Major Street                              | Eastbound         |           |            | Westbound                    |                             |            |    |      |
| Movement                                  | 1                 | 2         | 3          | 4                            | 5                           | 6          |    |      |
|   | L                 | T         | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                            | 147               | 132       | 15         | 10                           | 246                         | 39         |    |      |
| Peak-Hour Factor, PHF                     | 0.72              | 0.72      | 0.72       | 0.72                         | 0.72                        | 0.72       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 204               | 183       | 20         | 13                           | 341                         | 54         |    |      |
| Percent Heavy Vehicles                    | 5                 | --        | --         | 0                            | --                          | --         |    |      |
| Median Type                               | Undivided         |           |            |                              |                             |            |    |      |
| RT Channelized                            |                   |           | 0          |                              |                             |            | 0  |      |
| Lanes                                     | 1                 | 1         | 0          | 1                            | 1                           |            | 0  |      |
| Configuration                             | L                 |           | TR         | L                            |                             |            | TR |      |
| Upstream Signal                           |                   | 0         |            |                              | 0                           |            |    |      |
| Minor Street                              | Northbound        |           |            | Southbound                   |                             |            |    |      |
| Movement                                  | 7                 | 8         | 9          | 10                           | 11                          | 12         |    |      |
|   | L                 | T         | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                            | 31                | 1         | 19         | 10                           | 3                           | 214        |    |      |
| Peak-Hour Factor, PHF                     | 0.72              | 0.72      | 0.72       | 0.72                         | 0.72                        | 0.72       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 43                | 1         | 26         | 13                           | 4                           | 297        |    |      |
| Percent Heavy Vehicles                    | 55                | 0         | 5          | 10                           | 0                           | 7          |    |      |
| Percent Grade (%)                         | 0                 |           |            | 0                            |                             |            |    |      |
| Flared Approach                           |                   | N         |            |                              | N                           |            |    |      |
| Storage                                   |                   | 0         |            |                              | 0                           |            |    |      |
| RT Channelized                            |                   |           | 0          |                              |                             |            | 0  |      |
| Lanes                                     | 1                 | 1         | 0          | 1                            | 1                           |            | 0  |      |
| Configuration                             | L                 |           | TR         | L                            |                             |            | TR |      |
| Delay, Queue Length, and Level of Service |                   |           |            |                              |                             |            |    |      |
| Approach                                  | Eastbound         | Westbound | Northbound |                              |                             | Southbound |    |      |
| Movement                                  | 1                 | 4         | 7          | 8                            | 9                           | 10         | 11 | 12   |
| Lane Configuration                        | L                 | L         | L          |                              | TR                          | L          |    | TR   |
| v (veh/h)                                 | 204               | 13        | 43         |                              | 27                          | 13         |    | 301  |
| C (m) (veh/h)                             | 1147              | 1381      | 66         |                              | 749                         | 175        |    | 646  |
| v/c                                       | 0.18              | 0.01      | 0.65       |                              | 0.04                        | 0.07       |    | 0.47 |
| 95% queue length                          | 0.65              | 0.03      | 2.83       |                              | 0.11                        | 0.24       |    | 2.48 |
| Control Delay (s/veh)                     | 8.8               | 7.6       | 129.9      |                              | 10.0                        | 27.2       |    | 15.3 |
| LOS                                       | A                 | A         | F          |                              | A                           | D          |    | C    |
| Approach Delay (s/veh)                    | --                | --        | 83.7       |                              |                             | 15.8       |    |      |
| Approach LOS                              | --                | --        | F          |                              |                             | C          |    |      |

| TWO-WAY STOP CONTROL SUMMARY                     |                   |            |            |                              |                             |            |    |      |
|--|-------------------|------------|------------|------------------------------|-----------------------------|------------|----|------|
| <b>General Information</b>                       |                   |            |            | <b>Site Information</b>      |                             |            |    |      |
| Analyst  | DSK               |            |            | Intersection                 | Lockwood Cr. Rd. & Ivy Ave. |            |    |      |
| Agency/Co.                                       | Kelly Engineering |            |            | Jurisdiction                 | City of La Center           |            |    |      |
| Date Performed                                   | 2/21/2022         |            |            | Analysis Year                | 2022                        |            |    |      |
| Analysis Time Period                             | PM Peak Hour      |            |            |                              |                             |            |    |      |
| Project Description Existing                     |                   |            |            |                              |                             |            |    |      |
| East/West Street: Lockwood Creek Road            |                   |            |            | North/South Street: Ivy Ave. |                             |            |    |      |
| Intersection Orientation: East-West              |                   |            |            | Study Period (hrs): 0.25     |                             |            |    |      |
| <b>Vehicle Volumes and Adjustments</b>           |                   |            |            |                              |                             |            |    |      |
| <b>Major Street</b>                              |                   | Eastbound  |            |                              | Westbound                   |            |    |      |
| Movement   | 1                 | 2          | 3          | 4                            | 5                           | 6          |    |      |
|  | L                 | T          | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                                   | 179               | 289        | 2          | 1                            | 144                         | 15         |    |      |
| Peak-Hour Factor, PHF                            | 0.90              | 0.90       | 0.90       | 0.90                         | 0.90                        | 0.90       |    |      |
| Hourly Flow Rate, HFR (veh/h)                    | 198               | 321        | 2          | 1                            | 160                         | 16         |    |      |
| Percent Heavy Vehicles                           | 0                 | --         | --         | 0                            | --                          | --         |    |      |
| Median Type                                      | Undivided         |            |            |                              |                             |            |    |      |
| RT Channelized                                   |                   |            | 0          |                              |                             |            | 0  |      |
| Lanes  | 1                 | 1          | 0          | 1                            | 1                           | 0          |    |      |
| Configuration                                    | L                 |            | TR         | L                            |                             | TR         |    |      |
| Upstream Signal                                  |                   | 0          |            |                              | 0                           |            |    |      |
| <b>Minor Street</b>                              |                   | Northbound |            |                              | Southbound                  |            |    |      |
| Movement   | 7                 | 8          | 9          | 10                           | 11                          | 12         |    |      |
|  | L                 | T          | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                                   | 23                | 6          | 18         | 13                           | 2                           | 132        |    |      |
| Peak-Hour Factor, PHF                            | 0.90              | 0.90       | 0.90       | 0.90                         | 0.90                        | 0.90       |    |      |
| Hourly Flow Rate, HFR (veh/h)                    | 25                | 6          | 20         | 14                           | 2                           | 146        |    |      |
| Percent Heavy Vehicles                           | 0                 | 0          | 0          | 0                            | 0                           | 0          |    |      |
| Percent Grade (%)                                |                   | 0          |            |                              | 0                           |            |    |      |
| Flared Approach                                  |                   | N          |            |                              | N                           |            |    |      |
| Storage  |                   | 0          |            |                              | 0                           |            |    |      |
| RT Channelized                                   |                   |            | 0          |                              |                             | 0          |    |      |
| Lanes  | 1                 | 1          | 0          | 1                            | 1                           | 0          |    |      |
| Configuration                                    | L                 |            | TR         | L                            |                             | TR         |    |      |
| <b>Delay, Queue Length, and Level of Service</b> |                   |            |            |                              |                             |            |    |      |
| Approach   | Eastbound         | Westbound  | Northbound |                              |                             | Southbound |    |      |
| Movement   | 1                 | 4          | 7          | 8                            | 9                           | 10         | 11 | 12   |
| Lane Configuration                               | L                 | L          | L          |                              | TR                          | L          |    | TR   |
| v (veh/h)  | 198               | 1          | 25         |                              | 26                          | 14         |    | 148  |
| C (m) (veh/h)                                    | 1412              | 1248       | 175        |                              | 496                         | 222        |    | 851  |
| v/c  | 0.14              | 0.00       | 0.14       |                              | 0.05                        | 0.06       |    | 0.17 |
| 95% queue length                                 | 0.49              | 0.00       | 0.49       |                              | 0.17                        | 0.20       |    | 0.63 |
| Control Delay (s/veh)                            | 8.0               | 7.9        | 29.0       |                              | 12.7                        | 22.3       |    | 10.1 |
| LOS  | A                 | A          | D          |                              | B                           | C          |    | B    |
| Approach Delay (s/veh)                           | --                | --         | 20.7       |                              |                             | 11.2       |    |      |
| Approach LOS                                     | --                | --         | C          |                              |                             | B          |    |      |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           |            | Site Information             |                             |            |    |      |
|---|-------------------|-----------|------------|------------------------------|-----------------------------|------------|----|------|
| Analyst                                   | DSK               |           |            | Intersection                 | Lockwood Cr. Rd. & Ivy Ave. |            |    |      |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                 | City of La Center           |            |    |      |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                | 2025                        |            |    |      |
| Analysis Time Period                      | PM Peak Hour      |           |            |                              |                             |            |    |      |
| Project Description Year 2025 w/o Project |                   |           |            |                              |                             |            |    |      |
| East/West Street: Lockwood Creek Road     |                   |           |            | North/South Street: Ivy Ave. |                             |            |    |      |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25     |                             |            |    |      |
| Vehicle Volumes and Adjustments           |                   |           |            |                              |                             |            |    |      |
| Major Street                              | Eastbound         |           |            | Westbound                    |                             |            |    |      |
| Movement                                  | 1                 | 2         | 3          | 4                            | 5                           | 6          |    |      |
|   | L                 | T         | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                            | 189               | 366       | 2          | 0                            | 194                         | 23         |    |      |
| Peak-Hour Factor, PHF                     | 0.90              | 0.90      | 0.90       | 0.90                         | 0.90                        | 0.90       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 210               | 406       | 2          | 0                            | 215                         | 25         |    |      |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                            | --                          | --         |    |      |
| Median Type                               | Undivided         |           |            |                              |                             |            |    |      |
| RT Channelized                            |                   |           | 0          |                              |                             | 0          |    |      |
| Lanes                                     | 1                 | 1         | 0          | 1                            | 1                           | 0          |    |      |
| Configuration                             | L                 |           | TR         | L                            |                             | TR         |    |      |
| Upstream Signal                           |                   | 0         |            |                              | 0                           |            |    |      |
| Minor Street                              | Northbound        |           |            | Southbound                   |                             |            |    |      |
| Movement                                  | 7                 | 8         | 9          | 10                           | 11                          | 12         |    |      |
|   | L                 | T         | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                            | 19                | 6         | 15         | 6                            | 1                           | 139        |    |      |
| Peak-Hour Factor, PHF                     | 0.90              | 0.90      | 0.90       | 0.90                         | 0.90                        | 0.90       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 21                | 6         | 16         | 6                            | 1                           | 154        |    |      |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                            | 0                           | 0          |    |      |
| Percent Grade (%)                         | 0                 |           |            | 0                            |                             |            |    |      |
| Flared Approach                           |                   | N         |            |                              | N                           |            |    |      |
| Storage                                   |                   | 0         |            |                              | 0                           |            |    |      |
| RT Channelized                            |                   |           | 0          |                              |                             | 0          |    |      |
| Lanes                                     | 1                 | 1         | 0          | 1                            | 1                           | 0          |    |      |
| Configuration                             | L                 |           | TR         | L                            |                             | TR         |    |      |
| Delay, Queue Length, and Level of Service |                   |           |            |                              |                             |            |    |      |
| Approach                                  | Eastbound         | Westbound | Northbound |                              |                             | Southbound |    |      |
| Movement                                  | 1                 | 4         | 7          | 8                            | 9                           | 10         | 11 | 12   |
| Lane Configuration                        | L                 | L         | L          |                              | TR                          | L          |    | TR   |
| v (veh/h)                                 | 210               | 0         | 21         |                              | 22                          | 6          |    | 155  |
| C (m) (veh/h)                             | 1339              | 1162      | 129        |                              | 390                         | 169        |    | 799  |
| v/c                                       | 0.16              | 0.00      | 0.16       |                              | 0.06                        | 0.04       |    | 0.19 |
| 95% queue length                          | 0.56              | 0.00      | 0.56       |                              | 0.18                        | 0.11       |    | 0.72 |
| Control Delay (s/veh)                     | 8.2               | 8.1       | 38.3       |                              | 14.8                        | 27.1       |    | 10.6 |
| LOS                                       | A                 | A         | E          |                              | B                           | D          |    | B    |
| Approach Delay (s/veh)                    | --                | --        | 26.2       |                              |                             | 11.2       |    |      |
| Approach LOS                              | --                | --        | D          |                              |                             | B          |    |      |

| TWO-WAY STOP CONTROL SUMMARY               |                   |           |            |                              |                             |            |    |      |
|--|-------------------|-----------|------------|------------------------------|-----------------------------|------------|----|------|
| General Information                        |                   |           |            | Site Information             |                             |            |    |      |
| Analyst                                    | DSK               |           |            | Intersection                 | Lockwood Cr. Rd. & Ivy Ave. |            |    |      |
| Agency/Co.                                 | Kelly Engineering |           |            | Jurisdiction                 | City of La Center           |            |    |      |
| Date Performed                             | 2/21/2022         |           |            | Analysis Year                | 2025                        |            |    |      |
| Analysis Time Period                       | PM Peak Hour      |           |            |                              |                             |            |    |      |
| Project Description Year 2025 with Project |                   |           |            |                              |                             |            |    |      |
| East/West Street: Lockwood Creek Road      |                   |           |            | North/South Street: Ivy Ave. |                             |            |    |      |
| Intersection Orientation: East-West        |                   |           |            | Study Period (hrs): 0.25     |                             |            |    |      |
| Vehicle Volumes and Adjustments            |                   |           |            |                              |                             |            |    |      |
| Major Street                               | Eastbound         |           |            | Westbound                    |                             |            |    |      |
| Movement                                   | 1                 | 2         | 3          | 4                            | 5                           | 6          |    |      |
|  | L                 | T         | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                             | 189               | 398       | 2          | 0                            | 214                         | 23         |    |      |
| Peak-Hour Factor, PHF                      | 0.90              | 0.90      | 0.90       | 0.90                         | 0.90                        | 0.90       |    |      |
| Hourly Flow Rate, HFR (veh/h)              | 210               | 442       | 2          | 0                            | 237                         | 25         |    |      |
| Percent Heavy Vehicles                     | 0                 | --        | --         | 0                            | --                          | --         |    |      |
| Median Type                                | Undivided         |           |            |                              |                             |            |    |      |
| RT Channelized                             |                   |           | 0          |                              |                             |            | 0  |      |
| Lanes                                      | 1                 | 1         | 0          | 1                            | 1                           | 0          |    |      |
| Configuration                              | L                 |           | TR         | L                            |                             | TR         |    |      |
| Upstream Signal                            |                   | 0         |            |                              | 0                           |            |    |      |
| Minor Street                               | Northbound        |           |            | Southbound                   |                             |            |    |      |
| Movement                                   | 7                 | 8         | 9          | 10                           | 11                          | 12         |    |      |
|  | L                 | T         | R          | L                            | T                           | R          |    |      |
| Volume (veh/h)                             | 19                | 6         | 15         | 6                            | 1                           | 139        |    |      |
| Peak-Hour Factor, PHF                      | 0.90              | 0.90      | 0.90       | 0.90                         | 0.90                        | 0.90       |    |      |
| Hourly Flow Rate, HFR (veh/h)              | 21                | 6         | 16         | 6                            | 1                           | 154        |    |      |
| Percent Heavy Vehicles                     | 0                 | 0         | 0          | 0                            | 0                           | 0          |    |      |
| Percent Grade (%)                          | 0                 |           |            | 0                            |                             |            |    |      |
| Flared Approach                            |                   | N         |            |                              | N                           |            |    |      |
| Storage                                    |                   | 0         |            |                              | 0                           |            |    |      |
| RT Channelized                             |                   |           | 0          |                              |                             | 0          |    |      |
| Lanes                                      | 1                 | 1         | 0          | 1                            | 1                           | 0          |    |      |
| Configuration                              | L                 |           | TR         | L                            |                             | TR         |    |      |
| Delay, Queue Length, and Level of Service  |                   |           |            |                              |                             |            |    |      |
| Approach                                   | Eastbound         | Westbound | Northbound |                              |                             | Southbound |    |      |
| Movement                                   | 1                 | 4         | 7          | 8                            | 9                           | 10         | 11 | 12   |
| Lane Configuration                         | L                 | L         | L          |                              | TR                          | L          |    | TR   |
| v (veh/h)                                  | 210               | 0         | 21         |                              | 22                          | 6          |    | 155  |
| C (m) (veh/h)                              | 1314              | 1127      | 117        |                              | 365                         | 153        |    | 776  |
| v/c  | 0.16              | 0.00      | 0.18       |                              | 0.06                        | 0.04       |    | 0.20 |
| 95% queue length                           | 0.57              | 0.00      | 0.62       |                              | 0.19                        | 0.12       |    | 0.74 |
| Control Delay (s/veh)                      | 8.3               | 8.2       | 42.4       |                              | 15.5                        | 29.5       |    | 10.8 |
| LOS  | A                 | A         | E          |                              | C                           | D          |    | B    |
| Approach Delay (s/veh)                     | --                | --        | 28.6       |                              |                             | 11.5       |    |      |
| Approach LOS                               | --                | --        | D          |                              |                             | B          |    |      |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                                |                         |            |    |      |
|---|-------------------|-----------|------------|--------------------------------|-------------------------|------------|----|------|
| General Information                       |                   |           |            | Site Information               |                         |            |    |      |
| Analyst                                   | DSK               |           |            | Intersection                   | E. 4th St. & Aspen Ave. |            |    |      |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                   | City of La Center       |            |    |      |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                  | 2022                    |            |    |      |
| Analysis Time Period                      | AM Peak Hour      |           |            |                                |                         |            |    |      |
| Project Description Existing              |                   |           |            |                                |                         |            |    |      |
| East/West Street: E 4th St.               |                   |           |            | North/South Street: Aspen Ave. |                         |            |    |      |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25       |                         |            |    |      |
| Vehicle Volumes and Adjustments           |                   |           |            |                                |                         |            |    |      |
| Major Street                              | Eastbound         |           |            | Westbound                      |                         |            |    |      |
| Movement                                  | 1                 | 2         | 3          | 4                              | 5                       | 6          |    |      |
|   | L                 | T         | R          | L                              | T                       | R          |    |      |
| Volume (veh/h)                            | 45                | 297       |            |                                | 425                     | 16         |    |      |
| Peak-Hour Factor, PHF                     | 0.81              | 0.81      | 1.00       | 1.00                           | 0.81                    | 0.81       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 55                | 366       | 0          | 0                              | 524                     | 19         |    |      |
| Percent Heavy Vehicles                    | 7                 | --        | --         | 0                              | --                      | --         |    |      |
| Median Type                               | Undivided         |           |            |                                |                         |            |    |      |
| RT Channelized                            |                   |           | 0          |                                |                         | 0          |    |      |
| Lanes                                     | 1                 | 1         | 0          | 0                              | 1                       | 0          |    |      |
| Configuration                             | L                 | T         |            |                                |                         | TR         |    |      |
| Upstream Signal                           |                   | 0         |            |                                | 0                       |            |    |      |
| Minor Street                              | Northbound        |           |            | Southbound                     |                         |            |    |      |
| Movement                                  | 7                 | 8         | 9          | 10                             | 11                      | 12         |    |      |
|   | L                 | T         | R          | L                              | T                       | R          |    |      |
| Volume (veh/h)                            |                   |           |            | 47                             |                         | 124        |    |      |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00       | 0.81                           | 1.00                    | 1.00       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 58                             | 0                       | 124        |    |      |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 4                              | 0                       | 0          |    |      |
| Percent Grade (%)                         | 0                 |           |            | 0                              |                         |            |    |      |
| Flared Approach                           |                   | N         |            |                                | N                       |            |    |      |
| Storage                                   |                   | 0         |            |                                | 0                       |            |    |      |
| RT Channelized                            |                   |           | 0          |                                |                         | 0          |    |      |
| Lanes                                     | 0                 | 0         | 0          | 1                              | 0                       | 1          |    |      |
| Configuration                             |                   |           |            | L                              |                         | R          |    |      |
| Delay, Queue Length, and Level of Service |                   |           |            |                                |                         |            |    |      |
| Approach                                  | Eastbound         | Westbound | Northbound |                                |                         | Southbound |    |      |
| Movement                                  | 1                 | 4         | 7          | 8                              | 9                       | 10         | 11 | 12   |
| Lane Configuration                        | L                 |           |            |                                |                         | L          |    | R    |
| v (veh/h)                                 | 55                |           |            |                                |                         | 58         |    | 124  |
| C (m) (veh/h)                             | 1001              |           |            |                                |                         | 249        |    | 550  |
| v/c                                       | 0.05              |           |            |                                |                         | 0.23       |    | 0.23 |
| 95% queue length                          | 0.17              |           |            |                                |                         | 0.88       |    | 0.86 |
| Control Delay (s/veh)                     | 8.8               |           |            |                                |                         | 23.8       |    | 13.4 |
| LOS                                       | A                 |           |            |                                |                         | C          |    | B    |
| Approach Delay (s/veh)                    | --                | --        |            |                                |                         | 16.7       |    |      |
| Approach LOS                              | --                | --        |            |                                |                         | C          |    |      |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |            |                                |                         |            |    |      |
|---|-------------------|-----------|------------|--------------------------------|-------------------------|------------|----|------|
| General Information                       |                   |           |            | Site Information               |                         |            |    |      |
| Analyst                                   | DSK               |           |            | Intersection                   | E. 4th St. & Aspen Ave. |            |    |      |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                   | City of La Center       |            |    |      |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                  | 2025                    |            |    |      |
| Analysis Time Period                      | AM Peak Hour      |           |            |                                |                         |            |    |      |
| Project Description Year 2025 w/o Project |                   |           |            |                                |                         |            |    |      |
| East/West Street: E 4th St.               |                   |           |            | North/South Street: Aspen Ave. |                         |            |    |      |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25       |                         |            |    |      |
| Vehicle Volumes and Adjustments           |                   |           |            |                                |                         |            |    |      |
| Major Street                              | Eastbound         |           |            | Westbound                      |                         |            |    |      |
| Movement                                  | 1                 | 2         | 3          | 4                              | 5                       | 6          |    |      |
|   | L                 | T         | R          | L                              | T                       | R          |    |      |
| Volume (veh/h)                            | 48                | 325       |            |                                | 481                     | 19         |    |      |
| Peak-Hour Factor, PHF                     | 0.81              | 0.81      | 1.00       | 1.00                           | 0.81                    | 0.81       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 59                | 401       | 0          | 0                              | 593                     | 23         |    |      |
| Percent Heavy Vehicles                    | 7                 | --        | --         | 0                              | --                      | --         |    |      |
| Median Type                               | Undivided         |           |            |                                |                         |            |    |      |
| RT Channelized                            |                   |           | 0          |                                |                         | 0          |    |      |
| Lanes                                     | 1                 | 1         | 0          | 0                              | 1                       | 0          |    |      |
| Configuration                             | L                 | T         |            |                                |                         | TR         |    |      |
| Upstream Signal                           |                   | 0         |            |                                | 0                       |            |    |      |
| Minor Street                              | Northbound        |           |            | Southbound                     |                         |            |    |      |
| Movement                                  | 7                 | 8         | 9          | 10                             | 11                      | 12         |    |      |
|   | L                 | T         | R          | L                              | T                       | R          |    |      |
| Volume (veh/h)                            |                   |           |            | 51                             |                         | 131        |    |      |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00       | 0.81                           | 1.00                    | 1.00       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 62                             | 0                       | 131        |    |      |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 4                              | 0                       | 0          |    |      |
| Percent Grade (%)                         | 0                 |           |            | 0                              |                         |            |    |      |
| Flared Approach                           |                   | N         |            |                                | N                       |            |    |      |
| Storage                                   |                   | 0         |            |                                | 0                       |            |    |      |
| RT Channelized                            |                   |           | 0          |                                |                         | 0          |    |      |
| Lanes                                     | 0                 | 0         | 0          | 1                              | 0                       | 1          |    |      |
| Configuration                             |                   |           |            | L                              |                         | R          |    |      |
| Delay, Queue Length, and Level of Service |                   |           |            |                                |                         |            |    |      |
| Approach                                  | Eastbound         | Westbound | Northbound |                                |                         | Southbound |    |      |
| Movement                                  | 1                 | 4         | 7          | 8                              | 9                       | 10         | 11 | 12   |
| Lane Configuration                        | L                 |           |            |                                |                         | L          |    | R    |
| v (veh/h)                                 | 59                |           |            |                                |                         | 62         |    | 131  |
| C (m) (veh/h)                             | 940               |           |            |                                |                         | 211        |    | 502  |
| v/c                                       | 0.06              |           |            |                                |                         | 0.29       |    | 0.26 |
| 95% queue length                          | 0.20              |           |            |                                |                         | 1.17       |    | 1.04 |
| Control Delay (s/veh)                     | 9.1               |           |            |                                |                         | 29.0       |    | 14.7 |
| LOS                                       | A                 |           |            |                                |                         | D          |    | B    |
| Approach Delay (s/veh)                    | --                | --        |            |                                |                         | 19.3       |    |      |
| Approach LOS                              | --                | --        |            |                                |                         | C          |    |      |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   | Site Information               |                         |
|--|-------------------|--------------------------------|-------------------------|
| Analyst                                    | DSK               | Intersection                   | E. 4th St. & Aspen Ave. |
| Agency/Co.                                 | Kelly Engineering | Jurisdiction                   | City of La Center       |
| Date Performed                             | 2/21/2022         | Analysis Year                  | 2025                    |
| Analysis Time Period                       | AM Peak Hour      |                                |                         |
| Project Description Year 2025 with Project |                   |                                |                         |
| East/West Street: E 4th St.                |                   | North/South Street: Aspen Ave. |                         |
| Intersection Orientation: East-West        |                   | Study Period (hrs): 0.25       |                         |

| Vehicle Volumes and Adjustments |            |      |      |            |      |      |
|---------------------------------|------------|------|------|------------|------|------|
| Major Street                    | Eastbound  |      |      | Westbound  |      |      |
| Movement                        | 1          | 2    | 3    | 4          | 5    | 6    |
|                                 | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                  | 48         | 333  |      |            | 506  | 21   |
| Peak-Hour Factor, PHF           | 0.81       | 0.81 | 1.00 | 1.00       | 0.81 | 0.81 |
| Hourly Flow Rate, HFR (veh/h)   | 59         | 411  | 0    | 0          | 624  | 25   |
| Percent Heavy Vehicles          | 7          | --   | --   | 0          | --   | --   |
| Median Type                     | Undivided  |      |      |            |      |      |
| RT Channelized                  |            |      | 0    |            |      | 0    |
| Lanes                           | 1          | 1    | 0    | 0          | 1    | 0    |
| Configuration                   | L          | T    |      |            |      | TR   |
| Upstream Signal                 |            | 0    |      |            | 0    |      |
| Minor Street                    | Northbound |      |      | Southbound |      |      |
| Movement                        | 7          | 8    | 9    | 10         | 11   | 12   |
|                                 | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                  |            |      |      | 52         |      | 131  |
| Peak-Hour Factor, PHF           | 1.00       | 1.00 | 1.00 | 0.81       | 1.00 | 1.00 |
| Hourly Flow Rate, HFR (veh/h)   | 0          | 0    | 0    | 64         | 0    | 131  |
| Percent Heavy Vehicles          | 0          | 0    | 0    | 4          | 0    | 0    |
| Percent Grade (%)               | 0          |      |      | 0          |      |      |
| Flared Approach                 |            | N    |      |            | N    |      |
| Storage                         |            | 0    |      |            | 0    |      |
| RT Channelized                  |            |      | 0    |            |      | 0    |
| Lanes                           | 0          | 0    | 0    | 1          | 0    | 1    |
| Configuration                   |            |      |      | L          |      | R    |

| Delay, Queue Length, and Level of Service |           |           |            |   |   |            |    |      |
|---|-----------|-----------|------------|---|---|------------|----|------|
| Approach                                  | Eastbound | Westbound | Northbound |   |   | Southbound |    |      |
| Movement                                  | 1         | 4         | 7          | 8 | 9 | 10         | 11 | 12   |
| Lane Configuration                        | L         |           |            |   |   | L          |    | R    |
| v (veh/h)                                 | 59        |           |            |   |   | 64         |    | 131  |
| C (m) (veh/h)                             | 914       |           |            |   |   | 199        |    | 481  |
| v/c                                       | 0.06      |           |            |   |   | 0.32       |    | 0.27 |
| 95% queue length                          | 0.21      |           |            |   |   | 1.32       |    | 1.10 |
| Control Delay (s/veh)                     | 9.2       |           |            |   |   | 31.4       |    | 15.3 |
| LOS                                       | A         |           |            |   |   | D          |    | C    |
| Approach Delay (s/veh)                    | --        | --        |            |   |   | 20.6       |    |      |
| Approach LOS                              | --        | --        |            |   |   | C          |    |      |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                 |                   | Site Information               |                         |
|-------------------------------------|-------------------|--------------------------------|-------------------------|
| Analyst                             | DSK               | Intersection                   | E. 4th St. & Aspen Ave. |
| Agency/Co.                          | Kelly Engineering | Jurisdiction                   | City of La Center       |
| Date Performed                      | 2/21/2022         | Analysis Year                  | 2022                    |
| Analysis Time Period                | PM Peak Hour      |                                |                         |
| Project Description Existing        |                   |                                |                         |
| East/West Street: E 4th St.         |                   | North/South Street: Aspen Ave. |                         |
| Intersection Orientation: East-West |                   | Study Period (hrs): 0.25       |                         |

| Vehicle Volumes and Adjustments |            |      |      |            |      |      |
|---------------------------------|------------|------|------|------------|------|------|
| Major Street                    | Eastbound  |      |      | Westbound  |      |      |
| Movement                        | 1          | 2    | 3    | 4          | 5    | 6    |
|                                 | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                  | 171        | 425  |      |            | 229  | 11   |
| Peak-Hour Factor, PHF           | 0.93       | 0.93 | 1.00 | 1.00       | 0.93 | 0.93 |
| Hourly Flow Rate, HFR (veh/h)   | 183        | 456  | 0    | 0          | 246  | 11   |
| Percent Heavy Vehicles          | 0          | --   | --   | 0          | --   | --   |
| Median Type                     | Undivided  |      |      |            |      |      |
| RT Channelized                  |            |      | 0    |            |      | 0    |
| Lanes                           | 1          | 1    | 0    | 0          | 1    | 0    |
| Configuration                   | L          | T    |      |            |      | TR   |
| Upstream Signal                 |            | 0    |      |            | 0    |      |
| Minor Street                    | Northbound |      |      | Southbound |      |      |
| Movement                        | 7          | 8    | 9    | 10         | 11   | 12   |
|                                 | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                  |            |      |      | 11         |      | 87   |
| Peak-Hour Factor, PHF           | 1.00       | 1.00 | 1.00 | 0.93       | 1.00 | 0.93 |
| Hourly Flow Rate, HFR (veh/h)   | 0          | 0    | 0    | 11         | 0    | 93   |
| Percent Heavy Vehicles          | 0          | 0    | 0    | 0          | 0    | 0    |
| Percent Grade (%)               | 0          |      |      | 0          |      |      |
| Flared Approach                 |            | N    |      |            | N    |      |
| Storage                         |            | 0    |      |            | 0    |      |
| RT Channelized                  |            |      | 0    |            |      | 0    |
| Lanes                           | 0          | 0    | 0    | 1          | 0    | 1    |
| Configuration                   |            |      |      | L          |      | R    |

| Delay, Queue Length, and Level of Service |           |           |            |   |   |            |    |      |
|---|-----------|-----------|------------|---|---|------------|----|------|
| Approach                                  | Eastbound | Westbound | Northbound |   |   | Southbound |    |      |
| Movement                                  | 1         | 4         | 7          | 8 | 9 | 10         | 11 | 12   |
| Lane Configuration                        | L         |           |            |   |   | L          |    | R    |
| v (veh/h)                                 | 183       |           |            |   |   | 11         |    | 93   |
| C (m) (veh/h)                             | 1320      |           |            |   |   | 212        |    | 792  |
| v/c                                       | 0.14      |           |            |   |   | 0.05       |    | 0.12 |
| 95% queue length                          | 0.48      |           |            |   |   | 0.16       |    | 0.40 |
| Control Delay (s/veh)                     | 8.2       |           |            |   |   | 22.9       |    | 10.1 |
| LOS                                       | A         |           |            |   |   | C          |    | B    |
| Approach Delay (s/veh)                    | --        | --        |            |   |   | 11.5       |    |      |
| Approach LOS                              | --        | --        |            |   |   | B          |    |      |



## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   |           |            | Site Information               |                         |            |    |      |
|---|-------------------|-----------|------------|--------------------------------|-------------------------|------------|----|------|
| Analyst                                   | DSK               |           |            | Intersection                   | E. 4th St. & Aspen Ave. |            |    |      |
| Agency/Co.                                | Kelly Engineering |           |            | Jurisdiction                   | City of La Center       |            |    |      |
| Date Performed                            | 2/21/2022         |           |            | Analysis Year                  | 2025                    |            |    |      |
| Analysis Time Period                      | PM Peak Hour      |           |            |                                |                         |            |    |      |
| Project Description Year 2025 w/o Project |                   |           |            |                                |                         |            |    |      |
| East/West Street: E 4th St.               |                   |           |            | North/South Street: Aspen Ave. |                         |            |    |      |
| Intersection Orientation: East-West       |                   |           |            | Study Period (hrs): 0.25       |                         |            |    |      |
| Vehicle Volumes and Adjustments           |                   |           |            |                                |                         |            |    |      |
| Major Street                              | Eastbound         |           |            | Westbound                      |                         |            |    |      |
| Movement                                  | 1                 | 2         | 3          | 4                              | 5                       | 6          |    |      |
|   | L                 | T         | R          | L                              | T                       | R          |    |      |
| Volume (veh/h)                            | 181               | 483       |            |                                | 263                     | 13         |    |      |
| Peak-Hour Factor, PHF                     | 0.93              | 0.93      | 1.00       | 1.00                           | 0.93                    | 0.93       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 194               | 519       | 0          | 0                              | 282                     | 13         |    |      |
| Percent Heavy Vehicles                    | 0                 | --        | --         | 0                              | --                      | --         |    |      |
| Median Type                               | Undivided         |           |            |                                |                         |            |    |      |
| RT Channelized                            |                   |           | 0          |                                |                         | 0          |    |      |
| Lanes                                     | 1                 | 1         | 0          | 0                              | 1                       | 0          |    |      |
| Configuration                             | L                 | T         |            |                                |                         | TR         |    |      |
| Upstream Signal                           |                   | 0         |            |                                | 0                       |            |    |      |
| Minor Street                              | Northbound        |           |            | Southbound                     |                         |            |    |      |
| Movement                                  | 7                 | 8         | 9          | 10                             | 11                      | 12         |    |      |
|   | L                 | T         | R          | L                              | T                       | R          |    |      |
| Volume (veh/h)                            |                   |           |            | 14                             |                         | 92         |    |      |
| Peak-Hour Factor, PHF                     | 1.00              | 1.00      | 1.00       | 0.93                           | 1.00                    | 0.93       |    |      |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 0         | 0          | 15                             | 0                       | 98         |    |      |
| Percent Heavy Vehicles                    | 0                 | 0         | 0          | 0                              | 0                       | 0          |    |      |
| Percent Grade (%)                         | 0                 |           |            | 0                              |                         |            |    |      |
| Flared Approach                           |                   | N         |            |                                | N                       |            |    |      |
| Storage                                   |                   | 0         |            |                                | 0                       |            |    |      |
| RT Channelized                            |                   |           | 0          |                                |                         | 0          |    |      |
| Lanes                                     | 0                 | 0         | 0          | 1                              | 0                       | 1          |    |      |
| Configuration                             |                   |           |            | L                              |                         | R          |    |      |
| Delay, Queue Length, and Level of Service |                   |           |            |                                |                         |            |    |      |
| Approach                                  | Eastbound         | Westbound | Northbound |                                |                         | Southbound |    |      |
| Movement                                  | 1                 | 4         | 7          | 8                              | 9                       | 10         | 11 | 12   |
| Lane Configuration                        | L                 |           |            |                                |                         | L          |    | R    |
| v (veh/h)                                 | 194               |           |            |                                |                         | 15         |    | 98   |
| C (m) (veh/h)                             | 1278              |           |            |                                |                         | 176        |    | 756  |
| v/c                                       | 0.15              |           |            |                                |                         | 0.09       |    | 0.13 |
| 95% queue length                          | 0.53              |           |            |                                |                         | 0.28       |    | 0.44 |
| Control Delay (s/veh)                     | 8.3               |           |            |                                |                         | 27.4       |    | 10.5 |
| LOS                                       | A                 |           |            |                                |                         | D          |    | B    |
| Approach Delay (s/veh)                    | --                | --        |            |                                |                         | 12.7       |    |      |
| Approach LOS                              | --                | --        |            |                                |                         | B          |    |      |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   | Site Information               |                         |
|--|-------------------|--------------------------------|-------------------------|
| Analyst                                    | DSK               | Intersection                   | E. 4th St. & Aspen Ave. |
| Agency/Co.                                 | Kelly Engineering | Jurisdiction                   | City of La Center       |
| Date Performed                             | 2/21/2022         | Analysis Year                  | 2025                    |
| Analysis Time Period                       | PM Peak Hour      |                                |                         |
| Project Description Year 2025 with Project |                   |                                |                         |
| East/West Street: E 4th St.                |                   | North/South Street: Aspen Ave. |                         |
| Intersection Orientation: East-West        |                   | Study Period (hrs): 0.25       |                         |

### Vehicle Volumes and Adjustments

| Major Street                  | Eastbound  |      |      | Westbound  |      |      |
|-------------------------------|------------|------|------|------------|------|------|
|                               | 1          | 2    | 3    | 4          | 5    | 6    |
| Movement                      | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                | 181        | 513  |      |            | 282  | 14   |
| Peak-Hour Factor, PHF         | 0.93       | 0.93 | 1.00 | 1.00       | 0.93 | 0.93 |
| Hourly Flow Rate, HFR (veh/h) | 194        | 551  | 0    | 0          | 303  | 15   |
| Percent Heavy Vehicles        | 0          | --   | --   | 0          | --   | --   |
| Median Type                   | Undivided  |      |      |            |      |      |
| RT Channelized                |            |      | 0    |            |      | 0    |
| Lanes                         | 1          | 1    | 0    | 0          | 1    | 0    |
| Configuration                 | L          | T    |      |            |      | TR   |
| Upstream Signal               |            | 0    |      |            | 0    |      |
| Minor Street                  | Northbound |      |      | Southbound |      |      |
|                               | 7          | 8    | 9    | 10         | 11   | 12   |
| Movement                      | L          | T    | R    | L          | T    | R    |
| Volume (veh/h)                |            |      |      | 16         |      | 92   |
| Peak-Hour Factor, PHF         | 1.00       | 1.00 | 1.00 | 0.93       | 1.00 | 0.93 |
| Hourly Flow Rate, HFR (veh/h) | 0          | 0    | 0    | 17         | 0    | 98   |
| Percent Heavy Vehicles        | 0          | 0    | 0    | 0          | 0    | 0    |
| Percent Grade (%)             | 0          |      |      | 0          |      |      |
| Flared Approach               |            | N    |      |            | N    |      |
| Storage                       |            | 0    |      |            | 0    |      |
| RT Channelized                |            |      | 0    |            |      | 0    |
| Lanes                         | 0          | 0    | 0    | 1          | 0    | 1    |
| Configuration                 |            |      |      | L          |      | R    |

### Delay, Queue Length, and Level of Service

| Approach               | Eastbound | Westbound | Northbound |   |   | Southbound |    |      |
|------------------------|-----------|-----------|------------|---|---|------------|----|------|
|                        |           |           | 7          | 8 | 9 | 10         | 11 | 12   |
| Movement               | 1         | 4         |            |   |   |            |    |      |
| Lane Configuration     | L         |           |            |   |   | L          |    | R    |
| v (veh/h)              | 194       |           |            |   |   | 17         |    | 98   |
| C (m) (veh/h)          | 1253      |           |            |   |   | 163        |    | 735  |
| v/c                    | 0.15      |           |            |   |   | 0.10       |    | 0.13 |
| 95% queue length       | 0.55      |           |            |   |   | 0.34       |    | 0.46 |
| Control Delay (s/veh)  | 8.4       |           |            |   |   | 29.6       |    | 10.7 |
| LOS                    | A         |           |            |   |   | D          |    | B    |
| Approach Delay (s/veh) | --        | --        |            |   |   | 13.5       |    |      |
| Approach LOS           | --        | --        |            |   |   | B          |    |      |

### ROUNDBABOUT REPORT

**General Information**

Analyst *DSK*  
 Agency or Co. *Kelly Engineering*  
 Date Performed *2/21/2022*  
 Time Period *AM Peak Hour*  
 Peak Hour Factor *0.87*

**Site Information**

Intersection *Pacific Hwy. & 4th St.*  
 E/W Street Name *W 4th St.*  
 N/S Street Name *Pacific Hwy.*  
 Analysis Year *2022*  
 Project ID *Existing*

Project Description:

**Volume Adjustment and Site Characteristics**

|                                 | EB   |   |   |   | WB   |   |    |   | NB           |    |   |   | SB   |     |   |   |
|---------------------------------|------|---|---|---|------|---|----|---|--------------|----|---|---|------|-----|---|---|
|                                 | L    | T | R | U | L    | T | R  | U | L            | T  | R | U | L    | T   | R | U |
| Number of Lanes (N)             | 0    | 0 | 0 |   | 0    | 0 | 0  |   | 0            | 1  | 0 |   | 0    | 1   | 0 |   |
| Lane Assignment                 |      |   |   |   | LR   |   |    |   | T            |    |   |   | LT   |     |   |   |
| Right-Turn Bypass               | None |   |   |   | None |   |    |   | Non-Yielding |    |   |   | None |     |   |   |
| Conflicting Lanes               | 1    |   |   |   | 1    |   |    |   | 1            |    |   |   | 1    |     |   |   |
| Volume (V), veh/h               |      |   |   | 0 | 473  |   | 52 | 0 |              | 67 |   | 0 | 46   | 179 |   | 0 |
| Heavy Veh. Adj. ( $f_{HV}$ ), % | 3    | 3 | 3 | 3 | 3    | 3 | 3  | 3 | 3            | 3  | 3 | 3 | 3    | 3   | 3 | 3 |
| Pedestrians Crossing            | 0    |   |   |   | 0    |   |    |   | 0            |    |   |   | 0    |     |   |   |

**Critical and Follow-Up Headway Adjustment**

|                         | EB     |        |        | WB     |        |        | NB     |        |        | SB     |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                         | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass |
| Critical Headway (sec)  | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 |
| Follow-Up Headway (sec) | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 |

**Flow Computations**

|                                  | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|----------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                                  | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Circulating Flow ( $V_c$ ), pc/h | 826  |       |        | 79   |       |        | 54   |       |        | 560  |       |        |
| Exiting Flow ( $V_{ex}$ ), pc/h  | 54   |       |        | 0    |       |        | 141  |       |        | 772  |       |        |
| Entry Flow ( $V_e$ ), pc/h       |      |       |        |      | 622   |        |      | 79    | 701    |      | 266   |        |
| Entry Volume veh/h               |      |       |        |      | 604   |        |      | 77    | 681    |      | 258   |        |

**Capacity and v/c Ratios**

|                              | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                              | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Capacity ( $c_{PCE}$ ), pc/h |      | 0     |        |      | 1044  |        |      | 1070  |        |      | 645   |        |
| Capacity (c), veh/h          |      | 0     |        |      | 1013  |        |      | 1039  |        |      | 627   |        |
| v/c Ratio (X)                |      |       |        |      | 0.60  |        |      | 0.07  |        |      | 0.41  |        |

**Delay and Level of Service**

|                               | EB   |       |        | WB    |       |        | NB   |       |        | SB    |       |        |
|-------------------------------|------|-------|--------|-------|-------|--------|------|-------|--------|-------|-------|--------|
|                               | Left | Right | Bypass | Left  | Right | Bypass | Left | Right | Bypass | Left  | Right | Bypass |
| Lane Control Delay (d), s/veh |      |       |        |       | 11.6  |        |      | 4.1   | 0.0    |       | 11.8  |        |
| Lane LOS                      |      | F     |        |       | B     |        |      | A     |        |       | B     |        |
| Lane 95% Queue                |      |       |        |       | 4.1   |        |      | 0.2   |        |       | 2.0   |        |
| Approach Delay, s/veh         |      |       |        | 11.64 |       |        | 0.42 |       |        | 11.76 |       |        |
| Approach LOS, s/veh           |      |       |        | B     |       |        | A    |       |        | B     |       |        |
| Intersection Delay, s/veh     | 6.41 |       |        |       |       |        |      |       |        |       |       |        |
| Intersection LOS              | A    |       |        |       |       |        |      |       |        |       |       |        |

### ROUNDBOUT REPORT

**General Information**

Analyst *DSK*  
 Agency or Co. *Kelly Engineering*  
 Date Performed *2/21/2022*  
 Time Period *AM Peak Hour*  
 Peak Hour Factor *0.87*

**Site Information**

Intersection *Pacific Hwy. & 4th St.*  
 E/W Street Name *W 4th St.*  
 N/S Street Name *Pacific Hwy.*  
 Analysis Year *2025*  
 Project ID *Year 2025 w/o Project*

Project Description:

**Volume Adjustment and Site Characteristics**

|                                 | EB   |   |   |   | WB   |   |    |   | NB           |    |   |   | SB   |     |   |   |
|---------------------------------|------|---|---|---|------|---|----|---|--------------|----|---|---|------|-----|---|---|
|                                 | L    | T | R | U | L    | T | R  | U | L            | T  | R | U | L    | T   | R | U |
| Number of Lanes (N)             | 0    | 0 | 0 |   | 0    | 0 | 0  |   | 0            | 1  | 0 |   | 0    | 1   | 0 |   |
| Lane Assignment                 |      |   |   |   | LR   |   |    |   | T            |    |   |   | LT   |     |   |   |
| Right-Turn Bypass               | None |   |   |   | None |   |    |   | Non-Yielding |    |   |   | None |     |   |   |
| Conflicting Lanes               | 1    |   |   |   | 1    |   |    |   | 1            |    |   |   | 1    |     |   |   |
| Volume (V), veh/h               |      |   |   | 0 | 523  |   | 63 | 0 |              | 71 |   | 0 | 52   | 190 |   | 0 |
| Heavy Veh. Adj. ( $f_{HV}$ ), % | 3    | 3 | 3 | 3 | 3    | 3 | 3  | 3 | 3            | 3  | 3 | 3 | 3    | 3   | 3 | 3 |
| Pedestrians Crossing            | 0    |   |   |   | 0    |   |    |   | 0            |    |   |   | 0    |     |   |   |

**Critical and Follow-Up Headway Adjustment**

|                         | EB     |        |        | WB     |        |        | NB     |        |        | SB     |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                         | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass |
| Critical Headway (sec)  | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 |
| Follow-Up Headway (sec) | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 |

**Flow Computations**

|                                  | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|----------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                                  | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Circulating Flow ( $V_c$ ), pc/h | 906  |       |        | 84   |       |        | 62   |       |        | 619  |       |        |
| Exiting Flow ( $V_{ex}$ ), pc/h  | 62   |       |        | 0    |       |        | 159  |       |        | 844  |       |        |
| Entry Flow ( $V_e$ ), pc/h       |      |       |        |      | 694   |        |      | 84    | 752    |      | 287   |        |
| Entry Volume veh/h               |      |       |        |      | 674   |        |      | 82    | 730    |      | 279   |        |

**Capacity and v/c Ratios**

|                              | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                              | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Capacity ( $c_{PCE}$ ), pc/h |      | 0     |        |      | 1039  |        |      | 1063  |        |      | 608   |        |
| Capacity (c), veh/h          |      | 0     |        |      | 1009  |        |      | 1032  |        |      | 591   |        |
| v/c Ratio (X)                |      |       |        |      | 0.67  |        |      | 0.08  |        |      | 0.47  |        |

**Delay and Level of Service**

|                               | EB   |       |        | WB    |       |        | NB   |       |        | SB    |       |        |
|-------------------------------|------|-------|--------|-------|-------|--------|------|-------|--------|-------|-------|--------|
|                               | Left | Right | Bypass | Left  | Right | Bypass | Left | Right | Bypass | Left  | Right | Bypass |
| Lane Control Delay (d), s/veh |      |       |        |       | 13.8  |        |      | 4.2   | 0.0    |       | 13.8  |        |
| Lane LOS                      |      | F     |        |       | B     |        |      | A     |        |       | B     |        |
| Lane 95% Queue                |      |       |        |       | 5.3   |        |      | 0.3   |        |       | 2.5   |        |
| Approach Delay, s/veh         |      |       |        | 13.76 |       |        | 0.42 |       |        | 13.76 |       |        |
| Approach LOS, s/veh           |      |       |        | B     |       |        | A    |       |        | B     |       |        |
| Intersection Delay, s/veh     | 7.63 |       |        |       |       |        |      |       |        |       |       |        |
| Intersection LOS              | A    |       |        |       |       |        |      |       |        |       |       |        |

### ROUNABOUT REPORT

**General Information**

Analyst DSK  
 Agency or Co. Kelly Engineering  
 Date Performed 2/21/2022  
 Time Period AM Peak Hour  
 Peak Hour Factor 0.87

**Site Information**

Intersection Pacific Hwy. & 4th St.  
 E/W Street Name W 4th St.  
 N/S Street Name Pacific Hwy.  
 Analysis Year 2025  
 Project ID Year 2025 with Project

Project Description:

**Volume Adjustment and Site Characteristics**

|                                 | EB   |   |   |   | WB   |   |    |   | NB           |    |   |   | SB   |     |   |   |
|---------------------------------|------|---|---|---|------|---|----|---|--------------|----|---|---|------|-----|---|---|
|                                 | L    | T | R | U | L    | T | R  | U | L            | T  | R | U | L    | T   | R | U |
| Number of Lanes (N)             | 0    | 0 | 0 |   | 0    | 0 | 0  |   | 0            | 1  | 0 |   | 0    | 1   | 0 |   |
| Lane Assignment                 |      |   |   |   | LR   |   |    |   | T            |    |   |   | LT   |     |   |   |
| Right-Turn Bypass               | None |   |   |   | None |   |    |   | Non-Yielding |    |   |   | None |     |   |   |
| Conflicting Lanes               | 1    |   |   |   | 1    |   |    |   | 1            |    |   |   | 1    |     |   |   |
| Volume (V), veh/h               |      |   |   | 0 | 546  |   | 65 | 0 |              | 71 |   | 0 | 53   | 190 |   | 0 |
| Heavy Veh. Adj. ( $f_{HV}$ ), % | 3    | 3 | 3 | 3 | 3    | 3 | 3  | 3 | 3            | 3  | 3 | 3 | 3    | 3   | 3 | 3 |
| Pedestrians Crossing            | 0    |   |   |   | 0    |   |    |   | 0            |    |   |   | 0    |     |   |   |

**Critical and Follow-Up Headway Adjustment**

|                         | EB     |        |        | WB     |        |        | NB     |        |        | SB     |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                         | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass |
| Critical Headway (sec)  | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 |
| Follow-Up Headway (sec) | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 |

**Flow Computations**

|                                  | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|----------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                                  | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Circulating Flow ( $V_c$ ), pc/h | 934  |       |        | 84   |       |        | 63   |       |        | 646  |       |        |
| Exiting Flow ( $V_{ex}$ ), pc/h  | 63   |       |        | 0    |       |        | 161  |       |        | 871  |       |        |
| Entry Flow ( $V_e$ ), pc/h       |      |       |        |      | 723   |        |      | 84    | 760    |      |       | 288    |
| Entry Volume veh/h               |      |       |        |      | 702   |        |      | 82    | 738    |      |       | 280    |

**Capacity and v/c Ratios**

|                              | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                              | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Capacity ( $c_{PCE}$ ), pc/h |      | 0     |        |      | 1039  |        |      | 1061  |        |      |       | 592    |
| Capacity (c), veh/h          |      | 0     |        |      | 1009  |        |      | 1030  |        |      |       | 575    |
| v/c Ratio (X)                |      |       |        |      | 0.70  |        |      | 0.08  |        |      |       | 0.49   |

**Delay and Level of Service**

|                               | EB   |       |        | WB    |       |        | NB   |       |        | SB    |       |        |
|-------------------------------|------|-------|--------|-------|-------|--------|------|-------|--------|-------|-------|--------|
|                               | Left | Right | Bypass | Left  | Right | Bypass | Left | Right | Bypass | Left  | Right | Bypass |
| Lane Control Delay (d), s/veh |      |       |        |       | 14.8  |        |      | 4.2   | 0.0    |       | 14.5  |        |
| Lane LOS                      |      | F     |        |       | B     |        |      | A     |        |       | B     |        |
| Lane 95% Queue                |      |       |        |       | 5.9   |        |      | 0.3   |        |       | 2.6   |        |
| Approach Delay, s/veh         |      |       |        | 14.77 |       |        | 0.42 |       |        | 14.47 |       |        |
| Approach LOS, s/veh           |      |       |        | B     |       |        | A    |       |        | B     |       |        |
| Intersection Delay, s/veh     | 8.19 |       |        |       |       |        |      |       |        |       |       |        |
| Intersection LOS              | A    |       |        |       |       |        |      |       |        |       |       |        |

### ROUNDBABOUT REPORT

**General Information**

Analyst DSK  
 Agency or Co. Kelly Engineering  
 Date Performed 2/21/2022  
 Time Period PM Peak Hour  
 Peak Hour Factor 0.94

**Site Information**

Intersection Pacific Hwy. & 4th St.  
 E/W Street Name W 4th St.  
 N/S Street Name Pacific Hwy.  
 Analysis Year 2022  
 Project ID Existing

Project Description:

**Volume Adjustment and Site Characteristics**

|                                 | EB   |   |   |   | WB   |   |    |   | NB           |     |   |   | SB   |     |    |   |
|---------------------------------|------|---|---|---|------|---|----|---|--------------|-----|---|---|------|-----|----|---|
|                                 | L    | T | R | U | L    | T | R  | U | L            | T   | R | U | L    | T   | R  | U |
| Number of Lanes (N)             | 0    | 0 | 0 |   | 0    | 0 | 0  |   | 0            | 1   | 0 |   | 0    | 1   | 0  |   |
| Lane Assignment                 |      |   |   |   |      |   | LR |   |              |     | T |   |      |     | LT |   |
| Right-Turn Bypass               | None |   |   |   | None |   |    |   | Non-Yielding |     |   |   | None |     |    |   |
| Conflicting Lanes               | 1    |   |   |   | 1    |   |    |   | 1            |     |   |   | 1    |     |    |   |
| Volume (V), veh/h               |      |   |   | 0 | 327  |   | 31 | 0 |              | 169 |   | 0 | 16   | 129 |    | 0 |
| Heavy Veh. Adj. ( $f_{HV}$ ), % | 3    | 3 | 3 | 3 | 3    | 3 | 3  | 3 | 3            | 3   | 3 | 3 | 3    | 3   | 3  | 3 |
| Pedestrians Crossing            | 0    |   |   |   | 0    |   |    |   | 0            |     |   |   | 0    |     |    |   |

**Critical and Follow-Up Headway Adjustment**

|                         | EB     |        |        | WB     |        |        | NB     |        |        | SB     |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                         | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass |
| Critical Headway (sec)  | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 |
| Follow-Up Headway (sec) | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 |

**Flow Computations**

|                                  | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|----------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                                  | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Circulating Flow ( $V_c$ ), pc/h | 517  |       |        | 185  |       |        | 18   |       |        | 358  |       |        |
| Exiting Flow ( $V_{ex}$ ), pc/h  | 18   |       |        | 0    |       |        | 219  |       |        | 500  |       |        |
| Entry Flow ( $V_e$ ), pc/h       |      |       |        |      | 392   |        |      | 185   | 640    |      | 159   |        |
| Entry Volume veh/h               |      |       |        |      | 381   |        |      | 180   | 621    |      | 154   |        |

**Capacity and v/c Ratios**

|                              | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                              | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Capacity ( $c_{PCE}$ ), pc/h |      | 0     |        |      | 939   |        |      | 1110  |        |      | 790   |        |
| Capacity (c), veh/h          |      | 0     |        |      | 912   |        |      | 1078  |        |      | 767   |        |
| v/c Ratio (X)                |      |       |        |      | 0.42  |        |      | 0.17  |        |      | 0.20  |        |

**Delay and Level of Service**

|                               | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|-------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                               | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Lane Control Delay (d), s/veh |      |       |        |      | 8.8   |        |      | 4.8   | 0.0    |      | 6.9   |        |
| Lane LOS                      |      | F     |        |      | A     |        |      | A     |        |      | A     |        |
| Lane 95% Queue                |      |       |        |      | 2.1   |        |      | 0.6   |        |      | 0.7   |        |
| Approach Delay, s/veh         |      |       |        | 8.83 |       |        | 1.09 |       |        | 6.88 |       |        |
| Approach LOS, s/veh           |      |       |        | A    |       |        | A    |       |        | A    |       |        |
| Intersection Delay, s/veh     | 3.96 |       |        |      |       |        |      |       |        |      |       |        |
| Intersection LOS              | A    |       |        |      |       |        |      |       |        |      |       |        |

### ROUNDBOUT REPORT

**General Information**

Analyst DSK  
 Agency or Co. Kelly Engineering  
 Date Performed 2/21/2022  
 Time Period PM Peak Hour  
 Peak Hour Factor 0.94

**Site Information**

Intersection Pacific Hwy. & 4th St.  
 E/W Street Name W 4th St.  
 N/S Street Name Pacific Hwy.  
 Analysis Year 2025  
 Project ID Year 2025 w/o Project

Project Description:

**Volume Adjustment and Site Characteristics**

|                                 | EB   |   |   |   | WB   |   |    |   | NB           |     |   |   | SB   |     |   |   |
|---------------------------------|------|---|---|---|------|---|----|---|--------------|-----|---|---|------|-----|---|---|
|                                 | L    | T | R | U | L    | T | R  | U | L            | T   | R | U | L    | T   | R | U |
| Number of Lanes (N)             | 0    | 0 | 0 |   | 0    | 0 | 0  |   | 0            | 1   | 0 |   | 0    | 1   | 0 |   |
| Lane Assignment                 |      |   |   |   | LR   |   |    |   | T            |     |   |   | LT   |     |   |   |
| Right-Turn Bypass               | None |   |   |   | None |   |    |   | Non-Yielding |     |   |   | None |     |   |   |
| Conflicting Lanes               | 1    |   |   |   | 1    |   |    |   | 1            |     |   |   | 1    |     |   |   |
| Volume (V), veh/h               |      |   |   | 0 | 362  |   | 38 | 0 |              | 179 |   | 0 | 26   | 137 |   | 0 |
| Heavy Veh. Adj. ( $f_{HV}$ ), % | 3    | 3 | 3 | 3 | 3    | 3 | 3  | 3 | 3            | 3   | 3 | 3 | 3    | 3   | 3 | 3 |
| Pedestrians Crossing            | 0    |   |   |   | 0    |   |    |   | 0            |     |   |   | 0    |     |   |   |

**Critical and Follow-Up Headway Adjustment**

|                         | EB     |        |        | WB     |        |        | NB     |        |        | SB     |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                         | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass |
| Critical Headway (sec)  | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 |
| Follow-Up Headway (sec) | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 |

**Flow Computations**

|                                  | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|----------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                                  | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Circulating Flow ( $V_c$ ), pc/h | 575  |       |        | 196  |       |        | 28   |       |        | 397  |       |        |
| Exiting Flow ( $V_{ex}$ ), pc/h  | 28   |       |        | 0    |       |        | 238  |       |        | 547  |       |        |
| Entry Flow ( $V_e$ ), pc/h       |      |       |        | 438  |       |        | 196  | 705   |        | 179  |       |        |
| Entry Volume veh/h               |      |       |        | 425  |       |        | 190  | 684   |        | 174  |       |        |

**Capacity and v/c Ratios**

|                              | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                              | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Capacity ( $C_{PCE}$ ), pc/h |      | 0     |        | 929  |       |        | 1098 |       |        | 760  |       |        |
| Capacity (c), veh/h          |      | 0     |        | 902  |       |        | 1066 |       |        | 738  |       |        |
| v/c Ratio (X)                |      |       |        | 0.47 |       |        | 0.18 |       |        | 0.24 |       |        |

**Delay and Level of Service**

|                               | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|-------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                               | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Lane Control Delay (d), s/veh |      |       |        |      | 9.9   |        |      | 5.0   | 0.0    |      | 7.6   |        |
| Lane LOS                      |      | F     |        |      | A     |        |      | A     |        |      | A     |        |
| Lane 95% Queue                |      |       |        |      | 2.6   |        |      | 0.6   |        |      | 0.9   |        |
| Approach Delay, s/veh         |      |       |        | 9.86 |       |        | 1.09 |       |        | 7.55 |       |        |
| Approach LOS, s/veh           |      |       |        | A    |       |        | A    |       |        | A    |       |        |
| Intersection Delay, s/veh     | 4.38 |       |        |      |       |        |      |       |        |      |       |        |
| Intersection LOS              | A    |       |        |      |       |        |      |       |        |      |       |        |

### ROUNDBABOUT REPORT

**General Information**

Analyst DSK  
 Agency or Co. Kelly Engineering  
 Date Performed 2/21/2022  
 Time Period PM Peak Hour  
 Peak Hour Factor 0.94

**Site Information**

Intersection Pacific Hwy. & 4th St.  
 E/W Street Name W 4th St.  
 N/S Street Name Pacific Hwy.  
 Analysis Year 2025  
 Project ID Year 2025 with Project

Project Description:

**Volume Adjustment and Site Characteristics**

|                                 | EB   |   |   |   | WB   |   |    |   | NB           |     |   |   | SB   |     |    |   |
|---------------------------------|------|---|---|---|------|---|----|---|--------------|-----|---|---|------|-----|----|---|
|                                 | L    | T | R | U | L    | T | R  | U | L            | T   | R | U | L    | T   | R  | U |
| Number of Lanes (N)             | 0    | 0 | 0 |   | 0    | 0 | 0  |   | 0            | 1   | 0 |   | 0    | 1   | 0  |   |
| Lane Assignment                 |      |   |   |   |      |   | LR |   |              |     | T |   |      |     | LT |   |
| Right-Turn Bypass               | None |   |   |   | None |   |    |   | Non-Yielding |     |   |   | None |     |    |   |
| Conflicting Lanes               | 1    |   |   |   | 1    |   |    |   | 1            |     |   |   | 1    |     |    |   |
| Volume (V), veh/h               |      |   |   | 0 | 380  |   | 39 | 0 |              | 179 |   | 0 | 28   | 137 |    | 0 |
| Heavy Veh. Adj. ( $f_{HV}$ ), % | 3    | 3 | 3 | 3 | 3    | 3 | 3  | 3 | 3            | 3   | 3 | 3 | 3    | 3   | 3  | 3 |
| Pedestrians Crossing            | 0    |   |   |   | 0    |   |    |   | 0            |     |   |   | 0    |     |    |   |

**Critical and Follow-Up Headway Adjustment**

|                         | EB     |        |        | WB     |        |        | NB     |        |        | SB     |        |        |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                         | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass | Left   | Right  | Bypass |
| Critical Headway (sec)  | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 | 5.1929 |
| Follow-Up Headway (sec) | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 | 3.1858 |

**Flow Computations**

|                                  | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|----------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                                  | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Circulating Flow ( $V_c$ ), pc/h | 597  |       |        | 196  |       |        | 31   |       |        | 416  |       |        |
| Exiting Flow ( $V_{ex}$ ), pc/h  | 31   |       |        | 0    |       |        | 239  |       |        | 567  |       |        |
| Entry Flow ( $V_e$ ), pc/h       |      |       |        | 459  |       |        | 196  | 735   |        |      | 181   |        |
| Entry Volume veh/h               |      |       |        | 446  |       |        | 190  | 714   |        |      | 176   |        |

**Capacity and v/c Ratios**

|                              | EB   |       |        | WB   |       |        | NB   |       |        | SB   |       |        |
|------------------------------|------|-------|--------|------|-------|--------|------|-------|--------|------|-------|--------|
|                              | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Capacity ( $c_{PCE}$ ), pc/h |      | 0     |        | 929  |       |        | 1096 |       |        |      | 745   |        |
| Capacity (c), veh/h          |      | 0     |        | 902  |       |        | 1064 |       |        |      | 723   |        |
| v/c Ratio (X)                |      |       |        | 0.49 |       |        | 0.18 |       |        |      | 0.24  |        |

**Delay and Level of Service**

|                               | EB   |       |        | WB    |       |        | NB   |       |        | SB   |       |        |
|-------------------------------|------|-------|--------|-------|-------|--------|------|-------|--------|------|-------|--------|
|                               | Left | Right | Bypass | Left  | Right | Bypass | Left | Right | Bypass | Left | Right | Bypass |
| Lane Control Delay (d), s/veh |      |       |        |       | 10.3  |        |      | 5.0   | 0.0    |      | 7.8   |        |
| Lane LOS                      |      | F     |        |       | B     |        |      | A     |        |      | A     |        |
| Lane 95% Queue                |      |       |        |       | 2.8   |        |      | 0.6   |        |      | 1.0   |        |
| Approach Delay, s/veh         |      |       |        | 10.29 |       |        | 1.05 |       |        | 7.79 |       |        |
| Approach LOS, s/veh           |      |       |        | B     |       |        | A    |       |        | A    |       |        |
| Intersection Delay, s/veh     | 4.53 |       |        |       |       |        |      |       |        |      |       |        |
| Intersection LOS              | A    |       |        |       |       |        |      |       |        |      |       |        |



| TWO-WAY STOP CONTROL SUMMARY                     |                   |            |            |                                |                          |            |    |    |
|--|-------------------|------------|------------|--------------------------------|--------------------------|------------|----|----|
| <b>General Information</b>                       |                   |            |            | <b>Site Information</b>        |                          |            |    |    |
| Analyst  | DSK               |            |            | Intersection                   | La Ctr. Rd. & Timmen Rd. |            |    |    |
| Agency/Co.                                       | Kelly Engineering |            |            | Jurisdiction                   | City of La Center        |            |    |    |
| Date Performed                                   | 2/21/2022         |            |            | Analysis Year                  | 2022                     |            |    |    |
| Analysis Time Period                             | AM Peak Hour      |            |            |                                |                          |            |    |    |
| Project Description Existing                     |                   |            |            |                                |                          |            |    |    |
| East/West Street: La Center Road                 |                   |            |            | North/South Street: Timmen Rd. |                          |            |    |    |
| Intersection Orientation: East-West              |                   |            |            | Study Period (hrs): 0.25       |                          |            |    |    |
| <b>Vehicle Volumes and Adjustments</b>           |                   |            |            |                                |                          |            |    |    |
| <b>Major Street</b>                              |                   | Eastbound  |            |                                | Westbound                |            |    |    |
| Movement   | 1                 | 2          | 3          | 4                              | 5                        | 6          |    |    |
|  | L                 | T          | R          | L                              | T                        | R          |    |    |
| Volume (veh/h)                                   |                   | 288        | 8          | 61                             | 622                      |            |    |    |
| Peak-Hour Factor, PHF                            | 0.93              | 0.96       | 0.96       | 0.96                           | 0.96                     | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)                    | 0                 | 300        | 8          | 63                             | 647                      | 0          |    |    |
| Percent Heavy Vehicles                           | 0                 | --         | --         | 0                              | --                       | --         |    |    |
| Median Type                                      | Undivided         |            |            |                                |                          |            |    |    |
| RT Channelized                                   |                   |            | 0          |                                |                          |            | 0  |    |
| Lanes  | 0                 | 1          | 0          | 1                              | 1                        | 0          |    |    |
| Configuration                                    |                   |            | TR         | L                              | T                        |            |    |    |
| Upstream Signal                                  |                   | 0          |            |                                | 0                        |            |    |    |
| <b>Minor Street</b>                              |                   | Northbound |            |                                | Southbound               |            |    |    |
| Movement   | 7                 | 8          | 9          | 10                             | 11                       | 12         |    |    |
|  | L                 | T          | R          | L                              | T                        | R          |    |    |
| Volume (veh/h)                                   | 11                |            | 46         |                                |                          |            |    |    |
| Peak-Hour Factor, PHF                            | 0.96              | 1.00       | 0.96       | 0.93                           | 1.00                     | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)                    | 11                | 0          | 47         | 0                              | 0                        | 0          |    |    |
| Percent Heavy Vehicles                           | 2                 | 0          | 2          | 0                              | 0                        | 0          |    |    |
| Percent Grade (%)                                |                   | 0          |            |                                | 0                        |            |    |    |
| Flared Approach                                  |                   | N          |            |                                | N                        |            |    |    |
| Storage  |                   | 0          |            |                                | 0                        |            |    |    |
| RT Channelized                                   |                   |            | 0          |                                |                          | 0          |    |    |
| Lanes  | 1                 | 0          | 1          | 0                              | 0                        | 0          |    |    |
| Configuration                                    | L                 |            | R          |                                |                          |            |    |    |
| <b>Delay, Queue Length, and Level of Service</b> |                   |            |            |                                |                          |            |    |    |
| Approach   | Eastbound         | Westbound  | Northbound |                                |                          | Southbound |    |    |
| Movement   | 1                 | 4          | 7          | 8                              | 9                        | 10         | 11 | 12 |
| Lane Configuration                               |                   | L          | L          |                                | R                        |            |    |    |
| v (veh/h)  |                   | 63         | 11         |                                | 47                       |            |    |    |
| C (m) (veh/h)                                    |                   | 1264       | 230        |                                | 736                      |            |    |    |
| v/c  |                   | 0.05       | 0.05       |                                | 0.06                     |            |    |    |
| 95% queue length                                 |                   | 0.16       | 0.15       |                                | 0.20                     |            |    |    |
| Control Delay (s/veh)                            |                   | 8.0        | 21.4       |                                | 10.2                     |            |    |    |
| LOS  |                   | A          | C          |                                | B                        |            |    |    |
| Approach Delay (s/veh)                           | --                | --         | 12.4       |                                |                          |            |    |    |
| Approach LOS                                     | --                | --         | B          |                                |                          |            |    |    |

| TWO-WAY STOP CONTROL SUMMARY                     |                   |           |            |                                |                          |      |    |    |
|--|-------------------|-----------|------------|--------------------------------|--------------------------|------|----|----|
| <b>General Information</b>                       |                   |           |            | <b>Site Information</b>        |                          |      |    |    |
| Analyst  | DSK               |           |            | Intersection                   | La Ctr. Rd. & Timmen Rd. |      |    |    |
| Agency/Co.                                       | Kelly Engineering |           |            | Jurisdiction                   | City of La Center        |      |    |    |
| Date Performed                                   | 2/21/2022         |           |            | Analysis Year                  | 2025                     |      |    |    |
| Analysis Time Period                             | AM Peak Hour      |           |            |                                |                          |      |    |    |
| Project Description Year 2025 w/o Project        |                   |           |            |                                |                          |      |    |    |
| East/West Street: La Center Road                 |                   |           |            | North/South Street: Timmen Rd. |                          |      |    |    |
| Intersection Orientation: East-West              |                   |           |            | Study Period (hrs): 0.25       |                          |      |    |    |
| <b>Vehicle Volumes and Adjustments</b>           |                   |           |            |                                |                          |      |    |    |
| <b>Major Street</b>                              | <b>Eastbound</b>  |           |            | <b>Westbound</b>               |                          |      |    |    |
| Movement   | 1                 | 2         | 3          | 4                              | 5                        | 6    |    |    |
|  | L                 | T         | R          | L                              | T                        | R    |    |    |
| Volume (veh/h)                                   |                   | 340       | 9          | 68                             | 699                      |      |    |    |
| Peak-Hour Factor, PHF                            | 0.93              | 0.96      | 0.96       | 0.96                           | 0.96                     | 0.93 |    |    |
| Hourly Flow Rate, HFR (veh/h)                    | 0                 | 354       | 9          | 70                             | 728                      | 0    |    |    |
| Percent Heavy Vehicles                           | 0                 | --        | --         | 0                              | --                       | --   |    |    |
| Median Type                                      | Undivided         |           |            |                                |                          |      |    |    |
| RT Channelized                                   |                   |           | 0          |                                |                          | 0    |    |    |
| Lanes  | 0                 | 1         | 0          | 1                              | 1                        | 0    |    |    |
| Configuration                                    |                   |           | TR         | L                              | T                        |      |    |    |
| Upstream Signal                                  |                   | 0         |            |                                | 0                        |      |    |    |
| <b>Minor Street</b>                              | <b>Northbound</b> |           |            | <b>Southbound</b>              |                          |      |    |    |
| Movement   | 7                 | 8         | 9          | 10                             | 11                       | 12   |    |    |
|  | L                 | T         | R          | L                              | T                        | R    |    |    |
| Volume (veh/h)                                   | 12                |           | 49         |                                |                          |      |    |    |
| Peak-Hour Factor, PHF                            | 0.96              | 1.00      | 0.96       | 0.93                           | 1.00                     | 0.93 |    |    |
| Hourly Flow Rate, HFR (veh/h)                    | 12                | 0         | 51         | 0                              | 0                        | 0    |    |    |
| Percent Heavy Vehicles                           | 2                 | 0         | 2          | 0                              | 0                        | 0    |    |    |
| Percent Grade (%)                                |                   | 0         |            |                                | 0                        |      |    |    |
| Flared Approach                                  |                   | N         |            |                                | N                        |      |    |    |
| Storage  |                   | 0         |            |                                | 0                        |      |    |    |
| RT Channelized                                   |                   |           | 0          |                                |                          | 0    |    |    |
| Lanes  | 1                 | 0         | 1          | 0                              | 0                        | 0    |    |    |
| Configuration                                    | L                 |           | R          |                                |                          |      |    |    |
| <b>Delay, Queue Length, and Level of Service</b> |                   |           |            |                                |                          |      |    |    |
| Approach   | Eastbound         | Westbound | Northbound |                                | Southbound               |      |    |    |
| Movement   | 1                 | 4         | 7          | 8                              | 9                        | 10   | 11 | 12 |
| Lane Configuration                               |                   | L         | L          |                                | R                        |      |    |    |
| v (veh/h)  |                   | 70        | 12         |                                | 51                       |      |    |    |
| C (m) (veh/h)                                    |                   | 1207      | 186        |                                | 686                      |      |    |    |
| v/c  |                   | 0.06      | 0.06       |                                | 0.07                     |      |    |    |
| 95% queue length                                 |                   | 0.18      | 0.20       |                                | 0.24                     |      |    |    |
| Control Delay (s/veh)                            |                   | 8.2       | 25.7       |                                | 10.7                     |      |    |    |
| LOS  |                   | A         | D          |                                | B                        |      |    |    |
| Approach Delay (s/veh)                           | --                | --        | 13.5       |                                |                          |      |    |    |
| Approach LOS                                     | --                | --        | B          |                                |                          |      |    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   |           |            | Site Information               |                          |            |    |    |
|--|-------------------|-----------|------------|--------------------------------|--------------------------|------------|----|----|
| Analyst                                    | DSK               |           |            | Intersection                   | La Ctr. Rd. & Timmen Rd. |            |    |    |
| Agency/Co.                                 | Kelly Engineering |           |            | Jurisdiction                   | City of La Center        |            |    |    |
| Date Performed                             | 2/21/2022         |           |            | Analysis Year                  | 2025                     |            |    |    |
| Analysis Time Period                       | AM Peak Hour      |           |            |                                |                          |            |    |    |
| Project Description Year 2025 with Project |                   |           |            |                                |                          |            |    |    |
| East/West Street: La Center Road           |                   |           |            | North/South Street: Timmen Rd. |                          |            |    |    |
| Intersection Orientation: East-West        |                   |           |            | Study Period (hrs): 0.25       |                          |            |    |    |
| Vehicle Volumes and Adjustments            |                   |           |            |                                |                          |            |    |    |
| Major Street                               | Eastbound         |           |            | Westbound                      |                          |            |    |    |
| Movement                                   | 1                 | 2         | 3          | 4                              | 5                        | 6          |    |    |
|  | L                 | T         | R          | L                              | T                        | R          |    |    |
| Volume (veh/h)                             |                   | 347       | 9          | 71                             | 719                      |            |    |    |
| Peak-Hour Factor, PHF                      | 0.93              | 0.96      | 0.96       | 0.96                           | 0.96                     | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)              | 0                 | 361       | 9          | 73                             | 748                      | 0          |    |    |
| Percent Heavy Vehicles                     | 0                 | --        | --         | 0                              | --                       | --         |    |    |
| Median Type                                | Undivided         |           |            |                                |                          |            |    |    |
| RT Channelized                             |                   |           | 0          |                                |                          |            | 0  |    |
| Lanes                                      | 0                 | 1         | 0          | 1                              | 1                        |            | 0  |    |
| Configuration                              |                   |           | TR         | L                              | T                        |            |    |    |
| Upstream Signal                            |                   | 0         |            |                                | 0                        |            |    |    |
| Minor Street                               | Northbound        |           |            | Southbound                     |                          |            |    |    |
| Movement                                   | 7                 | 8         | 9          | 10                             | 11                       | 12         |    |    |
|  | L                 | T         | R          | L                              | T                        | R          |    |    |
| Volume (veh/h)                             | 12                |           | 49         |                                |                          |            |    |    |
| Peak-Hour Factor, PHF                      | 0.96              | 1.00      | 0.96       | 0.93                           | 1.00                     | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)              | 12                | 0         | 51         | 0                              | 0                        | 0          |    |    |
| Percent Heavy Vehicles                     | 2                 | 0         | 2          | 0                              | 0                        | 0          |    |    |
| Percent Grade (%)                          |                   | 0         |            |                                | 0                        |            |    |    |
| Flared Approach                            |                   | N         |            |                                | N                        |            |    |    |
| Storage                                    |                   | 0         |            |                                | 0                        |            |    |    |
| RT Channelized                             |                   |           | 0          |                                |                          |            | 0  |    |
| Lanes                                      | 1                 | 0         | 1          | 0                              | 0                        |            | 0  |    |
| Configuration                              | L                 |           | R          |                                |                          |            |    |    |
| Delay, Queue Length, and Level of Service  |                   |           |            |                                |                          |            |    |    |
| Approach                                   | Eastbound         | Westbound | Northbound |                                |                          | Southbound |    |    |
| Movement                                   | 1                 | 4         | 7          | 8                              | 9                        | 10         | 11 | 12 |
| Lane Configuration                         |                   | L         | L          |                                | R                        |            |    |    |
| v (veh/h)                                  |                   | 73        | 12         |                                | 51                       |            |    |    |
| C (m) (veh/h)                              |                   | 1200      | 177        |                                | 679                      |            |    |    |
| v/c  |                   | 0.06      | 0.07       |                                | 0.08                     |            |    |    |
| 95% queue length                           |                   | 0.19      | 0.22       |                                | 0.24                     |            |    |    |
| Control Delay (s/veh)                      |                   | 8.2       | 26.8       |                                | 10.7                     |            |    |    |
| LOS  |                   | A         | D          |                                | B                        |            |    |    |
| Approach Delay (s/veh)                     | --                | --        | 13.8       |                                |                          |            |    |    |
| Approach LOS                               | --                | --        | B          |                                |                          |            |    |    |

| TWO-WAY STOP CONTROL SUMMARY              |                   |           |                                |                          |      |            |    |    |
|---|-------------------|-----------|--------------------------------|--------------------------|------|------------|----|----|
| General Information                       |                   |           | Site Information               |                          |      |            |    |    |
| Analyst                                   | DSK               |           | Intersection                   | La Ctr. Rd. & Timmen Rd. |      |            |    |    |
| Agency/Co.                                | Kelly Engineering |           | Jurisdiction                   | City of La Center        |      |            |    |    |
| Date Performed                            | 2/21/2022         |           | Analysis Year                  | 2022                     |      |            |    |    |
| Analysis Time Period                      | PM Peak Hour      |           |                                |                          |      |            |    |    |
| Project Description Existing              |                   |           |                                |                          |      |            |    |    |
| East/West Street: La Center Road          |                   |           | North/South Street: Timmen Rd. |                          |      |            |    |    |
| Intersection Orientation: East-West       |                   |           | Study Period (hrs): 0.25       |                          |      |            |    |    |
| Vehicle Volumes and Adjustments           |                   |           |                                |                          |      |            |    |    |
| Major Street                              | Eastbound         |           |                                | Westbound                |      |            |    |    |
| Movement                                  | 1                 | 2         | 3                              | 4                        | 5    | 6          |    |    |
|   | L                 | T         | R                              | L                        | T    | R          |    |    |
| Volume (veh/h)                            |                   | 639       | 20                             | 67                       | 421  |            |    |    |
| Peak-Hour Factor, PHF                     | 0.93              | 0.96      | 0.96                           | 0.96                     | 0.96 | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 0                 | 665       | 20                             | 69                       | 438  | 0          |    |    |
| Percent Heavy Vehicles                    | 0                 | --        | --                             | 0                        | --   | --         |    |    |
| Median Type                               | Undivided         |           |                                |                          |      |            |    |    |
| RT Channelized                            |                   |           | 0                              |                          |      | 0          |    |    |
| Lanes                                     | 0                 | 1         | 0                              | 1                        | 1    | 0          |    |    |
| Configuration                             |                   |           | TR                             | L                        | T    |            |    |    |
| Upstream Signal                           |                   | 0         |                                |                          | 0    |            |    |    |
| Minor Street                              | Northbound        |           |                                | Southbound               |      |            |    |    |
| Movement                                  | 7                 | 8         | 9                              | 10                       | 11   | 12         |    |    |
|   | L                 | T         | R                              | L                        | T    | R          |    |    |
| Volume (veh/h)                            | 25                |           | 126                            |                          |      |            |    |    |
| Peak-Hour Factor, PHF                     | 0.96              | 1.00      | 0.96                           | 0.93                     | 1.00 | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)             | 26                | 0         | 131                            | 0                        | 0    | 0          |    |    |
| Percent Heavy Vehicles                    | 8                 | 0         | 2                              | 0                        | 0    | 0          |    |    |
| Percent Grade (%)                         | 0                 |           |                                | 0                        |      |            |    |    |
| Flared Approach                           |                   | N         |                                |                          | N    |            |    |    |
| Storage                                   |                   | 0         |                                |                          | 0    |            |    |    |
| RT Channelized                            |                   |           | 0                              |                          |      | 0          |    |    |
| Lanes                                     | 1                 | 0         | 1                              | 0                        | 0    | 0          |    |    |
| Configuration                             | L                 |           | R                              |                          |      |            |    |    |
| Delay, Queue Length, and Level of Service |                   |           |                                |                          |      |            |    |    |
| Approach                                  | Eastbound         | Westbound | Northbound                     |                          |      | Southbound |    |    |
| Movement                                  | 1                 | 4         | 7                              | 8                        | 9    | 10         | 11 | 12 |
| Lane Configuration                        |                   | L         | L                              |                          | R    |            |    |    |
| v (veh/h)                                 |                   | 69        | 26                             |                          | 131  |            |    |    |
| C (m) (veh/h)                             |                   | 918       | 171                            |                          | 454  |            |    |    |
| v/c                                       |                   | 0.08      | 0.15                           |                          | 0.29 |            |    |    |
| 95% queue length                          |                   | 0.24      | 0.52                           |                          | 1.18 |            |    |    |
| Control Delay (s/veh)                     |                   | 9.2       | 29.8                           |                          | 16.1 |            |    |    |
| LOS                                       |                   | A         | D                              |                          | C    |            |    |    |
| Approach Delay (s/veh)                    | --                | --        | 18.4                           |                          |      |            |    |    |
| Approach LOS                              | --                | --        | C                              |                          |      |            |    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                       |                   | Site Information               |                          |
|---|-------------------|--------------------------------|--------------------------|
| Analyst                                   | DSK               | Intersection                   | La Ctr. Rd. & Timmen Rd. |
| Agency/Co.                                | Kelly Engineering | Jurisdiction                   | City of La Center        |
| Date Performed                            | 2/21/2022         | Analysis Year                  | 2025                     |
| Analysis Time Period                      | PM Peak Hour      |                                |                          |
| Project Description Year 2025 w/o Project |                   |                                |                          |
| East/West Street: La Center Road          |                   | North/South Street: Timmen Rd. |                          |
| Intersection Orientation: East-West       |                   | Study Period (hrs): 0.25       |                          |

### Vehicle Volumes and Adjustments

| Major Street                  | Eastbound |      |      | Westbound |      |      |   |
|-------------------------------|-----------|------|------|-----------|------|------|---|
|                               | Movement  | 1    | 2    | 3         | 4    | 5    | 6 |
|                               | L         | T    | R    | L         | T    | R    |   |
| Volume (veh/h)                |           | 691  | 21   | 71        | 456  |      |   |
| Peak-Hour Factor, PHF         | 0.93      | 0.96 | 0.96 | 0.96      | 0.96 | 0.93 |   |
| Hourly Flow Rate, HFR (veh/h) | 0         | 719  | 21   | 73        | 475  | 0    |   |
| Percent Heavy Vehicles        | 0         | --   | --   | 0         | --   | --   |   |
| Median Type                   | Undivided |      |      |           |      |      |   |
| RT Channelized                |           |      | 0    |           |      | 0    |   |
| Lanes                         | 0         | 1    | 0    | 1         | 1    | 0    |   |
| Configuration                 |           |      | TR   | L         | T    |      |   |
| Upstream Signal               |           | 0    |      |           | 0    |      |   |

| Minor Street                  | Northbound |      |      | Southbound |      |      |    |
|-------------------------------|------------|------|------|------------|------|------|----|
|                               | Movement   | 7    | 8    | 9          | 10   | 11   | 12 |
|                               | L          | T    | R    | L          | T    | R    |    |
| Volume (veh/h)                | 25         |      | 133  |            |      |      |    |
| Peak-Hour Factor, PHF         | 0.96       | 1.00 | 0.96 | 0.93       | 1.00 | 0.93 |    |
| Hourly Flow Rate, HFR (veh/h) | 26         | 0    | 138  | 0          | 0    | 0    |    |
| Percent Heavy Vehicles        | 8          | 0    | 2    | 0          | 0    | 0    |    |
| Percent Grade (%)             |            | 0    |      |            | 0    |      |    |
| Flared Approach               |            | N    |      |            | N    |      |    |
| Storage                       |            | 0    |      |            | 0    |      |    |
| RT Channelized                |            |      | 0    |            |      | 0    |    |
| Lanes                         | 1          | 0    | 1    | 0          | 0    | 0    |    |
| Configuration                 | L          |      | R    |            |      |      |    |

### Delay, Queue Length, and Level of Service

| Approach               | Eastbound | Westbound | Northbound |   |      | Southbound |    |    |
|------------------------|-----------|-----------|------------|---|------|------------|----|----|
|                        |           |           | 7          | 8 | 9    | 10         | 11 | 12 |
| Movement               | 1         | 4         | 7          | 8 | 9    | 10         | 11 | 12 |
| Lane Configuration     |           | L         | L          |   | R    |            |    |    |
| v (veh/h)              |           | 73        | 26         |   | 138  |            |    |    |
| C (m) (veh/h)          |           | 876       | 148        |   | 422  |            |    |    |
| v/c                    |           | 0.08      | 0.18       |   | 0.33 |            |    |    |
| 95% queue length       |           | 0.27      | 0.61       |   | 1.40 |            |    |    |
| Control Delay (s/veh)  |           | 9.5       | 34.4       |   | 17.6 |            |    |    |
| LOS                    |           | A         | D          |   | C    |            |    |    |
| Approach Delay (s/veh) | --        | --        | 20.3       |   |      |            |    |    |
| Approach LOS           | --        | --        | C          |   |      |            |    |    |

## TWO-WAY STOP CONTROL SUMMARY

| General Information                        |                   |           | Site Information               |                          |      |            |    |    |
|--|-------------------|-----------|--------------------------------|--------------------------|------|------------|----|----|
| Analyst                                    | DSK               |           | Intersection                   | La Ctr. Rd. & Timmen Rd. |      |            |    |    |
| Agency/Co.                                 | Kelly Engineering |           | Jurisdiction                   | City of La Center        |      |            |    |    |
| Date Performed                             | 2/21/2022         |           | Analysis Year                  | 2025                     |      |            |    |    |
| Analysis Time Period                       | PM Peak Hour      |           |                                |                          |      |            |    |    |
| Project Description Year 2025 with Project |                   |           |                                |                          |      |            |    |    |
| East/West Street: La Center Road           |                   |           | North/South Street: Timmen Rd. |                          |      |            |    |    |
| Intersection Orientation: East-West        |                   |           | Study Period (hrs): 0.25       |                          |      |            |    |    |
| Vehicle Volumes and Adjustments            |                   |           |                                |                          |      |            |    |    |
| Major Street                               | Eastbound         |           |                                | Westbound                |      |            |    |    |
| Movement                                   | 1                 | 2         | 3                              | 4                        | 5    | 6          |    |    |
|  | L                 | T         | R                              | L                        | T    | R          |    |    |
| Volume (veh/h)                             |                   | 715       | 21                             | 74                       | 471  |            |    |    |
| Peak-Hour Factor, PHF                      | 0.93              | 0.96      | 0.96                           | 0.96                     | 0.96 | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)              | 0                 | 744       | 21                             | 77                       | 490  | 0          |    |    |
| Percent Heavy Vehicles                     | 0                 | --        | --                             | 0                        | --   | --         |    |    |
| Median Type                                | Undivided         |           |                                |                          |      |            |    |    |
| RT Channelized                             |                   |           | 0                              |                          |      | 0          |    |    |
| Lanes                                      | 0                 | 1         | 0                              | 1                        | 1    | 0          |    |    |
| Configuration                              |                   |           | TR                             | L                        | T    |            |    |    |
| Upstream Signal                            |                   | 0         |                                |                          | 0    |            |    |    |
| Minor Street                               | Northbound        |           |                                | Southbound               |      |            |    |    |
| Movement                                   | 7                 | 8         | 9                              | 10                       | 11   | 12         |    |    |
|  | L                 | T         | R                              | L                        | T    | R          |    |    |
| Volume (veh/h)                             | 26                |           | 133                            |                          |      |            |    |    |
| Peak-Hour Factor, PHF                      | 0.96              | 1.00      | 0.96                           | 0.93                     | 1.00 | 0.93       |    |    |
| Hourly Flow Rate, HFR (veh/h)              | 27                | 0         | 138                            | 0                        | 0    | 0          |    |    |
| Percent Heavy Vehicles                     | 8                 | 0         | 2                              | 0                        | 0    | 0          |    |    |
| Percent Grade (%)                          |                   | 0         |                                |                          | 0    |            |    |    |
| Flared Approach                            |                   | N         |                                |                          | N    |            |    |    |
| Storage                                    |                   | 0         |                                |                          | 0    |            |    |    |
| RT Channelized                             |                   |           | 0                              |                          |      | 0          |    |    |
| Lanes                                      | 1                 | 0         | 1                              | 0                        | 0    | 0          |    |    |
| Configuration                              | L                 |           | R                              |                          |      |            |    |    |
| Delay, Queue Length, and Level of Service  |                   |           |                                |                          |      |            |    |    |
| Approach                                   | Eastbound         | Westbound | Northbound                     |                          |      | Southbound |    |    |
| Movement                                   | 1                 | 4         | 7                              | 8                        | 9    | 10         | 11 | 12 |
| Lane Configuration                         |                   | L         | L                              |                          | R    |            |    |    |
| v (veh/h)                                  |                   | 77        | 27                             |                          | 138  |            |    |    |
| C (m) (veh/h)                              |                   | 857       | 137                            |                          | 409  |            |    |    |
| v/c  |                   | 0.09      | 0.20                           |                          | 0.34 |            |    |    |
| 95% queue length                           |                   | 0.30      | 0.70                           |                          | 1.46 |            |    |    |
| Control Delay (s/veh)                      |                   | 9.6       | 37.6                           |                          | 18.2 |            |    |    |
| LOS  |                   | A         | E                              |                          | C    |            |    |    |
| Approach Delay (s/veh)                     | --                | --        | 21.4                           |                          |      |            |    |    |
| Approach LOS                               | --                | --        | C                              |                          |      |            |    |    |

**APPENDIX F**  
**REFERENCES**

## References

1. Trip Generation Manual, 10<sup>th</sup> Edition, 2017, Institute of Transportation Engineers.
2. Highway Capacity Manual, 2000 and 2010, Transportation Research Board, National Research Council.
3. Correspondence with staff from the City of La Center.
4. Traffic Analysis Report, Lockwood Meadows Subdivision, Charbonneau Engineering, August 2021.



# Exhibit A.9

**PRELIMINARY GEOTECHNICAL ENGINEERING STUDY  
W/INFILTRATION**

**Proposed Lockwood Creek Subdivision  
2313 NE Lockwood Creek Road  
La Center, Clark County, WA 98629  
(Parcel No.'s 209064000 and 209121000)**

**Prepared for:**

**Gravitate Capital, LLC  
13563 NW Fuller Lane  
Portland, OR 97229**

**Prepared By:**



**Seth A. Chandlee  
President**



**Paul Williams, PE  
Project Engineer**

**Project No. G0372200  
{May 2022}**

**Soil and Water Technologies, Inc.  
1101 Broadway, Suite 216 | Vancouver, Washington 98660  
(360) 200-8693 / [www.swt.ski](http://www.swt.ski)**



## Soil and Water Technologies, Inc.

Geotechnical, Monitoring, Materials Testing & Erosion Compliance

Gravitate Capital, LLC  
13563 NW Fuller Lane  
Portland, OR 97229

May 2<sup>nd</sup>, 2022  
G0372200

Hello Shawn,

We are pleased to submit our report titled "Preliminary Geotechnical Engineering Study with Infiltration Testing, for the proposed Lockwood Creek Subdivision located at 2313 NE Lockwood Creek Road in La Center, Washington. This report presents the results of our field exploration, laboratory testing, and engineering analyses.

Based on the results of this study, it is our opinion that construction of the proposed residential development is feasible from a geotechnical standpoint, provided recommendations presented in this report are included in the project design.

We appreciate the opportunity to have been of service to you and look forward to working with you in the future. Should you have any questions about the content of this report, or if we can be of further assistance, please call (360) 200-8693.

Respectfully Submitted,  
**Soil and Water Technologies, Inc.**

A handwritten signature in black ink, appearing to read "Seth A. Chandlee".

Seth A. Chandlee  
President

A handwritten signature in blue ink, appearing to read "Paul Williams".

Paul Williams, PE  
Project Engineer

## TABLE OF CONTENTS

|   |          |
|---|----------|
| <b>INTRODUCTION.....</b>                                  | <b>1</b> |
| General .....   | 1        |
| Project Description.....                                  | 1        |
| <b>SITE CONDITIONS.....</b>                               | <b>1</b> |
| Surface.....  | 1        |
| Subsurface .....  | 2        |
| Infiltration Testing.....                                 | 2        |
| Groundwater.....  | 3        |
| General Regional Geology .....                            | 3        |
| <b>GEOLOGIC HAZARDS.....</b>                              | <b>4</b> |
| Seismic Hazards .....                                     | 4        |
| <i>Ground Motion Amplification</i> .....                  | 4        |
| <i>Liquefaction</i> .....                                 | 4        |
| <i>Fault Rupture</i> .....                                | 5        |
| Seismic Design Criteria:.....                             | 5        |
| General .....   | 5        |
| Foundations .....   | 6        |
| Slab on Grade .....                                       | 6        |
| Dewatering .....  | 7        |
| Site Drainage.....  | 7        |
| Pavement Areas.....                                       | 7        |
| <b>CONSTRUCTION RECOMMENDATIONS.....</b>                  | <b>8</b> |
| Site Earthwork and Grading.....                           | 8        |
| Wet Weather Construction & Moisture Sensitive Soils:..... | 9        |
| Erosion Control .....                                     | 10       |
| Expansive/Shrink Soil Capacity.....                       | 10       |
| Utility Support and Backfill .....                        | 10       |
| Temporary Excavations.....                                | 11       |

## GRAPHICS

|                        |   |
|------------------------|---|
| <b>Figure 1</b>        | <b>Vicinity Map</b>                         |
| <b>Figure 2</b>        | <b>Site Plan (Test Pit Locations)</b>       |
| <b>Figure 3</b>        | <b>Typical Footing and Drainage Detail</b>  |
| <b>Figure 4</b>        | <b>Utility Trench Backfill Detail</b>       |
| <b>Appendix A</b>      | <b>Field Exploration</b>                    |
| <b>Plate A1</b>        | <b>Unified Soil Classification – Legend</b> |
| <b>Plates A2 to A4</b> | <b>Logs of Exploratory Test Pit Logs</b>    |
| <b>Appendix B</b>      | <b>Laboratory Testing</b>                   |
| <b>LPL 1</b>           | <b>Atterberg Limits</b>                     |
| <b>Ei-1</b>            | <b>Expansion Index</b>                      |

## **INTRODUCTION**

### **General**

This report presents the results of the geotechnical engineering study completed by Soil and Water Technologies, Inc. (SWT) for the proposed Lockwood Creek Subdivision located in Vancouver, Washington. The general location of the site is shown on the *Vicinity Map, Figure 1*. Our approximate exploratory test pits / infiltration locations are shown in relation to the site on the *Site Plan, Figure 2*.

The purpose of this study is to explore and evaluate subsurface conditions at the site and provide geotechnical recommendations for the proposed construction based on the conditions encountered. These recommendations include site specific geotechnical parameters for foundation support, earthwork grading, stormwater infiltration, site drainage, erosion control and a seismic hazard evaluation.

### **Project Description**

Since a preliminary site plan was not provided at the time this report was written, this report should be considered preliminary and once available, undergo further grading plan review. However, based on our recent conversation and site investigation, we anticipate that the combined 18.57-acre properties, designated tax parcel No.'s 209064000 and 209121000, will be developed into a residential subdivision. Based on existing site grades, we anticipate minimal cuts/fills ranging from 1 to 2 feet in thickness across the site. The project will also include essential underground utilities (sanitary sewer, storm, domestic water) and onsite paved roadways.

Specific structural design loads were also not available, however, based on our experience with similar projects, we anticipate that wall loads will be approximately 700 to 1,500 pounds per lineal foot (plf). Slab-on-grade floor loads will most likely range from one hundred to one hundred and fifty pounds per square foot (100-150 psf).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that Soil and Water Technologies perform a general review of the final design.

## **SITE CONDITIONS**

### **Surface**

As shown on our *Site Plan, figure 2*, the subject site is located to the southwest of the intersection of NE Lockwood Creek Road and NE 24<sup>th</sup> Avenue, on the south side of NE Lockwood Creek Road in La Center, Washington. The subject property is bordered to the west by the newly constructed La Center Highschool, to the south by a single-family residence on land, to the east by undeveloped vacant land, and north by NE Lockwood Creek Road.

The 2-parcel site is relatively level (0-5% slope), with a gentle south-facing slope the runs adjacent to Lockwood Creek Road (5-10%) at the north side of the site. The total elevation change across the properties is about 10 feet. According to Clark County Maps Online imagery layers, the two properties were historically used as agricultural farming with an existing residence and associated structures dating back to 1955. All structures were removed between 2016 and 2018 and the site consists predominantly of field grass with a gravel parking area at the northeast corner. A gravel roadway (NE 23<sup>rd</sup> Avenue) also runs north and south between the two parcels in the center of the site.

## **Subsurface**

On March 25<sup>th</sup>, 2022, and April 4<sup>th</sup>, 2022, we evaluated the subsurface soil conditions by excavating a total of 1 infiltration test pit (I-1) and 4 exploratory test pits, designated TP-2 through TP-5 to the maximum explored depth of 8.0 feet below the existing ground surface (bgs). All exploration locations were selected by SWT to determine subsurface conditions across the site in regard to proposed development. The approximate locations are shown on the *Site Plan, Figure 2*.

All soil was classified in general accordance with the *Unified Soil Classification System (USCS)*. Soil samples obtained from the test pits were returned to our office for additional evaluation and laboratory testing. Descriptions of field and laboratory procedures are included in Appendices A and B, respectively.

The following is a generalized description of the subsurface units encountered. For a more detailed description of the conditions encountered, refer to test pit logs A2 through A4.

*SURFACE MATERIALS:* Surface materials encountered in the test pits consisted of approximately 4 - 6 inches of organic topsoil, wood chips and tree roots. A tilled zone resulting from agricultural farming is present in the upper approximate 1.5 feet.

*SANDY LEAN CLAY* Native sandy Lean Clay (CL) was encountered below the surface materials at each test pit to depths ranging from 0.5 to 7.0 feet bgs. Except for TP-3, which consists of silty Gravels (fill). The lean clay layer was also encountered below the sandy Fat Clay (CH) at test pits I-1 and TP-3 to depths ranging from 2.5/4.0 to 8.0 feet bgs. The sandy Lean Clay (CL) was brown, soft to stiff and in a moist condition. The moisture content of the 5 samples collected from this layer ranged from 30.8 to 36.4 percent with a fines content ranging from 58.3 to 86.7 percent. The upper ~ 1.5 feet of this layer predominantly consists of a tilled zone from agriculture farming. The expansion index of this layer is 13.

*SANDY FAT CLAY* Native sandy Fat Clay (CH) was encountered below the lean Clay (CL) layer at test pits I-1 and TP-3 to depths ranging from 1.0 to 2.5/4.0 feet bgs. The sandy Fat Clay (CH) was gray/brown, stiff to very stiff and in a moist condition. The moisture content of the 3 samples collected from this layer ranged from 25.7 to 34.2 percent with a fines content ranging from 79.6 to 88.1 percent. The Atterberg limits of this layer has a liquid limit of 56 and a plasticity index of 36.

## **Infiltration Testing**

Infiltration testing was performed at test pit I-1 at depths of 2.0 and 3.5 feet bgs. The approximate location of the infiltration test pit is shown on the *Site Plan, Figure 2*. The purpose of performing these tests was to determine if site subgrade soils are suitable for infiltration of stormwater and provide stormwater treatment and control for all onsite impervious surfaces after construction. Infiltration testing methods were performed in general accordance with 2021 Clark County Stormwater Manual requirements for the Single-Ring Falling Head Infiltration Test. The test pit was excavated to the desired depths and a 6-inch diameter PVC pipe was embedded into the exposed soil ~ 6 inches in depth. Following a minimum 4-hour pre-saturation period, the pipe was filled with water and timed as the head dropped. The test results were averaged and recorded in inches per hour (iph).

All soil was classified following the *Unified Soil Classification System* (USCS) and the *AASHTO Soil Classification System (M145)*. The following table provides the field coefficient infiltration test results and associated laboratory testing:

| Location | USCS Soil Type | Approx. Depth to Groundwater   | WWHM | Depth (ft.) | % Passing #200 sieve | % Moisture content | Field Coefficient of Permeability |
|----------|----------------|--------------------------------|------|-------------|----------------------|--------------------|-----------------------------------|
| I-1      | CH             | Not encountered to 8.0 ft. bgs | SG-4 | 2.0         | 88.1                 | 32.7               | 0.08 iph                          |
| I-1      | CH             | Not encountered to 8.0 ft. bgs | SG-4 | 3.5         | 87.1                 | 34.2               | 0.05 iph                          |

(USCS) Unified Soil Classification System / (CH) – Clay with sand (high plasticity)  
 (WWHM) Western Washington Hydrology Model / Soil Group 4 (poorly drained soils)

The coefficients of permeability presented were calculated using Darcy’s law in accordance with the 2021 CCSWM, but do not include base correction factors or system design correction factors as required by the guidelines. Additionally, it is recommended that the designer also include additional correction factors to account for the level of maintenance, type of system, vegetation, siltation, etc.

Based on the subsurface conditions encountered, the slow rate of infiltration and our laboratory test results, it is our opinion that the low permeable native sandy fat Clay (CH) encountered in test pit I-1, and across the site, *is not suitable* for the infiltration of stormwater and will require alternative management.

**Groundwater**

Due to the wet time of year and above-average rainfall, light to medium groundwater seepage was encountered in test pit TP-2, TP-4, and TP-5 at depths ranging from 2.0 to 5.0 feet bgs. Based on our review of Clark County Maps Online and the Department of Ecology well log database, static groundwater exceeds 30 feet in depth. However, the groundwater monitoring wells (piezometer) installed by Columbia West Engineering at the adjacent school property indicates groundwater depths of 3 feet bgs. during the months of April, 2018.

It is important to note that groundwater conditions are not static; fluctuations may be expected in the level and seepage of flow depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, the groundwater level is higher and seepage rate is greater in the wetter winter months (typically October through May).

**General Regional Geology**

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the USGS Geologic Map of Washington-Southwest Quadrant, WA. State Department of Natural Resources, (Geologic Map GM-34, 1987) and the Geologic Map of the Vancouver Quadrangle, Washington & Oregon, (DLNR), Open File Report 87-10 and the USDA web soil survey.

In the Late Pleistocene (17 -13 kya), a series of floods caused by the failure of the ice dam at Glacial Lake Missoula in western Montana caused the deposition of suspended sediments after the floodwaters

became hydraulically dammed north of the confluence of the Columbia and Lewis Rivers. Fine-grained sediments were deposited when the flood waters slowed down and deposited a series of distinct layers described as unconsolidated silty Sand, Silt, and Clay.

The native material encountered in our exploratory test pits consists predominantly fine-grained Clay (CL & CH) with sand consistent with cataclysmic-flood deposits, which represent weathered Late Pleistocene fine-grained sedimentary flood deposits attributed to Gee silt loam (GeB) and Odne silt loam (OdB) soil series. Both soil series consist predominately of fine-grained clays and silts with low to very low permeability and are moisture sensitive.

## **GEOLOGIC HAZARDS**

The following provides a geologic hazard review for the subject site. The purpose of this investigation was to determine if geologic hazards are present on the site, and if so, to provide recommendations to mitigate their impacts on development. The geologic hazard review is based on our site reconnaissance and subsurface explorations, as well as a review of publicly available published literature and maps.

### **Seismic Hazards**

The following seismic hazards have been considered as part of our geologic hazards review for the project site. Seismic hazards pertain to areas that are subject to risk of earthquake-induced damage. These hazards include ground shaking/motion amplification, soil liquefaction, geologic fault rupture, and landslides.

#### *Ground Motion Amplification*

According to the “Site Class Map layer of Clark County MapsOnline, the proposed site is designated as a seismic Site Class “C”. However, based on our subsurface explorations and laboratory test results, it is our opinion that a Site Class “D” is appropriate for use at the site. This designation indicates that some amplification of seismic activity may occur during a seismic event based on the subsurface soil conditions encountered.

#### *Liquefaction*

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake. Ground shaking of sufficient duration then results in the loss of grain-to-grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume the physical properties of a fluid.

To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table, and must be subjected to sufficient magnitude and duration of ground shaking.

According to the “Liquefaction Susceptibility” layer of Clark County MapsOnline, the site is mapped as having a “very low” liquefaction susceptibility. Due to the medium stiff to stiff and predominately fine-grained soils encountered in our test pits, and the absence of near surface groundwater, it is our professional opinion that soil liquefaction and induced differential settlement will not occur at the subject site during a moderate to strong seismic event and that a “very low” susceptibility is adequate for the site.



It should be noted that directly south of the site, at a distance of approximately 0.35 mile, an area of moderate to high potential for liquefaction is indicated by Clark County MapsOnline. Additional testing would need to be performed to determine the liquefaction potential of the onsite soils and is beyond our scope of work for this report.

*Fault Rupture*

According to USGS Earthquake Hazards Program, there are a total of three major fault zones in the vicinity of the site that have the potential to cause or induce soil liquefaction and/or settlement. These faults are the Portland Hills Fault, Lacamas Lake-Sandy River Fault, and the Cascadia Subduction Zone. However, there are no historically active faults located in close proximity to the site. Due to the stiff soil conditions encountered in our test pits and distance from the mapped fault, a fault rupture is not considered a hazard at the site.

**Seismic Design Criteria:**

According to Clark County MapsOnline, supportive foundation soils encountered at the site are classified as a type “C” soil. However, based on our test pit explorations and laboratory testing, a type “D” soil is more appropriate for the site. For more detail regarding soil conditions refer to the soil logs in Appendix A of this report.

The seismic design criteria for this project found herein is based on the International Building Code (IBC) 2018 and the USGS website. A summary of IBC seismic design criterion is below.

| <b>Table 1. 2018 IBC Seismic Design Parameters</b> |                            |                         |
|--|----------------------------|-------------------------|
| <b>Location (45.8587037, -122.6470354)</b>         | <b>Short Period</b>        | <b>1-Second</b>         |
| Maximum Credible Earthquake Spectral Acceleration  | $S_s = 0.796 \text{ g}$    | $S_1 = 0.374 \text{ g}$ |
| Site Class   | D                          |                         |
| Site Coefficient                                   | $F_a = 1.181$              | $F_v = 1.926$           |
| Adjusted Spectral Acceleration                     | $S_{MS} = 0.941 \text{ g}$ | $S_{M1} = 0.72$         |
| Design Spectral Response Acceleration Parameters   | $S_{DS} = 0.627 \text{ g}$ | $S_{D1} = 0.48$         |

g – acceleration due to gravity

Due to the Site Class “D” designation and the long period MCES (S1) value exceeding 0.2 g, the structural engineer must apply the site-specific ground motion increases outlined in Section 11.4.8 of ASCE 7-16, including an increased of 50 percent to the seismic base shear coefficient,  $C_s$ . As an alternative to applying these conservative increases to the ground motions, a site-specific ground motion hazard analysis may be performed, however such an analysis was not included in the scope of this study.

**GEOTECHNICAL DESIGN RECOMMENDATIONS**

**General**

Based on the results of our study, it is our opinion the proposed residential development can be constructed as planned, provided the geotechnical recommendations contained in this report are incorporated into the final design. The following sections present detailed recommendations and parameters pertaining to the geotechnical engineering design for this project.

## **Foundations**

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding *Site Earthwork and Grading* section, the proposed residential building foundations should be supported on 12 inches of compacted crushed rock above a properly prepared native subgrade or compacted structural fill. Due to the high plasticity and heterogeneous condition of soil, it is recommended that the foundations bear on crushed aggregate. See *Site Earthwork and Grading* sections for soil preparation prior to form installation.

Individual spread footings or continuous wall footings providing support for the proposed buildings may be designed for a maximum allowable bearing value of 1,500 pounds per square foot (psf). Footings for one level structures should be at least 12 inches in width. Footings for two level structures should be at least 15 inches in width. Footings for three level structures should be at least 18 inches in width. All footings should extend to a depth of at least twelve (12) inches below the lowest adjacent finished sub grade.

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured “neat” against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 305 pcf (equivalent fluid weight)
- Coefficient of Friction = 0.28

It is estimated that total and differential footing settlements for the relatively light residential building will be approximately one and one-half inches, respectively. It is recommended that an SWT representative be contacted to reevaluate removal limits during building construction and observe the condition of footing soils prior to the installation of forms/rebar.

## **Slab on Grade**

If concrete floor slabs are desired, then any disturbed soils must be re-compacted prior to pouring concrete. Satisfactory subgrade support for lightly loaded building floor slabs can be obtained on the undisturbed native soil or on engineered structural fill. A subgrade modulus of 125 pounds per cubic inch (pcf) may be used to design floor slabs. If desired, it is recommended that the slab subgrade be evaluated by a geotechnical engineer to verify bearing conditions.

A minimum 6-inch-thick layer of free draining fill should be placed and compacted over the prepared subgrade to assist as a capillary break and blanket drain. It is also suggested that nominal reinforcement such as “6x6-10/10” welded wire mesh be employed, near midpoint, in new concrete slabs. In areas where slab moisture is undesirable, a vapor barrier such as a 6-mil plastic membrane should be placed beneath the slab.

Exterior concrete slabs that are subject to vehicle traffic loads should be at least 6 inches in thickness. It is also suggested that nominal reinforcement such as “6x6-10/10” welded wire mesh be installed, near midpoint, in new exterior concrete slabs and paving. Fiber mesh concrete may be used in lieu of welded wire mesh.

### **Dewatering**

Our subsurface investigation indicates that groundwater seepage was encountered at depths ranging from 2.0 to 5.0 feet below the existing ground surface and will fluctuate in response to precipitation. Excavations that extend below the groundwater level may result in caving or heaving. This may require pumping to temporarily reduce the amount of groundwater present to allow for the installation of underground utilities or the placement and compaction of structural fills. The contractor should consider the use of a network of ditches and sumps, into which water can flow to be pumped out of the excavation.

The depth and dewatering time will need to be determined at the time of construction and adjusted depending on site conditions. If water is encountered, the contractor should be prepared and is responsible for appropriate dewatering and discharge methods. Unprotected working should not be allowed near temporary un-shored excavations until groundwater levels have been stabilized and shoring, such as lagging, has been installed.

### **Site Drainage**

During earthwork construction, a plan for the collection and conveyance of surface water to an appropriate management facility should be in place to control runoff. Final site grading should direct surface water off the site to prevent standing/ponding water and away from proposed buildings, structures and/or roadway. Water should also not be allowed to stand in any area where buildings or foundations are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential of moisture infiltrating into and degrading the exposed soil.

The ground should be sloped at a gradient of a minimum of 2 percent for a distance of at least 10 feet away from the buildings. We suggest that a foundation footing drain be installed around the perimeter of all buildings. The drain should consist of a 4-inch diameter perforated pipe and installed in an envelope of clean drain rock or pea gravel wrapped with free draining filter fabric. The drain should be a minimum of one-foot-wide and one-foot-deep with sufficient gradient to initiate flow. The drain should be routed to a suitable discharge area. Details for the footing drain have been included as *Figure 3, Typical Footing Subdrain Detail*.

Under no circumstances should the roof down spouts be connected to the perimeter building drain. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the drain system.

### **Pavement Areas**

Hot mix asphalt (HMA) and crushed rock base (CRB) materials should conform to WSDOT specifications. All pavement area subgrades should consist of compacted native soil or engineered structural fill and be compacted to at least 95 percent of the modified proctor, determined by ASTM D1557. The subgrade conditions should be assessed and tested by SWT prior to the placement of the roadway aggregate section. This includes nuclear gauge density testing and proof-rolling observations with a fully loaded haul truck or equivalent. Any soft areas identified during the proof rolling process should be removed to a competent subgrade and replaced with compacted crushed aggregate.

Based on our laboratory testing, visual observations and local knowledge of soil types in the area, the subgrade soils shall be considered an AASHTO soil type A-4 to A-7. Based on the anticipated traffic

loading, we recommend that a minimum of 4 inches of AC underlain by 12 inches of compacted CRB be applied at all public right-of-way and road improvement areas.

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements have the potential to saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section.

The subgrade and the pavement surface should have a minimum  $\frac{1}{4}$  inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

## **CONSTRUCTION RECOMMENDATIONS**

### **Site Earthwork and Grading**

#### *Clearing and Grubbing:*

Prior to grading, the project area should be cleared of all rubble, trash, debris, etc. Any buried organic debris, undocumented fill or other unsuitable material encountered (soft soils) during subsequent excavation and grading work should also be removed. Excavations for removal of any existing footings, slabs, walls, utility lines, tanks, and any other subterranean structures should be processed and backfilled in the following manner:

- Clear the excavation bottom and side cuts of all loose and/or disturbed material.
- Once the organic topsoil has been adequately removed (~ 4 to 6 inches), the upper 1.5 feet of native soil (tilled zone) shall be scarified to a competent subgrade (stiff Clay) and dried to within 2 percent *above* its optimal moisture content and re-compacted in 8–10-inch lifts. Density testing shall be performed prior to placement of additional fill.
- Structural fill shall be placed in loose lifts not exceeding 8 inches in thickness and compacted with adequate equipment (eg. segmented pad roller) to at least 95% of the ASTM D-1557 laboratory test standard.
- Prior to placing backfill, the excavation bottom should be dried or moisture conditioned to within 2 percent of the optimum moisture content and compacted to at least 95 percent of the ASTM D-1557 laboratory test standard.
- Backfill should be placed, moisture conditioned (i.e., watered and/or aerated as required and thoroughly mixed to a uniform, near optimum moisture content), and compacted by mechanical means in approximate 6-inch lifts. The degree of compaction obtained should be at least 95 percent of the ASTM D-1557 laboratory test standard, as applicable.
- Any large trees should be removed from any fill areas. Any remaining root balls, possibly reaching 3+ feet in depth, should be adequately removed and backfilled with approved structural fill. We recommend an SWT representative observe the removal and provide monitoring and density testing of compacted structural fill/backfill at all removal areas.

It is also critical that any surficial subgrade materials disturbed during initial demolition and clearing work be removed and/or re-compacted during subsequent site preparation earthwork operations.

It is important to note that all soft undocumented fill, if present, is to be over-excavated to a competent subgrade and replaced with suitable structural fill. Supporting the proposed buildings on homogeneous material will significantly decrease the potential for differential settlement across the foundation area. In order to create uniform subgrade support conditions, in the vicinity of undocumented fill areas if encountered, the following earthwork operations are recommended:

- Over-excavate existing soils to a competent native subgrade below the bottom of the proposed foundations. The excavations should extend at least one-half width laterally beyond the foundation footprint, or as constrained by existing structures. In addition, native soil removal shall extend to a minimum depth so that a maximum 2:1 ratio of differential structural fill thickness is maintained below all building spread foundation systems.
- The fill soils placed shall consist of clean soils with an expansion index (EI) less than twenty (20), and be free of organic material, debris, and rocks greater than 3 inches in maximum diameter. Based on the field observations and laboratory testing, the existing native soil consisting of Silt (ML) with sand and the underlying Clay (CH) with sand is suitable for use as structural fill so long as the material is within two percent (2%) of its optimum moisture content prior to compaction.
- The backfill shall consist of minimum ninety-five percent (95%) compacted fills (Note: ASTM D1557). In addition to the relative compaction requirements, all fills shall be compacted to a firm non-yielding condition.
- Import soils should be sampled, tested, and approved by SWT prior to arrival on site. Imported soils shall consist of clean soils (EI of 20 or less) free from vegetation, debris, or rocks larger than three inches in maximum dimension.

#### *Subgrade Verification and Proof Rolling*

After clearing and grading the site, it is possible that some localized areas of soft, wet or unstable subgrade may still exist. Before placement of any roadway base rock, the subgrade should be scarified 8 inches in depth and compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to medium dense/stiff material and replaced with compacted two inch-minus clean crushed rock. All building and pavement areas should be compacted to a dense non-yielding condition with suitable compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of any structural fill, at the bottom of all foundation excavations and along the roadway subgrade, before the placement of base rock.

#### **Wet Weather Construction & Moisture Sensitive Soils:**

Field observations and laboratory testing indicates that the upper subsurface soil layer at the site consists of native lean Clay (CL) with sand and is a fine-grained moisture sensitive material. As such, in an exposed condition, moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations, floor slabs and roadways.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. Equipment traffic should be minimized across exposed soils to reduce the amount of disturbance and creation of excess soft wet soil. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction. Covering the excavated area with plastic and refraining

from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

If construction proceeds during wet weather condition, roadway base sections may require to be increased or stabilized with 2–6-inch gabion/ballast with no fines. Soil cement treatment may also be required to provide a stable roadway or building subgrades. If this is considered, SWT should be contacted to provide the appropriate recommendations based on the soil moisture conditions and collect the necessary samples to perform laboratory testing to determine the optimum soil:cement ratio.

### **Erosion Control**

If construction extends into the winter “rainy” season, earthwork activities are feasible if proper erosion control measures are implemented to minimize degradation to both native and structural fill soils. Due to the relatively flat topography of the site, erosion hazards are likely to be low. All surface stormwater, if encountered, should be captured and directed away from structural areas by means of site-specific erosion control measures including conveyance trenches, straw wattles, sediment fences, temporary sediment ponds etc.

### **Expansive/Shrink Soil Capacity**

Laboratory testing of the native lean Clay (CL) with sand at depths ranging from 1.0/1.5 feet to the maximum explored depth of 8.0 feet bgs, indicates this soil has an Expansion Index (EI) of 13. An EI of 13 suggests a very low to low potential for soil shrinking and swelling. However, the importance for adequate soil conditioning during the placement and compaction of structural fill is essential. Soils with a high plasticity index such as the fat Clay (CH), which was also encountered across the site, should be placed and compacted with a moisture content at ~ 2 percent above its optimum moisture to avoid the potential for shrinking or swelling over time.

It is recommended that earthwork grading of expansive soils be closely monitored by an experienced geotechnical engineer or their representatives. To help avoid soil swelling, regulating soil moisture content and mixing of expansive clays with less plastic soils should be properly conditioned during fill placement and compaction.

### **Utility Support and Backfill**

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The backfill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench backfill should be placed in lifts having a loose thickness of eight inches. Utility trench backfill should consist of *WSDOT 9-03.19 Bank Run Gravel for Trench Backfill* or *WSDOT 9-03.14(2) Select Borrow* with a maximum particle size of 2-1/2-inches.

A typical trench backfill section and compaction requirements for load supporting and non-load supporting areas is presented on *Figure 4, Utility Trench Backfill Detail*.

### **Temporary Excavations**

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that SWT is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred. In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. The contractor should be aware that excavation and shoring should conform to the requirements specified in the applicable local, state, and federal safety regulations, such as OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. We understand that such regulations are being strictly enforced, and if not followed, the contractor may be liable for substantial penalties.

Based on the information obtained from our field exploration and laboratory testing, the onsite soils expected to be encountered in excavations will most likely consist of native lean Clay and fat Clay. These soils encountered are classified predominately as a type "A" soil. Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 3/4H:1V (horizontal to vertical).

If slopes of this inclination, or flatter, cannot be constructed, or if excavations greater than four feet in depth are required, temporary shoring may be necessary. This shoring would help protect against slope or excavation collapse and would provide protection to workmen in the excavation. If temporary shoring is required, we will be available to provide shoring design criteria, if requested.

### **LIMITATIONS**

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses and other design information provided to Soil and Water Technologies as well as our experience and engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

The recommendations submitted in this report are based upon the data obtained from our test pits. Soil and groundwater conditions between the test pits may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Soil and Water Technologies should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

Temporary construction excavation and site safety are the sole responsibility of the construction contractor who also is solely responsible for the means, methods, and sequencing of construction operations. We are providing the following information only as a service to our client for planning purposes by their design team. Under no circumstances should the information provided herein be interpreted to mean that SWT is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

# VICINITY MAP



**Soil and Water Technologies, Inc**  
1101 Broadway | Suite 216  
Vancouver, WA 98660  
PH: (360) 200-8693  
[www.swt.ski](http://www.swt.ski)

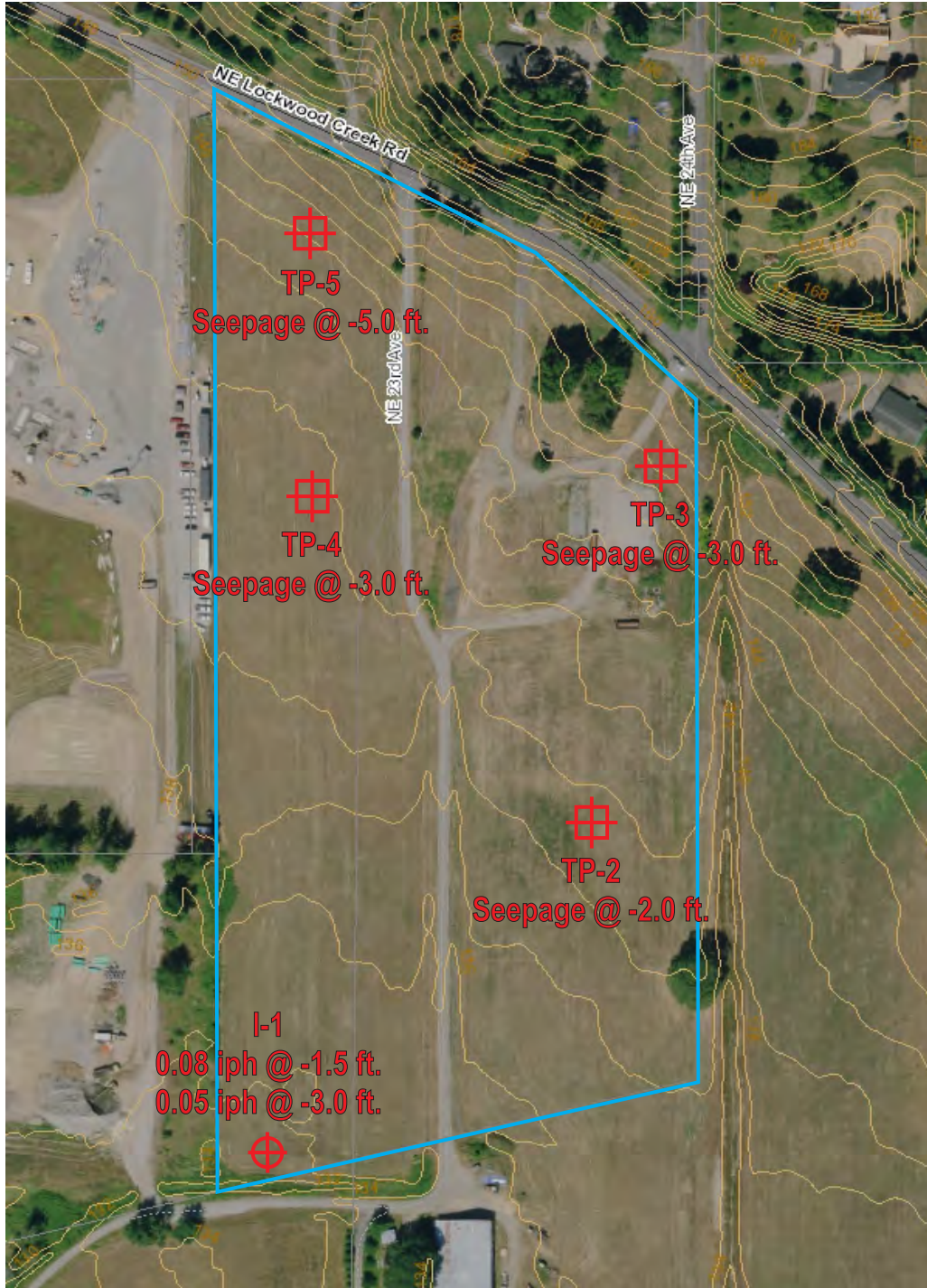


**CLIENT:** Gravitate Capital, LLC  
**PROJECT:** Lockwood Creek Subdivision  
2313 NE Lockwood Creek Road  
La Center, WA 98629



**DRAWN:** RN  
**DATE:** 4/5/2022  
**FIGURE:** 1  
**PRO. #:** G0372200



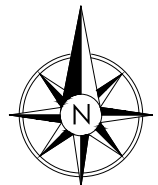
# SITE MAP



## Legend

- I-1**  Approximate Infiltration Test Pit Location
- TP-2**  Approximate Test Pit Location

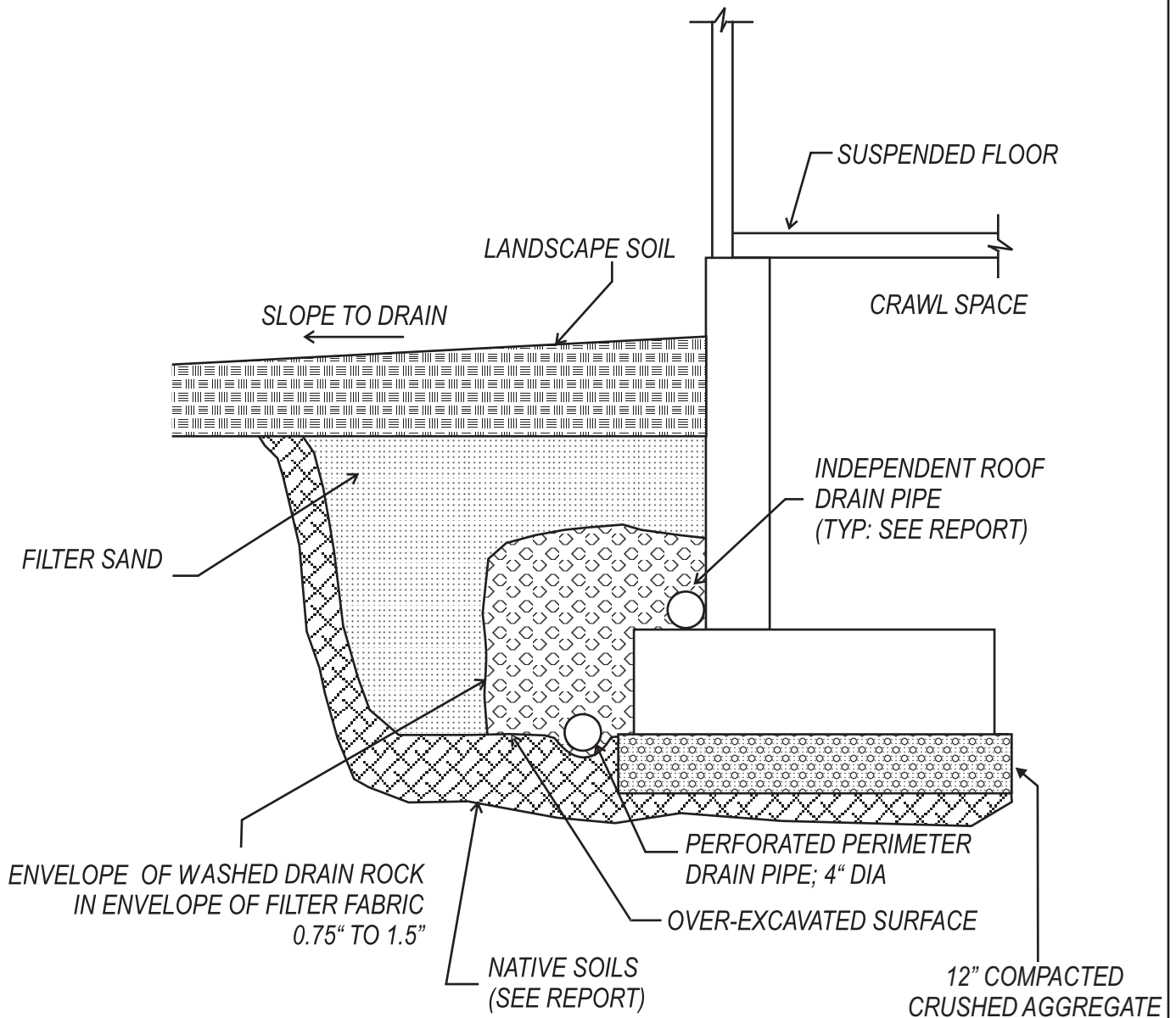
iph - Inches Per Hour



Soil and Water Technologies, Inc  
 1101 Broadway | Suite 216  
 Vancouver, WA 98660  
 PH: (360) 200-8693  
 www.swt.ski



|   |                  |
|---|------------------|
| CLIENT: Gravitate Capital, LLC  | DRAWN: RN        |
| PROJECT: Lockwood Creek Subdivision<br>2313 NE Lockwood Creek Road<br>La Center, WA 98629 | DATE: 3/8/2022   |
|   | FIGURE: 2        |
|   | PRO. #: G0262200 |



**NOTES:**

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FOOTINGS INSTALLED ABOVE 12" COMPACTED CRUSHED AGGREGATE; 95% OF MODIFIED PROCTOR (ASTM D1557)

**TYPICAL SUSPENDED FOOTING DETAIL**

Not to Scale

Soil and Water Technologies, Inc  
 PO Box 59  
 Vancouver, WA 98666  
 PH: (360) 200-8693  
 www.swt.ski



|          |  |         |           |
|----------|--|---------|-----------|
| CLIENT:  | Gravitate Capital, LLC   | DRAWN:  | RN        |
| PROJECT: | Lockwood Creek Subdivision<br>2313 NE Lockwood Creek Road<br>La Center, WA 98629 | DATE:   | 4/10/2022 |
|          |  | FIGURE: | 3         |
|          |  | PRO. #: | G0372200  |

**APPENDIX A**  
**(FIELD EXPLORATION)**

## **FIELD EXPLORATION**

Our field exploration was performed on March 25<sup>th</sup> and April 4<sup>th</sup>, 2022. Subsurface conditions at the site were explored by excavating a total of 1 infiltration test pit (I-1) and 4 test pits TP-2 – TP-5 with an excavator and hand auger to the maximum explored depth of 7.0 feet below the existing ground surface.

The approximate test pit locations were determined by the Soil and Water Technologies, Inc. by pacing from existing site features. These approximate locations are shown on the *Site Plan, Figure 2*.

The field exploration was monitored by Soil and Water Technologies, who classified the soil encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in sealed plastic bags and returned to the laboratory for further examination and testing.

All samples were visually classified in accordance with the Unified Soil Classification System (USCS), which is presented on *Plate A1*. Logs of the test pits are presented in *Appendix A*. The final logs represent our interpretations of the field logs and the results of the laboratory tests on field samples. The stratification lines on the logs represent the approximate boundaries between soil types. In fact, the transitions may be more gradual.

# UNIFIED SOIL CLASSIFICATION SYSTEM LEGEND

| MAJOR DIVISIONS      |   |  | GRAPH SYMBOL | LETTER SYMBOL | TYPICAL DESCRIPTION  |
|----------------------|---|--|--------------|---------------|--|
| Coarse Grained Soils | Gravel and Gravelly Soils<br>More Than 50% Coarse Fraction Retained on No 4 Sieve | Clean Gravels (little or no fines)               |              | GW / gw       | Well-Graded Gravels, Gravel-Sand Mixtures<br>Little or no Fines  |
|                      |   | Gravels with Fines (appreciable amount of fines) |              | GP / gp       | Poorly-Graded Gravels, Gravel-Sand Mixtures,<br>Little or no Fines   |
|                      | Sand and Sandy Soils<br>More Than 50% Coarse Fraction Passing No 4 Sieve          | Clean Sand (little or no fines)                  |              | SW / sw       | Well-graded Sands, Gravelly Sands<br>Little or no Fines  |
|                      |   | Sands with Fines (appreciable amount of fines)   |              | SP / sp       | Poorly-Graded Sands, Gravelly Sands<br>Little or no Fines  |
| Fine Grained Soils   | Silts and Clays   | Liquid Limit Less than 50                        |              | ML / ml       | Inorganic Silts and Very Fine Sands, Rock Flour,<br>Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity |
|                      |   |  |              | CL / cl       | Inorganic Clays of Low to Medium Plasticity,<br>Gravelly Clays, Sandy Clays, Silty Clays, Lean                 |
|                      |   |  |              | OL / ol       | Organic Silts and Organic Silty Clays<br>of Low Plasticity   |
|                      | Silts and Clays   | Liquid Limit Greater than 50                     |              | MH / mh       | Inorganic Silts, Micaceous or Diatomaceous<br>Fine Sand or Silty Soils   |
|                      |   |  |              | CH / ch       | Inorganic Clays of High Plasticity, Fat Clays  |
|                      |   |  |              | OH / oh       | Organic Clays of Medium to High Plasticity,<br>Organic Silts   |
| Highly Organic Soils |   |  |              | PT / pt       | Peat, Humus, Swamp Soils with High Organic Contents  |

|         |  |                              |
|---------|--|------------------------------|
| Topsoil |  | Humus and Duff Layer         |
| Fill    |  | Highly Variable Constituents |

| SAMPLING DESCRIPTIONS |                                |                                       |  |
|-----------------------|--------------------------------|---------------------------------------|--|
| ● Grab Sample         | SPT Drive Sampler (ASTM D1586) | Shelby Tube Push Sampler (ASTM D1587) | Dames and Moore Drive Sampler (ASTM D3550) |

|   |  |  |                  |
|---|--|--|------------------|
| <b>Soil and Water Technologies, Inc</b><br>1101 Broadway, Suite 216<br>Vancouver, WA 98660<br>PH: (360) 200-8693<br>www.swt.ski |  | CLIENT: Gravitate Capital, LLC                     | DRAWN: RN        |
|   |  | PROJECT: Lockwood Creek Subdivision                | DATE: 4/10/2022  |
|   |  | 2313 NE Lockwood Creek Road<br>La Center, WA 98629 | PLATE: A1        |
|   |  |  | PRO. #: G0372200 |

# LOG OF TEST PIT

# I-1

ELEVATION: **133 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **3/25/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION  | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES   |
|---------------|---------|---|------------------|----------------------------------|-------------------------|---|
| 1             |         | <i>brown, soft, moist sandy <b>lean Clay (CL)</b></i>                             |                  |                                  |                         | 4" organic topsoil                            |
| 2             | ●       | <i>brown/gray, stiff to very stiff sandy <b>Fat Clay (CH)</b></i><br><i>moist</i> |                  | 32.7                             | 88.1                    | Infiltration Testing - 0.08 iph @ 2.0 ft. bgs |
| 3             | ●       |   |                  | 34.2                             | 87.1                    | Infiltration Testing - 0.05 iph @ 3.5 ft. bgs |
| 4             |         |   |                  |                                  |                         |   |
| 5             |         | <i>brown, stiff sandy <b>Lean Clay (CL)</b></i><br><i>moist</i>                   |                  |                                  |                         | {AASHTO A-7-6(34)}<br>{mottling}              |
| 6             |         |   |                  |                                  |                         |   |
| 7             |         |   |                  |                                  |                         |   |
| 8             |         |   |                  | 32.6                             | 84.3                    |   |

Bottom of test pit at 8.0 feet below existing ground surface (bgs).  
No groundwater encountered.

|  |  |                                     |                  |
|--|--|-------------------------------------|------------------|
| <b>Soil and Water Technologies, Inc</b><br>1101 Broadway   Suite 216<br>Vancouver, WA   98660<br>PH: (360) 200-8693<br>www.swt.ski |  | CLIENT: Gravitare Capital, LLC      | DRAWN: RN        |
|  |  | PROJECT: Lockwood Creek Subdivision | DATE: 4/6/2022   |
|  |  | 2313 NE Lockwood Creek Road         | PLATE: A2        |
|  |  | La Center, WA 98629                 | PRO. #: G0372200 |

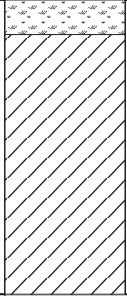
# LOG OF TEST PIT

# TP-2

ELEVATION: **140 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **3/25/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION   | LITHOLOGY (USGS)  | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES   |
|---------------|---------|--|---|----------------------------------|-------------------------|---|
| 1             | ●       |  |   | 27.9                             | 83.6                    | 6" organic topsoil<br>{till zone - soft from -0.5' to -1.0'}                  |
| 2             | ● ▼     | gray/brown, soft to stiff<br><b>sandy <u>Lean Clay (CL)</u></b><br>moist |  | 30.8                             | 86.7                    | {perched seepage @ 2.0 ft. bgs}<br>{EI - 13}<br><br>{1.5 tsf on penetrometer} |
| 3             |         |  |   |                                  |                         |   |
| 4             |         |  |   |                                  |                         |   |
| 5             |         |  |   |                                  |                         |   |

Bottom of test pit at 5.0 feet below existing ground surface (bgs).  
Perched seepage encountered .

|  |   |                                     |                  |
|--|---|-------------------------------------|------------------|
| <b>Soil and Water Technologies, Inc</b><br>1101 Broadway   Suite 216<br>Vancouver, WA   98660<br>PH: (360) 200-8693<br>www.swt.ski |  | CLIENT: Gravitare Capital, LLC      | DRAWN: RN        |
|  |   | PROJECT: Lockwood Creek Subdivision | DATE: 4/8/2022   |
|  |   | 2313 NE Lockwood Creek Road         | PLATE: A3        |
|  |   | La Center, WA 98629                 | PRO. #: G0372200 |

# LOG OF TEST PIT

# TP-3

ELEVATION: **150 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **3/25/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION                                 | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES      |
|---------------|---------|--|------------------|----------------------------------|-------------------------|------------|
| 1             | ●       | soft, silty <b>Gravels</b>                           | fill             |                                  | -                       |            |
| 2             | ●       | gray, medium stiff, moist sandy <b>Fat Clay (CH)</b> | native           | 25.7                             | 79.6                    |            |
| 3             |         | gray/brown, stiff sandy <b>Lean Clay (CL)</b>        |                  |                                  |                         | {mottling} |
| 4             | ●       | moist  |                  | 35.8                             | 75.5                    |            |

Bottom of test pit at 4.5 feet below existing ground surface (bgs).  
No groundwater encountered.

|  |   |                                     |                  |
|--|---|-------------------------------------|------------------|
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|  |   | PROJECT: Lockwood Creek Subdivision | DATE: 4/8/2022   |
|  |   | 2313 NE Lockwood Creek Road         | PLATE: A4        |
|  |   | La Center, WA 98629                 | PRO. #: G0372200 |



# LOG OF TEST PIT

# TP-4

ELEVATION: **142 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **4/4/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION   | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES  |
|---------------|---------|--|------------------|----------------------------------|-------------------------|--|
| 1             |         | gray/ brown, medium stiff to stiff<br>sandy <b>Lean Clay (CL)</b><br>moist | native           | -                                | -                       | {till zone - med. stiff from -0.5' to -1.5'} |
| 2             |         |  |                  | 36.4                             | 58.3                    | {Dry PCF - 81.0}                             |
| 3             | ● ▼     |  |                  |                                  |                         | {perched seepage @ 3.0 ft. bgs}              |
| 4             |         |  |                  |                                  |                         |  |

Bottom of test pit at 4.0 feet below existing ground surface (bgs).  
No groundwater encountered.

|  |   |                                     |                  |
|--|---|-------------------------------------|------------------|
| <b>Soil and Water Technologies, Inc</b><br>1101 Broadway   Suite 216<br>Vancouver, WA   98660<br>PH: (360) 200-8693<br>www.swt.ski |  | CLIENT: Gravitare Capital, LLC      | DRAWN: RN        |
|  |   | PROJECT: Lockwood Creek Subdivision | DATE: 4/8/2022   |
|  |   | 2313 NE Lockwood Creek Road         | PLATE: A5        |
|  |   | La Center, WA 98629                 | PRO. #: G0372200 |

# LOG OF TEST PIT

# TP-5

ELEVATION: **146 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **4/4/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION  | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES                                  |
|---------------|---------|---|------------------|----------------------------------|-------------------------|--|
| 1             |         |   |                  |                                  |                         | 4" organic topsoil                     |
| 2             |         |   |                  |                                  |                         | {till zone - soft from -0.5' to -1.5'} |
| 3             | ●       | gray/brown, soft to stiff<br>sandy <b>Lean Clay (CL)</b><br>moist |                  | 34.5                             | 34.5                    |  |
| 4             |         |   |                  |                                  |                         |  |
| 5             | ▼       |   |                  |                                  |                         | {perched seepage @ 5.0 ft. bgs}        |
| 6             |         |   |                  |                                  |                         |  |
| 7             |         |   | native           |                                  |                         |  |

Bottom of test pit at 7.0 feet below existing ground surface (bgs).  
No groundwater encountered.

**Soil and Water Technologies, Inc**  
1101 Broadway | Suite 216  
Vancouver, WA | 98660  
PH: (360) 200-8693  
www.swt.ski



|   |                  |
|---|------------------|
| CLIENT: Gravitare Capital, LLC  | DRAWN: RN        |
| PROJECT: Lockwood Creek Subdivision<br>2313 NE Lockwood Creek Road<br>La Center, WA 98629 | DATE: 4/8/2022   |
|   | PLATE: A6        |
|   | PRO. #: G0372200 |

**APPENDIX B**  
**(LABORATORY TESTING)**

## **LABORATORY TESTING**

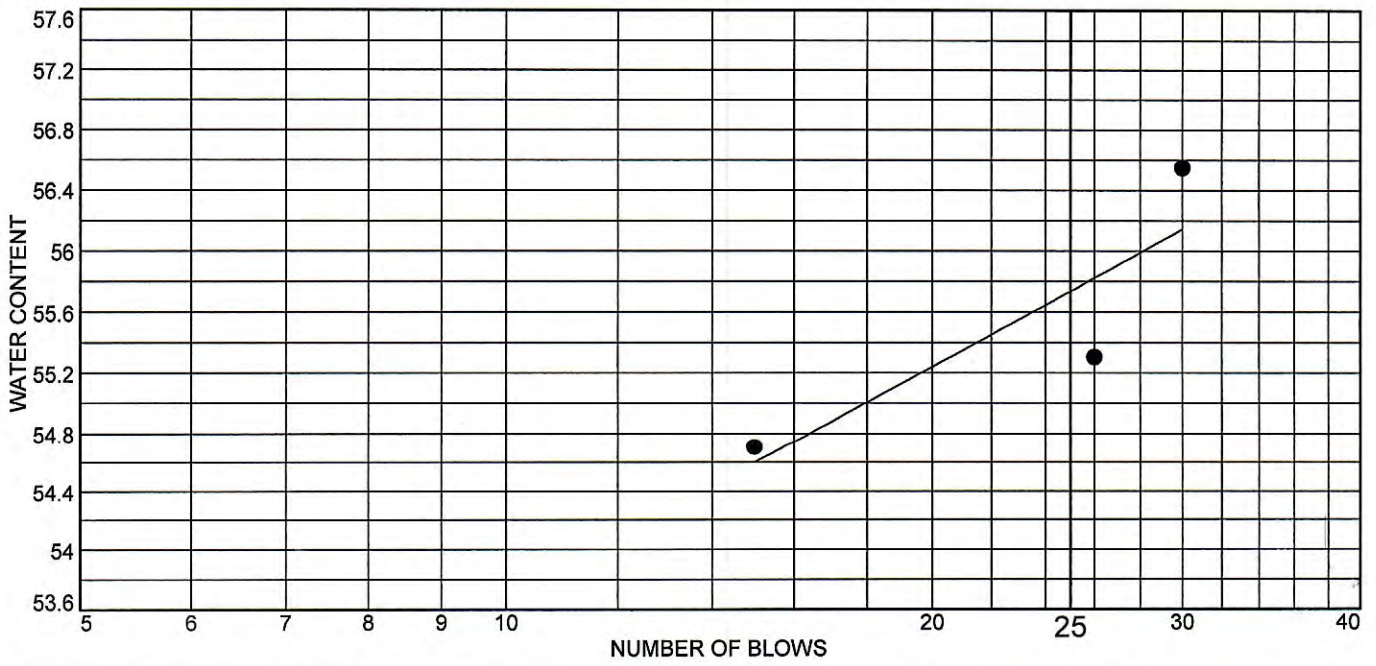
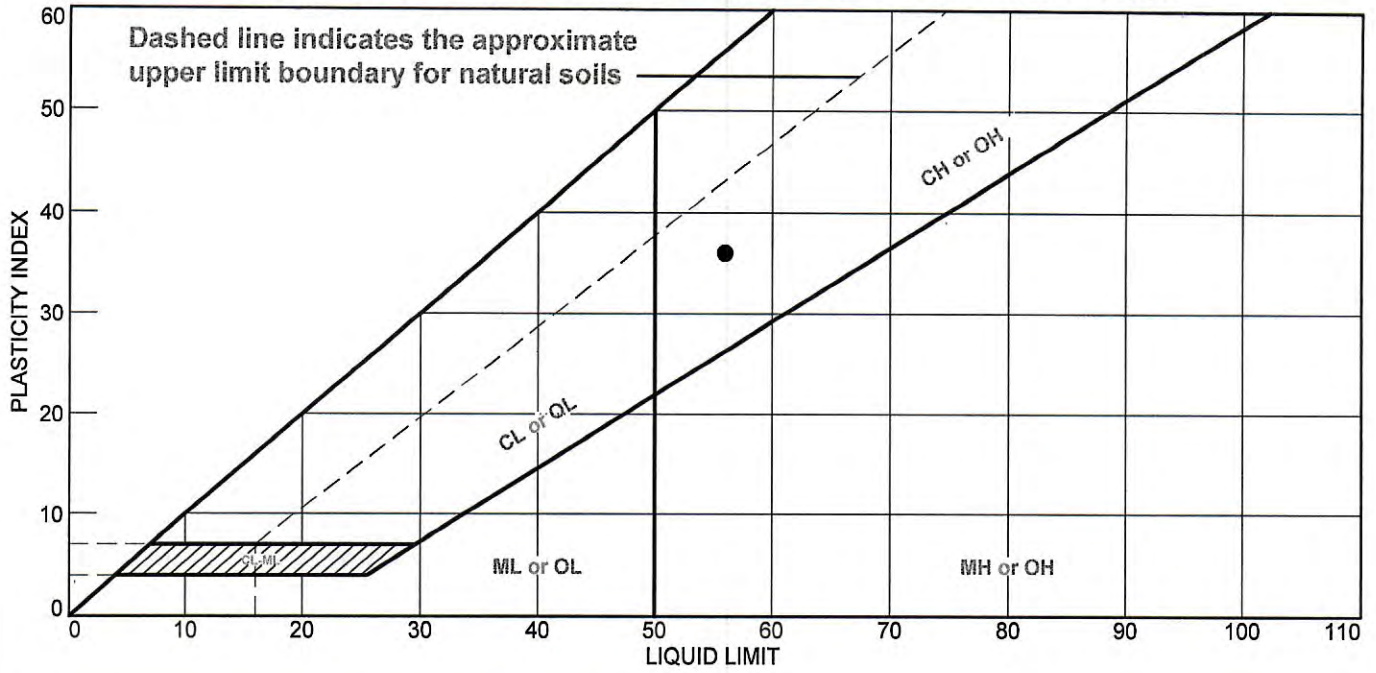
Laboratory tests were conducted on representative soil samples to verify or modify field soil classifications, and to evaluate the general physical properties and engineering characteristics of the soils encountered.

The following provides information about the testing procedures performed on representative soil samples:

- Moisture Content Tests (ASTM D2216) were performed on representative samples encountered in each test pit at each soil horizon.
- Sieve Analysis - No. 200 wash (ASTM C117) was performed on representative samples encountered in test pits I-1 and TP-2 - TP-5.
- Atterberg Limits (ASTM D4318) was performed on a representative soil sample encountered in test pits TP-4.
- Expansion Index (ASTM D4829) was performed on a representative soil sample encountered at I-1
- Moisture Content & Dry Density (ASTM D2216/D2937) was performed at TP-4.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

# LIQUID AND PLASTIC LIMITS TEST REPORT



| MATERIAL DESCRIPTION | LL | PL | PI | %<#40 | %<#200 | USCS |
|----------------------|----|----|----|-------|--------|------|
| fat Clay             | 56 | 20 | 36 | 100   | 88.12  | SC   |

**Project No.** G0372200    **Client:** Gravitate Capital, LLC  
**Project:** Lockwod Creek Subdivision  
**Source of Sample:** Native    **Depth:** TP-1 @ 3.5  
**Sample Number:** 370

**Remarks:**

**Figure** LPL-1



**Tested By:** JPT \_\_\_\_\_



# Soil and Water Technologies, Inc.

Geotechnical, Construction Monitoring, Materials Testing & Erosion Consulting Services

Gravitate Capital, LLC  
13563 NW Fuller Ln  
Portland, OR 97229

April 20<sup>th</sup>, 2022  
G0372200

**Project:** Lockwood Creek Subdivision  
**Report:** Expansion Index of Soil  
Figure 1; EI-1

## Sample Identification

Testing was performed in accordance with the standards indicated. Our laboratory test results are summarized in the following table.

### Laboratory Testing

| Expansion Index of Soils<br>(ASTM D4829) |                                |
|--|--------------------------------|
| Test                                     | TP-2 @ 2.0 in.<br>Test Results |
| Initial Moisture Content, (%)            | 12.0                           |
| Initial Dry Unit Weight, (pcf)           | 102.3                          |
| Initial Height of Specimen, (inches)     | 1.00                           |
| Initial Dial Gauge Reading (inches)      | 0.0158                         |
| Final Dial Gauge Reading (inches)        | 0.0160                         |
| Initial Degree of Saturation, (%)        | 50.1                           |
| Final Moisture Content, (%)              | 31.7                           |
| Expansion Index, <i>EI</i>               | 13, Very Low                   |

# Exhibit A.10

Archaeological Report -  
Contact Jessica Nash  
360-263-7665

# Exhibit A.11



# Asa's View

## Preliminary Technical Information Report: Drainage Design

*Prepared for:*

Troy Johns  
1004 W. 13<sup>th</sup> Street, Suite 220  
Vancouver, WA 98660

*Prepared by:*



NW Consilio LLC  
2410 NE 22<sup>nd</sup> Avenue  
Portland, OR 97212

**May 2022**

# CERTIFICATION

**Asa's View**

## **Preliminary Technical Information Report: Drainage Design**

The technical material and data contained in this report was prepared under the direction and supervision of the undersigned, who seal, as a professional engineer licensed to practice as such, is affixed.



Prepared by Shawn Ellis, PE

## TABLE OF CONTENTS

|       |  |   |
|-------|--|---|
| A.    | Project Overview.....                        | 1 |
| B.    | Approvals Conditions Summary.....            | 2 |
| C.    | Downstream Analysis.....                     | 2 |
| D.    | Quantity Control Analysis and Design.....    | 2 |
| D.1   | Site Hydrology .....                         | 2 |
| D.2   | Drainage Basins.....                         | 2 |
| D.2.1 | Existing Site Drainage.....                  | 2 |
| D.1.2 | Developed Site Drainage.....                 | 4 |
| D.3   | Detention Storage.....                       | 4 |
| E.    | Conveyance Systems Analysis and Design ..... | 5 |
| F.    | Water Quality Design .....                   | 6 |
| G.    | Soils Evaluation .....                       | 6 |
| H.    | Special Reports and Studies .....            | 6 |
| I.    | Other Permits.....                           | 7 |
| J.    | Ground Water Monitoring Program .....        | 7 |
| K.    | Maintenance and Operations Manual.....       | 7 |
| L.    | References .....                             | 7 |

## LIST OF TABLES

|          |  |
|----------|--|
| Table 1. | 24-Hour Design Storms                                    |
| Table 2. | Existing Site Drainage Land Cover Conditions             |
| Table 3. | Existing Site Peak Discharges                            |
| Table 4. | Developed Site Drainage Land Cover Conditions            |
| Table 5. | Detention Storage Facility – Design and Adjusted Volumes |
| Table 6. | Flow Control Features                                    |
| Table 7. | Proposed Site Discharges                                 |
| Table 8. | Water Quality Storage Volume                             |

## LIST OF FIGURES

|           |                             |
|-----------|-----------------------------|
| Figure 1. | Project Site Location       |
| Figure 2. | Existing Site Drainage Area |

## LIST OF APPENDICES

|            |                               |
|------------|-------------------------------|
| Appendix A | Supporting Information        |
| Appendix B | Model Output and Calculations |
| Appendix C | Preliminary Plans             |
| Appendix D | Geotechnical Report           |

## A. PROJECT OVERVIEW

The Project is located within the City of La Center, Washington (City) south of NE Lockwood Creek Road and just west of NE 24<sup>th</sup> Avenue. The site includes tax lots 209064-000 and 20121-000. Tax lot 209121-000 has an assigned address of 2313 NE Lockwood Creek Road, La Center, Washington 98629. The tax lots total about 16.47 acres based the current project site survey. The site location is shown on Figure 1. Preliminary plans for the project are included in Appendix C.

The site is located within the City's LDR-7.5 zone and the proposed development will include 68 residential lots ranging in size from 7,500 square feet (sf) to 10,201 sf (the largest lot). The 68 residential lots will total 524,594 sf (12.04 acres).

The development will include 10,900 sf of public park space in Tract B, in accordance with LCMC 18.147. The required park space is based on 0.25 acres of park space per 40 dwelling units for the number of lots exceeding the first 40 units. Stormwater facilities for management of water quality treatment and detention will be located on Tract A covering 39,411 sf (0.91 acres). Right-of-way dedication with the site will total 142,482 sf (3.27 acres).

A small (0.18 acre) Category 3 non-jurisdictional wetland has been identified in the center of the site along a ditch running north to south along a gravel road. An Oregon White Oak tree is located in the southeast portion of the development in Tract B. The tree will be retained as protected as part of park improvements.

This Technical Information Report (TIR) is provided as part of preliminary design for the proposed project. An updated and final TIR will be provided as project design progresses.

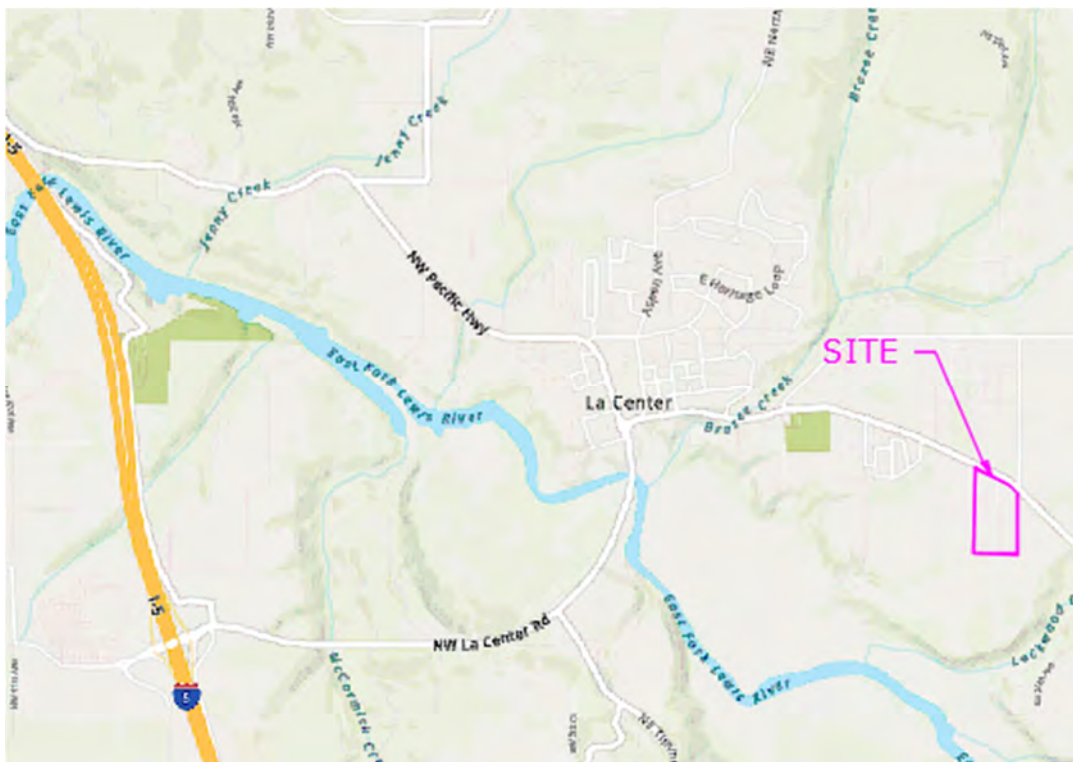


Figure 1. Project Site Location

## B. APPROVALS CONDITIONS SUMMARY

Conditions of approval for the development will be provided after the Type III Land Use application has been processed, the City of La Center staff recommendations have been provided, and a public hearing has taken place.

## C. DOWNSTREAM ANALYSIS

The project will provide on-site flow control in accordance with the City of La Center Municipal Code (LCMC) Section 18.320.220 (2)(b). The pre-development hydrologic analysis has assumed forested landcover conditions for the site, therefore an analysis of downstream conveyance capacity is not required.

## D. QUANTITY CONTROL ANALYSIS AND DESIGN

An on-site detention pond is proposed in Tract A, located in the southwest corner of the site. The pond's detention volume will be above a permanent pool designated for water quality treatment (see Section F for the water quality design discussion).

### D.1 Site Hydrology

Hydrologic calculations for the site have been completed using the HydroCAD<sup>®</sup> software model following the Santa Barbara Urban Hydrograph (SBUH) method for 24-hour rainfall depths distributed using the National Resources Conservation Service (NCRS) Type IA rainfall hyetograph. Design rainfall events for the project are listed in Table 1. Isopluvial maps of 24-hour rainfall events for Clark County are provided in Appendix A. Model output is included in Appendix B.

**Table 1. 24-Hour Design Storms**

| <b>Design Storm /<br/>Return Period</b> | <b>24-Hour Rainfall<br/>Depths (inches)</b> |
|---|---|
| 2-Year                                  | 2.4   |
| 10-Year                                 | 3.3   |
| 25-Year                                 | 3.8   |
| 100-Year                                | 4.5   |

### D.2 Drainage Basins

#### D.2.1 Existing Site Drainage

The existing project site (16.47 acres) and half of Lockwood Creek Road (0.52 acres) drains generally toward the southwest corner of the project area where it is conveyed off-site along an open drainage channel that runs southwesterly for discharge into Lockwood Creek which discharges into the Lewis River. A drainage channel near the center of the site is located along the east side of a road that runs through the site from the north to south. The road is located within a 60-foot Private Road and Utility Easement. The constructed ditch covering 0.18 acres has been identified as containing a non-jurisdictional Category 3 wetland. Figure 2 shows the existing site and basin outline.



**Figure 2. Existing Site Drainage Area**

Pre-development drainage conditions assume undisturbed forested land except for the 0.27 acres of pavement on Lockwood Creek Road that contributes to on-site drainage. The land cover areas and runoff Curve Numbers are summarized in Table 2 for existing drainage conditions analysis. The resultant peak flows for the existing conditions analysis summarized in Table 3.

**Table 2. Existing Site Drainage Land Cover Conditions**

| Land Cover          | Area (acres) | Curve Number |
|---------------------|--------------|--------------|
| Lockwood Creek Road | 0.27         | 98           |
| Undisturbed Forest  | 16.73        | 76           |
| Total Area          | 17.0         |              |

**Table 3. Existing Site Peak Discharges**

| Design Storm / Return Period | Peak Discharge (cfs) |
|------------------------------|----------------------|
| 2-Year                       | 1.13                 |
| 10-Year                      | 2.88                 |
| 25-Year                      | 4.03                 |
| 100-Year                     | 5.80                 |

### D.1.2 Developed Site Drainage

Proposed site drainage will maintain the general drainage pattern for the site with the exception that some runoff generated on the east border of the site that currently drains to an off-site drainage ditch will be retained on-site and collected as part of the developments stormwater manage system. The area generally falls within the 20-foot backyard setback, so will primarily remain pervious.

The developed site drainage will include impervious surface areas for road pavement within the project area (3.27 acres), Lockwood Creek Road pavement (0.47 acres), maximum lot impervious surface equal to 50 percent of the total lot coverage (6.02 acres), and the water surface of the stormwater management pond (0.56 acres). The balance of the site and right-of-way will be landscaped yards and the park in Tract B (6.68 acres). The areas and landcover conditions are summarized in Table 4. The drainage layout is shown on the preliminary drainage plans provided in Appendix C.

**Table 4. Developed Site Drainage Land Cover Conditions**

| Land Cover                  | Area (acres) | Curve Number |
|-----------------------------|--------------|--------------|
| Road Pavement               | 3.74         | 98           |
| Lot Maximum Impervious Area | 6.02         | 98           |
| Pond Surface Area           | 0.56         | 98           |
| Landscape / Park Area       | 6.68         | 74           |
| Total Area                  | 17.0         |              |

### D.3 Detention Storage

In accordance with LCMC Section 18.320.220, post-development discharges from the site must be less than or equal to the pre-project discharges for the 2-year, 10-year, 25-year, and 100-year design storms. The volume of water required to meet the design criteria must subsequently be adjusted (increased) to mitigate for runoff volumes that are underpredicted by 24-hour storm events. The correction factor recommended in the Puget Sound Manual (Section III-1.2) indicates correction factors of “20 percent and 50 percent apply to residential sites and commercial sites, respectively.” The 20 percent correction for this project has been applied to the design volume, resulting in a larger pond surface area (footprint). The design control features (orifice openings and overflow weir) remain unchanged from the initial design process.

HydroCAD output for the detention pond design is contain in Appendix B. The modeled stage-storage data for design of flow control is listed in Table 5. The adjusted values used for actual pond sizing is also listed. The constructed facility will be sized with the adjusted values. Flow control features for the facility are listed in Table 6. Storage for detention occurs above elevation 131 feet in the ponds. The volume below elevation 131 feet is the permanent pool for water quality treatment (see Section F). Site discharges for the design storms are summarized in Table 7, which also lists the target discharge rates based on pre-development analysis.

**Table 5. Detention Storage Facility – Design and Adjusted Volumes**

| Stage (feet) | Pond Design Per SBUH |             | Pond Size Per Applied Correction Factor |             |
|--------------|----------------------|-------------|---|-------------|
|              | Area (sf)            | Volume (cf) | Area (sf)                               | Volume (cf) |
| 131          | 15,853               | 0           | 19,587                                  | 0           |
| 132          | 17,369               | 16,611      | 21,239                                  | 20,413      |
| 133          | 18,942               | 18,156      | 22,948                                  | 22,094      |
| 134          | 20,572               | 19,757      | 24,713                                  | 23,831      |

**Table 6. Flow Control Features**

| Flow Control Element               | Elevation (feet) | Diameter (inches) |
|------------------------------------|------------------|-------------------|
| Detention Storage Bottom Elevation | 131.00           | -                 |
| Flow Control Outlet Pipe Invert    | 131.00           | -                 |
| Low Flow Orifice                   | 131.00           | 5.7               |
| Second Orifice                     | 132.75           | 9.6               |
| Overflow                           | 133.46           | 12                |

**Table 7. Proposed Site Discharges**

| Design Storm / Return Period | Peak Discharge (cfs) | Water Surface at Peak Flow | Target Discharge (cfs) |
|------------------------------|----------------------|----------------------------|------------------------|
| 2-Year                       | 1.13                 | 132.75                     | 1.13                   |
| 10-Year                      | 2.84                 | 133.18                     | 2.87                   |
| 25-Year                      | 3.52                 | 133.50                     | 4.04                   |
| 100-Year                     | 5.79                 | 133.78                     | 5.92                   |

## E. CONVEYANCE SYSTEMS ANALYSIS AND DESIGN

Design of the collection and conveyance system has been completed following the Rational Method and rainfall intensities based on the design storm with a 100-year recurrence interval. The intensity is determined in accordance with the Washington State Department of Transportation Hydraulics Manual based on time of concentration (TOC) and rainfall coefficients as follows:

$$I = m \sqrt[n]{(TOC^n)}$$

The values for the coefficients ( $m = 8.75$  and  $n = 0.527$ ) are averaged between the values provided for the City of Vancouver and the Kelso/Longview area. The reference data is provided in Appendix X.

A spreadsheet summarizing design of the stormwater conveyance system is provided in Appendix X. Inlets have been spaced to capture no more than 7,000 square feet of impervious surface are in



accordance City criteria. Combination curb inlets will be provided on longitudinal road slopes exceeding 2 percent. Standard curb inlets will be provided elsewhere within the developed site. On Lockwood Creek Road, catch basin inlets will be provided to allow for pipe connections between the structures within the street area (not under the sidewalk).

## F. WATER QUALITY DESIGN

Water quality treatment for the Project will be provided in a three-celled wet pond facility. Treatment is designed based on the volume of runoff generated by 24-hour design event with a 6-month return period. This storm is the water quality design storm and is assumed to be 64 percent of the 2-year, 24-hour design storm, or 1.54 inches. The water quality volume was calculated using the SBUH design methods and land use assumptions described in Section D.

The water quality volume for the site totals 52,751 cf (1.211 acre-feet). Hydrocad<sup>®</sup> model output is contained in Appendix B. The water quality volume will be located between elevations 127 feet and 131 feet in the treatment cells beneath the detention storage portion of the detention pond. The volume in the first cell below elevation 128 feet is not included as part of the water quality volume. The treatment cells will be separated with earthen berms with overflows at elevation 128 between Cell 1 and Cell 2 and at elevation 130 between Cell 2 and Cell 3. The calculated water quality stage storage and resultant volume is summarized in Table 8. The pond has a water quality storage volume of 56,780 cf.

**Table 8. Water Quality Storage Volume**

| Elevation (feet) | Cell #2 Area (sf) | Cell #3 Area (sf) | Combined Areas (sf) | Pond Volume (cf) |
|------------------|-------------------|-------------------|---------------------|------------------|
| 127              | 4,036             | 5,010             | 9,046               | -                |
| 128              | 4,906             | 6,086             | 10,992              | 10,019           |
| 129              | 7,242             | 7,218             | 14,460              | 22,745           |
| 130              | -                 | -                 | 17,011              | 38,481           |
| 131              | -                 | -                 | 19,587              | 56,780           |

## G. SOILS EVALUATION

A geotechnical investigation for the site was completed on March 25<sup>th</sup> and April 4<sup>th</sup>, 2022 by Soil and Water Technologies, Inc. (SWT). A report summarizing their findings is included in Appendix D. Based on the results of the investigation, infiltration of stormwater runoff is not recommended.

Groundwater elevations are reported to vary seasonally for the site and surrounding area. Seepage was encountered at depths ranging from 2 feet to 5 feet below ground surface at three of four test pits completed at the site. Static groundwater elevations reportedly exceed 30 feet in depth, and observed seepage is likely due to recent rainfall events.

Infiltration testing was completed for the location of the proposed stormwater management facility, in the southwest corner of the site. Groundwater was not observed during the test excavation activities, however test results indicated infiltration rates of 0.08 and 0.05 inches per hour for two tests completed.

## H. SPECIAL REPORTS AND STUDIES

A wetland delineation for the site was completed by Environmental Technology Consultants. The work and results are documented in a report dated February 25, 2022. The report, which is submitted under separate cover, identified the presence of a 0.18-acre non-jurisdictional wetland rated as Category 3.

## I. OTHER PERMITS

Permits for the proposed development will include a Grading Permit, Building Permit, and a Construction Permit (NPDES). The project requires review in accordance with the State Environmental Policy Act (SEPA). SEPA documents have been submitted separately from this TIR.

## J. GROUND WATER MONITORING PROGRAM

No groundwater monitoring program is proposed.

## K. MAINTENANCE AND OPERATIONS MANUAL

Operation and maintenance of the stormwater treatment and detention pond and the flow control structure will be the responsibility of the development Homeowners Association. An Operation and Maintenance Manual for the facilities will be completed as part of the final design and will be included as part of the final TIR for stormwater management.

## L. REFERENCES

City La Center, "La Center Municipal Code," Title 18 – Development Code. Updated February 9, 2022.

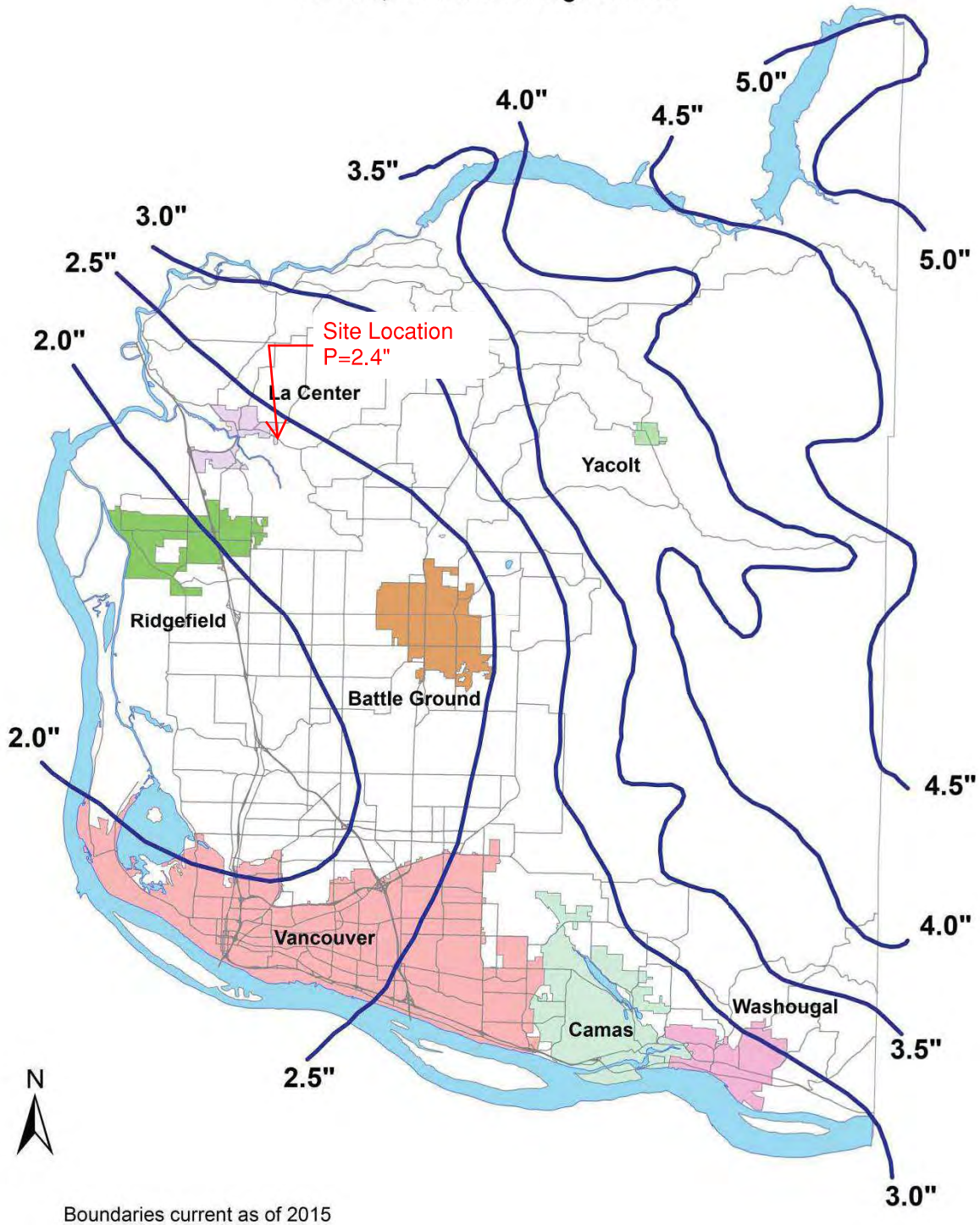
Washington State Department of Ecology – Water Quality Program. "Stormwater Management Manual for the Puget Sound Basin", Publication 91-75. Dated February 1999.

Washington State Department of Transportation. "Hydraulics Manual", Publication M23-03.07. Dated March 1, 2022.

# **Appendix A.**

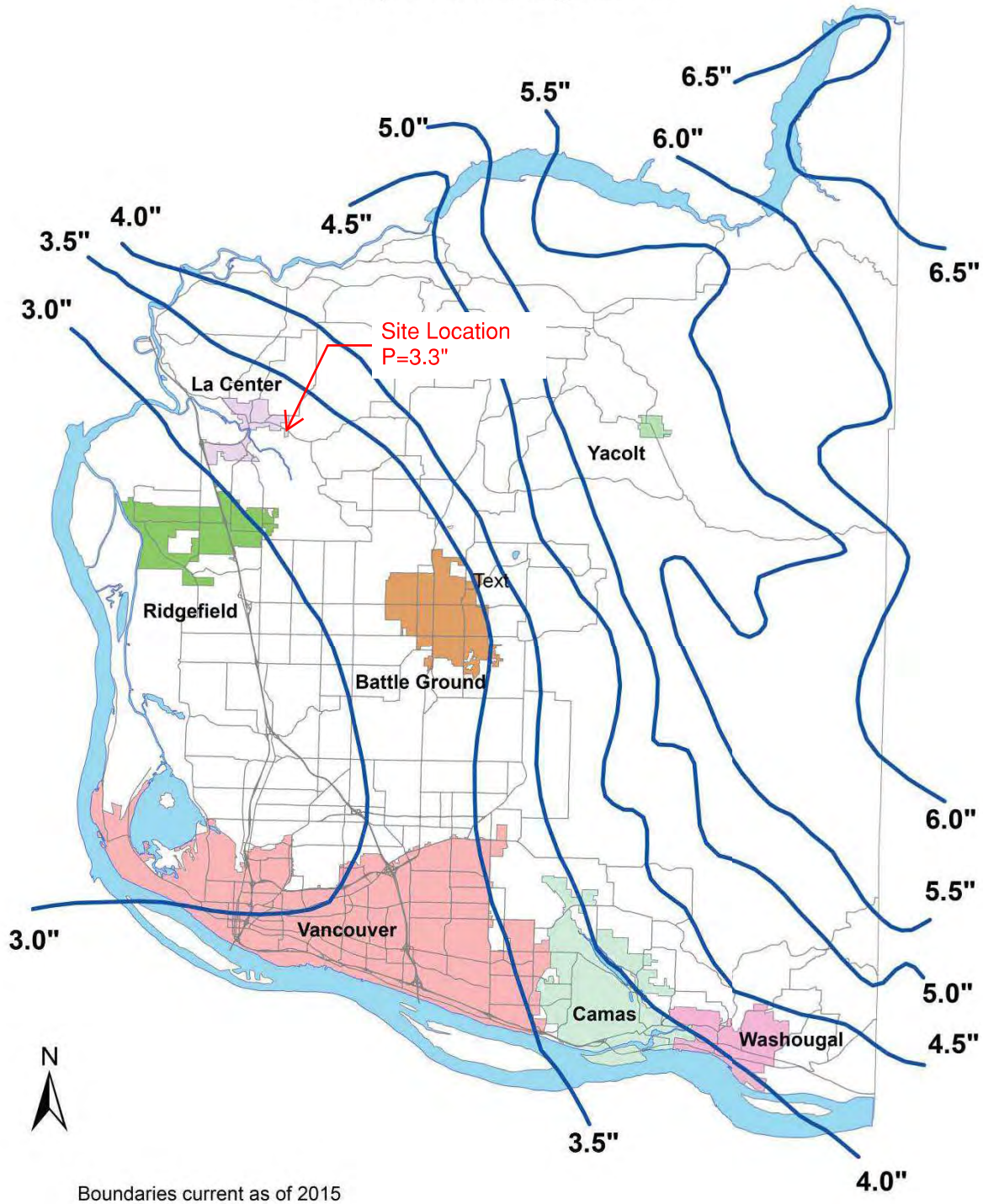
## **Supporting Data**

### Isopluvial Map for Clark County 2-Year, 24-Hour Design Storm

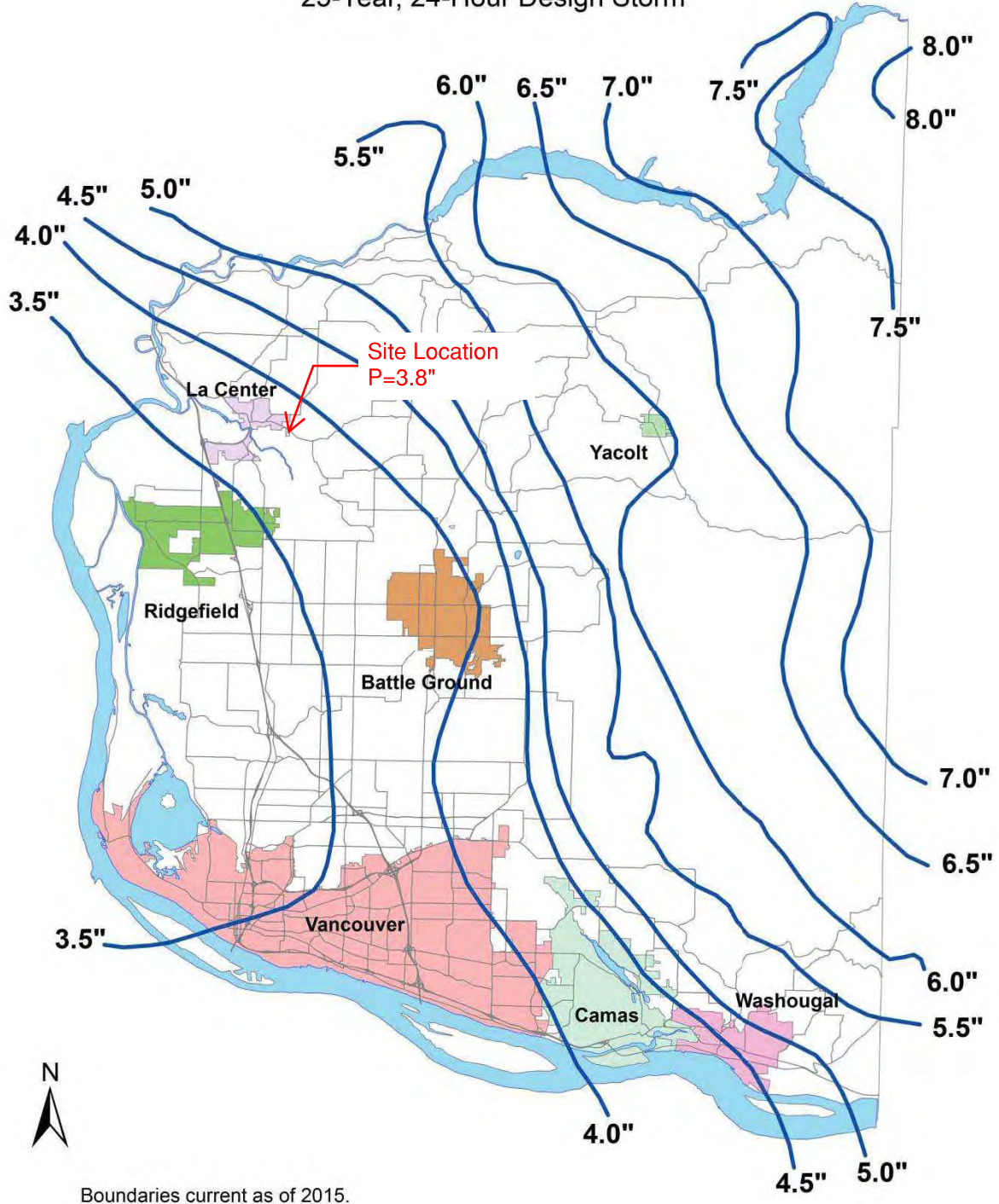


# Isopluvial Map for Clark County

## 10-Year, 24-Hour Design Storm

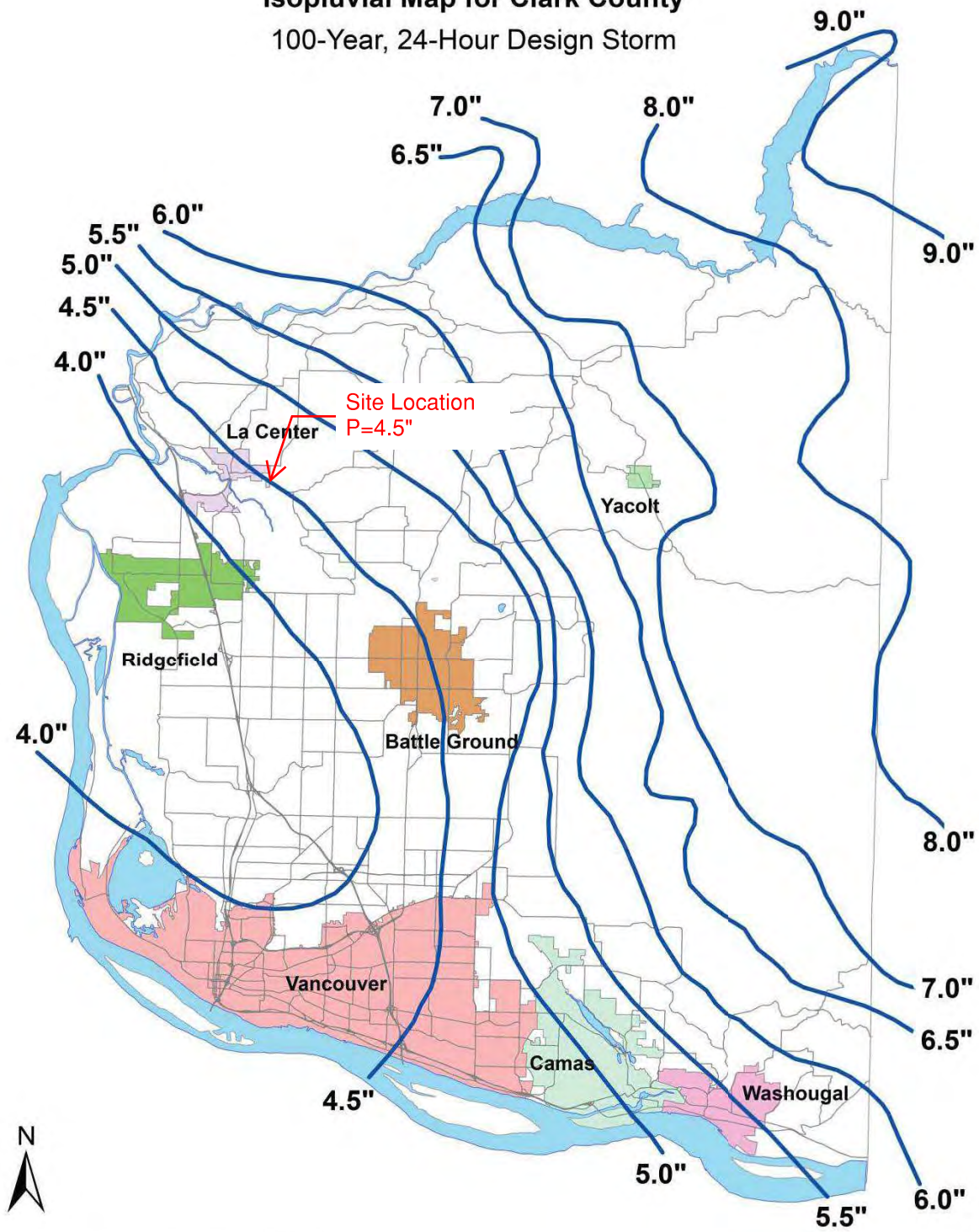


### Isopluvial Map for Clark County 25-Year, 24-Hour Design Storm



# Isopluvial Map for Clark County

## 100-Year, 24-Hour Design Storm



Boundaries current as of 2015.

Table 2-4 Inches to Rainfall Coefficients

| Location               | 2-Year MRI |       | 5-Year MRI |       | 10-Year MRI |       | 25-Year MRI |       | 50-Year MRI |       | 100-Year MRI |        |
|------------------------|------------|-------|------------|-------|-------------|-------|-------------|-------|-------------|-------|--------------|--------|
|                        | m          | n     | m          | n     | m           | n     | m           | n     | m           | n     | m            | n      |
| Aberdeen and Hoquiam   | 5.10       | 0.488 | 6.22       | 0.488 | 7.06        | 0.487 | 8.17        | 0.487 | 9.02        | 0.487 | 9.86         | 0.487  |
| Bellingham             | 4.29       | 0.549 | 5.59       | 0.555 | 6.59        | 0.559 | 7.90        | 0.562 | 8.89        | 0.563 | 9.88         | 0.565  |
| Bremerton              | 3.79       | 0.480 | 4.84       | 0.487 | 5.63        | 0.490 | 6.68        | 0.494 | 7.47        | 0.496 | 8.26         | 0.498  |
| Centralia and Chehalis | 3.63       | 0.506 | 4.85       | 0.518 | 5.76        | 0.524 | 7.00        | 0.530 | 7.92        | 0.533 | 8.86         | 0.537  |
| Clarkston and Colfax   | 5.02       | 0.628 | 6.84       | 0.633 | 8.24        | 0.635 | 10.07       | 0.638 | 11.45       | 0.639 | 12.81        | 0.639  |
| Colville               | 3.48       | 0.558 | 5.44       | 0.593 | 6.98        | 0.610 | 9.07        | 0.626 | 10.65       | 0.635 | 12.26        | 0.642  |
| Elensburg              | 2.89       | 0.590 | 5.18       | 0.631 | 7.00        | 0.649 | 9.43        | 0.664 | 11.30       | 0.672 | 13.18        | 0.678  |
| Everett                | 3.69       | 0.556 | 5.20       | 0.570 | 6.31        | 0.575 | 7.83        | 0.582 | 8.96        | 0.585 | 10.07        | 0.586  |
| Forks                  | 4.19       | 0.410 | 5.12       | 0.412 | 5.84        | 0.413 | 6.76        | 0.414 | 7.47        | 0.415 | 8.18         | 0.416  |
| Hoffstadt Cr. (SR 504) | 3.96       | 0.448 | 5.21       | 0.462 | 6.16        | 0.469 | 7.44        | 0.476 | 8.41        | 0.480 | 9.38         | 0.484  |
| Hoodsport              | 4.47       | 0.428 | 5.44       | 0.428 | 6.17        | 0.427 | 7.15        | 0.428 | 7.88        | 0.428 | 8.62         | 0.428  |
| Kelso and Longview     | 4.25       | 0.507 | 5.50       | 0.515 | 6.45        | 0.509 | 7.74        | 0.524 | 8.70        | 0.526 | 9.67         | 0.529  |
| Leavenworth            | 3.04       | 0.530 | 4.12       | 0.542 | 5.62        | 0.575 | 7.94        | 0.594 | 9.75        | 0.606 | 11.08        | 0.611  |
| Metaline Falls         | 3.36       | 0.527 | 4.90       | 0.553 | 6.09        | 0.566 | 7.45        | 0.570 | 9.29        | 0.592 | 10.45        | 0.591  |
| Moses Lake             | 2.61       | 0.583 | 5.05       | 0.634 | 6.99        | 0.655 | 9.58        | 0.671 | 11.61       | 0.681 | 13.63        | 0.688  |
| Mt. Vernon             | 3.92       | 0.542 | 5.25       | 0.552 | 6.26        | 0.557 | 7.59        | 0.561 | 8.60        | 0.564 | 9.63         | 0.567  |
| Naselle                | 4.57       | 0.432 | 5.67       | 0.441 | 6.14        | 0.432 | 7.47        | 0.443 | 8.05        | 0.440 | 8.91         | 0.436  |
| Olympia                | 3.82       | 0.466 | 4.86       | 0.472 | 5.62        | 0.474 | 6.63        | 0.477 | 7.40        | 0.478 | 8.17         | 0.480  |
| Omak                   | 3.04       | 0.583 | 5.06       | 0.618 | 6.63        | 0.633 | 8.74        | 0.647 | 10.35       | 0.654 | 11.97        | 0.660  |
| Pasco and Kennewick    | 2.89       | 0.590 | 5.18       | 0.631 | 7.00        | 0.649 | 9.43        | 0.664 | 11.30       | 0.672 | 13.18        | 0.678  |
| Port Angeles           | 4.31       | 0.530 | 5.42       | 0.531 | 6.25        | 0.531 | 7.37        | 0.532 | 8.19        | 0.532 | 9.03         | 0.532  |
| Poulsbo                | 3.83       | 0.506 | 4.98       | 0.513 | 5.85        | 0.516 | 7.00        | 0.519 | 7.86        | 0.521 | 8.74         | 0.523  |
| Queets                 | 4.26       | 0.422 | 5.18       | 0.423 | 5.87        | 0.423 | 6.79        | 0.423 | 7.48        | 0.423 | 8.18         | 0.424  |
| Seattle                | 3.56       | 0.515 | 4.83       | 0.531 | 5.62        | 0.530 | 6.89        | 0.539 | 7.88        | 0.545 | 8.75         | 0.5454 |
| Sequim                 | 3.50       | 0.551 | 5.01       | 0.569 | 6.16        | 0.577 | 7.69        | 0.585 | 8.88        | 0.590 | 10.04        | 0.593  |
| Snogualmie Pass        | 3.61       | 0.417 | 4.81       | 0.435 | 6.56        | 0.459 | 7.72        | 0.459 | 8.78        | 0.461 | 10.21        | 0.476  |
| Spokane                | 3.47       | 0.556 | 5.43       | 0.591 | 6.98        | 0.609 | 9.09        | 0.626 | 10.68       | 0.635 | 12.33        | 0.643  |
| Stevens Pass           | 4.73       | 0.462 | 6.09       | 0.470 | 8.19        | 0.500 | 8.53        | 0.484 | 10.61       | 0.499 | 12.45        | 0.513  |
| Tacoma                 | 3.57       | 0.516 | 4.78       | 0.527 | 5.70        | 0.533 | 6.93        | 0.539 | 7.86        | 0.542 | 8.79         | 0.545  |
| Vancouver              | 2.92       | 0.477 | 4.05       | 0.496 | 4.92        | 0.506 | 6.06        | 0.515 | 6.95        | 0.520 | 7.82         | 0.525  |
| Walla Walla            | 3.33       | 0.569 | 5.54       | 0.609 | 7.30        | 0.627 | 9.67        | 0.645 | 11.45       | 0.653 | 13.28        | 0.660  |
| Wenatchee              | 3.15       | 0.535 | 4.88       | 0.566 | 6.19        | 0.579 | 7.94        | 0.592 | 9.32        | 0.600 | 10.68        | 0.605  |
| Yakima                 | 3.86       | 0.608 | 5.86       | 0.633 | 7.37        | 0.644 | 9.40        | 0.654 | 10.93       | 0.659 | 12.47        | 0.663  |

City of La Center: m = 8.75  
n = 0.527



**Appendix B.**  
**Calculations**  
**Hydrocad Model Output**

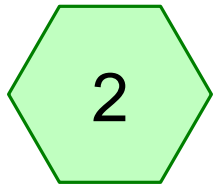
# Pipe Flow Conveyance and Capacity

Project Name: Asa' View Subdivision  
 Project Location: La Center, Wa

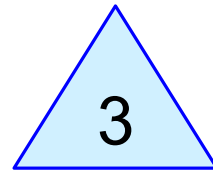
Design Storm Event: 100  
 Min. Time of Concentration: 5  
 Manual input:   
 Calculated Data:

Impervious C = 0.90  
 Intensity, m = 8.75  
 Intensity, n = 0.527  
 Intensity (in/hr) = m / (TOC<sup>n</sup>)

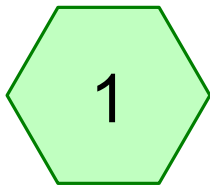
| Pipe Segment   |        |            |        |        |       | Impervious Area |         |         |         |       |         | Pipe Design Calculations |            |                   |        |          |           |        |         |                    |                |                  |
|--|--------|------------|--------|--------|-------|-----------------|---------|---------|---------|-------|---------|--------------------------|------------|-------------------|--------|----------|-----------|--------|---------|--------------------|----------------|------------------|
| Upstream   |        | Downstream |        | Length | Slope | (sf)            |         |         |         | (ac)  |         | TOC (min)                | ΣTOC (min) | intensity (in/hr) | Q      | Dia (in) | Area (sf) | Pipe n | Hyd Rad | Full Flow Velocity | Capacity (cfs) | Capacity > Flow? |
| Structure  | Invert | Structure  | Invert |        |       | Road            | Lot     | 50% Lot | Total   | Total | Σ Total |                          |            |                   |        |          |           |        |         |                    |                |                  |
| <b>Pipe Segment: Lockwood Creek through NE 23 Loop</b> |        |            |        |        |       |                 |         |         |         |       |         |                          |            |                   |        |          |           |        |         |                    |                |                  |
| CB-01  | 148.87 | CB-02      | 148.36 | 231    | 0.22% | 6,930           | 0       | 0       | 6,930   | 0.16  | 0.16    | 5.00                     | 5.00       | 3.75              | 0.283  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| CB-02  | 148.36 | MH-01      | 148.00 | 164    | 0.22% | 4,920           | 0       | 0       | 4,920   | 0.11  | 0.27    | 1.80                     | 6.80       | 3.19              | 0.411  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| MH-01  | 147.80 | MH-02      | 147.56 | 111    | 0.22% | 0               | 0       | 0       | 0       | 0.00  | 0.27    | 1.28                     | 8.09       | 2.91              | 0.375  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| MH-02  | 147.36 | CB-03      | 147.24 | 53     | 0.22% | 0               | 0       | 0       | 0       | 0.00  | 0.27    | 0.87                     | 8.95       | 2.76              | 0.356  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| CB-03  | 147.24 | MH-03      | 147.14 | 45     | 0.22% | 4,920           | 0       | 0       | 4,920   | 0.11  | 0.38    | 0.41                     | 9.37       | 2.69              | 0.491  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| MH-03  | 146.94 | MH-04      | 146.71 | 104    | 0.22% | 3,330           | 0       | 0       | 3,330   | 0.08  | 0.46    | 0.35                     | 9.72       | 2.64              | 0.578  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| MH-04  | 146.51 | MH-05      | 146.41 | 46     | 0.22% | 6,931           | 0       | 0       | 6,931   | 0.16  | 0.62    | 0.81                     | 10.53      | 2.53              | 0.745  | 12       | 0.7870    | 0.013  | 0.25    | 2.13               | 1.68           | Yes              |
| MH-05  | 146.21 | MH-06      | 145.87 | 68     | 0.50% | 0               | 0       | 0       | 0       | 0.00  | 0.62    | 0.36                     | 10.89      | 2.49              | 0.732  | 12       | 0.7870    | 0.013  | 0.25    | 3.22               | 2.53           | Yes              |
| MH-06  | 145.67 | MH-07      | 136.49 | 187    | 4.91% | 0               | 0       | 0       | 0       | 0.00  | 0.62    | 0.35                     | 11.24      | 2.44              | 0.719  | 12       | 0.7870    | 0.013  | 0.25    | 10.08              | 7.93           | Yes              |
| MH-07  | 136.29 | MH-08      | 136.18 | 53     | 0.20% | 11,203          | 56,917  | 28,459  | 39,662  | 0.91  | 1.53    | 0.31                     | 11.55      | 2.41              | 1.750  | 15       | 1.2297    | 0.013  | 0.31    | 2.36               | 2.90           | Yes              |
| MH-08  | 135.98 | MH-09      | 135.38 | 302    | 0.20% | 0               | 0       | 0       | 0       | 0.00  | 1.53    | 0.37                     | 11.93      | 2.37              | 1.721  | 15       | 1.2297    | 0.013  | 0.31    | 2.36               | 2.90           | Yes              |
| MH-09  | 135.18 | MH-10      | 134.66 | 261    | 0.20% | 30,663          | 154,776 | 77,388  | 108,051 | 2.48  | 4.01    | 2.13                     | 14.06      | 2.17              | 4.134  | 18       | 1.7708    | 0.013  | 0.38    | 2.67               | 4.72           | Yes              |
| MH-10  | 134.46 | MH-11      | 133.92 | 270    | 0.20% | 11,764          | 45,037  | 22,519  | 34,283  | 0.79  | 4.80    | 1.63                     | 15.69      | 2.05              | 4.667  | 18       | 1.7708    | 0.013  | 0.38    | 2.67               | 4.72           | Yes              |
| MH-11  | 133.72 | MH-17      | 133.58 | 47     | 0.30% | 11,494          | 67,777  | 33,889  | 45,383  | 1.04  | 5.84    | 1.69                     | 17.38      | 1.94              | 5.383  | 18       | 1.7708    | 0.013  | 0.38    | 3.26               | 5.78           | Yes              |
| <b>Pipe Segment: NE 23rd Avenue</b>                    |        |            |        |        |       |                 |         |         |         |       |         |                          |            |                   |        |          |           |        |         |                    |                |                  |
| MH-12  | 136.12 | MH-13      | 135.57 | 276    | 0.20% | 9,405           | 31,216  | 15,608  | 25,013  | 0.57  | 0.57    | 5.00                     | 5.00       | 3.75              | 1.020  | 12       | 0.7870    | 0.013  | 0.25    | 2.03               | 1.60           | Yes              |
| MH-13  | 135.37 | MH-14      | 134.79 | 288    | 0.20% | 11,049          | 52,549  | 26,275  | 37,324  | 0.86  | 1.43    | 2.26                     | 7.26       | 3.08              | 2.089  | 15       | 1.2297    | 0.013  | 0.31    | 2.36               | 2.90           | Yes              |
| MH-14  | 134.59 | MH-15      | 134.51 | 42     | 0.20% | 12,062          | 52,527  | 26,264  | 38,326  | 0.88  | 2.31    | 2.03                     | 9.30       | 2.70              | 2.962  | 18       | 1.7708    | 0.013  | 0.38    | 2.67               | 4.72           | Yes              |
| MH-15  | 134.31 | MH-16      | 134.04 | 134    | 0.20% | 0               | 0       | 0       | 0       | 0.00  | 2.31    | 0.26                     | 9.56       | 2.66              | 2.919  | 18       | 1.7708    | 0.013  | 0.38    | 2.67               | 4.72           | Yes              |
| MH-16  | 133.84 | MH-17      | 133.58 | 116    | 0.22% | 22,247          | 63,795  | 31,898  | 62,270  | 1.43  | 3.74    | 0.84                     | 10.40      | 2.55              | 4.520  | 18       | 1.7708    | 0.013  | 0.38    | 2.80               | 4.95           | Yes              |
| <b>Pipe Segment: Outfall to Pond</b>                   |        |            |        |        |       |                 |         |         |         |       |         |                          |            |                   |        |          |           |        |         |                    |                |                  |
| MH-17  | 133.41 | Pond       | 131.00 | 65     | 3.71% | 146,918         | 524,594 | 262,297 | 417,341 | 9.58  | 9.58    | 1.69                     | 1.69       | 6.64              | 30.172 | 24       | 3.1480    | 0.013  | 0.50    | 13.91              | 43.78          | Yes              |



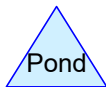
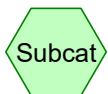
Developed Site



Pond



Undeveloped Site



**Rainfall Events Listing**

| Event# | Event Name | Storm Type    | Curve | Mode    | Duration (hours) | B/B | Depth (inches) | AMC |
|--------|------------|---------------|-------|---------|------------------|-----|----------------|-----|
| 1      | 2-year     | Type IA 24-hr |       | Default | 24.00            | 1   | 2.40           | 2   |
| 2      | 10-year    | Type IA 24-hr |       | Default | 24.00            | 1   | 3.30           | 2   |
| 3      | 25-year    | Type IA 24-hr |       | Default | 24.00            | 1   | 3.80           | 2   |
| 4      | 100-year   | Type IA 24-hr |       | Default | 24.00            | 1   | 4.50           | 2   |
| 5      | WQ         | Type IA 24-hr |       | Default | 24.00            | 1   | 1.54           | 2   |

**AsaLockwood**

Prepared by Microsoft

HydroCAD® 10.10-7a s/n 12389 © 2021 HydroCAD Software Solutions LLC

*Type IA 24-hr 2-year Rainfall=2.40"*

Printed 5/1/2022

Page 3

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SBUH method, Split Pervious/Imperv.  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1: UndevelopedSite** Runoff Area=17.000 ac 1.59% Impervious Runoff Depth>0.65"  
Flow Length=900' Slope=0.0500 '/' Tc=29.1 min CN=76/98 Runoff=1.13 cfs 0.915 af

**Subcatchment2: Developed Site** Runoff Area=17.000 ac 60.71% Impervious Runoff Depth>1.52"  
Flow Length=1,325' Tc=25.6 min CN=74/98 Runoff=4.65 cfs 2.152 af

**Pond 3: Pond** Peak Elev=132.75' Storage=30,139 cf Inflow=4.65 cfs 2.152 af  
Outflow=1.13 cfs 1.628 af

**Total Runoff Area = 34.000 ac Runoff Volume = 3.067 af Average Runoff Depth = 1.08"**  
**68.85% Pervious = 23.410 ac 31.15% Impervious = 10.590 ac**

**Summary for Subcatchment 1: Undeveloped Site**

Runoff = 1.13 cfs @ 8.25 hrs, Volume= 0.915 af, Depth> 0.65"

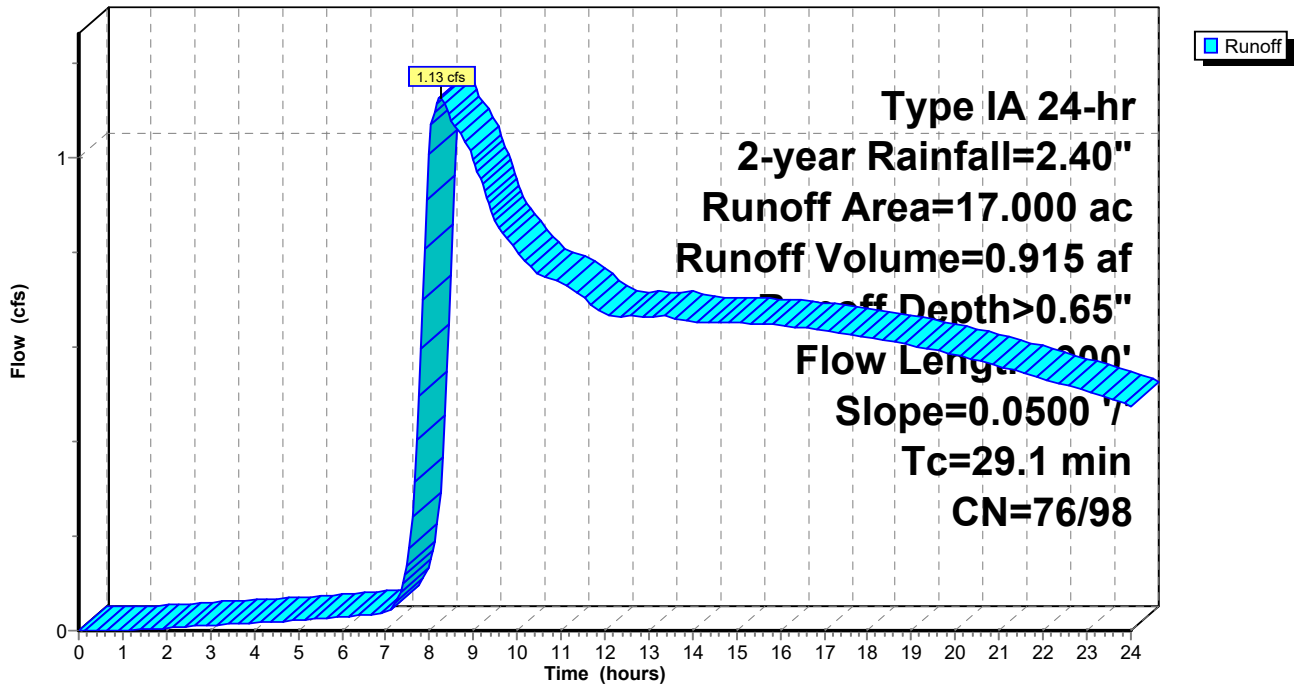
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 2-year Rainfall=2.40"

| Area (ac) | CN | Description           |
|-----------|----|-----------------------|
| * 16.730  | 76 | Woods, Good, HSG C    |
| * 0.270   | 98 | Existing Lockwood     |
| 17.000    | 76 | Weighted Average      |
| 16.730    | 76 | 98.41% Pervious Area  |
| 0.270     | 98 | 1.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 17.2     | 100           | 0.0500        | 0.10              |                | <b>Sheet Flow, sheet flow</b>                       |
|          |               |               |                   |                | Woods: Light underbrush n= 0.400 P2= 2.40"          |
| 11.9     | 800           | 0.0500        | 1.12              |                | <b>Shallow Concentrated Flow, Concentrated Flow</b> |
|          |               |               |                   |                | Woodland Kv= 5.0 fps                                |
| 29.1     | 900           | Total         |                   |                |   |

**Subcatchment 1: Undeveloped Site**

Hydrograph



**Summary for Subcatchment 2: Developed Site**

[47] Hint: Peak is 17610% of capacity of segment #2

[47] Hint: Peak is 130% of capacity of segment #3

Runoff = 4.65 cfs @ 8.04 hrs, Volume= 2.152 af, Depth> 1.52"  
 Routed to Pond 3 : Pond

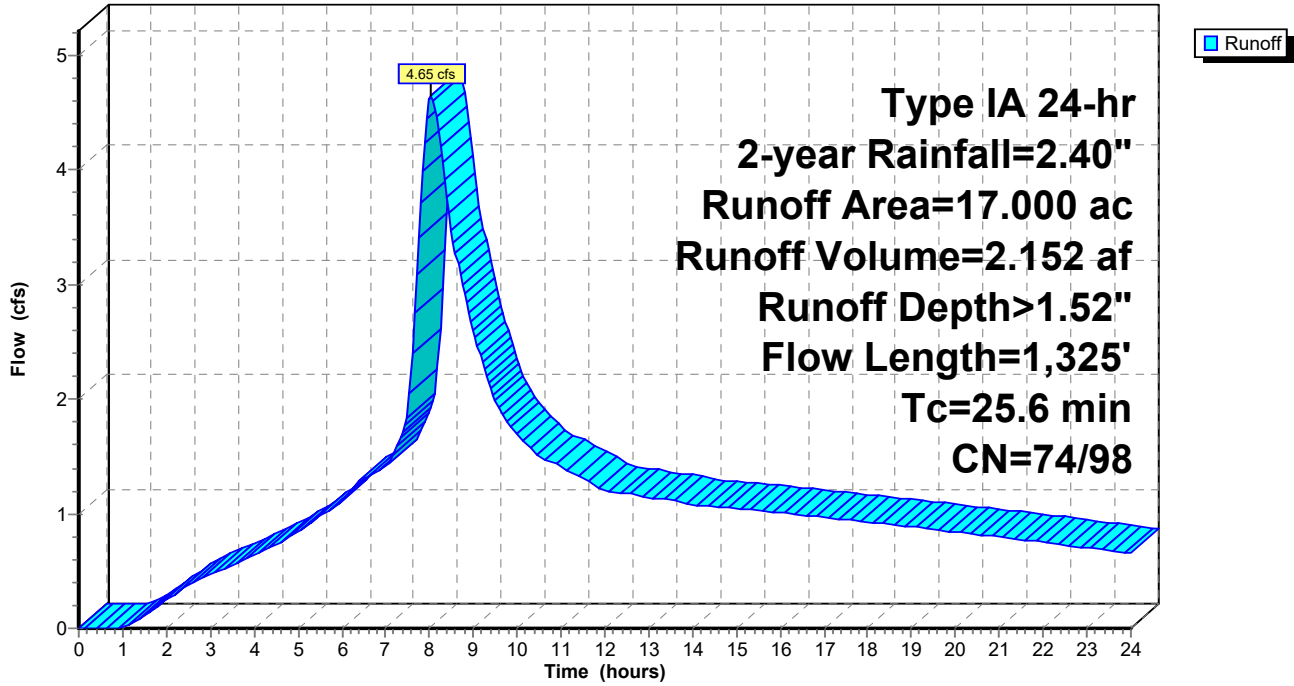
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 2-year Rainfall=2.40"

| Area (ac) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3.740     | 98 | Paved roads w/curbs & sewers, HSG C |
| 6.680     | 74 | >75% Grass cover, Good, HSG C       |
| * 6.020   | 98 | Lot Impervious Area (maximum)       |
| * 0.560   | 98 | Detention Pond Surface Area         |
| 17.000    | 89 | Weighted Average                    |
| 6.680     | 74 | 39.29% Pervious Area                |
| 10.320    | 98 | 60.71% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 13.5     | 125           | 0.0200        | 0.15              |                | <b>Sheet Flow, Lawn Sheet Flow</b><br>Grass: Short n= 0.150 P2= 2.40"                           |
| 8.4      | 200           | 0.0300        | 0.40              | 0.03           | <b>Parabolic Channel, Gutter</b><br>W=0.50' D=0.20' Area=0.1 sf Perim=0.7' n= 0.140             |
| 3.7      | 1,000         | 0.0100        | 4.54              | 3.56           | <b>Pipe Channel, CMP_Round 12"</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 25.6     | 1,325         | Total         |                   |                |   |

### Subcatchment 2: Developed Site

Hydrograph





**Summary for Pond 3: Pond**

Inflow Area = 17.000 ac, 60.71% Impervious, Inflow Depth > 1.52" for 2-year event  
 Inflow = 4.65 cfs @ 8.04 hrs, Volume= 2.152 af  
 Outflow = 1.13 cfs @ 13.26 hrs, Volume= 1.628 af, Atten= 76%, Lag= 313.2 min  
 Primary = 1.13 cfs @ 13.26 hrs, Volume= 1.628 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 132.75' @ 13.26 hrs Surf.Area= 18,554 sf Storage= 30,139 cf

Plug-Flow detention time= 316.7 min calculated for 1.624 af (75% of inflow)  
 Center-of-Mass det. time= 164.0 min ( 885.1 - 721.1 )

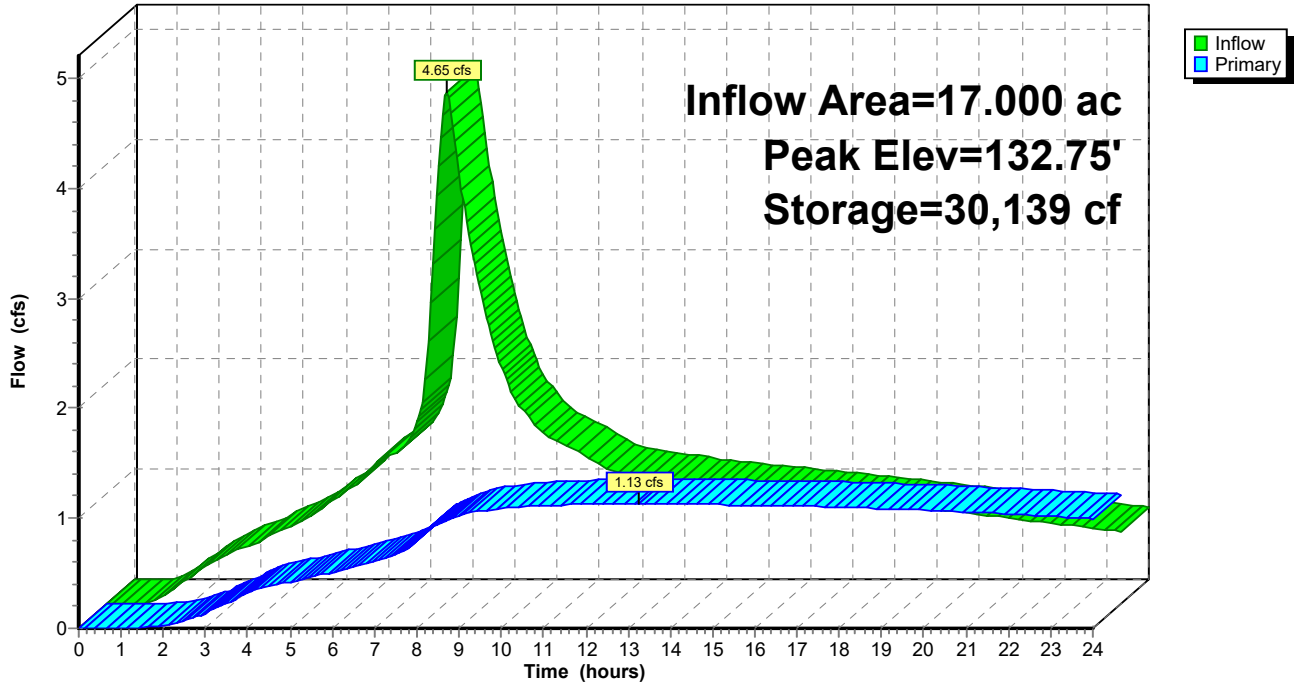
| Volume           | Invert            | Avail.Storage          | Storage Description  |
|------------------|-------------------|------------------------|--|
| #1               | 131.00'           | 54,524 cf              | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet)                                     |
| 131.00           | 15,853            | 0                      | 0  |
| 132.00           | 17,369            | 16,611                 | 16,611   |
| 133.00           | 18,942            | 18,156                 | 34,767   |
| 134.00           | 20,572            | 19,757                 | 54,524   |

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 131.00' | <b>5.7" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #2     | Primary | 132.75' | <b>9.6" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #3     | Primary | 133.46' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=1.13 cfs @ 13.26 hrs HW=132.75' (Free Discharge)  
 1=Orifice/Grate (Orifice Controls 1.13 cfs @ 6.38 fps)  
 2=Orifice/Grate (Weir Controls 0.00 cfs @ 0.18 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3: Pond

Hydrograph



**AsaLockwood**

Prepared by Microsoft

HydroCAD® 10.10-7a s/n 12389 © 2021 HydroCAD Software Solutions LLC

Type IA 24-hr 10-year Rainfall=3.30"

Printed 5/1/2022

Page 9

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SBUH method, Split Pervious/Imperv.  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1: UndevelopedSite** Runoff Area=17.000 ac 1.59% Impervious Runoff Depth>1.23"  
Flow Length=900' Slope=0.0500 '/' Tc=29.1 min CN=76/98 Runoff=2.88 cfs 1.742 af

**Subcatchment2: Developed Site** Runoff Area=17.000 ac 60.71% Impervious Runoff Depth>2.27"  
Flow Length=1,325' Tc=25.6 min CN=74/98 Runoff=7.06 cfs 3.219 af

**Pond 3: Pond** Peak Elev=133.18' Storage=38,152 cf Inflow=7.06 cfs 3.219 af  
Outflow=2.84 cfs 2.534 af

**Total Runoff Area = 34.000 ac Runoff Volume = 4.960 af Average Runoff Depth = 1.75"**  
**68.85% Pervious = 23.410 ac 31.15% Impervious = 10.590 ac**

**Summary for Subcatchment 1: Undeveloped Site**

Runoff = 2.88 cfs @ 8.12 hrs, Volume= 1.742 af, Depth> 1.23"

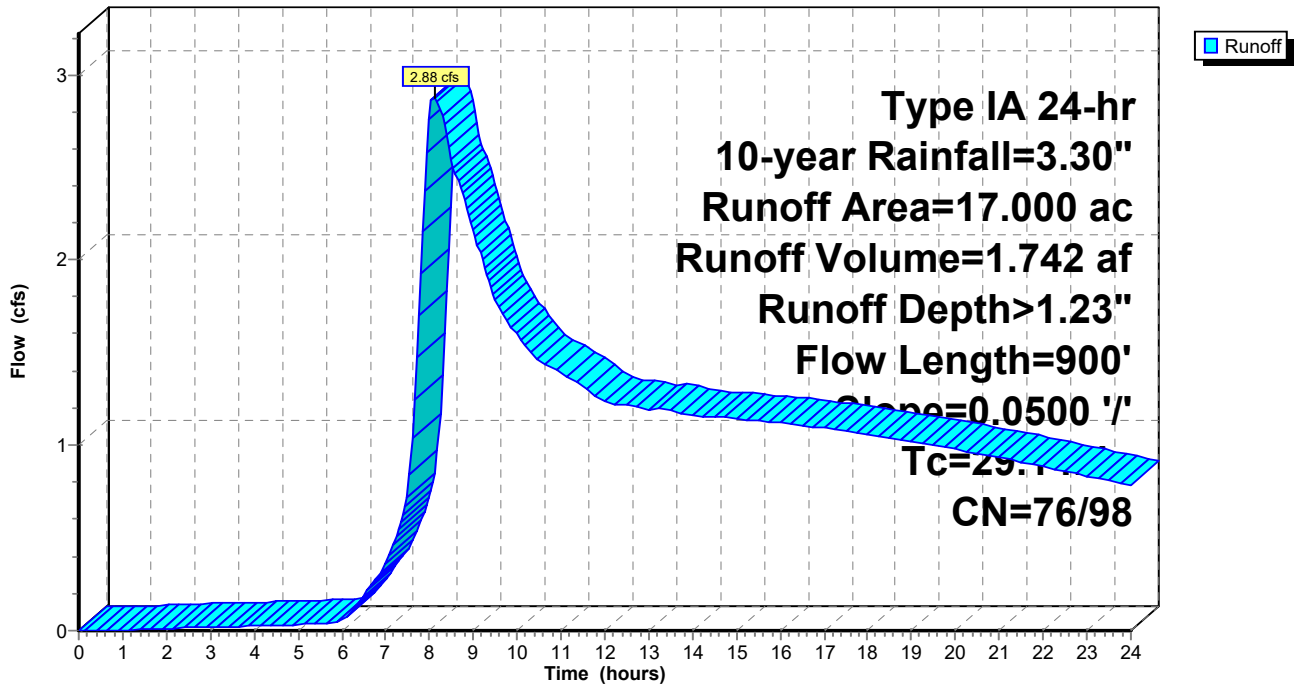
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr 10-year Rainfall=3.30"

| Area (ac) | CN | Description           |
|-----------|----|-----------------------|
| * 16.730  | 76 | Woods, Good, HSG C    |
| * 0.270   | 98 | Exisiting Lockwood    |
| 17.000    | 76 | Weighted Average      |
| 16.730    | 76 | 98.41% Pervious Area  |
| 0.270     | 98 | 1.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 17.2     | 100           | 0.0500        | 0.10              |                | <b>Sheet Flow, sheet flow</b>                       |
|          |               |               |                   |                | Woods: Light underbrush n= 0.400 P2= 2.40"          |
| 11.9     | 800           | 0.0500        | 1.12              |                | <b>Shallow Concentrated Flow, Concentrated Flow</b> |
|          |               |               |                   |                | Woodland Kv= 5.0 fps                                |
| 29.1     | 900           | Total         |                   |                |   |

**Subcatchment 1: Undeveloped Site**

Hydrograph



**Summary for Subcatchment 2: Developed Site**

[47] Hint: Peak is 26743% of capacity of segment #2

[47] Hint: Peak is 198% of capacity of segment #3

Runoff = 7.06 cfs @ 8.04 hrs, Volume= 3.219 af, Depth> 2.27"  
 Routed to Pond 3 : Pond

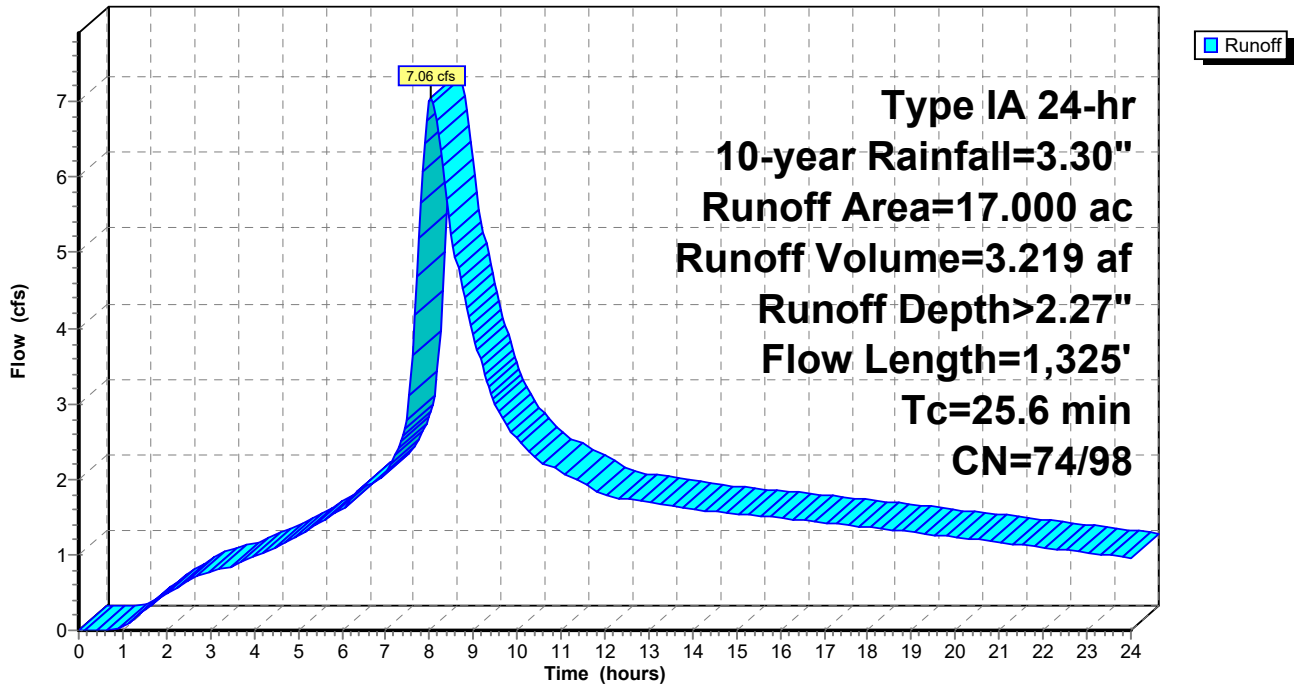
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 10-year Rainfall=3.30"

| Area (ac) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3.740     | 98 | Paved roads w/curbs & sewers, HSG C |
| 6.680     | 74 | >75% Grass cover, Good, HSG C       |
| * 6.020   | 98 | Lot Impervious Area (maximum)       |
| * 0.560   | 98 | Detention Pond Surface Area         |
| 17.000    | 89 | Weighted Average                    |
| 6.680     | 74 | 39.29% Pervious Area                |
| 10.320    | 98 | 60.71% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 13.5     | 125           | 0.0200        | 0.15              |                | <b>Sheet Flow, Lawn Sheet Flow</b><br>Grass: Short n= 0.150 P2= 2.40"                           |
| 8.4      | 200           | 0.0300        | 0.40              | 0.03           | <b>Parabolic Channel, Gutter</b><br>W=0.50' D=0.20' Area=0.1 sf Perim=0.7' n= 0.140             |
| 3.7      | 1,000         | 0.0100        | 4.54              | 3.56           | <b>Pipe Channel, CMP_Round 12"</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 25.6     | 1,325         | Total         |                   |                |   |

### Subcatchment 2: Developed Site

Hydrograph



**Summary for Pond 3: Pond**

Inflow Area = 17.000 ac, 60.71% Impervious, Inflow Depth > 2.27" for 10-year event  
 Inflow = 7.06 cfs @ 8.04 hrs, Volume= 3.219 af  
 Outflow = 2.84 cfs @ 9.63 hrs, Volume= 2.534 af, Atten= 60%, Lag= 95.4 min  
 Primary = 2.84 cfs @ 9.63 hrs, Volume= 2.534 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 133.18' @ 9.63 hrs Surf.Area= 19,231 sf Storage= 38,152 cf

Plug-Flow detention time= 252.4 min calculated for 2.534 af (79% of inflow)  
 Center-of-Mass det. time= 116.1 min ( 831.3 - 715.2 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1     | 131.00' | 54,524 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

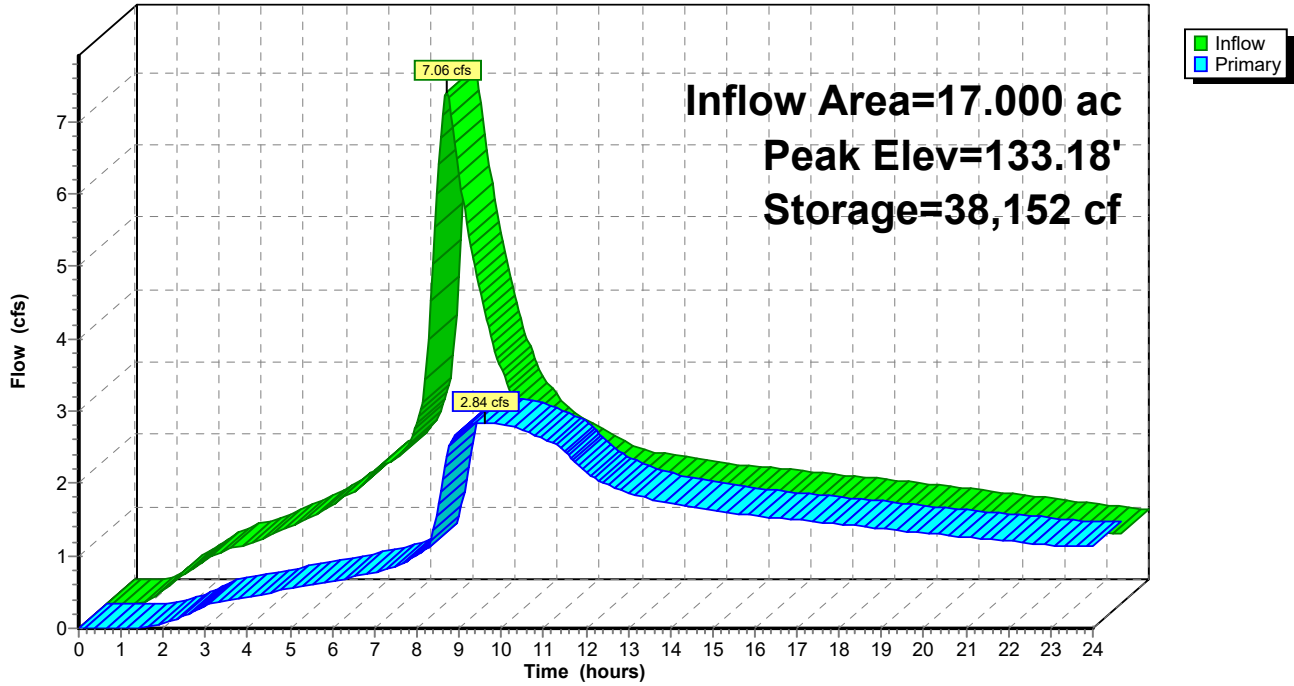
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 131.00           | 15,853            | 0                      | 0                      |
| 132.00           | 17,369            | 16,611                 | 16,611                 |
| 133.00           | 18,942            | 18,156                 | 34,767                 |
| 134.00           | 20,572            | 19,757                 | 54,524                 |

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 131.00' | <b>5.7" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #2     | Primary | 132.75' | <b>9.6" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #3     | Primary | 133.46' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=2.84 cfs @ 9.63 hrs HW=133.18' (Free Discharge)  
 1=Orifice/Grate (Orifice Controls 1.26 cfs @ 7.10 fps)  
 2=Orifice/Grate (Orifice Controls 1.58 cfs @ 3.15 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3: Pond

Hydrograph





**AsaLockwood**

Prepared by Microsoft

HydroCAD® 10.10-7a s/n 12389 © 2021 HydroCAD Software Solutions LLC

*Type IA 24-hr 25-year Rainfall=3.80"*

Printed 5/1/2022

Page 15

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1: UndevelopedSite**Runoff Area=17.000 ac 1.59% Impervious Runoff Depth>1.59"  
Flow Length=900' Slope=0.0500 '/' Tc=29.1 min CN=76/98 Runoff=4.03 cfs 2.254 af**Subcatchment2: DevelopedSite**Runoff Area=17.000 ac 60.71% Impervious Runoff Depth>2.71"  
Flow Length=1,325' Tc=25.6 min CN=74/98 Runoff=8.47 cfs 3.835 af**Pond 3: Pond**Peak Elev=133.50' Storage=44,404 cf Inflow=8.47 cfs 3.835 af  
Outflow=3.52 cfs 3.123 af**Total Runoff Area = 34.000 ac Runoff Volume = 6.089 af Average Runoff Depth = 2.15"**  
**68.85% Pervious = 23.410 ac 31.15% Impervious = 10.590 ac**

**Summary for Subcatchment 1: Undeveloped Site**

Runoff = 4.03 cfs @ 8.08 hrs, Volume= 2.254 af, Depth> 1.59"

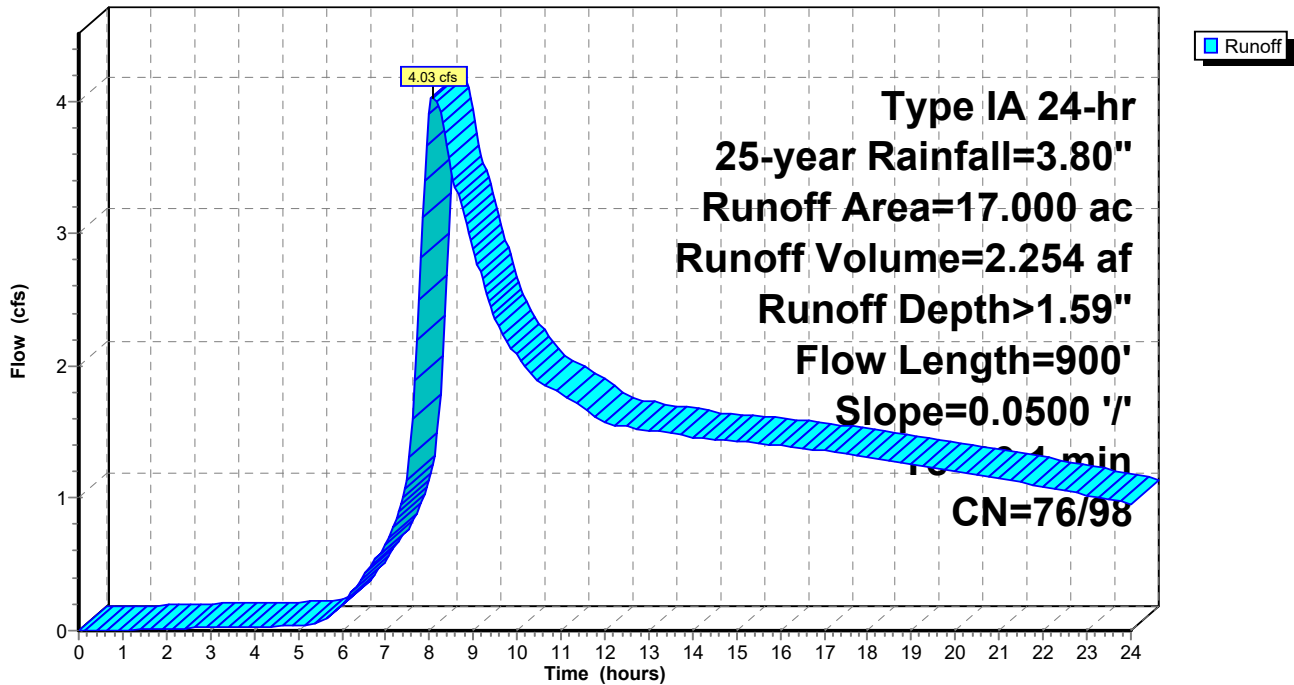
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 25-year Rainfall=3.80"

| Area (ac) | CN | Description           |
|-----------|----|-----------------------|
| * 16.730  | 76 | Woods, Good, HSG C    |
| * 0.270   | 98 | Exisiting Lockwood    |
| 17.000    | 76 | Weighted Average      |
| 16.730    | 76 | 98.41% Pervious Area  |
| 0.270     | 98 | 1.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 17.2     | 100           | 0.0500        | 0.10              |                | <b>Sheet Flow, sheet flow</b>                       |
|          |               |               |                   |                | Woods: Light underbrush n= 0.400 P2= 2.40"          |
| 11.9     | 800           | 0.0500        | 1.12              |                | <b>Shallow Concentrated Flow, Concentrated Flow</b> |
|          |               |               |                   |                | Woodland Kv= 5.0 fps                                |
| 29.1     | 900           | Total         |                   |                |   |

**Subcatchment 1: Undeveloped Site**

Hydrograph



**Summary for Subcatchment 2: Developed Site**

[47] Hint: Peak is 32077% of capacity of segment #2

[47] Hint: Peak is 238% of capacity of segment #3

Runoff = 8.47 cfs @ 8.04 hrs, Volume= 3.835 af, Depth> 2.71"  
 Routed to Pond 3 : Pond

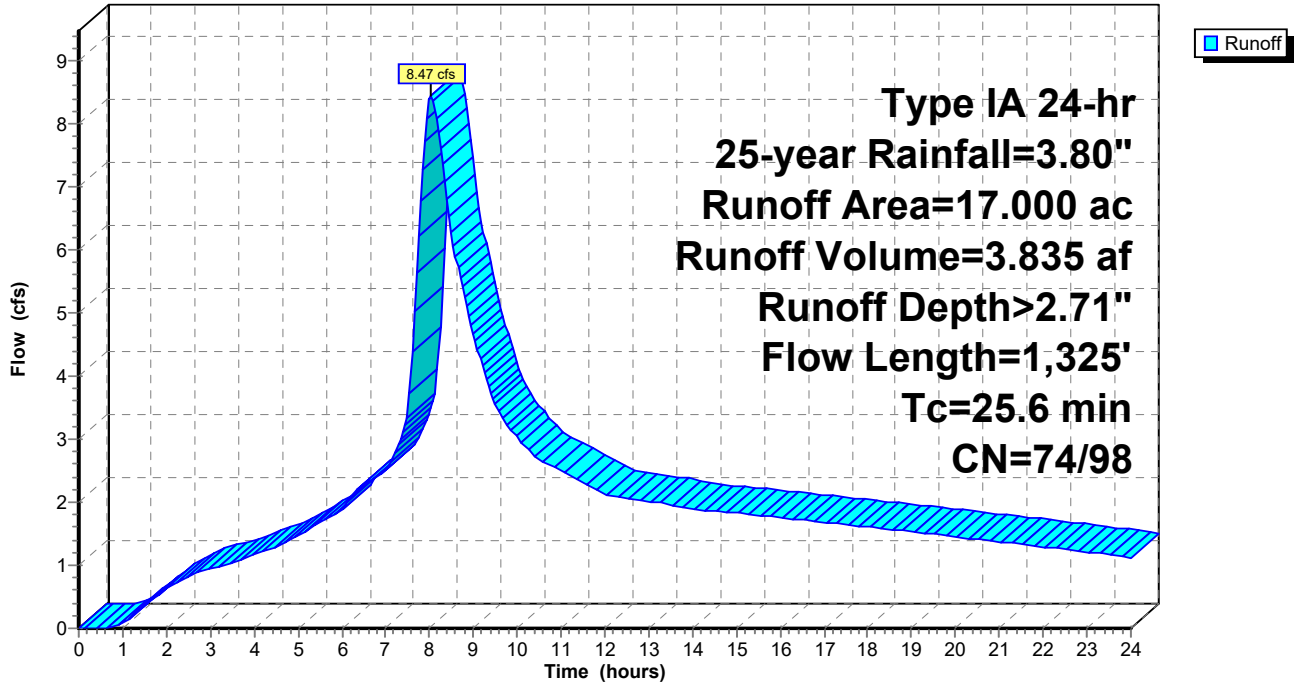
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 25-year Rainfall=3.80"

| Area (ac) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3.740     | 98 | Paved roads w/curbs & sewers, HSG C |
| 6.680     | 74 | >75% Grass cover, Good, HSG C       |
| * 6.020   | 98 | Lot Impervious Area (maximum)       |
| * 0.560   | 98 | Detention Pond Surface Area         |
| 17.000    | 89 | Weighted Average                    |
| 6.680     | 74 | 39.29% Pervious Area                |
| 10.320    | 98 | 60.71% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 13.5     | 125           | 0.0200        | 0.15              |                | <b>Sheet Flow, Lawn Sheet Flow</b><br>Grass: Short n= 0.150 P2= 2.40"                           |
| 8.4      | 200           | 0.0300        | 0.40              | 0.03           | <b>Parabolic Channel, Gutter</b><br>W=0.50' D=0.20' Area=0.1 sf Perim=0.7' n= 0.140             |
| 3.7      | 1,000         | 0.0100        | 4.54              | 3.56           | <b>Pipe Channel, CMP_Round 12"</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 25.6     | 1,325         | Total         |                   |                |   |

### Subcatchment 2: Developed Site

Hydrograph



**Summary for Pond 3: Pond**

Inflow Area = 17.000 ac, 60.71% Impervious, Inflow Depth > 2.71" for 25-year event  
 Inflow = 8.47 cfs @ 8.04 hrs, Volume= 3.835 af  
 Outflow = 3.52 cfs @ 9.52 hrs, Volume= 3.123 af, Atten= 58%, Lag= 89.2 min  
 Primary = 3.52 cfs @ 9.52 hrs, Volume= 3.123 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 133.50' @ 9.52 hrs Surf.Area= 19,754 sf Storage= 44,404 cf

Plug-Flow detention time= 230.5 min calculated for 3.116 af (81% of inflow)  
 Center-of-Mass det. time= 109.9 min ( 822.2 - 712.4 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1     | 131.00' | 54,524 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

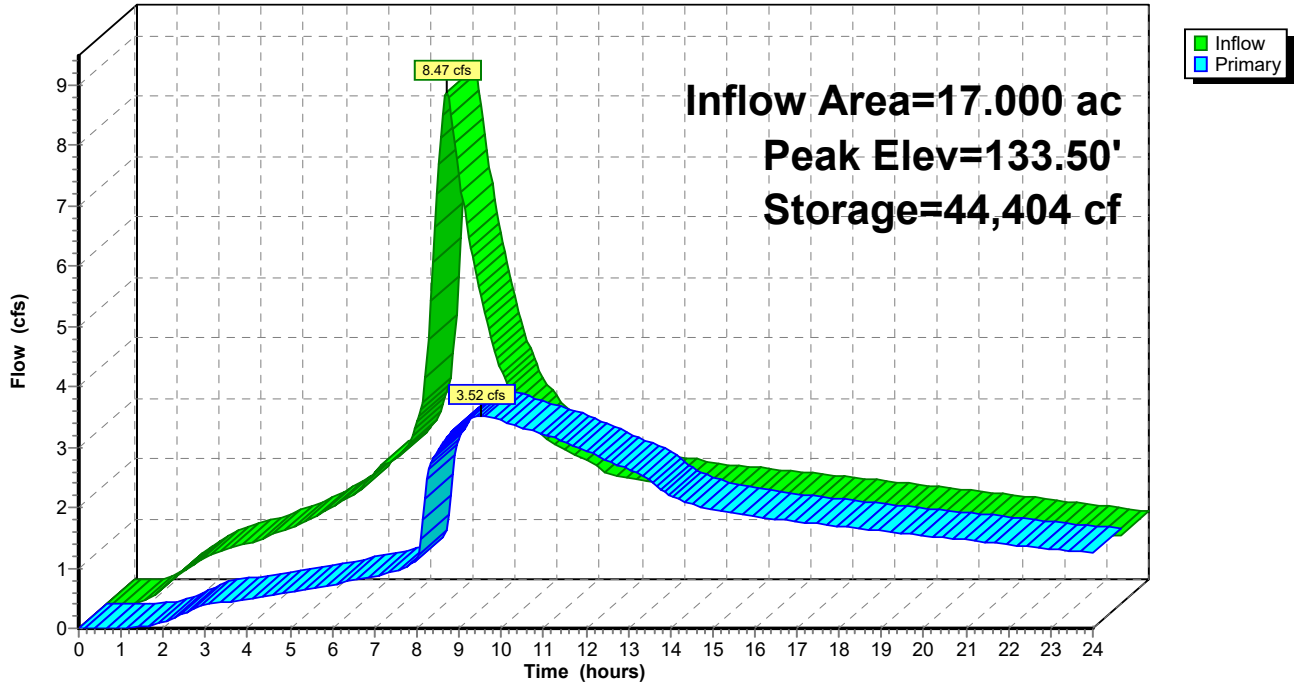
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 131.00           | 15,853            | 0                      | 0                      |
| 132.00           | 17,369            | 16,611                 | 16,611                 |
| 133.00           | 18,942            | 18,156                 | 34,767                 |
| 134.00           | 20,572            | 19,757                 | 54,524                 |

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 131.00' | <b>5.7" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #2     | Primary | 132.75' | <b>9.6" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #3     | Primary | 133.46' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=3.52 cfs @ 9.52 hrs HW=133.50' (Free Discharge)  
 1=Orifice/Grate (Orifice Controls 1.35 cfs @ 7.61 fps)  
 2=Orifice/Grate (Orifice Controls 2.09 cfs @ 4.16 fps)  
 3=Orifice/Grate (Weir Controls 0.08 cfs @ 0.64 fps)

### Pond 3: Pond

Hydrograph



**AsaLockwood**

Prepared by Microsoft

HydroCAD® 10.10-7a s/n 12389 © 2021 HydroCAD Software Solutions LLC

*Type IA 24-hr 100-year Rainfall=4.50"*

Printed 5/1/2022

Page 21

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SBUH method, Split Pervious/Imperv.  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1: UndevelopedSite**

Runoff Area=17.000 ac 1.59% Impervious Runoff Depth>2.13"  
Flow Length=900' Slope=0.0500 '/' Tc=29.1 min CN=76/98 Runoff=5.80 cfs 3.017 af

**Subcatchment2: DevelopedSite**

Runoff Area=17.000 ac 60.71% Impervious Runoff Depth>3.33"  
Flow Length=1,325' Tc=25.6 min CN=74/98 Runoff=10.50 cfs 4.717 af

**Pond 3: Pond**

Peak Elev=133.78' Storage=50,130 cf Inflow=10.50 cfs 4.717 af  
Outflow=5.79 cfs 3.979 af

**Total Runoff Area = 34.000 ac Runoff Volume = 7.734 af Average Runoff Depth = 2.73"**  
**68.85% Pervious = 23.410 ac 31.15% Impervious = 10.590 ac**

**Summary for Subcatchment 1: Undeveloped Site**

Runoff = 5.80 cfs @ 8.07 hrs, Volume= 3.017 af, Depth> 2.13"

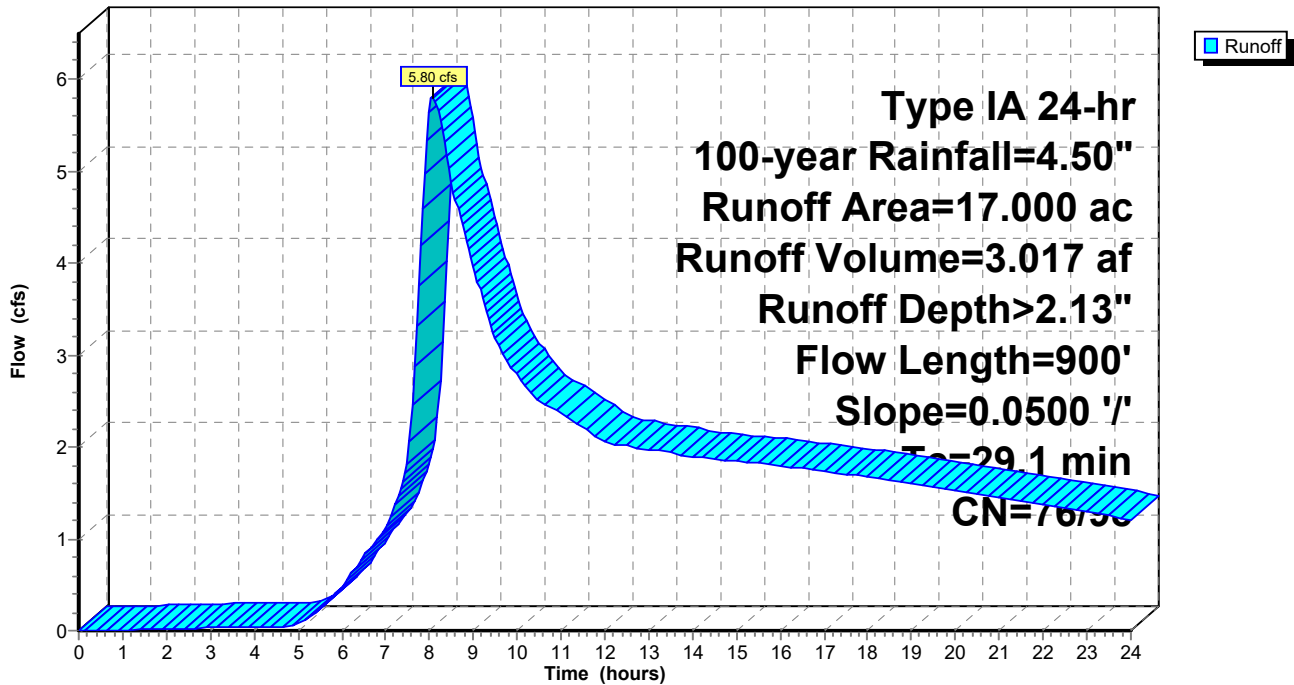
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 100-year Rainfall=4.50"

| Area (ac) | CN | Description           |
|-----------|----|-----------------------|
| * 16.730  | 76 | Woods, Good, HSG C    |
| * 0.270   | 98 | Existing Lockwood     |
| 17.000    | 76 | Weighted Average      |
| 16.730    | 76 | 98.41% Pervious Area  |
| 0.270     | 98 | 1.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 17.2     | 100           | 0.0500        | 0.10              |                | <b>Sheet Flow, sheet flow</b>                       |
|          |               |               |                   |                | Woods: Light underbrush n= 0.400 P2= 2.40"          |
| 11.9     | 800           | 0.0500        | 1.12              |                | <b>Shallow Concentrated Flow, Concentrated Flow</b> |
|          |               |               |                   |                | Woodland Kv= 5.0 fps                                |
| 29.1     | 900           | Total         |                   |                |   |

**Subcatchment 1: Undeveloped Site**

Hydrograph





**Summary for Subcatchment 2: Developed Site**

[47] Hint: Peak is 39762% of capacity of segment #2

[47] Hint: Peak is 295% of capacity of segment #3

Runoff = 10.50 cfs @ 8.04 hrs, Volume= 4.717 af, Depth> 3.33"  
 Routed to Pond 3 : Pond

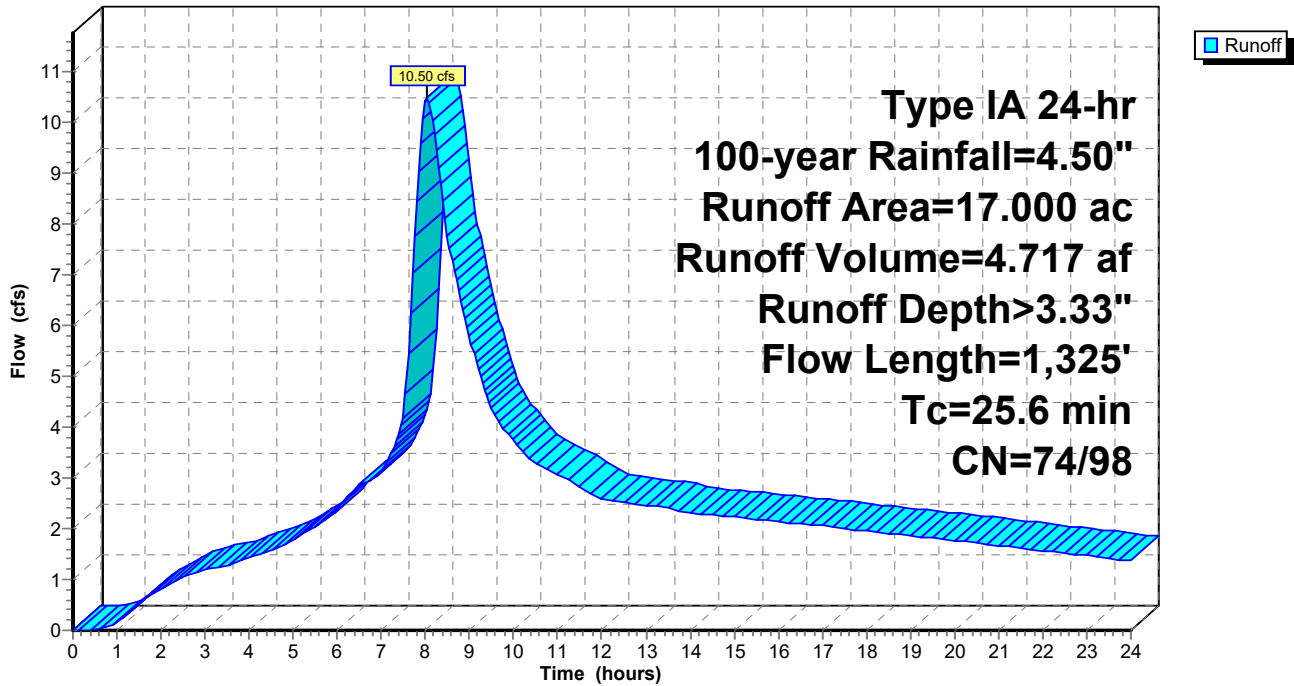
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr 100-year Rainfall=4.50"

| Area (ac) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3.740     | 98 | Paved roads w/curbs & sewers, HSG C |
| 6.680     | 74 | >75% Grass cover, Good, HSG C       |
| * 6.020   | 98 | Lot Impervious Area (maximum)       |
| * 0.560   | 98 | Detention Pond Surface Area         |
| 17.000    | 89 | Weighted Average                    |
| 6.680     | 74 | 39.29% Pervious Area                |
| 10.320    | 98 | 60.71% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 13.5     | 125           | 0.0200        | 0.15              |                | <b>Sheet Flow, Lawn Sheet Flow</b><br>Grass: Short n= 0.150 P2= 2.40"                           |
| 8.4      | 200           | 0.0300        | 0.40              | 0.03           | <b>Parabolic Channel, Gutter</b><br>W=0.50' D=0.20' Area=0.1 sf Perim=0.7' n= 0.140             |
| 3.7      | 1,000         | 0.0100        | 4.54              | 3.56           | <b>Pipe Channel, CMP_Round 12"</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 25.6     | 1,325         | Total         |                   |                |   |

### Subcatchment 2: Developed Site

Hydrograph



**Summary for Pond 3: Pond**

Inflow Area = 17.000 ac, 60.71% Impervious, Inflow Depth > 3.33" for 100-year event  
 Inflow = 10.50 cfs @ 8.04 hrs, Volume= 4.717 af  
 Outflow = 5.79 cfs @ 9.00 hrs, Volume= 3.979 af, Atten= 45%, Lag= 57.7 min  
 Primary = 5.79 cfs @ 9.00 hrs, Volume= 3.979 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 133.78' @ 9.00 hrs Surf.Area= 20,221 sf Storage= 50,130 cf

Plug-Flow detention time= 205.1 min calculated for 3.970 af (84% of inflow)  
 Center-of-Mass det. time= 101.5 min ( 810.3 - 708.8 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1     | 131.00' | 54,524 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

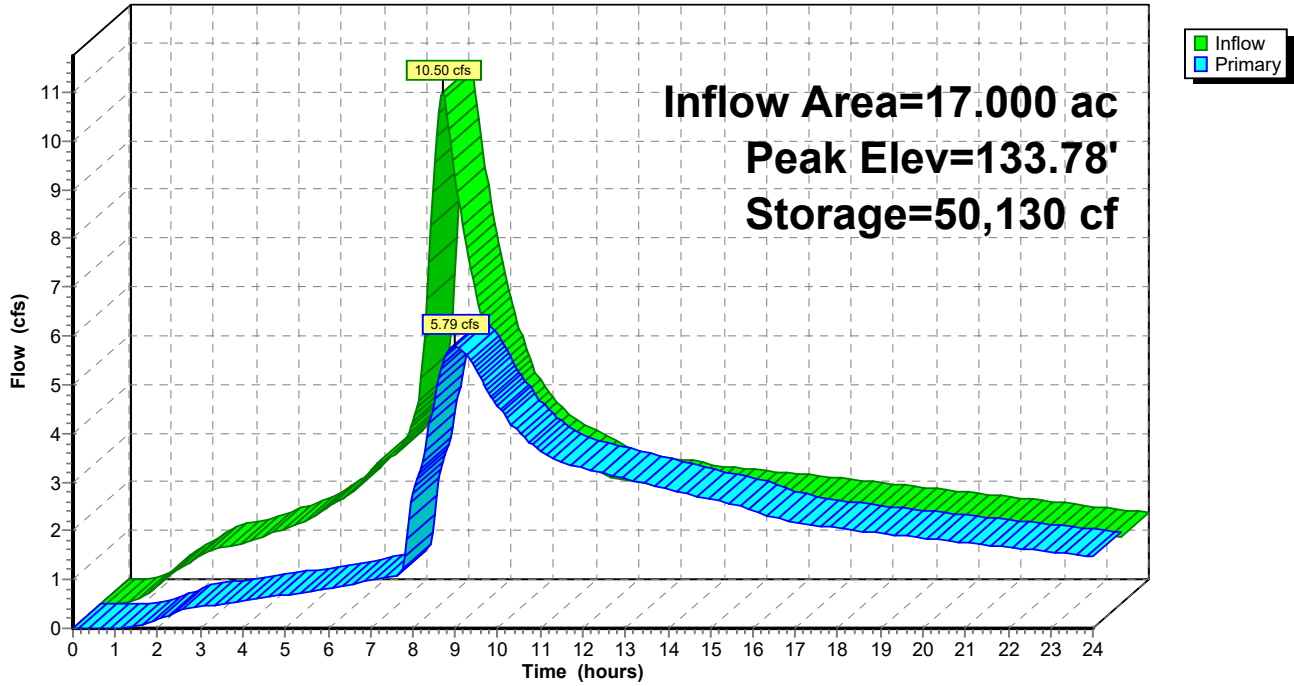
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 131.00           | 15,853            | 0                      | 0                      |
| 132.00           | 17,369            | 16,611                 | 16,611                 |
| 133.00           | 18,942            | 18,156                 | 34,767                 |
| 134.00           | 20,572            | 19,757                 | 54,524                 |

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 131.00' | <b>5.7" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #2     | Primary | 132.75' | <b>9.6" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #3     | Primary | 133.46' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=5.79 cfs @ 9.00 hrs HW=133.78' (Free Discharge)  
 1=Orifice/Grate (Orifice Controls 1.42 cfs @ 8.03 fps)  
 2=Orifice/Grate (Orifice Controls 2.46 cfs @ 4.90 fps)  
 3=Orifice/Grate (Weir Controls 1.90 cfs @ 1.86 fps)

### Pond 3: Pond

Hydrograph



**AsaLockwood**

Prepared by Microsoft

HydroCAD® 10.10-7a s/n 12389 © 2021 HydroCAD Software Solutions LLC

*Type IA 24-hr WQ Rainfall=1.54"*

Printed 5/1/2022

Page 27

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SBUH method, Split Pervious/Imperv.  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment1: UndevelopedSite**

Runoff Area=17.000 ac 1.59% Impervious Runoff Depth>0.21"  
Flow Length=900' Slope=0.0500 '/' Tc=29.1 min CN=76/98 Runoff=0.25 cfs 0.304 af

**Subcatchment2: DevelopedSite**

Runoff Area=17.000 ac 60.71% Impervious Runoff Depth>0.85"  
Flow Length=1,325' Tc=25.6 min CN=74/98 Runoff=2.68 cfs 1.211 af

**Pond 3: Pond**

Peak Elev=131.86' Storage=14,120 cf Inflow=2.68 cfs 1.211 af  
Outflow=0.79 cfs 1.051 af

**Total Runoff Area = 34.000 ac Runoff Volume = 1.516 af Average Runoff Depth = 0.53"**  
**68.85% Pervious = 23.410 ac 31.15% Impervious = 10.590 ac**

**Summary for Subcatchment 1: Undeveloped Site**

Runoff = 0.25 cfs @ 17.37 hrs, Volume= 0.304 af, Depth> 0.21"

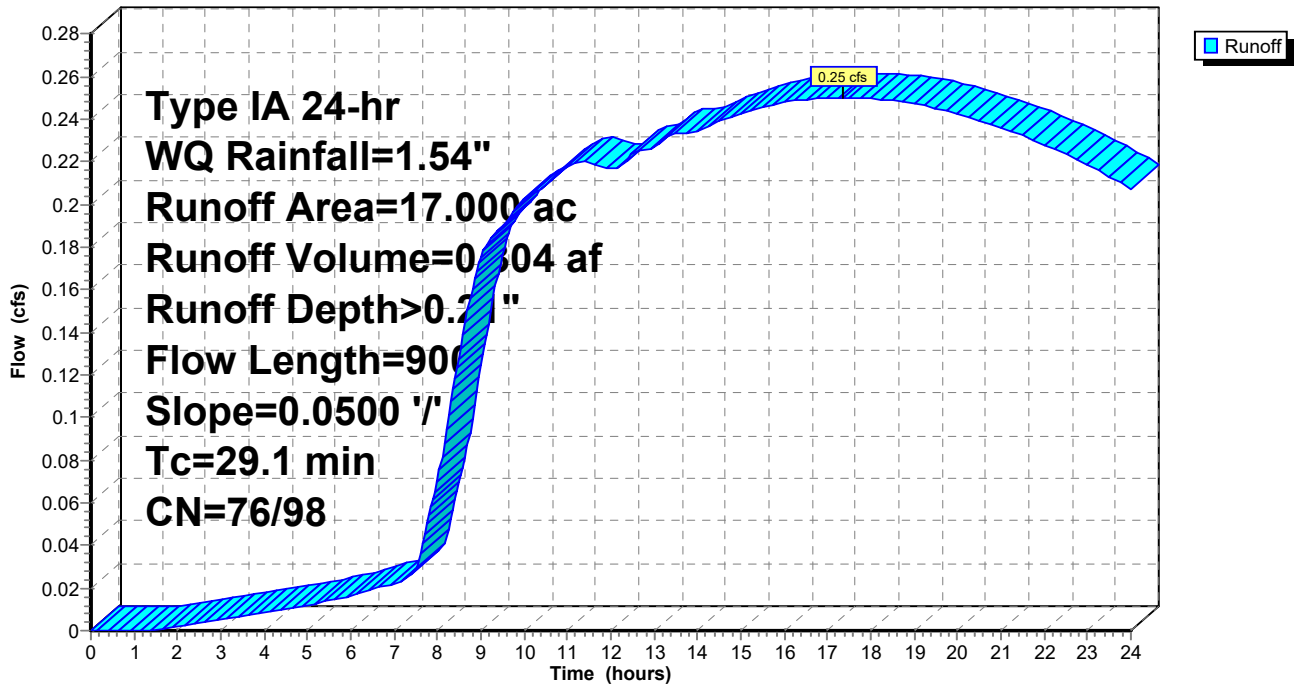
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type IA 24-hr WQ Rainfall=1.54"

| Area (ac) | CN | Description           |
|-----------|----|-----------------------|
| * 16.730  | 76 | Woods, Good, HSG C    |
| * 0.270   | 98 | Exisiting Lockwood    |
| 17.000    | 76 | Weighted Average      |
| 16.730    | 76 | 98.41% Pervious Area  |
| 0.270     | 98 | 1.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 17.2     | 100           | 0.0500        | 0.10              |                | <b>Sheet Flow, sheet flow</b>                       |
|          |               |               |                   |                | Woods: Light underbrush n= 0.400 P2= 2.40"          |
| 11.9     | 800           | 0.0500        | 1.12              |                | <b>Shallow Concentrated Flow, Concentrated Flow</b> |
|          |               |               |                   |                | Woodland Kv= 5.0 fps                                |
| 29.1     | 900           | Total         |                   |                |   |

**Subcatchment 1: Undeveloped Site**

Hydrograph



**Summary for Subcatchment 2: Developed Site**

[47] Hint: Peak is 10169% of capacity of segment #2

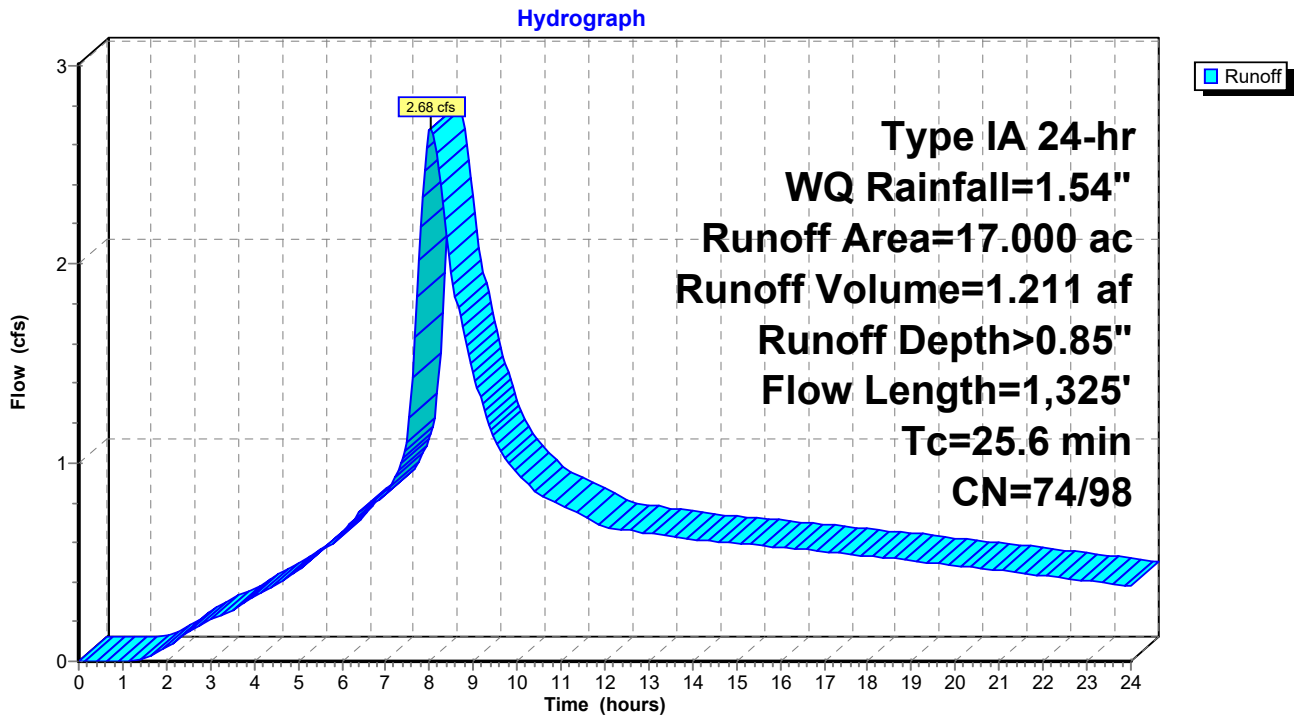
Runoff = 2.68 cfs @ 8.03 hrs, Volume= 1.211 af, Depth> 0.85"  
 Routed to Pond 3 : Pond

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Type IA 24-hr WQ Rainfall=1.54"

| Area (ac) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3.740     | 98 | Paved roads w/curbs & sewers, HSG C |
| 6.680     | 74 | >75% Grass cover, Good, HSG C       |
| * 6.020   | 98 | Lot Impervious Area (maximum)       |
| * 0.560   | 98 | Detention Pond Surface Area         |
| 17.000    | 89 | Weighted Average                    |
| 6.680     | 74 | 39.29% Pervious Area                |
| 10.320    | 98 | 60.71% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 13.5     | 125           | 0.0200        | 0.15              |                | <b>Sheet Flow, Lawn Sheet Flow</b><br>Grass: Short n= 0.150 P2= 2.40"                           |
| 8.4      | 200           | 0.0300        | 0.40              | 0.03           | <b>Parabolic Channel, Gutter</b><br>W=0.50' D=0.20' Area=0.1 sf Perim=0.7' n= 0.140             |
| 3.7      | 1,000         | 0.0100        | 4.54              | 3.56           | <b>Pipe Channel, CMP_Round 12"</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 25.6     | 1,325         | Total         |                   |                |   |

### Subcatchment 2: Developed Site





**Summary for Pond 3: Pond**

Inflow Area = 17.000 ac, 60.71% Impervious, Inflow Depth > 0.85" for WQ event  
 Inflow = 2.68 cfs @ 8.03 hrs, Volume= 1.211 af  
 Outflow = 0.79 cfs @ 11.01 hrs, Volume= 1.051 af, Atten= 71%, Lag= 178.6 min  
 Primary = 0.79 cfs @ 11.01 hrs, Volume= 1.051 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 131.86' @ 11.01 hrs Surf.Area= 17,150 sf Storage= 14,120 cf

Plug-Flow detention time= 233.7 min calculated for 1.049 af (87% of inflow)  
 Center-of-Mass det. time= 146.3 min ( 874.7 - 728.3 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1     | 131.00' | 54,524 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 131.00           | 15,853            | 0                      | 0                      |
| 132.00           | 17,369            | 16,611                 | 16,611                 |
| 133.00           | 18,942            | 18,156                 | 34,767                 |
| 134.00           | 20,572            | 19,757                 | 54,524                 |

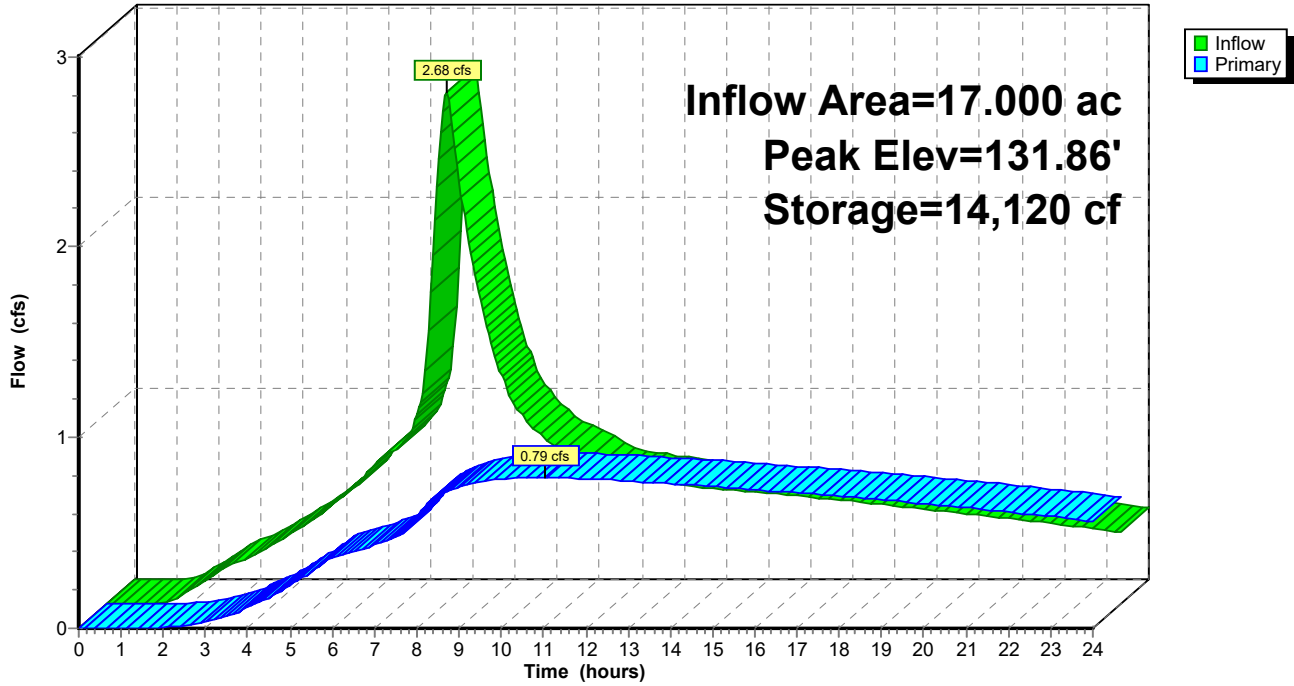
| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 131.00' | <b>5.7" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #2     | Primary | 132.75' | <b>9.6" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads  |
| #3     | Primary | 133.46' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.79 cfs @ 11.01 hrs HW=131.86' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.79 cfs @ 4.45 fps)
- 2=Orifice/Grate ( Controls 0.00 cfs)
- 3=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3: Pond

Hydrograph



# **Appendix C.**

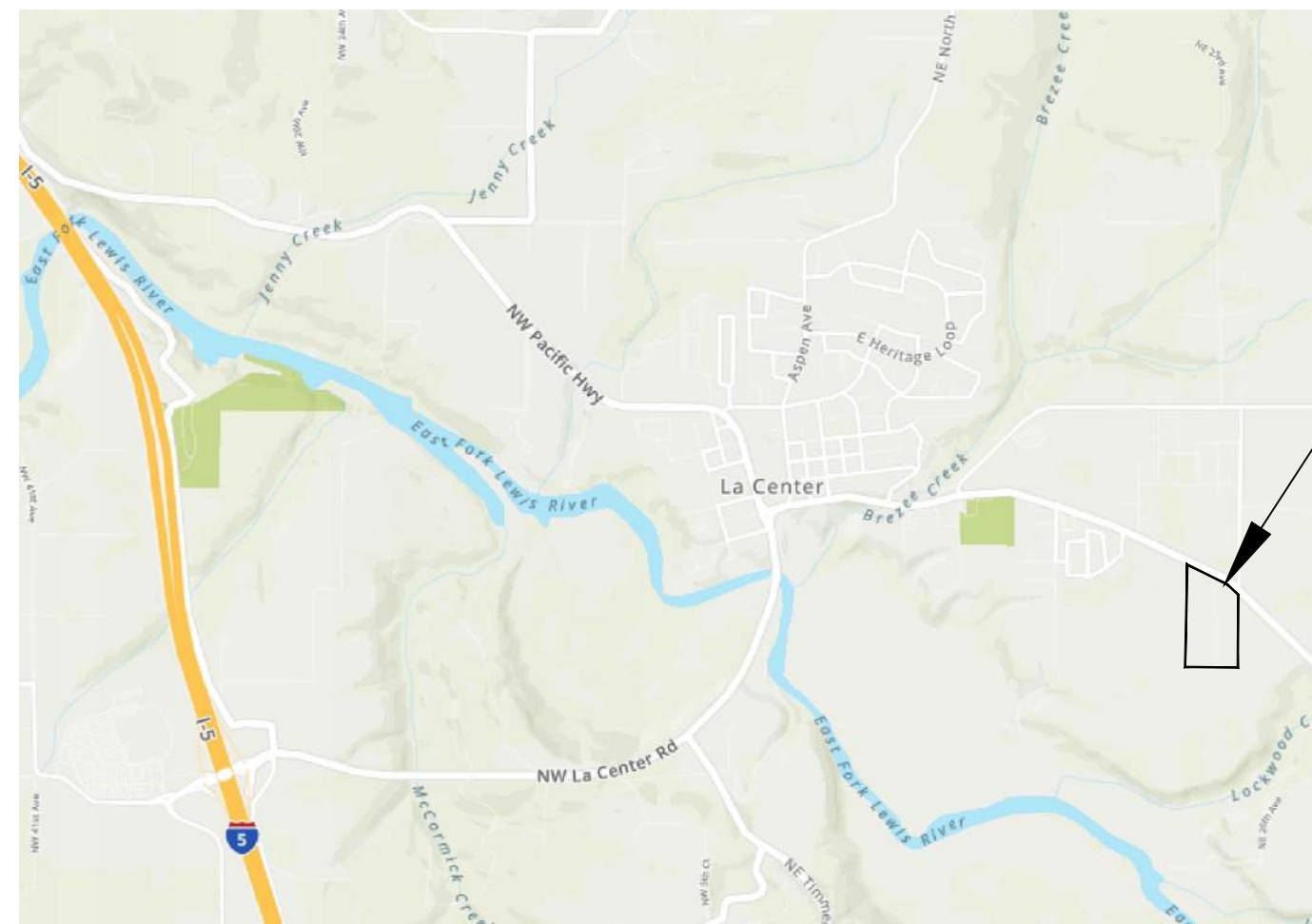
## **Preliminary Stormwater Plans**

# Asa's View Subdivision

Located in the SW ¼ of the NE ¼ of Section 2, T4N, R1E, W.M.  
La Center, Washington

## Preliminary Plans

NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212



**Site Location**

SITE



**Preliminary Plat Layout**

**Owner / Applicant:**

Troy Johns  
1004 W. 13th Street, Suite 220  
Vancouver, WA 98660

**Site Address**

2313 NE Lockwood Road  
La Center, Washington

**Parcel Numbers**

Lot 39: 209064-000 and  
Lot 102: 209121-000

**Civil Engineer:**

NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212  
(503) 415-0424

**Lot Size**

Lot 39: 7.39 acres  
Lot 102: 9.08 acres  
Total: 16.47 acres

**Proposal**

The project proposes to subdivide Tax Lots 39 and 102 into 68 single-family residential lots in the LDR-7.5 zone.

The site current use is residential and agricultural with access from NE Lockwood Road via a private driveway, which also provides access to residences located south of the site.

Public park space totaling 0.25 acres (10,900 square feet) is proposed. Street lighting and landscaping will be provided as part of future submittals.

Total site area = 717,383 SF (16.47 AC)  
ROW Dedication = 142,483 SF (3.27 AC)  
Total Development area = 574,900 SF (13.20 AC)

Tract A and B to be owned and maintained by a home owners association. Tract A will be for storm water management and will include a blanket easement to the City of La Center for access and inspection. Tract B will contain a public park.

**Setbacks**

Front = 20', Side = 7.5', Street Side = 10.0', Back - 20'

**Lot Coverage**

Maximum Building Coverage = 35%  
Maximum Impervious Surface Area = 50%

**Utilities**

Sanitary sewer services will be provided by the City of La Center. Connection to the existing sewer system will be to the existing Middle School pump station via an existing 8-inch diameter pipe stub west of the project site. The connection pipe will be located in a 15-foot wide public easement with vehicular access. The development proposes extension of the proposed sewer to the east side of the site in Lockwood Creek Road.

Public water supply will be provided by Clark Public Utilities. Connection to the public water system will be to the existing 12-inch waterline in Lockwood Creek Road.

Stormwater facilities for management of stormwater treatment and flow control will be located in Tract A in the southwest corner of the development.

**Critical Areas**

A non-jurisdictional wetland has been identified in the middle of the site covering 0.18 acres. It is identified as a Category 3 wetland.

An Oregon White Oak is located in the southeast portion of the proposed development in Tract B. The tree will be protected from park improvements. The project is not located within a designated 100-year floodplain or landslide hazard area. There are no known historic resources on site.

**Index of Drawings**

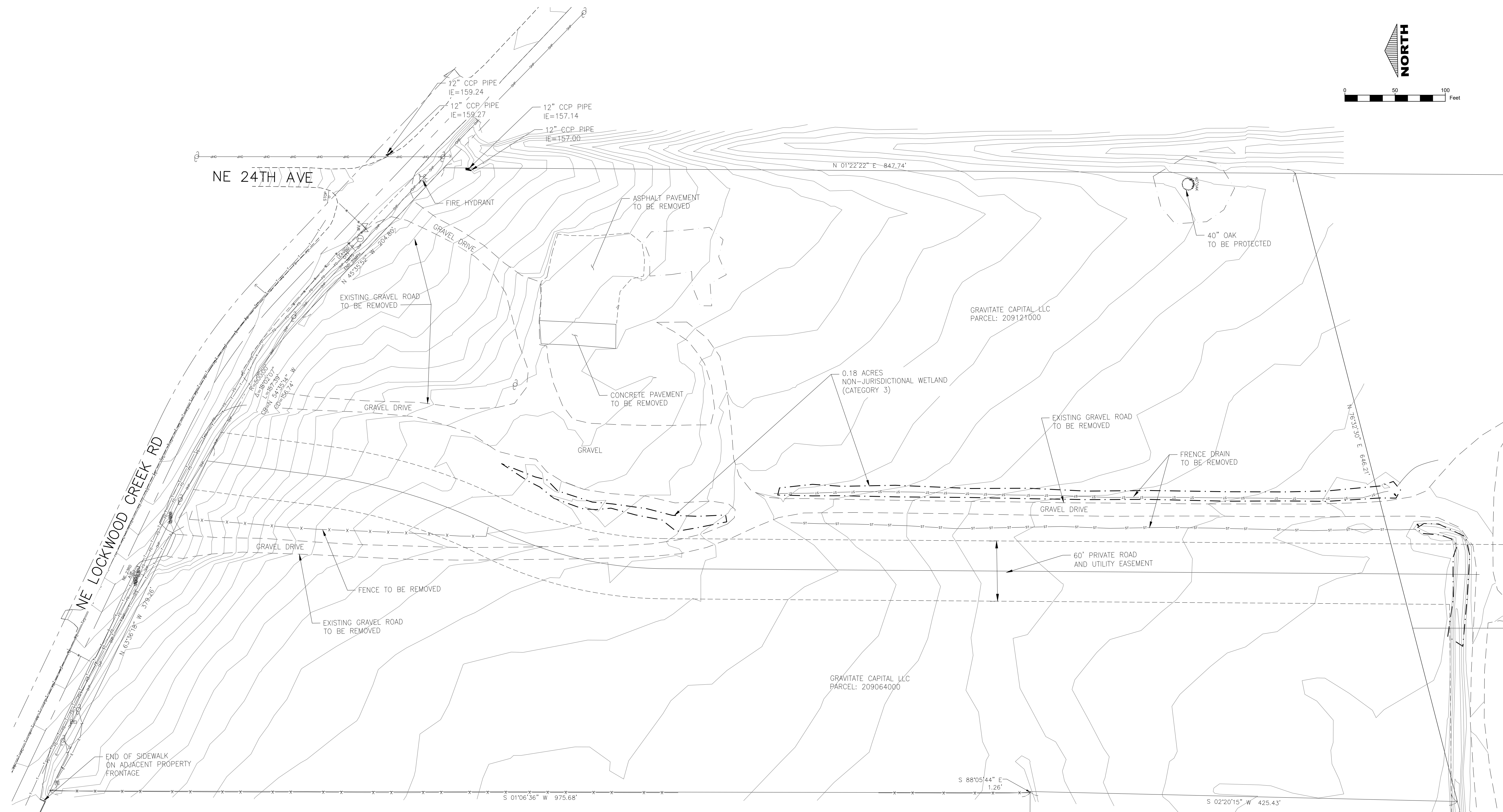
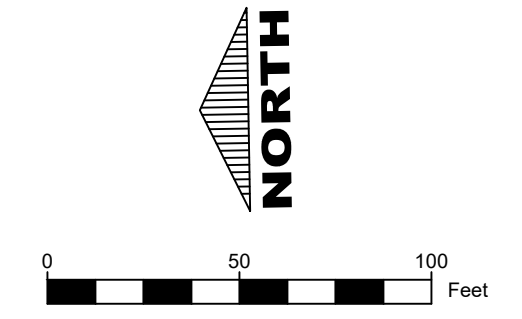
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|-------|-------------------------------------|
| 1     | COVER SHEET                         |
| 2     | EXISTING SITE CONDITIONS            |
| 3     | PRELIMINARY PLAT - NORTH            |
| 4     | PRELIMINARY PLAT - SOUTH            |
| 5     | PRELIMINARY GRADING PLAN            |
| 6     | PRELIMINARY STORMWATER PLAN - NORTH |
| 7     | PRELIMINARY STORMWATER PLAN - SOUTH |
| 8     | PRELIMINARY UTILITY PLAN - NORTH    |
| 9     | PRELIMINARY UTILITY PLAN - SOUTH    |
| 10    | ROAD IMPROVEMENT DETAILS            |
| 11    | PRELIMINARY LANDSCAPE PLAN          |

Asa's View  
COVER SHEET

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5/8/2022  
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1  
INDEX NUMBER 1 OF 11

PRELIMINARY PLANS



# Asa's View

## EXISTING SITE CONDITIONS

| NO. | DATE | REVISIONS |
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 5/8/2022

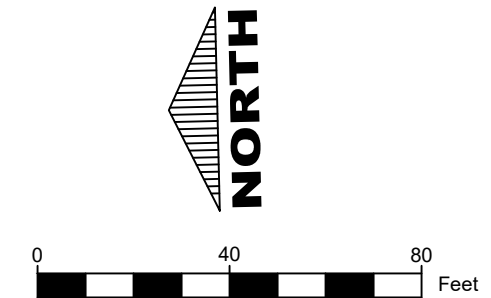
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 2

**INDEX NUMBER** 2 OF 11

**LEGEND:**

- |  |   |  |                                   |
|--|---|--|-----------------------------------|
|  | INDICATES WATER VALVE                                 |  | INDICATES BOUNDARY                |
|  | INDICATES FIRE HYDRANT                                |  | INDICATES EDGE OF ASPHALT         |
|  | INDICATES WATER METER                                 |  | INDICATES EDGE OF CONCRETE        |
|  | INDICATES TRAFFIC SIGNAL POLE                         |  | INDICATES EDGE OF GRAVEL          |
|  | INDICATES POWER POLE WITH DIRECTION OF OVERHEAD LINES |  | INDICATES 5 FOOT INTERVAL CONTOUR |
|  | INDICATES GUY ANCHOR                                  |  | INDICATES 1 FOOT INTERVAL CONTOUR |
|  | INDICATES JUNCTION BOX                                |  | INDICATES FENCE LINE              |
|  | INDICATES ELECTRIC METER                              |  | INDICATES ELECTRIC LOCATE         |
|  | INDICATES SIGN  |  | INDICATES FIBER OPTIC LOCATE      |
|  | INDICATES MAIL BOX                                    |  | INDICATES TELEPHONE LOCATE        |
|  | INDICATES TELEPHONE SERVICE BOX                       |  | INDICATES WATER LOCATE            |
|  | INDICATES TELEPHONE MANHOLE                           |  | INDICATES OVER HEAD POWER         |
|  | INDICATES DECIDUOUS TREE WITH TRUNK DIAMETER AND TYPE |  | FENCE                             |
- BEARINGS ARE WASHINGTON SOUTH NAD 83 SOUTH ZONE.  
 ELEVATIONS ARE NAVD 88 BASED ON OPUS GPS SOLUTION TO A CONTROL POINT #1 (ELEV.142.25)

**PRELIMINARY PLANS**



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212

LEGEND

- RIGHT OF WAY
- PROPERTY LINE
- EASEMENT
- SETBACKS
- ROAD CENTERLINE
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED GRAVEL ROAD



MATCHLINE - SEE SHEET 4

Asa's View  
 PRELIMINARY PLAT - North

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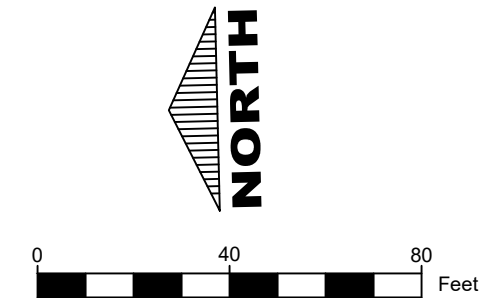
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 AS SHOWN ON PLAN

DATE:  
 5/8/2022

SHEET NO.  
 3

INDEX NUMBER 3 OF 11

PRELIMINARY PLANS

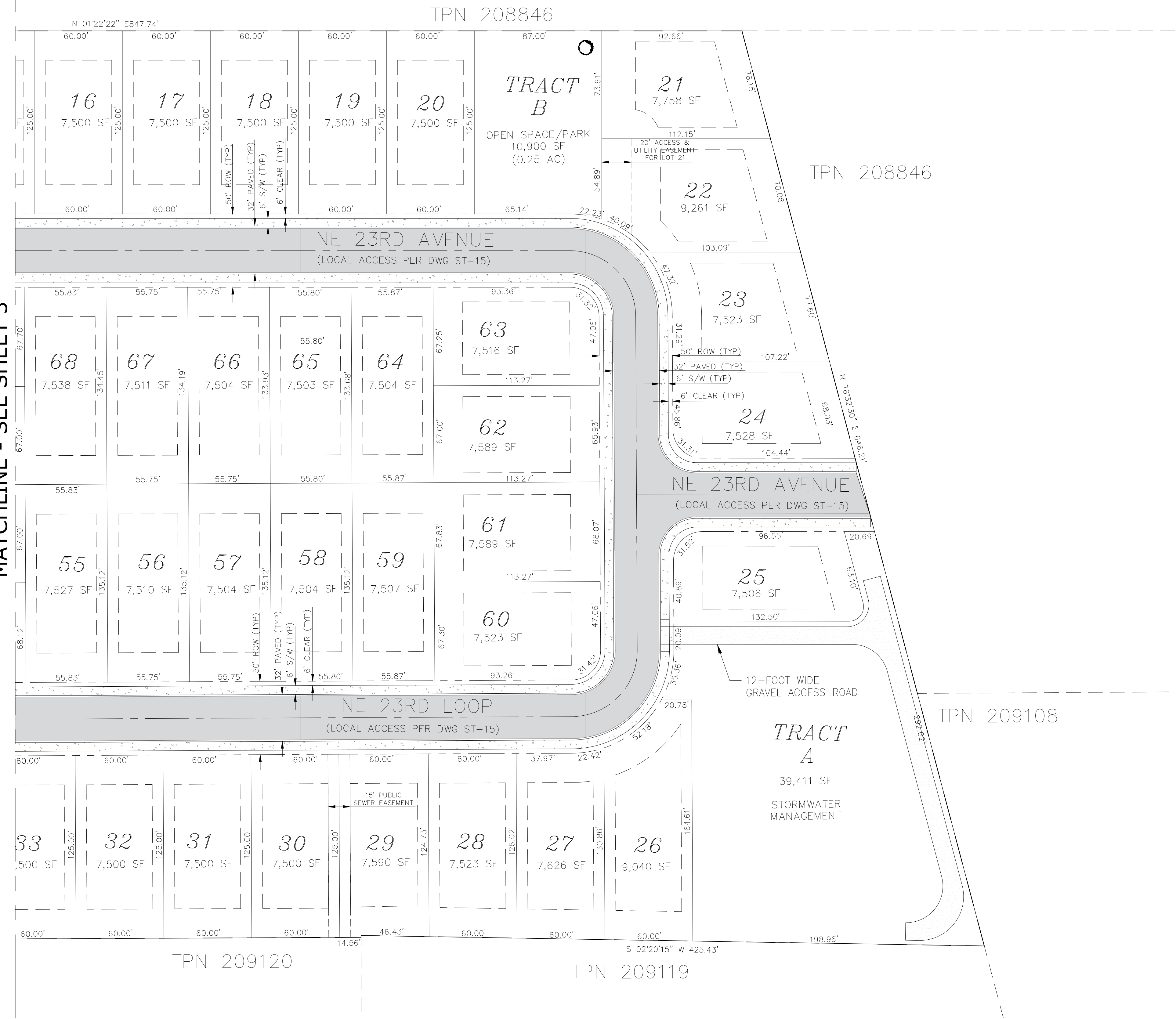


NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212

### LEGEND

- RIGHT OF WAY
- PROPERTY LINE
- EASEMENT
- SETBACKS
- ROAD CENTERLINE
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED GRAVEL ROAD

MATCHLINE - SEE SHEET 3



# Asa's View

PRELIMINARY PLAT

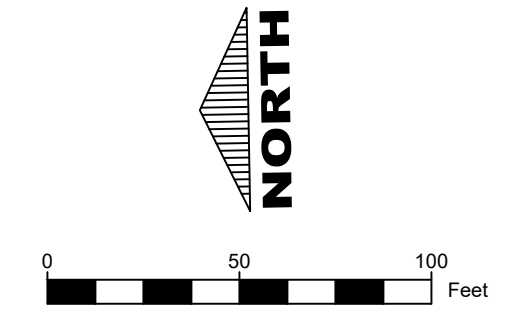
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5/8/2022

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4

## PRELIMINARY PLANS



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212



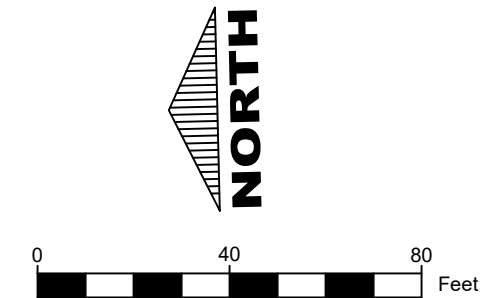
**Asa's View**  
 PRELIMINARY GRADING PLAN

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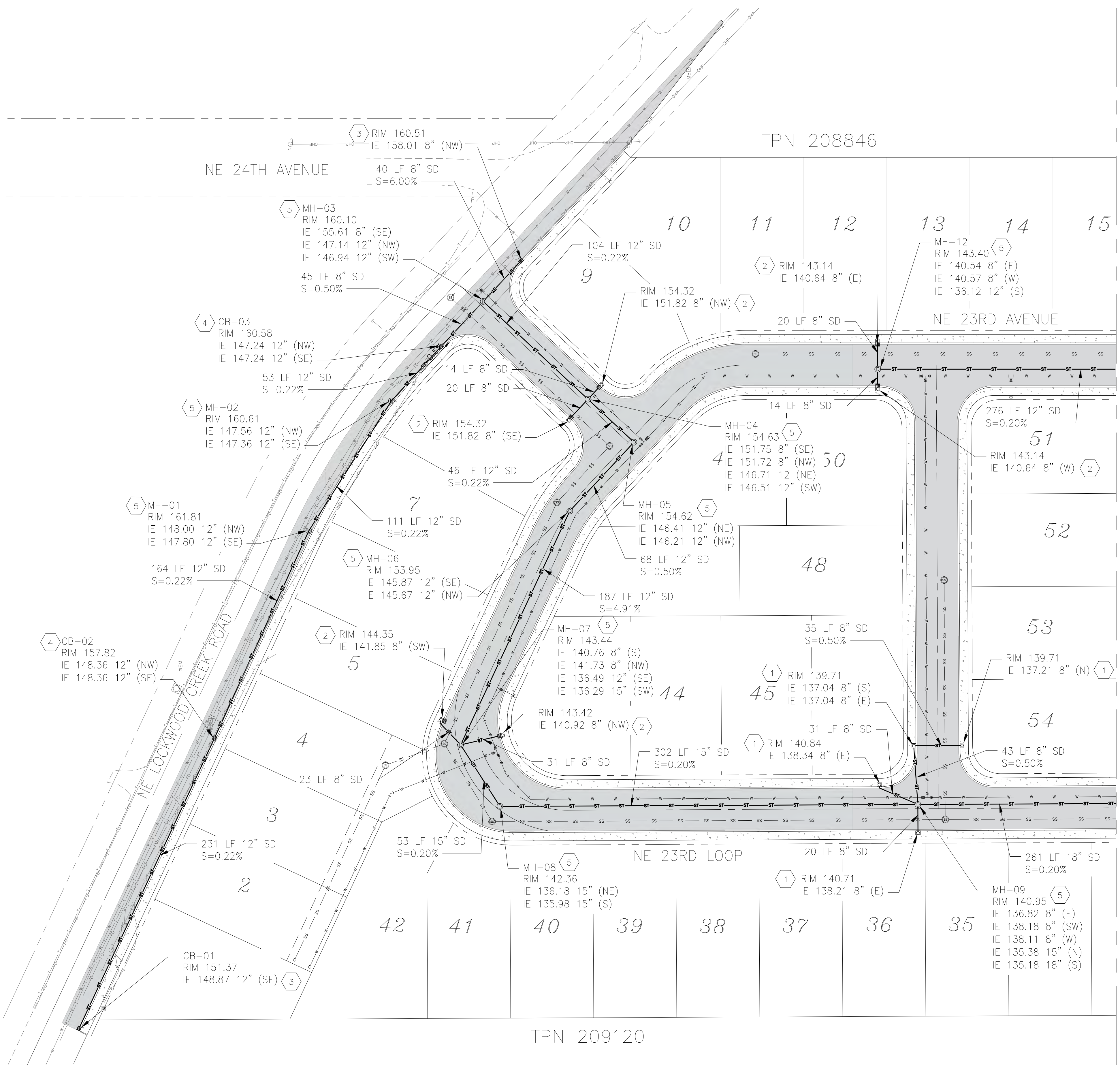
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 AS SHOWN ON PLAN  
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 5/8/2022  
 SHEET NO.  
 5  
 INDEX NUMBER 5 OF 11

**PRELIMINARY PLANS**





NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212



**KEYNOTES**

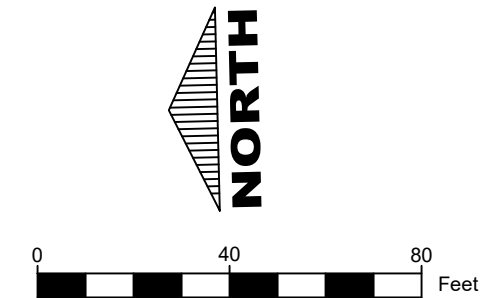
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PER CITY STD PLAN SM-4
- 2 COMBINATION CURB INLET  
PER CITY STD PLAN SM-6
- 3 CATCH BASIN  
PER CITY STD PLAN SM-5
- 4 CATCH BASIN TYPE 2, 48-INCH DIA.  
WITH FRAME AND GRATE  
PER WSDOT STD PLAN B-10.20-02
- 5 STORM MANHOLE, 48-INCH DIA.  
PER CITY STD PLAN SM-2

**Asa's View**  
 PRELIMINARY GRADING AND  
 STORMWATER PLAN - NORTH

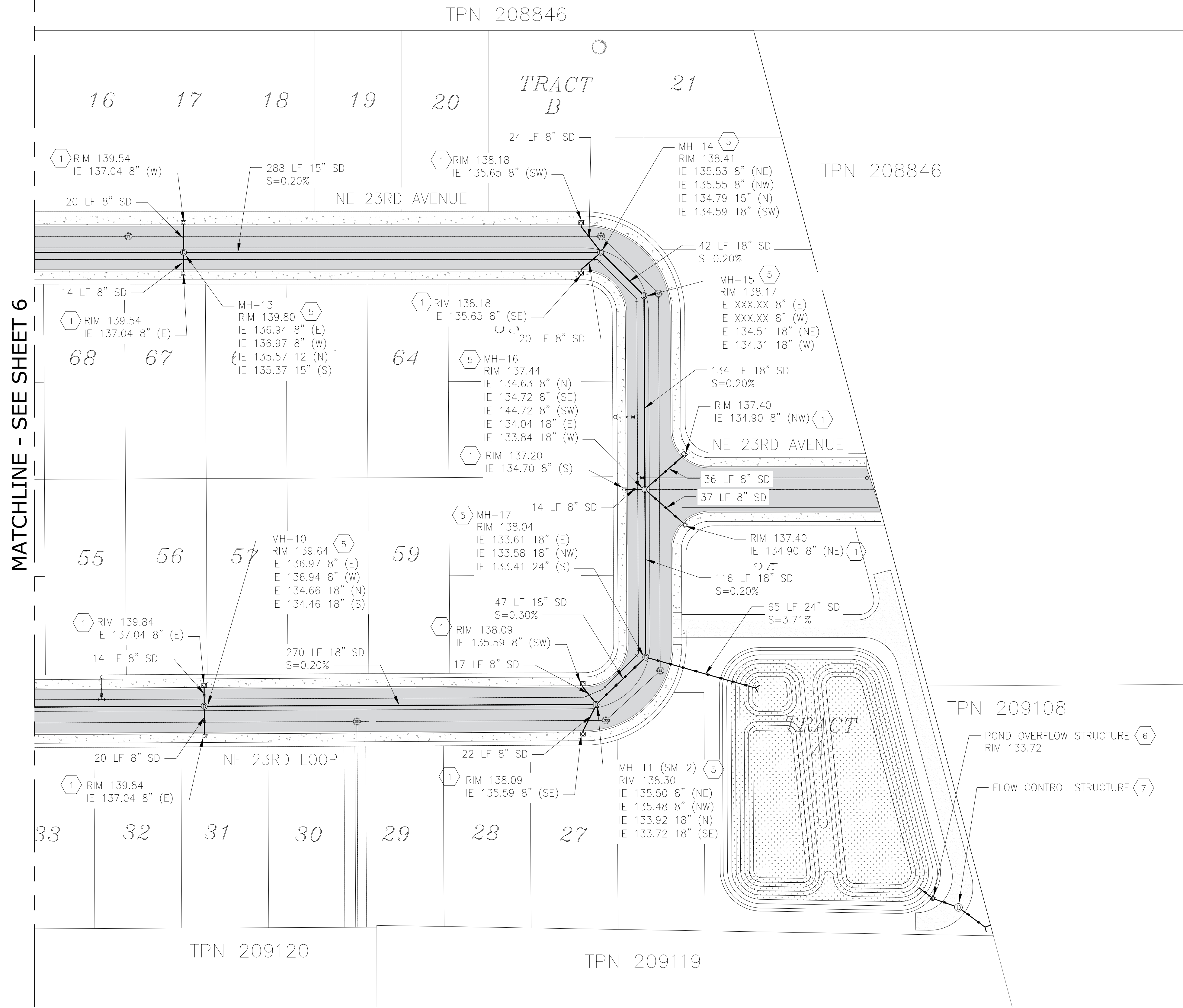
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 DATE:  
 5/8/2022  
 SHEET NO.  
 6  
 INDEX NUMBER 6 OF 11

**PRELIMINARY PLANS**



NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212



**KEYNOTES**

- 1 CURB INLET  
PER CITY STD PLAN SM-4
- 2 COMBINATION CURB INLET  
PER CITY STD PLAN SM-6
- 3 CATCH BASIN  
PER CITY STD PLAN SM-5
- 4 CATCH BASIN TYPE 2, 48-INCH DIA.  
WITH FRAME AND GRATE  
PER WSDOT STD PLAN B-10.20-02
- 5 STORM MANHOLE, 48-INCH DIA.  
PER CITY STD PLAN SM-2
- 6 SLOPED FIELD INLET  
PER CITY STD PLAN SM-9
- 7 FLOW CONTROL STRUCTURE, 60-INCH DIA.  
PER WSDOT STD PLAN B-10.40-02

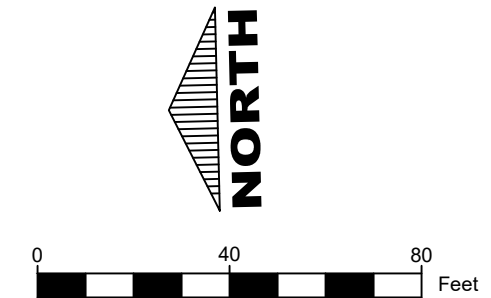
MATCHLINE - SEE SHEET 6

**Asa's View**  
PRELIMINARY GRADING AND  
STORMWATER - SOUTH

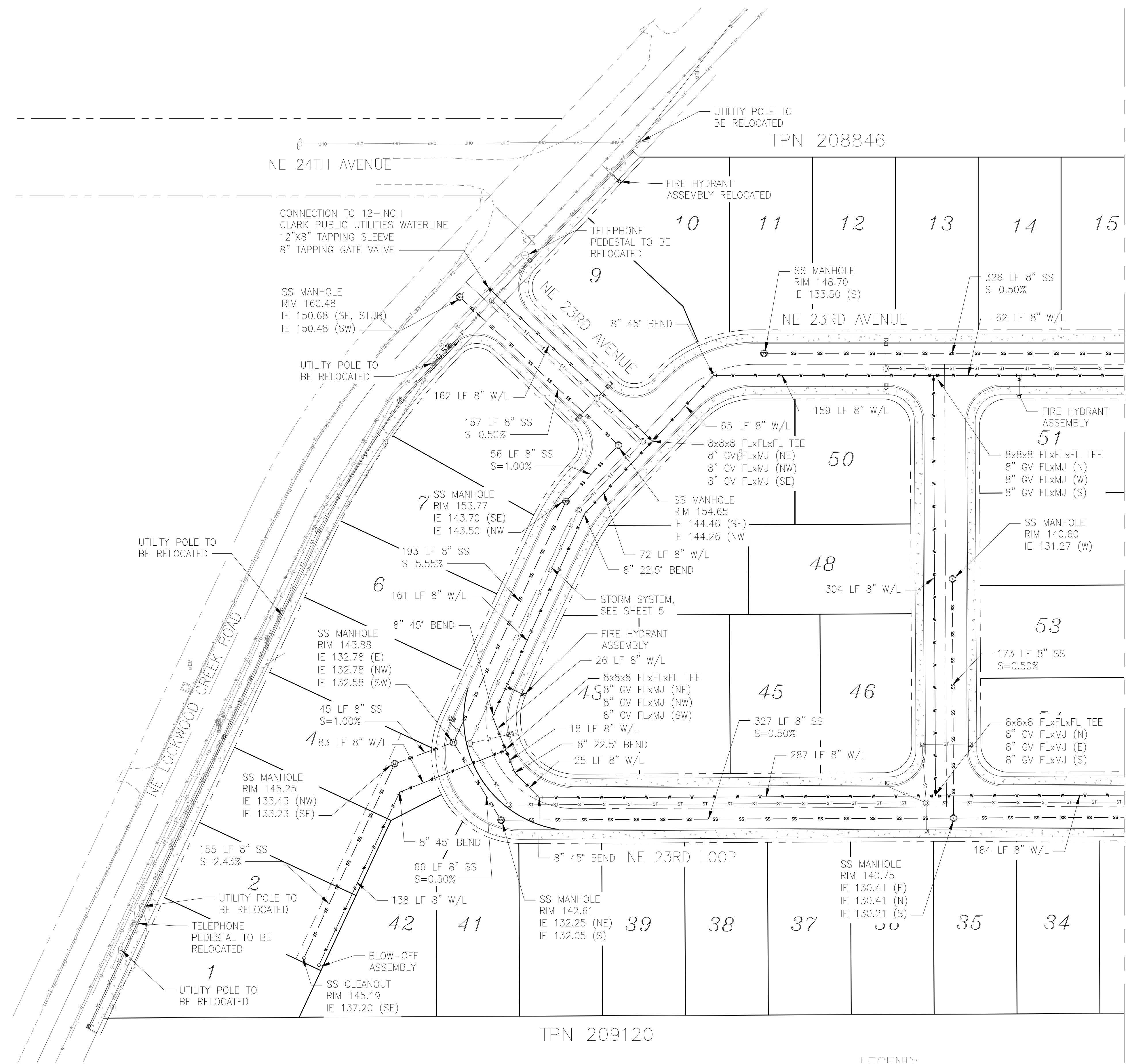
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DRAWING SCALE:  
AS SHOWN ON PLAN  
DATE:  
5/8/2022  
SHEET NO.

**PRELIMINARY PLANS**



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212



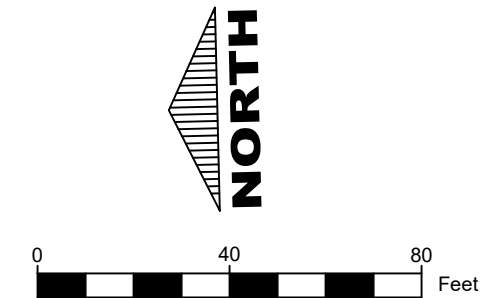
MATCHLINE - SEE SHEET 9

**Asa's View**  
 PRELIMINARY UTILITY PLAN - NORTH

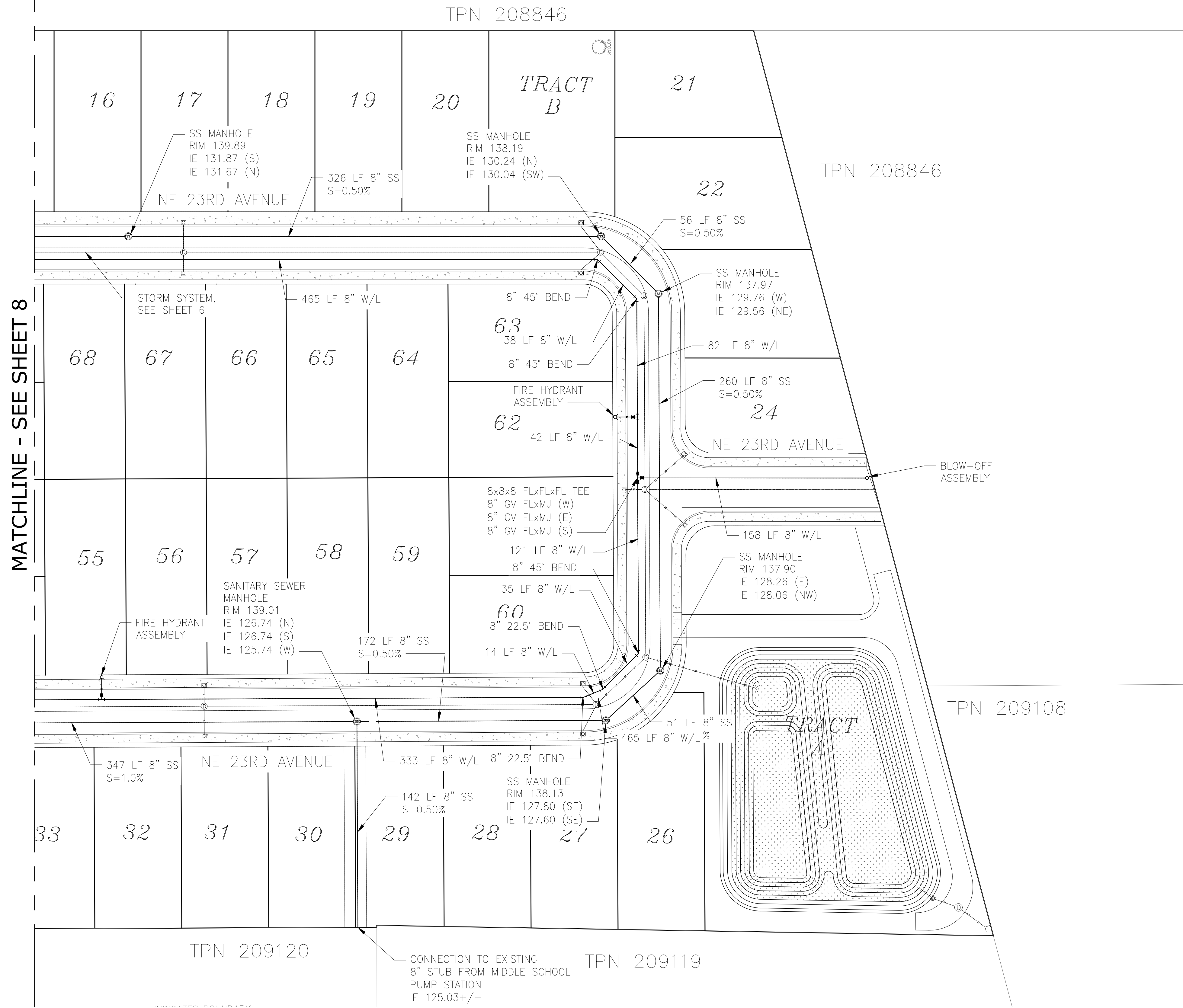
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**PRELIMINARY PLANS**



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212



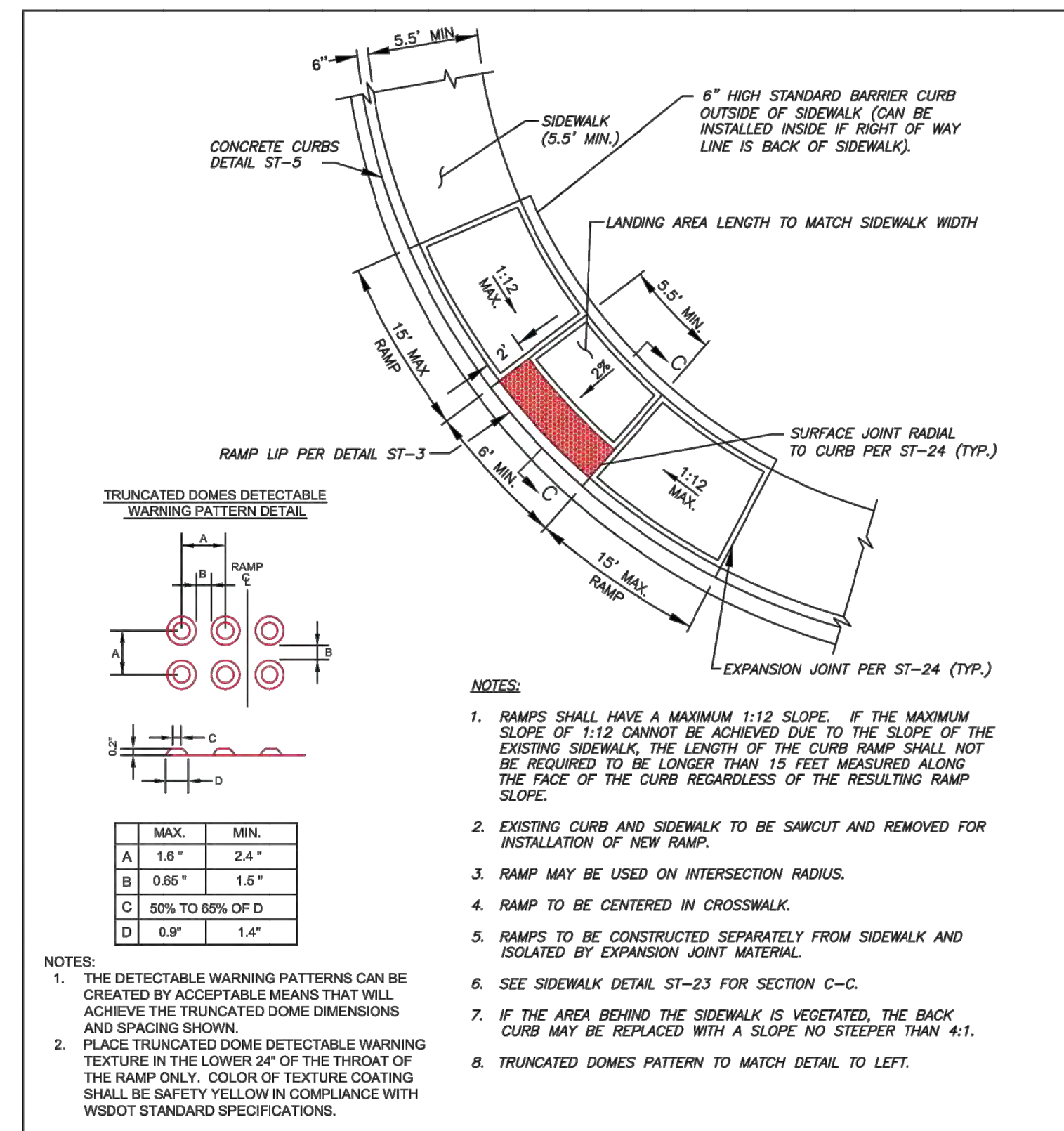
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 INDEX NUMBER 9 OF 11

**PRELIMINARY PLANS**

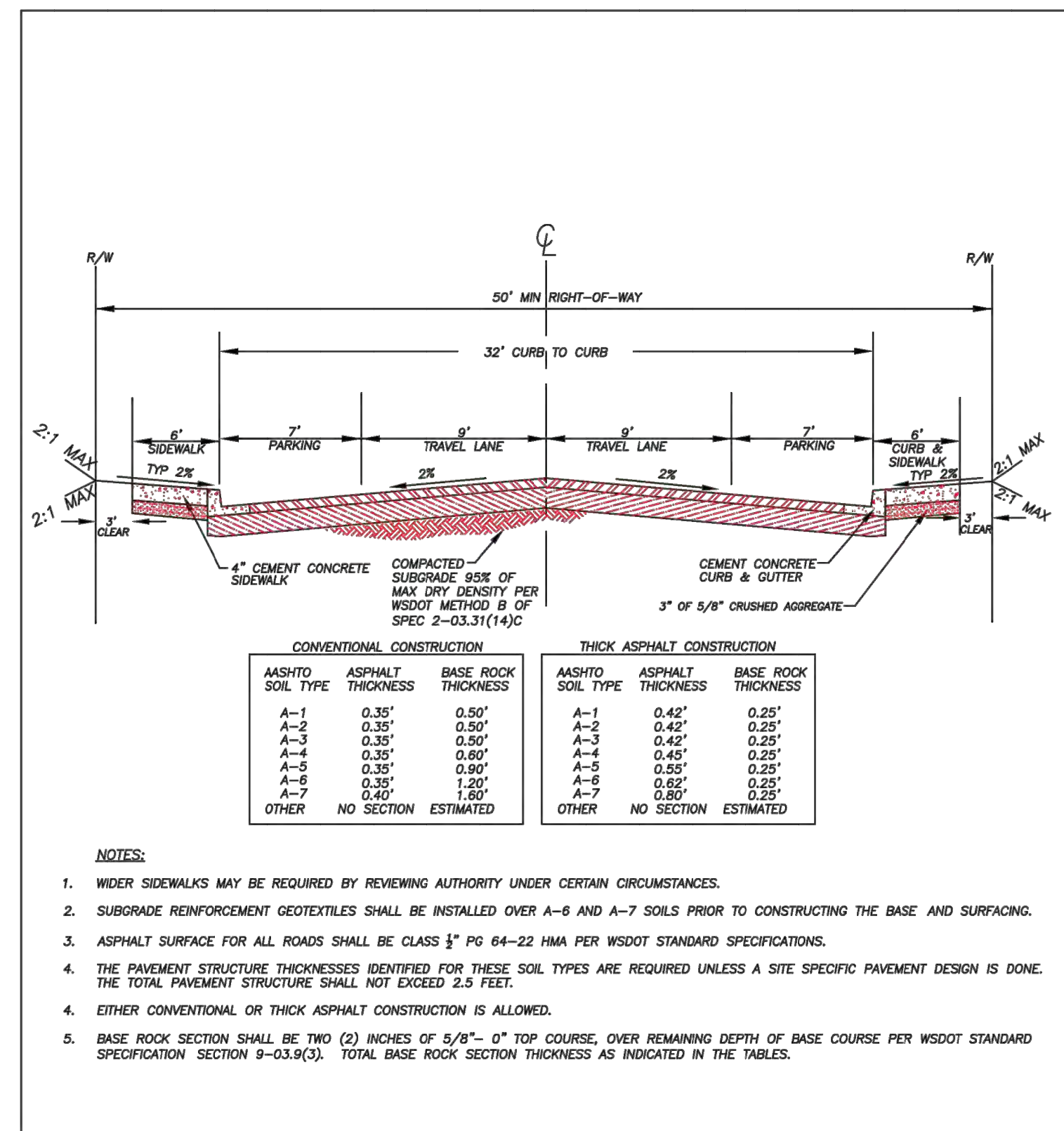


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CITY OF LA CENTER APPROVED

*Bart Stupp, PE* 9/22/10  
CITY ENGINEER DATE

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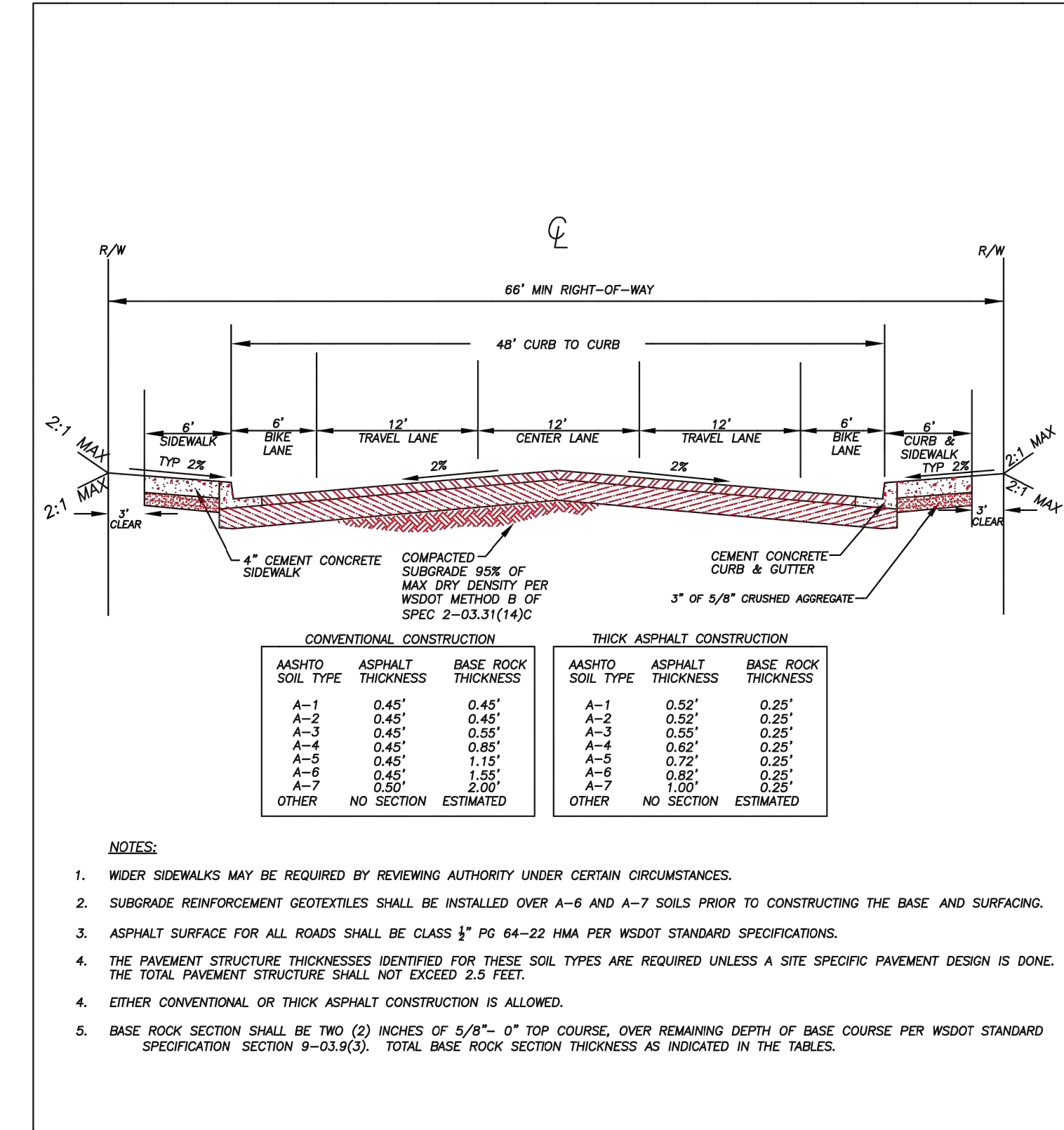


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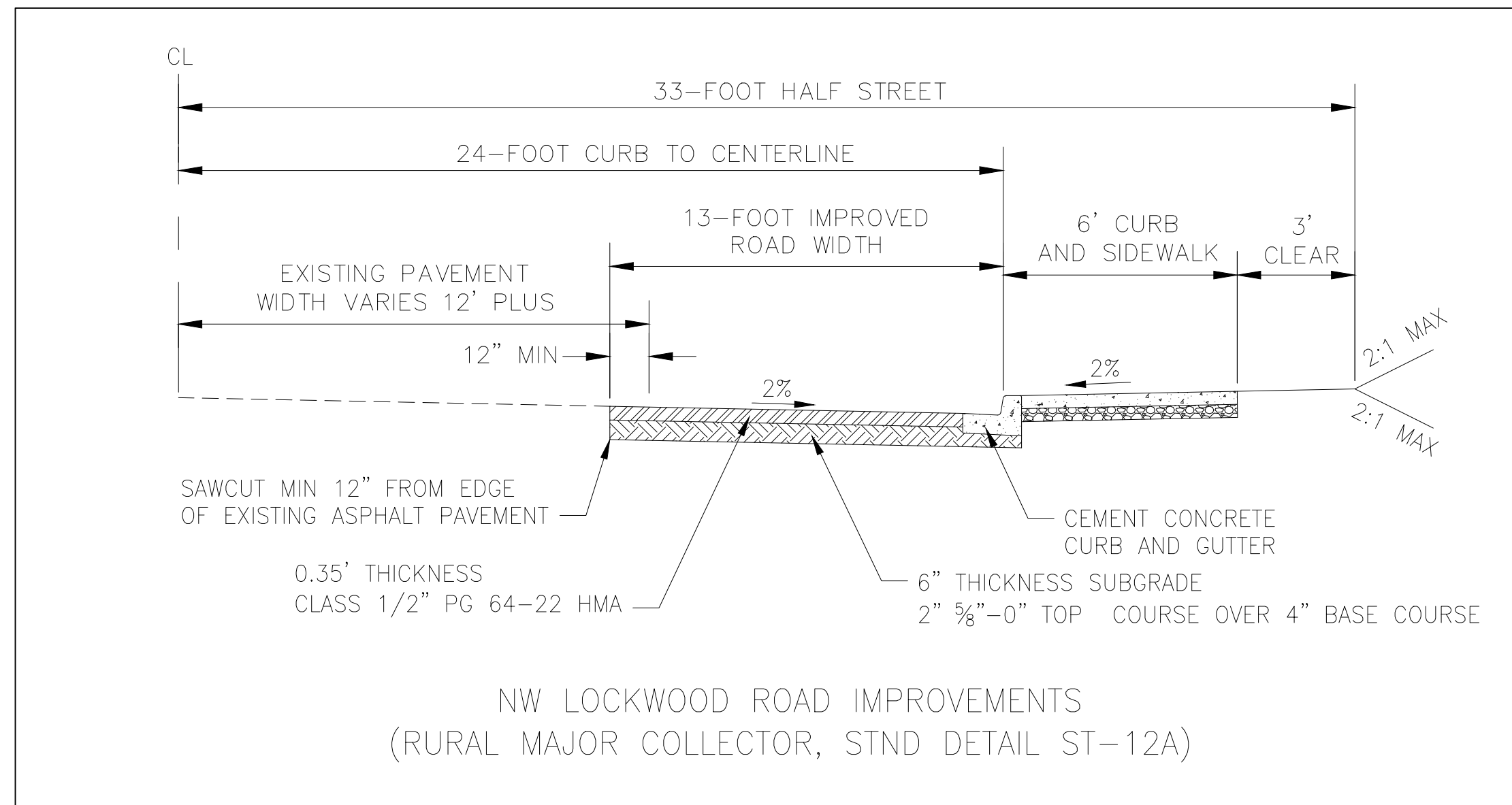


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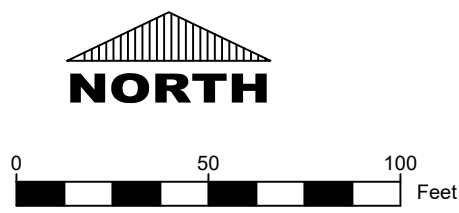
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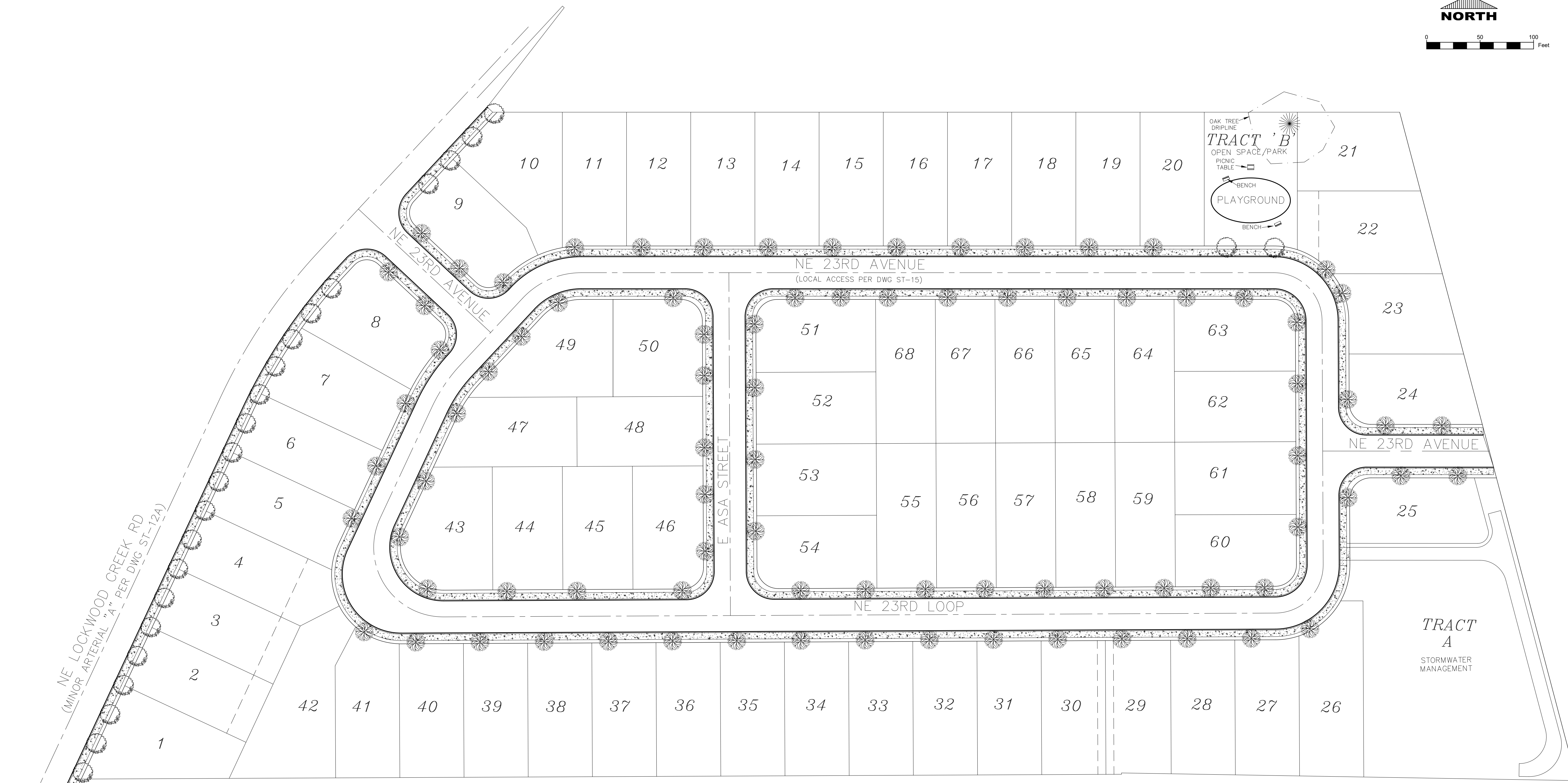
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2410 NE 22nd Ave  
Portland, OR 97212



Asa's View  
PRELIMINARY LANDSCAPE PLAN

| PLANT SYMBOL | PLANT NAME   | NUMBER OF PLANTS |
|--------------|--|------------------|
|              | ACER BUERRGERANUM - TRIDENT MAPLE (SPREAD 20' HEIGHT 25') OR SIMILAR OTHER FROM LIST OF APPROVED STREET TREES. TO BE INSTALLED WITH CONSTRUCTION OF THE SUBDIVISION.                     | 24 TREES         |
|              | ACER BUERRGERANUM - TRIDENT MAPLE (SPREAD 20' HEIGHT 25') OR SIMILAR OTHER FROM LIST OF APPROVED STREET TREES. TO BE INSTALLED WITH CONSTRUCTION OF INDIVIDUAL HOME, PLACEMENT MAY VARY. | 85 TREES         |
|              | EXISTING 40" OREGON WHITE OAK TO BE RETAINED   | 1 TREE           |

- NOTES:
- ALL PLANTING MATERIAL AND LOCATION TO BE FINALIZED WITH THE FINAL LANDSCAPE INSTALLATION
  - ALL LANDSCAPING INSTALLED BY THE DEVELOPER (OPEN SPACES, TRAILS, ETC) SHALL BE AUTOMATICALLY IRRIGATED BY MEANS OF A PERMANENT UNDERGROUND SYSTEM TO INSURE PLANT SURVIVAL.
  - IRRIGATION SYSTEM SHALL BE "DESIGN BUILD" BY THE LANDSCAPE CONTRACTOR, INSTALLING ALL WORK NECESSARY FOR THE COMPLETE INSTALLATION OF THE IRRIGATION SYSTEM, INCLUDING ZONING, BACKFLOW DEVICES AND POWER NEEDED FOR THE SYSTEM AND MONUMENT SIGNS. CONTRACTOR SHALL BE REQUIRED TO OBTAIN APPROVAL OF AGENCY FOR THE IRRIGATION SYSTEM PRIOR TO CONSTRUCTION.
  - ALL IRRIGATION WILL BE INCLUDED WITH THE FINAL LANDSCAPE INSTALLATION
  - INTERIOR STREET TREE SPECIES AND PLACEMENT WILL BE DETERMINED WITH THE BUILDING PERMIT TO ACCOMMODATE FUTURE HOMEOWNER PREFERENCE AND CONFLICTS WITH DRIVEWAYS AND UTILITIES
  - SIGHT DISTANCE WILL BE MAINTAINED AT ALL INTERSECTIONS

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DATE:  
5/8/2022  
SHEET NO.  
11  
INDEX NUMBER 11 OF 11

PRELIMINARY PLANS

**Appendix D.**  
**Geotechnical Report**

**PRELIMINARY GEOTECHNICAL ENGINEERING STUDY  
W/INFILTRATION**

**Proposed Lockwood Creek Subdivision  
2313 NE Lockwood Creek Road  
La Center, Clark County, WA 98629  
(Parcel No.'s 209064000 and 209121000)**

**Prepared for:**

**Gravitate Capital, LLC  
13563 NW Fuller Lane  
Portland, OR 97229**

**Prepared By:**



**Seth A. Chandlee  
President**



**Paul Williams, PE  
Project Engineer**

**Project No. G0372200  
{May 2022}**

**Soil and Water Technologies, Inc.  
1101 Broadway, Suite 216 | Vancouver, Washington 98660  
(360) 200-8693 / [www.swt.ski](http://www.swt.ski)**



## TABLE OF CONTENTS

|   |          |
|---|----------|
| <b>INTRODUCTION.....</b>                                  | <b>1</b> |
| General .....   | 1        |
| Project Description .....                                 | 1        |
| <b>SITE CONDITIONS.....</b>                               | <b>1</b> |
| Surface.....  | 1        |
| Subsurface .....  | 2        |
| Infiltration Testing.....                                 | 2        |
| Groundwater.....  | 3        |
| General Regional Geology .....                            | 3        |
| <b>GEOLOGIC HAZARDS.....</b>                              | <b>4</b> |
| Seismic Hazards .....                                     | 4        |
| <i>Ground Motion Amplification</i> .....                  | 4        |
| <i>Liquefaction</i> .....                                 | 4        |
| <i>Fault Rupture</i> .....                                | 5        |
| Seismic Design Criteria:.....                             | 5        |
| General .....   | 5        |
| Foundations .....   | 6        |
| Slab on Grade .....                                       | 6        |
| Dewatering .....  | 7        |
| Site Drainage .....                                       | 7        |
| Pavement Areas.....                                       | 7        |
| <b>CONSTRUCTION RECOMMENDATIONS .....</b>                 | <b>8</b> |
| Site Earthwork and Grading.....                           | 8        |
| Wet Weather Construction & Moisture Sensitive Soils:..... | 9        |
| Erosion Control .....                                     | 10       |
| Expansive/Shrink Soil Capacity.....                       | 10       |
| Utility Support and Backfill .....                        | 10       |
| Temporary Excavations.....                                | 11       |

## GRAPHICS

|                        |   |
|------------------------|---|
| <b>Figure 1</b>        | <b>Vicinity Map</b>                         |
| <b>Figure 2</b>        | <b>Site Plan (Test Pit Locations)</b>       |
| <b>Figure 3</b>        | <b>Typical Footing and Drainage Detail</b>  |
| <b>Figure 4</b>        | <b>Utility Trench Backfill Detail</b>       |
| <b>Appendix A</b>      | <b>Field Exploration</b>                    |
| <b>Plate A1</b>        | <b>Unified Soil Classification – Legend</b> |
| <b>Plates A2 to A4</b> | <b>Logs of Exploratory Test Pit Logs</b>    |
| <b>Appendix B</b>      | <b>Laboratory Testing</b>                   |
| <b>LPL 1</b>           | <b>Atterberg Limits</b>                     |
| <b>Ei-1</b>            | <b>Expansion Index</b>                      |

## **INTRODUCTION**

### **General**

This report presents the results of the geotechnical engineering study completed by Soil and Water Technologies, Inc. (SWT) for the proposed Lockwood Creek Subdivision located in Vancouver, Washington. The general location of the site is shown on the *Vicinity Map, Figure 1*. Our approximate exploratory test pits / infiltration locations are shown in relation to the site on the *Site Plan, Figure 2*.

The purpose of this study is to explore and evaluate subsurface conditions at the site and provide geotechnical recommendations for the proposed construction based on the conditions encountered. These recommendations include site specific geotechnical parameters for foundation support, earthwork grading, stormwater infiltration, site drainage, erosion control and a seismic hazard evaluation.

### **Project Description**

Since a preliminary site plan was not provided at the time this report was written, this report should be considered preliminary and once available, undergo further grading plan review. However, based on our recent conversation and site investigation, we anticipate that the combined 18.57-acre properties, designated tax parcel No.'s 209064000 and 209121000, will be developed into a residential subdivision. Based on existing site grades, we anticipate minimal cuts/fills ranging from 1 to 2 feet in thickness across the site. The project will also include essential underground utilities (sanitary sewer, storm, domestic water) and onsite paved roadways.

Specific structural design loads were also not available, however, based on our experience with similar projects, we anticipate that wall loads will be approximately 700 to 1,500 pounds per lineal foot (plf). Slab-on-grade floor loads will most likely range from one hundred to one hundred and fifty pounds per square foot (100-150 psf).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that Soil and Water Technologies perform a general review of the final design.

## **SITE CONDITIONS**

### **Surface**

As shown on our *Site Plan, figure 2*, the subject site is located to the southwest of the intersection of NE Lockwood Creek Road and NE 24<sup>th</sup> Avenue, on the south side of NE Lockwood Creek Road in La Center, Washington. The subject property is bordered to the west by the newly constructed La Center Highschool, to the south by a single-family residence on land, to the east by undeveloped vacant land, and north by NE Lockwood Creek Road.

The 2-parcel site is relatively level (0-5% slope), with a gentle south-facing slope the runs adjacent to Lockwood Creek Road (5-10%) at the north side of the site. The total elevation change across the properties is about 10 feet. According to Clark County Maps Online imagery layers, the two properties were historically used as agricultural farming with an existing residence and associated structures dating back to 1955. All structures were removed between 2016 and 2018 and the site consists predominantly of field grass with a gravel parking area at the northeast corner. A gravel roadway (NE 23<sup>rd</sup> Avenue) also runs north and south between the two parcels in the center of the site.

## **Subsurface**

On March 25<sup>th</sup>, 2022, and April 4<sup>th</sup>, 2022, we evaluated the subsurface soil conditions by excavating a total of 1 infiltration test pit (I-1) and 4 exploratory test pits, designated TP-2 through TP-5 to the maximum explored depth of 8.0 feet below the existing ground surface (bgs). All exploration locations were selected by SWT to determine subsurface conditions across the site in regard to proposed development. The approximate locations are shown on the *Site Plan, Figure 2*.

All soil was classified in general accordance with the *Unified Soil Classification System (USCS)*. Soil samples obtained from the test pits were returned to our office for additional evaluation and laboratory testing. Descriptions of field and laboratory procedures are included in Appendices A and B, respectively.

The following is a generalized description of the subsurface units encountered. For a more detailed description of the conditions encountered, refer to test pit logs A2 through A4.

*SURFACE MATERIALS:* Surface materials encountered in the test pits consisted of approximately 4 - 6 inches of organic topsoil, wood chips and tree roots. A tilled zone resulting from agricultural farming is present in the upper approximate 1.5 feet.

*SANDY LEAN CLAY* Native sandy Lean Clay (CL) was encountered below the surface materials at each test pit to depths ranging from 0.5 to 7.0 feet bgs. Except for TP-3, which consists of silty Gravels (fill). The lean clay layer was also encountered below the sandy Fat Clay (CH) at test pits I-1 and TP-3 to depths ranging from 2.5/4.0 to 8.0 feet bgs. The sandy Lean Clay (CL) was brown, soft to stiff and in a moist condition. The moisture content of the 5 samples collected from this layer ranged from 30.8 to 36.4 percent with a fines content ranging from 58.3 to 86.7 percent. The upper ~ 1.5 feet of this layer predominantly consists of a tilled zone from agriculture farming. The expansion index of this layer is 13.

*SANDY FAT CLAY* Native sandy Fat Clay (CH) was encountered below the lean Clay (CL) layer at test pits I-1 and TP-3 to depths ranging from 1.0 to 2.5/4.0 feet bgs. The sandy Fat Clay (CH) was gray/brown, stiff to very stiff and in a moist condition. The moisture content of the 3 samples collected from this layer ranged from 25.7 to 34.2 percent with a fines content ranging from 79.6 to 88.1 percent. The Atterberg limits of this layer has a liquid limit of 56 and a plasticity index of 36.

## **Infiltration Testing**

Infiltration testing was performed at test pit I-1 at depths of 2.0 and 3.5 feet bgs. The approximate location of the infiltration test pit is shown on the *Site Plan, Figure 2*. The purpose of performing these tests was to determine if site subgrade soils are suitable for infiltration of stormwater and provide stormwater treatment and control for all onsite impervious surfaces after construction. Infiltration testing methods were performed in general accordance with 2021 Clark County Stormwater Manual requirements for the Single-Ring Falling Head Infiltration Test. The test pit was excavated to the desired depths and a 6-inch diameter PVC pipe was embedded into the exposed soil ~ 6 inches in depth. Following a minimum 4-hour pre-saturation period, the pipe was filled with water and timed as the head dropped. The test results were averaged and recorded in inches per hour (iph).

All soil was classified following the *Unified Soil Classification System* (USCS) and the *AASHTO Soil Classification System (M145)*. The following table provides the field coefficient infiltration test results and associated laboratory testing:

| Location | USCS Soil Type | Approx. Depth to Groundwater   | WWHM | Depth (ft.) | % Passing #200 sieve | % Moisture content | Field Coefficient of Permeability |
|----------|----------------|--------------------------------|------|-------------|----------------------|--------------------|-----------------------------------|
| I-1      | CH             | Not encountered to 8.0 ft. bgs | SG-4 | 2.0         | 88.1                 | 32.7               | 0.08 iph                          |
| I-1      | CH             | Not encountered to 8.0 ft. bgs | SG-4 | 3.5         | 87.1                 | 34.2               | 0.05 iph                          |

(USCS) Unified Soil Classification System / (CH) – Clay with sand (high plasticity)  
 (WWHM) Western Washington Hydrology Model / Soil Group 4 (poorly drained soils)

The coefficients of permeability presented were calculated using Darcy’s law in accordance with the 2021 CCSWM, but do not include base correction factors or system design correction factors as required by the guidelines. Additionally, it is recommended that the designer also include additional correction factors to account for the level of maintenance, type of system, vegetation, siltation, etc.

Based on the subsurface conditions encountered, the slow rate of infiltration and our laboratory test results, it is our opinion that the low permeable native sandy fat Clay (CH) encountered in test pit I-1, and across the site, *is not suitable* for the infiltration of stormwater and will require alternative management.

**Groundwater**

Due to the wet time of year and above-average rainfall, light to medium groundwater seepage was encountered in test pit TP-2, TP-4, and TP-5 at depths ranging from 2.0 to 5.0 feet bgs. Based on our review of Clark County Maps Online and the Department of Ecology well log database, static groundwater exceeds 30 feet in depth. However, the groundwater monitoring wells (piezometer) installed by Columbia West Engineering at the adjacent school property indicates groundwater depths of 3 feet bgs. during the months of April, 2018.

It is important to note that groundwater conditions are not static; fluctuations may be expected in the level and seepage of flow depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, the groundwater level is higher and seepage rate is greater in the wetter winter months (typically October through May).

**General Regional Geology**

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the USGS Geologic Map of Washington-Southwest Quadrant, WA. State Department of Natural Resources, (Geologic Map GM-34, 1987) and the Geologic Map of the Vancouver Quadrangle, Washington & Oregon, (DLNR), Open File Report 87-10 and the USDA web soil survey.

In the Late Pleistocene (17 -13 kya), a series of floods caused by the failure of the ice dam at Glacial Lake Missoula in western Montana caused the deposition of suspended sediments after the floodwaters

became hydraulically dammed north of the confluence of the Columbia and Lewis Rivers. Fine-grained sediments were deposited when the flood waters slowed down and deposited a series of distinct layers described as unconsolidated silty Sand, Silt, and Clay.

The native material encountered in our exploratory test pits consists predominantly fine-grained Clay (CL & CH) with sand consistent with cataclysmic-flood deposits, which represent weathered Late Pleistocene fine-grained sedimentary flood deposits attributed to Gee silt loam (GeB) and Odne silt loam (OdB) soil series. Both soil series consist predominately of fine-grained clays and silts with low to very low permeability and are moisture sensitive.

## **GEOLOGIC HAZARDS**

The following provides a geologic hazard review for the subject site. The purpose of this investigation was to determine if geologic hazards are present on the site, and if so, to provide recommendations to mitigate their impacts on development. The geologic hazard review is based on our site reconnaissance and subsurface explorations, as well as a review of publicly available published literature and maps.

### **Seismic Hazards**

The following seismic hazards have been considered as part of our geologic hazards review for the project site. Seismic hazards pertain to areas that are subject to risk of earthquake-induced damage. These hazards include ground shaking/motion amplification, soil liquefaction, geologic fault rupture, and landslides.

#### *Ground Motion Amplification*

According to the “Site Class Map layer of Clark County MapsOnline, the proposed site is designated as a seismic Site Class “C”. However, based on our subsurface explorations and laboratory test results, it is our opinion that a Site Class “D” is appropriate for use at the site. This designation indicates that some amplification of seismic activity may occur during a seismic event based on the subsurface soil conditions encountered.

#### *Liquefaction*

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake. Ground shaking of sufficient duration then results in the loss of grain-to-grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume the physical properties of a fluid.

To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table, and must be subjected to sufficient magnitude and duration of ground shaking.

According to the “Liquefaction Susceptibility” layer of Clark County MapsOnline, the site is mapped as having a “very low” liquefaction susceptibility. Due to the medium stiff to stiff and predominately fine-grained soils encountered in our test pits, and the absence of near surface groundwater, it is our professional opinion that soil liquefaction and induced differential settlement will not occur at the subject site during a moderate to strong seismic event and that a “very low” susceptibility is adequate for the site.

It should be noted that directly south of the site, at a distance of approximately 0.35 mile, an area of moderate to high potential for liquefaction is indicated by Clark County MapsOnline. Additional testing would need to be performed to determine the liquefaction potential of the onsite soils and is beyond our scope of work for this report.

*Fault Rupture*

According to USGS Earthquake Hazards Program, there are a total of three major fault zones in the vicinity of the site that have the potential to cause or induce soil liquefaction and/or settlement. These faults are the Portland Hills Fault, Lacamas Lake-Sandy River Fault, and the Cascadia Subduction Zone. However, there are no historically active faults located in close proximity to the site. Due to the stiff soil conditions encountered in our test pits and distance from the mapped fault, a fault rupture is not considered a hazard at the site.

**Seismic Design Criteria:**

According to Clark County MapsOnline, supportive foundation soils encountered at the site are classified as a type “C” soil. However, based on our test pit explorations and laboratory testing, a type “D” soil is more appropriate for the site. For more detail regarding soil conditions refer to the soil logs in Appendix A of this report.

The seismic design criteria for this project found herein is based on the International Building Code (IBC) 2018 and the USGS website. A summary of IBC seismic design criterion is below.

| <b>Table 1. 2018 IBC Seismic Design Parameters</b> |                            |                         |
|--|----------------------------|-------------------------|
| <b>Location (45.8587037, -122.6470354)</b>         | <b>Short Period</b>        | <b>1-Second</b>         |
| Maximum Credible Earthquake Spectral Acceleration  | $S_s = 0.796 \text{ g}$    | $S_1 = 0.374 \text{ g}$ |
| Site Class   | D                          |                         |
| Site Coefficient                                   | $F_a = 1.181$              | $F_v = 1.926$           |
| Adjusted Spectral Acceleration                     | $S_{MS} = 0.941 \text{ g}$ | $S_{M1} = 0.72$         |
| Design Spectral Response Acceleration Parameters   | $S_{DS} = 0.627 \text{ g}$ | $S_{D1} = 0.48$         |

g – acceleration due to gravity

Due to the Site Class “D” designation and the long period MCES (S1) value exceeding 0.2 g, the structural engineer must apply the site-specific ground motion increases outlined in Section 11.4.8 of ASCE 7-16, including an increased of 50 percent to the seismic base shear coefficient,  $C_s$ . As an alternative to applying these conservative increases to the ground motions, a site-specific ground motion hazard analysis may be performed, however such an analysis was not included in the scope of this study.

**GEOTECHNICAL DESIGN RECOMMENDATIONS**

**General**

Based on the results of our study, it is our opinion the proposed residential development can be constructed as planned, provided the geotechnical recommendations contained in this report are incorporated into the final design. The following sections present detailed recommendations and parameters pertaining to the geotechnical engineering design for this project.

## **Foundations**

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding *Site Earthwork and Grading* section, the proposed residential building foundations should be supported on 12 inches of compacted crushed rock above a properly prepared native subgrade or compacted structural fill. Due to the high plasticity and heterogeneous condition of soil, it is recommended that the foundations bear on crushed aggregate. See *Site Earthwork and Grading* sections for soil preparation prior to form installation.

Individual spread footings or continuous wall footings providing support for the proposed buildings may be designed for a maximum allowable bearing value of 1,500 pounds per square foot (psf). Footings for one level structures should be at least 12 inches in width. Footings for two level structures should be at least 15 inches in width. Footings for three level structures should be at least 18 inches in width. All footings should extend to a depth of at least twelve (12) inches below the lowest adjacent finished sub grade.

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured “neat” against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 305 pcf (equivalent fluid weight)
- Coefficient of Friction = 0.28

It is estimated that total and differential footing settlements for the relatively light residential building will be approximately one and one-half inches, respectively. It is recommended that an SWT representative be contacted to reevaluate removal limits during building construction and observe the condition of footing soils prior to the installation of forms/rebar.

## **Slab on Grade**

If concrete floor slabs are desired, then any disturbed soils must be re-compacted prior to pouring concrete. Satisfactory subgrade support for lightly loaded building floor slabs can be obtained on the undisturbed native soil or on engineered structural fill. A subgrade modulus of 125 pounds per cubic inch (pcf) may be used to design floor slabs. If desired, it is recommended that the slab subgrade be evaluated by a geotechnical engineer to verify bearing conditions.

A minimum 6-inch-thick layer of free draining fill should be placed and compacted over the prepared subgrade to assist as a capillary break and blanket drain. It is also suggested that nominal reinforcement such as “6x6-10/10” welded wire mesh be employed, near midpoint, in new concrete slabs. In areas where slab moisture is undesirable, a vapor barrier such as a 6-mil plastic membrane should be placed beneath the slab.

Exterior concrete slabs that are subject to vehicle traffic loads should be at least 6 inches in thickness. It is also suggested that nominal reinforcement such as “6x6-10/10” welded wire mesh be installed, near midpoint, in new exterior concrete slabs and paving. Fiber mesh concrete may be used in lieu of welded wire mesh.

### **Dewatering**

Our subsurface investigation indicates that groundwater seepage was encountered at depths ranging from 2.0 to 5.0 feet below the existing ground surface and will fluctuate in response to precipitation. Excavations that extend below the groundwater level may result in caving or heaving. This may require pumping to temporarily reduce the amount of groundwater present to allow for the installation of underground utilities or the placement and compaction of structural fills. The contractor should consider the use of a network of ditches and sumps, into which water can flow to be pumped out of the excavation.

The depth and dewatering time will need to be determined at the time of construction and adjusted depending on site conditions. If water is encountered, the contractor should be prepared and is responsible for appropriate dewatering and discharge methods. Unprotected working should not be allowed near temporary un-shored excavations until groundwater levels have been stabilized and shoring, such as lagging, has been installed.

### **Site Drainage**

During earthwork construction, a plan for the collection and conveyance of surface water to an appropriate management facility should be in place to control runoff. Final site grading should direct surface water off the site to prevent standing/ponding water and away from proposed buildings, structures and/or roadway. Water should also not be allowed to stand in any area where buildings or foundations are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential of moisture infiltrating into and degrading the exposed soil.

The ground should be sloped at a gradient of a minimum of 2 percent for a distance of at least 10 feet away from the buildings. We suggest that a foundation footing drain be installed around the perimeter of all buildings. The drain should consist of a 4-inch diameter perforated pipe and installed in an envelope of clean drain rock or pea gravel wrapped with free draining filter fabric. The drain should be a minimum of one-foot-wide and one-foot-deep with sufficient gradient to initiate flow. The drain should be routed to a suitable discharge area. Details for the footing drain have been included as *Figure 3, Typical Footing Subdrain Detail*.

Under no circumstances should the roof down spouts be connected to the perimeter building drain. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the drain system.

### **Pavement Areas**

Hot mix asphalt (HMA) and crushed rock base (CRB) materials should conform to WSDOT specifications. All pavement area subgrades should consist of compacted native soil or engineered structural fill and be compacted to at least 95 percent of the modified proctor, determined by ASTM D1557. The subgrade conditions should be assessed and tested by SWT prior to the placement of the roadway aggregate section. This includes nuclear gauge density testing and proof-rolling observations with a fully loaded haul truck or equivalent. Any soft areas identified during the proof rolling process should be removed to a competent subgrade and replaced with compacted crushed aggregate.

Based on our laboratory testing, visual observations and local knowledge of soil types in the area, the subgrade soils shall be considered an AASHTO soil type A-4 to A-7. Based on the anticipated traffic



loading, we recommend that a minimum of 4 inches of AC underlain by 12 inches of compacted CRB be applied at all public right-of-way and road improvement areas.

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements have the potential to saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section.

The subgrade and the pavement surface should have a minimum  $\frac{1}{4}$  inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

## **CONSTRUCTION RECOMMENDATIONS**

### **Site Earthwork and Grading**

#### *Clearing and Grubbing:*

Prior to grading, the project area should be cleared of all rubble, trash, debris, etc. Any buried organic debris, undocumented fill or other unsuitable material encountered (soft soils) during subsequent excavation and grading work should also be removed. Excavations for removal of any existing footings, slabs, walls, utility lines, tanks, and any other subterranean structures should be processed and backfilled in the following manner:

- Clear the excavation bottom and side cuts of all loose and/or disturbed material.
- Once the organic topsoil has been adequately removed (~ 4 to 6 inches), the upper 1.5 feet of native soil (tilled zone) shall be scarified to a competent subgrade (stiff Clay) and dried to within 2 percent *above* its optimal moisture content and re-compacted in 8–10-inch lifts. Density testing shall be performed prior to placement of additional fill.
- Structural fill shall be placed in loose lifts not exceeding 8 inches in thickness and compacted with adequate equipment (eg. segmented pad roller) to at least 95% of the ASTM D-1557 laboratory test standard.
- Prior to placing backfill, the excavation bottom should be dried or moisture conditioned to within 2 percent of the optimum moisture content and compacted to at least 95 percent of the ASTM D-1557 laboratory test standard.
- Backfill should be placed, moisture conditioned (i.e., watered and/or aerated as required and thoroughly mixed to a uniform, near optimum moisture content), and compacted by mechanical means in approximate 6-inch lifts. The degree of compaction obtained should be at least 95 percent of the ASTM D-1557 laboratory test standard, as applicable.
- Any large trees should be removed from any fill areas. Any remaining root balls, possibly reaching 3+ feet in depth, should be adequately removed and backfilled with approved structural fill. We recommend an SWT representative observe the removal and provide monitoring and density testing of compacted structural fill/backfill at all removal areas.

It is also critical that any surficial subgrade materials disturbed during initial demolition and clearing work be removed and/or re-compacted during subsequent site preparation earthwork operations.

It is important to note that all soft undocumented fill, if present, is to be over-excavated to a competent subgrade and replaced with suitable structural fill. Supporting the proposed buildings on homogeneous material will significantly decrease the potential for differential settlement across the foundation area. In order to create uniform subgrade support conditions, in the vicinity of undocumented fill areas if encountered, the following earthwork operations are recommended:

- Over-excavate existing soils to a competent native subgrade below the bottom of the proposed foundations. The excavations should extend at least one-half width laterally beyond the foundation footprint, or as constrained by existing structures. In addition, native soil removal shall extend to a minimum depth so that a maximum 2:1 ratio of differential structural fill thickness is maintained below all building spread foundation systems.
- The fill soils placed shall consist of clean soils with an expansion index (EI) less than twenty (20), and be free of organic material, debris, and rocks greater than 3 inches in maximum diameter. Based on the field observations and laboratory testing, the existing native soil consisting of Silt (ML) with sand and the underlying Clay (CH) with sand is suitable for use as structural fill so long as the material is within two percent (2%) of its optimum moisture content prior to compaction.
- The backfill shall consist of minimum ninety-five percent (95%) compacted fills (Note: ASTM D1557). In addition to the relative compaction requirements, all fills shall be compacted to a firm non-yielding condition.
- Import soils should be sampled, tested, and approved by SWT prior to arrival on site. Imported soils shall consist of clean soils (EI of 20 or less) free from vegetation, debris, or rocks larger than three inches in maximum dimension.

#### *Subgrade Verification and Proof Rolling*

After clearing and grading the site, it is possible that some localized areas of soft, wet or unstable subgrade may still exist. Before placement of any roadway base rock, the subgrade should be scarified 8 inches in depth and compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to medium dense/stiff material and replaced with compacted two inch-minus clean crushed rock. All building and pavement areas should be compacted to a dense non-yielding condition with suitable compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of any structural fill, at the bottom of all foundation excavations and along the roadway subgrade, before the placement of base rock.

#### **Wet Weather Construction & Moisture Sensitive Soils:**

Field observations and laboratory testing indicates that the upper subsurface soil layer at the site consists of native lean Clay (CL) with sand and is a fine-grained moisture sensitive material. As such, in an exposed condition, moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations, floor slabs and roadways.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. Equipment traffic should be minimized across exposed soils to reduce the amount of disturbance and creation of excess soft wet soil. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction. Covering the excavated area with plastic and refraining

from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

If construction proceeds during wet weather condition, roadway base sections may require to be increased or stabilized with 2–6-inch gabion/ballast with no fines. Soil cement treatment may also be required to provide a stable roadway or building subgrades. If this is considered, SWT should be contacted to provide the appropriate recommendations based on the soil moisture conditions and collect the necessary samples to perform laboratory testing to determine the optimum soil:cement ratio.

### **Erosion Control**

If construction extends into the winter “rainy” season, earthwork activities are feasible if proper erosion control measures are implemented to minimize degradation to both native and structural fill soils. Due to the relatively flat topography of the site, erosion hazards are likely to be low. All surface stormwater, if encountered, should be captured and directed away from structural areas by means of site-specific erosion control measures including conveyance trenches, straw wattles, sediment fences, temporary sediment ponds etc.

### **Expansive/Shrink Soil Capacity**

Laboratory testing of the native lean Clay (CL) with sand at depths ranging from 1.0/1.5 feet to the maximum explored depth of 8.0 feet bgs, indicates this soil has an Expansion Index (EI) of 13. An EI of 13 suggests a very low to low potential for soil shrinking and swelling. However, the importance for adequate soil conditioning during the placement and compaction of structural fill is essential. Soils with a high plasticity index such as the fat Clay (CH), which was also encountered across the site, should be placed and compacted with a moisture content at ~ 2 percent above its optimum moisture to avoid the potential for shrinking or swelling over time.

It is recommended that earthwork grading of expansive soils be closely monitored by an experienced geotechnical engineer or their representatives. To help avoid soil swelling, regulating soil moisture content and mixing of expansive clays with less plastic soils should be properly conditioned during fill placement and compaction.

### **Utility Support and Backfill**

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The backfill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench backfill should be placed in lifts having a loose thickness of eight inches. Utility trench backfill should consist of *WSDOT 9-03.19 Bank Run Gravel for Trench Backfill* or *WSDOT 9-03.14(2) Select Borrow* with a maximum particle size of 2-1/2-inches.

A typical trench backfill section and compaction requirements for load supporting and non-load supporting areas is presented on *Figure 4, Utility Trench Backfill Detail*.

### **Temporary Excavations**

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that SWT is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred. In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. The contractor should be aware that excavation and shoring should conform to the requirements specified in the applicable local, state, and federal safety regulations, such as OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. We understand that such regulations are being strictly enforced, and if not followed, the contractor may be liable for substantial penalties.

Based on the information obtained from our field exploration and laboratory testing, the onsite soils expected to be encountered in excavations will most likely consist of native lean Clay and fat Clay. These soils encountered are classified predominately as a type "A" soil. Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 3/4H:1V (horizontal to vertical).

If slopes of this inclination, or flatter, cannot be constructed, or if excavations greater than four feet in depth are required, temporary shoring may be necessary. This shoring would help protect against slope or excavation collapse and would provide protection to workmen in the excavation. If temporary shoring is required, we will be available to provide shoring design criteria, if requested.

### **LIMITATIONS**

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses and other design information provided to Soil and Water Technologies as well as our experience and engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

The recommendations submitted in this report are based upon the data obtained from our test pits. Soil and groundwater conditions between the test pits may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Soil and Water Technologies should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

Temporary construction excavation and site safety are the sole responsibility of the construction contractor who also is solely responsible for the means, methods, and sequencing of construction operations. We are providing the following information only as a service to our client for planning purposes by their design team. Under no circumstances should the information provided herein be interpreted to mean that SWT is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

# VICINITY MAP



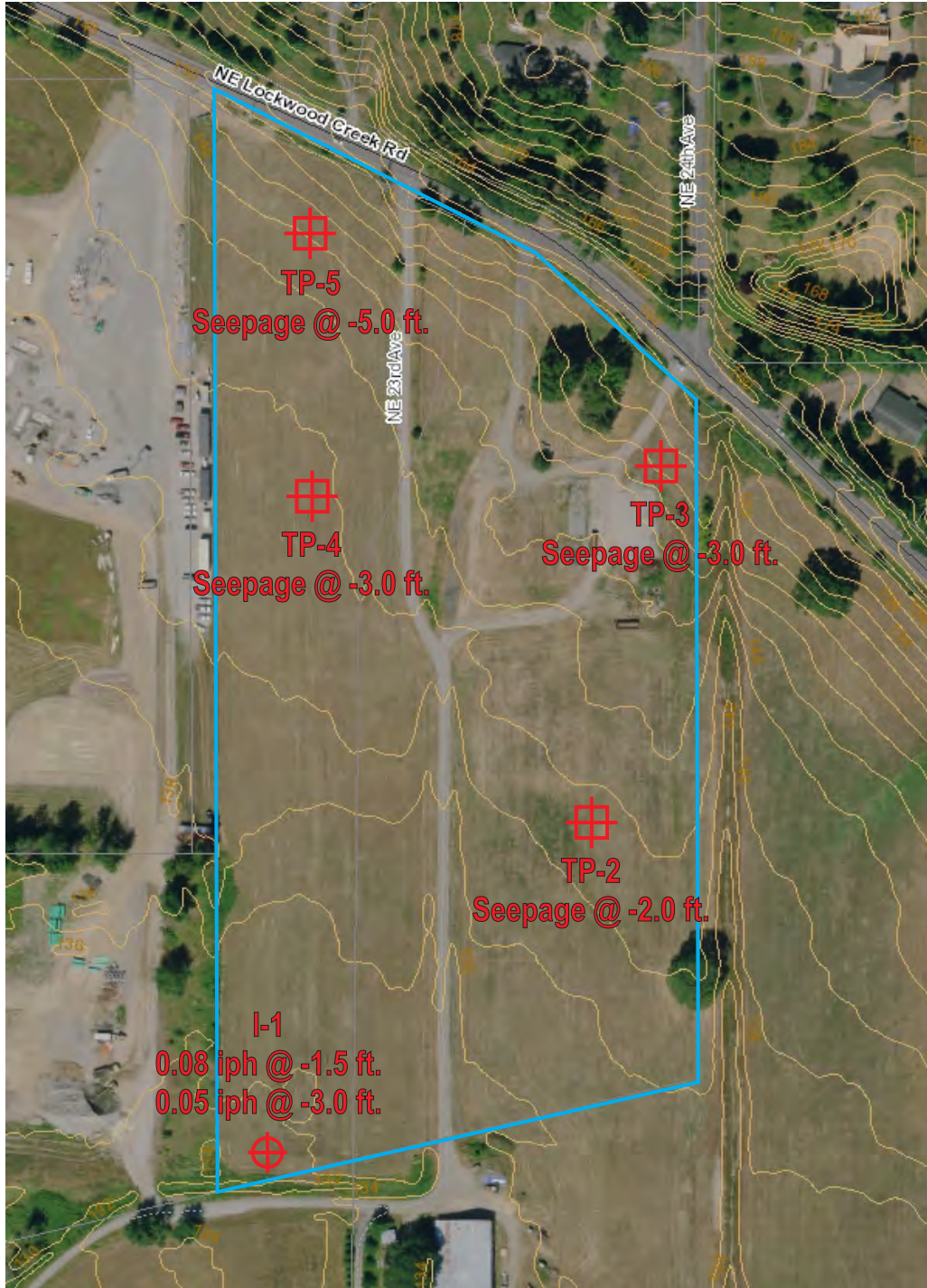
**Soil and Water Technologies, Inc**  
1101 Broadway | Suite 216  
Vancouver, WA 98660  
PH: (360) 200-8693  
[www.swt.ski](http://www.swt.ski)



**CLIENT:** Gravitate Capital, LLC  
**PROJECT:** Lockwood Creek Subdivision  
2313 NE Lockwood Creek Road  
La Center, WA 98629

**DRAWN:** RN  
**DATE:** 4/5/2022  
**FIGURE:** 1  
**PRO. #:** G0372200

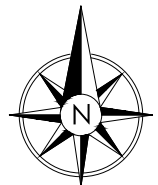
# SITE MAP



## Legend

- I-1** Approximate Infiltration Test Pit Location
- TP-2** Approximate Test Pit Location

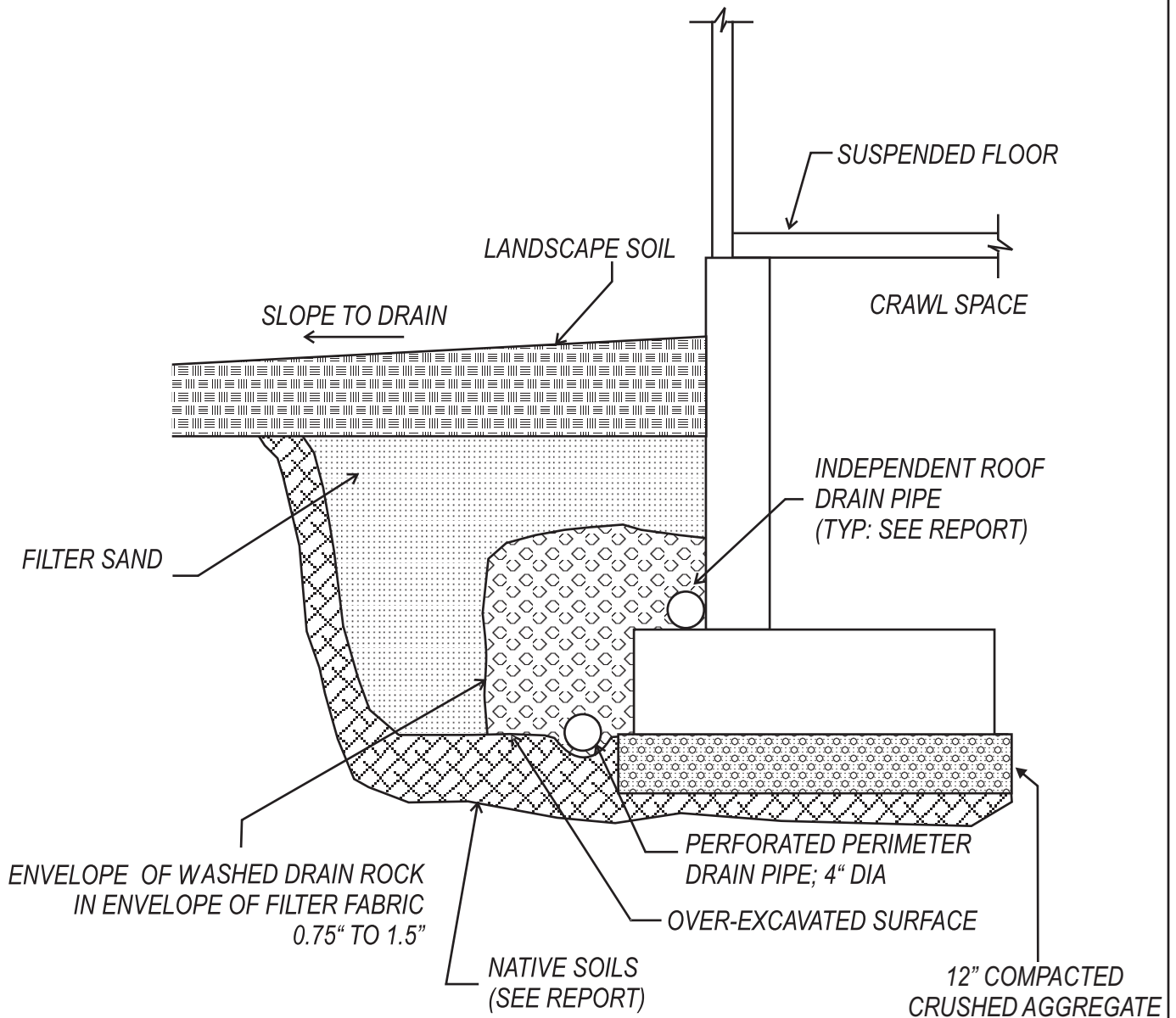
iph - Inches Per Hour



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|  |                         |
|--|-------------------------|
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| <i>PROJECT:</i> Lockwood Creek Subdivision<br>2313 NE Lockwood Creek Road<br>La Center, WA 98629 | <i>DATE:</i> 3/8/2022   |
|  | <i>FIGURE:</i> 2        |
|  | <i>PRO. #:</i> G0262200 |



**NOTES:**

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FOOTINGS INSTALLED ABOVE 12" COMPACTED CRUSHED AGGREGATE; 95% OF MODIFIED PROCTOR (ASTM D1557)

**TYPICAL SUSPENDED FOOTING DETAIL**

Not to Scale

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|          |  |         |           |
|----------|--|---------|-----------|
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| PROJECT: | Lockwood Creek Subdivision<br>2313 NE Lockwood Creek Road<br>La Center, WA 98629 | DATE:   | 4/10/2022 |
|          |  | FIGURE: | 3         |
|          |  | PRO. #: | G0372200  |

**APPENDIX A**  
**(FIELD EXPLORATION)**



## **FIELD EXPLORATION**

Our field exploration was performed on March 25<sup>th</sup> and April 4<sup>th</sup>, 2022. Subsurface conditions at the site were explored by excavating a total of 1 infiltration test pit (I-1) and 4 test pits TP-2 – TP-5 with an excavator and hand auger to the maximum explored depth of 7.0 feet below the existing ground surface.

The approximate test pit locations were determined by the Soil and Water Technologies, Inc. by pacing from existing site features. These approximate locations are shown on the *Site Plan, Figure 2*.

The field exploration was monitored by Soil and Water Technologies, who classified the soil encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in sealed plastic bags and returned to the laboratory for further examination and testing.

All samples were visually classified in accordance with the Unified Soil Classification System (USCS), which is presented on *Plate A1*. Logs of the test pits are presented in *Appendix A*. The final logs represent our interpretations of the field logs and the results of the laboratory tests on field samples. The stratification lines on the logs represent the approximate boundaries between soil types. In fact, the transitions may be more gradual.

# UNIFIED SOIL CLASSIFICATION SYSTEM LEGEND

| MAJOR DIVISIONS      |   |  | GRAPH SYMBOL | LETTER SYMBOL | TYPICAL DESCRIPTION  |
|----------------------|---|--|--------------|---------------|--|
| Coarse Grained Soils | Gravel and Gravelly Soils<br>More Than 50% Coarse Fraction Retained on No 4 Sieve | Clean Gravels (little or no fines)               |              | GW / gw       | Well-Graded Gravels, Gravel-Sand Mixtures<br>Little or no Fines  |
|                      |   | Gravels with Fines (appreciable amount of fines) |              | GP / gp       | Poorly-Graded Gravels, Gravel-Sand Mixtures,<br>Little or no Fines   |
|                      | Sand and Sandy Soils<br>More Than 50% Coarse Fraction Passing No 4 Sieve          | Clean Sand (little or no fines)                  |              | SW / sw       | Well-graded Sands, Gravelly Sands<br>Little or no Fines  |
|                      |   | Sands with Fines (appreciable amount of fines)   |              | SP / sp       | Poorly-Graded Sands, Gravelly Sands<br>Little or no Fines  |
| Fine Grained Soils   | Silt and Clays<br>Liquid Limit Less than 50                                       |  |              | ML / ml       | Inorganic Silts and Very Fine Sands, Rock Flour,<br>Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity |
|                      |   |  |              | CL / cl       | Inorganic Clays of Low to Medium Plasticity,<br>Gravelly Clays, Sandy Clays, Silty Clays, Lean                 |
|                      |   |  |              | OL / ol       | Organic Silts and Organic Silty Clays<br>of Low Plasticity   |
|                      | Silt and Clays<br>Liquid Limit Greater than 50                                    |  |              | MH / mh       | Inorganic Silts, Micaceous or Diatomaceous<br>Fine Sand or Silty Soils   |
|                      |   |  |              | CH / ch       | Inorganic Clays of High Plasticity, Fat Clays  |
|                      |   |  |              | OH / oh       | Organic Clays of Medium to High Plasticity,<br>Organic Silts   |
| Highly Organic Soils |   |  |              | PT / pt       | Peat, Humus, Swamp Soils with High Organic Contents  |

|         |  |                              |
|---------|--|------------------------------|
| Topsoil |  | Humus and Duff Layer         |
| Fill    |  | Highly Variable Constituents |

| SAMPLING DESCRIPTIONS |                                |                                       |  |
|-----------------------|--------------------------------|---------------------------------------|--|
| ● Grab Sample         | SPT Drive Sampler (ASTM D1586) | Shelby Tube Push Sampler (ASTM D1587) | Dames and Moore Drive Sampler (ASTM D3550) |

|   |  |  |                  |
|---|--|--|------------------|
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|   |  | PROJECT: Lockwood Creek Subdivision                | DATE: 4/10/2022  |
|   |  | 2313 NE Lockwood Creek Road<br>La Center, WA 98629 | PLATE: A1        |
|   |  |  | PRO. #: G0372200 |

# LOG OF TEST PIT

# I-1

ELEVATION: **133 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **3/25/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION  | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES   |
|---------------|---------|---|------------------|----------------------------------|-------------------------|---|
| 1             |         | <i>brown, soft, moist sandy <b>lean Clay (CL)</b></i>             |                  |                                  |                         | 4" organic topsoil                            |
| 2             | ●       | <i>brown/gray, stiff to very stiff sandy <b>Fat Clay (CH)</b></i> |                  | 32.7                             | 88.1                    | Infiltration Testing - 0.08 iph @ 2.0 ft. bgs |
| 3             | ●       | <i>moist</i>  |                  | 34.2                             | 87.1                    | Infiltration Testing - 0.05 iph @ 3.5 ft. bgs |
| 4             |         | <i>brown, stiff sandy <b>Lean Clay (CL)</b></i>                   |                  |                                  |                         |   |
| 5             |         | <i>moist</i>  |                  |                                  |                         |   |
| 6             |         |   |                  |                                  |                         |   |
| 7             |         |   |                  |                                  |                         |   |
| 8             |         |   |                  | 32.6                             | 84.3                    |   |

Bottom of test pit at 8.0 feet below existing ground surface (bgs).  
No groundwater encountered.

|  |  |                                     |                  |
|--|--|-------------------------------------|------------------|
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|  |  | PROJECT: Lockwood Creek Subdivision | DATE: 4/6/2022   |
|  |  | 2313 NE Lockwood Creek Road         | PLATE: A2        |
|  |  | La Center, WA 98629                 | PRO. #: G0372200 |

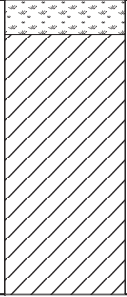
# LOG OF TEST PIT

# TP-2

ELEVATION: **140 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **3/25/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION   | LITHOLOGY (USGS)  | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES   |
|---------------|---------|--|---|----------------------------------|-------------------------|---|
| 1             | ●       |  |   | 27.9                             | 83.6                    | 6" organic topsoil<br>{till zone - soft from -0.5' to -1.0'}                  |
| 2             | ● ▼     | gray/brown, soft to stiff<br><b>sandy <u>Lean Clay (CL)</u></b><br>moist |  | 30.8                             | 86.7                    | {perched seepage @ 2.0 ft. bgs}<br>{EI - 13}<br><br>{1.5 tsf on penetrometer} |
| 3             |         |  |   |                                  |                         |   |
| 4             |         |  |   |                                  |                         |   |
| 5             |         |  |   |                                  |                         |   |

Bottom of test pit at 5.0 feet below existing ground surface (bgs).  
Perched seepage encountered .

|  |   |                                     |                  |
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|  |   | PROJECT: Lockwood Creek Subdivision | DATE: 4/8/2022   |
|  |   | 2313 NE Lockwood Creek Road         | PLATE: A3        |
|  |   | La Center, WA 98629                 | PRO. #: G0372200 |

# LOG OF TEST PIT

# TP-3

ELEVATION: **150 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **3/25/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION                                 | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES      |
|---------------|---------|--|------------------|----------------------------------|-------------------------|------------|
| 1             | ●       | soft, silty <b>Gravels</b>                           | fill             |                                  | -                       |            |
| 2             | ●       | gray, medium stiff, moist sandy <b>Fat Clay (CH)</b> | native           | 25.7                             | 79.6                    |            |
| 3             |         | gray/brown, stiff sandy <b>Lean Clay (CL)</b>        |                  |                                  |                         | {mottling} |
| 4             | ●       | moist  |                  | 35.8                             | 75.5                    |            |

Bottom of test pit at 4.5 feet below existing ground surface (bgs).  
No groundwater encountered.

|  |   |                                     |                  |
|--|---|-------------------------------------|------------------|
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|  |   | PROJECT: Lockwood Creek Subdivision | DATE: 4/8/2022   |
|  |   | 2313 NE Lockwood Creek Road         | PLATE: A4        |
|  |   | La Center, WA 98629                 | PRO. #: G0372200 |

# LOG OF TEST PIT

# TP-4

ELEVATION: **142 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **4/4/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION   | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES  |
|---------------|---------|--|------------------|----------------------------------|-------------------------|--|
| 1             |         | gray/ brown, medium stiff to stiff<br>sandy <b>Lean Clay (CL)</b><br>moist | native           | -                                | -                       | {till zone - med. stiff from -0.5' to -1.5'} |
| 2             |         |  |                  | 36.4                             | 58.3                    | {Dry PCF - 81.0}                             |
| 3             | ● ▼     |  |                  |                                  |                         | {perched seepage @ 3.0 ft. bgs}              |
| 4             |         |  |                  |                                  |                         |  |

Bottom of test pit at 4.0 feet below existing ground surface (bgs).  
No groundwater encountered.

|  |   |                                     |                  |
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|  |   | PROJECT: Lockwood Creek Subdivision | DATE: 4/8/2022   |
|  |   | 2313 NE Lockwood Creek Road         | PLATE: A5        |
|  |   | La Center, WA 98629                 | PRO. #: G0372200 |

# LOG OF TEST PIT

# TP-5

ELEVATION: **146 +/- feet**

EXPLORATORY EQUIPMENT: **Track-Hoe**

DATE: **4/4/2022**

| DEPTH IN FEET | SAMPLES | SOILS CLASSIFICATION  | LITHOLOGY (USGS) | MOISTURE CONTENT % OF DRY WEIGHT | PERCENT PASS NUMBER 200 | NOTES                                  |
|---------------|---------|---|------------------|----------------------------------|-------------------------|--|
| 1             |         |   |                  |                                  |                         | 4" organic topsoil                     |
| 2             |         |   |                  |                                  |                         | {till zone - soft from -0.5' to -1.5'} |
| 3             | ●       | gray/brown, soft to stiff<br>sandy <b>Lean Clay (CL)</b><br>moist |                  | 34.5                             | 34.5                    |  |
| 4             |         |   |                  |                                  |                         |  |
| 5             | ▼       |   |                  |                                  |                         | {perched seepage @ 5.0 ft. bgs}        |
| 6             |         |   |                  |                                  |                         |  |
| 7             |         |   | native           |                                  |                         |  |

Bottom of test pit at 7.0 feet below existing ground surface (bgs).  
No groundwater encountered.

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|   |                  |
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| CLIENT: Gravitare Capital, LLC  | DRAWN: RN        |
| PROJECT: Lockwood Creek Subdivision<br>2313 NE Lockwood Creek Road<br>La Center, WA 98629 | DATE: 4/8/2022   |
|   | PLATE: A6        |
|   | PRO. #: G0372200 |

**APPENDIX B**  
**(LABORATORY TESTING)**



## **LABORATORY TESTING**

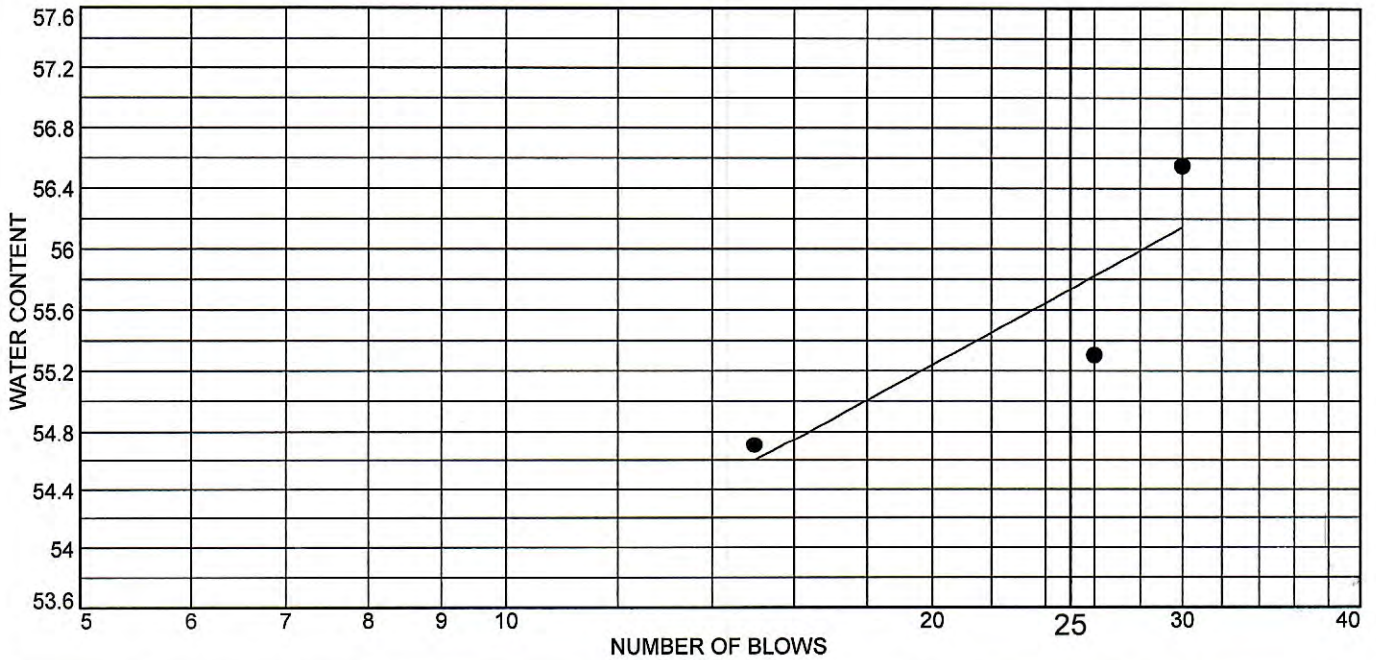
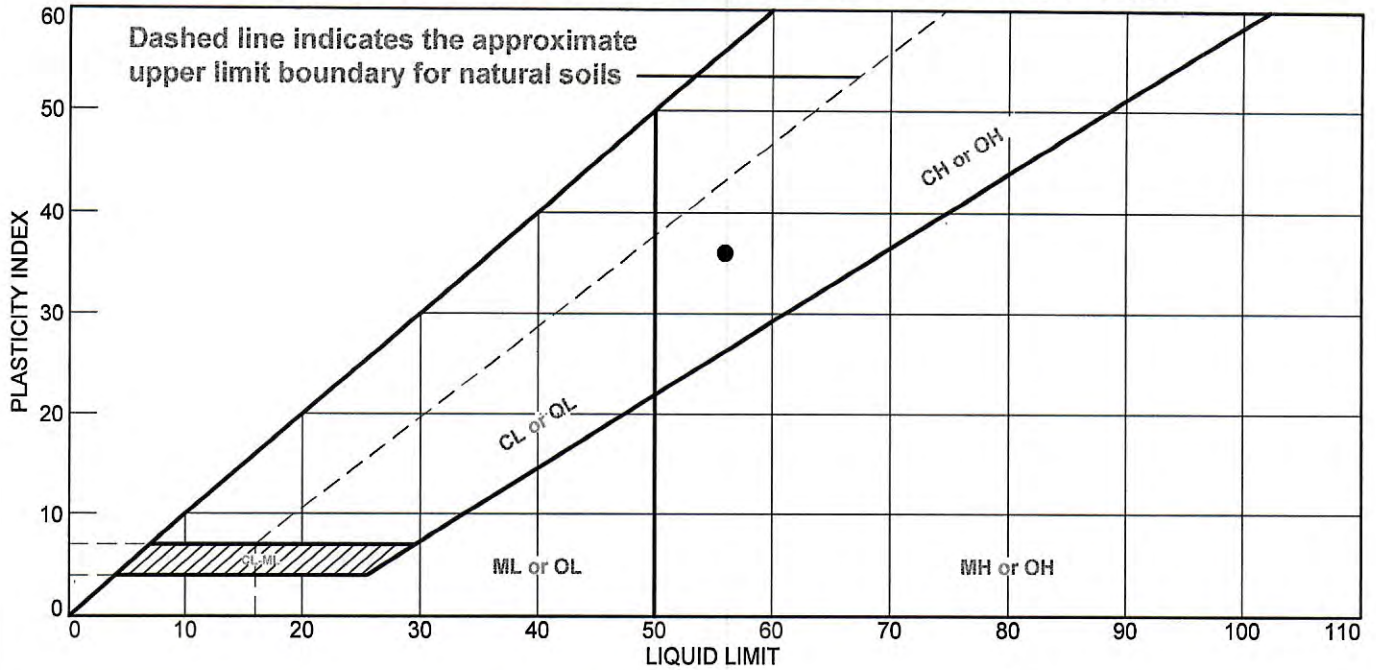
Laboratory tests were conducted on representative soil samples to verify or modify field soil classifications, and to evaluate the general physical properties and engineering characteristics of the soils encountered.

The following provides information about the testing procedures performed on representative soil samples:

- Moisture Content Tests (ASTM D2216) were performed on representative samples encountered in each test pit at each soil horizon.
- Sieve Analysis - No. 200 wash (ASTM C117) was performed on representative samples encountered in test pits I-1 and TP-2 - TP-5.
- Atterberg Limits (ASTM D4318) was performed on a representative soil sample encountered in test pits TP-4.
- Expansion Index (ASTM D4829) was performed on a representative soil sample encountered at I-1
- Moisture Content & Dry Density (ASTM D2216/D2937) was performed at TP-4.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

# LIQUID AND PLASTIC LIMITS TEST REPORT



|   | MATERIAL DESCRIPTION | LL | PL | PI | %<#40 | %<#200 | USCS |
|---|----------------------|----|----|----|-------|--------|------|
| ● | fat Clay             | 56 | 20 | 36 | 100   | 88.12  | SC   |

**Project No.** G0372200    **Client:** Gravitate Capital, LLC  
**Project:** Lockwod Creek Subdivision  
**Source of Sample:** Native    **Depth:** TP-1 @ 3.5  
**Sample Number:** 370

**Remarks:**



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 PH: (360) 200-8093  
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Figure LPL-1

Tested By: JPT \_\_\_\_\_



# Soil and Water Technologies, Inc.

Geotechnical, Construction Monitoring, Materials Testing & Erosion Consulting Services

Gravitate Capital, LLC  
13563 NW Fuller Ln  
Portland, OR 97229

April 20<sup>th</sup>, 2022  
G0372200

**Project:** Lockwood Creek Subdivision  
**Report:** Expansion Index of Soil  
Figure 1; EI-1

## Sample Identification

Testing was performed in accordance with the standards indicated. Our laboratory test results are summarized in the following table.

### Laboratory Testing

| Expansion Index of Soils<br>(ASTM D4829) |                                |
|--|--------------------------------|
| Test                                     | TP-2 @ 2.0 in.<br>Test Results |
| Initial Moisture Content, (%)            | 12.0                           |
| Initial Dry Unit Weight, (pcf)           | 102.3                          |
| Initial Height of Specimen, (inches)     | 1.00                           |
| Initial Dial Gauge Reading (inches)      | 0.0158                         |
| Final Dial Gauge Reading (inches)        | 0.0160                         |
| Initial Degree of Saturation, (%)        | 50.1                           |
| Final Moisture Content, (%)              | 31.7                           |
| Expansion Index, <i>EI</i>               | 13, Very Low                   |

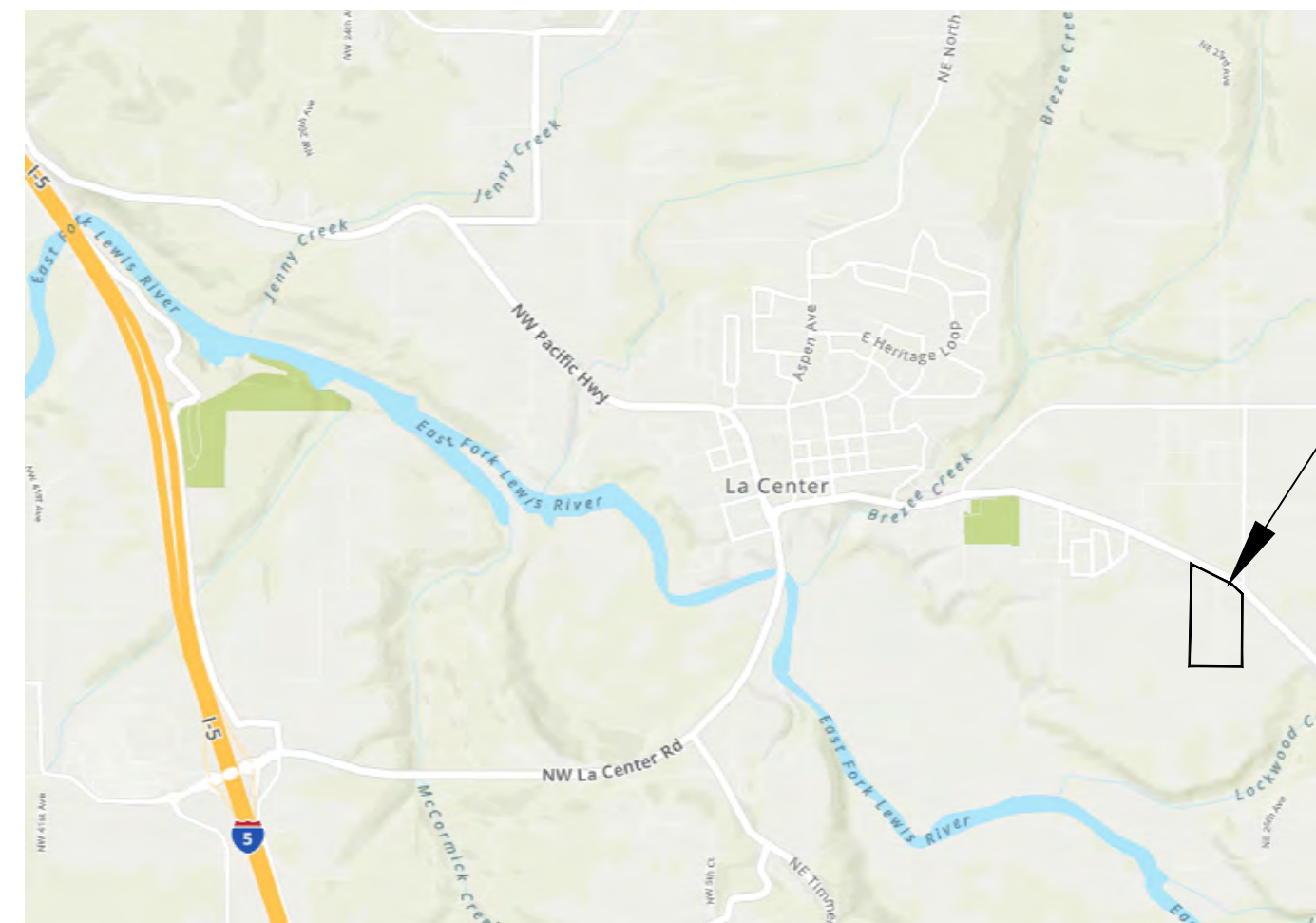
# Exhibit A.12

# Asa's View Subdivision

Located in the SW 1/4 of the NE 1/4 of Section 2, T4N, R1E, W.M.  
La Center, Washington

## Preliminary Plans

NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212



Site Location

SITE



Preliminary Plat Layout

**Owner / Applicant:**

Troy Johns  
1004 W. 13th Street, Suite 220  
Vancouver, WA 98660

**Site Address**

2313 NE Lockwood Road  
La Center, Washington

**Parcel Numbers**

Lot 39: 209064-000 and  
Lot 102: 209121-000

**Civil Engineer:**

NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212  
(503) 415-0424

**Lot Size**

Lot 39: 7.39 acres  
Lot 102: 9.08 acres  
Total: 16.47 acres

**Proposal**

The project proposes to subdivide Tax Lots 39 and 102 into 68 single-family residential lots in the LDR-7.5 zone.

The site current use is residential and agricultural with access from NE Lockwood Road via a private driveway, which also provides access to residences located south of the site.

Public park space totaling 0.25 acres (10,900 square feet) is proposed. Street lighting and landscaping will be provided as part of future submittals.

Total site area = 717,383 SF (16.47 AC)  
ROW Dedication = 142,483 SF (3.27 AC)  
Total Development area = 574,900 SF (13.20 AC)

Tract A and B to be owned and maintained by a home owners association. Tract A will be for storm water management and will include a blanket easement to the City of La Center for access and inspection. Tract B will contain a public park.

**Setbacks**

Front = 20', Side = 7.5', Street Side = 10.0', Back - 20'

**Lot Coverage**

Maximum Building Coverage = 35%  
Maximum Impervious Surface Area = 50%

**Utilities**

Sanitary sewer services will be provided by the City of La Center. Connection to the existing sewer system will be to the existing Middle School pump station via an existing 8-inch diameter pipe stub west of the project site. The connection pipe will be located in a 15-foot wide public easement with vehicular access. The development proposes extension of the proposed sewer to the east side of the site in Lockwood Creek Road.

Public water supply will be provided by Clark Public Utilities. Connection to the public water system will be to the existing 12-inch waterline in Lockwood Creek Road.

Stormwater facilities for management of stormwater treatment and flow control will be located in Tract A in the southwest corner of the development.

**Critical Areas**

A non-jurisdictional wetland has been identified in the middle of the site covering 0.18 acres. It is identified as a Category 3 wetland.

An Oregon White Oak is located in the southeast portion of the proposed development in Tract B. The tree will be protected from park improvements. The project is not located within a designated 100-year floodplain or landslide hazard area. There are no known historic resources on site.

**Index of Drawings**

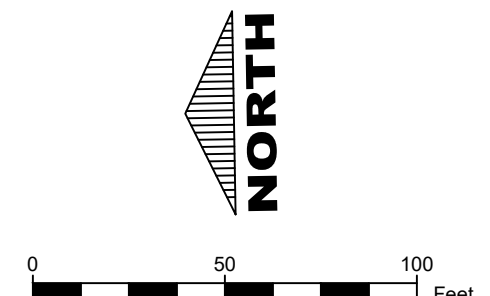
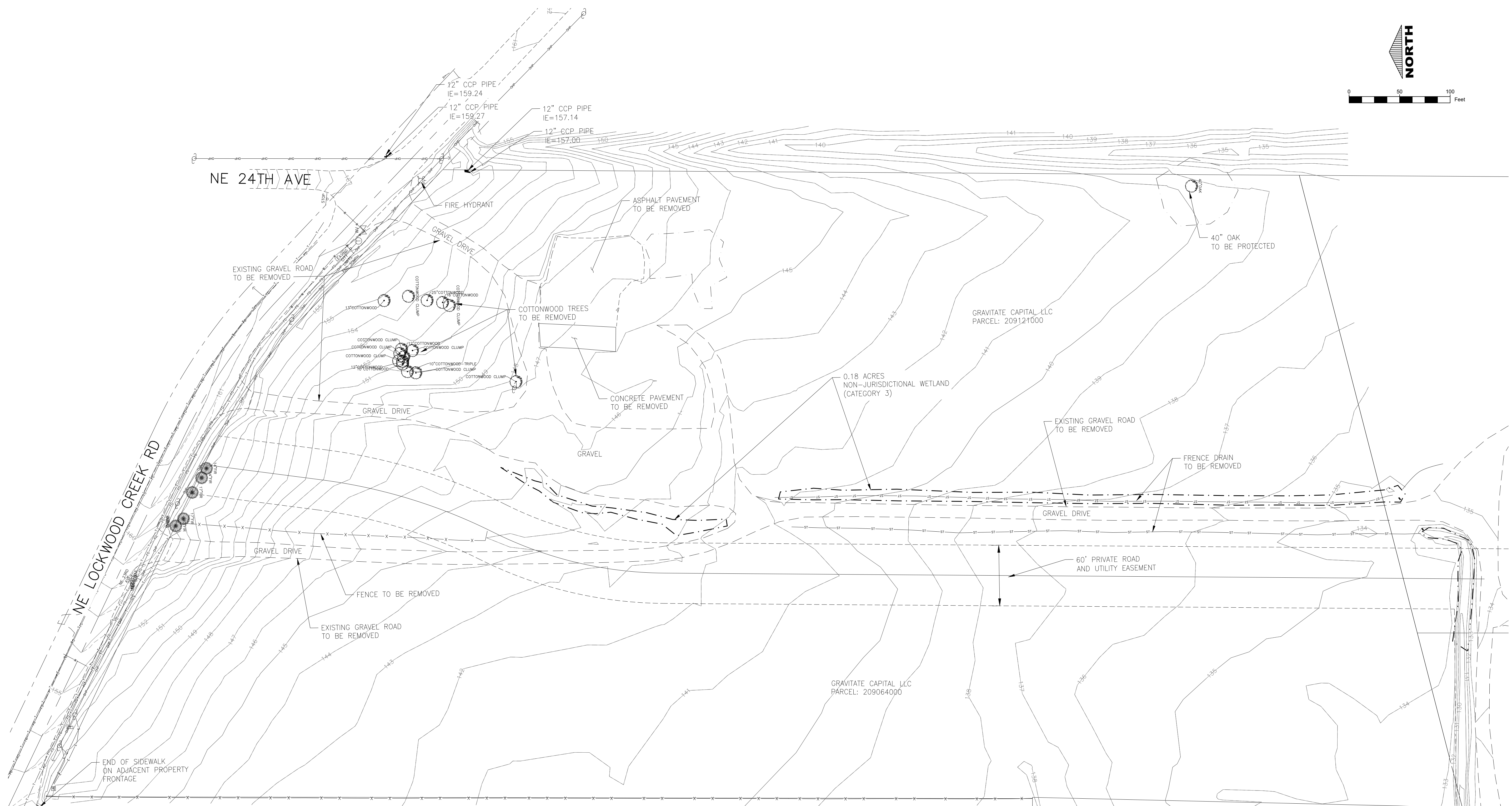
| SHEET | DRAWING TITLE                                |
|-------|--|
| 1     | COVER SHEET                                  |
| 2     | EXISTING SITE CONDITIONS                     |
| 3     | PRELIMINARY PLAT - NORTH                     |
| 4     | PRELIMINARY PLAT - SOUTH                     |
| 5     | PRELIMINARY GRADING AND EROSION CONTROL PLAN |
| 6     | PRELIMINARY STORMWATER PLAN - NORTH          |
| 7     | PRELIMINARY STORMWATER PLAN - SOUTH          |
| 8     | PRELIMINARY UTILITY PLAN - NORTH             |
| 9     | PRELIMINARY UTILITY PLAN - SOUTH             |
| 10    | ROAD IMPROVEMENT DETAILS                     |
| 11    | PRELIMINARY LANDSCAPE PLAN                   |

Asa's View  
COVER SHEET

| NO. | DATE | REVISIONS |
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7/6/2022  
SHEET NO.  
1  
INDEX NUMBER 1 OF 11

PRELIMINARY PLANS



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212

# Asa's View

## EXISTING SITE CONDITIONS

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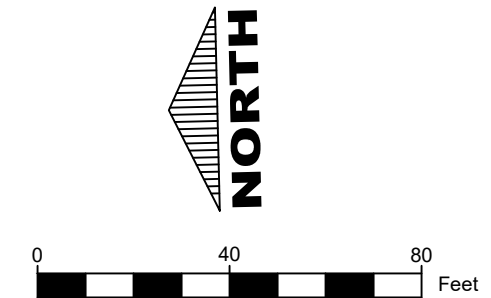
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 AS SHOWN ON PLAN  
**DATE:**  
 7/6/2022  
**SHEET NO.**  
 2

INDEX NUMBER 2 OF 11

**LEGEND:**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li> INDICATES WATER VALVE</li> <li> INDICATES FIRE HYDRANT</li> <li> INDICATES WATER METER</li> <li> INDICATES TRAFFIC SIGNAL POLE</li> <li> INDICATES POWER POLE WITH DIRECTION OF OVERHEAD LINES</li> <li> INDICATES GUY ANCHOR</li> <li> INDICATES JUNCTION BOX</li> <li> INDICATES ELECTRIC METER</li> <li> INDICATES SIGN</li> <li> INDICATES MAIL BOX</li> <li> INDICATES TELEPHONE SERVICE BOX</li> <li> INDICATES TELEPHONE MANHOLE</li> <li> INDICATES DECIDUOUS TREE WITH TRUNK DIAMETER AND TYPE</li> </ul> | <ul style="list-style-type: none"> <li> INDICATES BOUNDARY</li> <li> INDICATES EDGE OF ASPHALT</li> <li> INDICATES EDGE OF CONCRETE</li> <li> INDICATES EDGE OF GRAVEL</li> <li> INDICATES 5 FOOT INTERVAL CONTOUR</li> <li> INDICATES 1 FOOT INTERVAL CONTOUR</li> <li> INDICATES FENCE LINE</li> <li> INDICATES ELECTRIC LOCATE</li> <li> INDICATES FIBER OPTIC LOCATE</li> <li> INDICATES TELEPHONE LOCATE</li> <li> INDICATES WATER LOCATE</li> <li> INDICATES OVER HEAD POWER</li> <li> FENCE</li> </ul> |
|--|---|
- BEARINGS ARE WASHINGTON SOUTH NAD 83 SOUTH ZONE.  
 ELEVATIONS ARE NAVD 88 BASED ON OPUS GPS SOLUTION TO A CONTROL POINT #1 (ELEV.142.25)

**PRELIMINARY PLANS**



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212

LEGEND

- RIGHT OF WAY
- PROPERTY LINE
- EASEMENT
- SETBACKS
- ROAD CENTERLINE
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED GRAVEL ROAD



MATCHLINE - SEE SHEET 4

Asa's View  
 PRELIMINARY PLAT - North

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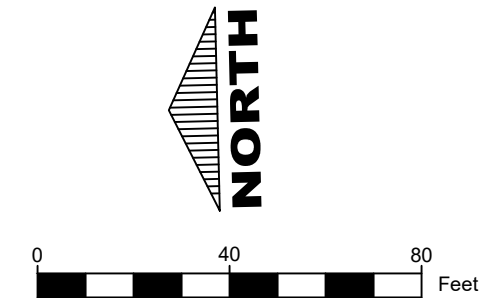
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DATE:  
 7/6/2022

SHEET NO.  
 3

INDEX NUMBER 3 OF 11

PRELIMINARY PLANS



NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212

LEGEND

- RIGHT OF WAY
- \_\_\_\_\_ PROPERTY LINE
- EASEMENT
- SETBACKS
- ROAD CENTERLINE
- ▒ PROPOSED ASPHALT PAVEMENT
- ▒ PROPOSED CONCRETE PAVEMENT
- ▒ PROPOSED GRAVEL ROAD



MATCHLINE - SEE SHEET 3

**Asa's View**  
PRELIMINARY PLAT

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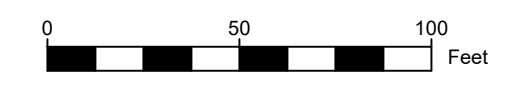
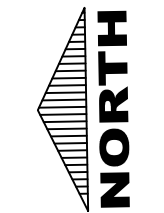
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7/6/2022

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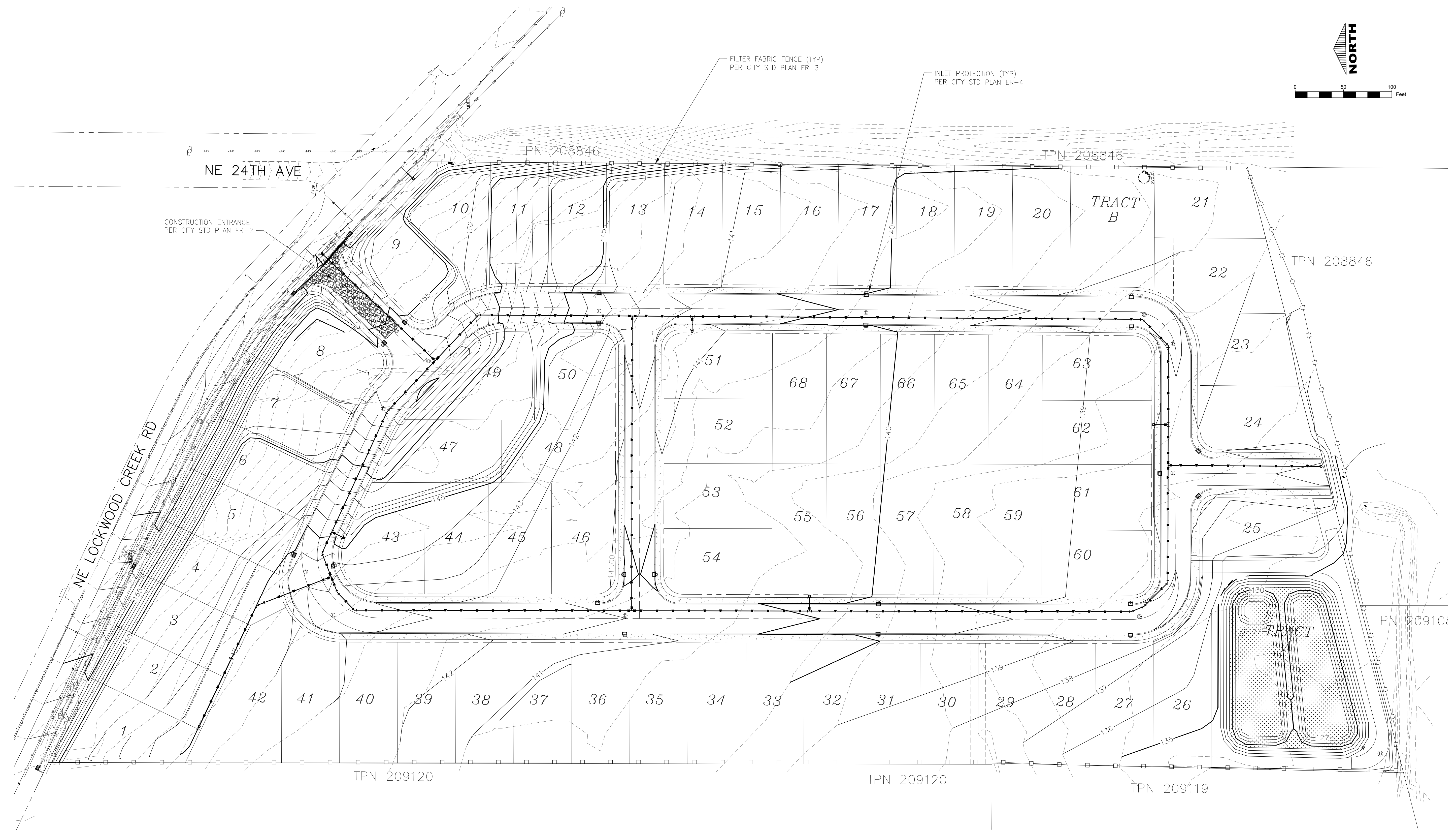
INDEX NUMBER 3 OF 11

**PRELIMINARY PLANS**





NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212



# Asa's View

## PRELIMINARY GRADING AND EROSION CONTROL PLAN

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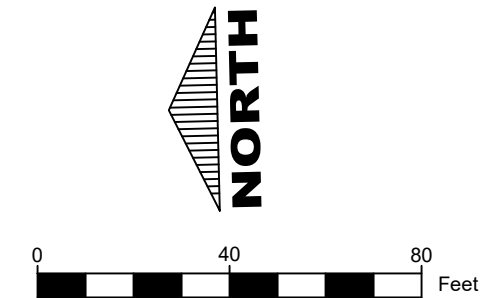
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7/6/2022

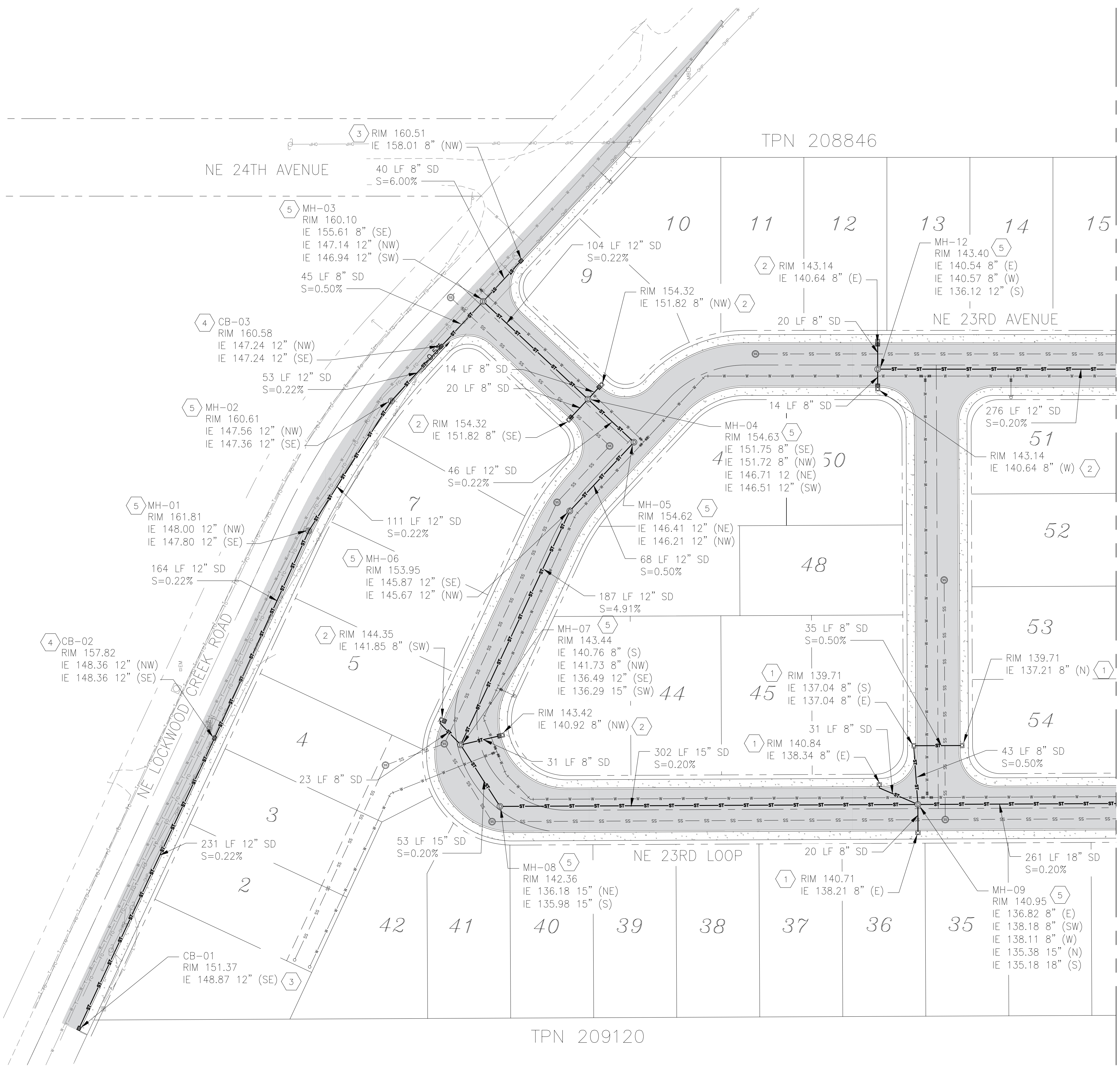
SHEET NO.  
5

INDEX NUMBER 5 OF 11

### PRELIMINARY PLANS



NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212



**KEYNOTES**

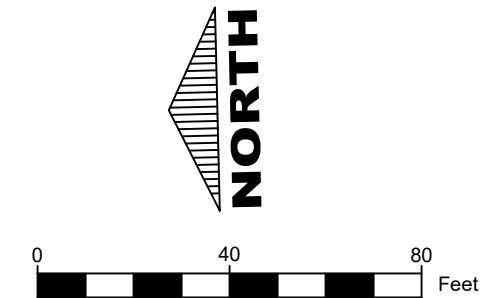
- 1 CURB INLET  
PER CITY STD PLAN SM-4
- 2 COMBINATION CURB INLET  
PER CITY STD PLAN SM-6
- 3 CATCH BASIN  
PER CITY STD PLAN SM-5
- 4 CATCH BASIN TYPE 2, 48-INCH DIA.  
WITH FRAME AND GRATE  
PER WSDOT STD PLAN B-10.20-02
- 5 STORM MANHOLE, 48-INCH DIA.  
PER CITY STD PLAN SM-2

**Asa's View**  
PRELIMINARY GRADING AND  
STORMWATER PLAN - NORTH

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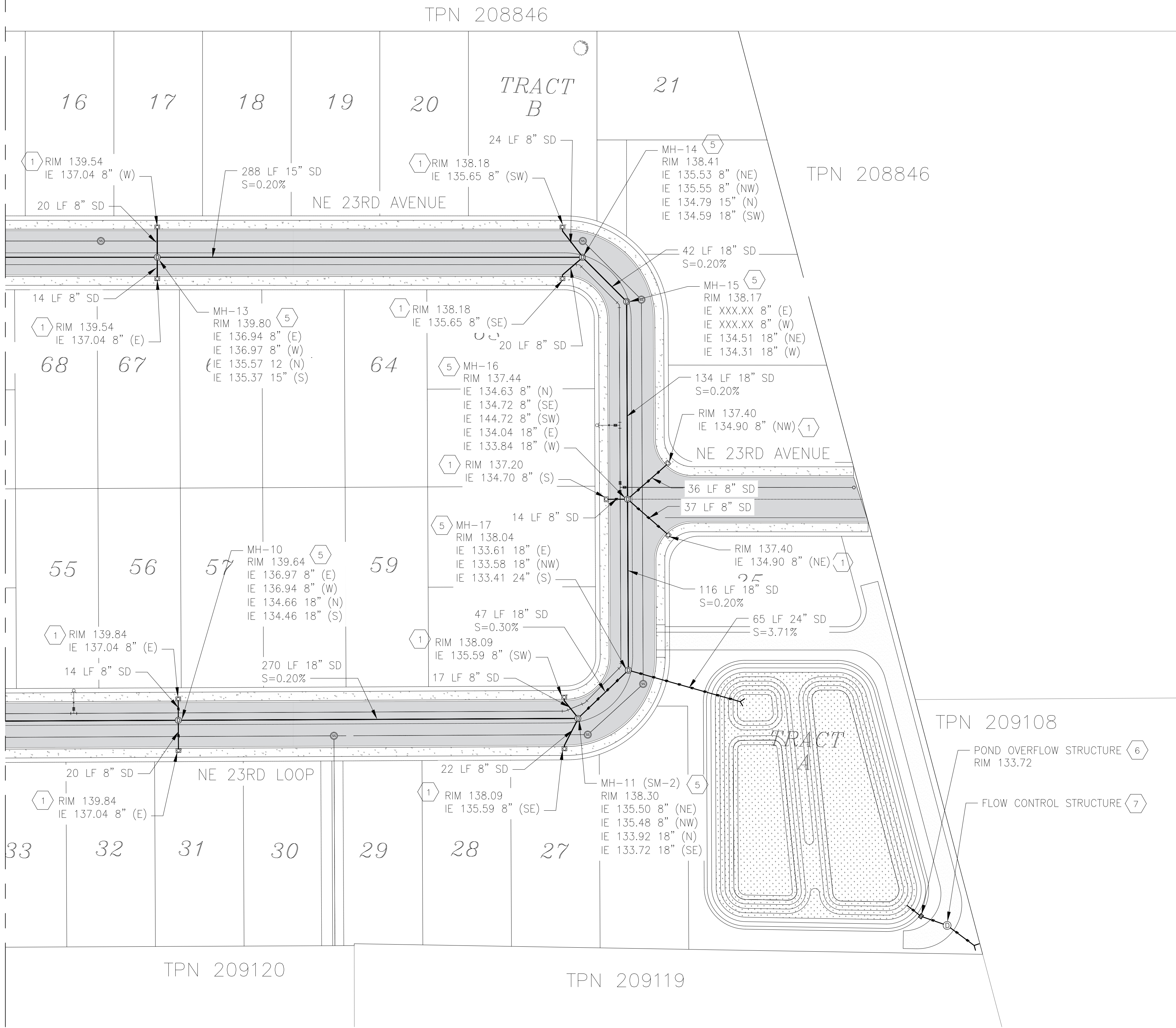
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7/6/2022  
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**PRELIMINARY PLANS**



NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212

MATCHLINE - SEE SHEET 6



**KEYNOTES**

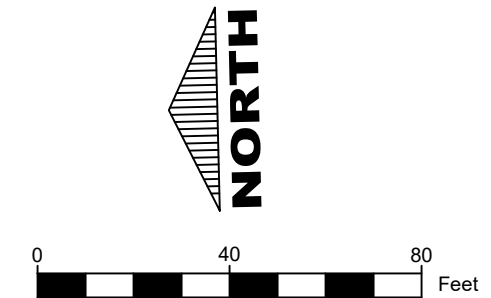
- 1 CURB INLET  
PER CITY STD PLAN SM-4
- 2 COMBINATION CURB INLET  
PER CITY STD PLAN SM-6
- 3 CATCH BASIN  
PER CITY STD PLAN SM-5
- 4 CATCH BASIN TYPE 2, 48-INCH DIA.  
WITH FRAME AND GRATE  
PER WSDOT STD PLAN B-10.20-02
- 5 STORM MANHOLE, 48-INCH DIA.  
PER CITY STD PLAN SM-2
- 6 SLOPED FIELD INLET  
PER CITY STD PLAN SM-9
- 7 FLOW CONTROL STRUCTURE, 60-INCH DIA.  
PER WSDOT STD PLAN B-10.40-02

**Asa's View**  
PRELIMINARY GRADING AND  
STORMWATER - SOUTH

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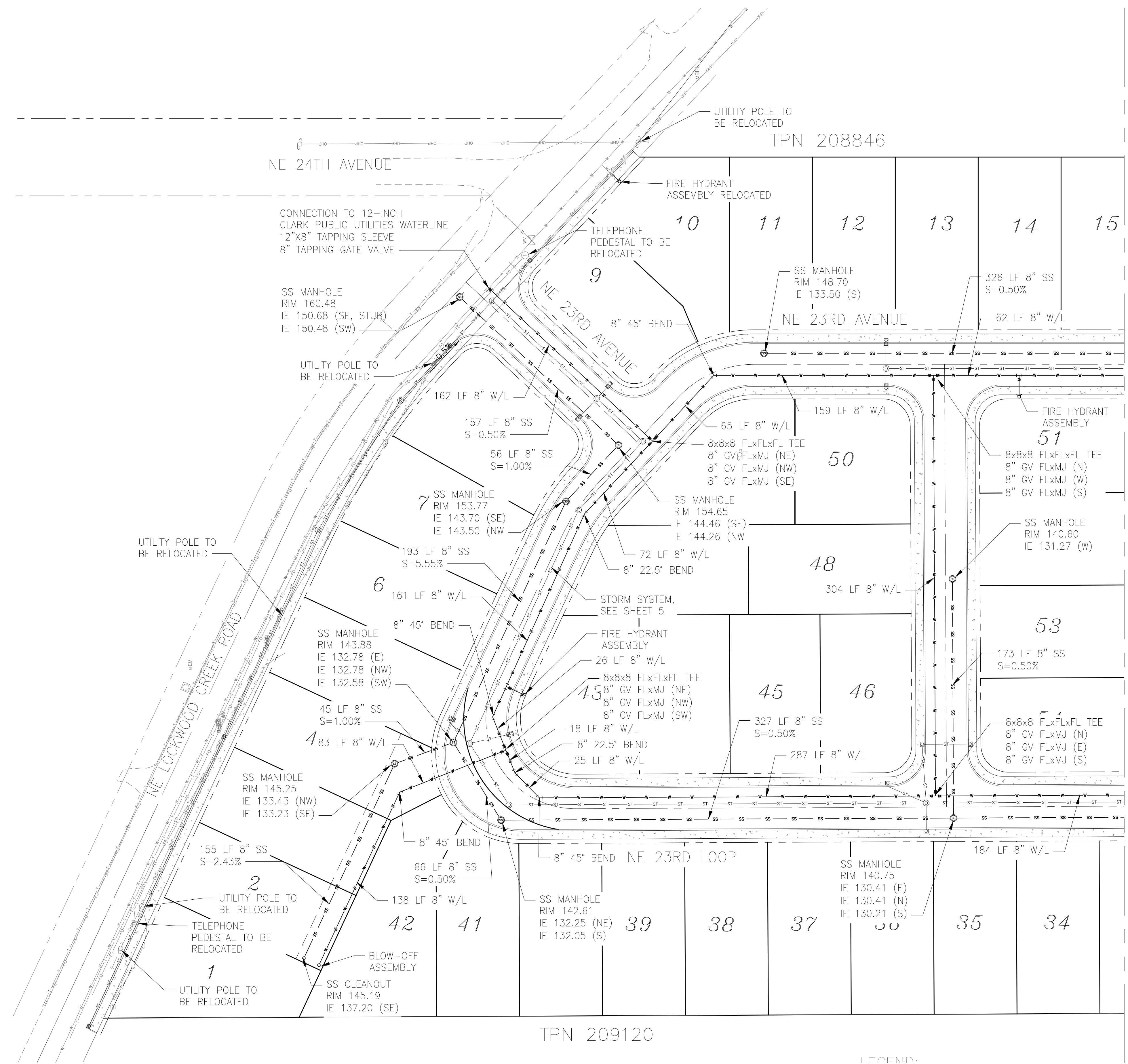
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SHEET NO.

**PRELIMINARY PLANS**



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212

**Asa's View**  
 PRELIMINARY UTILITY PLAN - NORTH

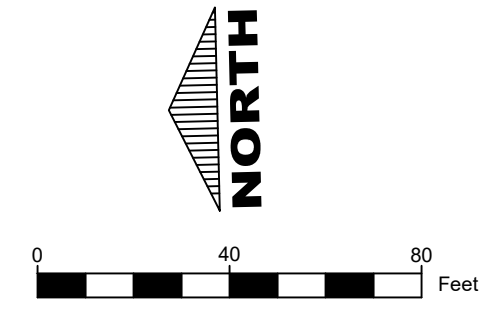


MATCHLINE - SEE SHEET 9

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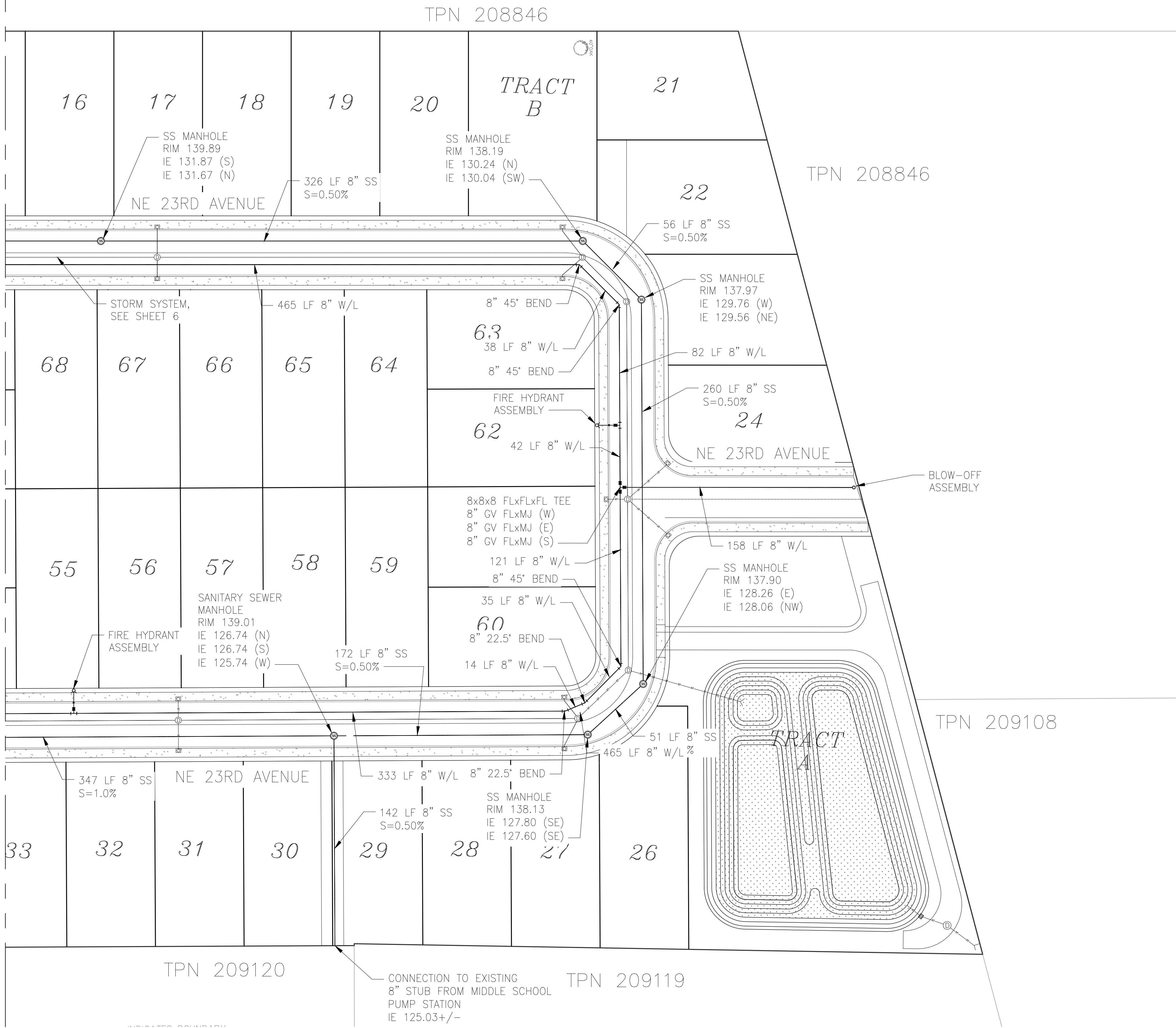
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**PRELIMINARY PLANS**



NW Consilio LLC  
 2410 NE 22nd Ave  
 Portland, OR 97212

MATCHLINE - SEE SHEET 8



Asa's View  
 PRELIMINARY UTILITY PLAN - SOUTH

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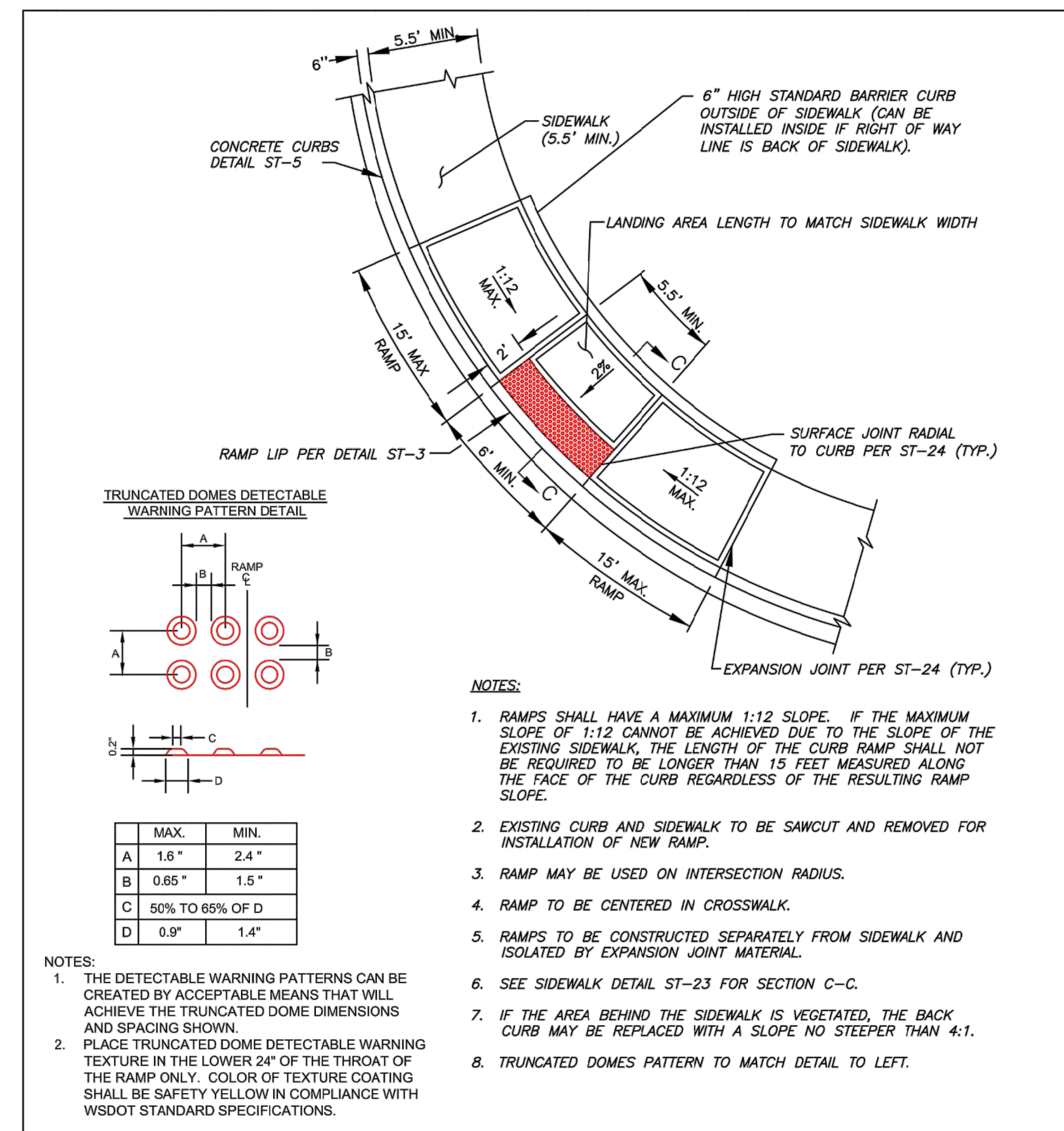
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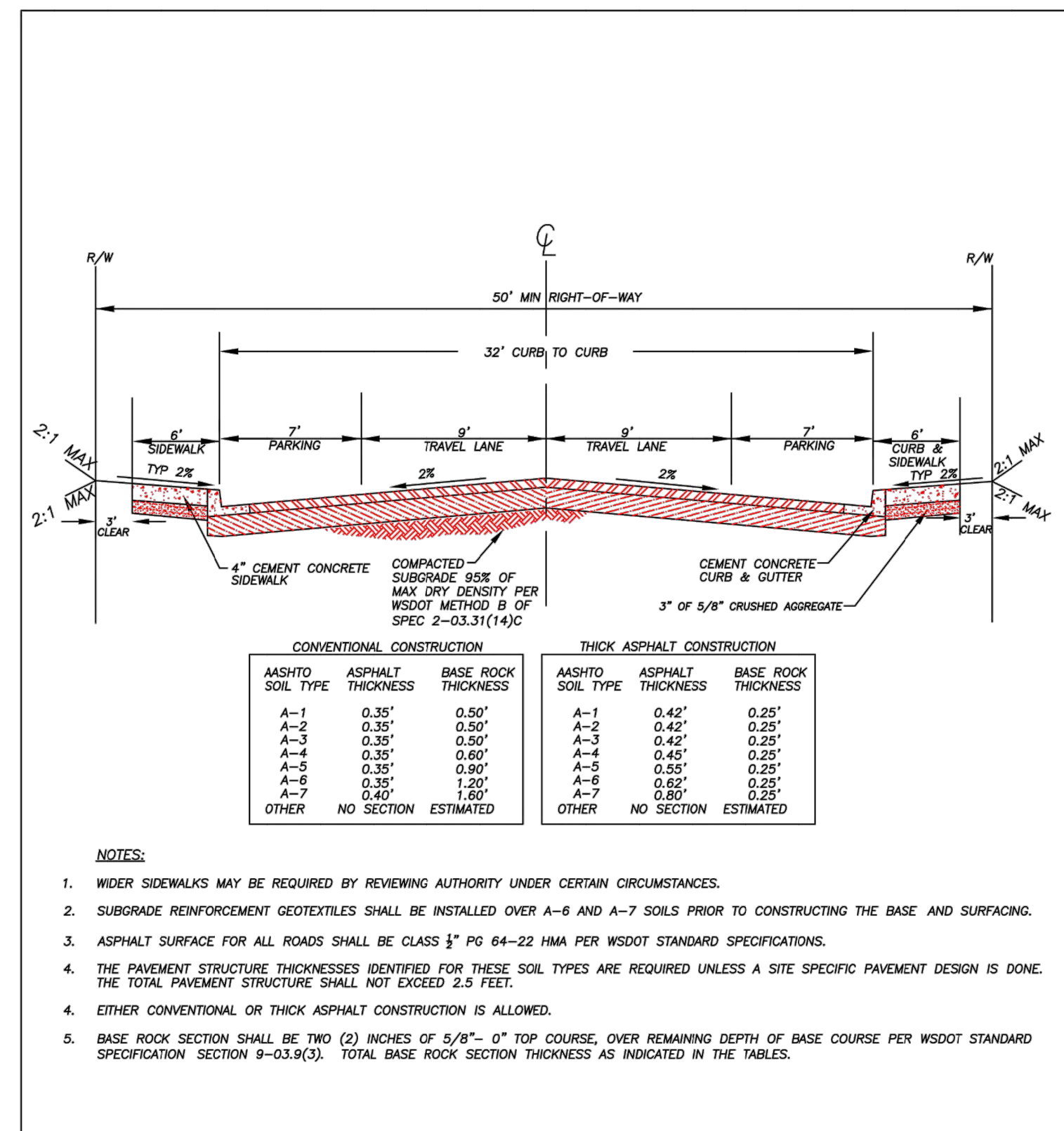
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 9

INDEX NUMBER 9 OF 11

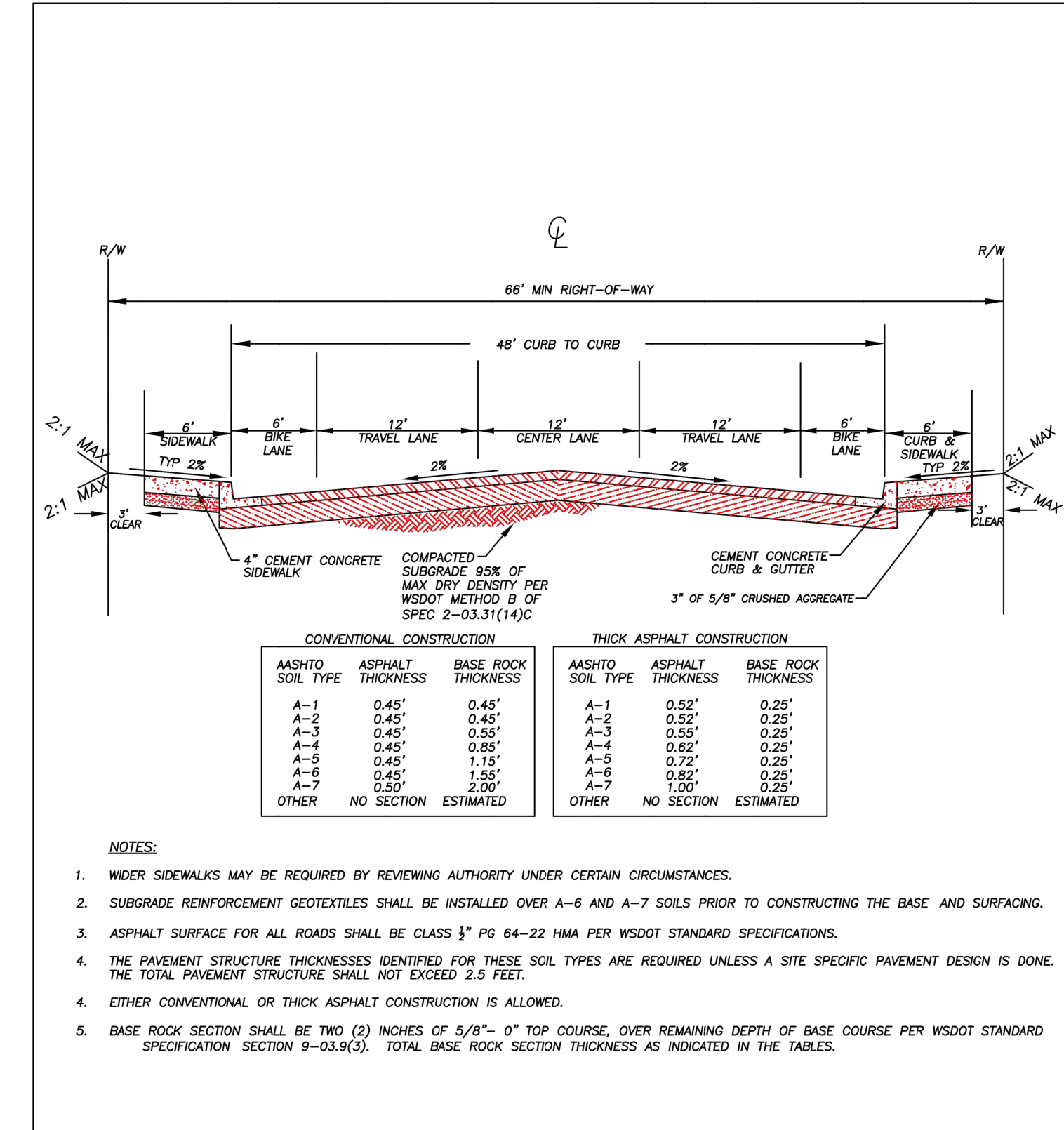
PRELIMINARY PLANS



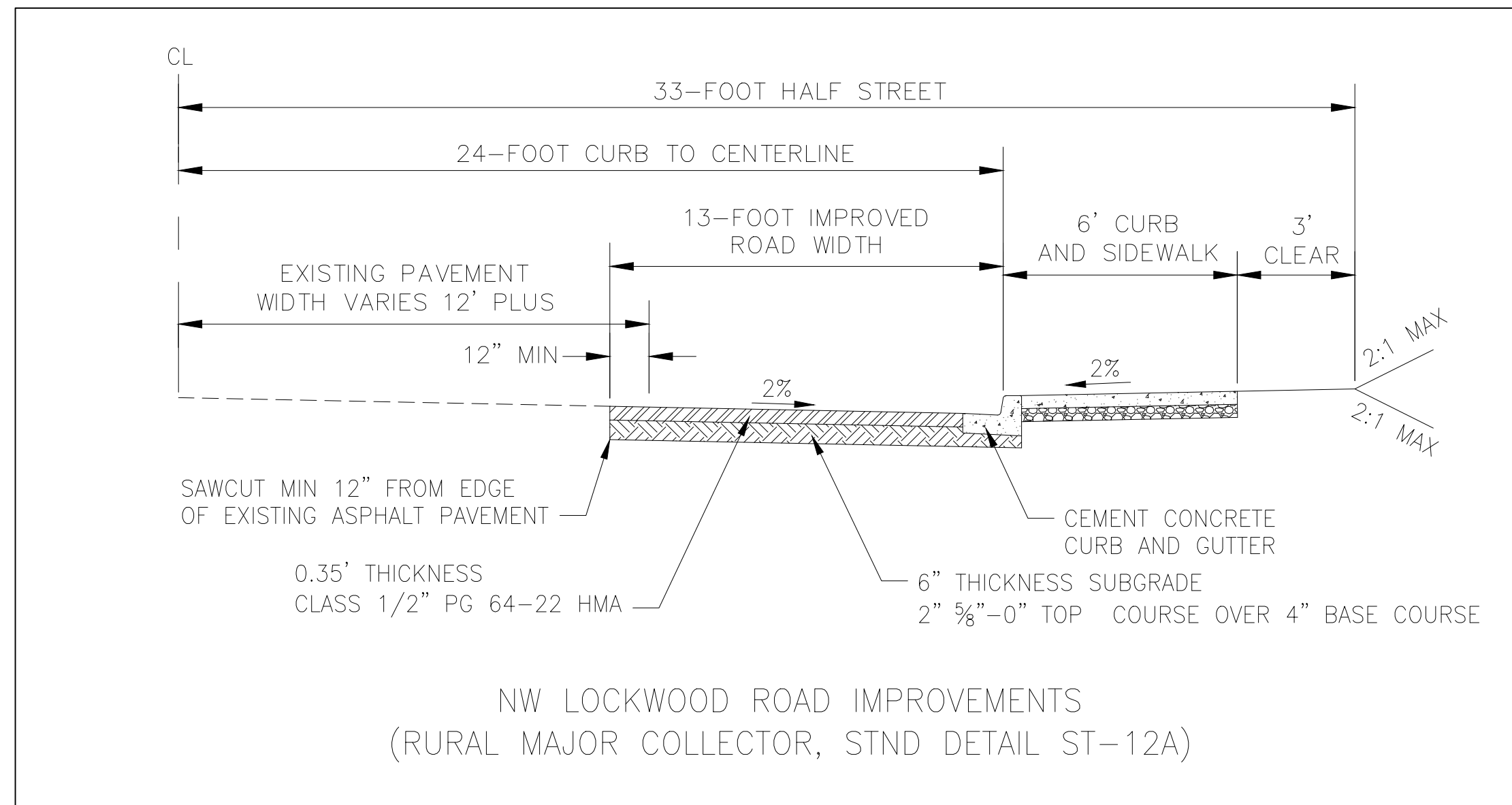
| TYPE 2 CORNER RADIUS CURB RAMP |                            |            |         | PLAN #          |       |
|--------------------------------|----------------------------|------------|---------|-----------------|-------|
|                                | CITY OF LA CENTER APPROVED | REVISIONS: | DATE:   | DRAWN/DESIGNED: | ST-8A |
|                                |                            | 1          | 9/22/10 | BES/BES         |       |
|                                |                            |            |         |                 |       |
|                                |                            |            |         |                 |       |
|                                | <i>Bart Stupp, PE</i>      | 9/22/10    |         |                 |       |
|                                | CITY ENGINEER              | DATE       |         |                 |       |



| LOCAL ACCESS |                            |            |         | PLAN #          |       |
|--------------|----------------------------|------------|---------|-----------------|-------|
|              | CITY OF LA CENTER APPROVED | REVISIONS: | DATE:   | DRAWN/DESIGNED: | ST-15 |
|              |                            | 1          | 9/27/10 | BES/BES         |       |
|              |                            |            |         |                 |       |
|              |                            |            |         |                 |       |
|              | <i>Bart Stupp, PE</i>      | 9/27/10    |         |                 |       |
|              | CITY ENGINEER              | DATE       |         |                 |       |



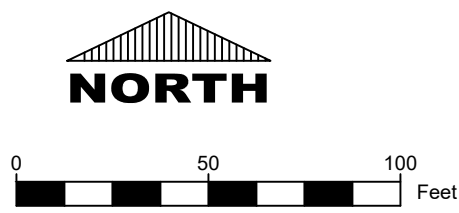
| MINOR ARTERIAL "A" |                            |            |         | PLAN #          |        |
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|                    | CITY OF LA CENTER APPROVED | REVISIONS: | DATE:   | DRAWN/DESIGNED: | ST-12A |
|                    |                            | 1          | 8/23/16 | ALC/ALC         |        |
|                    |                            |            |         |                 |        |
|                    |                            |            |         |                 |        |
|                    | TONY COOPER                | 8/23/16    |         |                 |        |
|                    | CITY ENGINEER              | DATE       |         |                 |        |



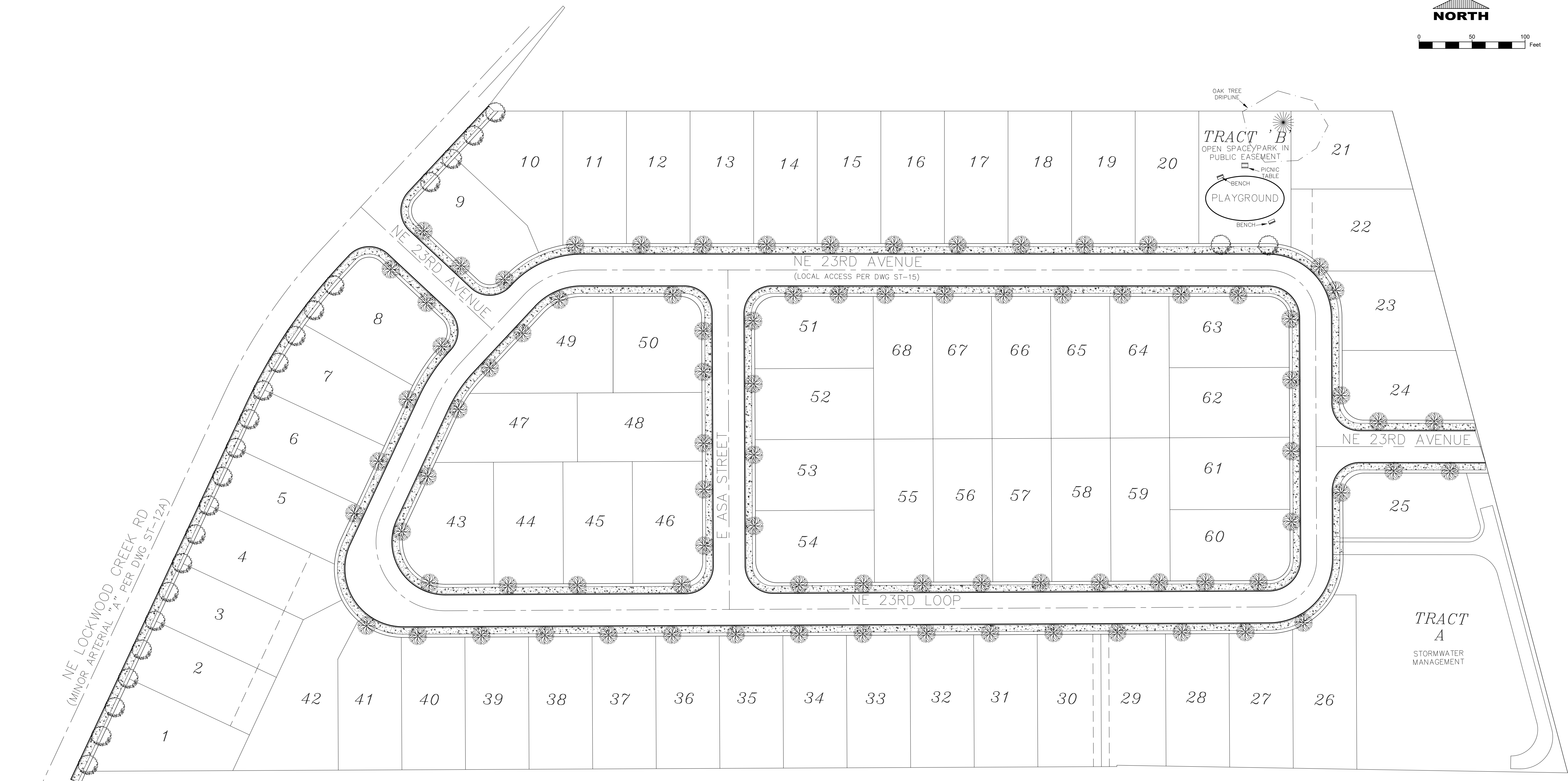
NW LOCKWOOD ROAD IMPROVEMENTS  
(RURAL MAJOR COLLECTOR, STD DETAIL ST-12A)

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NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212



**Asa's View**  
PRELIMINARY LANDSCAPE PLAN

| PLANT SYMBOL | PLANT NAME   | NUMBER OF PLANTS |
|--------------|--|------------------|
|              | ACER BUERRGERANUM - TRIDENT MAPLE (SPREAD 20' HEIGHT 25') OR SIMILAR OTHER FROM LIST OF APPROVED STREET TREES. TO BE INSTALLED WITH CONSTRUCTION OF THE SUBDIVISION.                     | 24 TREES         |
|              | ACER BUERRGERANUM - TRIDENT MAPLE (SPREAD 20' HEIGHT 25') OR SIMILAR OTHER FROM LIST OF APPROVED STREET TREES. TO BE INSTALLED WITH CONSTRUCTION OF INDIVIDUAL HOME, PLACEMENT MAY VARY. | 85 TREES         |
|              | EXISTING 40" OREGON WHITE OAK TO BE RETAINED   | 1 TREE           |

- NOTES:
- ALL PLANTING MATERIAL AND LOCATION TO BE FINALIZED WITH THE FINAL LANDSCAPE INSTALLATION
  - ALL LANDSCAPING INSTALLED BY THE DEVELOPER (OPEN SPACES, TRAILS, ETC) SHALL BE AUTOMATICALLY IRRIGATED BY MEANS OF A PERMANENT UNDERGROUND SYSTEM TO INSURE PLANT SURVIVAL.
  - IRRIGATION SYSTEM SHALL BE "DESIGN BUILD" BY THE LANDSCAPE CONTRACTOR, INSTALLING ALL WORK NECESSARY FOR THE COMPLETE INSTALLATION OF THE IRRIGATION SYSTEM, INCLUDING ZONING, BACKFLOW DEVICES AND POWER NEEDED FOR THE SYSTEM AND MONUMENT SIGNS. CONTRACTOR SHALL BE REQUIRED TO OBTAIN APPROVAL OF AGENCY FOR THE IRRIGATION SYSTEM PRIOR TO CONSTRUCTION.
  - ALL IRRIGATION WILL BE INCLUDED WITH THE FINAL LANDSCAPE INSTALLATION
  - INTERIOR STREET TREE SPECIES AND PLACEMENT WILL BE DETERMINED WITH THE BUILDING PERMIT TO ACCOMMODATE FUTURE HOMEOWNER PREFERENCE AND CONFLICTS WITH DRIVEWAYS AND UTILITIES
  - SIGHT DISTANCE WILL BE MAINTAINED AT ALL INTERSECTIONS

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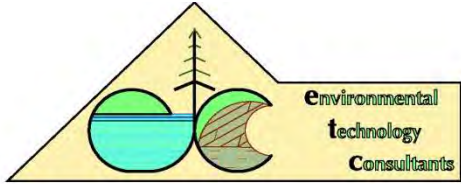
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11

INDEX NUMBER 11 OF 11

**PRELIMINARY PLANS**

# Exhibit A.13





"Creating Tomorrow's Environment - Today"

## Environmental Technology Consultants

A Division of Sisul Enterprises, Inc.

PO Box 821185, Vancouver, WA 98682

(360) 984-8767 Fax: (503) 657-5779

WA Landscape Contractors License #: ENVIRTC023RB

Web: [www.etcEnvironmental.net](http://www.etcEnvironmental.net)

[www.SisulEngineering.com](http://www.SisulEngineering.com)

Email: [AnnakateM@etcEnvironmental.net](mailto:AnnakateM@etcEnvironmental.net)

Updated June 17, 2022

May 18, 2022

City of La Center Community Development

Attn: Jessica Nash

210 E 4th Street

La Center, WA

CC: Troy Johns

To Whom It May Concern:

This letter is in response to the request from the City of La Center to provide information about critical areas located on tax lots 209064000 and 209121000. The critical areas are as follows:

- There is a ditch that runs north and south along NE 23<sup>rd</sup> Avenue which has seasonal water in the bottom during the growing season. This ditch met the criteria for a wetland but due to the circumstances was determined a roadside ditch.
- A 40" Oregon White Oak tree was present on tax lot 209121000 on the southeast area of the property. This is a priority non-riparian habitat and per the Washington Department of Fish and wildlife, Habitat Protection Ordinance, it is afforded protection to the edge of the dripline of the oak tree.
- There are no riparian areas or buffers on the site.

Thank you for your time and please let me know if there is anything else I can do.

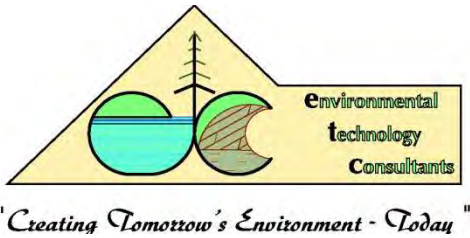
Sincerely,

*Annakate Martin*

Annakate Martin, Senior Biologist



# Exhibit A.14



## Environmental Technology Consultants

A Division of Sisul Enterprises, Inc.

PO Box 821185, Vancouver, WA 98682

(360) 984-8767 Fax: (503) 657-5779

WA Landscape Contractors License #: ENVIRTC023RB

Web: [www.etcEnvironmental.net](http://www.etcEnvironmental.net)

[www.SisulEngineering.com](http://www.SisulEngineering.com)

Email: [AnnakateM@etcEnvironmental.net](mailto:AnnakateM@etcEnvironmental.net)

August 24, 2022

City of La Center WA, Public Works

CC: Troy Johns

To Whom It May Concern:

This letter is in response to the request from the City of La Center to provide information about critical areas located on tax lot 209121000. There was one Oregon White Oak, *Quercus garryana*, on this parcel on the southeast area which is considered a critical area per LMC 18.350 and WDFW critical areas. The oak tree is in an area that is historically and currently farmed, there is no vegetation in the dripline as it was tilled almost to the trunk, the untilled is weeds. There are no other trees of concern in the development area.

The following should be the management plan for development around the Oak:

- There should be no development within the dripline of the Oak. The Oak on the property is older in age and therefore the dripline should be the root extent.
- The root systems are normally relatively shallow making ground disturbing activities difficult. The placement of a fence around the Oak tree or in the dripline needs to not have holes dug or no fence in the dripline.
- Porous materials (grasses, bark) should try to be used above nonporous (turf) around the tree and in the dripline.
- Manage invasive weeds preferably hand pulling, or spot herbicide spraying if necessary.
- Be careful of overwatering a mature oak. Established oaks are adapted to summer drought and do not require watering. Try to manage the tree water as it has historically been watered.

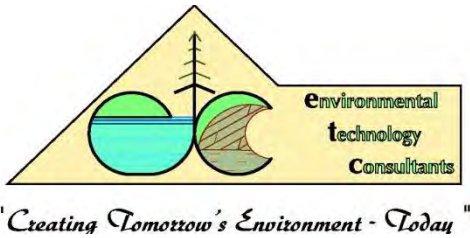
If these recommendations are followed there should be no need for mitigation for this project. Thank you for your time and please let me know if there is anything else I can do.

Sincerely,

*Annakate Martin*

Annakate Martin, Senior Biologist

# Exhibit A.15



## Environmental Technology Consultants

A Division of Sisul Enterprises, Inc.

PO Box 821185, Vancouver, WA 98682

(360) 984-8767 Fax: (503) 657-5779

WA Landscape Contractors License #: ENVIRTC023RB

Web: [www.etcEnvironmental.net](http://www.etcEnvironmental.net)

[www.SisulEngineering.com](http://www.SisulEngineering.com)

Email: [AnnakateM@etcEnvironmental.net](mailto:AnnakateM@etcEnvironmental.net)

November 8, 2022

City of La Center Community Development  
Attn: Jessica Nash  
210 E 4th Street  
La Center, WA

CC: Troy Johns  
To Whom It May Concern:

This letter is in response to the request from the City of La Center to provide information about critical areas, which is whether a ditch or stream is located offsite south of tax lots 209064000. It is my professional opinion that the drainage feature south of the tax lot is a continuation of the roadside ditch that travels down NE 23<sup>rd</sup> Avenue. The ditch that runs along the tax lot has no buffer at this time as on one side is the road and the other side has had agricultural plowing within 5' to the top of the ditch.

The true stream starts approximately 310 feet southwest of the project site that is a natural feature and not a dug-out ditch. There are two areas that have approximately 10" drainage pipes and road crossings along this ditch, please see the attached maps as I have drawn where I believe the stream starts. On November 8, 2022, I walked the ditch until it turned into a stream and there was no water visible at that time. There does not appear to be significant water flow in the ditch or stream as the bottom is covered with vegetation, primarily *Phalaris arundinacea* (Reed Canary Grass) which had no signs of hydrology (bending the grass over, sediment deposits, ect).

Again, the *Quercus garryana* (Oregon white oak) is a single tree that is in the middle of agricultural land that has been tilled all around it. The proposed limited maintenance in the dripline will be better managed than what it has currently endured.

Thank you for your time and please let me know if there is anything else I can do.

Sincerely,

*Annakate Martin*


Annakate Martin, Senior Biologist

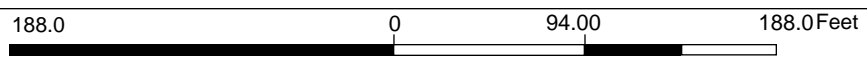


**Legend**

- Taxlots

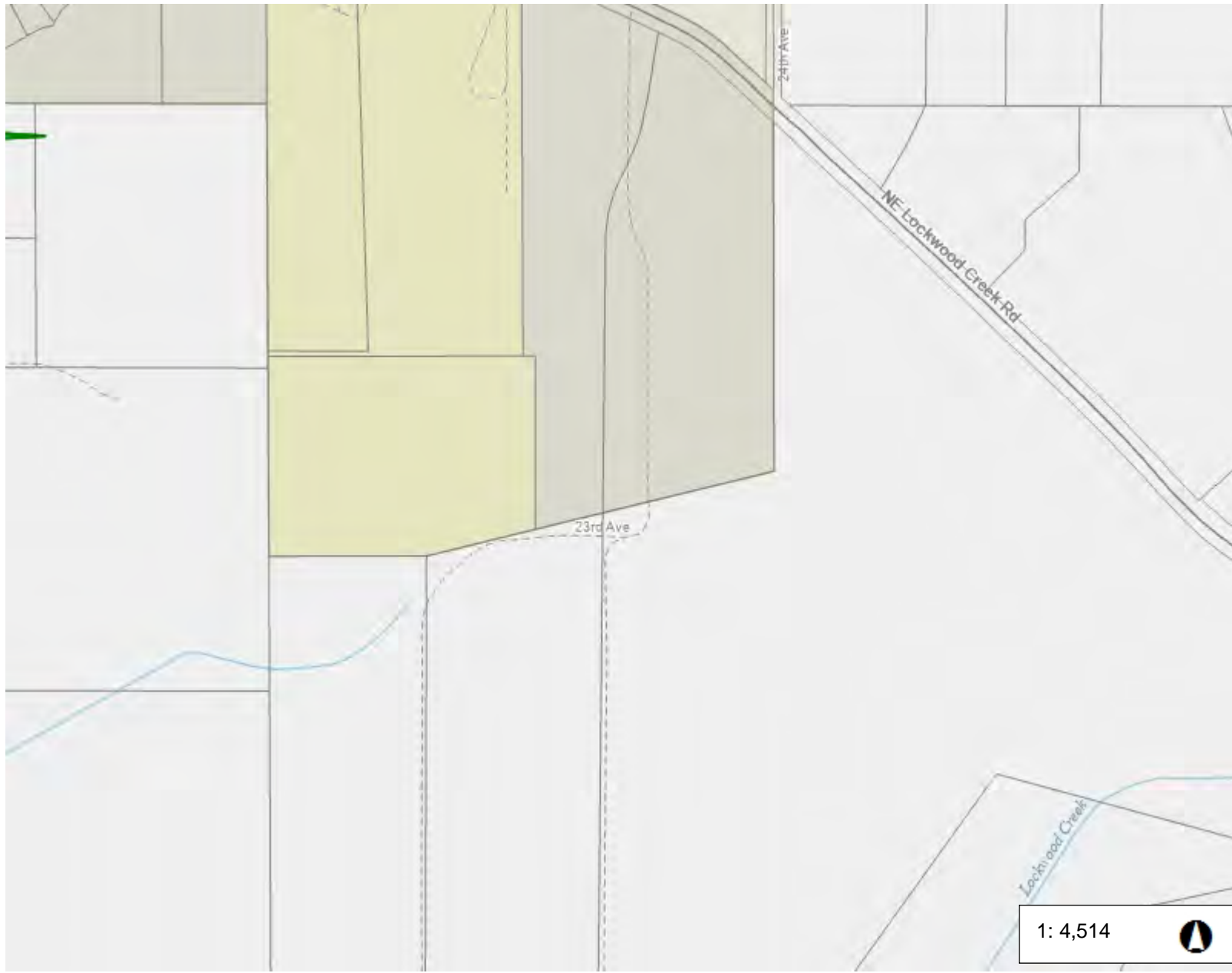
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WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
Clark County, WA. GIS - <http://gis.clark.wa.gov>

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

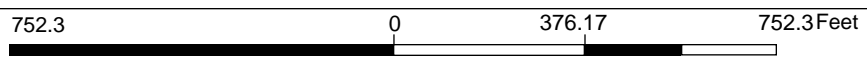


Legend

□ Taxlots

Notes:

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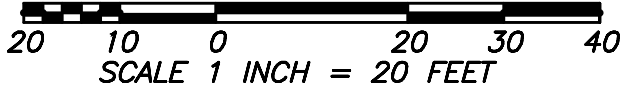
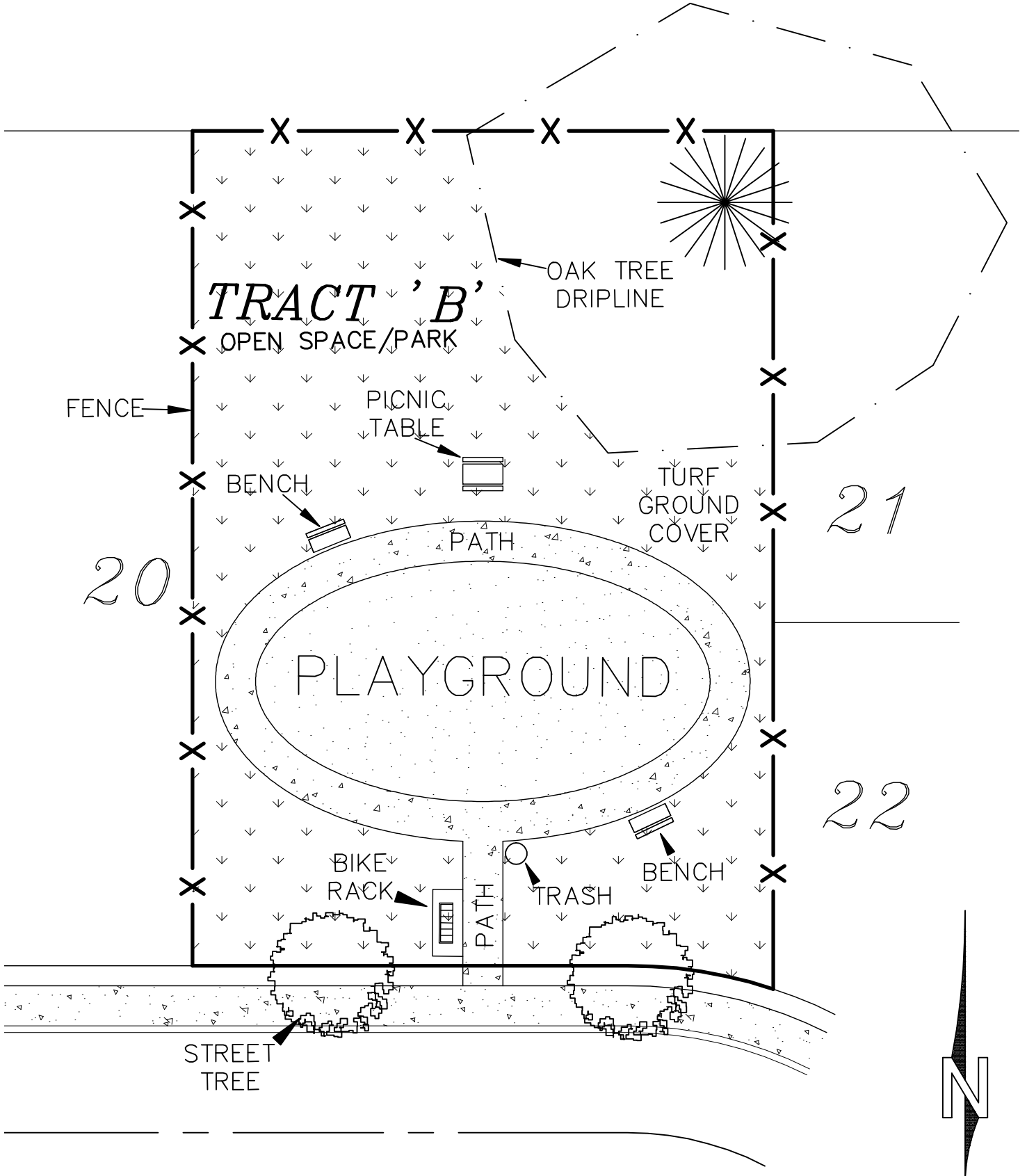
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Clark County, WA. GIS - <http://gis.clark.wa.gov>

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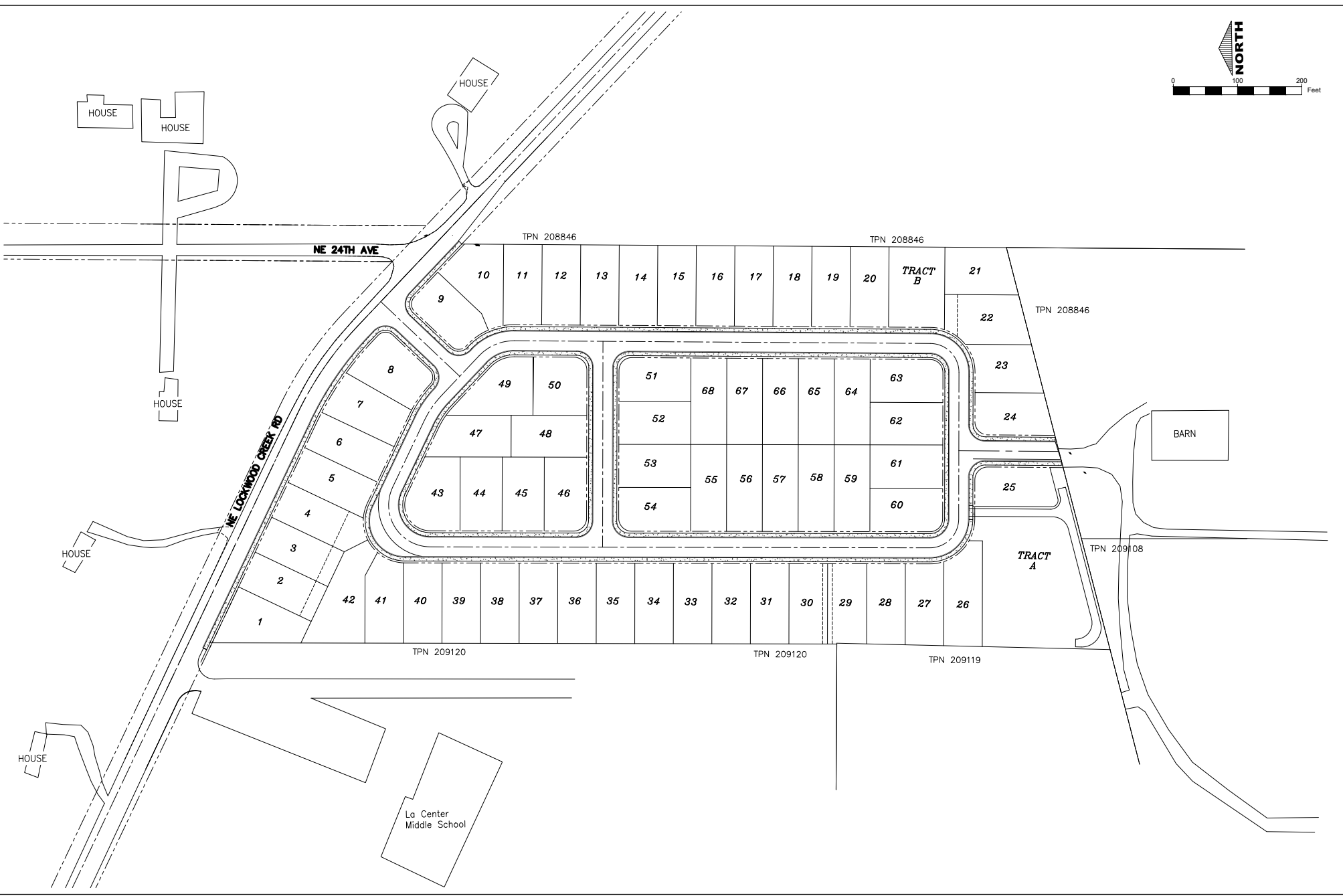
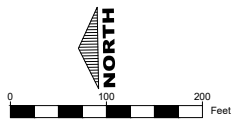



# Exhibit A.16

# ASA'S VIEW TRACT 'B' PARK EXHIBIT



# Exhibit A.17



 NW Consilio LLC  
2410 NE 22nd Ave  
Portland, OR 97212

# Asa's View

Site Plan and Off-Site Features

SCALE: AS SHOWN  
DATE: 7/6/2022

# Exhibit A.18



# ARBOR SCIENCE TREE CARE

SPECIALIZING IN SUSTAINABLE TREE CARE SOLUTIONS

arborsciencetreecare.com

360.521.0249

WA# ARBORST838DT

OR CCB# 216351

November 20, 2022

Asa's View Subdivision  
2313 NE Lockwood Creek Rd  
La Center, WA 98629

Tax Lot 102 209121-000

**RE:** Tree protection plan and management recommendations for Oregon white oak (*quercus garryana*)

## **On Site Observations:**

The Oregon white oak tree is located in the SE corner of the lot detailed above along a seasonal drainage ditch. This tree appears to have been a stand alone specimen with open light source and relatively zero competition from other tree specimens. The field this tree is located in appears to have been managed as a grass crop field as far back as at least 1951 (oldest aerial image found) but presumably far before that. This healthy specimen is largely unaltered and in a somewhat natural growing environment with deep will drained alluvial soils. I estimate this 40" diameter oak tree to be aged to at least 120-200+ years old.

## **General Tree Protection Guidelines:**

Tree, Vegetation and Soil Protection During Construction.

During construction. Prior to initiating tree removal on the site, soils, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities pursuant to the following standards.

**A. Placing Materials Near Trees.** No person may conduct any activity within the protected area of any tree designated to remain, including, but not limited to, parking equipment, placing solvents, storing building material and soil deposits, dumping concrete washout and locating burn holes.

1. During construction, no person shall attach any object to any tree designated for protection.

**B. Protective Barrier.** Before development, land clearing, filling or any land alteration for which a Tree

Removal Permit is required, the applicant:

1. Shall erect and maintain readily visible protective tree fencing along the outer edge and completely surrounding the protected area of all protected trees or groups of trees that are to remain undisturbed. Fences shall be constructed of chain link and at least four feet high, unless other type of fencing is authorized by the planning official.
2. Shall prohibit excavation or compaction of earth or other potentially damaging activities within the barriers.
3. Shall maintain the protective barriers in place until the planning official authorizes their removal or a final certificate of occupancy is issued, whichever occurs first
4. Shall ensure that any landscaping done in the protected zone subsequent to the removal of the barriers shall be accomplished with light machinery or hand labor. No turf or lawn areas are to be installed within protected area.
5. In addition to the above, the planning official may require the following:
  - Cover with mulch to a depth of at least six (6) inches or with plywood or similar material the areas adjoining the critical root zone of a tree in order to protect roots from damage caused by heavy equipment.
  - Minimize root damage by excavating a two (2) foot deep trench, at edge of critical root zone, to cleanly sever the roots of trees to be retained.
  - Have corrective pruning performed on protected trees in order to avoid damage from machinery or building activity.
  - Maintain trees throughout construction period by watering and fertilizing if recommended by Arborist.

**C. Grade.**

1. The grade shall not be elevated or reduced within the critical root zone of trees to be preserved without the planning official's authorization. The planning official may allow coverage of up to one half of the area of the tree's critical root zone with light soils (no clay) to the minimum depth necessary to carry out grading or landscaping plans, if it will not imperil the survival of the tree. Aeration devices may be required to ensure the tree's survival.
2. If the grade adjacent to a preserved tree is raised such that it could slough or erode into the tree's critical root zone, it shall be permanently stabilized to prevent suffocation of the roots.
3. The applicant shall not install an impervious surface within the critical root zone of any tree to be retained without the authorization of the planning official. The planning official may require specific construction methods and/or use of aeration devices to ensure the tree's survival and to minimize the potential for root induced damage to the impervious surface.

4. To the greatest extent practical, utility trenches shall be located outside of the critical root zone of trees to be retained. The planning official may require that utilities be tunneled under the roots of trees to be retained if the planning official determines that trenching would significantly reduce the chances of the tree's survival.

5. Trees and other vegetation to be retained shall be protected from erosion and sedimentation. Clearing operations shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, shrubs, ground cover and stumps shall be maintained on the individual lots, where feasible. Where not feasible appropriate erosion control practices shall be implemented pursuant to best management practices within industry standards.

**D. Directional felling.** Directional felling of trees shall be used to avoid damage to trees designated for retention and shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, shrubs, ground cover and stumps shall be retained where feasible. Where not feasible, appropriate erosion control practices shall be implemented pursuant to

**E. Additional requirements.** The planning official or Arborist may require additional tree, vegetation and soil protection measures which are consistent with accepted best management practices.

**Tree Specific Guidelines, Recommendations and Assessment of Governing Agencies Requirements:**

Best management practices and general guidelines detailed above shall be followed for any construction activities within the drip line.

Arborist Recommendations

1. Remove any competing or invasive weeds/plants. This should be completed with minimally invasive hand tools. Care should be taken not to scrape or “grub-out “ entire area. Chemical suppression is not recommended due to the sterilizing habits of herbicides.
2. Place 1-3” of mulch media within drip line prior to construction activities and surrounding disturbances. Mulch shall consist of natural material ideally tree service wood chips or similar. Care should be taken to keep mulch away from basal swell / root crown. Grass and natural vegetation can be cut very low and mulch placed directly on top. I do not recommend placing weed barrier or geo-textile fabrics.

Developer Specific Concerns and Questions.

Q. Extent of critical root zone?

A. In a completely natural growing environment unaltered by cultural activities this white oak tree would have absorbing roots far beyond its drip line. However, the surrounding soils have repeatedly been disturbed by farming activities for I would assume the better part of a century if not more. This field bears witness to having been disked or plowed as recent as last growing season. This is evident from the harrow marks present on site. In this trees benefit its stately, low-hanging canopy has prevented any such activities from happening within it's drip line. The cultivated portions of the surrounding soil will likely have very little if any critical root mass due to the annual springtime plow. This activity would undoubtedly sever roots to depth of at least 18-24” which is where the majority of the aerobic soil is and root development takes place.

Q. Placement of fence within drip line?



A. I do not feel that the placement of a fence within the critical root zone is unreasonable. The impact and foot print of said disruption is quite negligible. Oak trees are quite hardy and resilient. Fence installation guidelines are as follows

- Do not damage or cut roots larger than 2" in diameter .
- Allow post spacing to be dynamic or adjustable if roots are encountered.
- Hand dig and make holes as small as possible.
- Do not hole mix concrete and refrain from mixing any concrete within roots zone.

Q. Post construction allowed activities within drip line and post construction soil topping/dressing.

A. I feel that readily available tree service or municipal wood chips would be the most beneficial for this setting as well as retaining the annual leaf litter underneath this tree. This would allow for a natural nutrient cycle, provide an insulative benefit and moisture retention for the soil and its organisms.

Turf grasses are ill advised as they often require maintenance and out compete the absorbing roots for available moisture and nutrients. Native under-story plants are acceptable.

Human activity within the drip line is not a concern as long as there is a compliment of mulch under foot.

The portion of the drip line that will be in the proposed yard of lot 21 should be top with mulch or bark dust as a part of the landscape design.

Brandon Cheney # PN-7163A  
ISA Certified Arborist  
Certified Tree Risk Assessor

# Exhibit B.1



## STATE ENVIRONMENTAL POLICY ACT (SEPA) MITIGATED DETERMINATION OF NON-SIGNIFICANCE

### Asa's View Subdivision Type III Preliminary Plat, Variance, SEPA, Critical Areas Permit, Legal Lot Determination, and Tree Cutting Permit (File # 2022-022-SUB/VAR/SEPA/CAR/LLD/TRE)

**Description of proposal:** The applicant proposes to subdivide the 16.47-acre site located at 2313 Northeast Lockwood Creek Road (Parcels 209064000 and 209121000) into 68 lots for single-family detached residences. A public road system would serve the development with access from Northeast Lockwood Creek Road at Northeast 23rd Avenue. The applicant is also proposing a stub to the south property boundary, Northeast 23rd Avenue, for future connectivity and to preserve access to properties south of the site. Tract B of the development would be a 0.25-acre park. Lots within the development would range in size from 7,500 square feet to 10,201 square feet. The applicant is requesting a variance application for ten substandard lot widths as required by LCMC 18.130.080. The request also includes a critical areas permit for geologically hazardous areas due the site classification as Site Class D for ground shaking amplification.

**SEPA Determination:** NOTICE IS HEREBY GIVEN that the City makes the following findings and conclusions based upon a review of the environmental checklist; other information on file with the City of La Center and other public agencies; and the policies, and regulations designated by the City as a basis for the exercise of substantive authority under the Washington State Environmental Policy Act (SEPA) pursuant to Chapter 43.21C WAC. Based on a review of the code, the City of La Center hereby issues a **Mitigated Determination of Non-Significance (MDNS)** for this proposal pursuant to WAC 197-11-340 and the La Center Municipal Code (LCMC 18.310). An Environmental Impact Statement is not required under RCW 43.21c.031(1).

A public comment period was held under the optional MDNS procedures.

**Application:** Asa's View Subdivision Type III Preliminary Plat, Variance, SEPA, Critical Areas Permit, Legal Lot Determination, and Tree Cutting Permit (File # 2022-022-SUB/VAR/SEPA/CAR/LLD/TRE).

**Application date:** May 12, 2022

**Technically Complete:** September 30, 2022

**Proponent:** Representative: Shawn Ellis, NW Consilio, LLC, 2410 Northeast 22nd Avenue, Portland, OR 97212.

**Applicant:** Troy Johns, 1004 West 13th Street, Suite 220, Vancouver, WA 98660.

**Property owner:** Michael Parker, Gravitare Capital, LLC, 13563 Northwest Fuller Lane, Portland, OR 97229.

**Location of proposal:** 2313 Northeast Lockwood Creek Road, La Center, WA 98629 (Parcel No. 209064000 and 209121000).

**Public Hearing:** A public hearing is scheduled for November 28 at 5:00 p.m. at La Center City Hall, 210 East 4th Street, La Center, WA 98629.

**Existing Environmental Documents relied upon:** The State Environmental Policy Act (SEPA) requires that a review of the potential environmental impacts be conducted. City staff reviewed the proposal for compliance with applicable state requirements and city codes.

The following environmental documents were relied upon in the City's assessment of a likely determination of non-significance: SEPA Environmental Checklist dated, March 15, 2022; Narrative (NW Consilio LLC, September 2022); Preliminary Technical Information Report (NW Consilio LLC, May 2022); Geotechnical Site Investigation

(Soil and Water Technologies, Inc., May 2022); Traffic Analysis Report (Kelly Engineering, February 2022); Clark County Archaeological Predetermination Survey for the Asa's View Subdivision Project Area (March 17, 2022); Critical areas documentation (Environmental Technology Consultants, June 17, 2022, August 24, 2022, and November 8, 2022); and Asa's View Subdivision Plans (NW Consilio LLC).

**Statement of Determination:** As lead agency under the State Environmental Policy Act (SEPA) rules [Chapter 197-11, Washington Administrative Code] the City of La Center must determine if there are potential significant adverse environmental impacts associated with this proposal. The options include the following:

- **Determination of Significance – (DS)** The impact cannot be mitigated and therefore requires the preparation of an Environmental Impact Statement (EIS).
- **Mitigated Determination of Nonsignificance – (MDNS)** The impact can be mitigated through conditions of approval, or;
- **Determination of Nonsignificance – (DNS)** The impacts can be addressed by applying the city codes.

**Approval Standards/Applicable Laws:** The following standards will apply to the application: 18.30 Procedures; 18.130 Low Density Residential; 18.147 Parks and Open Space; 18.200 General Provisions; 18.210 Subdivision Provisions; 18.225 Legal Lot Determinations; 18.230 Monumentation, Survey, and Drafting Standards; 18.240 Mitigation of Adverse Impact; 18.245 Supplementary Development Standards; 18.260 Variances; 18.280 Off-Street Parking and Loading Requirements; 18.282 Outdoor Lighting; 18.300 Critical Areas; 18.310 Environmental Policy; 18.320 Stormwater and Erosion Control; 18.340 Native Plant List; 18.350 Tree Protection; 18.360 Archaeological Resource Protection.

**Mitigation Measures:** The applicant will be required to comply with all applicable approval standards and laws in addition to the following project-specific mitigation measures:

- **Earth:** The applicant must comply with the design recommendations of the geotechnical site investigation by Soil and Water Technologies, Inc. dated May 2022.
- **Air:** The applicant is required to apply best management practices to reduce dust during construction
- **Water:** The applicant must comply with the recommendations of the critical areas documentation (Environmental Technology Consultants, June 17, 2022, August 24, 2022, and November 8, 2022).
- **Water:** The applicant must comply with the recommendations of the Preliminary Technical Information Report dated May, 2022.
- **Water:** The applicant must use approved erosion control best management practices during construction.
- **Plants:** The applicant shall comply with the critical areas documentation for protection of the 40-inch Oregon white oak tree onsite provided by Environmental Technology Consultants dated, August 24, 2022.
- **Environmental Health:** The applicant shall comply with approved construction hours as required by the City of La Center.
- **Recreation:** The applicant is required to pay park impact fees prior to issuance of building permits.
- **Historic and cultural preservation:** In the event any archaeological or historic materials are encountered during project activity, work in the immediate area (initially allowing for a 100' buffer; this number may vary by circumstance) must stop and the following actions taken:
  - Implement reasonable measures to protect the discovery site, including any appropriate stabilization or covering;
  - Take reasonable steps to ensure confidentiality of the discovery site; and,
  - Take reasonable steps to restrict access to the site of discovery.

The applicant shall notify the concerned Tribes and all appropriate county, city, state, and federal agencies, including the Washington Department of Archaeology and Historic Preservation and the City of La Center. The agencies and Tribe(s) will discuss possible measures to remove or avoid cultural material, and will reach an agreement with the applicant regarding actions to be taken and disposition of material. If human remains are uncovered, appropriate law enforcement agencies shall be notified first, and the above steps followed. If the remains are determined to be Native, consultation with the affected Tribes will take place in order to mitigate the final disposition of said remains.

See the Revised Code of Washington, Chapter 27.53, "Archaeological Sites and Resources," for applicable state laws and statutes. See also Washington State Executive Order 05-05, "Archaeological and Cultural Resources." Additional state and federal law(s) may also apply.

Copies of the above inadvertent discovery language shall be retained on-site while project activity is underway.

| Contact   | Information   |
|---|---|
| Cowlitz Indian Tribe, Nathan Reynolds, Interim Cultural Resources Manager | Phone: 360-575-6226; email: nreynolds@cowlitz.org         |
| City of La Center, Bryan Kast, Public Works Director                      | Phone: 360-263-2889; email: bkast@ci.lacenter.wa.us       |
| Office of the Clark County Medical Examiner (for human remains)           | Phone: 564-397-8405; email: medical.examiner@clark.wa.gov |
| Washington DAHP, Dr. Allison Brooks, Ph.D, Director                       | Phone: 360-586-3066; email: Allyson.Brooks@dahp.wa.gov    |

- Transportation: The applicant shall comply with the recommendations of the Traffic Analysis Report (Kelly Engineering, February 2022).
- Transportation: The applicant is required to pay transportation impact fees prior to issuance of building permits.
- Utilities: The applicant is required to pay sewer system development charges prior to issuance of building permits.

Date: November 10, 2022

Signature: \_\_\_\_\_



Issued: November 10, 2022



**Asa's View Subdivision Type III Preliminary Plat, Variance, SEPA, Critical Areas Permit, Legal Lot Determination, and Tree Cutting Permit (File # 2022-022-SUB/VAR/SEPA/CAR/LLD/TRE)**

**Date Published: November 10, 2022**

Attached is a Mitigated Determination of Non-Significance (MDNS) and associated environmental checklist issued pursuant to the State Environmental Policy Act (SEPA) rules (WAC 197-11). The City (lead agency) completed evaluation of the environmental checklist as required by WAC 197-11. The City issued a SEPA MDNS under the optional DNS procedures in WAC 197-11-355. There is no additional comment period for this determination.

Please address any correspondence to: Jessica Nash, Permit Technician  
ATTN: SEPA COMMENTS – Asa's View Subdivision  
210 East 4th Street  
La Center, WA 98629

**DISTRIBUTION:**

Federal Agencies: National Marine Fisheries, PRD Division (Mail)  
US Army Corps of Engineers, Regulatory Functions Branch (Mail)

Native American Interests: Confederated Tribes of the Grande Ronde (Mail)  
Cowlitz Tribe, Natural Resources Department (Mail)

State Agencies: Dept of Ecology (Email)  
Dept of Health, Office of Drinking Water (Email)  
Dept of Commerce (Email)  
Dept of Fish & Wildlife, Region 5 (Email)  
Dept of Natural Resources, SEPA Center (Email)  
Dept of Transportation, Environmental Services (Email)  
Dept of Transportation, SW Region (Email)  
Department of Archaeology & Historic Preservation (Email)  
Washington Parks & Recreation Commission (Email)

Local Agencies: City of Ridgefield (Email)  
Clark County, Dept of Community Development (Email)  
Clark County, Dept of Health (Email)  
Clark County, Dept of Parks & Recreation (Mail)  
Clark County, Dept of Public Works (Email)  
Clark County Sheriff  
Clark County Fire and Rescue  
Town of Yacolt (Email)  
La Center Police Department

School Districts: La Center (WA) School District (Mail)

Special Purpose Agencies: Clark Public Utilities (Email)  
Columbia River Economic Development Council (Email)  
C-TRAN (Email)  
Lower Columbia Fish Recovery Board

Southwest Clean Air Agency  
Southwest Washington Regional Transportation Council  
Clark Regional Wastewater District

Libraries: Fort Vancouver Regional Library, La Center (Mail)

Fire Districts: Clark County Fire & Rescue

Media: The Columbian

Other Interested Parties: Audubon Society, Vancouver (Mail)  
Clark County Natural Resources Council (Email)  
NW Natural (Mail)  
Vancouver Wildlife League (Mail)

# Exhibit B.2





State of Washington  
**DEPARTMENT OF FISH AND WILDLIFE**  
Southwest Region 5 • 5525 South 11<sup>th</sup> St Ridgefield, WA 98642  
Telephone: (360) 696-6211 • Fax: (360) 906-6776

October 14, 2022

City of La Center  
Community Development  
210 E 4th Street  
La Center, WA 98629

Dear Jessica Nash:

Thank you for the opportunity to comment on the proposed Asa's View Subdivision project. The Washington Department of Fish and Wildlife (WDFW) has reviewed this proposal and offers the following comments for your consideration.

**Our primary concern is with the protection of the Oregon White Oak (OWO) both within and near the project site.** As of today, we have not had the opportunity to review the project's detailed tree protection plan, so we want to emphasize the importance of implementing best management practices to protect the OWO on site. We also want to note that, while only one OWO was identified in the Technical Completeness Review, our PHS map identifies several more oaks in the area. If there are additional trees within or near the site, they should be afforded the same protections described below.

We are concerned about the protecting of OWO, because while once commonly distributed throughout the lowlands of Clark County, it is disappearing at an alarming rate. Oregon White Oaks are a slow growing organism, take decades to reach maturity, and can live for upwards of 600 years. Because of the rate at which trees are being removed and their slow growth, large OWO are increasingly rare in this area. The OWO on-site is large with a 40 dbh and could be upwards of 500 years old. An OWO this size and in this location provides invaluable food and habitat for many native Washington wildlife species including Columbia White Tailed Deer, elk, squirrels, migratory birds (rufous hummingbirds, band-tailed pigeons, chipping sparrows and more), nuthatches, woodpeckers, raptors, and a wide array of invertebrates, including oak-obligates. For all these reasons, it is critical that proper care and attention is given to protecting this tree (and any others on the site) during construction activities. Moreover, we would ask that additional measures are taken to protect this OWO after the subdivision is in place. These are described below

*BMPs During the Construction*

Follow the BMPs outlined in [Tree Protection on Construction and Development Sites](#) published by Oregon State University Extension Service.

Notable BMPs to follow that are especially important for OWO

- **The oak tree's critical root zone should be protectively fenced at either the dripline or a foot per inch dbh, whichever is larger.**
- **If any digging needs to occur in this critical root zone, it should only be done under the supervision of an ISA certified arborist**
- **Avoid cutting tree roots greater than 4" in diameter**

*BMPs After Construction*

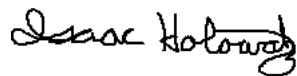
- **Monitor the tree annually 3-5 years to determine if there were long-term impacts from the construction activities**
- **Avoid placing permanent irrigation near the OWO. Oak trees are drought tolerant and do not need irrigation. In fact, when permanent irrigation is present it has been linked to OWO death.**

Lastly, we want to emphasize that one of the characteristics that makes OWO valuable as wildlife habitat, is the death of and dropping of limbs. The dead and downed wood associated with OWO provides critical food and habitat resources and should be left in place. However, for this reason, we encourage the applicant to be proactive and not place any infrastructure under or near the OWO to prevent future conflict with this natural process.

**To avoid impacting the ecological functions of OWO on site we ask that at least 10m beyond the dripline be undeveloped.** However, we would be supportive of including OWO into any required greenspace or other feature if the above considerations are met.

We are happy to assist and help with any questions that may arise from this letter or to talk about OWO protection in general.

Thank you for your consideration,



Isaac Holowatz  
Habitat Biologist,  
Washington Dept of Fish and Wildlife  
5525 South 11th St. Ridgefield, WA



STATE OF WASHINGTON  
**DEPARTMENT OF ECOLOGY**

Southwest Region Office  
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

October 14, 2022

Jessica Nash, Permit Technician  
City of La Center  
Department of Community Development  
210 E 4<sup>th</sup> Street  
La Center, WA 98629

Dear Jessica Nash:

Thank you for the opportunity to comment on the optional determination of nonsignificance/notice of application for the Asa's View Subdivision Project (2022-020-SUB-SEPA-CAR-LLD-VAR-TRE) located at 2313 Northeast Lockwood Creek Road as proposed by Troy Johns & Shawn Ellis. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

**SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287**

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

**TOXICS CLEANUP: Sam Meng (360) 999-9587**

La Center School District Future Site (Facility Site ID: 99671) is adjacent to the project area. The soil is impacted by halogenated pesticides, while the impact to groundwater is suspected. The cleanup at the site has started.

To search and access information about the site see <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites>.

If contamination is suspected, discovered, or occurs during construction, testing of the potentially contaminated media must be conducted. If contamination of soil or groundwater is readily apparent, or is revealed by sampling, the Department of Ecology must be notified. To notify Ecology, contact the Environmental Report Tracking System Coordinator at the Southwest Regional Office at (360) 407-6300. For assistance and information about subsequent cleanup and to identify the type of testing that will be required, contact Sam Meng with the Toxics Cleanup Program at the Southwest Regional Office at (360) 999-9587.

**WATER QUALITY/WATERSHED RESOURCES UNIT:  
Brian Johnson (360) 624-5741**

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

Construction Stormwater General Permit:

The following construction activities require coverage under the Construction Stormwater General Permit:

1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and
2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State.
  - a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and
3. Any size construction activity discharging stormwater to waters of the State that Ecology:
  - a) Determines to be a significant contributor of pollutants to waters of the State of Washington.
  - b) Reasonably expects to cause a violation of any water quality standard.

If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted. For additional information on contaminated construction sites, please contact Carol Serdar at [Carol.Serdar@ecy.wa.gov](mailto:Carol.Serdar@ecy.wa.gov), or by phone at (360) 742-9751.

Additionally, sites that discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional sampling and record keeping requirements. See condition S8 of the Construction Stormwater General Permit for a description of these requirements. To see if your site discharges to a TMDL or 303(d)-listed waterbody, use Ecology's Water Quality Atlas at: <https://fortress.wa.gov/ecy/waterqualityatlas/StartPage.aspx>.

The applicant may apply online or obtain an application from Ecology's website at: <http://www.ecy.wa.gov/programs/wq/stormwater/construction/> - [Application](#). Construction

Jessica Nash  
October 14, 2022  
Page 3

site operators must apply for a permit at least 60 days prior to discharging stormwater from construction activities and must submit it on or before the date of the first public notice.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology  
Southwest Regional Office

(GMP:202204955)

cc: Derek Rockett, SWM  
Sam Meng, TCP  
Brian Johnson, WQ

# Exhibit C.1



**Asa's View Subdivision  
Preliminary Plat, Variance, Critical Areas Permit  
Type III  
Technical Completeness Review**  
La Center City Hall  
210 E 4th St

**Site Address:** 2313 NE Lockwood Creek Road

**Parcel:** 209064000 and 209121000

**Legal Description:** #102 and #39 of Section 2, T4N R1E WM

**Project Description:**

The applicant is proposing a 68-lot subdivision on the approximate 18.57-acre site. Lot sizes would range from 7,500 square feet to 10,201 square feet. The property is located on the south edge of NE Lockwood Creek Road at the eastern La Center City limits. The site is zoned LDR-7.5 and the comprehensive plan designation for the site is Urban Residential (UR). Access to the property would be from a public street entrance from NE Lockwood Creek Road

**Date:** September 26, 2022

**Applicant's Representative:**

Contact: Shawn Ellis  
NW Consillo LLC  
2410 NE 22<sup>nd</sup> Avenue  
Portland, OR 97212  
[Sellispdx@gmail.com](mailto:Sellispdx@gmail.com)

The City's planning consultant (WSP USA Inc.) and engineering staff reviewed application materials for the proposed Type III Preliminary Plat Review and Type II Variance. We are writing to notify you that the application is deemed **complete** as documented below.

Planning Comments

The pre-application conference notes (2021-016-PAC) contain a list of required submittal items based on LCMC 18.30.050, 18.30.150, and 18.210.

- *The information listed in LCMC 18.210.010(2), provided an environmental checklist is required for a technically complete application unless categorically exempt.*
  - Status: **Complete**. The applicant provided a SEPA Environmental checklist.
- *An application form with original signatures by the applicant and property owners. If there is more than one property owner, separate application forms and signatures are required.*
  - Status: **Complete**. The applicant provided an application form signed by the property owner.

- *Proof of ownership document, such as copies of deeds and/or a policy of satisfactory commitment for title insurance.*
  - Status: **Complete.** The applicant provided a copy of the statutory warranty deed for the property confirming ownership by Gravitare Capital, LLC.
- *A legal description of the site.*
  - Status: **Complete.** The legal description is contained on the application form and an extended legal description is contained on the deed.
- *Site Plan. At a scale of no more than one inch equals 200 feet with north arrow, date, graphic scale, existing and proposed lots, tracts, easements, rights-of-way and structures on the site, and existing lots, tracts, easements, rights-of-way and structures abutting the site; provided, information about off-site structures and other features may be approximate if such information is not in the public record. The applicant shall provide one copy of the plan reduced to fit on an eight-and-one-half-inch by 11-inch page. Principal features of the plan shall be dimensioned.*
  - Status: **Complete.** The applicant provided preliminary plat plans including a site plan (with north arrow, date, graphic scale, lots, tracts, and rights-of-way) and an existing conditions plan. The plan is 1" = 80' and can be reduced to fit on an 8.5" x 11" sheet.
  - The preliminary park design includes the items as required in LCMC 18.147.030(b).
  - The plans show 20 trees on the north part of the site for removal while protecting one Oregon white oak tree. 109 street trees are to be planted and exceeds minimum mitigation for the trees to be removed on site. The applicant has not provided a tree protection plan meeting the requirements of LCMC 18.350.060 with adequate protection measures for the oak tree and will be conditioned to do so. Please note that the City can require changes to the design of the site to preserve trees based on the criteria in 18.350.080.
  - The applicant has modified grading since the first submittal to eliminate grading within the oak tree drip line. However, there are still presumed improvements for Lot 21 within the oak tree dripline. Please see further comments below regarding the critical areas report and, if improvements are proposed in this area including future buildings and yards, a mitigation plan for these impacts.
- *A copy of the pre-application conference summary*
  - Status: **Complete.**
- *A written description of how the proposed preliminary plat does or can comply with each applicable approval criterion for the preliminary plat, and basic facts and other substantial evidence that support the description.*
  - Status: **Complete.** The applicant provided a Project Narrative discussing compliance with selected standards.
  - Please also note that it appears that the proposed plat will exceed the minimum density of 4 units per net acre calling into question the narrow dimensions and requested variances for lots 55-59 and 64-68. The City is not obligated to approve more than the minimum density for the site and maximizing density is not a sufficient argument for approving a variance. The variance will be further reviewed during formal application review.
- *Names and addresses of owners of land within a radius of 300 feet:*

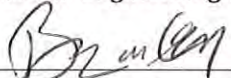



- Status: **Complete**. The applicant provided mailing labels for properties within 300 feet of the subject site.
- *Applications associated with the preliminary plat, such as exceptions, adjustments or variances to dimensional requirements of the base or overlay zones or for modifications to the road standards in Chapter 12.10 LCMC that are required to approve the preliminary plat application as proposed.*
  - Status: **Complete**. The applicant discusses their variance in their Project Narrative document and variance fee has been paid.
  - The applicant provided additional information indicating that the 40-inch oak tree onsite is a priority, non-riparian habitat and therefore is also a critical area. It appears that the applicant's development plans would include impacts to the dripline of the oak tree including fencing between Lot 21 and the park and park landscaping. A critical areas report was provided stating any improvements within the tree's dripline will impact the tree. If any impacts are proposed within this area, the applicant will be conditioned to comply with required mitigations to offset impacts. Additional coordination with the applicant may be needed to ensure adequate measures are taken to mitigate impacts if they occur. The critical areas fee has been paid.
  - The applicant's geotechnical report indicates that the site is classified as Site Class D for ground shaking amplification which is a geologic hazard critical area under the City's critical areas ordinance. The application form is updated to note that the applicant is applying for critical areas permit for geologic hazards and the critical areas fee has been paid.
- *A wetlands delineation report **OR** letter from a certified wetland biologist stating that there are no wetlands/stream resources onsite.*
  - Status: **Complete**. The applicant submitted a letter from Environmental Technology Consultants and has determined that the mapped wetland resource is a roadside ditch, and therefore is not a critical area per LCMC 18.300.
- *A geotechnical study is required if the site will contain substantial fill or there are steep or unstable slopes on the site.*
  - Status: **Complete**. The applicant provided a geotechnical report addressing whether the site will contain substantial fill and if any steep and/or unstable slopes are present on site.
- *Preliminary grading, erosion control and drainage plans, which may be a single plan, consistent with applicable provisions of Chapter 18.320 LCMC.*
  - Status: **Complete**. Sheets 5-7 of the preliminary plans file show stormwater drainage and grading. The applicant also provided a separate Drainage Design report, which discusses storm water and drainage. An attachment in Appendix D (geotechnical report) discusses drainage, grading and erosion control.
- *Evidence that potable water will be provided to each lot from a public water system, and that each lot will be connected to public sewer.*
  - Status: **Complete**. The applicant's preliminary grading and stormwater plan shows public water and sewer throughout the site.
- *A phasing plan, if proposed.*
  - Status: **Not applicable**.
- *An archeological predetermination*

- Status: Complete. The applicant has provided an archaeological predetermination report, as required.
- *A traffic study.*
  - Status: Complete. The applicant provided a Transportation Impact Study and a supplementary memorandum from a traffic consultant.
- *A signed Agreement to Pay Outside Professional Review Expenses Related to Land Use Application. (Provided during the meeting.)*
  - Status: Complete.
- *Topographic Map*
  - Status: Complete. The applicant's existing conditions plan (sheet 2 of the plans) provides existing topographic information.

Public Works and Engineering Comments

Public Works and Engineering do not have any comments at this time.

Signed:  Date: 9/30/22  
Bryan Kast, P.E, Public Works Director

Signed:  Date: 9/30/22  
Tony Cooper, P.E, City Engineer

# Exhibit C.2



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**THE CITY OF LA CENTER, WASHINGTON**  
**NOTICE OF PUBLIC HEARING**  
**File: 2022-020-SUB-CAR-LLD-VAR-TRE-SEPA (Asa's View Subdivision)**

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NOTICE IS HEREBY GIVEN that the La Center Hearings Examiner will conduct a Public Hearing on Monday, November 28, 2022, scheduled to begin at 5:00 p.m. This meeting will be held at the La Center City Hall Council Chambers, located at 210 E. 4<sup>th</sup> St., La Center, Washington and virtually through Go-To Meetings.

**Asa's View Subdivision - Public Hearing**  
Mon November 28, 2022, 5:00 – 7:00 PM (PST)

**Please join my meeting from your computer, tablet or smartphone.**  
<https://meet.goto.com/LaCenterCouncilMeetings/asasviewsubdivision-publichearing>

**You can also dial in using your phone.**  
Access Code: 403-305-957  
United States: [+1 \(224\) 501-3412](tel:+12245013412)

The Hearings Examiner will be reviewing the record and hearing public testimony on the proposal to subdivide approximately 16.56 acres into 68 single family lots. The proposed development is within the LDR-7.5 zoning district.

The site is located at 2313 NE Lockwood Creek Road and further described as Parcel #209121000 and #209064000, located within #102 and #39 of Section 2, Township 4 North, Range 1 East of the Willamette Meridian. The Hearings Examiner's written decision on this request will be final unless appealed. Appeals proceed to the City Council not more than 35 days from the date a complete appeal is filed.

ALL PERSONS ARE INVITED to appear at such time and place through in-person or virtual, as public testimony will be taken. Public testimony may be written and must be received by the City of La Center no later than November 28, 2022 at 5:00 p.m. The complete application may be viewed at <https://ci.lacenter.wa.us/city-departments/community-development/community-development-planning/recent-land-use/>.

DATED THIS 11<sup>th</sup> DAY OF November, 2022  
City of La Center