CITY OF ST. HELENS PLANNING DEPARTMENT
STAFF REPORT

Subdivision Preliminary Plat, **SUB.1.22**
Subdivision Variance, **V.1.22**
Sensitive Lands Permit, **SL.1.22** (significant wetlands)
Sensitive Lands Permit, **SL.2.22** (steep slopes)
Sensitive Lands Permit, **SL.3.22** (drainageways)

DATE: March 1, 2022
TO: Planning Commission
FROM: Jacob A. Graichen, AICP, City Planner

APPLICANT: North 8th Street LLC (Shawn Clark)
OWNER: North 8th Street LLC (principal property involved)
*Elks Lodge Homeowners Association (Tract A, Elks Subdivision)
*St. Helens Lodge #1999 BPOE (Lot 1, Elks Subdivision)

ZONING: Mobile Home Residential, MHR and Moderate Residential, R7
LOCATION: At the current northern termini of N. 8th, 9th and 10th Streets lying north of Deer Island Road; also Tract A and Lot 1 of the Elks Subdivision located along Madrona Court.

5N1W-33-00700
*5N1W33AD 1900 & 1901

PROPOSAL: 66 lot Planned Development Subdivision Preliminary Plat

*These properties are only part of SL.1.22 (significant wetlands) related to a proposed extension of a public sanitary sewer line and pedestrian path associated with development of the principal property.

SITE INFORMATION / BACKGROUND

The principal subject property proposed to be subdivided is approximately 23.68 acres in size and is irregular in topography and contains multiple wetlands and drainages. Two of the wetlands, D-10 and D-11 located on the east side of the site are Type 1 significant per Chapter 17.40 SHMC. There are several other wetlands as well. This property is located beyond the norther termini of N. 8th, N. 9th, and N 10th Streets and along the south side of the Crestwood Manufactured Home Park at 2154 Oregon Street.

The other properties are involved with this proposal due to a proposed sanitary sewer extension and walking path. These are part of the Elks Subdivision, platted in 2009. Tract A of this subdivision includes a portion of wetland D-11. These properties are around 29,000 square feet in size combined and located on the west side of Madrona Court.

The site is undeveloped. The area may have been used as a quarry in the early years of St. Helens but has been idle and wooded for decades. Much of the principal subject property was logged around early 2019.

Associated file: Planned Development (overlay zone), PD.1.22

PUBLIC HEARING & NOTICE

Public hearing before the Planning Commission: March 8, 2022

Notice of this proposal was sent to surrounding property owners within 300 feet of the subject property(ies) on February 11, 2022 via first class mail. Notice was sent to agencies by mail or e-mail on the same date.

Notice was published on February 16, 2022 in The Chronicle newspaper.

APPLICATION COMPLETENESS

This application packet was originally received on October 12, 2021. Staff identified missing information or other aspects that rendered the application incomplete and notified the applicant of the issue pursuant to SHMC 17.24.050 on November 8, 2022. The applicant provided revised or new information on January 12, 2022 except for copies of plan sets. Plan set copies were provided on February 3, 2022 and the application was deemed complete.

The 120-day rule (ORS 227.178) for final action for this land use decision is June 3, 2022.

AGENCY REFERRALS & COMMENTS

City Engineering provided comments via memorandum dated February 22, 2022. These comments are incorporated into this report as Exhibit B.

APPLICABLE CRITERIA, ANALYSIS & FINDINGS

Planned Development Standards

The first step to a Planned Development proposal is to adopt a Planned Development overlay zone. This overlay zone is necessary to use the flexibility of Chapter 17.148 SHMC. **Such an overlay zone is proposed via file PD.2.22**. Though a separate matter, this Subdivision Preliminary Plat approval shall be contingent on successful adoption of a Planned Development overlay, since it would not be possible without it.

The Planned Development overlay zone allows flexibility to the provisions of the base zoning district. This property is split zoned (two zoning districts within). The lots are proposed within the MHR zone, except a portion of the four easterly lots are partially within the R7 zoning district. Otherwise, the R7 zone is in areas proposed to be an open space/wetland preservation

tract. Thus, the MHR zone will be the focus in considering zoning flexibility per **SHMC 17.148.080 as follows:**

(1) The provisions of the base zone are applicable as follows:
(a) Lot Dimensional Standards. The minimum lot size, lot depth and lot width standards shall not apply except as related to the density computation under Chapter 17.56 SHMC;
(b) Site Coverage. The site coverage provisions of the base zone shall apply;
(c) Building Height. The building height provisions shall not apply except within 100 feet of an "established area"; and
(d) Structure Setback Provisions.
(i) Front yard and rear yard setbacks for structures on the perimeter of the project shall be the same as that required by the base zone unless otherwise provided by Chapter 17.96 SHMC;
(ii) The side yard setback provisions shall not apply except that all detached structures shall meet the applicable building code (as administered by the building official) requirements for fire walls; and
(iii) Front yard and rear yard setback requirements in the base zone setback shall not apply to structures on the interior of the project except that:
(A) A minimum front yard setback of 20 feet is required for any garage structure which opens facing a street;
(B) A minimum front yard setback of eight feet is required for any garage opening for an attached single-family dwelling facing a private street as long as the required off-street parking spaces are provided.
(2) All other provisions of the base zone shall apply except as modified by this chapter.

Finding(s): The applicant proposes some desired standards as allowed per the provisions above. Note that per (1)(b) above, the site coverage rules cannot be changed.

Also note that building height can be flexible, but not within 100' of an "established area" per Chapter 17.112. Since the applicant proposes the standard building height, this issue is moot.

Moreover, "interior yards" (i.e., distance between buildings) as established via Ordinance No. 3264 in 2021 are not included in the provisions that may be flexed and thus apply per (2).

A summary of the standards proposed for this development, as noted in the application materials, is attached as Exhibit A. Note that in the MHR zone, the R5 zone standards apply for non-mobile home park development.

ORS 94.550 to 94.783 (2019) address Planned Communities, which are defined as:

ORS 94.550(20)(a) "Planned community" means any subdivision under ORS 92.010 to 92.192 that results in a pattern of ownership of real property and all the buildings, improvements and rights located on or belonging to the real property, in which the owners collectively are responsible for the maintenance, operation, insurance or other expenses relating to any property within the planned community, including common property, if any, or for the exterior maintenance of any property that is individually owned.

ORS record of declaration requirements:

ORS 94.565(2) A person may not convey any lot or unit in a planned community until the planned community is created by the recording of the declaration for the planned community with the county recording officer of each county in which the planned community is located.

The declaration is the instrument per ORS 94.580 that establishes a planned community. This includes formation of a homeowners association, bylaws and such.

ORS 94.625(1) and (2) requires that a homeowners association be formed as a nonprofit corporation, and adopt and record bylaws either (1) not later than when the first lot is conveyed or (2) if the plat contains a conveyance of any property to the association, before the plat is recorded. This is important since tracts of the subdivision will be conveyed to the homeowners association.

ORS 94.665(1) says that a homeowners association may sell, transfer, convey or subject to security interest any portion of the common property given certain affirmative votes, except as otherwise provided in the declaration. The exception is important given common ownership of wetlands. The declaration will need to include a provision that any sale, transfer, etc. also requires City approval.

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Subdivision Standards

SHMC 17.136.040(1)

(1) The preliminary plat approval by the planning commission or final approving authority shall lapse if:

(a) A final plat (first phase in an approved phased development) has not been submitted within a one-year period; or

(b) The final plat does not conform to the preliminary plat as approved or approved with conditions.

Discussion: This is a standalone subdivision request. No phases are proposed.

Finding: This Subdivision preliminary plat approval shall be effective for a period of twelve (12) months from the date of approval per this section. Time extensions are possible per SHMC 17.136.040.

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SHMC 17.136.060(1) – Approval standards – Preliminary plat.

(1) The planning commission may approve, approve with conditions or deny a preliminary plat based on the following approval criteria:

(a) The proposed preliminary plat complies with the city's comprehensive plan, the applicable sections of this code and other applicable ordinances and regulations;

(b) The proposed plat name is not duplicative or otherwise satisfies the provisions of ORS Chapter 92[.090(1)];

(c) The streets and roads are laid out so as to conform to the plats of subdivisions and maps of partitions already approved for adjoining property as to width, general direction and in all other respects unless the city determines it is in the public interest to modify the street or road pattern; and

(d) An explanation has been provided for all common improvements.

(a) This criterion asks if the proposed preliminary plat complies with the city's comprehensive plan, the applicable sections of this code and other applicable ordinances and regulations. The City's development code (SHMC Title 17) implements the Comprehensive Plan. The Development Code standards are addressed herein.

There are some Comprehensive Plan provisions that apply to consideration of the existing streets providing access to the site (i.e., N. 8th, 9th and 10th). These are discussed under **Off Site Improvement** considerations below.

Aside from any off-site improvement finings by the Commission, there are no known conflicts with the Comprehensive Plan. This includes addendums to the Comprehensive Plan: Economic Opportunities Analysis (Ord. No. 3101), Waterfront Prioritization Plan (Ord. No. 3148), the Transportation Systems Plan (Ord. No. 3150), the Corridor Master Plan (Ord. No 3181), the Parks & Trails Master Plan (Ord. No. 3191), the Riverfront Connector Plan (Ord. No. 3241), and the Housing Needs Analysis (Ord. No. 3244).

Applicable provisions of the Development Code are addressed per Chapter as follows:

- **17.32 – Zones and Uses** → The subject property is zoned Mobile Home Residential, MHR and Moderate Residential, R7. As a Planned Development, the applicant is seeking different standards as allowed by the city's Planned Development provisions—see attached Exhibit A.

  The subdivision appears to comply with the proposed standards per attached Exhibit A.

  There are no existing dwellings or other buildings to determine compliance with proposed property lines.

  The applicant notes that the proposed development will only be for detached single family dwellings. St. Helens code treats detached single-family dwellings and duplexes the same for zoning purposes as required by 2019 Oregon House Bill No. 2001 as implemented by 2021City of St. Helens Ordinance No. 3264. These uses are allowed in the zoning districts of the subject property.

- **17.40 – Wetlands & Riparian Areas** → There are two significant wetlands within the boundaries of the subject properties: wetland D-10 towards the southeast corner of the site and wetland D-11 towards the northeast corner of the site.

  Both of these wetlands are Type I per this Chapter and include 75' upland protection zones.

  An environmental assessment has been conducted (DSL WD # 2019-0281) identifying the specific location of these significant wetlands and other wetlands and drainages on the site. This is required for land divisions such as this.

All proposed lots are separated from wetlands D-10 and D-11 and their 75' upland protection zones. However, logging activity c. 2019 resulted in unauthorized tree removal and other native vegetation impacts within the protection zones of both wetlands. Moreover, additional impacts are proposed for wetland D-11's protection zone for an extension of a public sanitary sewer line and trail. See Sensitive Lands Permit section below for further information.

- **17.44 – Sensitive Lands** → This chapter addresses various types of sensitive lands. In addition to wetlands, the site has natural drainageways and steep slopes.

  See Sensitive Lands Permit section below for further information.

- **17.56 – Density Computations** → The applicant provided a density calculation summary. 66 lots proposed is well within the potential maximum allowed.

- **17.72 – Landscaping and Screening** → Street trees are required per this Chapter because the site fronts a street (as proposed) for more than 100 feet.

  All streets will be classified as local per the City's Transportation Systems Plan. The trees will be planted behind the sidewalk in the right-of-way or landscape/public utility easement, per this Chapter. These trees will be planted as each lot is developed, as a condition of building permits.

  However, street trees will not be required along the open spaces proposed between preliminary plat Lots 7 and 66 due to wetlands, slopes and storm water facilities. These "natural areas" will provide "green-scape" there.

- **17.84 – Access, Egress & Circulation** → Since this proposal will extend streets within the subdivision (e.g., N. 8th and N. 9th Streets), which are classified as local per the city's Transportation Systems Plan, and does not abut any other streets, just the basic driveway provisions will apply.

  All lots are proposed to be accessed via these extended public streets.

- **17.88 – Signs** → The applicant proposes entrance monuments at both the N. 8th and N. 9th Street boundary. The preliminary plans show sign easements for this.

  Any new sign will require a sign permit.

  Per SHMC 17.88.055(1)(a)(ii):

  > (ii) In subdivisions, not more than two single-faced monument signs for a subdivision or planned unit development having 20 or more lots may be permitted on either side of each public right-of-way or private street tract entrance. Sign area shall not exceed 16 square feet for each sign face.

Signage as generally proposed is possible as cited above since this development exceeds 20 lots, provided sign permits are obtained.

These private signs are a type of common improvement subject to homeowners association responsibility.

- **17.132 – Tree Removal** → A tree plan is required for a property with more than 10 trees or any tree over 2 feet diameter at breast height (DBH). This chapter focuses on trees over 12 inches DBH.

  Trees removed within one year prior to a subdivision/planned development application need to be inventoried. Much of the site was logged c. 2019.

  This chapter has a "commercial forestry" provision where 10 trees per acre per calendar year are removed. The city notified the owner of this via letter dated December 6, 2018. The city also notified the contractor responsible for this via email on the same day. They failed to comply with the required plan for commercial forestry but provided copies of revenue generated from the trees and chipwood, the combined amount which was less than $5,000.

  This logging effort did not clear all trees, however.

  A tree plan per this Chapter is required. The applicant provided some of this information. Final inventorying and protection standards will be required as part of development permits subsequent to this preliminary plat. The plans will need to detail the inventory of each individual property involved separately for the purposes of determining the 50% retainage provision and replacement trees.

- **17.152 – Street & Utility Improvement Standards** → Development is required to have frontage along a public street improved to city standards. Streets are proposed to be dedicated and improved within the subject property.

  All streets are local classified streets per the St. Helens Transportation Systems Plan. Proposed right-of-way width (50 feet) and street cross section (roadway) width (34 feet) meets the local class standards. Standard 5' wide sidewalks are depicted too.

  The proposed intersection of N.8th and N. 9th Streets is less than 60 degrees. Despite notifying the applicant of this issue as part of deeming the application complete, they did not adequately address the provisions of SHMC 17.152.030(8). However, city engineering staff considered this and suggested a bulb out to remedy this. There does not appear to be any reason for the intersection to not be at a right angle. This will need to be incorporated into final plans.

  Cul-de-sac. Cul-de-sacs are allowed only when there are justifiable constraints.

Cul-de-sacs shall be no more than 400' long and not provide access to more than 20 dwelling units per normal standards. The proposed cul-de-sac exceeds 1,000' in length and provides access to approximately 44 lots. This requires a Subdivision Variance, explained more below.

Being longer than 150' the cul-de-sac needs to terminate with a turnaround area meeting fire code standards (which exceeds the city's normal cul-de-sac end standards). Plans show a 96-diameter cul-de-sac end, exclusive of sidewalks, which meets the minimum per the fire code.

Street names. All new street names are subject to approval by Columbia 9-1-1 Communications District. Since the streets are extensions of N. 9th and N8th Street, new street names are not needed.

Street grade and curves. Street grades for new streets appear less than 12%, which is the basic maximum standard for local streets. The centerline radii of proposed curve is not less than 100' (except at intersections), which is the normal minimum requirement.

Private streets. No private streets proposed.

Mailboxes. Joint mailbox facility shall be included on engineering/construction plans per City standards and the USPS. Proposed location is included on the preliminary plans, but ultimately this will be subject to city and Postmaster approval via final plans.

Street lights. Are required at least at each intersection and as otherwise required by City Engineering for sufficient illumination.

Blocks. This proposal will complete the 9th/8th Street Block north of LeMont Street. It will exceed the normal 1,800-foot maximum perimeter dimension by approx. less than 200 feet. This comes close to the standard, which can be considered due to preexisting development and the complexity of developing this property.

The block bounded on three sides (currently) by N. 10th Street, N. 9th Street and Deer Island Road is also something the Commission should consider. If a street was dedicated along the south property line of the subject property between N. 10th and N 9th Streets, it would complete the block with a perimeter of approximately 1,600 feet.

The Commission should consider if a street for vehicular access is warranted. N. 10th Street is a dead-end street longer than 150 feet (it exceeds 450 feet in length from Deer Island Road). Dead-end roads longer than 150 feet require a turnaround for fire emergency vehicles. There is insufficient right-of-way for this, but a street "completing the block" would remedy this. Moreover, the recommended spacing of "T" intersections along local streets per SHMC 17.152.030(7)(a) can be met. If the

Commission determines this should be a street for vehicle use, you could consider a 20' wide alley or greater street standards.

If the Commission does not think a street accessible to vehicles is appropriate the Commission could consider a paved multi-use non-vehicular path.

Easements. Minimum 8' wide public utility easements will be required along the street frontage of all lots unless a greater width is determined necessary by City Engineering. Moreover, other utility easements necessary, as identified on approved engineering/construction plans shall be included on the final plat. Approved engineering/construction plans will be required before submission of the final plat.

Easements specific to city utilities (e.g., sanitary sewer) are proposed. These are typically 15' wide on the center of the utility line, unless the utility is really deep.

An access easement is also proposed with the sanitary sewer line extending to the northeast corner to provide access to the Madrona Court area and beyond.

Sidewalks/street frontage improvements. All local classified public streets within the boundary of the site will require curb-tight sidewalks. No other classifications of streets are involved.

Utilities. Water, sanitary sewer, and storm water system plans will be required in accordance with city requirements.

Water is available and proposed to be extended from N. 9th and N. 8th Streets.

Though physically present, sanitary sewer cannot be extended from N. 9th and N. 8th Streets because those lines are too shallow to serve this development. Applicant proposes to extend the public sewer from a pump station along Madrona Court via the NE corner of the site.

Storm water infrastructure is proposed within the public streets and public easements for the conveyance (pipes) system. Four stormwater facilities (vegetated bioswales) are also proposed to provide water quality and quantity (dual) functions. Generally, storm water encounters the stormwater facilities before being discharged to the post development on-site wetlands.

Storm water plan is preliminary and final plans will be necessary; this is stated in the submitted stormwater report (storm water management plan, SWMP) dated January 2022 prepared by Lower Columbia Engineering.

The stormwater report notes that after inspection and acceptance of public stormwater facilities, maintenance responsibilities will be transferred to the city. The city will not accept the multiple stormwater facilities proposed near the terminus of N. 10th

Street and those amongst the wetland area on the east side (four total). The reasons for this are many:

- The City's Engineering Manager (see Exhibit B) notes that the city does not accept facilities not designed for use by the general public as public infrastructure. Engineering has determined that they are to be private facilities per SHMC 17.152.100(6). Engineering has also determined that these facilities will not be accepted by the city for use by the general public and that management of them by a private entity is something that can be approved via SHMC 13.20.050(4).

- Storm water facilities not part of a public storm water system are to be managed by the persons responsible for property per SHMC 13.20.060. As these will not be accepted as public or not part of the public storm water system per SHMC 13.20.060(a), they will be subject to private management.

- The applicant notes (in the stormwater report) that the proposed conveyance system will not connect to the public stormwater infrastructure along N. 8th and N. 9th Streets, but will rather be detained, treated, and discharged to the post development on-site wetlands. This emphasizes the non-public nature of the storm water facilities.

- This city will not accept the wetland open space tract(s) where the wetlands that the storm water will be discharged to are located. These stormwater facilities are a critical component of the wetland's hydrology and health. Disparate management entities of the storm water facilities and the wetlands increase the probability of conflict, coordination challenges, etc. and is this contrary to public health, safety and welfare.

- The Oregon DEQ 401 Water Quality Certification 2019-342 dated July 16, 2021 lists the impacts to the wetlands into a residential subdivision including "new public streets, public utilities, and water quality facilities." DEQ lists the water quality facilities separate from public utilities, thus emphasizing their private nature.

- Per the Oregon DEQ 401 Water Quality Certification 2019-342 dated July 16, 2021, the applicant is North 8th Street, LLC (also the property owner). It identifies the applicant of bearing the responsibility to "implement effective operation and maintenance practices for the lifetime of the proposed facility." It notes that the "long-term operation and maintenance of stormwater treatment facilities will be the responsibility of North 8th Street LLC unless and until an agreement transferring that responsibility to another entity is submitted to DEQ." The city will not except these; transfer to an HOA is anticipated.

- The applicant made no attempt to include the city in the subdivision design when consulting with Oregon DEQ, Oregon DSL or the US Army Corps of Engineers. Multiple small facilities that require ongoing maintenance is not in the public

interest to maintain as it is fiscally inefficient. Moreover, this design was borne out of an enforcement case (e.g., DSL Enforcement File No. 8247-ENF), which the city attempted to prevent (regarding city rules), yet violations still blatantly occurred.

- The very definition of "planned community" per ORS 94.550(20)(a) emphasizes a subdivision in which owners are collectively responsible for common property. The full definition can be found earlier in this report.

All utilities shall be underground pursuant to SHMC 17.152.120.

Bikeways and trails. There are no identified routes in the City's Parks and Trails Master Plan or Transportation Systems Plan that traverse through the subject property.

Development completion, financial guarantees, building permit timing, etc. There are two options for completing the subdivision for the purpose of completing the final plat and creating lots eligible for building permits: 1) the *HB 2306 method* and 2) the *full completion method.*

Developments require financial guarantees (e.g., bonds) of workmanship and guarantees of performance for public improvements, as determined by City Engineering. All public improvements shall be guaranteed (e.g., warranty bond) as to workmanship in a form and value as required by City Engineering. The degree of various financial guarantees required of the developer will depend on whether or not they use the ***HB 2306 method*** **or the** ***full completion method.***

The HB 2306 Method.

HB 2306 (effective January 1, 2020), as it pertains to subdivisions, disallows a City from denying a building permit for residential dwellings for a residential subdivision based on the conditions of a preliminary plat not being met, if "substantial completion" occurs and the remaining public improvements are secured with some type of financial guarantee such as a bond.

A City may still delay (deny) any certificate of occupancy for residential dwellings if the conditions of the development are not fully completed or the conditions for the release of the financial guarantee are not fulfilled.

"Substantial completion" means the city, county or other appropriate public body has inspected, tested and found acceptable under applicable code requirements, unless the parties agree to a lower standard: (A) The water supply system; (B) The fire hydrant system; (C) The sewage disposal system; (D) The storm water drainage system, excepting any landscaping requirements that are part of the system; (E) The curbs; (F) The demarcating of street signs acceptable for emergency responders; and (G) The roads necessary for access by emergency vehicles.

Building permits must be applied for based on lots that actually exist. The City of St. Helens views these requirements as when a final plat can be considered for review as it is the final part of the process before the land is divided into lots. This will be incorporated into the conditions for final plat review for this subdivision.

The Full Completion Method.

As an alternative to the HB 2306 method as described, in order to minimize financial guarantees, all public improvements shall be completed, in place and acceptable to the City prior to the final plat. The only exception to this is that portions of sidewalk that abut buildable lots created by this subdivision where there may be a driveway approach are often not built until the lot is developed. Though some portions of sidewalk will be required where there will be no driveway approach such as corners and along non-buildable tracts. For these portions of sidewalk allowed to be left unfinished for the final plat, a performance guarantee will be required prior as approved by City Engineering.

Required in all cases.

Before construction, **performance guarantees** will be required for storm drainage systems, grading and erosion control. This is necessary for public health, safety and welfare, because if this work is only partially done and the developer/owner abandons the project, these could have negative impacts on other property owners. Other improvements left unfinished (e.g., streets, water and sewer infrastructure) do not necessarily have the same impact to a neighboring property owner. This initial guarantee should not be encumbered by other "non-impact" issues as it complicates executing the security; thus, dealing with storm drainage systems, grading and erosion control specifically.

- **17.156 – Traffic Impact Analysis (TIA)** → A TIA is warranted by this proposal.

A study was conducted based on a study scope that city staff and the traffic consultant agreed to (based on city code standards). The study found that the development will not result in functional issues as it pertains to vehicle use.

Despite no findings of vehicular use disfunction, the segments of N. 9th and N. 8th Streets between Deer Island Road and the subject property are going to feel different for existing residents. For example, the PM peak hour traffic (vehicle trips), which is usually the busiest time for traffic, at Deer Island Road based on this study is:

Intersection	Pre-development (TIA Fig. 4)	Post-development (TIA Fig. 6)	% increase
N. 8th Street/Deer Island Road	32 PM peak hour trips	42 PM peak hour trips	31%
N. 9th Street/Deer Island Road	20 PM peak hour trips	75 PM peak hour trips	250%

Increased traffic will be more pronounced on N 9th Street since it will be increasing 2.5 times current levels, with more than one vehicle passing by per minute (in or out) during the PM peak hour. This is expected given the proposal to extend N. 9th Street via the extra-long cul-de-sac.

Note that for the AM peak hour, the N. 9th Street intersection will increase from 19 trips to 59 trips, an increase of over 200% with about one vehicle passing by per minute.

Today at its worst (PM or AM peak hour) at N 9th Street/Deer Island Road, there is about 1 vehicle pass by every 3 minutes. This will increase with this development as already noted.

Other applicable ordinances and regulations. Oregon Fire Code Section D107 is relevant. Developments of one- or two-family dwellings (such as that proposed) where the number of dwelling units exceeds 30 shall be provided with two separate and approved fire apparatus access roads. There are two exceptions to this:

1. Where there are more than 30 dwelling units on a single public or private apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system.

2. The number of dwelling units on a single fire apparatus access road shall not be increased unless fire apparatus access road will connect with future development, as determined by the fire code official.

As there are about 44 lots proposed north of the proposed N. 8th/N. 9th Street intersection with no other access or outlet, the dwelling units built on those lots will need to include automatic sprinkler systems.

(b) This criterion requires that the proposed plat name is not duplicative or otherwise satisfies the provisions of ORS Chapter 92.

The name "North 8th Planned Development" will need to be approved by the County Surveyor per ORS 92.090.

The applicant has made no attempt to date to determine the eligibility of this name with the County Surveyor. This is recommended for consistency of plans following this preliminary plat decision.

(c) This criterion requires that the streets and roads are laid out so as to conform to the plats of subdivisions and maps of partitions already approved for adjoining property as to width, general direction and in all other respects unless the city determines it is in the public interest to modify the street or road pattern.

Extensions of both N. 8th and N. 9th Streets are logical. The city's Transportation Systems Plan (TSP) does not indicate other future streets within and there are no other streets "stubbed" to the property except some of N. 10th Street. The TSP does show an extension of N. 11th street north of Deer Island Road, which has some impractical aspects. However, N. 10th Street is a potential alternative. At a minimum, right-of-way dedication to continue N. 10th Street is the future is warranted.

As described above in the discussion of blocks, the Commission should consider a street between N. 9th and N. 10th Street or an improved nonvehicular path.

(d) This criterion requires that an explanation has been provided for all common improvements.

Common improvements are proposed. These include but are not limited to open space and wetland preservation tracts, and potential subdivision signs at the accesses to the site.

The city will require the Homeowners Association to own and maintain responsibility of these improvements.

* * *

SHMC 17.136.060(2) – Lot Dimensions

(a) Lot size, width, shape and orientation shall be appropriate for the location of the development and for the type of use contemplated, and:

(i) No lot shall be dimensioned to contain part of an existing or proposed public right-of-way;

(ii) The depth of all lots shall not exceed two and one-half times the average width, unless the parcel is less than one and one-half times the minimum lot size of the applicable zoning district; and

(iii) Depth and width of properties zoned for commercial and industrial purposes shall be adequate to provide for the off-street parking and service facilities required by the type of use proposed.

Findings: **(i)** No proposed lot interferes with existing or proposed right-of-way given compliance with the conditions herein. **(ii)** The proposed minimum lot size is 3,690 square feet. 150% of that is 5,535. A minority of the lots proposed exceed 5,535 square feet, and none of those conflict with the depth to width ratio requirement. **(iii)** The site is zoned residential; thus, this criterion is not applicable.

* * *

SHMC 17.136.060(3) – Through Lots

(a) Through lots shall be avoided except where they are essential to provide separation of residential development from major traffic arterials or to overcome specific disadvantages of topography and orientation, and:

(i) A planting buffer at least 10 feet wide is required abutting the arterial rights-of-way; and

(ii) All through lots shall provide the required front yard setback on each street.

Discussion: The Development Code defines a through lot as a lot having frontage on two parallel or approximately parallel streets. Note that access easements are considered "streets" for the purpose of the Development Code.

Finding: No through lots are proposed.

* * *

SHMC 17.136.060(4) – Large Lots

(a) In dividing tracts into large lots or parcels which at some future time are likely to be redivided, the approving authority may require that the lots be of such size and shape, and be so divided into building sites, and contain such site restrictions as will provide for the extension and opening of streets at intervals which will permit a subsequent division of any tract into lots or parcels of smaller size, and:

(i) The land division shall be denied if the proposed large development lot does not provide for the future division of the lots and future extension of public facilities.

Discussion: The proposed minimum lot size is 3,690 square feet.

Findings: Though some of the proposed lots or more than twice the minimum lot size (7,380 square feet), there are only about four such lots and given the layout of this planned development, future development plans or "shadow plans" are not warranted.

* * *

SHMC 17.136.060(5) – Access Control

(5) Control of access to adjoining properties, including but not limited to continuation of streets, shall be granted to the city via reserve strips or language in lieu of reserve strips as a note on the plat. Generally, language in lieu of reserve strips is preferred.

Findings: N. 8th and 9th Streets are being extended, both converging to a cul-de-sac terminating within the boundaries of the principal property.

However, some N. 10th Street right-of-way dedication is warranted, and this this criterion will apply to that.

* * *

SHMC 17.136.060(6) – Additional Conditions

(6) The planning commission may require additional conditions as are necessary to carry out the comprehensive plan and other applicable ordinances and regulations.

Findings: The condition of Planned Development (overlay zone) PD.1.22 (assuming the decision by the Commission is as recommended by staff) was based on the Comprehensive Plan and requires that no development allowed under the Planned Development (overlay zone) shall preclude manufactures homes. This includes development standards and other factors such as use restrictions (e.g., CCRs) the developer may place on themselves. This shall be a condition of this proposal.

Off-site street improvement considerations. This pertains to the existing streets between the subject property and Deer Island Road (i.e., N 8th, 9th and 10th Streets).

The Comprehensive Plan supports consideration of the condition of these streets as they relate to the proposed development as follows:

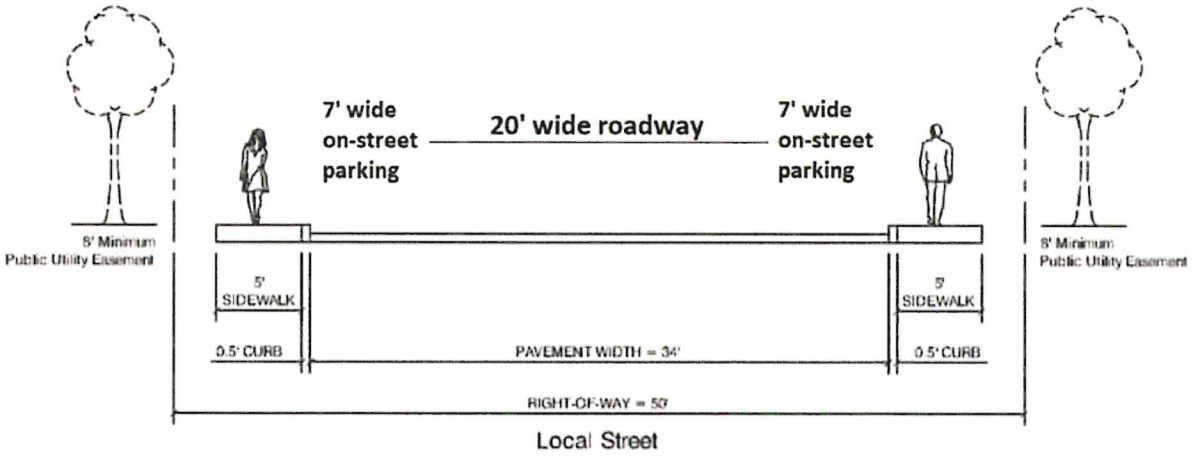
- Pursuant to SHMC 19.08.030(1), public facilities includes transportation systems. Per SHMC 19.08.030(2)(c), design of public facilities must consider that capacities are related to future and present demands.

- Pursuant to SHMC 19.08.030(3)(d) capacity of [public] facilities must be ensured to support residential densities anticipated by the Comprehensive Plan.

- Pursuant to SHMC 19.08.040(2)(h) and (k), the city must assure that roads have the capacity for expansion to meet future demands, and increasing walking and bicycling opportunities is a goal.

- Pursuant to SHMC 19.08.040(3)(b), it is a policy to ensure the establishment of a safe and efficient road system for all subdivision plats.

The ability of these streets to serve the proposed development can be considered against the standards for a local classified street per Chapter 17.152 SHMC.



The standard for a local street includes a 20' wide roadway for two-way traffic with a 7' wide swath on each side for on-street parking for a total roadway width of 34 feet. Curb and 5' wide sidewalk are intended to be on either side.

See Exhibits C and D. N. 8th and 9th Streets are proposed to provide access into the site, but N. 10th Street also could provide some access. All roadway pavement sections are at least 20 feet wide within rights of way (except a small area along N. 8th Street) that do not preclude widening. Only a portion of N. 8th Street has sidewalk. Both N. 8th and N. 9th have segments around 23 feet in width, with at least a gravel shoulder on one side. These provide sufficient area for vehicles, but is lacking in pedestrian accommodation.

N. 10th Street has a section that is 40 or more feet wide paved, with a 29' wide section that, due to the existing apartment complex, has limited driveways compared to other street segments in the neighborhood. This provides the 20', plus an "extra" 9' for the potential benefit of pedestrians.

As an off-site improvement consideration, the Commission must consider the minimum necessary requirements to achieve compliance. Staff recommends considering improvement of N. 8th and/or N. 9th to include road widening and/or curb/sidewalk, on one side of the street or both. As an alternative, if N. 10th Street is available for pedestrians, the Commission could find that this allows new/future residents to choose which of the three streets suites them best, based on their purpose for walking and destination.

* * * * *

Subdivision Variance

SHMC 17.136.120 – Criteria for Subdivision Variance (file V.1.22)

(2) A variance may be approved, approved with conditions, or denied provided the planning commission finds:

(a) There are special circumstances or conditions affecting the property which are unusual and peculiar to the land as compared to other lands similarly situated;

(b) The variance is necessary for the proper design or function of the subdivision;

(c) The granting of the variance will not be detrimental to the public health, safety, and welfare or injurious to the rights of other owners of property; and

(d) The variance is necessary for the preservation and enjoyment of a substantial property right because of an extraordinary hardship which would result from strict compliance with the regulations of this code.

Discussion: Normally, code standards call for cul-de-sacs to be no more than 400' long and provide access to no more than 20 dwelling units. The proposed cul-de-sac exceeds 1,000' in length and provides access to approximately 44 lots. This is the reason for this Subdivision Variance.

Findings: **(a)** The applicant notes the extensive wetlands throughout the site and the limitations of developable area they impose.

(b) One linear street is due to the wetlands, as noted by the applicant.

(c) As the applicant notes, the cul-de-sac end meets fire code standards for turnaround area. However, this would have been required even for a 400' long cul-de-sac meeting normal standards because any dead-end street longer than 150 needs a fire turnaround.

Germain to fire code standards, this Subdivision Variance for the extra-long cul-de-sac results in the necessary inclusion of automatic sprinkler systems per Oregon Fire Code Section D107, as described earlier in this report. As such, compliance with Section D107 shall be a condition of this Variance.

The Commission should also think about how this will focus most traffic into N. 9th over other streets and if any mitigation of the existing segment of N. 9th between the subject property and Deer Island Road is necessary because of that.

(d) As noted by the applicant topography and wetlands create limitations. If the cul-de-sac was limited to 400 feet in length and 20 dwelling units, the site would be greatly underutilized. The applicant suggests that without the Variance, the project would not be financially viable.

* * * * *

Sensitive Lands Permit
Significant Wetlands

Chapters 17.40 and 17.132 SHMC – related to significant wetlands (file SL.1.22)

As noted previously in this report, all proposed lots are separated from city-determined significant wetlands D-10 and D-11 and their 75' upland protection zones. However, impacts that need to be addressed includes: logging activity c. 2019 that resulted in unauthorized tree removal within the protection zones of both wetlands, and proposed impacts of wetland D-11's upland protection zone for an extension of a public sanitary sewer line and trail.

Unauthorized tree removal from c. 2019 logging activity.

Not only did this logging activity violate city law, it also resulted in enforcement action from the Oregon Division of State Lands for a violation of Oregon's Removal-Fill Law (DSL Enforcement File No. 8247-ENF).

The applicant's consultants, Schott and Associates, provided correspondence to the city dated July 26, 2019 (included in the applicant's materials) addressing this unlawful behavior in the context of wetland D-10 and D-11. Four protected Douglas fir and a Big Leaf Maple tree were removed within the D-10 protection zone, and a Oregon white oak was removed from the D-11 protection zone.

Native vegetation subject to protection (within the protection zone) was also disturbed.

Proposed impacts of wetland D-11's upland protection zone for extension of public sanitary sewer and trail.

Portions of the sanitary sewer extension and the trail proposed along the same swath of land are within the 75' upland protection zone of wetland D-11. This will result in site disturbance and tree removal.

Requirements.

An environmental assessment, to determine wetland and protection zone boundaries, per SHMC 17.40.020 has been conducted. However, it does not include the Elks Subdivision properties.

Additional impacts to wetland D-10, beyond the c. 2019 logging error, are not anticipated.

Additional impacts to wetland D-11 (in addition to the c. 2019 logging error) are anticipated, but will not be entirely known until final construction plans are developed.

The sanitary sewer line extension falls within SHMC 17.40.040(6)(b). The other 2019 impacts will have similar restoration requirements and so can be included in the same mitigation/restoration conditions. Criteria for 17.40.040(6)(b):

(6) Other Authorized Activities in the Protection Zone. The following uses, alteration and development activity shall be permitted in a protection zone provided the approval authority finds that proposed development uses or alterations are designed and constructed in a manner to minimize intrusion into the protection zone, and the applicant demonstrates compliance with specific requirements listed, and all applicable general criteria in SHMC 17.40.055, including minimum restoration and enhancement requirements, are met.

(b) Construction of new drainage facilities, utilities and irrigation pumps in public rights-of-way or easements, existing or herein accepted by the city thereafter.

Findings: Does the proposal minimize intrusion into the protection zone? Options for sanitary sewer service are scant. The route from the city's pump station along Madrona Court seems to be the only viable option. In the preapplication discussions with the city, the applicant was also considering coming off the southern end of Madrona Court, but that would have likely had greater wetland impacts.

The applicant acknowledges SHMC 17.40.055 and the requirements thereof. Final restoration plans will be required including a minimum two-year contract per this section.

The requirement for public records per SHMC 17.40.055(6)(c) could be accomplished by inclusion in the HOA documents and ensuring the tract for the wetlands is appropriately labeled as to the tract's purpose on the final plat, and that wetlands, including those determined to be significant to the city (and their protection zones) are within that tract. Except, this will not work for the Elks Subdivision properties since the are outside of the planned development subdivision boundary.

* * * * *

Sensitive Lands Permit
Steep Slopes

SHMC 17.44.040(1) – Steep slopes (file SL.2.22)

(1) The appropriate approval authority shall approve or approve with conditions an application request for a sensitive lands permit on slopes of 25 percent or greater or unstable ground in SHMC 17.44.015(2) and (4) based upon findings that all of the following criteria have been satisfied:

(a) The extent and nature of the proposed landform alteration or development will not create site disturbances to an extent greater than that required for the use;

(b) The proposed landform alteration or development will not result in erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards to life or property;

(c) The structures are appropriately sited and designed to ensure structural stability and proper drainage of foundation and crawl space areas for development with any of the following soil conditions: wet/high-water table; high shrink-swell capability; compressible/organic; and shallow depth-to-bedrock; and

(d) Where natural vegetation has been removed due to landform alteration or development, the areas not covered by structures or impervious surfaces will be replanted to prevent erosion in accordance with Chapter 17.72 SHMC.

Discussion: If you look at the existing conditions sheet C-1 and compare to the overall grading plan, there are slopes >25% throughout the site. Some of these steep slope areas are within the area subject to be developed with streets and lots.

Findings: **(a)** The applicant notes limited site disturbance, which is also illustrated by the plans. The avoidance of wetland impacts helps reduce impacts to steep slopes.

(b) The applicant notes that all fill materials will be licensed engineer verified with new vegetation to help prevent erosion or ground instability. The applicant also notes their requirement for a 1200-C permit from Oregon DEQ, which includes erosion control measures. A copy of this permit will be needed.

The applicant also notes that after construction, all disturbed areas will be replanted. The lots to be built themselves are included in the disturbed areas. The applicant shall provide a method of how the lot themselves will be covered to prevent erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards before development of that specific lot commences.

All bare earth upon finished construction of each lot shall be planted as required by SHMC 17.72.120.

(c) The applicant sidesteps their explanation for this criterion by using the "to be design by others" comment.

The "back side" of some lots are proposed to be at a 50% or higher grade. These proposed slope areas are as much as 15 feet into the lot, except there is one close to 20 feet into the rear of lots 48-50.

If structures or buildings are proposed on the newly created steep slopes within any lot of this subdivision, a Sensitive Lands Permit will be necessary. Since the applicant is proposing a 10 year yard (setback), this is anticipated to be a rare occurrence.

(d) Applicant notes the landscaping sheets that shows planting in all disturbed areas. Since these plans are preliminary, this shall be a condition of approval.

Moreover, the landscaping sheets only show plating of portions of the lot to be developed. Pre-development of the bare lots needs to be addressed. In addition, no disturbed area shall be left unvegetated upon final inspection/occupancy of development on said lots.

* * * * *

Sensitive Lands Permit
Drainageways

SHMC 17.44.040(2) – Drainageways (file SL.3.22)

(2) The appropriate approval authority shall approve or approve with conditions an application request for a sensitive lands permit within drainageways in SHMC 17.44.015(2) and (4) based upon findings that all of the following criteria have been satisfied:

(a) The extent and nature of the proposed landform alteration or development will not create site disturbances to the extent greater than that required for the use;

(b) The proposed landform alteration or development will not result in erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards to life or property;

(c) The water flow capacity of the drainageway is not decreased;

(d) Where natural vegetation has been removed due to landform alteration or development, the areas not covered by structures or impervious surfaces will be replanted to prevent erosion in accordance with Chapter 17.72 SHMC;

(e) The drainageway will be replaced by a public facility of adequate size to accommodate maximum flow in accordance with the adopted 1999 Master Drainage Plan; and

(f) The necessary U.S. Army Corps of Engineers and State of Oregon Land Board, Division of State Lands approvals shall be obtained.

Discussion: Chapter 17.16 SHMC defines "drainageway" as undeveloped land inundated during a 25-year storm with a peak flow of at least five cubic feet per second and conveyed, at least in part, by identifiable channels that either drain to the Columbia River directly or after flowing through other drainageways, channels, creeks, or floodplain.

Per the applicant's analysis, drainages #3 and 4 meet the definition of "drainageway."

Findings: **(a)** The applicant notes limited site disturbance, which is also illustrated by the plans. The drainageways themselves are not proposed to be impacted.

(b) The applicant notes that all fill materials will be licensed engineer verified with new vegetation to help prevent erosion or ground instability.

(c) Applicant notes that the site is designed to keep pre and post construction flow rates similar for wetland health. This will need to be verified by final plans.

(d) Applicant notes the landscaping sheets that shows planting in all disturbed areas. Since these plans are preliminary, this shall be a condition of approval.

Moreover, the landscaping sheets only show plating of portions of the lot to be developed. Pre-development of the bare lots needs to be addressed. In addition, no disturbed area shall be left unvegetated upon final inspection/occupancy of development (dwellings) on said lots.

(e) The applicant intends on post development drainage patters to match predevelopment conditions. The drainageways are intended to remain intact.

(f) The applicant notes permits from Oregon DSL and the US Army Corps of Engineers have been obtained. Oregon DSL's removal-fill permit no. 62981-RF was provided to the city. No proof of USACE approval has been provided.

* * * * *

CONCLUSION & RECOMMENDATION

Based on the facts and findings herein, if the Planning Commission approves this proposal, staff recommends the following conditions:

1. **This Subdivision preliminary plat approval shall be effective for a period of twelve (12) months from the date of approval.** The approval shall become void if a final plat prepared by a professional registered surveyor in accordance with (1) the approved preliminary plat, (2) the conditions herein, and (3) the form and content requirements of the City of St. Helens Development Code (SHMC Title 17) and Oregon Revised Statutes is not submitted within the twelve (12) month approval period. **Note: two time extensions are possible per SHMC 17.136.040(2).**

2. **The following shall be completed prior to submission and the City's acceptance of a final plat application:**

    a. A Planned Development overlay (e.g., via file PD.1.22) shall be adopted and in effect for the subject property.

    b. Homeowners Association (HOA) and CC&Rs for establishing the HOA shall be approved (see condition 8).

c. Engineering/construction plans for all public and other applicable improvements shall be submitted to the City for review and approval in compliance with all City of St. Helens laws and standards and in accordance with the conditions herein. As specific conditions of approval, these plans shall include:

i. Curb, sidewalk and street trees (i.e., frontage improvements) along portions of streets that will not abut buildable lots as explained in condition 2.e, *The Full Completion Method.* Street trees not required along open space tracts.

ii. Incorporate tree plans per condition 2.f. A protection program by a qualified professional defining the standards and methods that will be used to protect the existing trees to be preserved is required. This shall be on or with the development and/or building permit plan set(s) to ensure contractors and others follow the tree protection plan during site development.

iii. The proposed intersection of N.8th and N. 9th Streets shall be as near as 90 degrees as possible. Angle less than 60 degrees is prohibited.

iv. No-parking signage/markings at the cul-de-sac turnaround. Also, any N. 10th Street access (depending on the findings of the Commission)?

v. Joint mailbox facility(ies) shall be included per City and USPS (Postmaster) standards.

vi. Streetlights are required at each intersection and at such locations to provide overlapping lighting to sufficiently illuminate the street. New streetlights shall use LED fixtures.

vii. Utility easements shall be at least 15' wide for linear improvements such as sanitary sewer lines.

viii. Any public improvement shall be legally and physically accessible.

ix. Minimum cover of pipe shall be 18 inches for ductile iron pipe and 36 inches for nonreinforced pipe.

x. A blow off shall be installed at the end of any water main that does not loop or reconnect to the public system.

xi. City requires a minimum 95% of the maximum density be achieved for trench backfill and in the public right-of-way.

xii. Does the Commission want to require access via N. 10th Street? A street linking N. 9th and 10th would compete the block. It would also remedy a lack of turn around area for large vehicles (including fire apparatus). If a street, what standard? Minimum per fire code is 20 feet. If the Commission does not think a street

accessible to vehicles is appropriate the Commission could consider a paved multi-use path. In all cases, at a minimum right-of-way dedication shall be required for the extension of N. 10th Street.

xiii. Does the Commission want to require any improvements to the existing portions of N. 8th, N. 9th, or N. 10th Streets between the subject property and Deer Island Road for improved pedestrian accommodation? Given the Variance allowing the big cul-de-sac extension of N. 9th Street, should N. 9th Street get special attention in this regard?

d. Prior to or with submission of engineering/construction plans per **condition 2.c**, a drainage plan and full stormwater report shall be submitted that includes methods of downstream conveyance and pre and post conditions. The proposed development shall mitigate the increased stormwater flows from the site so that the increased runoff will not impact the downstream flows.

e. *The Full Completion Method.* **All public improvements shall be completed, in place and acceptable to the City**. The only exception to this is that portions of sidewalk that abut buildable lots created by this subdivision where there may be a driveway approach are often not built until the lot is developed. Though some portions of sidewalk will be required where there will be no driveway approach such as corners and along non-buildable tracts. For these portions of sidewalk allowed to be left unfinished for the final plat, a performance guarantee will be required prior as approved by City Engineering. Completion includes providing final approved as-build plans to the City and any other guarantees (e.g., bonds) of workmanship or guarantees of performance for public improvements that may required;

Or

The HB 2306 Method. **All public improvements shall be "substantially completed," in place and acceptable to the City. "Substantial completed" means** the city, county or other appropriate public body has inspected, tested and found acceptable under applicable code requirements, unless the parties agree to a lower standard: (A) The water supply system; (B) The fire hydrant system; (C) The sewage disposal system; (D) The storm water drainage system, excepting any landscaping requirements that are part of the system; (E) The curbs; (F) The demarcating of street signs acceptable for emergency responders; and (G) The roads necessary for access by emergency vehicles. The remaining public improvements are secured with some type of financial guarantee such as a bond. Other guarantees (e.g., bonds) of workmanship or guarantees of performance for public improvements may also be required. As-build plans shall be required unless insufficient work will be done per this "substantially completed" option, in which case the as-build plans shall be bonded.

f. A tree plan for the planting, removal, and protection of trees by a certified arborist pursuant to SHMC 17.132.025 shall be submitted to the City for review and approval. The plans will need to detail the inventory of each individual property involved (three

total) separately for the purposes of determining the 50% retainage provision and replacement trees.

g. Areas where natural vegetation has been removed, and that are not covered by approved landscaping, shall be replanted pursuant to SHMC 17.72.120. This includes the proposed lots to be developed to show how the lot themselves will be covered to prevent erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards before development of that specific lot commences.

h. Restoration (of impacts from the 2019 logging activity and proposed impacts), protection measures and guarantees of plant survival per SHMC 17.40.055(6) shall be required for all previous impacts and those proposed in the wetland protection zones of wetland D-10 and D-11. Materials and methods subject to city review and approval. As there are three separate properties involved, each with different ownership and two of which are not part of the subdivision itself, this may result in three different sets of documentation (e.g., management plans), contracts, etc.

3. **In addition to compliance with local, county, state and other requirements, the following shall be included on/with (for recordation) the final plat**:

a. Minimum 8' wide public utility easements will be required along the street frontage of all lots (and tracts) unless a greater width is determined necessary by City Engineering.

b. All utility easements necessary, as identified on approved engineering/construction plans shall be included on the final plat.

c. The County Surveyor shall approve the name of the plat.

d. Does the Commission want to require access via N. 10th Street? A street linking N. 9th and 10th would compete the block. It would also remedy a lack of turn around area for large vehicles (including fire apparatus). If a street, what standard? Minimum per fire code is 20 feet. If the Commission does not think a street accessible to vehicle is appropriate the Commission could consider a paved multi-use path. In all cases, at a minimum right-of-way dedication shall be required for the extension of N. 10th Street. <<this is the same note under engineering/construction plan requirements above—this condition would be for the right-of-way for this to be on the plat>>

e. Access control guarantees in a form approved by the city for the extension of N. 10th Street. This shall be a note on the plat as approved by the city.

f. Tracts shall be identified as to purpose.

g. Declaration of Protective Covenants, Conditions and Restrictions (CCRs) and Establishment of a Homeowners Association (HOA) shall be recorded with and noted on the final plat for HOA responsibility for common improvement maintenance (see condition 8).

h. Conveyance of tracts and any other common area to the Planned Development's Homeowner's Association.

4. **Prior to any construction or development of the subject property to develop this subdivision:**

   a. Performance guarantees (e.g., performance bond) as approved by City Engineering shall be required for storm drainage systems, grading and erosion control. In addition, engineering/construction plans shall be approved.

   b. Applicant shall provide a copy of the approved 1200-C permit from Oregon DEQ.

   c. Applicant shall provide a copy of USACE approval of this proposal.

5. **After completion of construction and City approval, all public improvements shall be guaranteed** (e.g., warranty bond) for at least two years as to workmanship in a form and value as required by City Engineering.

6. **The following requirements shall apply to the development of the lots of this Subdivision**:

   a. If the "*HB 2306 Method*" is chosen under condition 2.e, certificate of occupancy for residential dwellings shall not be granted if **all public improvements are not completed, in place and acceptable to the City.** This includes providing final approved as-build plans to the City and release of any and all financial guarantees for improvements used to allow submission of the final plat or recordation of the final plat, before completion of said improvements.

   b. Building permits for Lots created by this Subdivision cannot be accepted until the final plat is recorded.

   c. If not otherwise recorded with the final plat as required, a Declaration of Protective Covenants, Conditions and Restrictions (CCRs) and Establishment of a Homeowners Association (HOA) shall be recorded (see condition 8).

   d. Curb/sidewalk shall be completed and street trees will be required along all streets as lots are developed.

   e. Areas where natural vegetation has been removed, and that are not covered by approved landscaping, shall be replanted pursuant to SHMC 17.72.120.

   f. Lots north of the proposed N. 8th/N. 9th Street intersection shall have automatic sprinkler systems as required by Oregon Fire Code Section D107 and required as a condition of approval of the subdivision variance of this proposal.

g. Sensitive Lands Permit will be required for any proposed structure to be placed or constructed on slopes of 25% or greater per Chapter 17.44 SHMC.

7. The zoning standards for this development shall be those as proposed per **Exhibit A**, attached hereto.

8. Declaration per ORS Chapter 94 that establishes the Planned Community **shall be recorded with the final plat**. Subject to review and approval by the City, it shall include the following:

   a. A Planned Development Homeowners Association formed as a nonprofit corporation.

   b. Bylaws.

   c. Specific language that prohibits the Homeowners Association from selling, transferring, conveying or subjecting to security interest of any platted open space or wetland tract without City of St. Helens approval.

   d. The Planned Development Homeowners Association shall be responsible for all common improvements including but not limited to any open space tract, wetland tract, trail, stormwater quality facility (see condition 11), and subdivision entry monument signage.

   e. Provisions for the City to veto dissolution of the Homeowners Association or have the right to assess owners for taxes and maintenance or lien properties.

   f. Responsibility for common improvement maintenance. This includes but is not limited to the long term operation and maintenance of the water quality facilities and wetland responsibilities.

   g. Per condition 12.

   h. As applicable per condition 2.h.

9. Any new sign (e.g., entrance monument signs for the development) requires a sign permit prior to installation.

10. All new utilities shall be underground pursuant to SHMC 17.152.120.

11. The city will not accept any open space, wetland, or stormwater facility tract or improvement. Ownership shall belong to the Homeowners Association of this Planned Development.

12. This planned development shall not preclude (prevent) manufactured homes.

13. Owner/Developer shall be solely responsible for obtaining all approvals, permits, licenses, and authorizations from the responsible Federal, State and local authorities, or other entities,

necessary to perform land clearing, construction and improvement of the subject property in the location and manner contemplated by Owner/Developer. City has no duty, responsibility or liability for requesting, obtaining, ensuring, or verifying Owner/Developer compliance with the applicable State and Federal agency permit or other approval requirements. This land use approval shall not be interpreted as a waiver, modification, or grant of any State or Federal agency or other permits or authorizations.

14. Owner/applicant and their successors are still responsible to comply with the City Development Code (SHMC Title 17).

* * * * *

Attachment(s): Exhibit A, A summary of the standards proposed for this Planned Development Subdivision based on applicant's application materials.

Exhibit B, City Engineering Comments

Exhibit C, Area Connectivity Map

Exhibit D, General Conditions N. 10th, N. 9th, and N. 8th Streets

Applicant's Planned Development Narrative (includes copy of DSL permit)

Applicant's Density Calculations

Applicant's Sensitive Lands Narrative

Applicant's Transportation Impact Study (except Appendix B, traffic data)

Applicant's Preliminary Stormwater Report (except Appendix C, Section 401 WQC-Post Construction Submission Checklist and Appendix D, Stormwater Calculations)

Applicant's Preliminary Geotechnical Report (except test pit logs)

Oregon DEQ 401 Water Quality Certification

Applicant's plan set

*NORTH 8TH STREET PLANNED DEVELOPMENT STANDARDS

The base standards the MHR zone, those which can deviate as a Planned Development, and those proposed:

PLANNED DEVELOPMENT STANDARDS TABLE

STANDARD	MHR ZONING DISTRICT	PD ALLOWS FLEXIBILITY?	PROPOSED
Min. lot size	5,000 s.f. for detached single-family dwellings and duplexes	Yes	3,690 s.f. for detached single-family dwellings and duplexes
Min. lot width at building line (interior lots)	50 feet for detached single-family dwellings and duplexes	Yes	29 feet for detached single-family dwellings and duplexes
Min. lot width at building line (corner lots)	50 feet for detached single-family dwellings and duplexes	Yes	43 feet for detached single-family dwellings and duplexes
Min. lot width at street (standard)	50 feet for detached single-family dwellings and duplexes	Yes	29 feet for detached single-family dwellings and duplexes
Min. lot width at street (cul-de-sac)	30 feet	Yes	30 feet
Min. lot width at street (flag lot)	20 feet	Yes	20 feet
Min. lot depth	85 feet	Yes	85 feet
Min. front yard (setback)	20 feet	Yes (except along perimeter of PD and for garage structures which open facing a street)	20 feet (20 feet required along perimeter of PD and for any garage structure which opens facing a street)
Min. side yard (setback)	5 feet for interior lots and 10 feet for sides of corner lots along street for detached single-family dwellings and duplexes	Yes	4 feet all sides for detached single-family dwellings and duplexes
Min. rear yard (setback)	10 feet	Yes (except along perimeter of PD)	10 feet (10 feet along perimeter of PD)
Min. interior yard (building/structure separation)	6 feet	No	6 feet
Max. building height	35 feet	Yes	35 feet
Max. lot coverage	Buildings and structures shall not occupy more than 40% of the lot area for detached single-family dwellings and duplexes	No	Buildings and structures shall not occupy more than 40% of the lot area for detached single-family dwellings and duplexes
Min. landscaping	25% of the lot area	No	25% of the lot area

No other code exceptions or modifications are proposed.

*Final subdivision name requires approval by the County Surveyor. This is a preliminary name and may change.

February 2022

ENGINEERING DIVISION | PUBLIC WORKS

MEMORANDUM

TO: Jacob Graichen, City Planner

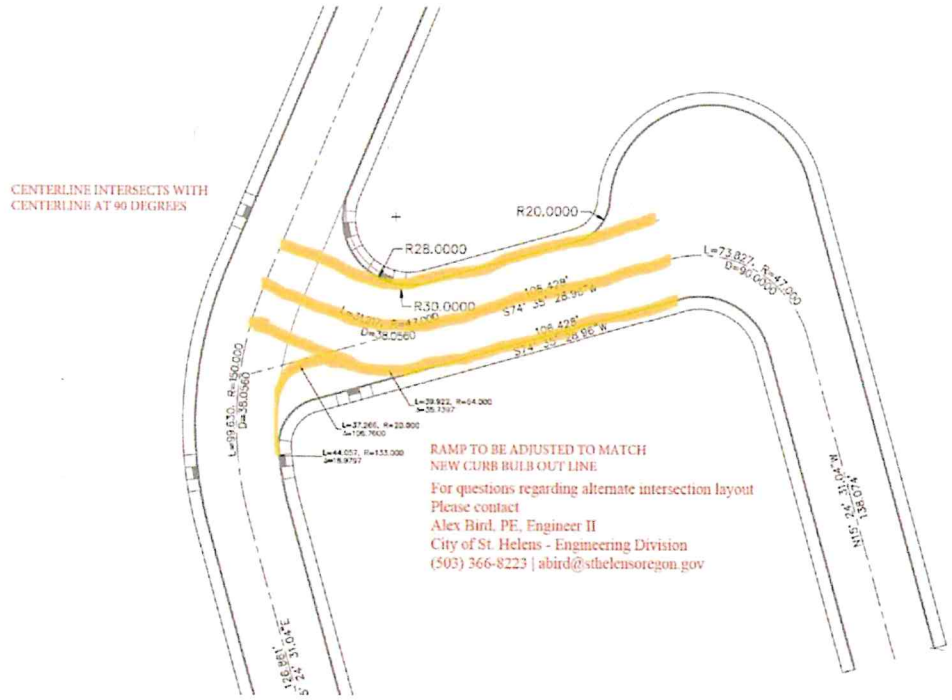
FROM: Sharon Darroux, Engineering Manager

DATE: February 22, 2022

SUBJECT: Comments Regarding the N 8th Street Planned Development

The Engineering Division has the following conditions of approval regarding the N 8th St Planned Development,

1. The N 9th – N 8th intersection does not meet the City's minimum requirements. The interior angle at the intersecting street should be kept as near to 90-degrees as possible and shall not be less than 60-degrees. Please see a potential corrective option below,



2. Driveways shall be a minimum of 12 feet wide.

3. Sewer easements shall be a minimum of 15 feet wide.

EXHIBIT B

4. Storm drain and storm structures that are proposed to be public shall be in the public right of way or within public easements of adequate width and in easily accessible locations for maintenance and repair.

5. The stormwater facilities shall remain under the ownership and management of the N 8th Street Subdivision's HOA. As a rule, the City does not accept facilities which are not designed for use by the general public as public infrastructure. Reference SHMC 17.152.100 (6) and 13.20.050 (4) regarding the City's acceptance of stormwater facilities.

6. Minimum cover of pipe shall be 18-inches for ductile iron pipe and 36-icnhes for non-reinforced pipe. In no case shall pipe cover be less than 18-inches. (Pipe cover less than 18-inches was seen throughout the prelim. plans)

7. A blow off shall be installed at the end of any water main that does not loop or reconnect to public system.

8. A 2-year maintenance/warranty period is required, not 1 year as the stormwater report states.

9. The Geotech report recommends that fill be compacted to 90% of the maximum dry density. Our standards require that a minimum of 95 percent of the maximum density be achieved for trench backfill and in the public right of way.

EXHIBIT B

SUB.1.22, et. al. - EXHIBIT C

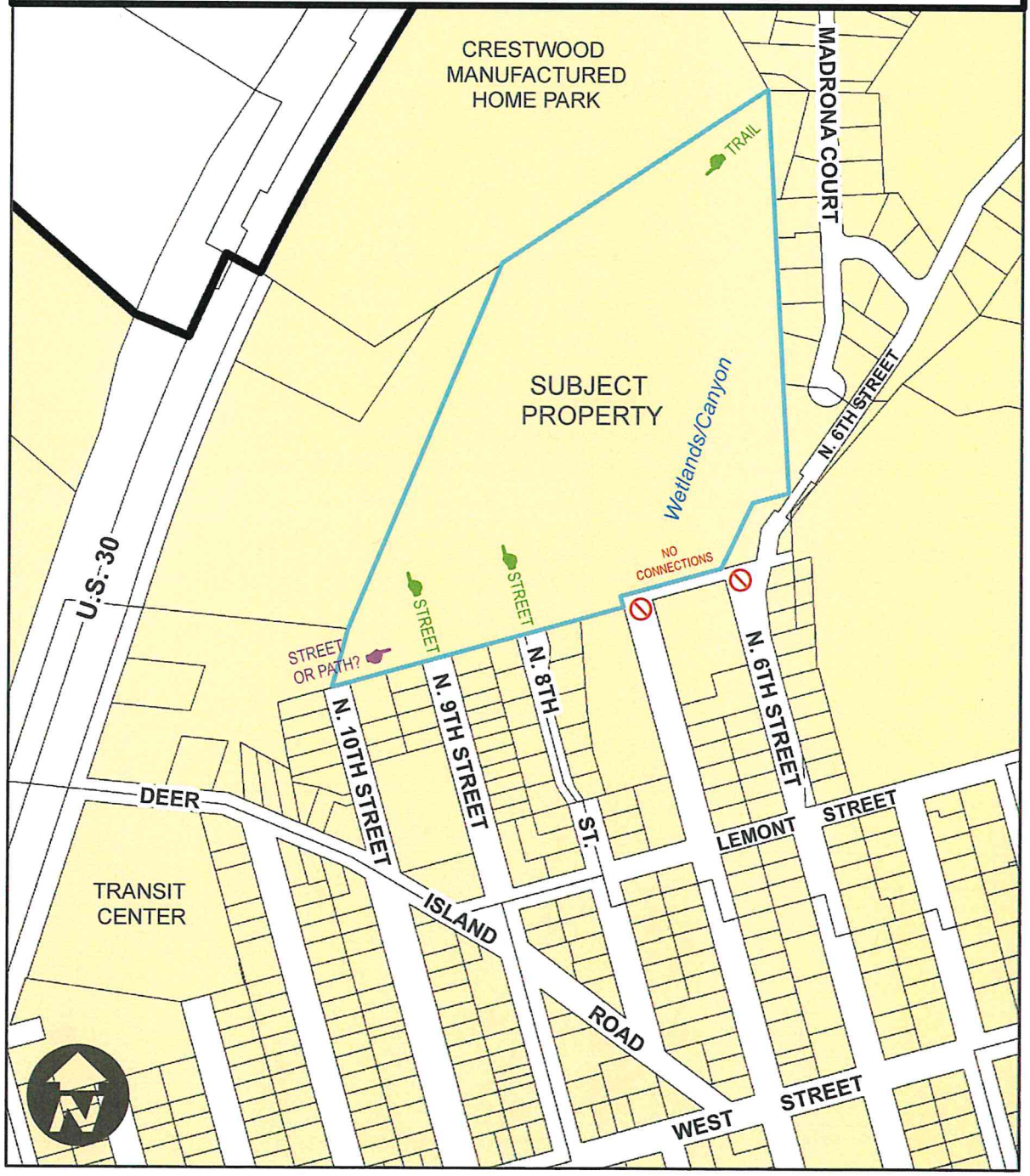
AREA CONNECTIVITY

Connection options are limited. The applicant proposes street extensions of N. 8th and N. 9th Streets and a trail connection to Madrona Court. The Madrona Court connection is a valuable rereational asset but not a practical route to goods and services. For this site, access to Deer Island Road is the only efficient way to the overall transportation system for goods, services, employment, etc.

As the Planning Commission considers the developed streets between the subject property and Deer Island Road, N.10th Street should not be overlooked. Also see Exhibit D.

SOURCE: City of St. Helens

Feb. 2022



SUB.1.22, et. al. - EXHIBIT D

GENERAL EXISTING CONDITIONS
N. 10th, 9th, and 8th STREETS

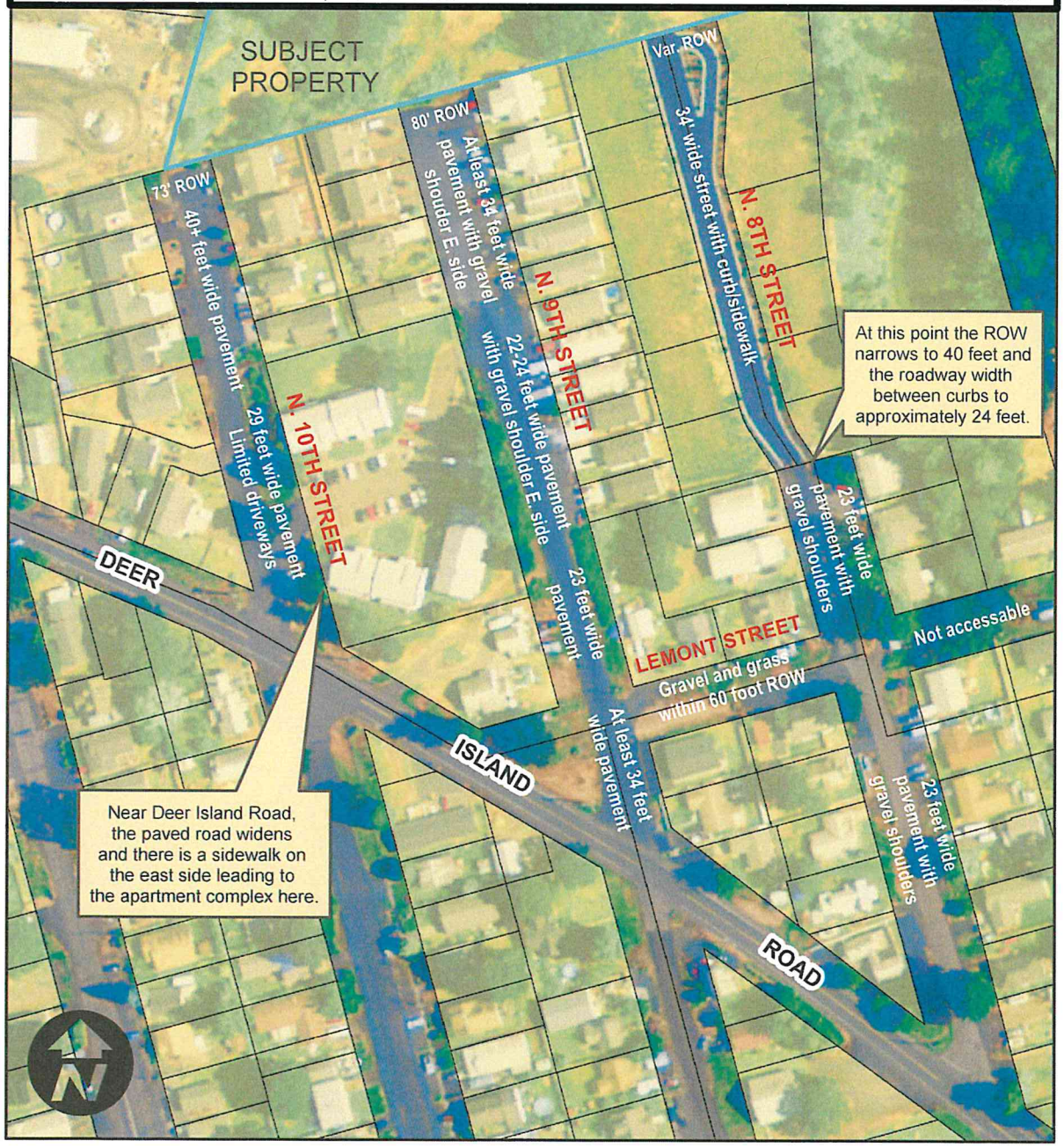
N. 10th. 9th and 8th Streets are all classified as local per St. Helens' Transportation Systems Plan. Standards for local streets inclue a roadway width of 34 feet (20 feet for two-way travel plus 7 foot on each side for on-street parking) with curb and 5 foot wide sidewalk on either side of the roadway.

The Commission needs to consider the deficiencies of N. 8th and especially N. 9th for vehicular and non-vehciluar use as these streets are intended to be extended with inceased use on these existing segments upon build out.

Since N. 10th abuts the property, it must also be considered for connectivity too.

SOURCE: City of St. Helens. Aerial photo from 2009.

Feb. 2022



North 8th Street Planned Development

PLANNED DEVELOPMENT NARRATIVE

Civil Engineer:
Lower Columbia Engineering, LLC
58640 McNulty Way
Saint Helens, OR 97051
Phone: (503) 366-0399
Engineer: Andrew Niemi
Email: andrew@lowercolumbiaengr.com
Contact: Chase Berg
Email: chase@lowercolumbiaengr.com

Client:
North 8th Street, LLC.
76220 Heath Road
Rainier, Oregon 97048
Contact: Shawn Clark
Phone: (312) 965-9637

Project Type: Residential
Project Location: St. Helens, Oregon

January 2022

LCE #3146-01

Table of Contents

The approval criteria and requirements addressed in this document for a Planned Development application were referenced from Chapters 17.136, 17.148, 17.08, 17.132 and 17.40 of the St. Helens Municipal Code.

Project Narrative

A. Existing Site Conditions

The site is located on taxlot 700 of Columbia County tax map 05013300. The project site is located east of the intersection of N. Columbia River Highway 30 and Deer Island Road. The historic land use has been quarry related as much of the site is underlain by shallow basalt. Due to recent logging activity, the site is now clear of trees and includes grasses and native vegetation that has grown in place of the trees.

B. Site Concept

The proposed development will be a 66-lot planned development. Two new roads will be constructed which will begin at the north end of the existing North 8th Street and North 9th Street roads. North 8th street is designed to continue into the site for approximately 140 feet before turning west and connecting into the proposed North 9th Street. North 9th Street will begin at the north end of the existing North 9th Street and continue into the site for approximately 1,000 feet before turning east and terminating in a cul-de-sac.

C. Grading Concept

The proposed grading is designed to mimic pre-development conditions. The site will generally slope from south to north with an average slope of 2%. Outside of the proposed site development, the lot generally slopes from south to north, with slopes of 1% longitudinally and up to 60% along banks. In several areas across the site fill material will be placed to accommodate houses on lots as well as to reduce the amount of blasting due to shallow native bedrock found on-site from the attached geotechnical report dated May 10th, 2019. In all circumstances, the finished grade surface has been designed to tie back into existing grades with as shallow of slopes as practical. A JPA (Joint Permit Application) has been submitted and has been approved by both DSL and USACE (U.S. Army Corps of Engineers). The attached DSL permit titled, "Removal-Fill Permit Application 62981-RF" can be found attached to this document.

D. Landscape Concept

Open space will be created for use by residents and will be surrounded by native trees and shrubs along its edges. The inner section of this space will feature grass that can be used recreationally. This mix of functional space benefits the community and surrounding habitat, allowing a more cohesive land use.

The soils on site are Inceptisols. These soils are often organic matter and clay limited. While that limits plant production a majority of native plants and trees will establish in these soils. Top soil will be added around new plantings as necessary. This top soil will be composed of a mulch mix to support growth of the native plants. The erosion and sediment control plan uses standard practices such as wattles, sediment fence, and slope matting. Sediment fence and wattles will be implemented in areas that are susceptible to erosion to prevent any material from moving onto adjacent lands, roadways, or wetlands. Slope matting will be implemented on steep slopes during construction to limit the risk of sediment movement. The post-construction plan includes planting vegetation in disturbed areas to lower the risk of future erosion.

E. Sign Concept

The proposed development will only provide signage where required by the City of St. Helens Municipal Code. Currently, entrance monuments are proposed at both North 8th Street and North 9th Street entrances. A separate permit will be submitted for these monuments with the permit set.

F. A Copy of All Existing or Proposed Restrictions or Covenants

This site does not have any existing or proposed restriction or covenants.

Chapter 17.148.120 SHMC, Approval Standards

(1) All the provisions of the land division provisions, Chapters 17.136 and 17.140 SHMC, et seq., shall be met;

Response: All provisions set forth in Chapters 17.136 SHMC have been met. Responses to approval criteria can be seen on pages 20 - 22 of this document. Chapter 17.140 is not applicable since this is not a Partition or Lot Line Adjustment.

(2) The provisions of the following chapters shall also be met:

(a) Chapter 17.56 SHMC, Density Computations;

[...]
17.56.20 Density Calculation
(1) Net development area, in acres, shall be determined by subtracting the following land area(s) from the gross acres, which is all of the land included in the legal description of the property:
(a) All sensitive land areas:
i. [...]
(b) All land dedicated to the public for park purposed
(c) All land dedicated for public right-of-way.
(d) All land proposed for private streets
(e) A lot of at least the size required by the applicable zoning district, if a lawfully existing use is to remain on the site.
[...]

Response: Density Computations have been completed and are included with the Planned Development Application. See the 08 Density Calculations document for more information.

(c) Chapter 17.64 SHMC, Additional Yard Setback Requirements and Exceptions;

[...]
17.64.020 Additional setback for centerline required
[...]
(3) The minimum yard requirement shall be increased in the event a yard abuts a street having a right-of-way width less than required by its functional classification on the city's transportation plan map and, in such case, the setback shall be not less than the setback required by the zone plus one-half of the projected road width as shown on the transportation map.
[...]

Response: The current front yard setback has been sized as required by the zone plus one-half of the proposed road width.

(d) Chapter 17.68 SHMC, Building Height Limitations – Exceptions;

[...]
17.68.020 Building Height Exceptions
Any building located in an industrial zone may be built to a maximum of 75 feet, provided:
[...]

17.68.040 Building height criteria for scenic resources.
[...]

Response: No buildings are proposed within an industrial zone nor will any buildings obstruct views of the Columbia River.

(e) Chapter 17.72 SHMC, Landscaping and Screening;

[...]
17.72.030 Street Trees
(1) All development projects fronting on a public or private street, or a private driveway more than 100 feet in length approved after the adoption of the ordinance codified in this code shall be required to plant street trees in accordance with the standards in SHMC 17.72.035.
[...]
17.72.080 Buffering and screening requirements
(5) Where screening is required, the following standards shall apply in addition to those required for buffering:
- *(a) A hedge of narrow or broadleaf evergreen shrubs shall be planted which will form a four-foot continuous screen within two years of planting; or*
- *(b) An earthen berm planted with evergreen plant materials shall be provided which will form a continuous screen six feet in height within two years. The unplanted portion of the berm shall be planted in lawn, ground cover or bark mulch; or*
- *(c) A five-foot or taller fence or wall shall be constructed to provide a continuous sight-obscuring screen.*

[...]

Response: Street trees are proposed for this site and can be seen on sheets L-1: L-3 of the proposed development plans. Additionally, a five-foot fence will be constructed in order to provide private outdoor space for each lot.

(f) Chapter 17.76 SHMC, Visual Clearance Areas;

[...]
17.76.020 Visual clearance – Required
(1) A visual clearance area shall be maintained on the corners of all property adjacent to the intersection of two streets, a street and a railroad, or a driveway providing access to a public or private street.
[...]

Response: Visual clearance areas are shown and called out on sheets L-1: L-3.

(g) Chapter 17.80 SHMC, Off-Street Parking and Loading Requirements;

[...]
17.80.015 Applicability of Provisions
[...]
(3) The applicant shall submit a site plan which includes:
- *(a) The location of the structures on the property and on the adjoining property;*

Response: The location of all existing structures are shown on sheet G-1.

- *(b) The delineation of individual parking and loading spaces and their dimensions;*

Response: Each lot will have parking that will allow for two vehicles. See sheets C-5 and C-6.

(c) The location of the circulation area necessary to serve the spaces;

Response: Circulation of the site has been accounted for and can be seen on sheets C-4: C-6.

(d) The location of the access point(s) to streets, to accessways and to properties to be served;

Response: Location of access points on site are shown on sheets C-4 and C-6.

(e) The location of curb cuts;

Response: Curb cut locations can be seen on sheets C-4: C-6. More specifically, the curb cut locations can be found at the intersection of North 8th Street and North 9th Street.

(f) The location and dimensions of all landscaping, including the type and size of plant material to be used, as well as any other landscape material incorporated into the overall plan;

Response: Location, dimensions and specifications of plants used is included on sheets L-1: L-3.

(g) The proposed grading and drainage plans; [and]

Response: Grading and draining plan is included on sheets C-9: C-11.

(h) Specifications as to signs and bumper guards. (Ord. 2875 § 1.114.015, 2003)

Response: The location of possible off-street parking spaces has been added to sheets C-5 and C-6. These parking space demarcations are for reference only and will not be striped as shown.

(h) Chapter 17.84 SHMC, Access, Egress, and Circulation;

[...]

17.84.25 Applicability of provisions

(3) The applicant shall submit a site plan which includes:

(a) The location of the structures on the property and on the adjoining property;

Response: Locations of all existing structures on the property and adjoining properties is included on sheet G-1.

(b) The location of parking and loading areas and their dimensions;

Response: The location of possible off-street parking spaces has been added to sheets C-5 and C-6. These parking space demarcations are for reference only and will not be striped as shown.

(c) The location of the circulation area necessary to serve the spaces;

Response: The circulation for the proposed development can be found on sheets C-4: C-6.

(d) The location of the access point(s) on the site and on the adjoining properties and on both sides of abutting streets within 200 feet of the subject site;

Response: Access locations are shown on sheet G-1 at the north end of the existing North 8th St and North 9th St roads.

(e) The location of curb cuts on adjoining properties and on the subject site;

Response: The current site plan shows all curb cuts. The adjoining properties do not have curb cuts within several hundred feet of the subject property.

(f) The location and dimensions of all landscaping, including the type and size of plant material to be used, as well as any other landscape material incorporated into the overall plan;

Response: Location, dimension and species of all proposed plans are included on sheets L-1: L-3.

(g) The proposed grading and drainage plans; and

Response: Proposed grading and drainage plan are included on sheets C-9: C-11.

(h) Specifications as to signs. (Ord. 2875 § 1.116.025, 2003)

Response: The proposed development will only provide signage where required by the City of St. Helens Municipal Code. Currently, entrance monuments are proposed at both North 8th Street and North 9th Street entrances. A separate permit will be submitted for these monuments.

[...]

(i) Chapter 17.88 SHMC, Signs; and

[...]
17.88.020 General requirements
(1) Except as provided in SHMC 17.88.025, no person shall erect, construct, enlarge, alter, repair, move, improve, remove, convert, demolish, equip, use or maintain any sign, or cause or permit the same to be done, contrary to or in violation of any of the provisions of this code.
(2) Except as provided in SHMC 17.88.025, no person shall erect, construct or alter a sign, or permit the same to be done, unless a sign permit has been issued by the city. A sign permit for the construction and continued use of a sign is subject to the terms and conditions stated in the permit and this code.
(3) An application for sign permit approval is also subject to the procedures set forth in SHMC 17.88.130.
(4) No owner shall erect or construct a sign on a site that contains unlawful signs.
(5) This chapter shall not be construed to permit the erection or maintenance of any sign at any place or in any manner unlawful under any other city code provision or other applicable law. In any case where a part of this chapter conflicts with a provision of any zoning, building, fire, safety or health ordinance or code, the provision which establishes a stricter standard for the protection of the public health and safety shall prevail.
(6) This chapter is not intended to and does not restrict speech on the basis of its content, viewpoint or message. Any classification of signs in this chapter that permits speech by reason of the type of sign, identity of the sign user or otherwise shall permit any type of speech on the sign. No part of this chapter shall be construed to favor commercial speech over noncommercial speech. To the extent any provision of this chapter is ambiguous, the term shall be interpreted to not regulate on the basis of speech content, and the interpretation resulting in the least restriction on the content of the sign message shall prevail.
(7) If any section, subsection, paragraph, sentence, clause or phrase of this chapter is declared invalid for any reason by a court having jurisdiction under state or federal law, the remaining portions of this chapter shall remain in full force and effect. (Ord. 3091 § 2, 2008)
[...]

Response: The only proposed signs can be found on sheets L-1 and L-3 at the intersection of North 8th Street and North 9th Street. A stop sign as well as cross street signs are planned for this intersection.

(j) Chapter 17.124 SHMC, Accessory Structures;

[...]
17.124.030 Applicability of Provision
(1) Review of accessory structures by the director is required except for the following situations:
(a) Buildings or structures within residential zoning districts which do not exceed 200 square feet in gross floor area and 15 feet or less in height, measured from base to highest point of the structure;
[...]

Response: No accessory structures are proposed for this development.

Chapter 17.148 Planned Development

[...]

Chapter 17.184.120 SHMC, Approval standards

(3) In addition, the following criteria shall be met:
(a) Relationship to the Natural and Physical Environment.
i. The streets, buildings, and other site elements shall be designed and located to preserve the existing trees, topography, and natural drainage to the greatest degree possible (justification required);

Response: The proposed streets, and site elements have been designed and located to preserve the existing wetlands, natural drainage patterns, and topography to the best extent as practical.

ii. Structures located on the site shall not be in areas subject to ground slumping and sliding;

Response: In reference to the Geotechnical Report dated May 10th, 2019; there are no areas prone to ground slumping and sliding.

iii. There shall be adequate distance between on-site buildings and other on-site and off-site buildings on adjoining properties to provide for adequate light and air circulation and for fire protection;

Response: The proposed development will only be for single family detached houses and does not include accessory buildings. The spacing between houses on site lots has been considered during the design of this development to meet the City of St. Helens Municipal code. Additionally, the layout of the proposed planned development has been designed to accommodate a double wide mobile home as required per pre-application conference held on June 1, 2021.

iv. The structures shall be oriented with consideration for the sun and wind directions, where possible; [and]

HOW DOUBLE-WIDES RANGE FROM 20-32' WIDE

Response: The proposed development has been designed with consideration for the sun and wind directions.

v. Trees with a six-inch caliper measured at four feet in height from ground level shall be saved where possible (justification required to cut down trees);

Response: A portion of the site has previously been logged. As part of this application, a sensitive lands application has been filled out for the logging activities. The proposed development plans for necessary tree removal for a public sanitary line as well as a pedestrian path. These areas will be replanted with native vegetation after the proposed sewer line is put in therefore the removal will not negatively impact erosion, soil stability, flow of surface waters, or water quality per 17.132.040. See sheets L-1: L-3 for more information.

(b) Buffering, Screening, and Compatibility between Adjoining Uses.

i. Buffering shall be provided between different types of land uses (for example, between single-family and multiple-family residential, and residential and commercial);

Response: As part of this planned development, screening will be provided where different land uses are next to one another as well as where residential uses are abutted to one another.

ii. In addition to the requirements of the buffer matrix, the following factors shall be considered in determining the adequacy and extent of the buffer required under Chapter 17.72 SHMC:

(A) The purpose of the buffer, for example, to decrease noise levels, absorb air pollution, filter dust, or to provide a visual barrier;

(B) The size of the buffer needs in terms of width and height to achieve the purpose;

(C) The direction(s) from which buffering is needed;

(D) The required density of the buffering; and

(E) Whether the viewer is stationary or mobile;

Response: Buffering has been designed in accordance with the buffer matrix provided under chapter 17.72 of the St. Helens Municipal Code as well as the summarized criteria.

iii. On-site screening from view from adjoining properties of such things as service areas, storage areas, parking lots, and mechanical devices on rooftops shall be provided and the following factors shall be considered in determining the adequacy of the type and extent of the screening:

(A) What needs to be screened;

(B) The direction from which it is needed; and

(C) Whether the screening needs to be year-round;

Response: Screening has been designed considering the above criteria.

(c) Privacy and Noise. Nonresidential structures which abut existing residential dwellings shall be located on the site or be designed in a manner, to the maximum degree possible, to protect the private areas on the adjoining properties from view and noise;

Response: All structures proposed as part of this development are for residential use. Where the proposed structures abut nonresidential structures, the required buffering and screening will be provided.

(d) Private Outdoor Area – Residential Use.

i. In addition to the requirements of subsection (3)(d)(iii) of this section, each ground level residential dwelling unit shall have an outdoor private area (patio, terrace, porch) of not less than 48 square feet;

Response: Each structure will have an outdoor private area greater than 48 square feet.

ii. Wherever possible, private outdoor open spaces should be oriented toward the sun; and

Response: Private outdoor spaces will be orientated towards the sun where practical.

iii. Private outdoor spaces shall be screened or designed to provide privacy for the use of the space;

Response: Private outdoor spaces have been designed to maximize the total amount of private space as practical. Additionally, screening has been designed in accordance with section 17.72.080 of the St. Helens Municipal Code.

(e) Shared Outdoor Recreation Areas – Residential Use.

i. In addition to subsections (3)(e)(ii) and (iii) of this section each multiple-dwelling development shall incorporate shared usable outdoor recreation areas within the development plan as follows:

(A) Studio units up to and including two-bedroom units, 200 square feet per unit; and

Response: Studio units up to and including two-bedroom units are not proposed as part of this development.

(B) Three- or more bedroom units, 300 square feet per unit;

Response: Four (4) bedroom units are proposed as part of this development. The required shared outdoor recreational space, totaling 19,817 square feet, which can be seen on sheets C-4 and L-1.

ii. Shared outdoor recreation space shall be readily observable from adjacent units for reasons of crime prevention and safety;

Response: The shared outdoor recreational space is located in an observable area from the end of the North 9th Street cul-de-sac bulb.

iii. The required recreation space may be provided as follows:

(A) It may be all outdoor space; or

(B) It may be part outdoor space and part indoor space; for example, an outdoor tennis court and indoor recreation room; or

(C) It may be all public or common space; or

(D) It may be part common space and part private; for example, it could be an outdoor tennis court, indoor recreation room, and balconies on each unit; or

(E) Where balconies are added to units, the balconies shall not be less than 48 square feet;

Response: The required recreational space is currently proposed as all public outdoor space.

(f) Access and Circulation.

i. The number of allowed access points for a development shall be as provided in Chapter 17.84 SHMC;

Response: The project site has two access points located at the ends of the existing North 8th St and North 9th St.

ii. All circulation patterns within a development must be designed to accommodate emergency vehicles; [and]

Response: The proposed roadway has been designed with a cul-de-sac radius that complies with the 2019 Oregon Fire Code standards found in Appendix D section D103 for an emergency vehicle turnaround. This can be found on sheets C-4: C-6.

iii. Provisions shall be made for pedestrian and bicycle ways if such facilities are shown on an adopted plan;

Response: Although bicycle facilities are not provided, bicyclists are able to ride on both North 8th Street and North 9th Street. Sidewalks have also been provided along all roadways to allow for safe pedestrian access.

(g) Landscaping and Open Space.

i. Residential Development. In addition to the requirements of subsections (3)(d) and (e) of this section, a minimum of 20 percent of the site shall be landscaped;

Response: A minimum of 20% of the site will be landscaped in accordance with sections 17.72 and 17.148.120 of the St. Helens Municipal Code.

ii. Commercial Development. A minimum of 15 percent of the site shall be landscaped; and

Response: The proposed development is a residential development. This standard does not apply.

iii. Industrial Development. A minimum of 15 percent of the site shall be landscaped;

Response: The proposed development is a residential development. This standard does not apply.

(h) Signs.

i. In addition to the provisions of Chapter 17.88 SHMC, Signs:

(A) Location of all signs proposed for the development site; [and]

Response: Location of all proposed signage is located on sheets L-1: L-3.

(B) The signs shall not obscure vehicle drivers' sight distance;

Response: Proposed locations of all signage is not within the vision clearance of all intersections on site.

(i) Parking.

i. All parking and loading areas shall be generally laid out in accordance with the requirements set forth in Chapter 17.80 SHMC;

Response: Parking and loading areas are included on sheet C-4: C-6.

ii. Up to 50 percent of required off-street parking spaces for single-family attached dwellings may be provided on one or more common parking lots within the planned development as long as each single-family lot contains one off-street parking space;

Response: The proposed development currently will be utilizing single family detached homes.

> *(j) Drainage. All drainage provisions shall be generally laid out in accordance with the requirements set forth in Chapter 17.44 SHMC and the criteria in the adopted 1999 master drainage plan. (Ord. 2875 § 1.180.120, 2003)*

Response: Drainage plans are included and can be seen on sheets sheet C-9: C-11.

Chapter 17.08 SHMC Amendments to the Code and Zone District Maps

[...]

Chapter 17.08.040 SHMC, Quasi-judicial amendments and standards

> *[...]*
> *(a) A recommendation or a decision to approve, approve with conditions, or to deny an application for a quasi-judicial amendment shall be based on all of the following standards:*
>
> > *(i) The applicable comprehensive plan policies and map designation; and that the change will not adversely affect the health, safety, and welfare of the community;*

Response: The proposed development comprehensive plan designation is Mobile Home Residential. Within this designation, single family detached homes were sought to be constructed instead of manufactured homes. As required per chapter 17.32.090 (4), standards for mobile home parks have been considered and integrated into this development. Through the zone amendment process, this development will not adversely affect the health, safety, or welfare of the community. With the zone amendment process, minor changes have been made to R-5 zoning lot size standards in order to best preserve the natural topography and keep existing wetlands healthy.

> *(ii) The applicable Oregon Statewide Planning Goals adopted under ORS Chapter 197, until acknowledgment of the comprehensive plan and ordinances;*

Response: The proposed development comprehensive plan designation is Mobile Home Residential. Through the zone amendment process, minor changes have been made to R-5 zoning lot size standards in order to best preserve the natural topography and keep existing wetlands healthy.

> *(iii) The standards applicable of any provision of this code or other applicable implementing ordinance; and*

Response: The proposed development has been designed to be compliant with all regulations through the planned development zone amendment process. Minor changes have been made to R-5 zoning lot size standards in order to best preserve the natural topography and keep existing wetlands healthy.

> *(iv) A proposed change to the St. Helens zoning district map that constitutes a spot zoning is prohibited. A proposed change to the St. Helens comprehensive plan map that facilitates a spot zoning is prohibited.*

Response: This development does not propose spot zoning. Through the zone amendment process, this development proposes minor changes to the R-5 lot size standards. These changes do not constitute spot zoning.

(b) Consideration may also be given to:

(i) Any applicable evidence of change in the neighborhood or community or a mistake or inconsistency in the comprehensive plan or zoning map as it relates to the property which is the subject of the development application. (Ord. 3215 § 4 (Att. D), 2017; Ord. 2875 § 1.020.040, 2003)

Response: The proposed development comprehensive plan designation is Mobile Home Residential. Within this designation, single family detached homes were sought to be constructed instead of manufactured homes. As required per chapter 17.32.090 (4), standards for mobile home parks have been considered and integrated into this development. This development will not preclude the option for manufactured homes to be constructed instead of single family detached homes. Under chapter 17.60.030 (1) the manufactured home shall be multisectional and enclose a space of not less than 1,000 square feet. The proposed development utilizes lot sizes of at least 3,690 square feet and often larger than 4,000 square feet. Following with manufactured home development standards all lots have a 20-foot front yard setback, a 20-foot rear yard setback (10' except where not on perimeter of planned development) and a 4-foot side yard setback. All lots will be serviced by public facilities (water, sewer, electric, sidewalks, and streets). A summary table below shows the requirements of Mobile Home Residential Zoning district, if the planned development allows flexibility, and what requirements are proposed with this development.

STANDARD	MHR ZONING DISTRICT	PD ALLOWS FLEXIBILITY?	PROPOSED
Min. lot size	5,000 s.f. for detached single-family dwellings and duplexes	Yes	3,690 s.f.
Min. lot width at building line (interior lots)	50 feet	Yes	29 feet
Min. lot width at building line (corner lots)	50 feet	Yes	43 feet
Min. lot width at street (standard)	50 feet	Yes	29 feet
Min. lot width at street (cul-de-sac)	30 feet	Yes	30 feet
Min. lot width at street (flag lot)	20 feet	Yes	20 feet
Min. lot depth	85 feet	Yes	85 feet
Min. front yard (setback)	20 feet	Yes (except along perimeter of PD and for garage structures which open facing a street)	20 feet (20 feet along perimeter of PD and for any garage structure which opens facing a street)
Min. side yard (setback)	5 feet	Yes	4 feet
Min. rear yard (setback)	~~20~~ 10' feet	Yes (except along perimeter of PD)	10 feet (except along perimeter of PD)
Min. interior yard (building/structure separation)	6 feet	No	6 feet
Max. building height	35 feet	Yes	35 feet
Max. lot coverage	Buildings and structures shall not occupy more than 40% of the lot area	No	Buildings and structures shall not occupy more than 40% of the lot area

5' FOR INTERIOR LOTS & 10' FOR SIDES OF CORNER LOTS ALONG STREET

Min. landscaping	25% of the lot area	No	25% of the lot area

Chapter 17.132 SHMC, Tree Removal

[...]

Chapter 17.132.040 SHMC, Permit Criteria

(1) The following approval standards shall be used by the director or designee for the issuance of a tree removal permit on sensitive lands:

(a) Removal of the tree must not have a measurable negative impact on erosion, soil stability, flow of surface waters, or water quality as evidenced by an erosion control plan which precludes:

Response: There will be no measurable impacts because the area will implement proper erosion control measures. Additionally, the area will be replanted as shown in the landscaping plan to prevent long term impacts.

(i). Deposits of mud, dirt, sediment or similar material exceeding one-half cubic foot in volume on public or private streets, adjacent property, or into the storm and surface water system, either by direct deposit, dropping, discharge or as a result of the action of erosion; and

Response: There will be no deposits of materials exceeding one-half cubic foot because due to proper erosion control measures such as sediment fence, inlet protection, construction entrances, etc. This development will be replanted as shown in the landscaping plan to prevent long term impacts.

(ii). Evidence of concentrated flows of water over bare soils; turbid or sediment-laden flows; or evidence of on-site erosion such as rivulets on bare soil slopes where the flow of water is not filtered or captured on site.

Response: There will be no evidence of concentrated, turbid, or sediment-laden flows because the area will implement proper erosion control measures as seen on sheet C-2. This development will be replanted as shown in the landscaping plan to prevent long term impacts.

(2) Within stream or wetland corridors, tree removal must maintain no less than a 75 percent canopy cover or no less than the existing canopy cover if the existing canopy cover is less than 75 percent. (Ord. 2875 § 1.160.040, 2003)

Response: Tree removal is proposed to only occur within the wetland buffer thus, the tree cover will not be decreased over the wetland.

Chapter 17.40 SHMC, Protective Measures for Significant Wetlands, Riparian Corridors, and Protective Zones

[...]

Chapter 17.40.055, General criteria for exceptions and other approvals

The appropriate approval authority shall approve or approve with conditions an application request within a significant wetland, significant riparian corridor or protection zone based upon findings that all of the following criteria have been satisfied and the conditions herein are imposed:

(1) The extent and nature of the proposed alteration or development will not create site disturbances to an extent greater than the minimum required for the use;

Response: Site disturbance will be limited to the greatest extent possible during construction and will only create disturbance that is required for the use.

(2) No loss of wetland/riparian area and function:

(a) Any wetland or riparian area alteration permitted through an exception or other approval shall be mitigated to ensure that there is no net loss of functions or the spatial extent of wetlands or riparian area within the city of St. Helens;

Response: Any and all impacts to wetlands or riparian areas will be mitigated as described within this section.

(b) Any encroachment or change in on-site or off-site drainage which would adversely impact wetland or riparian characteristics have been mitigated;

Response: The proposed development will not adversely impact wetland or riparian function but impacts will be mitigated.

(3) Where natural vegetation has been removed due to alteration or development, erosion control provisions of the Community Development Code and "Engineering Department Public Facility Construction Standards Manual" shall be met;

Response: Where natural vegetation has been removed, erosion control provisions and the Engineering Department Public Facility Construction Standards Manual will be used in order to minimize erosion and restore vegetation.

(4) All applicable sensitive lands requirements of Chapter 17.44 SHMC have been met;

Response: Sensitive lands requirements have been met for the applicable applications. See the sensitive lands narrative for more information.

(5) Copies of all state and federal permit applications shall be submitted with development applications requiring compliance with this chapter. All required state and federal permits shall be obtained and copies provided to the city of St. Helens prior to alteration of the site;

Response: A JPA (Joint Permit Application) has been submitted and has been approved by DSL in the attached "Removal-Fill Permit Application 62981-RF". Additionally, the U.S. Army Corps of Engineers permit has been issued.

(6) The protection of the significant riparian corridor or significant wetland can be assured through restoration, enhancement, and other similar measures in the protection zone and the resource area. The following minimum restoration and enhancement shall be required as a condition of approval:

(a) The applicant shall enter into a two-year contract for installation and maintenance of plant materials with the city. Financial security in an amount not less than 110 percent of the cost estimate for installation shall be provided. Within the time specified in the contract, the applicant shall remove noxious vegetation and restore or enhance with native plant materials and other approved resource enhancements all required portions of the protection or resource zone on the site, as well as restoration and enhancement in any associated contiguous resource area under the applicant's ownership or control;

Response: It is understood that the applicant shall enter into a two-year contract for the installation and maintenance of plant materials with the city.

(b) Restoration and enhancement shall be on a 1:1 area basis or such greater ratios as specified in this chapter for the requested activity. Thus, at a minimum, for every 100 square feet of protection zone or resource area that is altered or used for development purposes, at least 100 square feet of the available remaining resource area and/or protection zone shall be enhanced or restored. Priority shall be given to removal of noxious vegetation and planting of native plant materials, including ground cover, under-story and canopy, in nonvegetated areas or areas where noxious plant species are removed. The number and type of plant materials shall be specified in the contract but shall at a minimum comply with the following requirements:

(i). Only plant materials approved by the director shall be installed in the protection zone or the resource areas. Plant materials shall be of high quality;

Response: Where mitigation is required, only plant materials approved by the director will be installed in the protection zone.

(ii). No noxious plants shall be installed and existing noxious materials shall be removed;

Response: For all mitigation, no noxious plants will be planted and existing noxious materials/plants will be removed.

(iii). Plant materials shall consist of ground cover, under-story and canopy materials and shall be located in such a manner to maximize enhancement and restoration of the resource area and the protection zone, with particular emphasis on temperature reduction of watercourses, erosion control, and wildlife habitat enhancement;

Response: All plant materials will consist of ground cover, under-story and canopy materials. Species will be native and will be selected with temperature reduction, erosion control and wildlife habitat enhancement in mind.

(iv). Installation standards within the required enhancement area be as follows:

(A) Ground cover shall be hydro-seeded or planted at two-foot intervals or such other interval established by the approval authority as sufficient to attain coverage of the required area within the two-year contract period;

Response: Ground cover will be hydro-seeded or planted at two-foot intervals to attain coverage of the required area after all disturbance has taken place for exposed soils.

(B) Under-story shall be minimum one-gallon materials planted at six-foot intervals or such other interval approved by the approval authority as sufficient to attain adequate coverage within the two-year contract period;

Response: Understory landscaping will be at a minimum one-gallon in size and planted at six-foot intervals as required.

(C) Canopy trees shall be planted at 20-foot intervals or such other interval as required to install all materials required for tree mitigation pursuant to the tree mitigation requirements of the Community Development Code;

Response: For all mitigation, no noxious plants will be planted and existing noxious materials/plants will be removed.

(D) Additional materials or other habitat enhancements are encouraged;

Response: Additional material or habitat enhancements will be considered as mitigation for impacts is designed with the permit drawings.

(v). As a condition of approval the applicant shall implement a management plan for the entire protection zone and resource areas under the applicant's ownership or control, including the areas restored and enhanced. The management plan must be approved by the city and shall be attached to the approval document. The management plan shall contain the following requirements and statements:

Response: A management plan will be developed as part of the planned development process.

(A) Identification of resource and protection zone management practices to be conducted and proposed intervals;

Response: Resource and protection zone management practices to be conducted will be incorporated into the management plan.

(B) Provisions for the perpetual maintenance of protection zone and resource areas by a responsible party;

Response: Maintenance of the protection zone and resource areas will be maintained by a responsible party. The responsible party will be named within the management plan for the protection zone.

(C) Provisions for the initial removal and ongoing management of exotic invasive vegetation and debris;

Response: The initial removal and ongoing management of exotic invasive vegetation will be addressed within the management plan. Additionally, a responsible party will be listed within the management plan to ensure invasive species are removed as necessary.

(D) Plans for the restoration and enhancement of any resource or protection areas with appropriate native plant material;

Response: All disturbed areas within the protection areas will be planted with native vegetation as required.

(E) Provisions for the protection of protected plant and animal species in accordance with recommendations from applicable state and federal agencies;

Response: Maintenance of the protection zone and resource areas will be maintained by a responsible party. The responsible party will be named within the management plan for the protection zone.

(F) Provision for protective barriers around all trees and vegetation to be saved in accordance with minimum city standards, and prohibiting all activity within these areas during construction;

Response: Disturbance will be minimized to the greatest extent possible and all existing trees will be preserved if possible. Disturbance is only proposed within the protection zone and will not enter any wetland.

(G) Specific provisions for city enforcement of the management plan as contained in the city-approved sample management plan;

Response: When the management plan is created, it will be created utilizing the sample management plan and will have specific provisions for city enforcement of the management plan.

(H) Any additional measures deemed necessary to protect and maintain the functions and values of the wetlands, riparian corridors and protection zones (e.g., signage delineating preserve boundaries);

Response: Any and all measures will be taken in order to protect and maintain the functions and values of the wetlands. Additional measures will be detailed within the management plan.

(I) The following statements:

(1) "There shall be no alteration of significant wetlands, riparian corridors or protection zones as delineated and shown on the attached plan" [attach reduced plan];

(2) "There shall be no alteration of the size, shape or design of an approved protection area or resource area without the approval by the City of St. Helens" (modification to original permit);

(3) "There shall be no amendment or change to this Management Plan without the approval of the City of St. Helens" (modification to original permit);

Response: The above statements will be included within the management plan when submitted.

(c) The exception or other approval document shall be recorded in the public records to give notice of the protection zone and resource area restrictions and maintenance obligations and to ensure no further encroachment into the protection zone and resource area occurs;

Response: It is understood that approval documents will be kept as public record to ensure no further encroachment in the protection zone and resource area occurs.

(d) The applicant may dedicate a conservation easement or equivalent protection instrument to the city, homeowners association or a conservation organization, provided the form of the instrument

is approved by the city attorney and accepted by the council, if offered. Applicants should consult with their legal counsel or tax professionals about the tax advantages of conservation easements;

Response: A conservation easement is not proposed as part of this development.

(e) The director or approval authority may impose such additional reasonable conditions to mitigate other identified impacts resulting from development on the site. (Ord. 2890 Att. A, 2003; Ord. 2875 § 1.091.055, 2003)

Response: It is understood that additional conditions may be imposed from the impacts resulting from this proposed development.

Chapter 17.136 SHMC, Land Division – Subdivision

[...]

Chapter 17.136.060 Approval Standards – Preliminary Plat

(1) The planning commission may approve, approve with conditions or deny a preliminary plat based on the following approval criteria:

(a) The proposed preliminary plat complies with the city's comprehensive plan, the applicable sections of this code and other applicable ordinances and regulations;

Response: The proposed preliminary plat complies with the City of St. Helens comprehensive plan. A planned development overlay zone is being applied for concurrently with this application. The summary table above shows the requirements of Mobile Home Residential Zoning District, if the planned development allows flexibility, and what requirements are proposed with this development.

(b) The proposed plat name is not duplicative or otherwise satisfies the provisions of ORS Chapter 92[.090(1)];

Response: The proposed plat name, to the best of our knowledge, has not been used before. In the instance that the proposed plat name has been used, a new plat name will be chosen.

(c) The streets and roads are laid out so as to conform to the plats of subdivisions and maps of partitions already approved for adjoining property as to width, general direction and in all other respects unless the city determines it is in the public interest to modify the street or road pattern; and

Response: All streets and roads are laid out to conform to the plats of subdivisions and maps of partitions already approved for adjoining properties. All streets have also been designed to minimize the impact to natural topographic features (wetlands, drainages, etc.).

(d) An Explanation has been provided for all common improvements.

Response: All common improvements have been designed in areas that are accessible to the public. Open space has been designated to the east of North 9th Street to the eastern property boundary. Additionally, open common space has been designated behind lots 51 and 52 as a space to be enjoyed by residents of the planned development.

(2) Lot Dimensions.

(a) Lot size, width, shape and orientation shall be appropriate for the location of the development and for the type of use contemplated, and:

Response: Lot size, width, shape and orientation has been designed to preserve the natural topography of the site given the proposed use.

(i). No lot shall be dimensioned to contain part of an existing or proposed public right-of-way;

Response: All lot dimensions are dimensioned to not include any part of a proposed or existing Right-of-Way. See sheets C-4: C-6 for more information.

(ii). The depth of all lots shall not exceed two and one-half times the average width, unless the parcel is less than one and one-half times the minimum lot size of the applicable zoning district; and

Response: The proposed lots are less than one and one-half times the minimum lot size of the applicable zoning district (5,000 s.f.).

(iii). Depth and width of properties zoned for commercial and industrial purposes shall be adequate to provide for the off-street parking and service facilities required by the type of use proposed.

Response: The proposed development is for residential use and is not for commercial or industrial purposed. This standard does not apply.

(3) Through Lots.

(a) Through lots shall be avoided except where they are essential to provide separation of residential development from major traffic arterials or to overcome specific disadvantages of topography and orientation, and:

Response: No through lots are proposed as part of this development. This standard does not apply.

(i). A planting buffer at least 10 feet wide is required abutting the arterial rights-of-way; and

Response: No arterial streets are adjacent or are proposed as part of this development. This standard does not apply.

(ii). All through lots shall provide the required front yard setback on each street.

Response: No through lots are proposed as part of this development. This standard does not apply.

(4) Large Lots.

(a) In dividing tracts into large lots or parcels which at some future time are likely to be redivided, the approving authority may require that the lots be of such size and shape, and be so divided into building sites, and contain such site restrictions as will provide for the extension and opening of streets at intervals which will permit a subsequent division of any tract into lots or parcels of smaller size, and:

Response: All proposed lots are too small to be divided again at a future date. This standard does not apply.

(i). The land division shall be denied if the proposed large development lot does not provide for the future division of the lots and future extension of public facilities.

Response: All proposed lots are too small to be divided again at a future date. This standard does not apply.

(5) Control of access to adjoining properties, including but not limited to continuation of streets, shall be granted to the city via reserve strips or language in lieu of reserve strips as a note on the plat. Generally, language in lieu of reserve strips is preferred.

Response: The proposed development has been designed in such a manner that future development would likely not occur. With existing wetlands on-site, a future development would not be able to utilize a majority of the available land, thus, the proposed design does not accommodate the continuation of streets, utilities, etc.

(6) The planning commission may require additional conditions as are necessary to carry out the comprehensive plan and other applicable ordinances and regulations. (Ord. 3264 § 2 (Att. A), 2021; Ord. 2875 § 1.170.060, 2003)

Response: Additional conditions that are required will be dealt with and incorporated into this development as necessary.

Chapter 17.136.120, Criteria for granting a variance

(a) There are special circumstances or conditions affecting the property which are unusual and peculiar to the land as compared to other lands similarly situated;

Response: With existing wetlands present throughout the site, the circulation and connectivity of streets was severely limited and requires a cul-de-sac to be longer than the maximum distance of 400' given the natural geographic constraints.

(b) The variance is necessary for the proper design or function of the subdivision;

Response: In order to minimize the impacts to existing wetlands on-site and to satisfy the U.S. Army Core of Engineers and Department of State Lands Joint Permit Application the layout of the streets and lots were restricted. To minimize the total impact to existing wetlands, a cul-de-sac longer than 400' was required.

(c) The granting of the variance will not be detrimental to the public health, safety, and welfare or injurious to the rights of other owners of property; [and]

Response: The proposed roadway has been designed with a cul-de-sac radius that complies with the 2019 Oregon Fire Code standards found in Appendix D section D103 for an emergency vehicle turnaround. The design of this cul-de-sac has been optimized for the given constraints and has been designed with public health, safety, and welfare of other property owners.

(d) The variance is necessary for the preservation and enjoyment of a substantial property right because of an extraordinary hardship which would result from strict compliance with the regulations of this code. (Ord. 2875 § 1.170.120, 2003)

Response: Due to the natural topography of this site and the existing wetlands, it is necessary to extend the proposed North 9th Street past the 400' cul-de-sac maximum. Without exceeding the maximum, this would cause financial hardship on the development and likely would terminate this development.

Attachment A: DSL Permit

Oregon
Kate Brown, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

BEFORE THE DIRECTOR OF THE DEPARTMENT OF STATE LANDS OF THE STATE OF OREGON

In the Matter of Removal-Fill Permit Application 62981-RF
By North 8th Street, LLC

) Proposed Permit Decision and Order;
) Notice of Right to a Hearing

Short and Plain Statement of the Permitting Decision: The permit application is approved because the Department of State Lands (DSL or the Department) has determined that, when carried out in compliance with all terms and conditions outlined in the permit, the proposed removal-fill activity is consistent with the protection, conservation, and best use of the water resources of this state and will not unreasonable interfere with the paramount policy of this state to preserve the use of its waters for navigation, fishing, and recreation. *See* ORS 196.825.

I. Applicable Law:

a. ORS Chapter 196 governs removal fill permits in Oregon. The Department administers Oregon's Removal-Fill Law, Oregon Revised Statutes (ORS) 196.795 to ORS 196.990, which protects the state's wetlands and waterways. *See* ORS 196.805. Unless an exception applies, a person may not remove material from waters of this state or fill waters of this state without a permit from DSL. ORS 196.810. Waters of this state include the all-natural waterways, tidal and non-tidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, the Pacific Ocean that is in the boundaries of this state, and other water bodies. ORS 196.800; Oregon Administrative Rule (OAR) 141-085-0515; OAR 141-093-0100.

b. Specifically, the statutes that govern removal-fill permits in Oregon, including the permit application at issue in this case, generally include the following:

ORS 196.795 (Administration of State Removal or Fill Permits; General Permits);
ORS 196.800 (Definitions);
ORS 196.805 (Policy);
ORS 196.810 (Removal from Bed or Banks of Waters; Permits; Exceptions);
ORS 196.812 (Removal of Large Woody Debris);
ORS 196.815 (Permit Applications; Fees);
ORS 196.816 (Removal of Materials for Purpose of Maintaining Drainage and Protecting Agricultural Land);
ORS 196.817 (Removal or Fill General Permits);
ORS 196.818 (Wetland Delineation Reports; Fees);
ORS 196.820 (Smith Lake, Bybee Lake Prohibition);
ORS 196.825 (Permit Criteria; Consultation with Other Agencies);
ORS 196.830 (Estuarine Resource Replacement; Other Permit Conditions);
ORS 196.835 (Issuance of Permits; Procedure);
ORS 196.845(Investigations and Surveys of Location); and
ORS 196.850 (Waiver of Permit Requirement; Notice; Review).

The full text of these statutes may be viewed online at:
https://www.oregonlegislature.gov/bills_laws/ors/ors196.html.

The full text of these statutes may also be inspected in person during normal business hours at:
Oregon Department of State Lands
775 Summer St NE STE 100
Salem, OR 97301.

c. OAR Chapter 141, Division 85 implement the above statutory scheme and govern removal-fill permits in Oregon. The rules that govern removal-fill permits in Oregon, including the permit application at issue in this case, generally include the following:

Div. 85 Removal-Fill Authorizations:
OAR 141-085-0500 (General);
OAR 141-085-0506 (Policy);
OAR 141-085-0510 (Definitions);
OAR 141-085-0515 (Removal-Fill Jurisdiction by Type of Water);
OAR 141-085-0520 (Removal-Fill Jurisdiction by Volume of Material);
OAR 141-085-0525 (Measuring and Calculating Volume of Removal and Fill);
OAR 141-085-0530 (Exemptions for Certain Activities and Structures);
OAR 141-085-0534 (Exemptions for Certain Voluntary Habitat Restoration Activities):
OAR 141-085-0535 (Exemptions Specific to Agricultural Activities);
OAR 141-085-0540 (Types of Authorizations);
OAR 141-085-0545 (Fees; Amounts and Disposition);
OAR 141-085-0550 (Application Requirements for Individual Permits);
OAR 141-085-0555 (Individual Removal-Fill Permit Application Review Process);
OAR 141-085-0560 (Public Review Process for Individual Removal - Fill Permit Applications);
OAR 141-085-0565 (Department Determinations and Considerations in Evaluating Individual Permit Applications);
OAR 141-085-0575 (Permit Appeals);
OAR 141-085-0580 (Discovery in Contested Cases);
OAR 141-085-0585 (Permit Conditions, Permit Expiration Dates and Permit Transfer);
OAR 141-085-0590 (Renewal and Extension of Individual Removal-Fill Permits);
OAR 141-085-0595 (Permit Requirements and Interagency Coordination for Department of Environmental Quality Approved Remedial Action, Corrections Facilities, Solid Waste Land Fills and Energy Facilities);
OAR 141-085-0665 (Expedited Process for Industrial or Traded Sector Sites);
OAR 141-085-0676 (Emergency Authorizations);
OAR 141-085-0680 (Compensatory Mitigation (CM); Applicability and Principal Objectives);
OAR 141-085-0685 (Functions and Values Assessment);
OAR 141-085-0690 (Eligibility Requirements for CM);
OAR 141-085-0692 (Mitigation Accounting);
OAR 141-085-0694 (Special Requirement for CM);
OAR 141-085-0695 (Administrative Protection of CM Sites);
OAR 141-085-0700 (Financial Security for CM Sites);
OAR 141-085-0705 (Requirements for CM Plans);
OAR 141-085-0710 (Monitoring Requirements for CWM);
OAR 141-085-0715 (Mitigation for Temporary Impacts);
OAR 141-085-0720 (Mitigation Banking Purpose, Applicability and Policies);

OAR 141-085-0725 (Process for Establishing Mitigation Banks);
OAR 141-085-0730 (Establishment of Mitigation Credits);
OAR 141-085-0735 (Release, Use and Sale of Mitigation Credits);
OAR 141-085-0740 (Authorization for Mitigation Banks);
OAR 141-085-0745 (In-Lieu Fee Mitigation);
OAR 141-085-0750 (Payments to and Expenditures from the Oregon Removal-Fill Mitigation Fund);
OAR 141-085-0755 (Advance Mitigation); and
OAR 141-085-0768 (Advance Aquatic Resource Plans).

The full text of these rules may be viewed online at:
https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=15700.

The full text of these rules may also be inspected in person during normal business hours at:
Oregon Department of State Lands
775 Summer St NE STE 100
Salem, OR 97301.

II. **Findings of Fact and Findings of Ultimate Fact**:

1. The Department received a complete, written application from applicant on April 19, 2021, for the proposed removal-fill activity consisting of construction of a residential development and on-site wetland mitigation.
2. The Department circulated the complete application for 30-day public comment period May 25 to June 23, 2021, to parties including, affected local, state and federal agencies, affected tribal governments, adjacent landowners, and other parties requesting notification.
3. Public comments were received from Department proprietary staff, City of St. Helens Planning Department, and the Confederated Tribes of the Warm Springs and forwarded to applicant on June 24, 2021. Applicant was invited to respond to comments identified as relevant to the Removal-Fill Law: City of St. Helens Planning Department. The nature of those comments included the requirement of an updated Land Use Compatibility Statement.
4. Applicant provided satisfactory response to comments on July 9, 2021.
5. Based on all the information in the agency file in this matter, including the complete application, comments received, applicant response to comments, and the agency's own investigations, the Department concludes as to the determinations in ORS 196.825(1) and (4), OAR 141-085-0565(3), and OAR 141-093-0115:

    a. The project described in the permit application and as conditioned in the proposed permit, is consistent with the protection, conservation, and best use of the water resources of this state as specified in ORS 196.600 to 196.905;

    b. The project described in the permit application and as conditioned in the proposed permit would not interfere with the paramount policy of this state to preserve the use of its waters for navigation, fishing, and public recreation.

6. Based on all the information in the agency file in this matter, including the complete application, comments received, applicant response to comments, and the agency's own investigations, the Department concludes, as to the considerations in ORS 196.825(3), OAR 141-085-0565(4), OAR 141-093-0115.

a. There is not an identified public need for the proposed fill or removal and social, economic, or other public benefits likely to result from the proposed fill or removal.

b. There is not an identified economic cost to the public if the proposed fill or removal is not accomplished.

c. The application describes three alternatives to the project for which the fill or removal is proposed. There are no practicable alternatives with lesser impact to waters of this state.

d. The application describes three alternative sites for the proposed removal or fill. There are no practicable alternative sites with lesser impact to waters of this state.

e. The proposed project conforms to sound policies of conservation because adverse effects to the aquatic resources have been reduced to the extent practicable and the proposed permit contains operating conditions for best management practices to further minimize adverse effects. No interference with public health and safety was identified in the application evaluation and public review processes.

f. There is not a conflict with existing public uses of the affected waters or adjacent land uses identified in the application evaluation and public review processes.

g. The proposed permit is conditioned on future local approval as described in the application's Land Use Compatibility Statement.

h. The proposed fill and removal is not for streambank protection.

i. The application describes compensatory mitigation in the form of permittee-provided on-site. The mitigation is sufficient to offset anticipated spatial and function attribute losses resulting from the proposed fill or removal.

III. Conclusions of Law:

Based on the factors laid out in ORS Chapter 196 and OAR Chapter 141, Division 85, including ORS 196.825, OAR 141-085-0565, and OAR 141-093-0115, DSL should approve the permit application as conditioned in the proposed permit.

IV. Proposed Order:

The Department proposes approving the permit application with conditions and based on the factors laid out in ORS Chapter 196 and OAR Chapter 141, Division 85, including ORS 196.825, OAR 141-085-0565 and OAR 141-093-0130.

As described below, you have the right to request a hearing within 21 days. Prior to the expiration of the 21-day period, this proposed permit decision is not the final agency order on the matter, and the permittee should be aware that the decision could be changed prior to the expiration of the 21-day appeal period—either because the permittee requests a contested case hearing, or as otherwise allowed under the removal fill law. A permittee who begins work under a permit prior to issuance of a final order does so with acceptance of this risk.

V. **Hearing:**

You are entitled to request a hearing based on this Proposed Order as provided by the Oregon Administrative Procedures Act (ORS chapter 183) and the administrative rules implementing the Administrative Procedures Act, OAR Chapter 137, Division 3. *See* ORS 196.825(7); OAR 141-001-0005; OAR 141-001-0010; OAR 141-085-0575; OAR 141-093-0130.

If you want a hearing, you must file a written request for a hearing with the Department no later than 21 calendar days from the date of the permit decision. *See* ORS 196.825(7); OAR 141-085-0575; OAR 141-093-0130. If you are a corporation, partnership, limited liability company, unincorporated association, trust, or government body, you must either have an attorney licensed to practice law in Oregon submit a request for a contested case hearing on your behalf or ratify your hearing request within 28 days. See OAR 137-003-0550.

The Department has determined that due to the complexity of removal-fill permitting, a general denial of the matters or a general objection to all permit conditions in the request for a contested case proceeding does not provide sufficient information for a fair and efficient contested case and a more specific request is warranted. OAR 141-085-0575. All requests for a contested case proceeding under this section shall include a specific list of issues for the contested case proceeding. OAR 141-085-0575. The requester may amend their request to include additional issues or clarify existing issues within 15 days of the date that the case is referred to the Office of Administrative Hearings. OAR 141-085-0575.

You may mail a request for a hearing to:

Department of State Lands
Aquatic Resource Management Program
775 Summer Street NE STE 100
Salem, OR 97301.

If you request a hearing, you will be notified of the time and the place of the hearing. *See* OAR 137-003-0525. You may be represented by legal counsel at the hearing. ORS 183.417; OAR 137-003-0550. Corporations, partnerships, limited liability companies, unincorporated associations, trusts and government bodies must be represented by an attorney except as provided in OAR 137-003-0555 or as otherwise authorized by law. OAR 137-003-0550. Legal aid organizations may be able to represent you if you have limited financial resources. You will be given information on the procedures, right of representation, and other rights of parties relating to the substance and conduct of the hearing before commencement of the hearing. *See* ORS 183.413.

VI. **Jurisdiction and Authority to Hold a Hearing:**

The Department has jurisdiction over the issuance of removal-fill permits pursuant to ORS Chapter 196, and specifically, ORS 196.810. A permit decision constitutes an order in a contested case. *See* ORS 183.310(2)(a); ORS 196.825(7). If timely requested, a hearing is held as laid out in ORS 183.411 to ORS 183. 471, OAR Chapter 137, Division 3, ORS Chapter 196, and OAR Chapter 141, Division 85. ORS 196.825(7).

VII. **Final Order and Defaults**:

If a request for a hearing is not received by the Department within this 21-day period, your right to a hearing shall be waived and this Proposed Order shall become the Final Order by default. *See* ORS 196.825(7); OAR 141-085-0575; OAR 141-093-0130.

If you request a hearing and then either withdraw your hearing request, notify the Department or administrative law judge that you will not appear, or fail to appear at a scheduled hearing, the Department may issue a final order by default. *See* ORS 183.417.

If the Department issues a final order by default, it designates its file on this matter, including any materials submitted by you that relate to this matter, as the record for purposes of supporting its decision.

If you proceed to a contested case hearing, a Final Order will not be issued until after the hearing concludes. *See* ORS 183.464; OAR 141-085-0575; OAR 141-093-0130.

VIII. **Federal Servicemembers Civil Relief Act**:

Active duty servicemembers have a right to stay contested case proceedings under the federal Servicemembers Civil Relief Act. *See generally* 50 USC 3901 *et seq.* For more information, contact the Oregon State Bar (800-452-8260), the Oregon Military Department (503-584-3571), or the nearest United States Armed Forces Legal Assistance Office (http://legalassistance.law.af.mil). The Oregon Military Department does not have a toll-free telephone number.

Department of State Lands
775 Summer Street, Suite 100
Salem, OR 97301-1279
☎ 503-986-5200

Permit No.:	**62981-RF**
Permit Type:	**Removal/Fill**
Waters:	**Wetland/Unnamed Drainage**
County:	**Columbia**
Expiration Date:	**October 12, 2022**

NORTH 8TH STREET, LLC

IS AUTHORIZED IN ACCORDANCE WITH ORS 196.800 TO 196.990 TO PERFORM THE OPERATIONS DESCRIBED IN THE REFERENCED APPLICATION, SUBJECT TO THE SPECIAL CONDITIONS LISTED ON ATTACHMENT A AND TO THE FOLLOWING GENERAL CONDITIONS:

1. This permit does not authorize trespass on the lands of others. The permit holder must obtain all necessary access permits or rights-of-way before entering lands owned by another.
2. This permit does not authorize any work that is not in compliance with local zoning or other local, state, or federal regulation pertaining to the operations authorized by this permit. The permit holder is responsible for obtaining the necessary approvals and permits before proceeding under this permit.
3. All work done under this permit must comply with Oregon Administrative Rules, Chapter 340; Standards of Quality for Public Waters of Oregon. Specific water quality provisions for this project are set forth on Attachment A.
4. Violations of the terms and conditions of this permit are subject to administrative and/or legal action, which may result in revocation of the permit or damages. The permit holder is responsible for the activities of all contractors or other operators involved in work done at the site or under this permit.
5. Employees of the Department of State Lands (DSL) and all duly authorized representatives of the Director must be permitted access to the project area at all reasonable times for the purpose of inspecting work performed under this permit.
6. Any permit holder who objects to the conditions of this permit may request a hearing from the Director, in writing, within twenty-one (21) calendar days of the date this permit was issued.
7. In issuing this permit, DSL makes no representation regarding the quality or adequacy of the permitted project design, materials, construction, or maintenance, except to approve the project's design and materials, as set forth in the permit application, as satisfying the resource protection, scenic, safety, recreation, and public access requirements of ORS Chapters 196, 390, and related administrative rules.
8. Permittee must defend and hold harmless the State of Oregon, and its officers, agents and employees from any claim, suit, or action for property damage or personal injury or death arising out of the design, material, construction, or maintenance of the permitted improvements.
9. Authorization from the U.S. Army Corps of Engineers may also be required.

NOTICE: If removal is from state-owned submerged and submersible land, the permittee must comply with leasing and royalty provisions of ORS 274.530. If the project involves creation of new lands by filling on state-owned submerged or submersible lands, you must comply with ORS 274.905 to 274.940 if you want a transfer of title; public rights to such filled lands are not extinguished by issuance of this permit. This permit does not relieve the permittee of an obligation to secure appropriate leases from DSL, to conduct activities on state-owned submerged or submersible lands. Failure to comply with these requirements may result in civil or criminal liability. For more information about these requirements, please contact Department of State Lands, 503-986-5200.

Christopher Castelli, Northern Operations Manager
Aquatic Resource Management
Oregon Department of State Lands

Christopher Castelli
Digitally signed by Christopher Castelli
Date: 2021.10.12 08:38:59 -07'00'

Authorized Signature

ATTACHMENT A

Permit Holder: North 8th Street, LLC

Project Name: North 8th Street Subdivision

Special Conditions for Removal/Fill Permit No. 62981-RF

READ AND BECOME FAMILIAR WITH CONDITIONS OF YOUR PERMIT.

The project site may be inspected by the Department of State Lands (DSL) as part of our monitoring program. A copy of this permit must be available at the work site whenever authorized operations are being conducted.

1. **Responsible Party:** By signature on the application, Shawn Clark is acting as the representative of North 8th Street, LLC. By proceeding under this permit, North 8th Street, LLC agrees to comply with and fulfill all terms and conditions of this permit, unless the permit is officially transferred to another party as approved by DSL. In the event information in the application conflicts with these permit conditions, the permit conditions prevail.

2. **Authorization to Conduct Removal and/or Fill:** This permit authorizes 0.67 acres of permanent wetland impacts, 0.05 acres of permanent waterway impacts, 0.17 acres of temporary wetland impacts and 375 linear feet of temporary waterway impacts (0.05 acres) with associated fill of material in T5N R1W Section 33DA, Tax Lot 700 in Columbia County, as referenced in the application, map and drawings (See Attachment B for project location), dated September 13, 2021. This permit also authorizes removal and fill activities necessary to complete the required compensatory mitigation.

3. **Changes to the Project or Inconsistent Requirements from Other Permits:** It is the permittee's responsibility to ensure that all state, federal and local permits are consistent and compatible with the final approved project plans and the project as executed. Any changes made in project design, implementation or operating conditions to comply with conditions imposed by other permits resulting in removal-fill activity must be approved by DSL prior to implementation.

4. **DSL May Halt or Modify:** DSL retains the authority to temporarily halt or modify the project or require rectification in case of unforeseen adverse effects to aquatic resources or permit non-compliance.

5. **DSL May Modify Conditions Upon Permit Renewal:** DSL retains the authority to modify conditions upon renewal, as appropriate, pursuant to the applicable rules in effect at the time of the request for renewal or to protect waters of this state.

Pre-Construction

6. **Local Government Approval Required Before Beginning Work:** Prior to the start of construction, the permittee must obtain a Subdivision preliminary plat, Sensitive Land Permitting and a Subdivision Variance (or Variances) will be required or a Planned Development application as an alternative from the City of St. Helens.

7. **Stormwater Management Approval Required Before Beginning Work:** Prior to the start of construction, the permittee must obtain a National Pollution Discharge Elimination System (NPDES) permit from the Oregon Department of Environmental Quality (DEQ), if one is required by DEQ.

8. **Pre-construction Resource Area Fencing or Flagging:** Prior to any site grading, the boundaries of the avoided wetlands, waterways, and riparian areas adjacent to the project site must be surrounded by noticeable construction fencing or flagging. The marked areas must be maintained during construction of the project and be removed immediately upon project completion.

General Construction Conditions

9. **Water Quality Certification:** The Department of Environmental Quality (DEQ) may evaluate this project for a Clean Water Act Section 401 Water Quality Certification (WQC). If the evaluation results in issuance of a Section 401 WQC, that turbidity condition will govern any allowable turbidity exceedance and monitoring requirements.

10. **Erosion Control Methods:** The following erosion control measures (and others as appropriate) must be installed prior to construction and maintained during and after construction as appropriate, to prevent erosion and minimize movement of soil into waters of this state.

    a. All exposed soils must be stabilized during and after construction to prevent erosion and sedimentation.
    b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms, or other measures must be used to prevent movement of soil into waterways and wetlands.
    c. To prevent erosion, use of compost berms, impervious materials or other equally effective methods, must be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours.
    d. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian and wetland areas must use removable pads or mats to prevent soil compaction. However, in some wetland areas under dry summer conditions, this requirement may be waived upon approval by DSL. At project completion, disturbed areas with soil exposed by construction activities must be stabilized by mulching and native vegetative plantings/seeding. Sterile grass may be used instead of native vegetation for temporary sediment control. If soils are to remain exposed more than seven days after completion of the work, they must be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed.
    e. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch must be used so the seed does not wash away before germination and rooting.
    f. Dredged or other excavated material must be placed on upland areas having stable slopes and must be prevented from eroding back into waterways and wetlands.
    g. Erosion control measures must be inspected and maintained as necessary to ensure their continued effectiveness until soils become stabilized.
    h. All erosion control structures must be removed when the project is complete, and soils are stabilized and vegetated.

11. **Fuels, Hazardous, Toxic, and Waste Material Handling:** Petroleum products, chemicals, fresh cement, sandblasted material and chipped paint, material treated with leachable preservatives or other deleterious waste materials must not be allowed to enter waters of this state. Machinery and equipment staging, cleaning, maintenance, refueling, and fuel storage must be at least 150 feet

from OHW or HMT and wetlands to prevent contaminates from entering waters of the state. Refueling is to be confined to a designated area to prevent spillage into waters of this state. Barges must have containment system to effectively prevent petroleum products or other deleterious material from entering waters of this state. Project-related spills into waters of this state or onto land with a potential to enter waters of this state must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311.

12. **Archaeological Resources:** If any archaeological resources, artifacts or human remains are encountered during construction, all construction activity must immediately cease. The State Historic Preservation Office must be contacted at 503-986-0674. You may be contacted by a Tribal representative if it is determined by an affected Tribe that the project could affect Tribal cultural or archeological resources.

13. **Trenching in Wetlands:** During trenching or excavation, the top layer of soil must be separated from the rest of the excavated material and put back on top when the trench or pit is back-filled. If the native underlying soils are not used as bedding material and a coarser, non-native soil or other material is used, preventative measures such as clay or concrete plugs must be used so that underground hydraulic piping does not dewater the site and adjacent wetlands.

14. **Trenching in Bedrock Adjacent to Wetlands:** Where bedrock removal occurs within 25 feet from an avoided or mitigation wetland, drilling methods will be implemented instead of blasting to limit fracturing and draining the adjacent wetland.

15. **Temporary Ground Disturbances:** All temporarily disturbed areas must be returned to original ground contours at project completion.

Rectification of Temporary Impacts

16. **Site Rectification Required for Temporary Wetland Impacts:** Site rectification for temporary impacts to 0.17 acres of palustrine shrub scrub wetland and 375 linear feet of intermittent waterway must be conducted according to the rehabilitation plan in the compensatory mitigation plan. Failure to rectify the site may result in additional compensatory mitigation.

17. **Pre-construction Elevations Must Be Restored Within the Same Construction Season:** Construction activities within areas identified as temporary impact must not exceed two construction seasons and rectification of temporary impacts must be completed within 24 months of the initiation of impacts. However, if the temporary impact only requires one construction season, re-establishment of pre-construction contours must be completed within that same construction season, before the onset of fall rains.

18. **Woody Vegetation Planting Required:** Planting of native woody vegetation must be completed before the next growing season after re-establishment of the pre-construction contours.

Compensatory Mitigation

The following conditions apply to the actions proposed in the application received September 13, 2021. Compensatory mitigation will be accomplished by two methods: Payment-in-lieu and Permittee Responsible Mitigation.

Payment-in-Lieu

19. **Payment-in-Lieu Mitigation:** Wetland mitigation for the unavoidable loss of 0.29 acres of palustrine forested, slope wetland has been accomplished via payment to DSL's Removal-Fill Mitigation Fund in the amount of $54,411.39. Once the authorized fill has commenced, the payment is non-refundable.

Permittee Responsible Mitigation

20. **Personal Guarantee:** On North 8th Street LLC, Shawn Clark has provided a joint and several personal guarantee to ensure compliance with the mitigation obligation associated with this permit.

21. **Notice of Business Entity Changes Required:** The permittee must make all reasonable efforts to maintain the business entity in active status until all mitigation obligations have been satisfied. North 8th Street, LLC must notify DSL 60 days prior to dissolution, bankruptcy, or changes in the shareholders or stockholders, limited partners, members, trustees, current beneficiaries or other principals of the business.

22. **Acreage and Type:** Mitigation must be conducted according to the minimum acreages and methods described in the table below.

Acres	Credits	Cowardin, HGM Class	Method
0.53	0.35	PFO, Slope/Depressional	creation
0.03	0.02	PFO, Depressional	creation
0.02	0.01	PSS, Depressional	creation
0.58	**0.38**	**Subtotal**	**Permittee responsible**
0.29	0.29		PIL
0.87	**0.67**	**Total combined mitigation**	
Protected Buffer			
0.27		Forested, scrub shrub	

23. **Mitigation Site Location:** The mitigation must be conducted on-site as shown on Figure 3 of the mitigation plan.

24. **Timing of Mitigation Site Grading:** Mitigation site grading must be completed prior to or within the same construction season as the commencement of the wetland impacts.

25. **Timing of Mitigation Site Planting:** Mitigation site plantings must be completed during fall and winter of the same year following grading as described in the Compensatory Mitigation Plan, p.13.

26. **Signs Required:** Signs must be posted along the mitigation site perimeter stating that the area behind the sign is a protected site.

27. **Long-term Protection of the Mitigation Site - Deed Restriction:** The mitigation site (buffer and mitigation wetlands) must be protected in perpetuity by recording the approved Declaration of Covenants and Restrictions and Access Easement (Protection Instrument) on the deed of the

property. The protection instrument must be approved and signed by DSL prior to recording with Columbia County. A copy of the recorded instrument must be sent to DSL with the post-construction report.

28. **GIS Data:** A georeferenced shapefile (.shp) must be submitted to DSL prior to mitigation site release that documents the spatial extent of the mitigation sites, including buffers. The shapefile must conform to the Oregon Lambert (Intl. Feet) projection.

29. **Long-term Maintenance Required:** Long-term site maintenance is required as described in the Compensatory Mitigation Plan in the application.

Monitoring and Reporting Requirements

30. **Post-Construction Report Required:** A post-construction report demonstrating as-built conditions and discussing any variation from the approved plan must be provided to DSL within 90 days of revegetation, which shall occur during the fall, winter, or spring immediately following the completion of grading within the required planting areas. The post-construction report must include:

    a. A scaled drawing, accurate to 1-foot elevation, clearly showing the following:
        i. Finished contours of the site.
        ii. Current tax lot and right-of-way boundaries.
        iii. Photo point locations.
        iv. Permanently and temporarily impacted wetland and waterway boundaries identified separately, with square foot listed.
    b. Photos from fixed photo points. This should clearly show the site conditions, and any signage, and fencing required.
    c. A narrative that describes any deviation from the approved plan.
    d. A copy of the recorded deed restriction or conservation easement.

31. **Annual Monitoring Reports Required:** Monitoring is required until DSL has officially released the site from further monitoring. The permittee must monitor the site to determine whether the site is meeting performance standards for a minimum period of 5 growing seasons after completion of all the initial plantings. Annual monitoring reports are required and are due by December 31. Failure to submit the required monitoring report by the due date may result in an extension of the monitoring period, forfeiture of the financial security and/or enforcement action.

32. **Extension of the Monitoring Period:** The monitoring period may be extended, at the discretion of DSL, for failure of the site to meet performance standards for the final two consecutive years without corrective or remedial actions (such as irrigation, significant weed/invasive plants treatment or replanting) or when needed to evaluate corrective or remedial actions.

33. **Contents of the Annual Monitoring Report:** The annual monitoring report must include the following information:

    a. Completed Monitoring Report Cover Sheet, which includes permit number, permit holder name, monitoring date, report year, performance standards, and a determination of whether the site is meeting performance standards.
    b. Site location map(s) that clearly shows the impact site and mitigation site boundaries.

c. Site Plan that clearly shows at least the following:
   i. The area seeded, with the square foot area listed.
   ii. The area planted with trees and shrubs, with the square foot area listed.
   iii. Current tax lot and right-of-way boundaries.
   iv. Permanent monitoring plot locations that correspond to the data collected and fixed photo-points. These points should be overlaid on the as-built map.
   v. PSS, PFO, waterways, avoided and restored wetland areas, and buffer clearly identified separately and the area (square foot or acreage) of each noted.
   vi. Creation, restoration, and avoided wetland areas identified separately, with the square foot area of each listed.
d. A brief narrative that describes maintenance activities and recommendations to meet success criteria. This includes when irrigation occurred and when the above ground portion of the irrigation system was or will be removed from the site.
e. Data collected to support the conclusions related to the status of the site relative to the performance standards listed in this permit (include summary/analysis in the report and raw data in the appendix). Data should be submitted using the DSL Mitigation Monitoring Vegetation Spreadsheet or presented in a similar format as described in DSL's Routine Monitoring Guidance for Vegetation.
f. Photos from fixed photo points (include in the appendix).
g. Other information necessary or required to document compliance with the performance standards listed in this permit.
h. A post-construction functional assessment by the end of the monitoring period.

34. **Corrective Action May Be Required:** DSL retains the authority require corrective action in the event the performance standards are not accomplished at any time within the monitoring period.

Performance Standards

To be deemed successful, the mitigation areas including buffers must meet the following performance standards, as determined by DSL:

35. **Establishment of Permanent Monitoring Locations Required:** Permanent plot locations must be established during the first annual monitoring in sufficient number and locations to be representative of the site. The permanent plot locations must be clearly marked on the ground.

36. **Wetland Acreage Required:** The site will have a minimum acreage as shown in the Acreage and Type table above, as determined by a Wetland Delineation Light with data collected during spring of a year when precipitation has been near normal, vegetation has been established, and irrigation has been removed for at least two years. Acreage must be documented on a printed map and in a GIS shapefile (.shp) including attribute information for each unique wetland polygon identifying the size as well as HGM and Cowardin classes.

Shrub-dominated and Forested Wetlands

37. **Native Species Cover:** The cover of native species, as defined in the USDA Plants Database, in the herbaceous stratum is at least 60%.

38. **Invasive Species Cover:** The cover of invasive species is no more than 10%. A plant species should automatically be labeled as invasive if it appears on the current Oregon Department of

Agriculture noxious weed list, plus known problem species including *Phalaris arundinacea, Mentha pulegium, Holcus lanatus, Anthoxanthum odoratum,* and the last crop plant if it is non-native. Non-native plants should be labeled as such if they are listed as non-native on the USDA Plants Database. Beginning in Year 2 of monitoring, DSL will consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class and increases in cover or frequency from the previous monitoring period. Plants that meet this definition will be considered invasive for all successive years of monitoring. After the site has matured to the stage when desirable canopy species reach 50% cover, the cover of invasive understory species may increase but may not exceed 30%.

39. **Bare Substrate Cover:** Bare substrate represents no more than 20% cover.

40. **Woody Vegetation:** The density of woody vegetation is at least 1,600 live native plants (shrubs) and/or stems (trees) per acre OR the cover of native woody vegetation on the site is at least 50%. Native species volunteering on the site may be included, dead plants do not count, and the standard must be achieved for 2 years without irrigation.

41. **Species Diversity:** By Year 3 and thereafter, there are at least 6 different native species. To qualify, a species must have at least 5% average cover in the habitat class and occur in at least 10% of the plots sampled.

42. **Moisture Prevalence Index:** Prevalence Index total for all strata is <3.0.

Upland Buffers

43. **Native Species Cover:** The cover of native species, as defined in the USDA Plants Database, in the herbaceous stratum is at least 60%.

44. **Invasive Species Cover:** The cover of invasive species is no more than 10%. A plant species should automatically be labeled as invasive if it appears on the current Oregon Department of Agriculture noxious weed list, plus known problem species including *Phalaris arundinacea, Mentha pulegium, Holcus lanatus, Anthoxanthum odoratum,* and the last crop plant if it is non-native. Non-native plants should be labeled as such if they are listed as non-native on the USDA Plants Database. Beginning in Year 2 of monitoring, DSL will consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class and increases in cover or frequency from the previous monitoring period. Plants that meet this definition should be considered invasive for all successive years of monitoring. After the site has matured to the stage when desirable canopy species reach 50% cover, the cover of invasive understory species may increase but may not exceed 30%.

45. **Woody Vegetation:** The density of woody vegetation is at least 1,600 live native plants (shrubs) and/or stems (trees) per acre OR the cover of native woody vegetation on the site is at least 50%. Native species volunteering on the site may be included, dead plants do not count, and the standard must be achieved for 2 years without irrigation.

Financial Security

46. **Financial Security Required:** An Assignment of Deposit (financial security) in the amount of $72,769.76 has been provided to DSL to ensure completion of compensatory mitigation in

accordance with the conditions of this permit. Failure to keep the Assignment of Deposit continuously in effect through the date of full performance of all the permit holder's obligations hereunder will constitute a violation and default of this permit by permit holder. If at any time DSL is notified that the performance bond is to be canceled or not renewed, and a replacement financial security is not in place before the termination date, DSL may declare the permit holder to be in breach or default of its performance obligation under this permit. DSL may claim the full unreleased portion of the penal sum of the financial security, which the holder must pay to DSL with 20 days after delivery of written notice to the holder of such financial security of such breach of default by permit holder.

47. **Incremental Release of the Financial Security:** The permit holder must file a written request with the agency for release of portions of this financial security. Portions of the financial security may be released at the discretion of DSL, based on the following schedule:

    a. 25% release upon approval of the post-construction report, site protection instrument recorded, and first growing season monitoring report showing site constructed as approved by DSL.
    b. 25% release upon demonstration that the required acreages of wetland have been confirmed by delineation of wetland hydrology and hydrophytic vegetation, and the site is meeting all applicable performance standards after two growing seasons.
    c. 50% release upon approval of the final monitoring report and demonstrated success of the mitigation project based on the performance standards listed in this permit. All performance standards must be met for the final two consecutive years without irrigation, substantial weed or invasive species treatment, or replanting.

Monitoring and Reporting Schedule

Report	Requirements	Schedule	Financial Surety Release Schedule
Post-Construction	Post-construction report Recorded Protection Instrument	90 days after completion of revegetation	
First Annual Report	Establishment of permanent monitoring locations Vegetation performance standards	After one growing season of all proposed plantings	25% upon approval of the first annual monitoring report and post-construction report. Site protection instrument recorded.
Second Annual Report	Vegetation performance standards	After two growing seasons	
Third and Fourth Annual Reports	Vegetation performance standards Actual acreage achieved by HGM and Cowardin class[1].	After three and four growing seasons, respectively. One "light delineation" should be completed during spring of a year when precipitation has been near normal and no irrigation has been in use during the previous two years	Up to 25% of original amount upon achieving wetland acreage confirmed by delineation of wetland hydrology and wetland vegetation, and meeting all applicable performance standards

Report	Requirements	Schedule	Financial Surety Release Schedule
Fifth Annual Report (or final report if the monitoring period has been extended)	Vegetation performance standards	After five growing seasons	Final 50% release upon meeting all performance standards. The performance standards must be met for the final two consecutive years without corrective or remedial actions (such as irrigation, significant weed/invasive plants treatment or replanting)

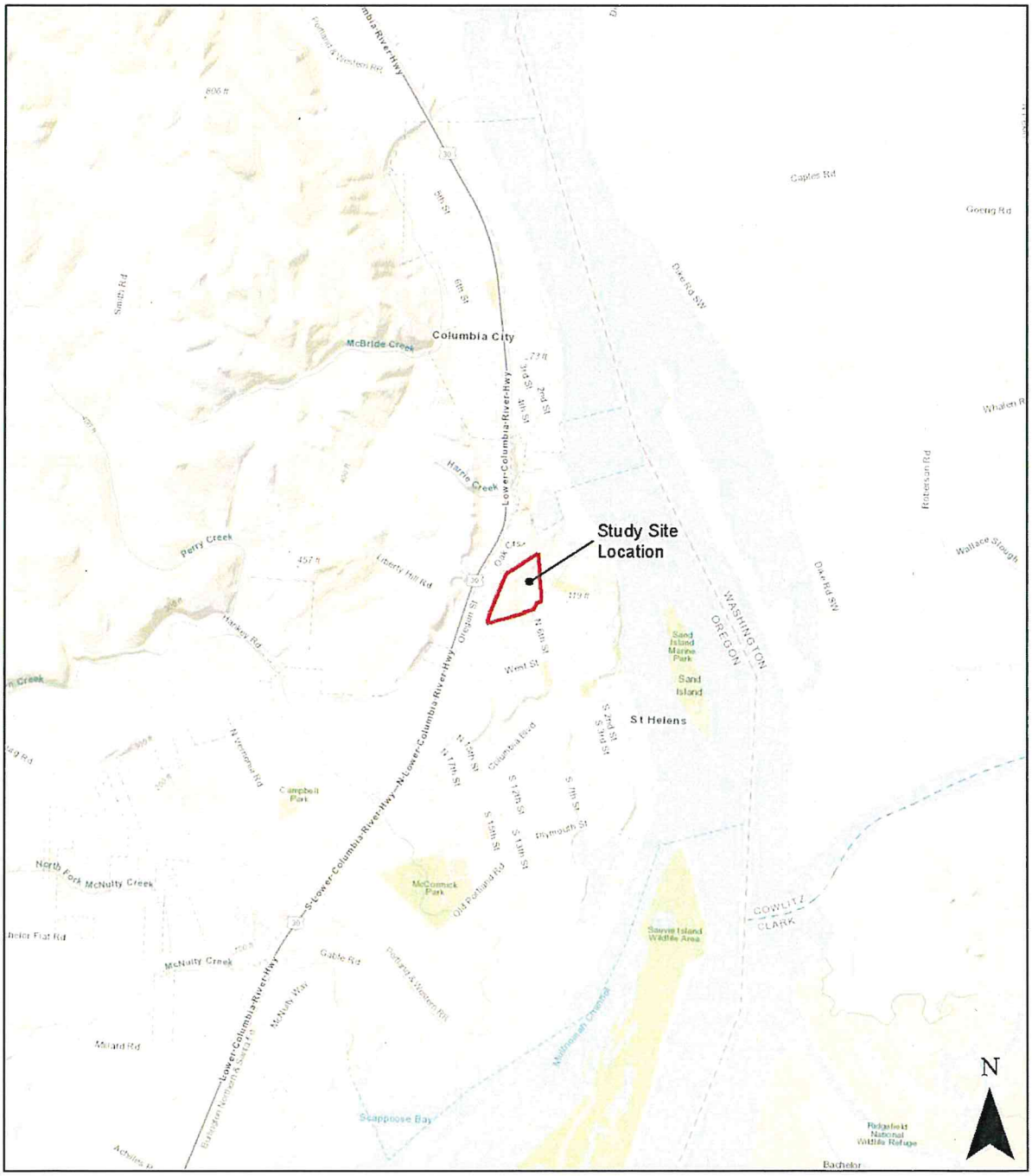
[1]These requirements may be fulfilled any time during the monitoring period but must be received by DSL no later than the fifth annual monitoring.

ATTACHMENT B

Permit Holder: North 8th Street, LLC

Project Name: North 8th Street Subdivision

Maps and Drawings for Removal/Fill Permit No. 62981-RF



Date: 4/14/2021

1 inch = 0.6 miles

Data Source: ESRI, 2018

Figure 1. Location Map

St. Helens Project Site: S&A #2668

SCHOTT & ASSOCIATES, Inc.

0 0.25 0.5 1 Miles

Date: 4/14/2021

Data Source: Goolge Earth, 2020; Columbia County GIS Dept., 2020

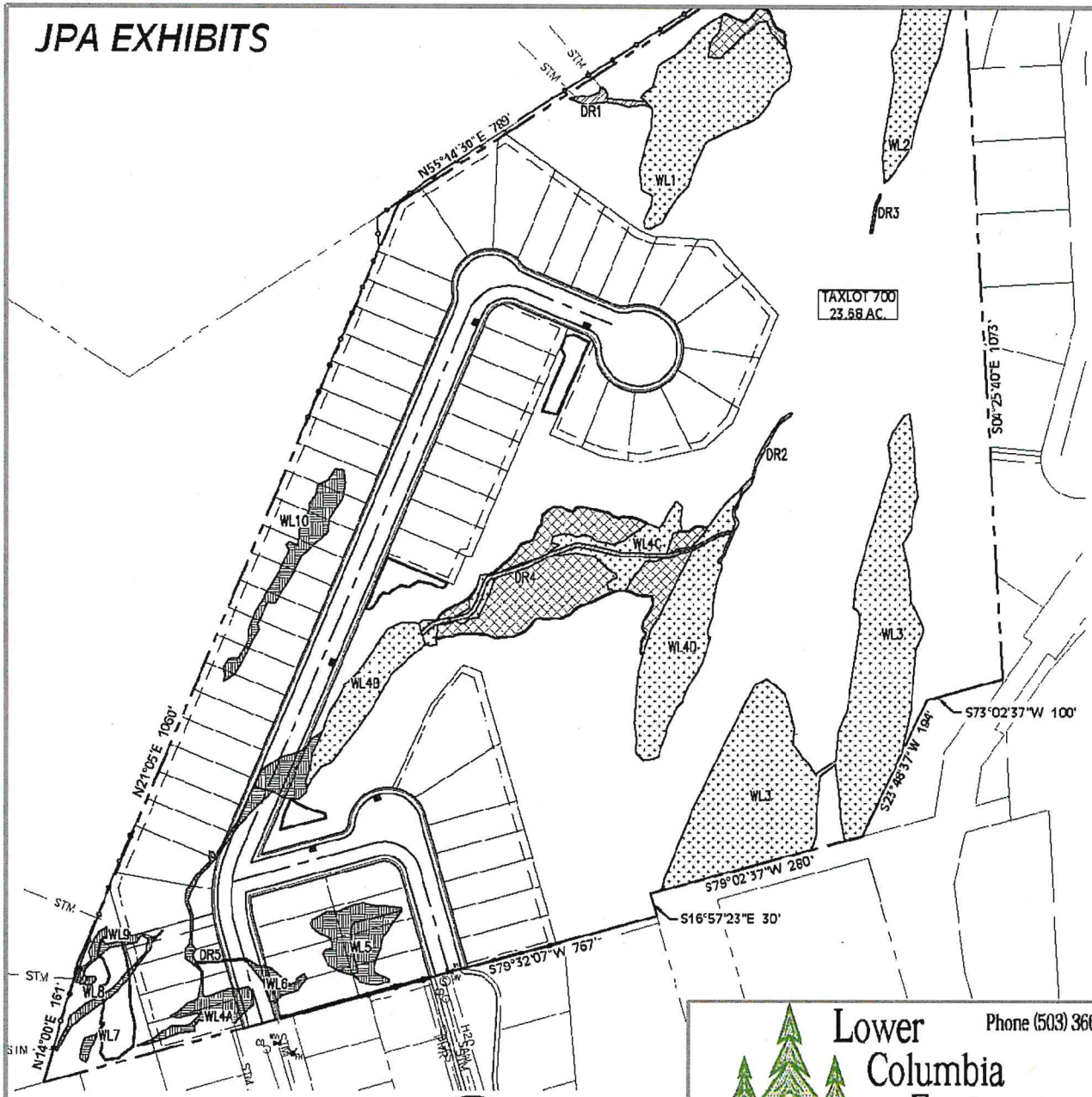
Figure 4. Recent Aerial Image - July 18, 2019

SCHOTT & ASSOCIATES, Inc.

St. Helens Project Site: S&A # 2668

0 50 100 200 Feet

JPA EXHIBITS



PLOT PLAN

SCALE: 1" = 200'-0"

NORTH

DATE: 04/12/2021
ISSUED
FOR APPROVAL

N. 8TH ST. SUBDIVISION

ST. HELENS, OREGON

PROJECT TEAM

OWNER
N. 8TH ST., LLC
SHAWN CLARK
DENA WOMACK
76220 HEATH ROAD
RAINIER, OR 97048
(312) 965-9637

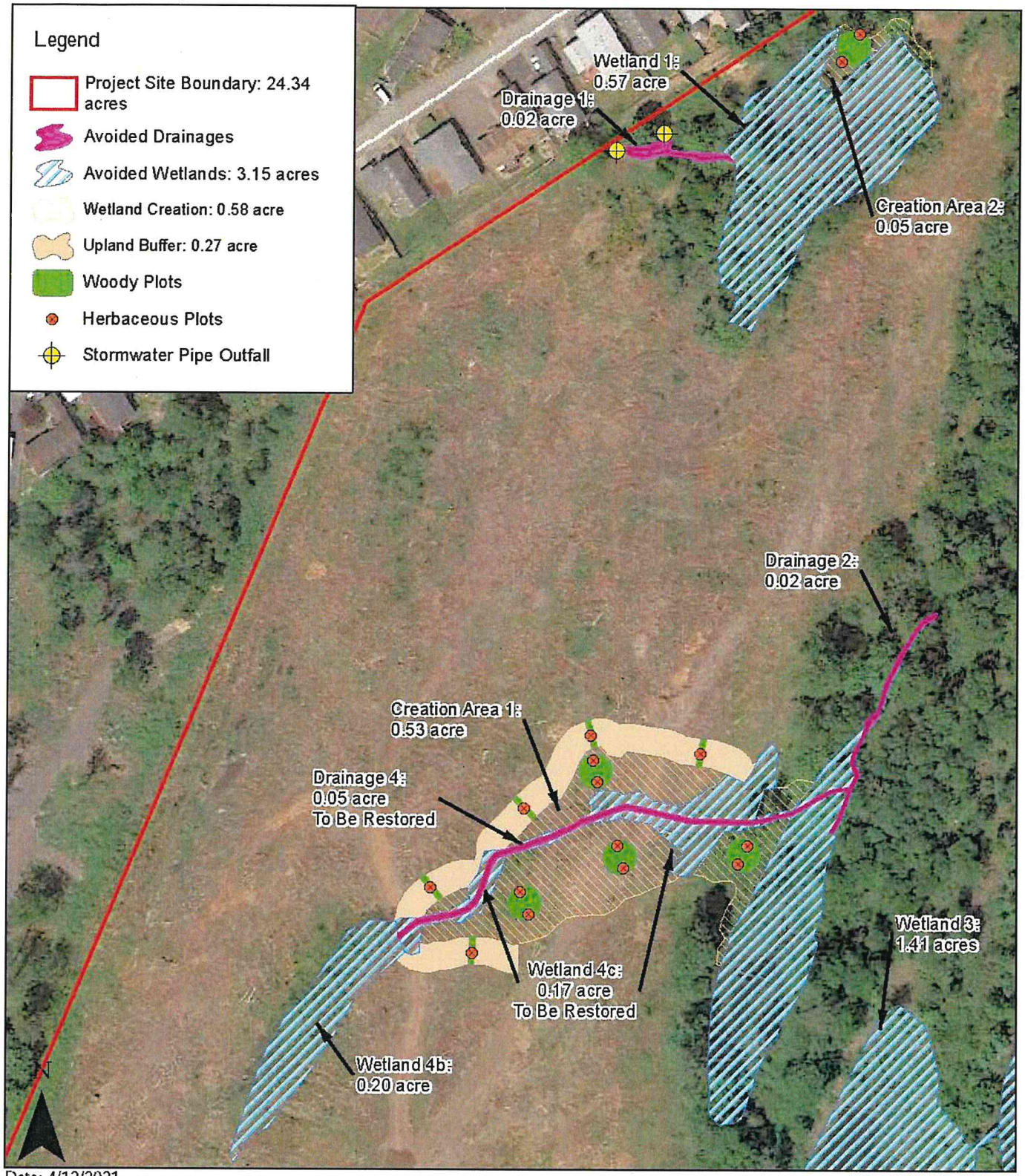
ENGINEER
LOWER COLUMBIA ENGINEERING, LLC
ANDREW NIEMI, P.E.
HANNA OPDAHL
58840 MCNULTY WAY
ST. HELENS, OR 97051
(503) 366-0399

ECOLOGIST
SCHOTT & ASSOCIATES, LLC
KIM BIAFORA
JODI REED
21018 NW HWY 99E
P.O. BOX 589
AURORA, OR 97002
(503) 678-6028

DRAWING INDEX

Lower Columbia Engineering
Phone (503) 366-0399

N. 8TH ST. SUBDIVISION	
PLOT PLAN, PROJECT TEAM, & INDEX	
SCALE: NOTED	DATE: 04/01/21
BY: HBO	A-3146-G-1



Date: 4/12/2021

Data Source: Google Earth, 2019; Columbia County GIS Dept., 2020

Figure 3. Mitigation Monitoring Map

SCHOTT & ASSOCIATES, Inc.

St. Helens Project Site: S&A # 2668

0 50 100 200 Fee

DENSITY CALCS

58640 McNulty Way
St. Helens, OR 97051
503.366.0399
lowercolumbiaengr.com

North 8th Street — Project No. 3146-01
Shawn and Dena Clark — St. Helens, Oregon
Density Calculations — January 2022

Density Calculations

Mobile Home Residential

Area (Acres)	14.9
Lot Size (SF)	5,000
Subtracted Area	
Wetlands (Acres)	1.68
Open Space Area (Acres)	0
Right-of-Way (Acres)	2.15
Net Developable Area (AC)	11.07
Maximum Number of Lots	96

R-7 (Non Deveoped Section of Property)

Area (Acres)	8.78
Lot Size (SF)	7,000
Subtracted Area	
Wetlands (Acres)	2.13
Open Space Area (Acres)	0
Right-of-Way (Acres)	0
Net Developable Area (AC)	6.65
Maximum Number of Lots	41

North 8th Street Planned Development

SENSITIVE LANDS NARRATIVE

Civil Engineer:
Lower Columbia Engineering, LLC
58640 McNulty Way
Saint Helens, OR 97051
Phone: (503) 366-0399
Engineer: Andrew Niemi
Email: andrew@lowercolumbiaengr.com
Contact: Chase Berg
Email: chase@lowercolumbiaengr.com

Client:
North 8th Street, LLC.
76220 Heath Road
Rainier, Oregon 97048
Contact: Shawn Clark
Phone: (312) 965-9637

Project Type: Residential
Project Location: St. Helens, Oregon

January 2022

LCE #3146-01

Table of Contents

Project Narrative

A. Existing Site Conditions

The site is located on tax lot 700 of Columbia County tax map 05013300. The project site is located east of the intersection of N. Columbia River Highway 30 and Deer Island Road. The historic land use has been quarry related as much of the site is underlain by shallow basalt. Due to recent logging activity, the site is now clear of trees and includes grasses and native vegetation that has grown in place of the trees.

B. Site Concept

The proposed development will be a 66-lot planned development and will have no direct impacts to surrounding wetlands. A buffer of 75 feet has been included around the type 1 wetlands known as D-10 and D-11. These wetland buffers will have a limited encroachment from the proposed sewer line. The development will avoid adverse effects to the wetlands by using natural infiltration in storm water facilities to clean the runoff. All graded slopes will be replanted with native plants to assist in minimizing sediment runoff into the wetlands.

The project includes the creation of new wetlands, which shall be given a 25-foot buffer with minor encroachment from the necessary grading and a proposed foot path. The areas within the buffer of D-10 and D-11, which have been logged will be replanted to mitigate direct impacts to those wetlands. A total of six trees of 6" or greater DBH were logged within the buffer and will be replanted. A list of tree species and further details can be found in Schott and Associates report located in Attachment A.

C. Grading Plan

The proposed grading concept is to mimic pre-development conditions. The site will generally slope from south to north with an average slope of 2%. Outside of the proposed site development, the lot generally slopes from south to north, with slopes of 1% longitudinally and up to 60% along banks. The disturbed banks will be replanted with native vegetation to limit risk of erosion. A majority of this grading is taking place in the middle of the property and will not create any offsite impacts.

Cut and fill calculations result in 5,133 cubic yards cut and 90,083 cubic yards of fill. Lower Columbia Engineering came to this result by creating a proposed surface from Westlake Consultants topographic survey then taking the difference between it and the existing Westlake Consultants topographic surface in AutoCAD Civil 3D. The results were verified by hand calculations.

D. Landscape Plan

The proposed landscaping concept is to provide street trees at a spacing of 20 feet where practical along both North 8th Street and North 9th Street. This design will also utilize the existing wetlands and created wetlands. The created wetlands will be hydrologically connected to the stormwater system by discharge treated runoff to the surrounding area. The created wetlands will be featured along a walking path to the vegetated open space.

The open space will be surrounded by native trees and shrubs along its edges. The middle of the open space will feature grass that can be used recreationally by the North 8th Street Planned Development residents. This mix of functional space serves purpose both for community and habitat, allowing for a more cohesive land use.

The soils on site are Inceptisols. These soils are often organic matter and clay limited. While that limits plant production a majority of native plants and trees will establish on these soils. A UC Davis Soil Web Survey report is located in Attachment B.

The erosion and sediment control plan uses standard practices such as wattles, sediment fencing, and slope matting. The sediment fence and wattles will be implemented in areas that are susceptible to erosion to prevent any material from moving onto adjacent lands, roadways, or wetlands. The slope matting will be implemented on steep slopes during construction to limit risk of sediment movement. The plan post-construction will be to plant disturbed slopes in order to lower the risk of future erosion.

Chapter 17.44 SHMC, Sensitive Lands

[...]

Chapter 17.44.040 SHMC, Approval Standards

Steep Slopes

A. The extent and nature of the proposed landform alteration or development will not create site disturbances to an extent greater than that required for the use;

Response: The extent of grading is limited to the proposed development. A slope of 2:1 was used to limit disturbance to natural areas where proposed elevations connect to existing grades. In areas where wetlands are directly impacted from this development, slopes greater than 2:1 were used, but are not in excess of 1:1.

B. The proposed landform alteration or development will not result in erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards to life or property;

Response: The disturbed areas will be planted to limit risk of erosion. There is no stream on site however the significant wetlands D-10 and D-11 will not be impacted by landform alteration. The site is primarily located on shallow soils and bedrock. All fill materials will be verified by a licensed engineer. The proposed landform alteration will not have adverse effects or be hazardous to life on and off site. The development will follow all erosion and sediment control measures per the 1200C plans during construction. After construction all disturbed areas will be replanted.

C. The structures are appropriately sited and designed to ensure structural stability and proper drainage of foundation and crawl space areas for development with any of the following soil conditions: wet/high-water table; high shrink-swell capability; compressible/organic; and shallow depth-to-bedrock; and

Response: All proposed structures have sufficient drainage away from the structures. The foundations and structural stability have not been completed as part of this phase; this will need to be designed by others.

D. *Where natural vegetation has been removed due to landform alteration or development, the areas not covered by structures or impervious surfaces will be replanted to prevent erosion in accordance with Chapter 17.72 SHMC.*

Response: The landscaping plan shows the proposed planting that will be placed on all disturbed areas.

Drainageways

After further investigation, drainages 3 and 4 have been deemed to be drainageways. Both of these drainages receive over 5 cubic feet per second of flow during the 25-year event. The drainages flow into the Columbia River via sheet flow to a channel offsite, through a culvert below Madrona Court and into Dalton Lake before exiting into the Columbia River via Harrie Creek.

A. *The extent and nature of the proposed landform alteration or development will not create site disturbances to the extent greater than that required for the use;*

Response: The extent of grading is limited to the proposed development. A slope of 2:1 was used to limit disturbance to natural areas where proposed elevations connect to existing grade. In areas where wetlands are directly impacted from this development, slopes greater than 2:1 were used, but are not in excess of 1:1. Additional wetlands are designed to maintain existing drainage patterns.

B. *The proposed landform alteration or development will not result in erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards to life or property;*

Response: The disturbed areas will be planted to limit risk of erosion. There is no stream on site however the significant wetlands D-10 and D-11 will not be impacted by landform alteration. The site is primarily located on bedrock and all fill materials will be verified by a licensed engineer. The proposed landform alteration will not have adverse effects or be hazardous to life on and off site. The new vegetation will help to lower the risk of erosion, sedimentation, and ground instability.

C. *The water flow capacity of the drainageway is not decreased;*

Response: Drainage patterns and stormwater swales are designed to mimic existing conditions. Additionally, the pre vs post construction flow rates are designed to be similar in order to keep all existing wetlands healthy.

D. *Where natural vegetation has been removed due to landform alteration or development, the areas not covered by structures or impervious surfaces will be replanted to prevent erosion in accordance with Chapter 17.72 SHMC;*

Response: Sheets L-1: L-3 show a proposed planting plan to occur on all disturbed areas. Temporary and permanent vegetation will be incorporated.

E. *The drainageway will be replaced by a public facility of adequate size to accommodate maximum flow in accordance with the adopted 1999 Master Drainage Plan; and*

Response: Proposed drainage patters are designed to match existing conditions. Public stormwater facilities are designed to provide proper detention, treatment, and conveyance prior to entering the existing wetlands on-site.

F. *The necessary U.S. Army Corps of Engineers and State of Oregon Land Board, Division of State Lands approvals shall be obtained.*

Response: A JPA (Joint Permit Application) has been submitted and has been approved by DSL in the attached "Removal-Fill Permit Application 62981-RF". Additionally, the permit from the U.S. Army Corps of Engineers has also been issued.

Logging Impacts

The areas within the buffer of wetlands D-10 and D-11, which have been logged will be replanted to mitigate direct impacts to those wetlands. A total of six trees of 6" or greater DBH were logged within the buffer and will be replanted. A list of tree species and further details can be found in Schott and Associates Environmental Assessment located in Attachment A. Additional tree removal for the new sanitary line and pedestrian path can be seen on sheet L-1 and more information can be found within the Planned Development Narrative on pages 15-20.

Attachment A: Schott and Associates Environmental Assessment

SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists
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July 26, 2019

Jacob Graichen, AICP, City Planner
City of St. Helens
265 Strand Street
St. Helens, OR 97051

Re: Environmental assessment for the proposed project site located at North 8th Street, St. Helens, OR

CC: Shawn Clark, North 8th Street, LLC
Kenneth Sandblast, Westlake Consulting, Inc

Dear Mr. Graichen,

Schott & Associates was contracted to conduct an environmental assessment on the 24.34-acre project site as required by the City of St. Helens Municipal Code (SHMC) Chapters 17.40 and 17.132 (and per phone and email discussion with you on May 2, 2019). Regulations of Chapter 17.40 applies to significant wetlands, riparian corridors and associated 'protection zones', or development setbacks, as designated by the City; Chapter 17.132 applies to tree removal requirements for project sites with 10 or more trees or trees over 24" diameter at breast height (dbh). According to the City, the project site contains significant wetlands and associated 75-foot-wide protection zones.

A mobile home development is proposed within the project site and permanent impacts to the protection zone, including tree removal are expected. This site was recently logged under the Oregon Forest Practices Act in preparation for the proposed development. This memorandum is intended only to document the existing condition of wetland protection zones and describe any potential encroachments which resulted from the logging of the site. The full environmental assessment report, which will present and evaluate proposed project impacts on City-regulated sensitive lands in detail as well as propose a mitigation plan and satisfy any further requirements of Sections17.40.065 and 17.132.025 of the SHMC, is intended to be submitted to the City as part of the land use approval process.

Site Description

The project site encompasses tax lot 700 and portions of 1900, 4700, and 4800 located at North 8th Street in St. Helens, Columbia County, Oregon (T5N, R1W, Section 33). The site is vacant and much of it has been recently logged under the Oregon Forest Practices Act; several logging roads criss-cross the site. The unlogged portion of the site in the east incudes the northern portion of a pond surrounded by mixed Oregon ash (*Fraxinus latifolia)*, Oregon white oak (*Quercus garryana*), and Douglas fir (*Pseudotsuga menziesii*) forest; the unlogged portion in the north featured mixed oak and ash forest. The project site is zoned for moderate-density residential in the eastern portion and mobile home

residential in the western portion (City of St. Helens zoning designations R-7 and MHR; http://webmap.co.columbia.or.us/geomoose2//). St. Helens Local Wetland Inventory (LWI) identifies two wetlands occurring within the project site (Appendix B): D-10 and D-11. Both wetlands are designated Type I significant wetlands according to SHMC 17.40.15 and are protected by 75-foot-wide protection zones.

Schott and Associates conducted wetland delineation on the project site in January 2019 (#WD2019-0281; pending review by the Oregon Department of State Lands). Four wetlands, one pond, two drainages, and one ditch were identified within the site (shown in the attached Figure 1), not all of which may be jurisdictional. The pond was found to correspond with Wetlands D-10 and D-11 as shown in the City LWI map; Wetland 2 was found to correspond with the northern portion of D-11. No hydrological connection was found between the pond (southern portion of D-11) and Wetland 2 (northern portion of D-11) during delineation fieldwork. Jacob Graichen confirmed that the pond and Wetland 2 would be subject to City sensitive lands regulation, designated as Type I wetlands, and that Wetlands 1, 3, and 4 were not subject to sensitive land regulation provided they were not hydrologically connected to the pond (Appendix C; J. Graichen, personal communication, May 3, 2019).

Methods

S&A conducted wetland delineation in February 2019 according to methods described in the *1987 Manual* and the *Regional Supplement to the Corps of Engineers Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* to determine boundaries of wetlands subject to state and federal jurisdiction. Onsite streams or ditches were delineated via the ordinary high-water mark (OHWM) as indicated by top of bank, wrack or scour lines, change in vegetation communities, or gage elevation where applicable.

Protection zones were assessed in May 2019. 75-foot protection zones, which apply to the pond and Wetland 2, were measured in the field, perpendicular to the delineated edge of the resource at multiple locations along the boundary. Vegetation community composition and structure were also assessed at these locations. The protection zones were inspected for evidence of tree removal. Trees removed within the protection zones that were estimated to be 6" or greater in dbh, as evidenced by evaluation of remaining stumps, were recorded with GPS, measured, and identified to species level as practicable. Onsite topography was mapped using 2-foot contours derived from National Elevation Data (NED) sourced from the U.S. Geological Survey (USGS 2013).

Representative ground level photographs were also collected to document site conditions and are included as Appendix A.

Wetland and protection zone boundary, sample plot, removed trees, and photo point locations were recorded with a handheld Trimble GPS unit capable of sub-meter accuracy following differential correction with Pathfinder Office desktop software. These data were converted to ESRI shapefile and mapped using ArcMap 10.6 desktop software. The extent of protection zones not physically measured were extrapolated using topography and AcrMap 10.6 buffer functions.

Results

Wetlands and Waters

Four wetlands, one pond, two drainages, and one ditch were identified within the study site: wetland area totaled 1.43 acres (62,262 ft.²), pond area totaled 1.41 acres (61,530 ft.²), drainage corridor area totaled 0.04 acre (1,538 ft.²), and ditch area totaled 90 ft.² (Figure 1).

Wetland 1: Wetland 1 was located in the north-central portion of the site and covered 0.41 acre. It consisted of a large topographical depression that was filled with one or more feet of water at the time of fieldwork. The banks of the depression were generally steep and rocky, particularly on the northwest side where the bank was formed by the fill slope of the existing mobile home development to the northwest. The wetland was sustained by Drainage 1, which routed stormwater runoff from the mobile home development via 2 stormwater pipes into the wetland, along with precipitation perched above the rocky substrate and impounded by the local topography. While the wetland was completely inundated and mostly unvegetated during dormant season fieldwork, it was assumed that the area draws down to some extent and vegetates during the growing season. It was assessed as a depressional closed, nonpermanent HGM class with a Cowardin classification of seasonally flooded, palustrine emergent (PEMC).

Vegetation within the wetland generally occurred as a thin fringe along the banks of the depression and included Oregon ash trees with an understory of spiraea (*Spiraea douglasii*; FACW), Nootka rose (*Rosa nutkana*; FAC), and reed canarygrass (*Phalaris arundinacea*; FACW). Much of the area surrounding the wetland was logged, though a narrow buffer of oak/bigleaf maple forest was present.

Wetland 1 was not identified by either the 1999 LWI or the 2018 NWI and does not have a surface connection to other wetlands or waters aside from the stormwater drainage. It is the investigator's estimation that the wetland was artificially created by the impoundment of stormwater runoff issued over time from adjacent development. This wetland is not regarded as significant according to the City and is not subject to Chapter 17.40 of the SHMC (Appendix C).

Wetland 2: Wetland 2 was located in the northeastern portion of the site, occupying 0.57 acres and extending offsite to the northeast. The wetland was contained within a very deep and steep ridge-swale feature and was bordered by nearly sheer, forested slopes underlain by rock on the east and west. It was a depressional feature similar to Wetland 1, containing one or more feet of surface water and featuring vegetation mainly along the banks. The vegetation community was the same as Wetland 1 with the exception of the presence of occasional slough sedge (*Carex obnupta*; OBL) stands occurring within the inundated area. No inlet or outlet was identified, and it was assumed that wetland hydrology was sustained by the perching of impounded precipitation and runoff above a restrictive rock layer. The wetland was assessed as a depressional closed nonpermanent HGM class with a Cowardin class of PEMC.

Wetland 2 is encompassed by Wetland D-11in the St. Helens LWI and is listed as a Type I significant wetland in Section 17.44.015 of the SHMC. It is assumed a 75-foot-wide protection zone applies to this wetland as measured from the delineated edge.

Wetland 3: Wetland 3 was another depressional feature contained within a broad swale located in the south-central portion of the site and covering 0.17 acres. It featured one or more feet of surface water and was bound by moderately steep, rocky slopes; the wetland and the surrounding area had been completely logged. While there was no natural inlet or outlet present, a logging road running across the north end of the wetland had partially breached the depression and water was observed flowing across the road and further northeast, downslope. Wetland hydrology was assumed a function of the existing restrictive rocky substrate perching impounded surface runoff along with precipitation; a culvert outfall was observed offsite to the west, upslope from the wetland, which is assumed the primary hydrology source. However, there was no water flowing from the culvert at the time of the site visit, and there was no defined channel below the culvert. The wetland was assessed as a depressional closed nonpermanent HGM class with a Cowardin class of PEMC. The wetland was well vegetated throughout and featured spiraea, reed canarygrass, and slough sedge, with a fringe of Oregon ash saplings.

Wetland 3 was not identified by either the 1999 LWI or the 2018 NWI and does not have a surface water connection to other waters or wetlands. It is the investigator's estimation that the wetland was artificially created by the impoundment of stormwater runoff issued over time from adjacent development. This wetland is not regarded as significant according to the City and is not subject to Chapter 17.40 of the SHMC (Appendix C).

Wetland 4: Wetland 4 was also a depressional feature contained in a broad swale located in the southeastern portion of the site, covering 0.28 acres. It featured one or more feet of surface water and was bound by a steep, rocky ridge to the east, and gentler slopes to the south and west. The north end was partially blocked by what appeared to be an old debris dam, which had been partially breached, possibly due to the recent logging activity, and was leaking surface water north-northeast, supporting wetland formation and eventually the channel of Drainage 2. Wetland hydrology was assumed sustained by the impoundment of perched precipitation and runoff. The wetland was assessed as a depressional outflow HGM class with a Cowardin class of PEMC. The wetland was vegetated primarily along the banks of the depression and included a narrow fringe of Oregon ash, spiraea, reed canarygrass, and slough sedge.

Wetland 4 was not identified by either the 1999 LWI or the 2018 NWI and does not have a surface water connection to other waters or wetlands. It is located near Pond 1 but separated by a steep embankment and abandoned road grade that is currently vegetated by upland oak forest. Wetland 4 drains north-northeast, parallel to the pond. There was no indication of any hydrological connection between Wetland 4 and the pond. Based on this assertion, the wetland is not regarded as significant according to the City and is not subject to Chapter 17.40 of the SHMC (Appendix C)

Pond 1: Pond 1 was located at the southeastern section of the site and extended offsite to the south; 1.41 acres occurred within the study site boundaries. The pond was several feet deep and bound by steep, rocky forested ridges to the east and west. It featured a narrow fringe of wetland vegetation below the OHWM including Oregon ash, spiraea, Nootka rose, slough sedge, and reed canarygrass. What appeared to be a remnant earthen and riprap levee nearly bisected the pond east-west. The levee

had apparently been breached at its north end at some point, creating a narrow channel connecting the eastern and western portions of the pond. At the time of fieldwork, a beaver dam was located over this breach, though surface water was still allowed to flow east through it. It is unknown if the pond is a natural feature or has been artificially impounded. It did appear in aerial photos as old as 1936. The pond was assessed as a depressional closed permanent HGM class and with a Cowardin class of permanently flooded, palustrine rock bottom (PRBH).

Pond 1 corresponds with Wetland D-10 and the southern portion of Wetland D-11 in the St. Helens LWI which are listed a Type I significant wetlands in Section 17.44.015 of the SHMC. A 75-foot-wide protection zone applies to the pond as measured from the delineated edge.

Drainage 1: Drainage 1 originated from stormwater runoff discharged from the mobile home development along the northwestern boundary of the site. Water flowed east through a 3-5-foot-wide, mostly defined channel into Wetland 1 and covered 0.02 acre (793 ft.^{2}). Several inches of flowing surface water was present at the time of fieldwork, though the drainage is likely dry during the summer months.

Drainage 1 was not identified by either the 1999 LWI or the 2018 NWI and does not have a surface water connection to other significant waters or wetlands. It is the investigator's estimation that drainage is artificially created, does not appear to have relatively permanent waters, and does not support fish habitat. This drainage is not regarded as significant according to the City and is not subject to Chapter 17.40 of the SHMC (Appendix C).

Drainage 2: Drainage 2 originated from Wetland 4, fed by a leaking debris dam, and flowed north. The channel was approximately 2-5 feet wide, covering 0.02 acre (745 ft.^{2}), and featured a few inches of flowing surface water at the time of fieldwork. The drainage appeared to be newly formed, featuring a defined channel for approximately 200 feet before it continued as sheet flow through upland forest, ending in a small, shallow depression in the vicinity of sample plot 12. The drainage may have formed due to disturbance from the recent logging activity. It is assumed that this drainage is dry in the summer months.

Drainage 1 was not identified by either the 1999 LWI or the 2018 NWI and does not have a surface water connection to other significant waters or wetlands. It is the investigator's estimation that drainage is artificially created, does not appear to have relatively permanent waters, and does not support fish habitat. This drainage is not regarded as significant according to the City and is not subject to Chapter 17.40 of the SHMC (Appendix C).

Ditch 1: A segment of ditch located in the northernmost corner of the study site occupying 90 ft.^{2}, this ditch featured no surface water and was lined with rock. The ditch was apparently excavated from upland, surrounding by Douglas fir forest to the south, and residential development to the north. It drains the adjacent development northwest offsite through a culvert under Madrona Court. The ditch was vegetated by reed canarygrass and Himalayan blackberry. Sample plot excavation was precluded by the presence of the rock.

Ditch 1 was not identified by either the 1999 LWI or the 2018 NWI and does not have a surface water connection to other significant waters or wetlands. It is the investigator's estimation that the ditch is artificially created, does not appear to have relatively permanent waters, and does not support fish habitat. This ditch is not regarded as significant according to the City and is not subject to Chapter 17.40 of the SHMC (Appendix C).

Protection Zones

The 75-foot wide protection zones associated with the wetlands/water resources subject to Chapter 17.40 of the SHMC are shown in the attached Figure 2. Photographs of the protection zones are included in Appendix A.

Pond 1/D-10; D-11

The 75-foot protection zone surrounding Pond 1/D-10; D-11 within the project area consisted of moderately steep to very steep ravine sideslopes featuring three different second-growth forest communities. The community within the southwestern portion consisted of a canopy of Oregon oak and bigleaf maple interspersed with Douglas-fir, with a brushy understory dominated by Himalayan blackberry, Oregon grape, snowberry, English ivy, and false solomon's seal (*Maianthemum racemosum*), and scattered dense thickets of salmonberry (*Rubus spectabilis*). The community within the northwestern portion consisted of a canopy of primarily Oregon oak with some bigleaf maple and Oregon ash, and an understory dominated by poison oak (*Toxicodendron diversilobum*), Oregon grape, oceanspray (*Holodiscus discolor*), snowberry, and grasses such as brome (*Bromus* spp.), sweet vernalgrass (*Anthoxanthum odoratum*), and orchardgrass (*Dactylis glomerata*). The community within the eastern portion consisted of Douglas-fir-bigleaf maple forest with an understory composed largely of western swordfern (*Polystichum munitum*), Oregon grape, and salal (*Gaultheria shallon*). Topographical slopes in the southwestern and northwestern portions of the protection zone range from 10-20%, while slopes in the eastern portion range from 20-40%.

Encroachments

Minor encroachments from site logging were noted along the southwest margin of the protection zone of Pond 1, including the removal of a cluster of five trees (one double-stemmed), defined by Chapter 17.132 of the SHMC as woody species 6" or greater in dbh, along with some shrub removal. Trees over 6" in dbh that were removed are listed in Table 1 below. Figure 2 shows the tree removal locations and Appendix A, photo point 1 shows the encroachment area.

Wetland 2/D-11

The 75-foot protection zone surrounding Wetland 2/D-11 within the project area consisted generally of very steep ravine sideslopes featuring two different second-growth forest communities. The community within the eastern and western portions consisted of an Oregon oak and bigleaf maple canopy with an understory dominated by western oak fern (*Gymnocarpium dryopteris*) and snowberry along with poison oak, Oregon grape, and clustered rose (*Rosa pisocarpa*). The community within the northern portion featured Oregon ash with a brushy understory of hazelnut (*Corylus cornuta*), Himalayan blackberry, and snowberry, and a sparse herb layer composed of stinging nettle (*Urtica dioica*), herb-Robert (*Geranium robertianum*), and jewelweed (*Impatiens capensis*). In this area, the

protection zone extended approximately 25 feet into the residential yard associated with the home on tax lot 4700. Topographical slopes of the protection zone ranged from 25-45%.

Encroachments
Minor encroachments from site logging were noted along the southwest margin of the protection zone of Wetland 2, including the removal of one tree 6" or greater in dbh (listed in Table 1 below) along with some shrub removal. Figure 2 shows the tree removal locations and Appendix A, photo point 4 shows the encroachment area.

Table 1. Trees removed 6" or greater in dbh

Species	Approx. DBH (inches)	Protection Zone
Douglas-fir	12	Pond 1
Douglas-fir	20	Pond 1
Douglas-fir	10	Pond 1
Douglas-fir	18	Pond 1
Bigleaf maple (double-stemmed)	20 & 12	Pond 1
Oregon white oak	6	Wetland 2

D-10

D-11

Conclusion

In conclusion, the proposed project site contains two water resources subject to regulation under Chapter 17.40 of the SHMC. Six trees 6" or greater in dbh were removed from the protection zones of the regulated water sources during logging of the site under the Oregon Forest Practices Act. The encroachments into the protection zones must be mitigated for to the satisfaction of City ordinance. Tree removal is also subject to the requirements of Chapter 17.132. While existing encroachments are below the threshold of 10 or more trees or trees over 24" dbh, further tree removal may be necessary to complete construction of the project.

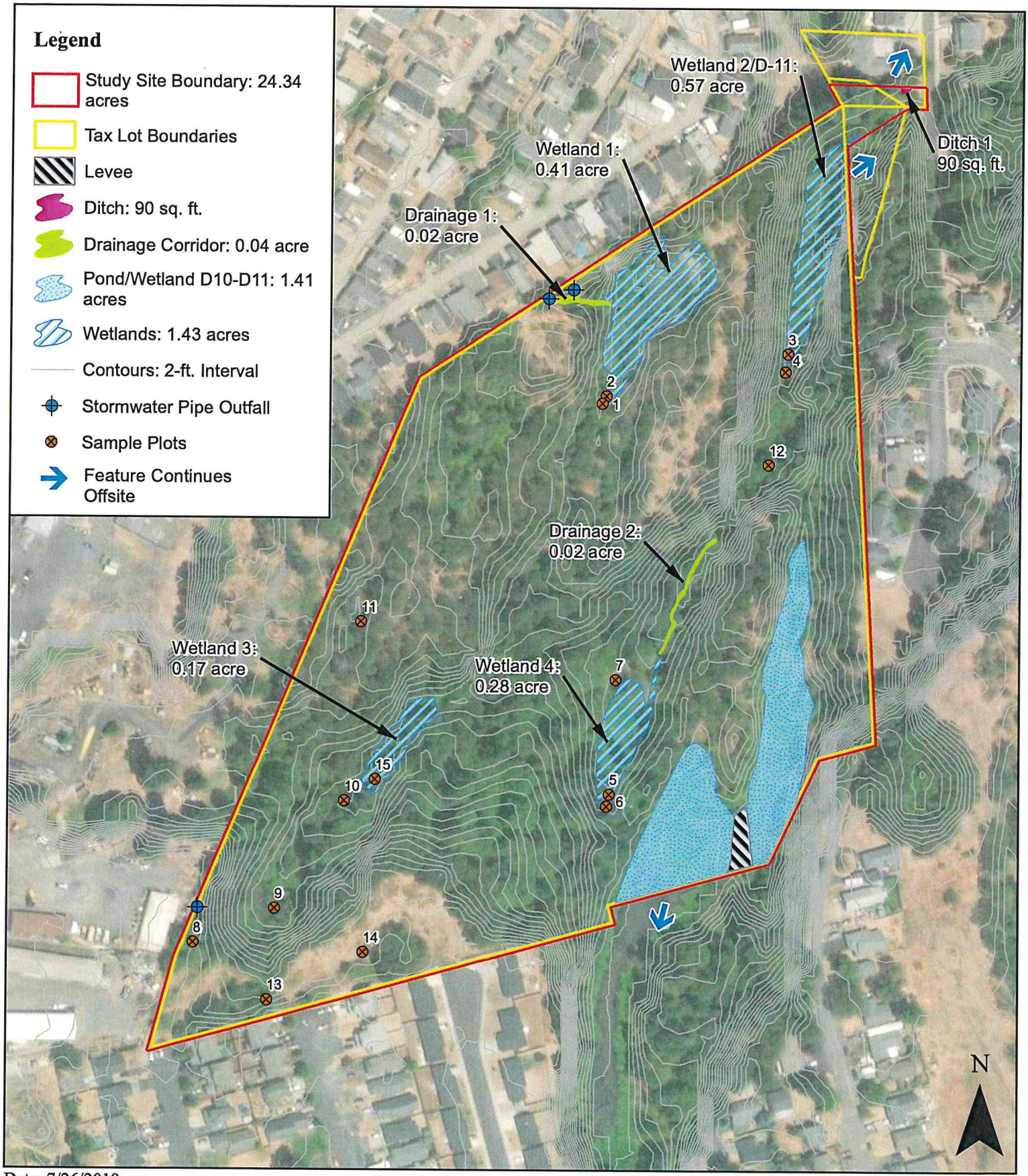
A full environmental assessment report will be prepared according to Chapter 17.40, including detailed analysis of project impacts to sensitive lands, a compensatory mitigation plan, and a tree plan according to Chapter 17.132 as necessary. Materials will be submitted to the City as part of the upcoming land use approval process.

Please let me know if you have any questions regarding the site assessment methods or results. I look forward to your input and appreciate any guidance you may have on the City environmental assessment process.

Sincerely,

Kim Biafora, Wetland Ecologist & GIS Analyst
kim@schottandassociates.com

Attachments: Figure 1: Preliminary Wetland Delineation Map
Figure 2: Significant Wetlands, Protection Zones, and Tree Removal
Appendix A: Site Photographs
Appendix B: City of St. Helens Local Wetland Inventory
Appendix C: Email Correspondence with Jacob Graichen, City Planner



Date: 7/26/2019

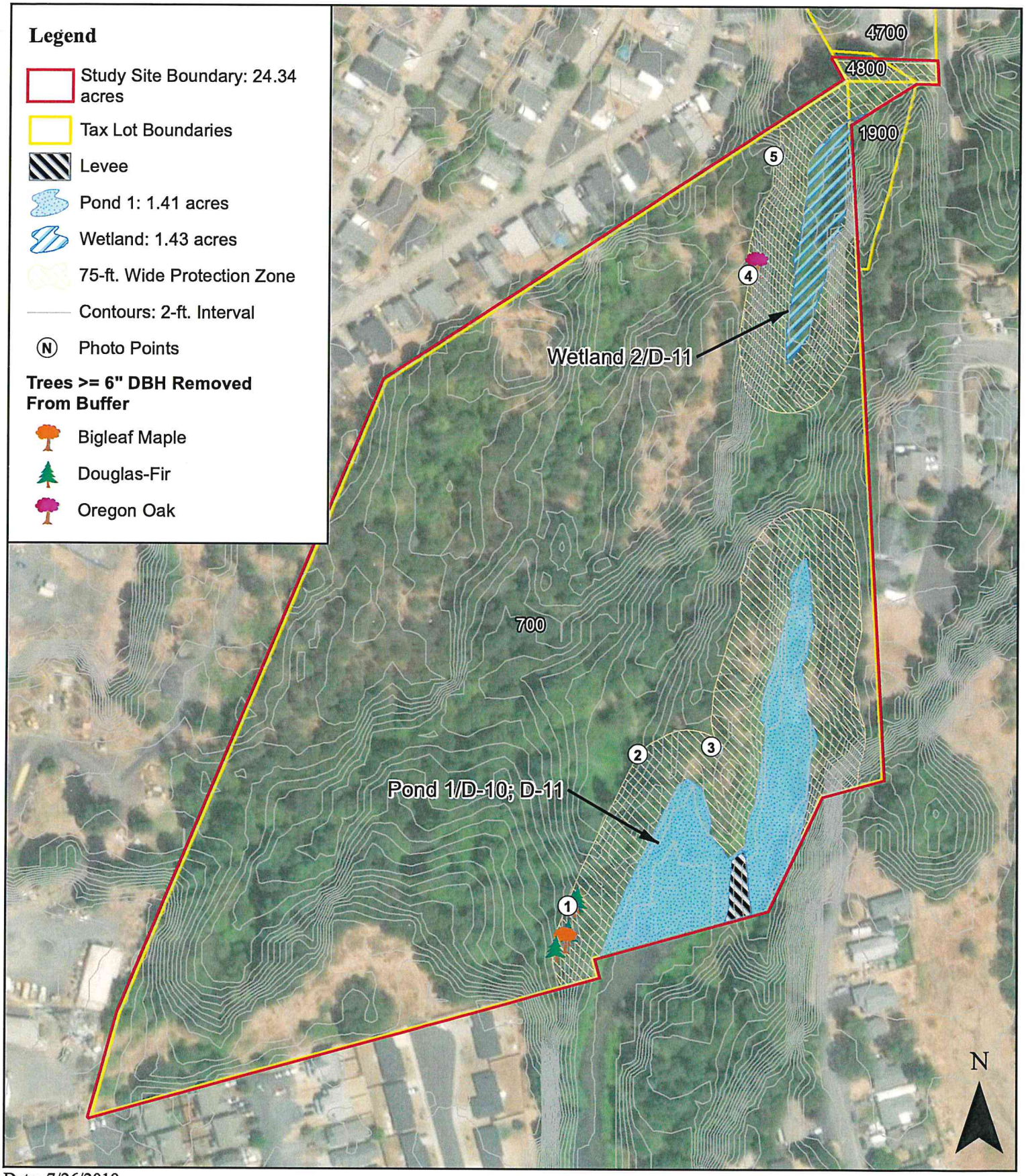
Data Source: ESRI, 2019; Columbia County GIS Dept., 2018; USGS, NED, 2013

Figure 1. Preliminary Wetland Delineation Map

SCHOTT & ASSOCIATES, Inc.

St. Helens Project Site: S&A # 2668

0 50 100 200 Feet



Date: 7/26/2019

Data Source: ESRI, 2019; Columbia County GIS Dept., 2018; USGS, NED, 2013

Figure 2. Signficant Wetlands, Protection Zones and Tree Removal

SCHOTT & ASSOCIATES, Inc.

St. Helens Project Site: S&A # 2668

0 50 100 200 Feet

Photo Point 1. From boundary of the southwest portion of the protection zone of Pond 1 looking northeast at encroachment area.

Photo Point 1. From boundary of the southwest portion of the protection zone of Pond 1 looking southeast at mixed coniferous-deciduous forest of intact protection zone.

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Photo Point 1. From boundary of the southwest portion of the protection zone of Pond 1 looking south at mixed coniferous-deciduous forest of intact protection zone.

Photo Point 1. From boundary of the southwest portion of the protection zone of Pond 1 looking northwest at logged area beyond protection zone.

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Photo Point 2. From boundary of the west-central portion of the protection zone of Pond 1 looking northeast at mixed coniferous-deciduous forest of intact protection zone.

Photo Point 2. From boundary of the west-central portion of the protection zone of Pond 1 looking southeast at mixed coniferous-deciduous forest of intact protection zone.

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Photo Point 2. From boundary of the west-central portion of the protection zone of Pond 1 looking south at mixed coniferous-deciduous forest of intact protection zone.

Photo Point 2. From boundary of the west-central portion of the protection zone of Pond 1 looking northwest beyond the protection zone.

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Photo Point 3. From the Oregon oak forest community of the protection zone of Pond 1 looking east.

Photo Point 3. From the Oregon oak forest community of the protection zone of Pond 1 looking south

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Photo Point 3. From the Oregon oak forest community of the protection zone of Pond 1 looking north.

Photo Point 3. From the Oregon oak forest community of the protection zone of Pond 1 looking west

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Photo Point 4. From the boundary of the western portion of the protection zone of Wetland 2 looking south along boundary and encroachment area.

Photo Point 4. From the boundary of the western portion of the protection zone of Wetland 2 looking east at mixed Oregon oak forest of the intact protection zone.

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Photo Point 4. From the boundary of the western portion of the protection zone of Wetland 2 looking north along boundary and encroachment area.

Photo Point 5. From the boundary of the western portion of the protection zone of Wetland 2 looking north at mixed Oregon oak forest of intact protection zone.

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Photo Point 5. From the boundary of the western portion of the protection zone of Wetland 2 looking south at mixed Oregon oak forest of intact protection zone.

Photo Point 5. From the boundary of the western portion of the protection zone of Wetland 2 looking east at Oregon ash forest of intact protection zone and Wetland 2.

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Aurora, OR. 97002
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Photo Point 5. From the boundary of the western portion of the protection zone of Wetland 2 looking west at mixed Oregon oak forest beyond protection zone.

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

St. Helens Local Wetland Inventory Map

City of St. Helens
City Hall
265 Strand St.
St. Helens, OR 97051

Information shown on this map is of a generalized nature. In all cases, actual field conditions determine wetland boundaries. There may be unmapped wetlands subject to regulation.

Current LWI Mapping Completed 11/11/97

Consultants:
otak Incorporated
PALSA, L.L.C. Environmental Science & Policy

Sheet No. 18

Project No. L7813.L01

LEGEND

- Wetland Boundary
- Data Point
- WU Wetland/Upland Mosaic
- OD Off-Site Determination
- AW Artificial Wetland
- (4) Wetland Code

MATCHLINE: SEE SHEET H8

MATCHLINE: SEE SHEET I8

MATCHLINE: SEE SHEET I7

MATCHLINE: SEE SHEET

North end of study site

COLUMBIA RIVER HWY

BELTON TERRACE

MADRONA CT.

PARK

N. 6TH ST.

COLUMBIA BOTANICAL GARDENS

GRAY CLIFFS DR.

D-11 D-13 D-14 D-15 D-16 D-17 D-18 D-20 D-21

0' 50' 100' 200'

APPROVED LOCAL WETLANDS

OREGON DEPARTMENT OF STATE

5/1/98

St. Helens Local Wetland Inventory Map

City of St. Helens
City Hall
265 Strand St.
St. Helens, OR 97051

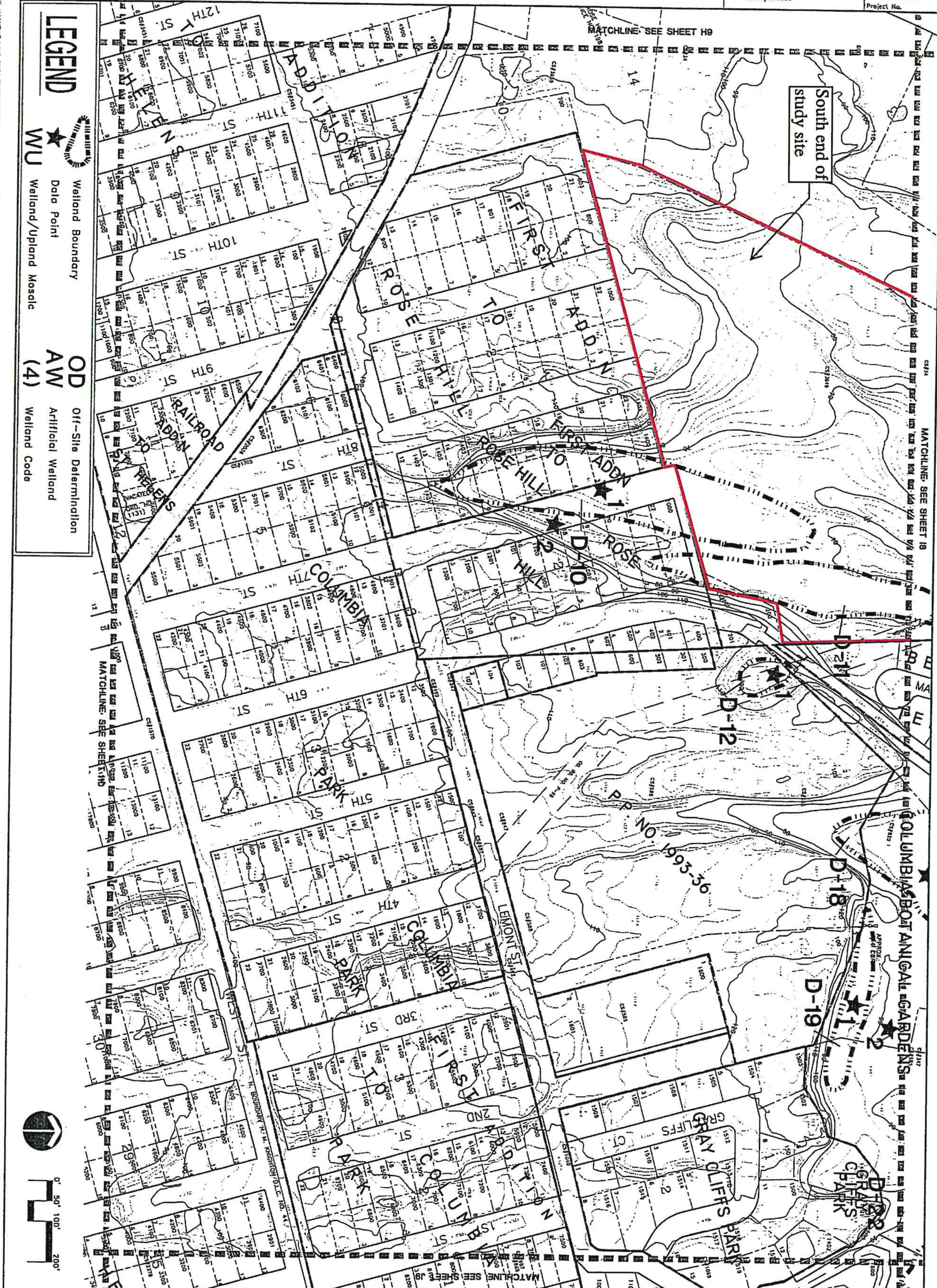
Information shown on this map is of a generalized nature. In all cases, actual field conditions determine wetland boundaries. There may be unmapped wetlands subject to regulation.

Current LWI Mapping Completed 11/11/97

Consultants:
otak Incorporated
PALSA, L.L.C. Environmental Science & Policy

19
Sheet No.

L7813.L01
Project No.



LEGEND
Wetland Boundary
Data Point
WU Wetland/Upland Mosaic
OD Off-Site Determination
AW Artificial Wetland
(4) Wetland Code
MATCHLINE SEE SHEET H9
MATCHLINE SEE SHEET I8
South end of study site
D-10
D-11
D-12
D-18
D-19
COLUMBIA BOTANICAL GARDENS
GRAY CLIFFS PARK
P.P. NO 1993-36
FIRST ADDN TO ROSE HILL
COLUMBIA PARK
RAILROAD ADDN TO ST. HELENS
LEMONT ST.
12TH ST.
11TH ST.
10TH ST.
9TH ST.
8TH ST.
7TH ST.
6TH ST.
5TH ST.
4TH ST.
3RD ST.
2ND ST.
1ST ST.
0' 50' 100' 200'

From: Jacob Graichen
To: Kim Biafora
Subject: RE: St Helens Preliminary WL maps
Date: Friday, May 3, 2019 8:36:42 AM
Attachments: image001.png

Kim,

Ponds and Wetland 2 – Type I per City, 75' upland buffer applies; City sensitive land rules apply

Wetlands 1 and 3 – not significant to City; City sensitive land rules don't apply; have fun with OR DSL and Army Corps

Wetland 4 – assuming it is not directly associated with the ponds, same as # 1 and #3. If it is, same as #2

Jacob Graichen, AICP, City Planner
City of St. Helens

From: Kim Biafora <kim@schottandassociates.com>
Sent: Thursday, May 02, 2019 4:40 PM
To: Jacob Graichen <jacob@ci.st-helens.or.us>
Subject: RE: St Helens Preliminary WL maps

Thank you Jacob.
My other concern is about the buffer width that may be associated with wetlands 1, 3, and 4 as I delineated them. Can you give me a sense of how wetlands are classified into each type?
Regards,

Kim Biafora, Wetland Ecologist & GIS Analyst
21018 NW Hwy 99E
P.O. Box 589
Aurora, OR 97002
(503) 678-6007
www.schottandassociates.com

From: Jacob Graichen [mailto:jacob@ci.st-helens.or.us]
Sent: Thursday, May 2, 2019 4:29 PM
To: Kim Biafora
Subject: RE: St Helens Preliminary WL maps

KIM,

THANK YOU FOR THE PRELIM MAPS. THE PONDS WOULD BE WETLANDS D-10 AND D-11. LOOKING AT SOME DATA AND BASED ON YOUR COMMENTS THAT WETLAND 2 AS IDENTIFIED ON THE MAP IS HYDRAULICALLY CONNECTED TO ONE OF THE PONDS, I BELIEVE THAT WETLAND 2 IS ALSO D-11.

WHICH MEANS IS A TYPE I WITH THE 75' UPLAND PROTECTION BUFFER. THUS, TREE REMOVAL AND OTHER DISTURBANCE WITHIN THAT BUFFER MATTERS.

FYI

Jacob Graichen, AICP, City Planner
City of St. Helens

From: Kim Biafora <kim@schottandassociates.com>
Sent: Thursday, May 02, 2019 2:30 PM
To: Jacob Graichen <jacob@ci.st-helens.or.us>
Subject: St Helens Preliminary WL maps

Kim Biafora, Wetland Ecologist & GIS Analyst
21018 NW Hwy 99E
P.O. Box 589
Aurora, OR 97002
(503) 678-6007
www.schottandassociates.com

Attachment B: Soil Web Survey Results

Xerumbrepts

▲ Soil Profiles

Typical Profile ? >

Org. Matter | Clay
Sand | AWC
Ksat | pH
Kf Factor | EC
SAR | $CaCO_3$
Gypsum
CEC @ pH7
Linear Ext.

0	
H1	
25	
H2	
46	
H3	
56	

▲ Soil Taxonomy

Order: *Inceptisols*
Suborder: *Umbrepts* Map of Suborders
Greatgroup: *Xerumbrepts*
Subgroup:
Family: *Xerumbrepts*
Soil Series: *Xerumbrepts*

▲ Land Classification

CA Storie Index: *n/a*
Land Capability Class (non-irrigated): *6-s* ?
Land Capability Class (irrigated): *-* ?
Ecological Site Description: *n/a* ?
Forage Suitability Group: *n/a* ?
Organic Carbon Stock: *6 [5-8] kg / m²* ?
Organic Carbon Stock 0-30cm: *4 [3-5] kg / m²* ?
Organic Carbon Stock 0-100cm: *6 [5-6] kg / m²* ?

▲ Hydraulic and Erosion Ratings

Wind Erodibility Group: *6* ?
Wind Erodibility Index: *48* ?
T Erosion Factor: *1* ?
Runoff:

lancaster mobley

8th Street Subdivision

Transportation Impact Study

St Helens, Oregon

Date:
September 27, 2021

Prepared for:
Shawn Clark

Prepared by:
Jessica Hijar
Jennifer Danziger, PE

SAME AS OCT. 12, 2021 SUBMITTAL

RENEWS: 12.31.21

Table of Contents

Appendices

List of Figures

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Executive Summary

1. A 66-lot subdivision is proposed to be located on tax lot 5133-00-00700 near the northern city limits in St Helens, Oregon. accesses that will be extensions of existing N 8th Street and N 9th Street.
2. The trip generation calculations show that the proposed development is projected to generate 49 morning peak hour trips, 65 evening peak hour trips, and 624 new average weekday trips.
3. No significant trends or crash patterns were identified at any of the study intersections that would be affected by the proposed development. Accordingly, no safety mitigation is recommended per the crash data analysis.
4. Intersection sight distance is available at both site accesses on Deer Island Road. Accordingly, no sight distance related mitigation is necessary or recommended.
5. Preliminary traffic signal warrants are not projected to be met any of the unsignalized study intersections upon full buildout of the proposed development. Accordingly, no related mitigation is necessary or recommended.
6. Left-turn lanes are not projected to be met at the site access intersections upon full buildout of the proposed development. Accordingly, no related mitigation is necessary or recommended.
7. All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2023 site buildout year.

Project Description

Introduction

A 66-lot subdivision is proposed to be located on tax lot 5133-00-00700 near the northern city limits in St Helens, Oregon. The development will have two site accesses that will be extensions of existing N 8th Street and N 9th Street.

Based on correspondence with City of St Helens and ODOT and each jurisdictions' requirements, the report conducts safety and capacity/level of service analyses at the following intersections:

1. Deer Island Road at N 9th Street (site access)
2. Deer Island Road at N 8th Street (site access)
3. Deer Island Road at US-30
4. Columbia Boulevard at 12th Street
5. Columbia Boulevard at US-30

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses, and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

Location Description

The subject property is located north of Deer Island Road and east of US-30. The proposed development includes roadway extensions of N 8th Street and N 9th Street. Figure 1 on the following page shows the site vicinity with the subject site highlighted in blue.

Figure 1: Vicinity Map

Vicinity Streets

The proposed development is expected to impact six roadways near the site. Table 1 provides a description of each vicinity roadway.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Cross-Section	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
Deer Island Road	City of St Helens	Minor Arterial	2 lanes	25 mph posted	Partial South side	Not Permitted	Both Sides
N 9th Street	City of St Helens	Local Street	2 lanes	25 mph statutory	None	Permitted	None
N 8th Street	City of St Helens	Local Street	2 lanes	25 mph statutory	Partial both sides	Permitted	None
US-30	ODOT	Statewide Highway	5 lanes	35-45 mph posted	West Side, Partial East Side	Not Permitted	Both Sides
12th Street	City of St Helens	Collector	2 lanes	25 mph posted	Partial both sides	Partially Permitted	None
Columbia Boulevard	City of St Helens	Minor Arterial/ Collector	2-3 lanes	20 mph posted	Both sides	Partially Permitted	Partial

Study Intersections

Based on coordination with City of St Helens staff, five intersections were identified for analysis. A summarized description of these study intersections, under their existing lane configurations, is provided in Table 2.

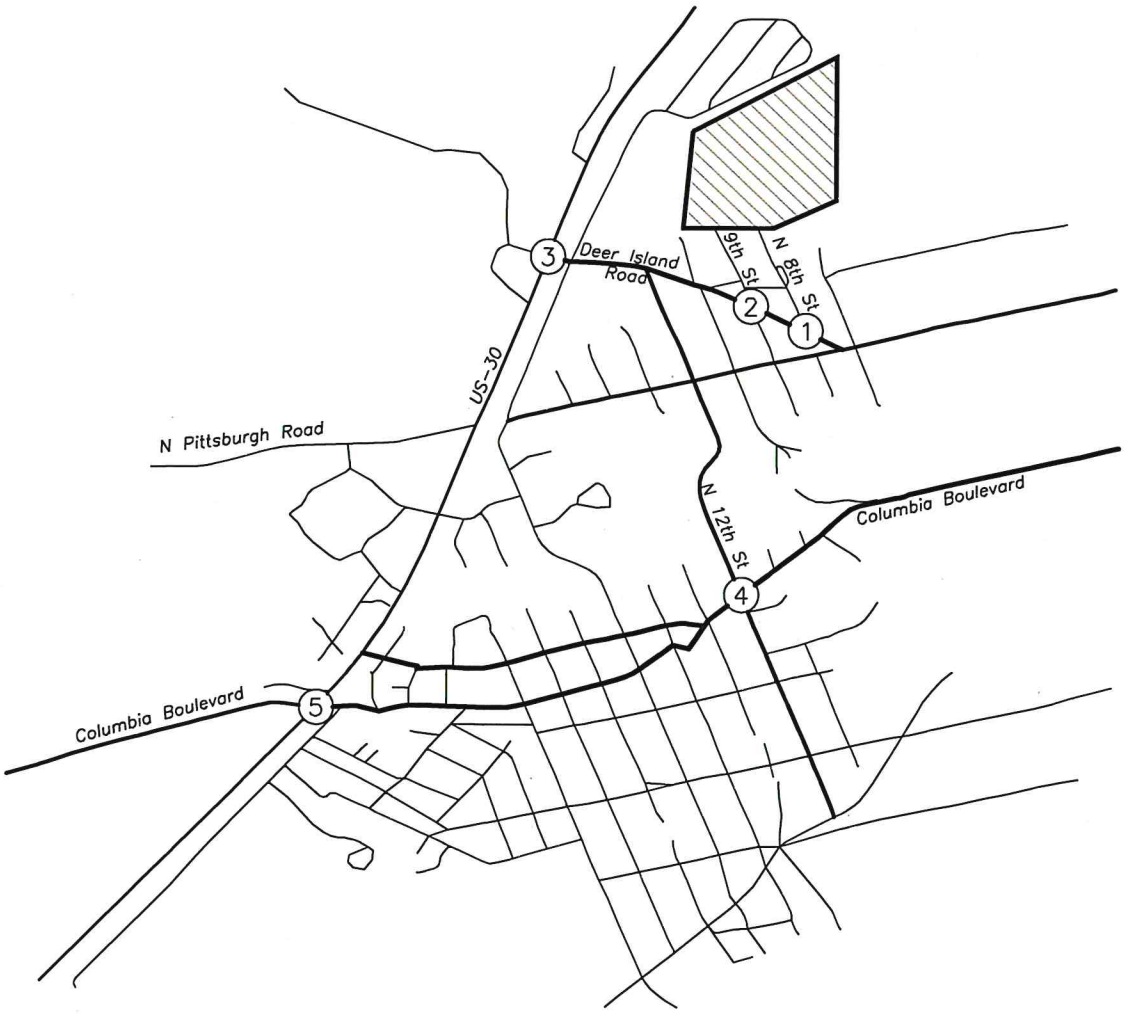
Table 2: Study Intersection Configurations

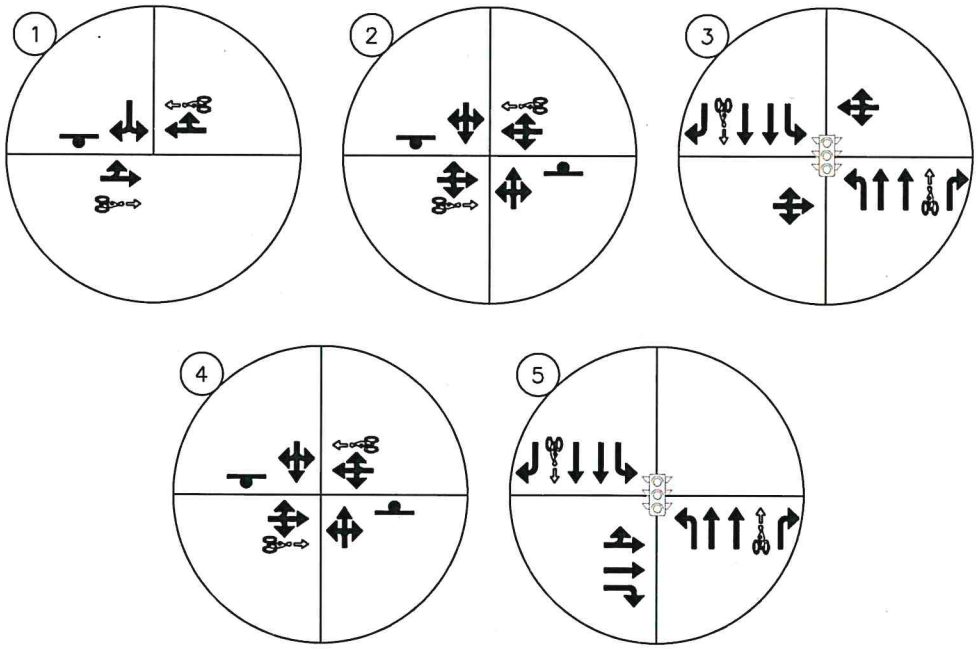
	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	Deer Island Road at N 9th Street (site access)	Four-Legged	Stop Controlled	NB/SB Stop-Controlled
2	Deer Island Road at N 8th Street (site access)	Three-Legged	Stop Controlled	SB Stop-Controlled
3	Deer Island Road at US-30	Four-Legged	Traffic Signal	Protected NB/SB Lefts, Permitted WB/EB Lefts
4	Columbia Boulevard at 12th Street	Four-Legged	Stop Controlled	NB/SB Stop-Controlled
5	Columbia Boulevard at US-30	Four-Legged	Traffic Signal	Protected NB/SB Lefts

A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

LEGEND

- STUDY INTERSECTION
- STOP SIGN
- TRAFFIC SIGNAL
- BIKE LANE
- PROJECT SITE
- INTERSTATE
- ARTERIAL ROADWAY
- COLLECTOR ROADWAY
- LOCAL ROADWAY





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VICINITY MAP

Figure 2

8th St Subdivision

9/23/2021

Site Trips

Trip Generation

To estimate the number of trips that are projected to be generated by the development, trip rates from the *Trip Generation Manual*[1] were used. Specifically, data from land use code 210, Single Family Detached Housing, was used to estimate the proposed development's trip generation based on the number of lots.

The trip generation calculations show that the proposed development is projected to generate 49 morning peak hour trips, 65 evening peak hour trips, and 624 new average weekday trips. The trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included in the technical appendix.

Table 3: Trip Generation Summary

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday
			In	Out	Total	In	Out	Total	Total
Single Family Housing	210	66 lots	12	37	49	41	24	65	624

Trip Distribution

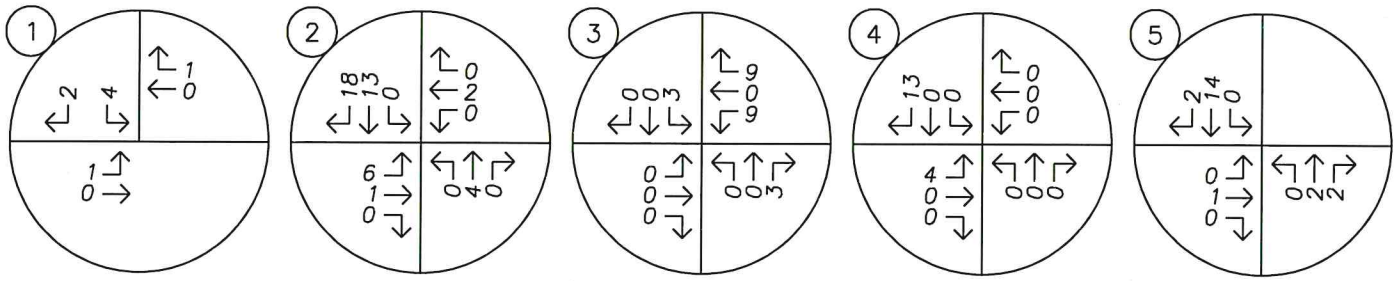
The directional distribution of site trips to/from the project site was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at study intersections.

The following trip distribution is projected:

- Approximately 40 percent of trips will travel to/from the south along US-30
- Approximately 25 percent of trips will travel to/from the north along US-30
- Approximately 10 percent of trips will travel to/from the east along Columbia Boulevard
- Approximately 10 percent of trips will travel to/from local destinations within St Helens, specifically in the St Helens Street/Columbia Boulevard couplet
- Approximately 5 percent of trips will travel to/from the west along Columbia Boulevard
- Approximately 10 percent of trips will travel to/from the west along Pittsburgh Road

The trip distribution and assignment for the primary and pass-by site trips generated during the evening peak hour is shown in Figure 3.

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

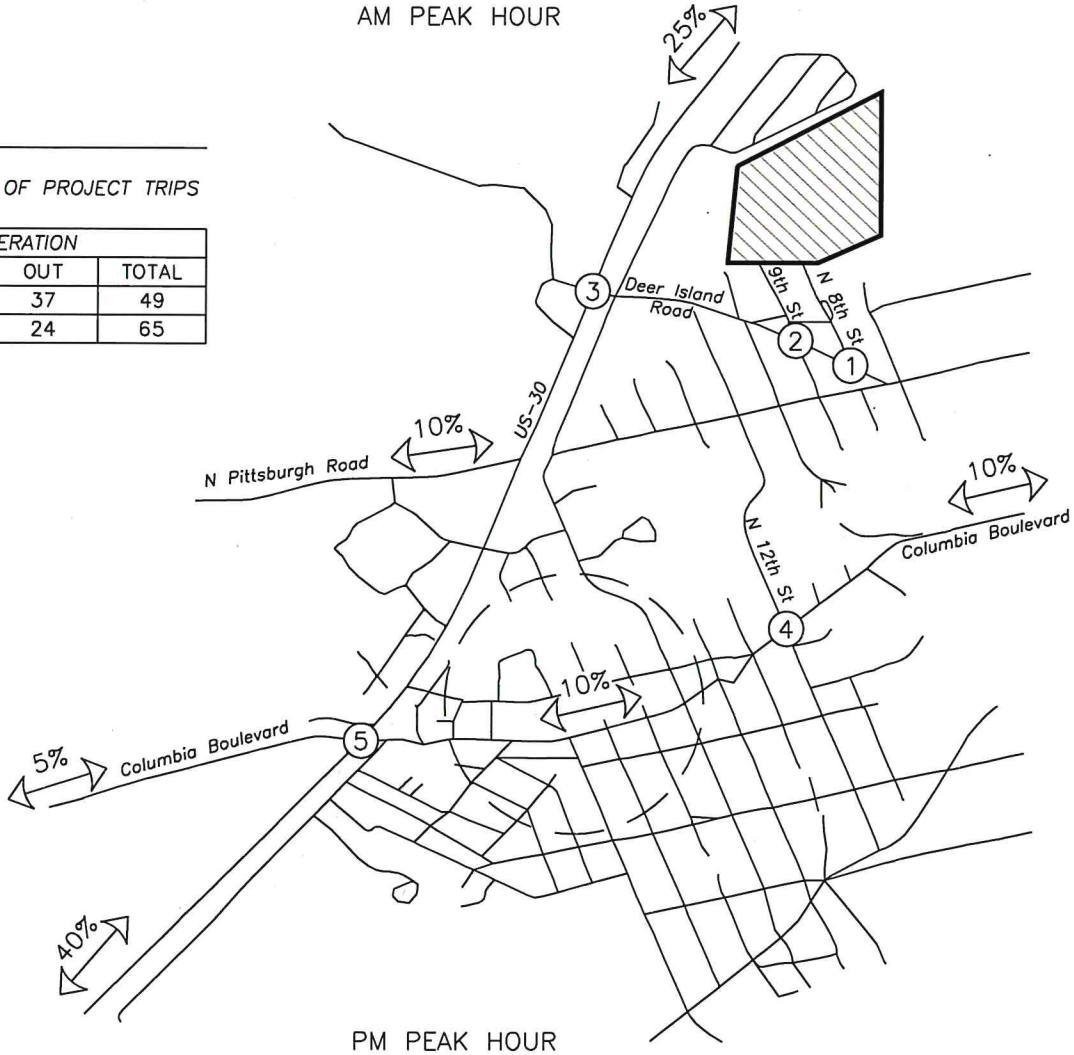


AM PEAK HOUR

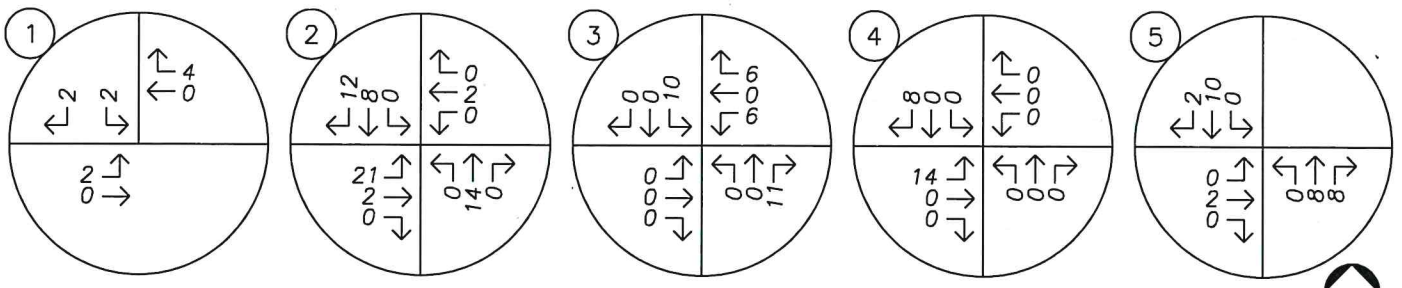
LEGEND

XX% *PERCENT OF PROJECT TRIPS*

TRIP GENERATION			
	IN	OUT	TOTAL
AM	12	37	49
PM	41	24	65



PM PEAK HOUR



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SITE TRIP DISTRIBUTION

Proposed Development Plan - Site Trips
AM & PM Peak Hours

Figure 3

8th St Subdivision

9/23/2021

Traffic Volumes

Existing Conditions

The ongoing COVID-19 pandemic is still causing a significant decrease in traffic due to closed or limited business operations and telecommuting. Therefore, adjustments are needed to reflect more normalized traffic conditions.

Traffic counts were collected at all study intersections during the morning (between 7:00 AM and 9:00 AM) and evening (between 4:00 PM and 6:00 PM) peak hours. To approximate year 2021 existing traffic volumes under "typical" conditions, recently collected counts were compared to counts collected at the intersection of US-30 at Columbia Boulevard in 2018 before the pandemic, which were adjusted to year 2021 volumes by adding a growth rate based on local and state methodology.

Since US-30 is under ODOT jurisdiction, traffic volumes were seasonally adjusted to reflect the 30th highest hour of traffic, as per procedures described in ODOT's *Analysis Procedures Manual* (APM)[2]. Using the ODOT's Seasonal Trend Table[3], a seasonal adjustment factor of 1.14 was calculated based on a Commuter seasonal trend and applied to the year 2018 traffic volumes. The adjustment factor was applied to through volumes on US-30.

A growth rate for through traffic along US-30 was derived using ODOT's 2039 Future Volume Table in accordance with ODOT's APM. Using data corresponding to milepost 28.58 and 29.48 of ODOT highway number 92, an average linear growth rate of 0.6 percent per year for the three-year scenario. For all other turning movements at the US-30 study intersection, a compounded growth rate of two percent per year was applied to the 2018 traffic volumes to approximate year 2021 existing conditions.

Since the year 2021 traffic counts were collected on a different date than the 2018, a seasonal adjustment factor was calculated for these counts as well. A seasonal adjustment factor of 1.02 was calculated for the recently collected counts based on a Commuter seasonal trend and applied to the year 2021 through highway volumes.

When comparing the calculated 2021 volumes to the recently collected counts, a COVID adjustment factor was calculated to be 1.35 for the morning peak hour and 1.24 for the evening peak hour. The factors were applied to the recently collected counts to estimate the year 2021 traffic volumes under "typical" conditions.

Figure 4 shows the existing traffic volumes at the study intersections during the morning and evening peak hours.

Background Conditions

To provide analysis of the impact of the proposed development on the existing transportation facilities, an estimation of future traffic volumes is required. To calculate future traffic volumes for the year 2023 conditions, the linear growth rate of 0.6 percent per year calculated using ODOT's Future Volume Table was applied to through highway volumes. For all other turning movements at highway intersections and local intersection

[2] Oregon Department of Transportation, *Analysis Procedures Manual Version 2*. October 2020.
[3] ODOT Seasonal Trend Table (Updated 7/20/2021)

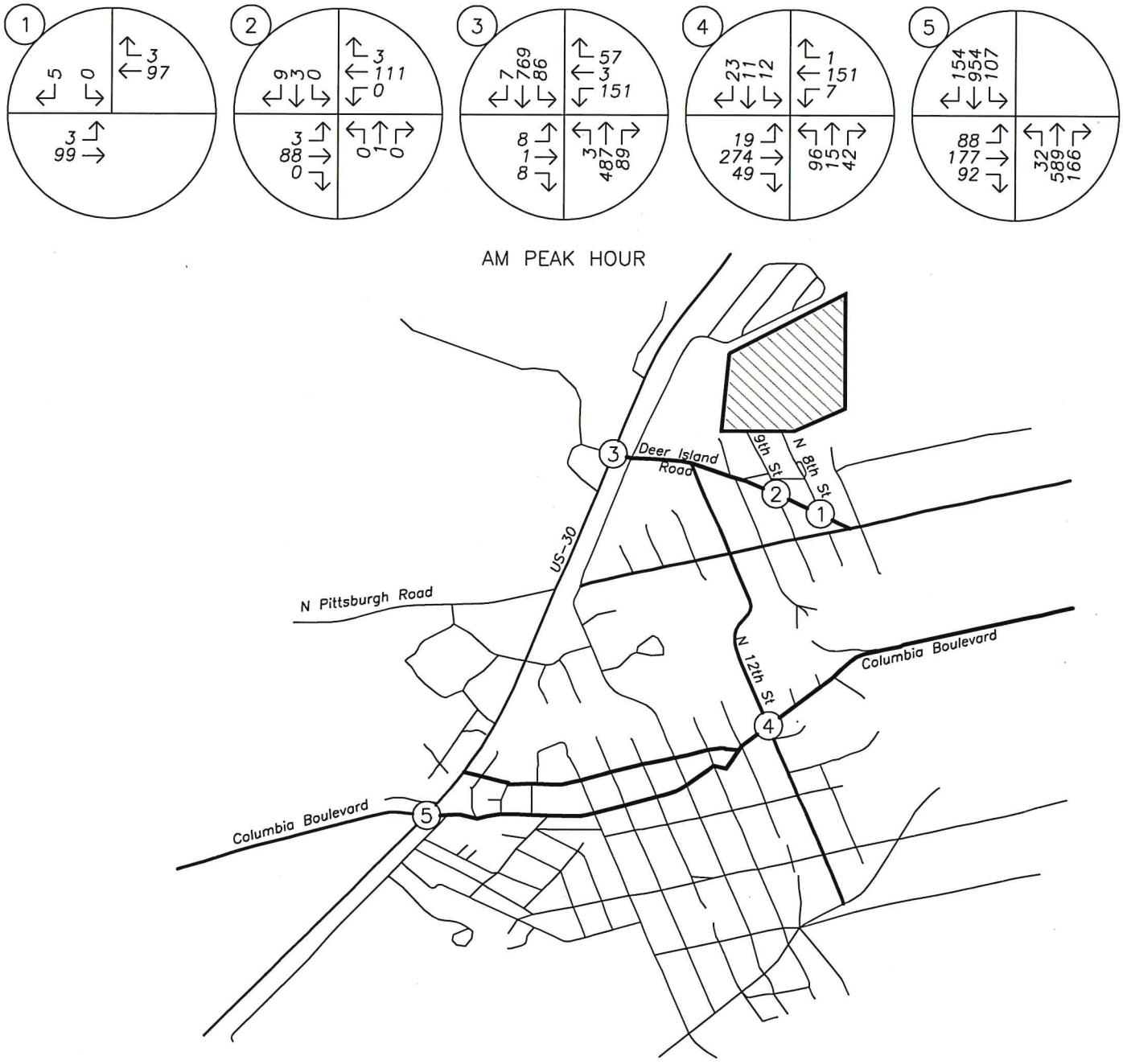
volumes, a compounded growth rate of two percent per year was applied. A build-out condition of two years was assumed.

Figure 5 shows the background traffic volumes at the study intersections during the morning and evening peak hours.

Buildout Conditions

Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2023 background traffic volumes to obtain the expected 2023 site buildout volumes.

Figure 6 shows the buildout traffic volumes at the study intersections during the morning and evening peak hours.



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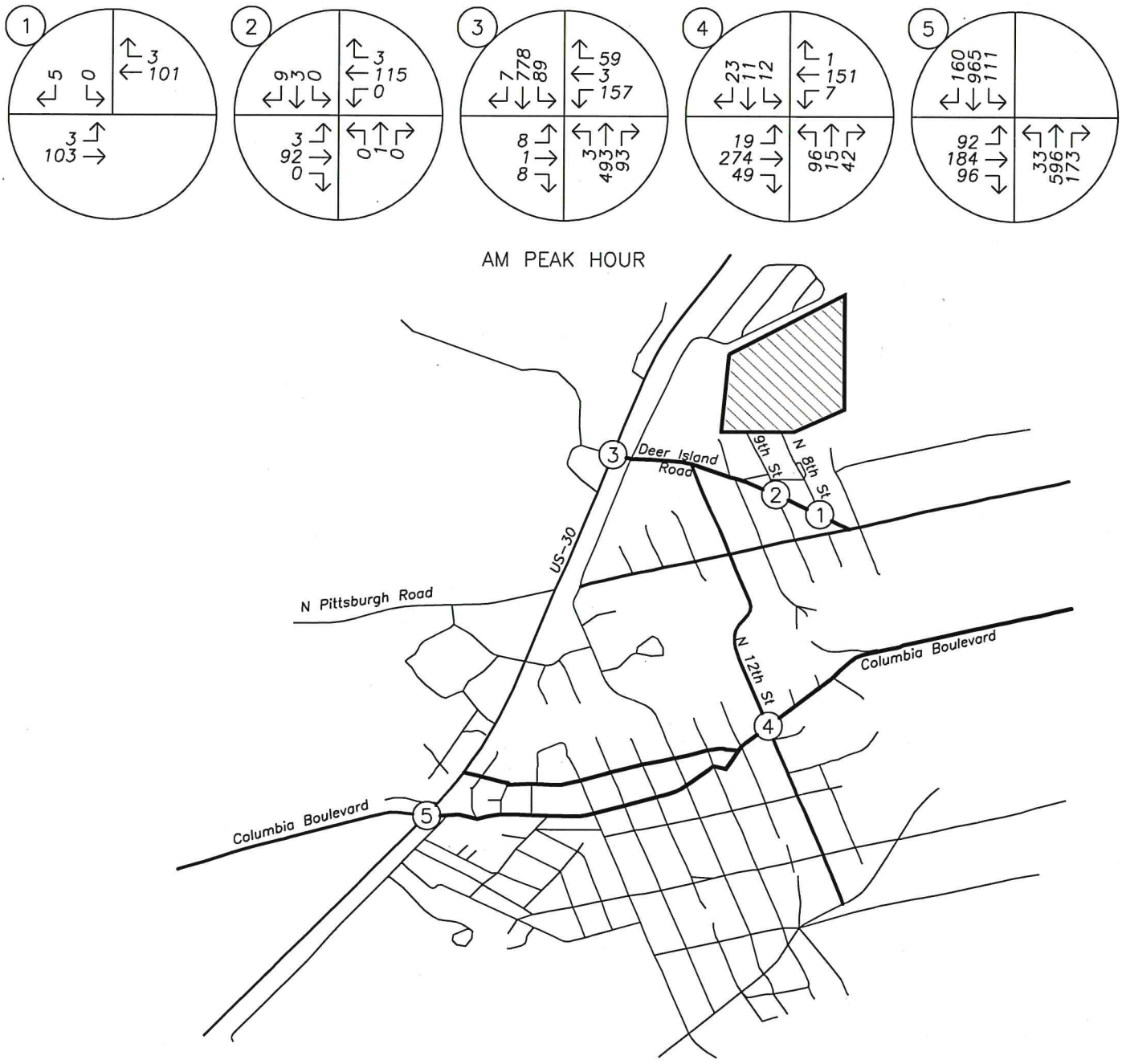
TRAFFIC VOLUMES
Year 2021 Existing Conditions
AM & PM Peak Hours

Figure 4
8th St Subdivision
9/23/2021



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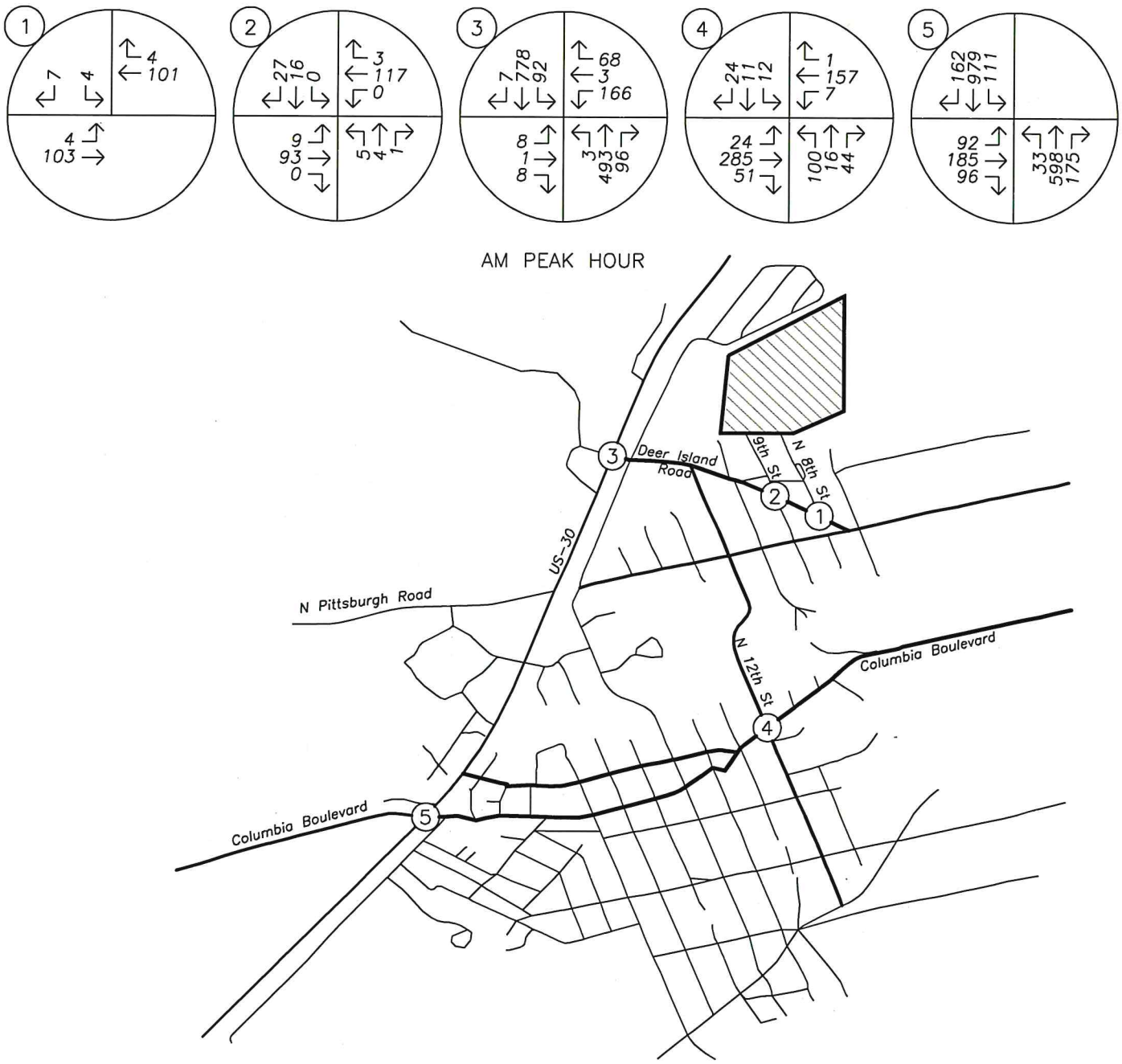
TRAFFIC VOLUMES
Year 2023 Background Conditions
AM & PM Peak Hours

Figure 5
8th St Subdivision
9/23/2021



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TRAFFIC VOLUMES
Year 2023 Buildout Conditions
AM & PM Peak Hours

Figure 6
8th St Subdivision
9/23/2021

Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2015 through December 2019) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- Property Damage Only (PDO)
- Possible Injury (Injury C)
- Non-Incapacitating Injury (Injury B)
- Incapacitating Injury (Injury A)
- Fatality or Fatal Injury

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak period represents approximately 10 percent of the annual average daily traffic (ADT) at the intersection.

Since the study area includes intersections along US-30, calculated crash rates were compared with rates in ODOT's APM. According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of their respective 90th percentile crash rates should be "flagged for further analysis".

Table 4 provides a summary of crash types while Table 5 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in the appendix to this report.

Table 4: Crash Type Summary

Intersection		Crash Type								Total Crashes
		Turn	Rear End	Angle	Fixed Object	Backing	Ped	Bike	Other	
1	Deer Island Road at N 9th Street	0	0	0	1	0	0	0	0	1
2	Deer Island Road at N 8th Street	0	0	0	0	0	0	0	0	0
3	Deer Island Road at US-30	1	8	0	0	0	1	0	0	10
4	Columbia Boulevard at 12th Street	0	1	0	0	0	3	0	0	4
5	Columbia Boulevard at US-30	3	8	2	1	1	0	3	0	18

Table 5: Crash Severity and Rate Summary

	Intersection	Severity					Total Crashes	Peak Hour Volume	Crash Rate	ODOT 90th %
		PDO	C	B	A	Fatal				
1	Deer Island Road at N 9th Street	1	0	0	0	0	1	310	0.18	0.408
2	Deer Island Road at N 8th Street	0	0	0	0	0	0	315	0	0.293
3	Deer Island Road at US-30	4	4	2	0	0	10	2,209	0.25	0.860
4	Columbia Boulevard at 12th Street	1	1	2	0	0	4	777	0.28	0.408
5	Columbia Boulevard at US-30	7	5	6	0	0	18	2,684	0.37	0.860

Crashes involving vulnerable users are described further below.

Deer Island Road at US-30

A pedestrian collision was reported which was caused by the pedestrian not yielding to the vehicle. The pedestrian sustained a non-incapacitating injury (Type B).

Columbia Boulevard at 12th Street

Three collisions involving pedestrians were reported at this intersection. Two pedestrian collisions were caused by vehicles not granting right-of-way to the pedestrian. One resulted in possible injury (Type C) to the pedestrian, and one resulted in non-incapacitating injury (Type B) to the pedestrian. A third pedestrian collision was caused by a reckless driver who did not stop at the stop sign. The pedestrian sustained a non-incapacitating injury (Type B).

Columbia Boulevard at US-30

Two bicycle collisions were caused vehicles completing a turning movement while driving distracted and not granting right-of-way to the cyclist. In both cases, the bicyclist involved sustained a non-incapacitating injury (Type B). A third bicycle collision was reported in which the cyclist struck the vehicle resulting in a possible injury (Type C).

Based on review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of study intersections that would be affected by the proposed development. In addition, none of the study intersections exhibit crash rates exceeding ODOT's 90th percentile rate. Accordingly, no safety mitigation is recommneded per crash data analysis.

Sight Distance Evaluation

Sight distance at the proposed site access intersections of N 8th Street at Deer Island Road and N 9th Street at Deer Island Road was evaluated in accordance with the standards established in *A Policy of Geometric Design of*

Highways and Streets[4]. According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Deer Island Road is generally flat, with roadway grades less than 2 percent within the site vicinity. Based on the posted speed of 25 mph on Deer Island Road, the minimum recommended intersection sight distance is 280 feet.

Sight distance at N 9th Street was measured to exceed 300 feet to the east and west along Deer Island Road.

Sight distance at N 8th Street was measured to be approximately 290 feet to the east, to the intersection at West Street, and measured to exceed 300 feet to the west.

Based on the above measurements, intersection sight distance is available in either direction of the site access. Accordingly, no sight distance related mitigation is necessary or recommended.

Preliminary Traffic Signal Warrant Analysis

Traffic signal warrants were examined for all unsignalized intersections based on the methodologies in the Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration in 2009. Volumes were used from the year 2022 buildout conditions. Warrant 1, Eight Hour Vehicular Volumes, was evaluated based on the common assumption that traffic counted during the evening peak hour represents ten percent of the ADT. Detailed information on the traffic signal warrant analysis is included in the attached appendix.

Preliminary traffic signal warrants are not projected to be met any of the unsignalized study intersections upon full buildout of the proposed development.

Left-Turn Lane Warrants

A left-turn refuge lane is primarily a safety consideration for the major-street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants were examined for the site access intersections on Deer Island Road using methodologies provided within the National Cooperative Highway Research Program's (NCHRP) Report 457. Turn lane warrants were evaluated based on the number of advancing and opposing vehicles as well as the number of turning vehicles, the travel speed, and the number of through lanes.

Left-turn lane warrants are not projected to be met at either of the study intersections under the year 2023 buildout scenario.

[4] American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.

Operational Analysis

Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)[5]. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little, or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay.

Performance Standards

The operating standards adopted by the City of Scappoose and ODOT are summarized below.

City of St Helens

According to the City of St Helen's Transportation System Plan (TSP), LOS "E" is considered acceptable for the poorest operating approach at two-way stop intersections. LOS "F" is allowed in situations where a traffic signal is not warranted.

ODOT

ODOT's operating mobility target for intersections along US-30 is v/c ratio no greater than 0.80 with posted speeds over 45 mph (at Deer Island Road) and no greater than 0.85 with posted speeds equal to 35 mph or less (at Columbia Boulevard) per Table 6 of the *Oregon Highway Plan*[6].

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 6 for the evening peak hour. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

[5] Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.
[6] Oregon Department of Transportation, *Oregon Highway Plan*. 1999

Table 6: Capacity Analysis Summary

Intersection & Condition	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
1. Deer Island Road at N 9th Street						
2021 Existing Conditions	A	9	0.01	B	10	0.03
2023 Background Conditions	A	9	0.01	B	10	0.03
2023 Buildout Conditions	A	9	0.02	B	10	0.03
2. Deer Island Road at N 8th Street						
2021 Existing Conditions	B	10	0.02	B	12	0.02
2023 Background Conditions	B	10	0.02	B	12	0.02
2023 Buildout Conditions	B	11	0.06	B	14	0.06
3. Deer Island Road at US-30						
2021 Existing Conditions	B	13	0.54	B	14	0.76
2023 Background Conditions	B	13	0.55	B	14	0.78
2023 Buildout Conditions	B	14	0.57	B	15	0.80
4. Columbia Boulevard at 12th Street						
2021 Existing Conditions	D	29	0.59	C	21	0.32
2023 Background Conditions	D	33	0.64	C	22	0.35
2023 Buildout Conditions	E	37	0.68	C	23	0.37
5. Columbia Boulevard at US-30						
2021 Existing Conditions	B	20	0.56	C	30	0.70
2023 Background Conditions	C	20	0.57	C	31	0.72
2023 Buildout Conditions	C	20	0.57	C	32	0.73

Based on the results of the operational analysis, all study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2023 site buildout year. No operational mitigation is necessary or recommended at these intersections.

Conclusions

Key findings include:

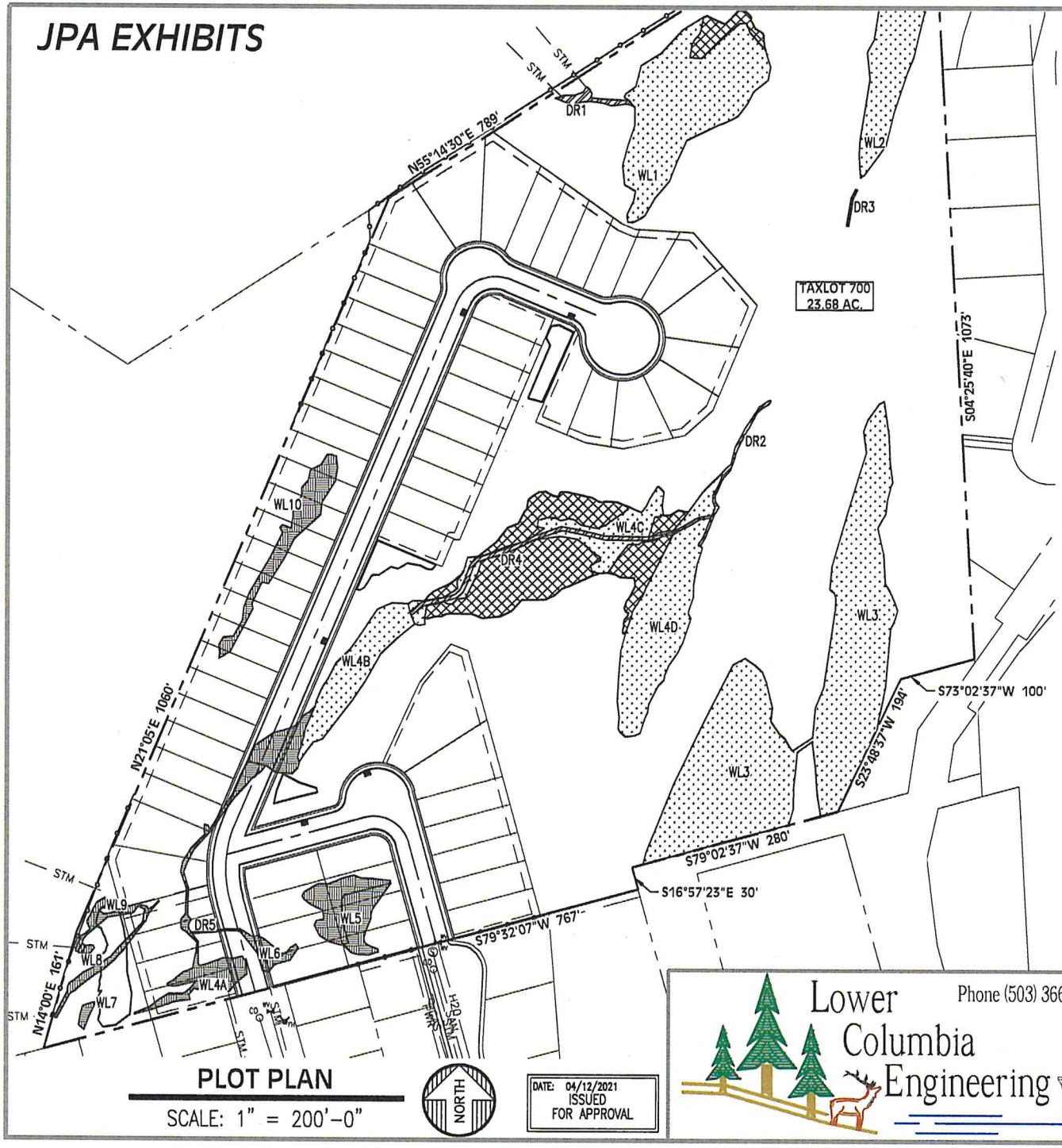
- No significant trends or crash patterns were identified at any of the study intersections that would be affected by the proposed development. Accordingly, no safety mitigation is recommended per the crash data analysis.
- Intersection sight distance is available at both site accesses on Deer Island Road. Accordingly, no sight distance related mitigation is necessary or recommended.
- Preliminary traffic signal warrants are not projected to be met any of the unsignalized study intersections upon full buildout of the proposed development. Accordingly, no related mitigation is necessary or recommended.
- Left-turn lanes are not projected to be met at the site access intersections upon full buildout of the proposed development. Accordingly, no related mitigation is necessary or recommended.
- All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2023 site buildout year.

Appendix A – Site Data

Site Plan

Trip Generation Calculations

JPA EXHIBITS



PLOT PLAN

SCALE: 1" = 200'-0"

NORTH

DATE: 04/12/2021
ISSUED
FOR APPROVAL

N. 8TH ST. SUBDIVISION

ST. HELENS, OREGON

PROJECT TEAM

OWNER
N. 8TH ST., LLC
SHAWN CLARK
DENA WOMACK
76220 HEATH ROAD
RAINIER, OR 97048
(312) 965-9637

ENGINEER
LOWER COLUMBIA ENGINEERING, LLC
ANDREW NIEMI, P.E.
HANNA OPDAHL
58640 MCNULTY WAY
ST. HELENS, OR 97051
(503) 366-0399

ECOLOGIST
SCHOTT & ASSOCIATES, LLC
KIM BIAFORA
JODI REED
21018 NW HWY 99E
P.O. BOX 589
AURORA, OR 97002
(503) 678-6028

DRAWING INDEX

Lower Columbia Engineering
Phone (503) 366-0399

N. 8TH ST. SUBDIVISION	
PLOT PLAN, PROJECT TEAM, & INDEX	
SCALE: NOTED	DATE: 04/01/21
BY: HBO	A-3146-G-1

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 66

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	12	37	49

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	41	24	65

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	312	312	624

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	315	315	630

Source: Trip Generation Manual, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 66

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	12	37	49

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	41	24	65

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	312	312	624

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	315	315	630

Source: Trip Generation Manual, Tenth Edition

North 8th Street Planned Development

STORMWATER REPORT

Applicant:
Shawn Clark
76220 Heath Rd.
Rainier, OR 97048

Corps Project Number: NWP-2019-342
DSL Project Number: 2019-0287

Project Type: Residential Subdivision
Project Location: St. Helens, Oregon

Prepared By:
Lower Columbia Engineering, LLC
58640 McNulty Way
Saint Helens, OR 97051
Phone: (503) 366-0399
Engineer: Andrew Niemi, P.E.
Email: andrew@lowercolumbiaengr.com
Contact: Chase Berg
Email: chase@lowercolumbiaengr.com

January 2022
LCE #3146-01

Table of Contents

1. Introduction:

The purpose of this stormwater management plan (SWMP) is to describe the routing, detention, treatment, and discharge of post-construction stormwater runoff resulting from 1) the conversion of existing pervious surfaces to impervious on-site, and 2) off-site storm drainage that currently empties into the project site at the southwest corner. This SWMP describes the water quality treatment of the stormwater runoff before it enters the retained and proposed jurisdictional wetlands at the center of the site. Low impact development practices are adopted by this project to: 1) attenuate peak storm discharges; 2) provide pollutant removal in a resilient and regionally appropriate manner; and 3) preserve the natural hydrologic flow of the pre-construction site.

2. Project Location/Description:

This development is located on taxlot 700 of Columbia County Map SN1W33. The project site is located east of the intersection of N. Columbia River Highway 30 and Deer Island Road. The historic land use has been quarry related as much of the site is underlain by shallow basalt. Currently, existing stormwater runoff from this site drains to a culvert under Madrona Ct. and then drains through open channels into Dalton Lake. Tax lot 700 occupies a total of 23.68 acres whereas the total subdivision area is ± 9.75 acres.

The project will involve grading and filling parts of on-site wetlands for roadways, building pads, and utilities. The project will interrupt existing stormwater surface flows from the southwest which shall be collected and treated in water quality facilities and routed to their existing discharge location, east of the new development, into the retained and proposed wetlands. Runoff from impervious and pervious areas inside the new development will also be managed in the new public conveyance system that will treat and detain the stormwater in water quality facilities before discharging into the retained and proposed wetlands to the east of the development. These wetlands naturally drain to the north where they are channelized and flow into the existing public conveyance system as part of the Belton Terrace Subdivision outside the project parcel, leading to Dalton Lake.

3. Stormwater Quantity Management Criteria

A. USACE SLOPES Standards

The project requires a Section 404 permit from the U.S. Army Corps of Engineers (USACE); therefore, the stormwater quantity management system was designed to meet the requirements of the revised Standard Local Operating Procedures for Endangered Species (NMFS No: NWR-2013-10411, SLOPES). SLOPES criteria require the implementation of a stormwater management plan that includes water quantity retention or detention facilities for all stormwater facilities that do not discharge directly into a major body of water (e.g., lakes, the Columbia River, etc.). SLOPES criteria require retention or detention facilities that limit post-development discharge rates to match pre-developed discharge rates [50% of 2-year, 2-year, 10-year, 25-year, 50-year, and 100-year flow events]. The vegetated bioswale stormwater facilities are designed to meet the above criteria for detention, conveyance, and overflow. Slopes in the stormwater facilities will be no steeper than 2H:1V. The stormwater analysis of the pre- and post-construction conditions are provided for reference in Appendix D.

B. City of St Helens Municipal Code 8.16.010

The City of St Helens Municipal Code section 18.16.100 stipulates that each new development is responsible for mitigating its impacts on the public stormwater system. The proposed conveyance system will not connect into the public stormwater infrastructure along North 8th street or North 9th Street, but rather will be detained, treated, and discharged to the retained and proposed wetlands on-site. The system has been designed to safely transmit the off-site and development runoff during the 100-year storm event without overtopping the water quality facilities. The stormwater analysis of the 100-year storm event is

included for reference in Appendix D.

4. Stormwater Quality Management Criteria

A. 401 Water Quality Certification Program Standards

The stormwater facility will provide stormwater quality management per SLOPES and DEQ Section 401 Water Quality Certification Program standards, which require treatment of the water quality storm event, equal to 50% of the cumulative rainfall from the 2-year, 24-hour storm event. Meeting this criterion also suggests that greater storm events are also qualitatively treated. The stormwater analysis of the water quality event is provided in Appendix D. The analysis indicates that the stormwater system provides sufficient detention and exfiltration to treat the peak flows produced on-site during the water quality storm event. The off-site waters discharged from the upland basin were not included in these calculations since these waters are considered a pre-existing condition.

B. DEQ Section 401 Water Quality Certification Post-Construction Stormwater Management Plan

To address post-construction stormwater pollution, the DEQ Section 401 Water Quality Certification Program requires a post-construction stormwater management plan to meet the most current standards and regulations. The DEQ Section 401 post-construction stormwater management plan checklist is provided in Appendix C to ensure that post-construction stormwater management will meet the DEQ Section 401 Water Quality Certification Program requirements.

5. Design Parameters

A. On-Site Inlet and Conduit Sizing

Stormwater inlets for the site will be placed at locations that will adequately convey stormwater runoff. The stormwater pipes will be sized, at a minimum, to convey peak flows for the 25-year, 24-hour storm event as required by the City of St. Helens design standards. Sizing of on-site subdivision conveyance is beyond the scope of this preliminary storm report and will be addressed at final engineering. See stormwater management plan on sheets C-12 through C-14 for on-site drainage map and conceptual conveyance layout.

B. Upstream Basin

The upstream basin is estimated to consist of a highway corridor, industrial region, residential development, and naturally vegetated hillsides to the northwest of the project parcel. For purposes of estimating runoff from this area to the subject parcel, the following assumptions are made: 1) the highway corridor is drained to existing stormwater infrastructure and does not enter the subject site; and 2) the existing quarries do not contribute overland flows to the subject site. The upstream basin area which is approximated to contribute run-on to the project parcel is divided into two regions shown in Appendix A. They include a 10-acre industrial region to the west of the project area and a 4-acre residential region to the south of the project area.

C. Site Topography

The existing site consists of brush and wetlands. The site topography slopes from south to north generally, with slopes of 1% longitudinally and up to 60% along banks. The site has been historically a mix of wooded and quarry areas. Currently the site surface consists of grass, scattered trees, brush, and wetland plants. There are no existing structures on the property.

6. Basin Calculations

A. Pre-Developed Site

Total Parcel Area = 1,031,500 sf (23.68 acres)
Project Area = 424,710 sf (9.75 acres)
CN = 84 Assumed based on HSG D

B. Post-Developed Project Area

Total Impervious Area = 84,382 sf (1.95 acres)
Total Pervious Area (50-75%) = 339,951 sf (7.80 acres)
Total Undisturbed Area = 606,790 sf (13.93 acres) (includes wetland creation areas)

Table 1. Developed Areas

Region	Area [sf (ac)]	Impervious [sf (ac)]	Pervious* [sf (ac)]	Drainage Description
Zone 1 (South)	93,706 (2.15)	19,828 (0.46)	73,878 (1.70)	Drain to catch basins; detain in WQF 2
Zone 2 (West)	108,141 (2.48)	29,332 (0.67)	78,809 (1.80)	Drain to catch basin; detain in WQF 3
Zone 3 (North)	200,129 (4.59)	35,952 (0.82)	164,177 (3.77)	Drain to catch basin; detain in WQF 4
Remainder	23,087 (0.53)	-	23,087 (0.53)	Pervious yard/taxlot surface that drains outside of proposed stormwater basin
Total	424,710 (9.75)	85,112 (1.95)	339,951 (7.80)	

*For the purposes of water quality and quantity calculations, lots are assumed to be 50%-75% pervious based upon maximum lot coverage by the zone.

7. Water Quantity and Quality BMP DESIGN:

Dual use facilities are proposed to provide both water quantity and water quality treatment of on-site and off-site runoff per Section 18.16.130 of the City standards. The selected BMP is a vegetated bioswale that will promote settlement of suspended solids and filtration through growing medium. A typical vegetated bioswale per DEQ Post-Construction Stormwater Management Plan Guidelines is depicted on Sheet D-1. Bioswales treat stormwater runoff via filtration and then route the treated water through an underground, perforated pipe to discharge in the existing and newly created wetlands at the center of the site. Swales are also designed with one or two overflow outlet pipes to prevent overtopping. Swales are referred to in this document and in the plans as Water Quality Facilities (WQF).

The water quality performance goal as determined by DEQ Post-Construction Guidelines is to treat 50% of the 2-year storm through settling of suspended solids and through nutrient uptake by the basin vegetation (see Planting List). The water quantity function of the stormwater facility is sized to ensure that the post-developed flows do not exceed pre-development flows [50% of 2-year, 2-year, 10-year, 25-year, 50-year, and 100-year flow events]. The pre- and post-development flow rates are listed in Table 2. WQF's are designed to minimize post-development flow rates but maintain hydrologic functionality of the nearby wetlands by infiltrating water into the shared soil complex and by discharging treated runoff to the wetlands directly during high flow events. An additional requirement is imposed from St. Helens Engineering Standards to ensure that the post-developed 100-year storm event is safely routed without

overtopping.

Stormwater calculations were performed using the SBUH method and an SCS Type 1A 24-hour storm. HydroCAD computer software aided in the analysis. Representative CN numbers were selected based upon proposed ground cover and permeability. Table 3 provides the recommended geometry of the water quality facilities (i.e., vegetated bioswales) to provide sufficient detention and filtration of the water quality storm event. The stated detention volume is considered a minimum. Table 4 provides the overflow outlet invert elevations to prevent overtopping during design storm events. The water quality facilities are numbered to correspond with the Stormwater Plan provided on sheets C-12 through C-14 of the plans.

Table 2. Pre- and Post-Development Peak Flow Release Rates

Design Storm Event	Depth (in.)*	Pre-Developed Peak Flow Rate (cfs)	Post-Developed Peak Flow Rate (cfs)
Water Quality Event (50% of 2-Year)	1.25"	2.92	2.11
2-Year	2.5"	7.23	5.73
10-Year	3.0"	9.25	6.86
25-Year	3.5"	11.4	7.92
50-Year	3.75"	12.47	11.05
100-Year	4.0"	13.58	12.04
*Design storm depth per Oregon Climate Service			

Table 3. Water Quality Facility Geometry

Parameter	WQF 1	WQF 2	WQF 3	WQF 4
Basin Top Elev.	108'	94'	94'	86'
Basin Bottom Elev.	104'	90'	88'	82'
Bottom Area (ft^2)	1,030	180	206	504
Bottom Perimeter (ft)	207	64	76	195
Top Area (ft^2)	5,286	1,028	2,364	2,305
Top Perimeter (ft)	386	147	271	256
Maximum Side Slopes	2H:1V	2H:1V	2H:1V	2H:1V
Longitudinal Slope	0%	0%	0%	0%
Detention Volume (ft^3)	12,234	1,522	3,665	3,605

Table 4. Orifice Size and Invert Elevations

Water Quality Facility	Orifice Diameter (in.)	Orifice Invert Elevation
WQF 1	10	104.75'
	12	107.50'
WQF 2	10	91.25'
	12	91.50'
WQF 3	12	89.75'
WQF 4	6	82.75'
	8	85.50'

8. Operations and Maintenance

Upon construction and for the first year thereafter it will be the responsibility of the developer to inspect and maintain all stormwater facilities including the new catch basins and the vegetated bioswales. After a 1-year vegetation establishment period and upon City of St. Helens inspection and acceptance of the public stormwater facilities, maintenance responsibilities of the public facilities will be transferred to the City.

Stormwater Facility Maintenance Considerations (from King County Surface Water Manual):

- The vegetated bioswales should be inspected annually. Floating debris and accumulated petroleum products should be removed as needed, but at least annually.
- Nearby vegetation should be trimmed as necessary to keep the pond free of leaves and to maintain the aesthetic appearance of the area. Slope areas that have become bare should be revegetated and eroded areas should be regraded prior to being revegetated.
- Sediment should be removed when the 1-foot sediment zone is full plus 6 inches. Sediments should be tested for toxicants in compliance with current disposal requirements if land uses in the catchment include commercial or industrial zones, or if visual or olfactory indications of pollution are noticed.
- Water drained or pumped from ponds prior to sediment removal may be discharged to storm drains if it is not excessively turbid (i.e., if water appears translucent when held to light) and if floatable debris and visual petroleum sheens are removed. Excessively turbid water (i.e., water appears opaque when held to light) should be discharged only after the solids have been settled and removed.
- Pumping rates should be slow enough so that downstream channel erosion problems do not develop.

A Public Stormwater Facility Maintenance (first-year establishment) agreement is outlined as follows:

Table 5. Outline Maintenance Agreement

Task	Quarterly	Annual	As-Needed	Criteria
WQ Swale Inspection		X		Overall condition
WQ Manhole Inspection		X		No accumulation of oil or sediment
Catch Basin inspections		X		No blockages or damage
Upstream Outlet Inspection		X		No blockages or damage
Flow Control Outlet Inspection		X		No orifice blockages
Rip-Rap Inspection		X		No erosion
Inspect Plantings (basin and swale)	X			Acceptable survival rate
Oil, sediment, debris removal			X	
Repair damage			X	

9. Water Quality Facility Planting Requirements

The water quality facilities (i.e., vegetated bioswales) which will receive, detain, treat and discharge from the off-site runoff and the site development will be planted in accordance with the recommendations and requirements of the King County Surface Water Manual. The final planting plan will be produced as part of final construction documents in accordance with the following requirements:

- Grass shall be established throughout the entire treatment area of the swale subject to the following provisions:
    - Seeding is best performed in spring (mid-March to June) or fall (late September to October). For summer seeding, sprinkler systems or other measures for watering the grass seed must be provided.
    - Seed may be applied via hydroseeding or broadcast application.
    - Irrigation is required during the first summer following installation if seeding occurs in spring or summer. Swales seeded in the fall may not need irrigation. However, the maintenance and defect financial guarantee will not be released unless a healthy grass cover is established. Therefore, site planning should address the need for sprinklers or other means of irrigation.
- Swale treatment areas are subject to both dry and wet conditions, as well as accumulation of sediment and debris. A mixture of dry-area and wet-area grass species that can continue to grow through silt deposits is most effective. Two acceptable grass seed mixtures for the King County area are listed in Table 6. The mixes shall be applied throughout the swale in the treatment area at a rate of 80 pounds per acre. As an alternative to these mixes, a horticultural or erosion control specialist may develop a seed specification tailored to the site. Table 7 lists grasses or other plants particularly tolerant of wet conditions. Some of these seed types, however, may not be commercially available.
- A newly constructed swale shall be protected from stormwater flows until grass has been established. This may be done by diverting flows or by covering the swale bottom with clear plastic until the grass is well rooted. If these actions are not feasible, an erosion control blanket shall be placed over the freshly applied seed mix.
- Above the design treatment elevation, either a typical lawn seed mix or landscape plants may be used. However, for swales also used to convey high flows, consideration shall be given to the soil binding capacity of the vegetation. Acceptable grasses and groundcovers are presented in Table 8. Plant material other than that given in the table may be used if the swale is privately maintained and the plants selected will not spread into the swale treatment area. Ivy shall not be used because of its tendency to spread. Native plant species (e.g., kinnikinnick) are preferred.

Table 6. Acceptable Grass Seed Mixtures for Vegetated Swales per King County Standards.

TABLE 6.3.1.C GRASS SEED MIXES SUITABLE FOR BIOSWALE TREATMENT AREAS			
Mix 1		**Mix 2**	
75-80 percent	Tall or Meadow Fescue	60-70 percent	Tall Fescue
10-15 percent	Seaside Creeping Bentgrass or Colonial Bentgrass	10-15 percent	Seaside Creeping Bentgrass or Colonial Bentgrass
5-10 percent	Redtop	10-15 percent	Meadow Foxtail
		6-10 percent	Alsike Clover
		1-5 percent	Marshfield Big Trefoil
		1-6 percent	Redtop
Note: All percentages are by weight.			

Table 7. Recommended Plantings for Vegetated Swales per King County Standards.

TABLE 6.3.1.D FINELY-TEXTURED PLANTS TOLERANT OF FREQUENT SATURATED SOIL CONDITIONS OR STANDING WATER			
Grasses		**Wetland Plants**	
Water Foxtail	*Alopecurus geniculatus*	Sawbeak Sedge	*Carex stipata*
Shortawn Foxtail	*Alopecurus aequalis*	Spike Rush	*Eleocharis palustris*
Bentgrass	*Agrosits* spp.	Slender Rush	*Juncus tenuis*
Spike Bentgrass	*A. exarata*	Grass-leaf rush	*Juncus marginatus*
Redtop	*A. alba* or *gigantea*		
Colonial Bentgrass	*A. tenuis* or *capillaris*		
Mannagrass	*Glyceria* spp.		
Western	*G. occidentalis*		
Northern	*G. borealis*		
Slender-Spiked	*G. leptostachya*		
Rough-Stalked Bluegrass	*Poa trivialis*		
Velvet Grass	*Holcus mollis*		

Table 8. Recommended Upper Area Plantings for Vegetated Swales per King County Standards.

TABLE 6.3.1.E GROUNDCOVERS AND GRASSES SUITABLE FOR THE UPPER SIDE SLOPES OF A BIOSWALE	
Groundcovers	
Kinnikinnick*	*Arctostaphylos uva-ursi*
Epimedium	*Epimedium grandiflorum*
—	*Euonymus lanceolata*
Strawberry*	*Fragaria chiloensis*
—	*Genista*
St. John's-Wort	*Hypericum sempervirens*
Broadleaf Lupine*	*Lupinus latifolius*
White Sweet Clover*	*Melilotus alba*
Creeping Forget-Me-Not	*Omphalodes verna*
—	*Rubus calycinoides*
White Lawn Clover	*Trifolium repens*
Yellow-Root	*Xanthorhiza simplissima*
Grasses (drought-tolerant, minimum mowing)	
Buffalo Grass	*Buchloe dactyloides*
Tufted Fescue	*Festuca amethystina*
Tall Fescue *	*Festuca arundinacea*
Hard Fescue	*Festuca ovina duriuscula* (e.g., Reliant, Aurora)
Red Fescue*	*Festuca rubra*
Dwarf Tall Fescues	*Festuca* spp. (e.g., Many Mustang, Silverado)
Blue Oatgrass	*Helictotrichon sempervirens*
Low-growing turf mix: 40% dwarf tall fescue 30% dwarf perenial rye "Barclay" 25% red fescue 5% colonial bentgrass	
* *Native species.* *Notes*: • *Many other ornamental grasses which require only annual mowing are suitable.* • *Ivy is not permitted because of its tendency to spread.*	

10.Summary

The proposed water quantity and quality facilities have been specified to meet City, DEQ, and Army Corps requirements. Dual-purpose vegetated bioswales are the water quality facilities specified to treat and detain post-development flows for the 50% 2-year, 10-year, and 25-year design storms. Full conveyance design will be performed during final engineering. Upstream run-on will be collected on the SW corner of the site and distributed to vegetated bioswales to be treated and then emptied into the existing and proposed wetland areas. The post-development site runoff will combine with runoff from the east wetland areas before passing to the northeast through an existing culvert as part of the Belton Terrace Subdivision and eventually into Dalton Lake. Downstream analysis will be performed as part of final engineering.

11.References

1. Post-Construction Stormwater Management Plan Submission Guidelines, January 2021
2. City of St. Helens Municipal Code, Title 18 Engineering Standards Manual
3. King County, Washington Surface Water Design Manual

12.Appendices List

Appendix A: Off-Site Basin

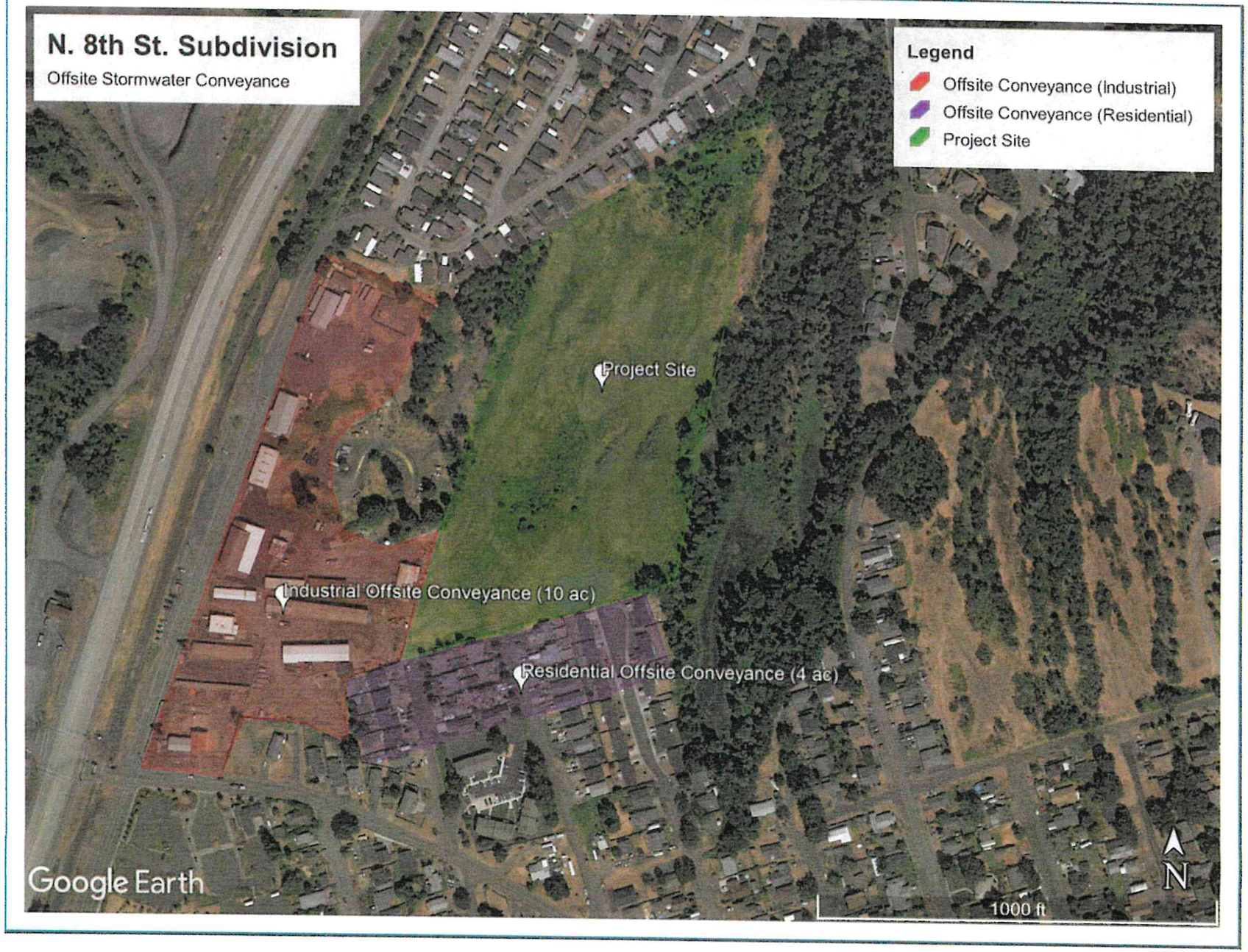
Appendix B: NRCS Soil Report

Appendix C: Section 401 WQC-Post Construction Submission Checklist

Appendix D: Stormwater Calculations

APPENDIX A

Off-Site Basin


N. 8th St. Subdivision
Offsite Stormwater Conveyance
Legend
Offsite Conveyance (Industrial)
Offsite Conveyance (Residential)
Project Site
Project Site
Industrial Offsite Conveyance (10 ac)
Residential Offsite Conveyance (4 ac)
Google Earth
1000 ft
N

APPENDIX B

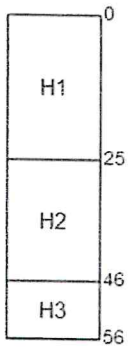
NRCS Soil Report

Xerumbrepts

Soil Profiles

Typical Profile ? >

Org. Matter | Clay | Sand | AWC | Ksat | pH | Kf Factor | EC | SAR | $CaCO_3$ | Gypsum | CEC @ pH7 | Linear Ext.



Soil Taxonomy

Order: *Inceptisols*

Suborder: *Umbrepts* Map of Suborders

Greatgroup: *Xerumbrepts*

Subgroup:

Family: *Xerumbrepts*

Soil Series: *Xerumbrepts*

Land Classification

CA Storie Index: *n/a*

Land Capability Class (non-irrigated): *6-s* ?

Land Capability Class (irrigated): - ?

Ecological Site Description: *n/a* ?

Forage Suitability Group: *n/a* ?

Organic Carbon Stock: *6 [5-8] kg / m²* ?

Organic Carbon Stock 0-30cm: *4 [3-5] kg / m²* ?

Organic Carbon Stock 0-100cm: *6 [5-8] kg / m²* ?

Hydraulic and Erosion Ratings

Wind Erodibility Group: *6* ?

Wind Erodibility Index: *48* ?

T Erosion Factor: *1* ?

Runoff:

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

May 10, 2019
Project No. 19-5185

Shawn Clark
North 8th Street, LLC
76220 Heath Road
Rainier, Oregon 97048
Email: shawnpclark@icloud.com

CC: Shad Haney, Westlake Consulting via email: slhaney@westlakeconsultants.com

SUBJECT: PRELIMINARY GEOTECHNICAL ENGINEERING REPORT
ST. HELENS MOBILE HOME PARK
T5N R1W SECTION 33 TAX LOT 700
ST. HELENS, OREGON

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-6926, dated March 18, 2019, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*. This report is considered preliminary since a layout and grading plan have not been finalized.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is approximately 24 acres in size and located at the northern terminus of N. 8th Street in St. Helens, Columbia County, Oregon (Figure 1). Topography is characterized as undulating with gently to moderately sloping areas (Figure 2). Vegetation has recently been cleared. The property is currently unimproved.

Based on the preliminary site plan provided, development will consist of a 69 lot subdivision for mobile homes, new streets, stormwater facility, open space, and associated underground utilities. The preliminary grading plan provided for our review indicates that maximum cuts of fills will be on the order of 20 feet. Retaining wall may be incorporated into the design.

REGIONAL AND LOCAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-

bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The subject site is underlain by the Columbia River Basalt Formation (Evarts, 2004). The Miocene aged (about 14.5 to 16.5 million years ago) Columbia River Basalts are a thick sequence of lava flows which form the crystalline basement of the region (Madin, 1990). The basalts are composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, brecciated, and sometimes include sedimentary rocks.

REGIONAL SEISMIC SETTING

At least two potential source zones capable of generating damaging earthquakes are thought to exist in the region. These include the Portland Hills Fault Zone and the Cascadia Subduction Zone, as discussed below.

Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills, and is approximately 11.9 miles southwest of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is approximately 20.3 miles south of the site. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 17 miles south of the site. The Oatfield Fault is considered to be potentially seismogenic (Wong, et al., 2000). Madin and Mabey (1996) indicate the Portland Hills Fault Zone has experienced Late Quaternary (last 780,000 years) fault movement; however, movement has not been detected in the last 20,000 years. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately 50 miles west of the Portland Basin at depths of between 20 and 40 kilometers below the surface.

FIELD EXPLORATION

Our site-specific exploration for this report was conducted on April 4, 2019. Thirty five exploratory test pits were excavated with a medium sized backhoe to depths ranging between 0.3 and 10 feet at the approximate locations presented on Figure 2. It should be noted that exploration locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

A GeoPacific geologist continuously monitored the field exploration program and logged the explorations. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System (USCS). Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of the test pits and borings are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

Table 1. Rock Hardness Classification Chart

ODOT Rock Hardness Rating	Field Criteria	Unconfined Compressive Strength	Typical Equipment Needed For Excavation
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many blows, hammer rebounds	>16,000 psi	Blasting

Undocumented Fill: Undocumented fill was encountered beneath a thin topsoil horizon in test pits TP-5 and TP-7. The fill generally consisted of brown to dark gray, gravel (GM) with a silty clay to clayey silt matrix. The fill had a loose to medium dense relative density and extended to depth of 6 feet in test pit TP-5 and 7 feet in test pit TP-7. Other areas or areas of deeper undocumented fill may exist outside our exploration locations.

Topsoil Horizon: The ground surface in test pits TP-1 through TP-35 was directly underlain by a moderately to highly organic topsoil horizon. The brown, gravelly silt (OL-ML) was loose and contained fine roots throughout. In test pits, the topsoil horizon typically extended to a depth of 3 to 18 inches.

Residual Soil: Underlying the topsoil horizon in test pits TP-4, TP-6, TP-26, and TP-29 and the fill in test pit TP-5 was residual soil derived from in place decomposition of the underlying Columbia River Basalt Formation. These soils generally consisted of medium stiff to very stiff, light reddish brown clayey silt (ML) to silty clay (CL) with basalt fragments or loose to medium dense, silty gravel (GM). Significant caving of the excavation sidewalls was observed in test pit TP-26 due to soft soil conditions and shallow groundwater, which was encountered at a depth of 2 feet. In test pits TP-4 through TP-6 and TP-29, the residual soil extended to depths of 2 to 8 feet below the ground surface and beyond the maximum depth of exploration in test pit TP-26 (4 feet).

Columbia River Basalt Formation: The fill in test pit TP-7; the topsoil horizon in test pits TP-1 through TP-3, TP-8 through TP-25, TP-27, TP-28, and TP-30 through TP-35; and the residual soil in test pits TP-4 through TP-6 and TP-29 was underlain by gray basalt with trace silty clay to clayey silt matrix belonging to the Columbia River Basalt Formation. The vesicular basalt was weathered to extremely soft (R0) to hard (R4) according to the ODOT Rock Hardness Classification chart and commonly fractured. Practical refusal on medium hard (R3) to hard (R4) basalt was achieved with a medium sized backhoe equipped with rock teeth in test pits TP-1 through TP-6, TP-8 through TP-25, and TP-27 through TP-35 at depths of 0.25 to 9.5 feet, as presented on Figure 2 and indicated in Table 2.

Table 2. Summary of Hard Rock Encountered in Test Pits and Depths of Practical Refusal

Test Pit	Depth at which Rock is First Encountered	Depth of Practical Refusal on R3-R4 Basalt
TP-1	0.5'	0.75'
TP-2	0.5'	1.0'
TP-3	1.5'	2.5'
TP-4	2.0'	2.0'
TP-5	8.0'	8.0'
TP-6	2.0'	3.5'
TP-7	7.0'	>10.0'
TP-8	1.0'	8.0'
TP-9	0.25'	0.5'
TP-10	1.0'	2.0'
TP-11	0.25'	0.25'
TP-12	0.25'	0.25'
TP-13	0.25'	0.25'

Test Pit	Depth at which Rock is First Encountered	Depth of Practical Refusal on R3-R4 Basalt
TP-14	1.5'	7.0'
TP-15	0.25'	0.5'
TP-16	1.5'	1.5'
TP-17	2.0'	2.0'
TP-18	1.5'	3.0'
TP-19	0.75'	2.0'
TP-20	1.0'	1.0'
TP-21	0.5'	2.5'
TP-22	0.5'	5.0'
TP-23	0.5'	1.5'
TP-24	0.75'	2.0'
TP-25	1.5'	2.0'
TP-27	1.5'	6.0'
TP-28	1.0'	8.0'
TP-29	7.5'	9.5'
TP-30	1.5'	3.5'
TP-31	0.75'	9.0'
TP-32	0.75'	3.5'
TP-33	1.0'	2.0'
TP-34	0.0'	4.0'
TP-35	0.5'	1.5'

Soil Moisture and Groundwater

On April 4, 2019, soils encountered in test pits were moist to wet. Perched groundwater seepage was encountered in test pits TP-5, TP-7, TP-8, and TP-29 at depths of 4.5 to 7 feet. Discharge was visually estimated at approximately 1 to 5 gallons per minute. Static groundwater was encountered in test pit TP-26 at a depth of 2 feet. Experience has shown that temporary perched storm-related groundwater conditions often occur within the surface soils over fine-grained native deposits such as those beneath the site, particularly during the wet season. It is anticipated that

groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The primary geotechnical condition unfavorable to development is the presence of shallow rock encountered throughout the property. Basalt bedrock was encountered in test pits TP-1 through TP-25 and TP-27 through TP-35 and practical refusal was achieved with a medium sized backhoe equipped with rock teeth in test pits TP-1 through TP-6, TP-8 through TP-25, and TP-27 through TP-35 at depths of 0.25 to 8.5 feet. Difficult excavating conditions should be expected throughout the site.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. Remaining undocumented fills and any subsurface structures (dry wells, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be removed and the excavations backfilled with engineered fill. Undocumented fill was encountered in test pits TP-5 and TP-7 to depths of 6 and 7 feet, respectively. We anticipate that other areas of undocumented fill may exist in the vicinity of the existing streets that terminate at the property boundary.

Organic-rich topsoil should then be stripped from native soil areas of the site. The estimated depth range necessary for removal of topsoil in cut and fill areas is approximately 3 to 12 inches, respectively. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/ excavation has been performed. Stripped topsoil should preferably be removed from the site due to the high density of the proposed development. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Once topsoil stripping and removal of organic and inorganic debris and undocumented fill soils are approved in a particular area, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below), or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill provided they are adequately moisture conditioned prior to compacting. Imported fill material should be reviewed by GeoPacific prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 90% of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd^3, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Keyways and Benching For Engineered Fill on Slopes

Engineered fill to be placed in sloping areas inclining steeper than 20% grade should be constructed on a keyway and benches in accordance with the typical design shown in Figure 3. Keyways should have a minimum depth of 2 feet and minimum width of 10 feet. Removal of soft or potentially unstable soils may be required depending on conditions observed during construction. Both benches and keyways should be roughly horizontal in the down slope direction, but may slope up to 20% grade along topographic contour. Keyways sloping more than 20% grade along topographic contour should be benched.

The keyway should include a subdrain consisting of a minimum 3-inch-diameter, ADS Heavy Duty grade (or equivalent), perforated plastic pipe enveloped in a minimum of 3 cubic feet per lineal foot of 2"- ½", open-graded gravel drain rock wrapped with geotextile filter fabric (Mirafi 140N or equivalent). GeoPacific should inspect keyways, subdrains and benching prior to fill placement. Areas of potential seepage observed during construction may require a rock blanket drain in the keyway bottom.

We recommend that permanent fill and cut slopes be constructed no steeper than 2H:1V (50% grade). Fill slopes should be overbuilt a minimum of 3 feet horizontally beyond finish grade and then trimmed back to finish grade as shown in figure in order to achieve a well compacted slope face.

Excavating Conditions and Utility Trenches

Due to the presence of shallow basalt bedrock, difficult excavating conditions should be anticipated throughout the site. Very soft (R1) to hard (R4) basalt were encountered throughout the site. Practical refusal was achieved with a medium sized backhoe in test pits TP-1 through TP-6, TP-8 through TP-25, and TP-27 through TP-35 at depths of 3 inches to 9.5 feet. A larger excavator may be able to achieve greater excavation depths; however, difficult excavating conditions should be expected.

All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing native soil is classified as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions.

Soft, saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater. Trench bottom stabilization, such as one to two feet of compacted crushed aggregate base, may be necessary in deeper trenches.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 90% of the maximum dry density obtained by Modified Proctor ASTM D1557 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion, except in areas of moderately to steeply sloping topography. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw bales and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Straw wattles and/or geotextile silt fences should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

Spread Foundations

The proposed residential structures may likely be supported on shallow foundations bearing on competent undisturbed, native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story structures. Minimum foundation reinforcement should consist of a No. 4 bar at the top of the stem walls, and a No. 4 bar at the bottom of the footings. Concrete slab-on-grade reinforcement should consist of No. 4 bars placed on 24-inch centers in a grid pattern.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft^2 for footings bearing on competent, low to moderately expansive, native soil and/or engineered fill. A maximum chimney and column load of 40 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that drainage provisions are incorporated, free draining gravel backfill is used, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude 6.5H, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the

base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

Pavement Design

For design purposes, we used an estimated resilient modulus of 9,000 for compacted native soil. Table 3 presents our recommended minimum pavement section for dry weather construction.

Table 3. Recommended Minimum Dry-Weather Pavement Section

Material Layer	Light-duty Public Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	12 in.	95% of Standard Proctor AASHTO T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Seismic Design

The Oregon Department of Geology and Mineral Industries (Dogami), Oregon HazVu: 2019 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake (Dogami HazVu, 2019). Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2015 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2014). We recommend Site Class C be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the Applied Technology Council (ATC) 2019 Hazards by Location Online Tool are summarized in Table 4, and are based upon existing soil conditions.

Table 4. Recommended Earthquake Ground Motion Parameters (2010 ASCE-7)

Parameter	Value
Location (Lat, Long), degrees	45. 873, -122.810
Mapped Spectral Acceleration Values (MCE):	
Peak Ground Acceleration PGA_M	0.406
Short Period, S_s	0.924 g
1.0 Sec Period, S_1	0.419 g
Soil Factors for Site Class D:	
F_a	1.031
F_v	1.381
Residential Site Value = 2/3 x F_a x S_s	0.635 g
Residential Seismic Design Category	C

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. According to the Oregon HazVu: Statewide Geohazards Viewer, the subject site is regionally characterized as having a moderate risk of soil liquefaction (DOGAMI:HazVu, 2019). Due to the presence of shallow basalt bedrock, it is our opinion that the site does not have a risk of liquefaction.

Footing and Roof Drains

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be consulting regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

If the proposed structures will have a raised floor, and no concrete slab-on-grade floors in living spaces are used, perimeter footing drains would not be required based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe

outlet. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to meet the street.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.

For BKR

REGISTERED PROFESSIONAL ENGINEER
14743PE
OREGON
JAN. 23, 1990
JAMES D. IMBRIE

EXPIRES: 06/30/2019

Beth K. Rapp, C.E.G.
Senior Engineering Geologist

James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Site and Exploration Plan
Figure 3 – Fill Slope Detail
Test Pit Logs (TP-1 through TP-35)

REFERENCES

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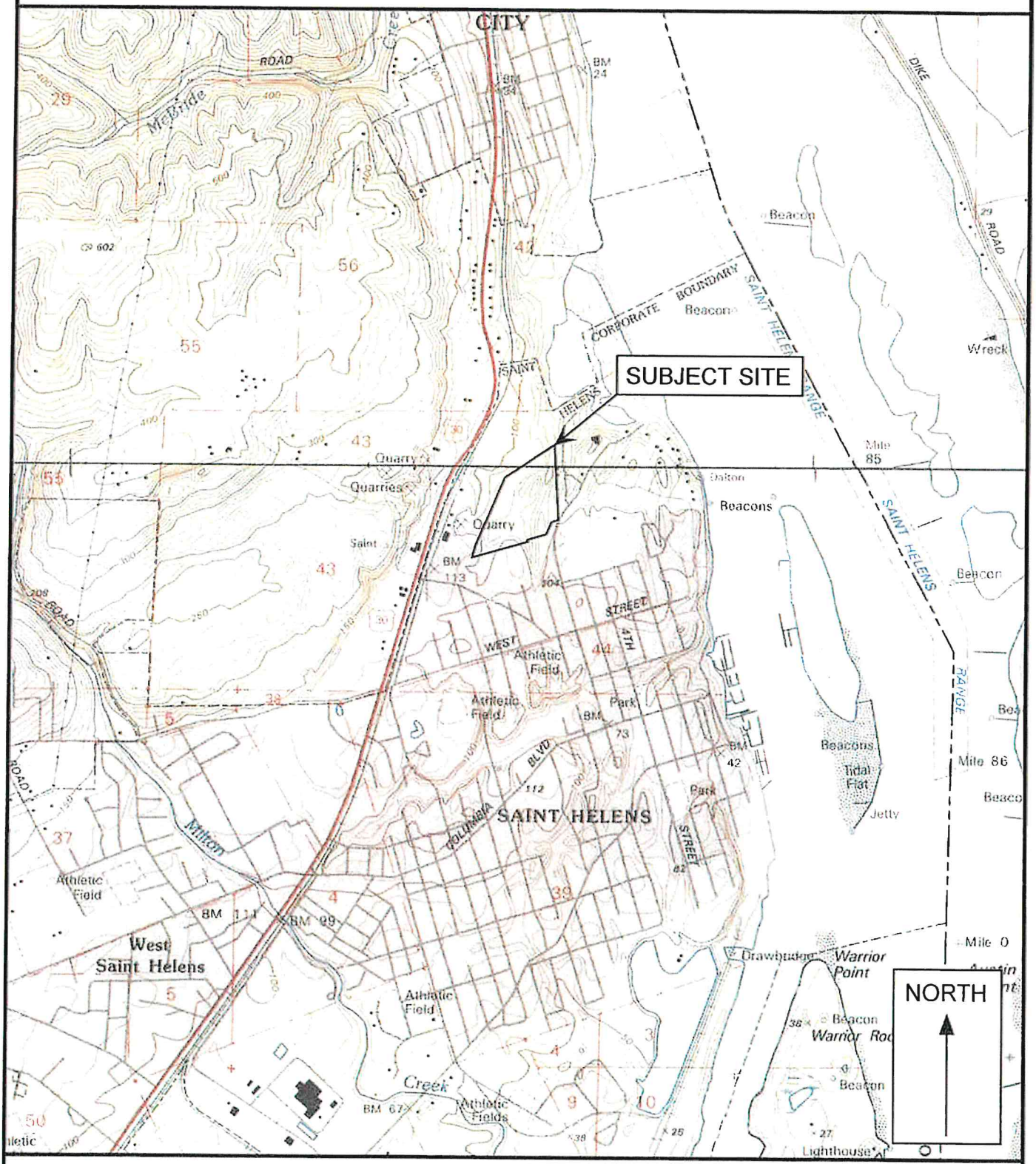
CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (90% of Modified Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Compaction testing of trench backfill (90% of Modified Proctor)	During backfilling, tested every 4 vertical feet for every 200 lineal feet	Soil Technician	
6	Street Subgrade Compaction (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
7	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 lineal feet	Soil Technician	
8	AC Compaction (91% (bottom lift) / 92% (top lift) of Rice)	During paving, tested every 200 lineal feet	Soil Technician	
9	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 ft

Date: 5/10/2019
Drawn by: EKR

Base maps: U.S. Geological Survey 7.5 minute Topographic Map Series, Deer Island, Oregon Quadrangle, 1990 and St. Helens, Oregon Quadrangle, 1990.

Project: St. Helens Mobile Home Park Subdivision St. Helens, Oregon	Project No. 19-5185	FIGURE 1

GeoPacific Engineering, Inc.
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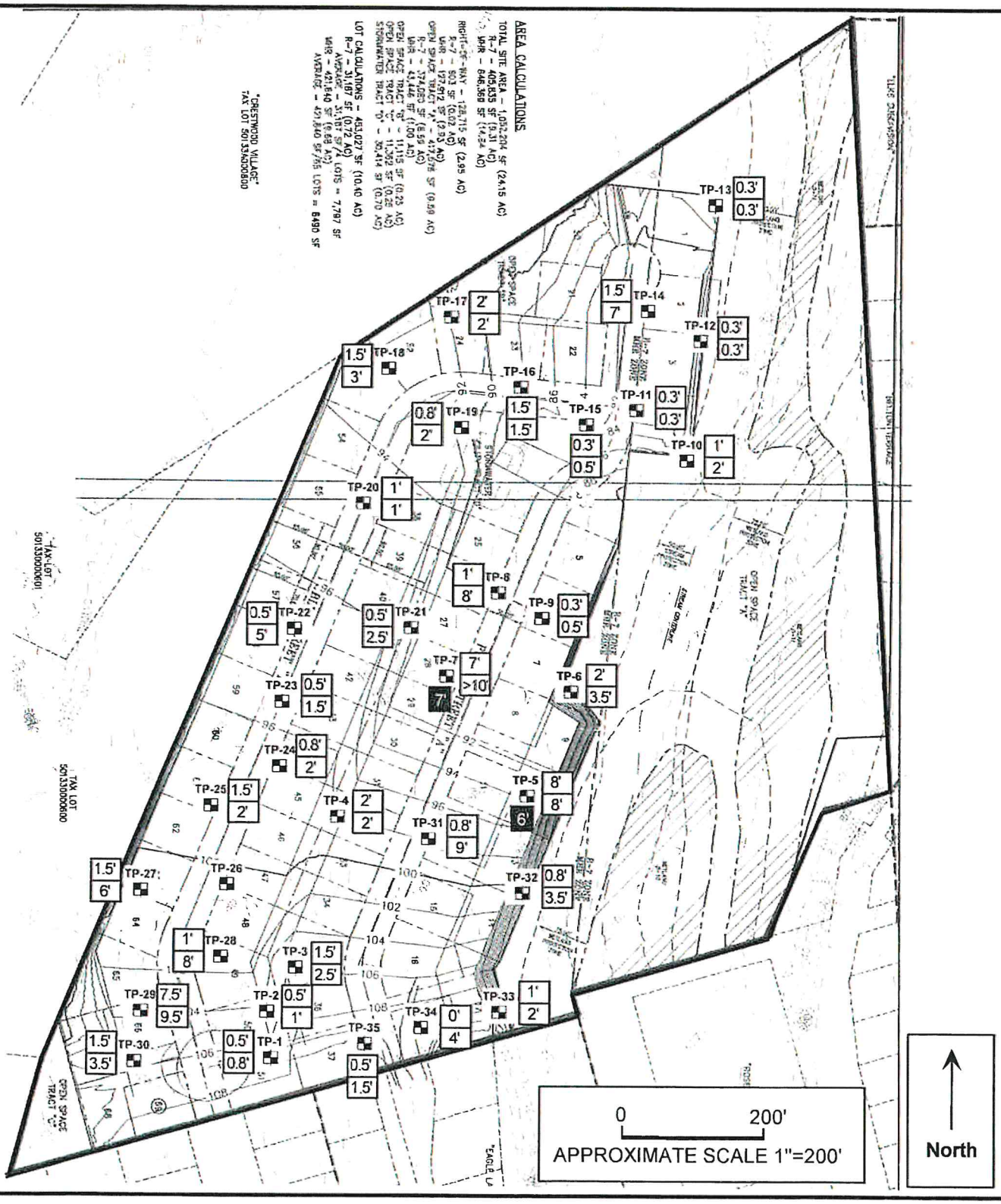
SITE PLAN AND EXPLORATION LOCATIONS



Legend

TP-1 Test Pit Designation and Approximate Location

2' = Depth at Which Rock is First Encountered
3.5' = Depth of Practical Refusal on Rock
>10'= Depth is Beyond Maximum Exploration Depth

6' = Depth of Fill Encountered

Date: 5/10/2019
Drawn by: EKR

Project: St. Helens Mobile Home Park St. Helens, Oregon	Project No. 19-5185	FIGURE 2

GeoPacific Engineering, Inc.
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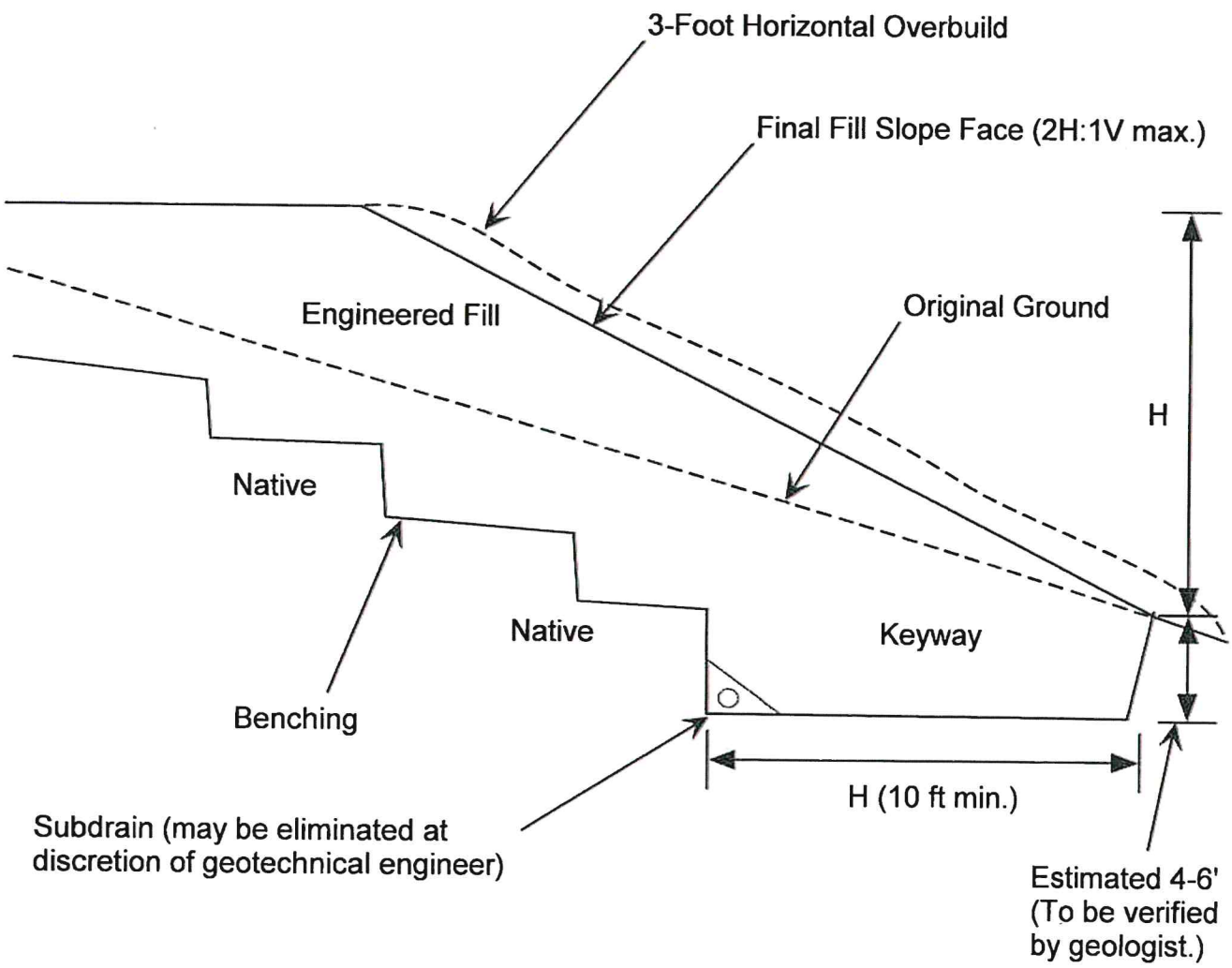
Tel: (503) 598-8445 Fax: (503) 941-9281

FILL SLOPE DETAIL

TYPICAL KEYWAY, BENCHING & FILL SLOPE DETAIL



Recommended subdrain is minimum 3-inch-diameter ADS Heavy Duty grade (or equivalent), perforated plastic pipe enveloped in a minimum of 3 cubic feet per lineal foot of 2" to 1/2" open-graded gravel drain rock wrapped with geotextile filter fabric (Mirafi 140N or equivalent).

Project: St. Helens Mobile Home Park St. Helens, Oregon	Project No. 19-5185	FIGURE 3

Oregon
Kate Brown, Governor

Department of Environmental Quality
Northwest Region Portland Office/Water Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232-4100
(503) 229-5263
FAX (503) 229-6957
TTY 711

July 16th, 2021

Shawn Clark
North 8th Street, LLC
76220 Heath Rd.
Rainier, OR 97048

RE: 2019-342; North 8th Street Subdivision 401 Water Quality Certification

The Department of Environmental Quality (DEQ) has reviewed the U.S. Army Corps of Engineers (USACE) Permit application #2019-342, pursuant to a request for a Clean Water Act Section 401 Water Quality Certification (WQC) received on April 19th, 2021. DEQ's 401 WQC public comment opportunity was circulated with the USACE public notice, and DEQ received no water quality comments.

According to the application, North 8th Street LLC ("the Applicant") proposes to impact wetlands in order to develop 9.75 acres of a 24-acre parcel into a 66-lot single-family residential subdivision including new public streets, public utilities, and water quality facilities. The project is located in wetlands adjacent to Beaver Creek and the Columbia River in, St. Helens, Columbia County, Oregon (Section 33/Township 5 North/Range 1 West).

Project Description: The Applicant proposes to develop public street access providing vehicular, pedestrian and multimodal access by extending two existing rights-of-way into the property from the south. Placement of 3,942 cubic yards of fill into wetlands and 32 cubic yards of fill into other waters for construction of the lots, access roads, and utilities is proposed resulting in 0.58 acre of permanent impact to wetlands and 0.003 acre of non-wetland waters. A 75-foot upland buffer will be enhanced via removal of invasive species and installation of native plantings. Onsite permittee responsible mitigation consisting of wetland creation is proposed in combination with payment to the Department of State Lands in-Lieu Program (PIL).Avoided wetland and drainage disturbed by previous logging activities totaling 0.07 acre will be restored as mitigation efforts.

Status of Affected Waters of the State: The Columbia River is classified as water quality limited under the Federal Clean Water Act and is listed on the Section 303(d) list of impaired water bodies for the parameters of arsenic, polychlorinated biphenyls (PCBs); DDE 4; temperature; and has an Environmental Protection Agency Total Maximum Daily Load (TMDL) developed for the parameters of dioxin.

In addition, the entire Lower Columbia Basin has a TMDL for all perennial streams and fish-bearing intermittent streams for total dissolved gas.

The above listed parameters impair the following beneficial uses in the Columbia River: Fishing; Private Domestic Water Supply; Public Domestic Water Supply; Fish and Aquatic Life.

Certification Decision: Based on the information provided by the Applicant and USACE, DEQ is reasonably assured that implementation of the project will be consistent with applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act, state water quality standards set forth in Oregon Administrative Rules Chapter 340 Division 41 and other appropriate requirements of state law, provided the following conditions are incorporated into the USACE permit and strictly adhered to by the Applicant.

401 WQC GENERAL CONDITIONS

1) **Responsible parties:** This 401 WQC applies to the Applicant. The Applicant is responsible for the work of its contractors and subcontractors, as well as any other entity that performs work related to this Water Quality Certification.
Rule: *40 CFR 121, OAR 340-048-0015*
Justification: *DEQ must be aware of responsible parties to ensure compliance.*

2) **Work Authorized:** Work authorized by this Order is limited to the work described in the Joint Permit Application signed on November, 2nd 2020 and additional application materials (hereafter "the permit application materials"), unless otherwise authorized by DEQ. If the project is operated in a manner that's not consistent with the project description contained in the permit application materials, the Applicant is not in compliance with this Order and may be subject to enforcement.
Rule: *OAR 340-048-0015*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

3) **Duration of Certificate:** This 401 Water Quality Certification for impacts to waters, including dredge and fill activities, is valid for five years from the date of issuance of the USACE 404 permit. A new or modified 401 WQC must be requested before any modification of the USACE 404 permit. Post construction stormwater facilities must be maintained for the life of the facility.
Rule: *40 CFR 121*
Justification: *Certification is required for any license or permit that authorizes an activity that may result in a discharge.*

4) **401 WQC on Site:** A copy of this 401 Water Quality Certification letter must be kept on the job site and readily available for reference by the Applicant and its contractors and subcontractors, as well as by DEQ, US Army Corps of Engineers, National Marine Fisheries Service, Oregon Department of Fish and Wildlife and other state and local government inspectors.
Rule: *OAR 340-012*
Justification: *All parties must be aware of and comply with the 401 WQC, including on-site contractors.*

5) **Modification:** Any approved modifications to this certification, including a change of ownership, will incur a Tier 1 fee of $985 at a minimum. A higher fee may be assessed for complex modifications.
Rule: *OAR 340-048-0050*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

6) **Notification:** The Applicant must notify DEQ of any change in ownership or control of this project within 30 days, and obtain DEQ review and approval before undertaking any change to the project that might affect water quality.
Rule: *OAR 340-048-0050*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

7) **Project Changes:** DEQ may modify or revoke this certification, in accordance with Oregon Administrative Rules 340-048-0050, if the project changes or project activities are having an adverse impact on state water quality or beneficial uses, or if the Applicant violates any of the conditions of this certification.
Rule: *OAR 340-048-0050*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

8) **Access:** The Applicant and its contractors must allow DEQ access to the project site with or without prior notice, including staging areas, and mitigation sites to monitor compliance with these certification conditions, including:

a. Access to any records, logs, and reports that must be kept under the conditions of this certification;

b. To inspect best management practices, monitoring or equipment or methods; and

c. To collect samples or monitor any discharge of pollutants.

Rule: *OAR 340-012*
Justification: *DEQ must inspect facilities for compliance with all state rules and laws.*

9) Failure of any person or entity to comply with this order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.
Rule: *OAR 340-012*
Justification: *If the project is not being constructed or operated as proposed, it may not be consistent with water quality requirements.*

CONSTRUCTION SPECIFIC CONDITIONS

10) **Erosion Control**: During construction, erosion control measures must be implemented to prevent soil from reaching waters of the state. The Applicant is required to develop and implement an effective erosion and sediment control plan. Refer to DEQ's Oregon Sediment and Erosion Control Manual, January, 2013 at:
https://www.oregon.gov/deq/FilterPermitsDocs/ErosionSedimentControl.pdf

A project that disturbs one acre or more may be required to obtain a National Pollutant Discharge Elimination System 1200-C construction stormwater general permit. Contact the DEQ Stormwater Program for more information at:
https://www.oregon.gov/deq/wq/wqpermits/Pages/Stormwater-Construction.aspx

In addition, the Applicant, unless otherwise authorized by DEQ in writing must:

a. Maintain an adequate supply of materials necessary to control erosion at the construction site

b. Prohibit erosion of stockpiles. Deploy compost berms, impervious materials, or other effective methods during rain or when stockpiles are not moved or reshaped for more than 48 hours.

c. Inspect erosion control measures daily and maintain erosion control measures as often as necessary to ensure the continued effectiveness of measures. Erosion control measures must remain in place until all exposed soil is stabilized;

   i. If monitoring or inspection shows that the erosion and sediment controls are ineffective, the Applicant must act immediately to make repairs, install replacements, or install additional controls as necessary.

   ii. If sediment has reached a third of the exposed height of a sediment or erosion control, the Applicant must remove the sediment to its original contour.

d. Use removable pads or mats to prevent soil compaction at all construction access points through, and staging areas in, riparian or wetland areas to prevent soil compaction, unless otherwise authorized by DEQ.

e. Flag or fence off wetlands not specifically authorized to be impacted to protect from disturbance and/or erosion.

f. Place dredged or other excavated material on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands.

g. Place clean aggregate at all construction entrances, and utilize other best management practices, including, but not limited to truck or wheel washes, when earth-moving equipment is leaving the site and traveling on paved surfaces. Vehicles are prohibited from tracking sediment off site.

h. This certification does not authorize the placement of best management practices into waters of the state unless specifically outlined in the application and authorized by DEQ.

i. Upon completion of construction activities, stormwater facilities must be inspected and adequately prepared for post-construction stormwater treatment.

j. Upon completion of construction activities, stormwater facilities must be tested to ensure they are working and adequately prepared for post-construction stormwater treatment.

Rule: *OAR 340-041-0007(8), ORS 468B.050, CWA Section 402, OAR 340-045*
Justification: *DEQ must ensure that pollution does not enter waterways.*

11) **Deleterious waste materials**: The Applicant is prohibited from placing biologically harmful materials and construction debris where they could enter waters of the state, including wetlands (wetlands are waters of the state). This includes, but is not limited to: petroleum products; chemicals; cement cured less than 24 hours; welding slag and grindings; concrete saw cutting by-products; sandblasted materials; chipped paint; tires; wire; steel posts; asphalt; and waste concrete.

The Applicant must:

a. Cure concrete, cement, or grout for at least 24 hours before any contact with flowing waters;

b. Use only clean fill, free of waste and polluted substances;

c. Employ all practicable controls to prevent discharges of spills of harmful materials to surface or groundwater;

d. Maintain at the project construction site, and deploy as necessary, an adequate supply of materials needed to contain deleterious materials during a weather event;

e. Remove all foreign materials, refuse, and waste from the project area; and

f. Employ general good housekeeping practices at all times.

Rule: *OAR 340-041-0007(8), ORS 468B.050, CWA Section 402*
Justification: *DEQ must ensure that pollution does not enter waterways.*

12) **Spill Prevention:** The Applicant must have a spill prevention and control plan. The Applicant must fuel, operate, maintain and store vehicles and equipment, and must store construction materials, in areas that will not disturb native habitat directly or result in potential discharges. In general, reasonable precautions and controls must be used to prevent any discharges of petroleum products or other harmful or toxic materials from entering the water as a result of any in-water activities. In addition, the following specific requirements apply:

a. Vehicle and motorized equipment staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area 150 feet or more from any waters of the state. DEQ may approve in writing exceptions to this distance if all practical prevention measures are employed and this distance is not possible because of any of the following site conditions:

   i. Physical constraints that make this distance not feasible (e.g., steep slopes, rock outcroppings)

   ii. Natural resource features would be degraded as a result of this setback

   iii. Equal or greater spill containment and effect avoidance is provided even if staging area is less than 150 feet away from waters of the state.

b. If staging areas are within 150 feet of any waters of the state, as allowed under subsection (a)(iii) of this condition, full containment of potential contaminants must be provided to prevent soil and water contamination, as appropriate.

c. All vehicles operated within 150 feet of any waters of the state must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected in the vehicle-staging area must be repaired before the vehicle resumes operation.

d. Before operations begin and as often as necessary during operation, equipment must be steam cleaned (or undergo an approved equivalent cleaning) until all visible oil, grease, mud, and other visible contaminants are removed if the equipment will be used below the bank of a waterbody.

e. All stationary power equipment (e.g., generators, cranes, stationary drilling equipment) operated within 150 feet of any waters of the state must be covered by an absorbent mat to prevent leaks, unless other suitable containment is provided to prevent potential spills from entering any waters of the state.

f. An adequate supply of materials (such as straw matting/bales, geotextiles, booms, diapers, and other absorbent materials) needed to contain spills must be maintained at the project construction site and deployed as necessary.

g. All equipment operated in state waters must use bio-degradable hydraulic fluid.

h. A maintenance log documenting equipment maintenance inspections and actions must be kept on-site and available upon request.

Rule: *ORS 466.645(1); OAR 340-142-0030(1)(b)(B), OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways and must be protective of beneficial uses, including fish.*

13) **Spill & Incident Reporting**:

a. In the event that petroleum products, chemicals, or any other harmful materials are discharged into state waters, or onto land with a potential to enter state waters, the Applicant must promptly report the discharge to the Oregon Emergency Response System (800-452-0311). The Applicant must immediately begin containment and complete cleanup as soon as possible.

b. If the project operations cause a water quality problem which results in distressed or dying fish, the Applicant must immediately:

i. Cease operations;

ii. Take appropriate corrective measures to prevent further environmental damage;

iii. Note condition of fish (dead, dying, decaying, erratic, or unusual behavior);

iv. Note the number, species, and size of fish in each condition;

v. Note the location of fish relative to operations;

vi. Note the presence of any apparently healthy fish in the area at the same time;

vii. Collect fish specimens and water samples; and

viii. Notify DEQ, Oregon Department of Fish and Wildlife, National Marine Fisheries Service and U.S. Fish and Wildlife Service as appropriate (reporting of listed fish mortality to National Marine Fisheries Service is required).

Rule: *ORS 466.645(1); OAR 340-142-0030(1)(b)(B), OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways and must be protective of beneficial uses, including fish.*

14) **Vegetation Protection and Restoration:**

a. The Applicant must protect riparian, wetland, and shoreline vegetation in the authorized project area (as defined in the permit application materials) from disturbance through one or more of the following:

   i. Minimization of project and impact footprint

   ii. Designation of staging areas and access points in open, upland areas

   iii. Fencing and other barriers demarcating construction areas

   iv. Use of alternative equipment (e.g., spider hoe or crane)

b. If authorized work results in vegetative disturbance and the disturbance has not been accounted for in planned mitigation actions, the Applicant must successfully reestablish vegetation to a degree of function equivalent or better than before the disturbance. The standard for success is 80 percent cover for native plant species. The vegetation must be reestablished by the completion of authorized work and include:

   i. Restoring damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (e.g., a natural rock wall)

   ii. Replanting or reseeding each area requiring revegetation before the end of the first planting season following construction

   iii. Planting disturbed areas with native plants and trees in all cases except where the use of non-native plant materials may be essential for erosion control

   iv. The use of invasive species to re-establish vegetation is prohibited

   v. Herbicides, pesticides and fertilizers must be applied per manufacturer's instructions, and only if necessary for vegetation establishment. If chemical treatment is necessary, the Applicant is responsible for ensuring that pesticide application laws, including with the National Pollutant Discharge Eliminations System 2300-A general permit are met. Please review the information on the following website for more information: https://www.oregon.gov/deq/wq/wqpermits/Pages/Pesticide.aspx

   Additionally:

   1. Unless otherwise approved in writing by DEQ, applying surface fertilizer within stormwater treatment facilities or within 50 feet of any stream channel is prohibited.

   2. Other than spot application to cut stems, no herbicides are allowed within stormwater treatment facilites or within 150 feet of waters of the state. Mechanical, hand, or other methods may be used to

control weeds and unwanted vegetation within stormwater treatment facilites or within 150 feet of waters of the state; and

3. No pesticides may be used within stormwater treatment facilities or within 150 feet of waters of the state.

vi. Install wildlife-friendly fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons

vii. Minimize soil compaction, especially in areas that are designated for replanting. If soils are compacted, decompact staging areas and work construction areas prior to replanting. Leave topsoil when possible. Chip materials from clear and grub operation and spread on soil surface, unless cleared areas contained invasive species.

Rule: *OAR 340-041, OAR 340-012, OAR 340-041-0033*
Justification: *Riparian, wetland, and shoreline vegetation help ensure excess sediment does not enter a waterway, and helps offset potential temperature impacts. DEQ must ensure that pollution does not enter waterways.*

15) **Buffers:** The Applicant shall avoid and protect from harm, all wetlands and provide a 50 foot buffer to waters of the state, unless proposed, necessary, and approved as part of the project. If a local jurisdiction has a more stringent buffer requirement, that requirement will override this certification requirement.
Rule: *OAR 340-041, OAR 340-012*
Justification: *Riparian, wetland, and shoreline buffers help ensure excess sediment does not enter a waterway, and helps offset potential temperature impacts. DEQ must ensure that pollution does not enter waterways.*

16) **Previously Contaminated Soil and Groundwater:** If any contaminated soil or groundwater is encountered, it must be handled and disposed of in accordance with the soil and groundwater management plan for the site, as well as local, state and federal regulations. The Applicant must notify the Environmental Cleanup Section of DEQ at 800-452-4011 Ex.6258.
Rule: *OAR 340-041, OAR 340-012, OAR 340-122, OAR 340-040*
Justification: *DEQ must ensure that pollution does not enter waterways. As sediments are disturbed, pollutants could become redistributed.*

17) **Notification to DEQ:** The Applicant must provide pre-construction notification to DEQ one week before construction starts. Contact information can be found at the end of the certification.
Rule: *OAR 340-012*
Justification: *DEQ must inspect facilities for compliance with all state rules and laws.*

SPECIFIC CONDITIONS FOR POST-CONSTRUCTION STORMWATER MANAGEMENT

19) **Post Construction Stormwater Management:** The Applicant must implement and comply with the terms of the approved post-construction stormwater management plan, which describes best management practices to prevent or treat pollution in stormwater anticipated to be generated by the project, in order to comply with state water quality standards. The Applicant must implement best management practices as proposed in the stormwater management plan, including operation and maintenance, dated April,

2021. If proposed stormwater facilities change due to site conditions, the Applicant must receive approval in writing from DEQ to make changes.

The project will involve grading and filling on-site wetlands for roadways, building pads, and utilities. The project will interrupt existing stormwater surface flows from the southwest which will be collected and treated in water quality facilities and routed to their previous discharge area to the east of the new development. Runoff from impervious areas within the new development will also be managed in the new public conveyance system that will treat and detain the stormwater in vegetated bioswales that will promote settlement of suspended solids and filtration through growing medium before discharging into the wetlands to the east of the development. These wetland areas naturally drain to the north where they are channelized and flow into the existing public conveyance system outside the project parcel and into the Columbia River.

Within 30 days of project completion, the Applicant must submit a copy of the "as-builts" or red-lined construction drawings showing all stormwater management facilities.
Rule: *ORS 468B.050, OAR 340-045, OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways.*

20) **Stormwater Management & System Maintenance:** The Applicant is required to implement effective operation and maintenance practices for the lifetime of the proposed facility. These include but are not limited to:

a. Monitoring facilities for signs of groundwater interception, and reconstructing the facilities as needed to prevent interception of sub-surface flow.

b. Maintenance techniques and frequency for each system component must follow appropriate recommendations in accepted manuals.

c. Long-term operation and maintenance of stormwater treatment facilities will be the responsibility of North 8th Street LLC unless and until an agreement transferring that responsibility to another entity is submitted to DEQ.

Rule: *OAR 340-041, OAR 340-012, OAR 340-045*
Justification: *DEQ must ensure that pollution does not enter waterways.*

21) **Corrective Action May Be Required:** DEQ retains the authority to require corrective action in the event the stormwater management facilities are not built or performing as described in the plan.

Rule: *OAR 340-041, OAR 340-012*
Justification: *DEQ must ensure that pollution does not enter waterways.*

If the Applicant is not satisfied with the conditions contained in this certification, a contested case hearing may be requested in accordance with Oregon Administrative Rule 340-048-0045. Such requests must be made in writing to the DEQ Office of Compliance and Enforcement at 700 NE Multnomah St, Suite 600, Portland Oregon 97232 within 20 days of the mailing of this certification.

The DEQ hereby certifies this project in accordance with the Clean Water Act and state rules, with the above conditions. If you have any questions, please contact Chance Plunk at chance.plunk@deq.state.or.us, by phone at 541-9725436, or at 165 E. 7th Ave, Suite 100, Eugene, OR 97404.

Sincerely,

Steve Mrazik
Water Quality Manager
Northwest Region

cc: Caila Heintz, USACE
Dan Cary, DSL
Kim Biafora, Schott and Associates

N. 8TH STREET PLANNED DEVELOPMENT

ST. HELENS, OREGON

MASTER LEGEND

(E)	EXISTING	TP	TEST PIT LOCATION
(N)	NEW		SIGN
CO	CLEAN OUT		POWER POLE
LS	PUBLIC LIFT STATION		SUBJECT PROPERTY LINE
	STORM SEWER MANHOLE		ADJACENT PROPERTY LINE
S	SANITARY SEWER MANHOLE		CURB
	NEW CATCH BASIN	10'	NEW MAJOR CONTOUR
FH	FIRE HYDRANT	11'	NEW MINOR CONTOUR
WV	WATER VALVE	10'	EXISTING MAJOR CONTOUR
	POWER POLE	11'	EXISTING MINOR CONTOUR
WM	WATER METER		(E) FILL
	EXTERIOR LIGHTING		(E) WETLAND
	STORMWATER DISCHARGE		(E) WETLAND TO BE RESTORED
	CENTERLINE MONUMENT		(E) DRAINAGE CHANNEL
PWR	POWER LINE		(N) SANITARY SEWER
STM	STORM LINE		(N) STORMWATER SWALE
	FENCE LINE		(N) CREATED WETLAND
SAN	(N) SANITARY SEWER		SIDEWALK
H2O	(N) WATER LINE		
	SLOPE ARROW		

PROJECT TEAM

ENGINEER/PROJECT MANAGER

LOWER COLUMBIA ENGINEERING
58640 McNULTY WAY
ST. HELENS, OR 97051
PHONE: (503) 366-0399
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andrew@lowercolumbiaengr.com
CONTACT: CHASE BERG
chase@lowercolumbiaengr.com

OWNER/DEVELOPER

N. 8TH ST., LLC
SHAWN CLARK AND DENA WOMACK
76220 HEATH ROAD
RAINIER, OR 97048
(312) 965-9637

ECOLOGIST

SCHOTT & ASSOCIATES, LLC
KIM BIAFORA AND JODI REED
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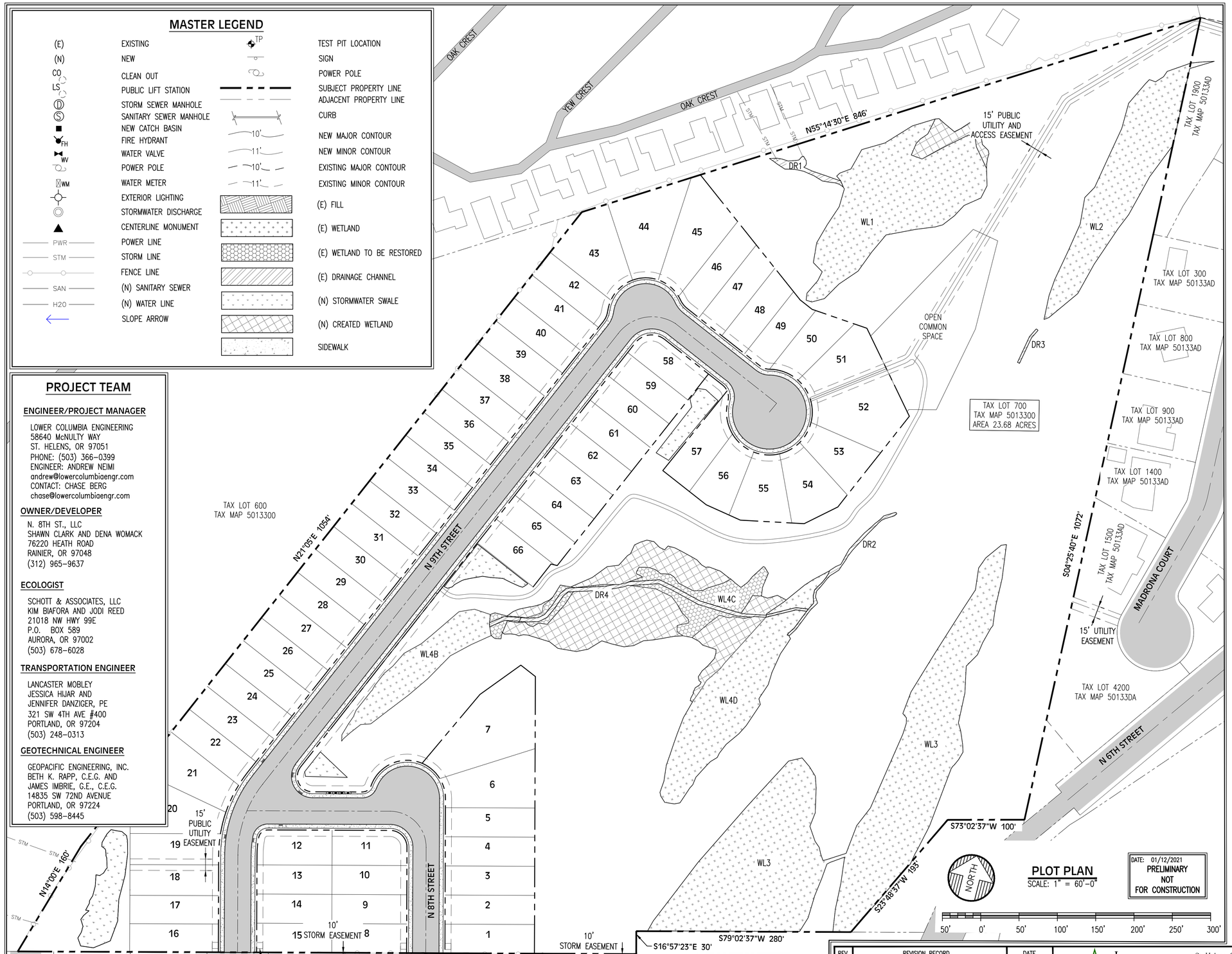
AURORA, OR 97002
(503) 678-6028

TRANSPORTATION ENGINEER

LANCASTER MOBLEY
JESSICA HIJAR AND
JENNIFER DANZIGER, PE
321 SW 4TH AVE #400
PORTLAND, OR 97204
(503) 248-0313

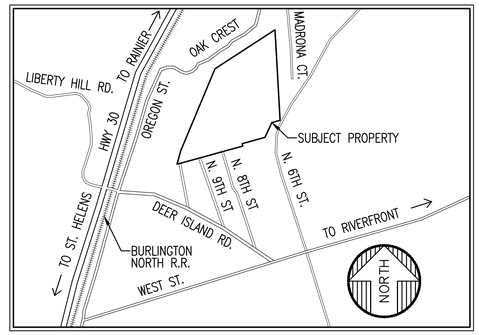
GEOTECHNICAL ENGINEER

GEOPACIFIC ENGINEERING, INC.
BETH K. RAPP, C.E.G. AND
JAMES IMBRIE, G.E., C.E.G.
14835 SW 72ND AVENUE
PORTLAND, OR 97224
(503) 598-8445



PLOT PLAN
SCALE: 1" = 60'-0"

DATE: 01/12/2021
PRELIMINARY
NOT
FOR CONSTRUCTION



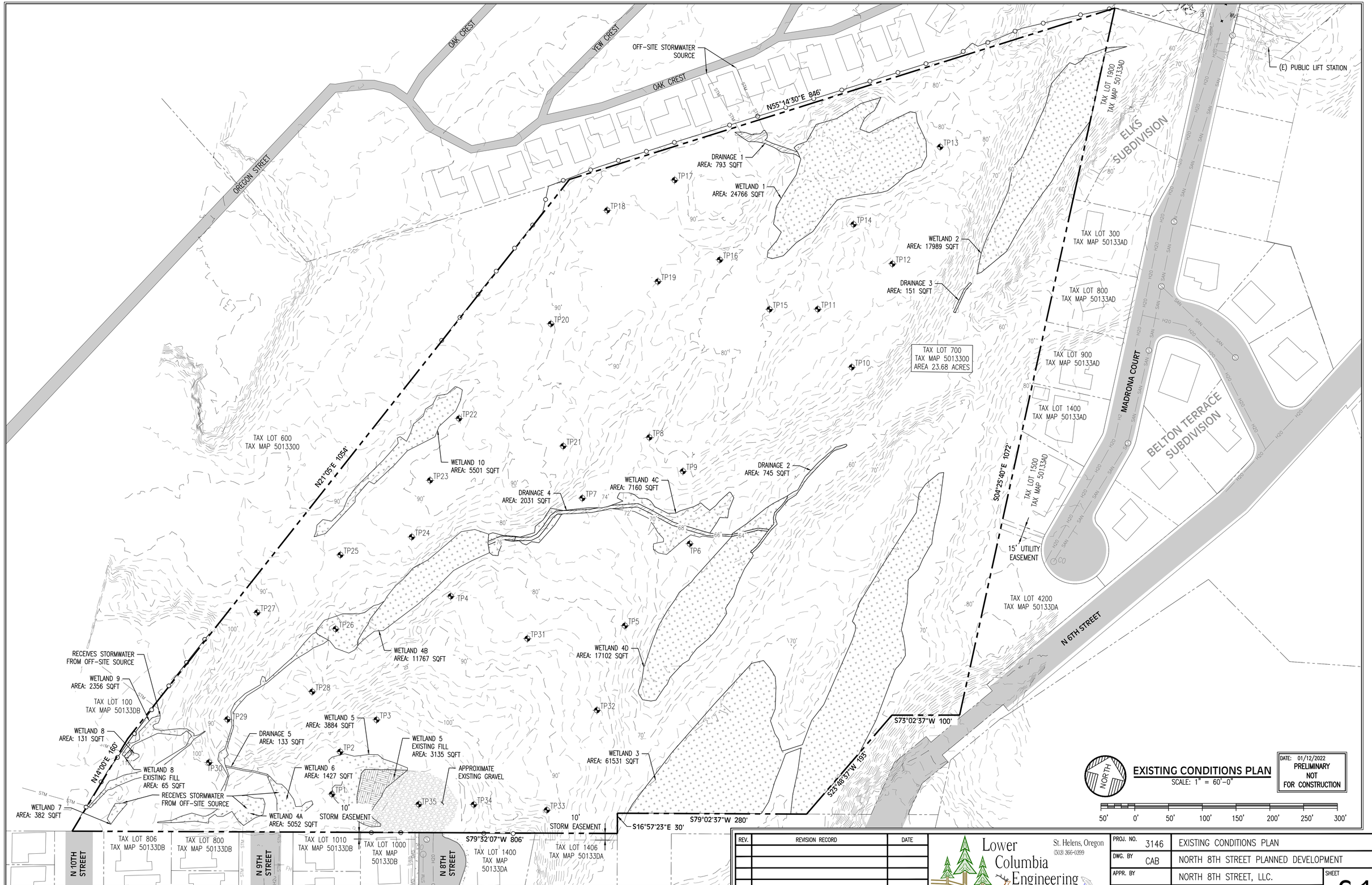
VICINITY MAP
SCALE: NTS

DRAWING INDEX

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	COVER SHEET, INDEX, PLOT PLAN, & VICINITY MAP	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET G-1
FILE	D-3146-G-1	DATE 06/10/2021	



EXISTING CONDITIONS PLAN

SCALE: 1" = 60'-0"

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	EXISTING CONDITIONS PLAN		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-1
FILE D-3146-C-1	DATE 06/10/2021		

EROSION CONTROL LEGEND

- FLOW ARROW
- SLOPE MATTING (AS NECESSARY)
- AREA WHERE ROCK BLASTING IS LIKELY TO OCCUR
- CONSTRUCTION ENTRANCE
- TEMPORARY STOCKPILE
- 25' WETLAND BUFFER
- 75' WETLAND BUFFER
- SEDIMENT FENCE
- STRAW WATTLE
- INLET PROTECTION
- CONCRETE WASHOUT

NOTE:
EFFECTED SLOPES SHALL BE STABILIZED WITH PERMANENT AND TEMPORARY VEGETATION AS NECESSARY.

OAK CREST
YEW CREST
OREGON STREET
N55°14'30"E 846'
DR1
WL1
WL2
TAX LOT 1900
TAX MAP 50133AD
ELKS SUBDIVISION
TAX LOT 300
TAX MAP 50133AD
TAX LOT 800
TAX MAP 50133AD
TAX LOT 900
TAX MAP 50133AD
TAX LOT 1400
TAX MAP 50133AD
BELTON TERRACE SUBDIVISION
SEDIMENT FENCE. (TYP)
INLET PROTECTION (TYP)
DR3
STRAW WATTLES (AS NEEDED)
TAX LOT 600
TAX MAP 5013300
N21°05'E 1054'
DR2
S04°25'40"E 1072'
TAX LOT 1500
TAX MAP 50133AD
MADRONA COURT
15' UTILITY EASEMENT
(N) TEMPORARY CONSTRUCTION STOCKPILE
DR4
WL4C
WL4B
WL4D
WL3
TAX LOT 4200
TAX MAP 50133DA
N 6TH STREET
(N) STRAW WATTLE
(N) SLOPE MATTING (TYP)
(N) CONCRETE WASHOUT
TAX LOT 100
TAX MAP 50133DB
OFF-SITE STORMWATER DISCHARGE FROM INDUSTRIAL AREA
N14°00'E 180'
AREA WHERE ROCK BLASTING LIKELY TO OCCUR
CONSTRUCTION ENTRANCE
SECONDARY CONSTRUCTION ENTRANCE (OPTIONAL)
OFF-SITE STORMWATER DISCHARGE FROM INDUSTRIAL AREA
S73°02'37"W 100'
S25°48'37"W 193'
10' STORM EASEMENT
S16°57'23"E 30'
S79°02'37"W 280'
S79°32'07"W 806'
N 10TH STREET
TAX LOT 806
TAX MAP 50133DB
TAX LOT 800
TAX MAP 50133DB
N 9TH STREET
TAX LOT 1010
TAX MAP 50133DB
10' STORM EASEMENT
TAX LOT 1000
TAX MAP 50133DB
N 8TH STREET
TAX LOT 1400
TAX MAP 50133DA
TAX LOT 1406
TAX MAP 50133DA

NOTE
SEE SHEETS C-30, C-31, C-32, D-30 AND D-31 FOR COMPLETE ESC PLANS FOR DEQ 1200-C PERMIT

NORTH

EROSION & SEDIMENT CONTROL PLAN

SCALE: 1" = 60'-0"

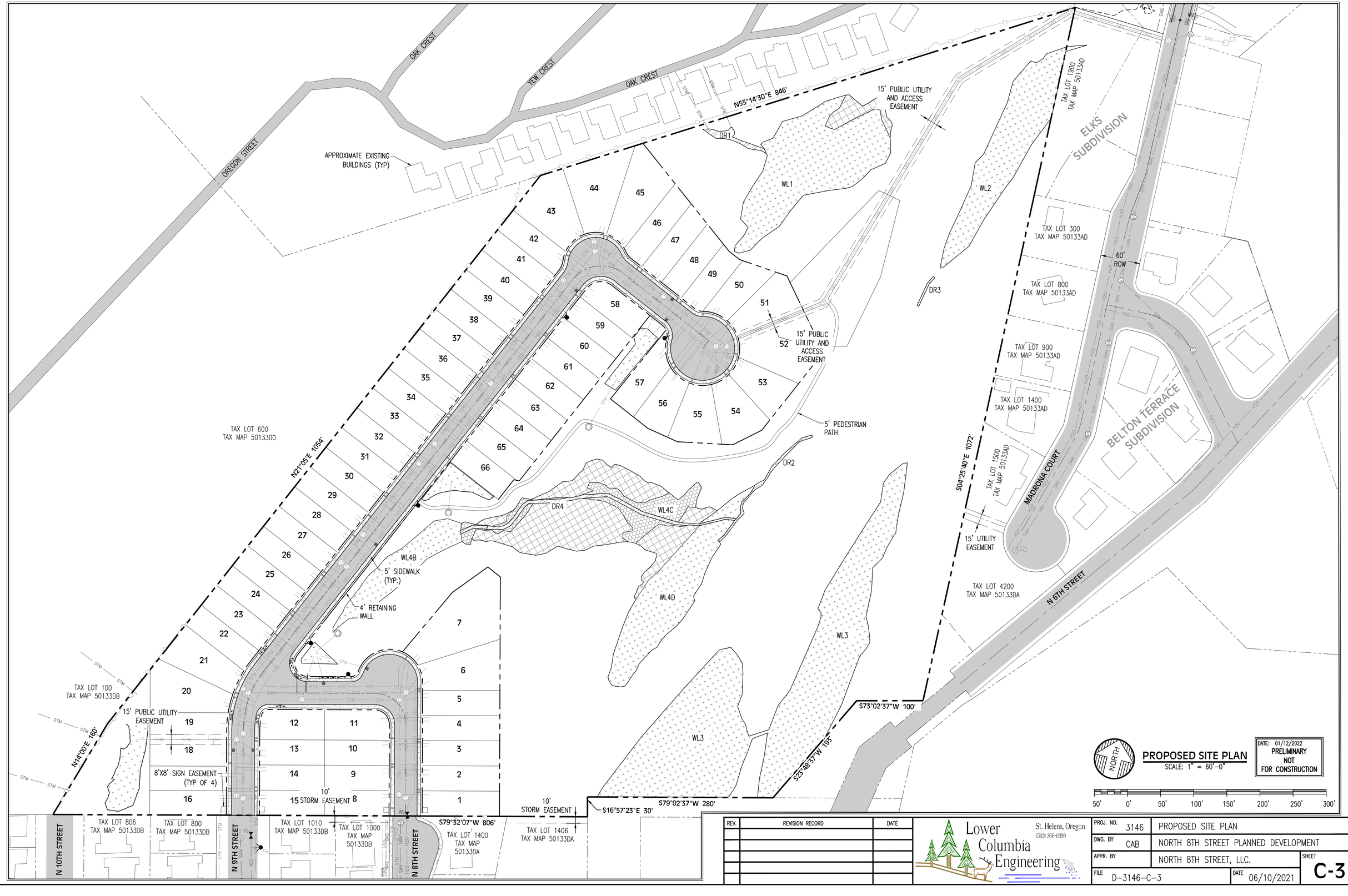
DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

50' 0' 50' 100' 150' 200' 250' 300'

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	EROSION & SEDIMENT CONTROL PLAN
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT
APPR. BY	NORTH 8TH STREET, LLC.
FILE D-3146-C-2	DATE 07/01/2021
	SHEET C-2



PROPOSED SITE PLAN

SCALE: 1" = 60'-0"

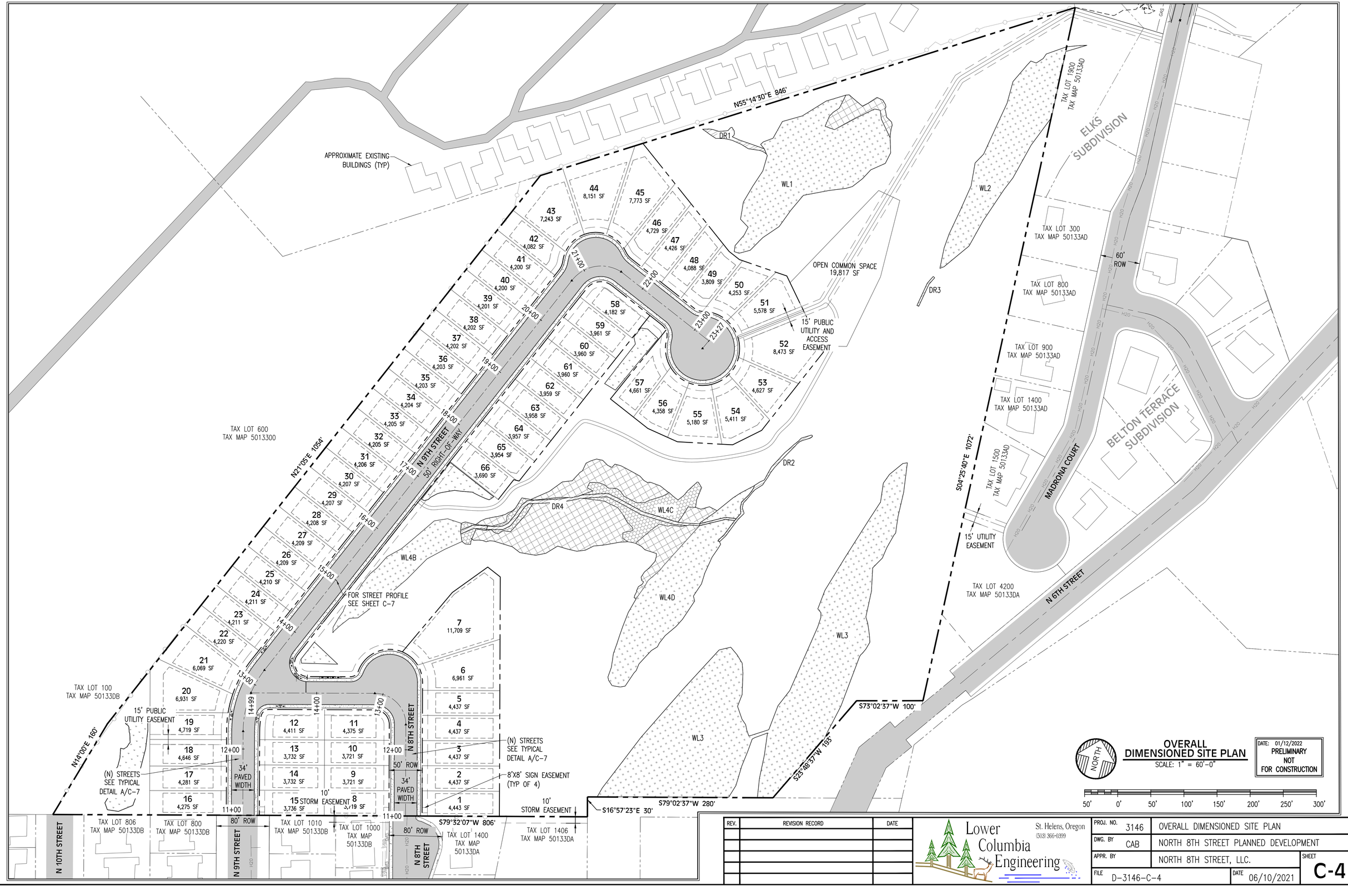
DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

50' 0' 50' 100' 150' 200' 250' 300'

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	PROPOSED SITE PLAN	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-3
FILE	D-3146-C-3	DATE 06/10/2021	



NORTH

OVERALL DIMENSIONED SITE PLAN

SCALE: 1" = 60'-0"

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

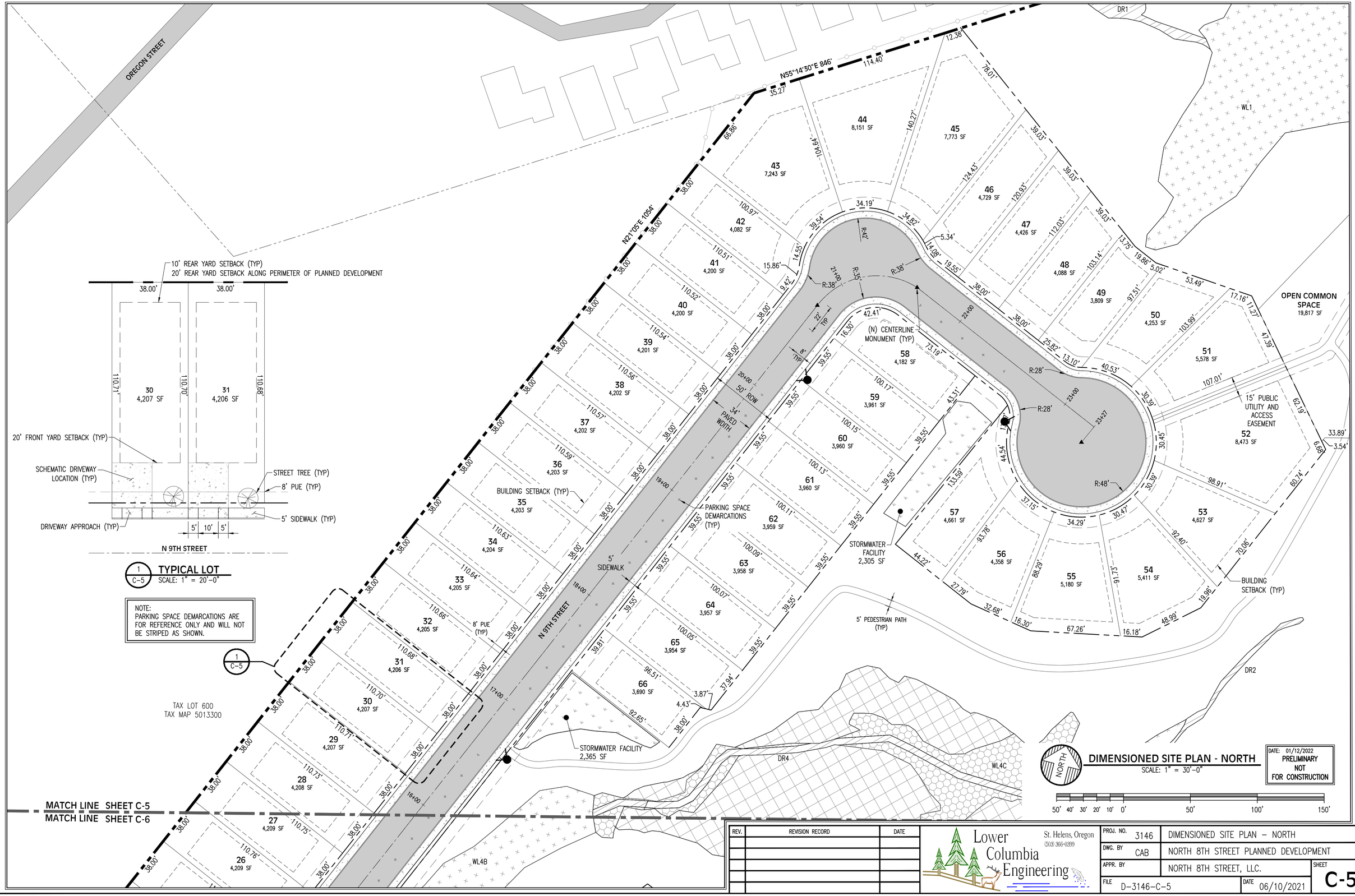
50' 0' 50' 100' 150' 200' 250' 300'

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	OVERALL DIMENSIONED SITE PLAN
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT
APPR. BY	NORTH 8TH STREET, LLC.
FILE D-3146-C-4	DATE 06/10/2021

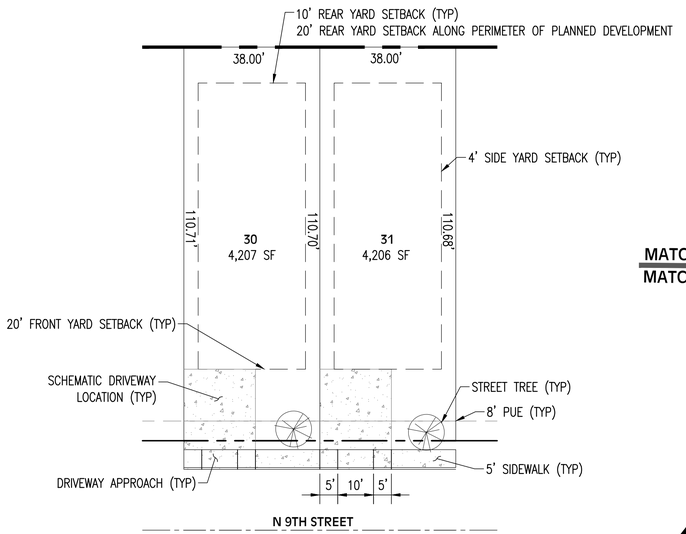
SHEET C-4



REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	DIMENSIONED SITE PLAN – NORTH	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-5
FILE	D-3146-C-5	DATE 06/10/2021	



1 C-6 **TYPICAL LOT**
SCALE: 1" = 20'-0"

NOTE:
PARKING SPACE DEMARCATIONS ARE FOR REFERENCE ONLY AND WILL NOT BE STRIPED AS SHOWN.

TAX LOT 600
TAX MAP 5013300

1 C-6

MATCH LINE SHEET C-5
MATCH LINE SHEET C-6

N21°05'E 1054'

(N) MAILBOX CLUSTER

STORMWATER FACILITY 2,365 SF

N 9TH STREET

50' ROW

PARKING SPACE DEMARCATIONS (TYP)

STORMWATER FACILITY 961 SF

(N) MAILBOX CLUSTERS (TYP OF 4)

CENTERLINE MONUMENT (TYP)

5' SIDEWALK

BUILDING SETBACK (TYP)

15' PUBLIC UTILITY EASEMENT

34' PAVED WIDTH

8' PUE (TYP)

22' TYP

8'X8' SIGN EASEMENT (TYP OF 4)

10' STORM EASEMENT

N 8TH STREET

TAX LOT 100
TAX MAP 50133DB

STORMWATER FACILITY 5,286 SF

N14°00'E 160'

S79°32'07"W 806'

TAX LOT 806
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

N 10TH STREET

80' ROW

N 9TH STREET

WL4C
WL4B
WL4D
WL3
DR4

DIMENSIONED SITE PLAN - SOUTH
SCALE: 1" = 30'-0"

NORTH

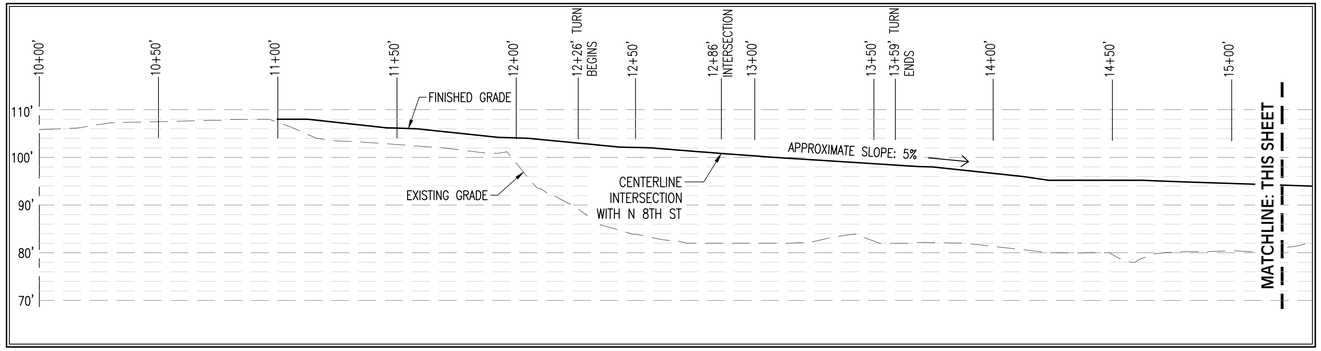
50' 40' 30' 20' 10' 0' 50' 100' 150'

DATE: 01/12/2022
PRELIMINARY NOT FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

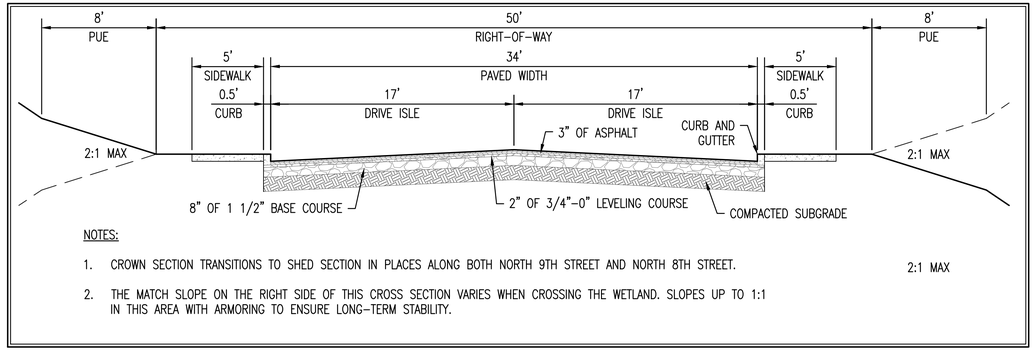
Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	DIMENSIONED SITE PLAN – SOUTH		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-6
FILE D-3146-C-6	DATE 06/10/2021		



N 9TH STREET PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

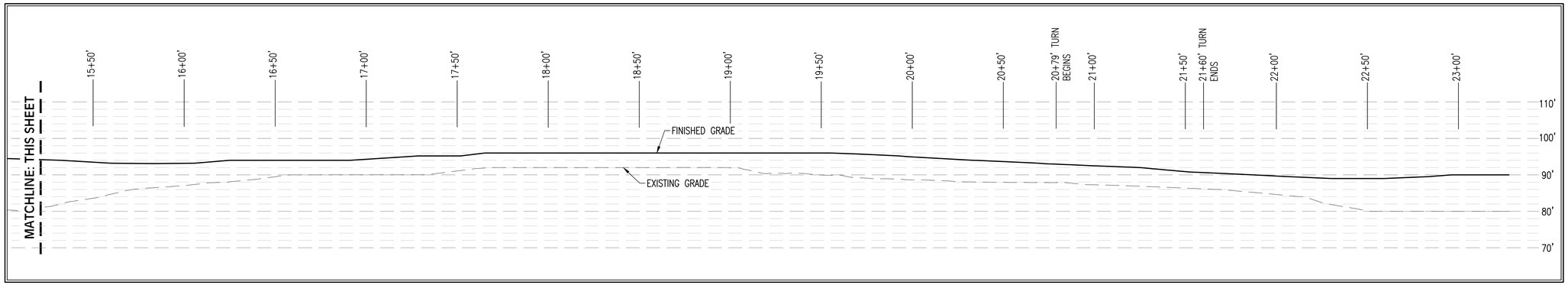


NOTES:

1. CROWN SECTION TRANSITIONS TO SHED SECTION IN PLACES ALONG BOTH NORTH 9TH STREET AND NORTH 8TH STREET.
2. THE MATCH SLOPE ON THE RIGHT SIDE OF THIS CROSS SECTION VARIES WHEN CROSSING THE WETLAND. SLOPES UP TO 1:1 IN THIS AREA WITH ARMORING TO ENSURE LONG-TERM STABILITY.

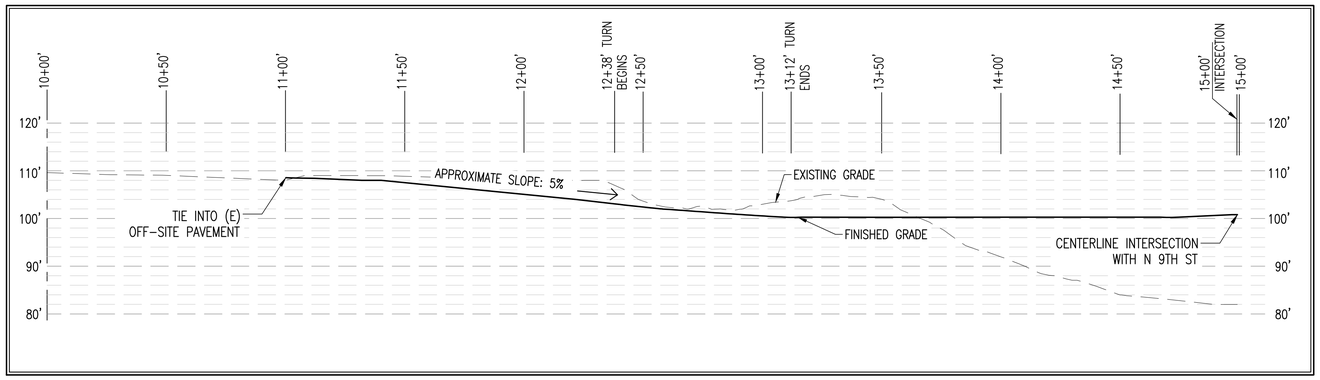
A / C-7 LOCAL STREET CROSS SECTION

SCALE: 1" = 5'-0"



N 9TH STREET PROFILE CONTINUED

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



N 8TH STREET PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

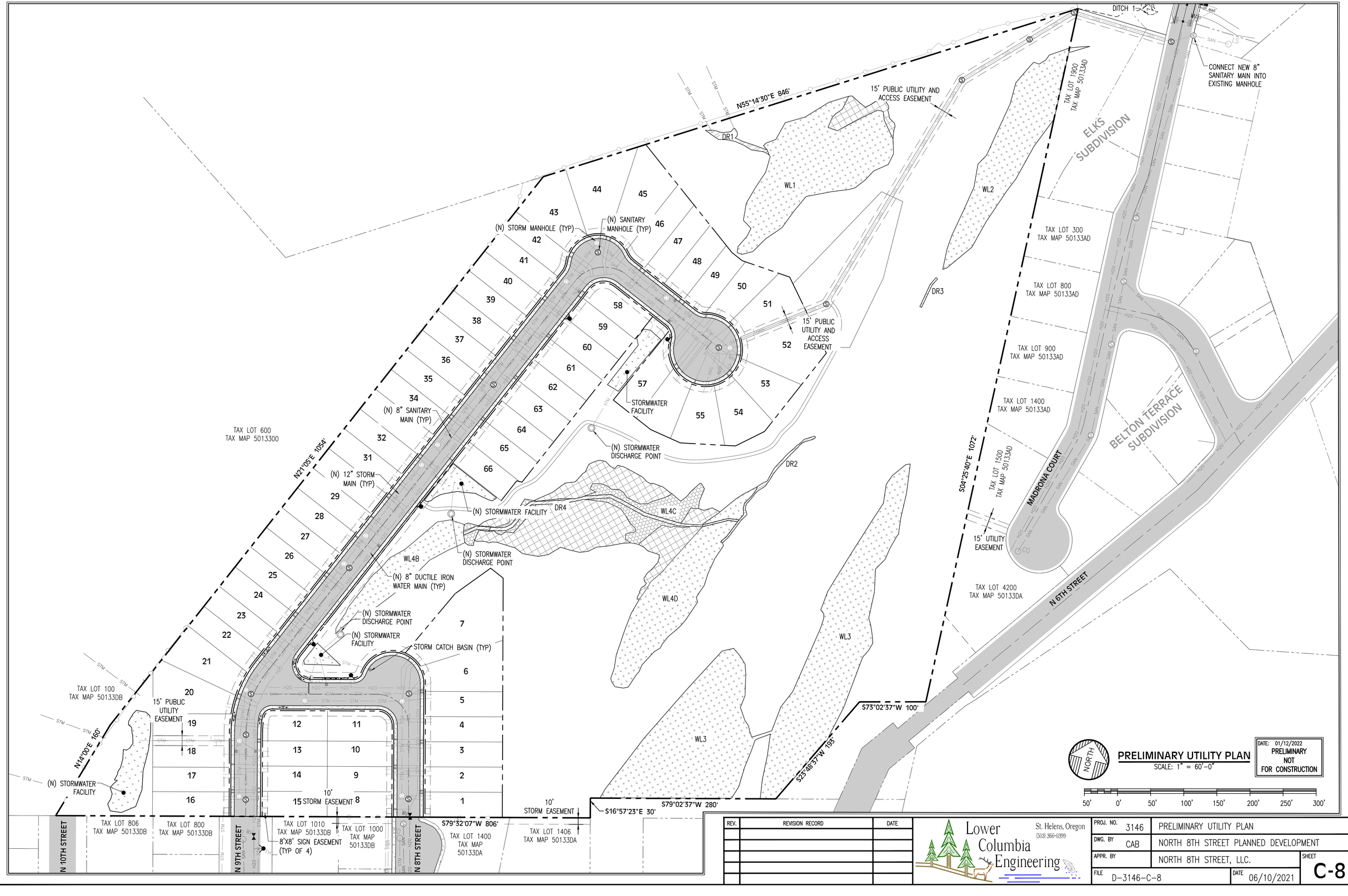
HORIZONTAL SCALE BAR

50' 40' 30' 20' 10' 0' 50' 100' 150'

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	STREET PROFILES AND CROSS SECTION	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-7
FILE	D-3146-C-7	DATE 07/01/2021	



PRELIMINARY UTILITY PLAN

SCALE: 1" = 60'-0"

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	PRELIMINARY UTILITY PLAN
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT
APPR. BY	NORTH 8TH STREET, LLC.
FILE D-3146-C-8	DATE 06/10/2021

SHEET C-8

BENCHMARK LOCATION DESCRIPTION

0.55 MILE NORTHWEST FROM CITY HALL NEAR NORTHEAST CORNER OF SIXTH STREET AND COLUMBIA BOULEVARD, 30 FEET EAST OF THE EAST CURB OF SIXTH STREET, 6 INCHES NORTH OF THE NORTH CURB OF COLUMBIA BOULEVARD, IN LINE WITH THE EAST EDGE OF WALK TO METHODIST CHURCH, IN WALK.

N55°14'30"E 846'

15' PUBLIC UTILITY AND ACCESS EASEMENT

DR1

WL1

WL2

WL4B

WL4C

WL4D

WL3

DR2

DR3

DR4

TAX LOT 1900 TAX MAP 50133AD

ELKS SUBDIVISION

TAX LOT 300 TAX MAP 50133AD

TAX LOT 800 TAX MAP 50133AD

TAX LOT 900 TAX MAP 50133AD

TAX LOT 1400 TAX MAP 50133AD

TAX LOT 1500 TAX MAP 50133AD

MADRONA COURT

BELTON TERRACE SUBDIVISION

S04°25'40"E 1072'

15' UTILITY EASEMENT

TAX LOT 4200 TAX MAP 50133DA

N 6TH STREET

TAX LOT 600 TAX MAP 5013300

N21°05'E 1054'

N 9TH STREET

STORMWATER DISCHARGE LOCATION (TYP)

(N) 4' RETAINING WALL

OFF-SITE STORMWATER DISCHARGE FROM INDUSTRIAL AREA

TAX LOT 100 TAX MAP 50133DB

N49°00'E 160'

15' PUBLIC UTILITY EASEMENT

N 8TH STREET

10' STORM EASEMENT

S73°02'37"W 100'

S23°48'37"W 193'

S79°02'37"W 280'

S16°57'23"E 30'

S79°32'07"W 806'

TAX LOT 806 TAX MAP 50133DB

TAX LOT 800 TAX MAP 50133DB

TAX LOT 1010 TAX MAP 50133DB

TAX LOT 1000 TAX MAP 50133DB

8'X8' SIGN EASEMENT (TYP OF 4)

TAX LOT 1400 TAX MAP 50133DA

TAX LOT 1406 TAX MAP 50133DA

N 10TH STREET

N 9TH STREET

N 8TH STREET

OFF-SITE STORMWATER DISCHARGE FROM INDUSTRIAL AREA

NORTH

OVERALL GRADING PLAN

SCALE: 1" = 60'-0"

50' 0' 50' 100' 150' 200' 250' 300'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	OVERALL GRADING PLAN	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-9
FILE	D-3146-C-9	DATE 07/01/2021	

BENCHMARK LOCATION DESCRIPTION

0.55 MILE NORTHWEST FROM CITY HALL NEAR NORTHEAST CORNER OF SIXTH STREET AND COLUMBIA BOULEVARD, 30 FEET EAST OF THE EAST CURB OF SIXTH STREET, 6 INCHES NORTH OF THE NORTH CURB OF COLUMBIA BOULEVARD, IN LINE WITH THE EAST EDGE OF WALK TO METHODIST CHURCH, IN WALK.

N55°14'30"E 846'

N21°05'E 1054'

N 9TH STREET

WL1

WL4B

WL4C

DR2

DR4

OPEN COMMON SPACE

15' PUBLIC UTILITY AND ACCESS EASEMENT

TAX LOT 600
TAX MAP 5013300

MATCH LINE SHEET C-10
MATCH LINE SHEET C-11

NORTH

ENLARGED GRADING PLAN - NORTH

SCALE: 1" = 30'-0"

50' 40' 30' 20' 10' 0' 50' 100' 150'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	ENLARGED GRADING PLAN – NORTH	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-10
FILE	D-3146-C-10	DATE 06/10/2021	

BENCHMARK LOCATION DESCRIPTION

0.55 MILE NORTHWEST FROM CITY HALL NEAR NORTHEAST CORNER OF SIXTH STREET AND COLUMBIA BOULEVARD, 30 FEET EAST OF THE EAST CURB OF SIXTH STREET, 6 INCHES NORTH OF THE NORTH CURB OF COLUMBIA BOULEVARD, IN LINE WITH THE EAST EDGE OF WALK TO METHODIST CHURCH, IN WALK.

MATCH LINE SHEET C-10
MATCH LINE SHEET C-11

TAX LOT 600
TAX MAP 5013300

N21°05'E 1054'

N 9TH STREET

N 8TH STREET

N 10TH STREET

WL4B

WL4C

WL4D

DR4

15' PUBLIC UTILITY EASEMENT

10' STORM EASEMENT

10' STORM EASEMENT

8'X8' SIGN EASEMENT (TYP OF 4)

TAX LOT 100
TAX MAP 50133DB

TAX LOT 806
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

TAX LOT 1010
TAX MAP 50133DB

N14°00'E 160'

S79°32'07"W 806'

NORTH

ENLARGED GRADING PLAN - SOUTH

SCALE: 1" = 30'-0"

50' 40' 30' 20' 10' 0' 50' 100' 150'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	ENLARGED GRADING PLAN – SOUTH		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-11
FILE D-3146-C-11	DATE 06/10/2021		

OVERALL STORMWATER PLAN

SCALE: 1" = 60'-0"

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

NORTH

50' 0' 50' 100' 150' 200' 250' 300'

N55°14'30"E 846'

N21°05'E 1054'

N14°00'E 160'

S04°25'40"E 1072'

S73°02'37"W 100'

S23°48'37"W 198'

S79°02'37"W 280'

S16°57'23"E 30'

S79°32'07"W 806'

STM MH 1.1
STM MH 1.2
STM MH 1.3
STM MH 1.4
STM MH 1.5
STM MH 1.6
STM MH 2.1
STM MH 2.2
STM MH 2.3
STM MH 3.1
STM MH 3.2
STM MH 3.3
STM MH 3.4
STM MH 4.1

STORM 1
STORM 2
STORM 3
STORM 4

DR1
DR2
DR3
DR4

WL1
WL2
WL3
WL4B
WL4C
WL4D

STORMWATER QUALITY FACILITY NO. 1
STORMWATER QUALITY FACILITY NO. 2
STORMWATER QUALITY FACILITY NO. 3
STORMWATER QUALITY FACILITY NO. 4

STORMWATER DISCHARGE POINT
STORMWATER DISCHARGE POINT
STORMWATER DISCHARGE POINT

15' PUBLIC UTILITY AND ACCESS EASEMENT
10' UTILITY AND ACCESS EASEMENT
15' PUBLIC UTILITY EASEMENT
15' UTILITY EASEMENT
10' STORM EASEMENT
8'X8' SIGN EASEMENT (TYP OF 4)

TAX LOT 600
TAX MAP 5013300

TAX LOT 100
TAX MAP 50133DB

TAX LOT 806
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

TAX LOT 1010
TAX MAP 50133DB

TAX LOT 1000
TAX MAP 50133DB

TAX LOT 1400
TAX MAP 50133DA

TAX LOT 1406
TAX MAP 50133DA

TAX LOT 4200
TAX MAP 50133DA

TAX LOT 1900
TAX MAP 50133AD

TAX LOT 300
TAX MAP 50133AD

TAX LOT 800
TAX MAP 50133AD

TAX LOT 900
TAX MAP 50133AD

TAX LOT 1400
TAX MAP 50133AD

TAX LOT 1500
TAX MAP 50133AD

ELKS SUBDIVISION

BELTON TERRACE SUBDIVISION

MADRONA COURT

N 6TH STREET

N 8TH STREET

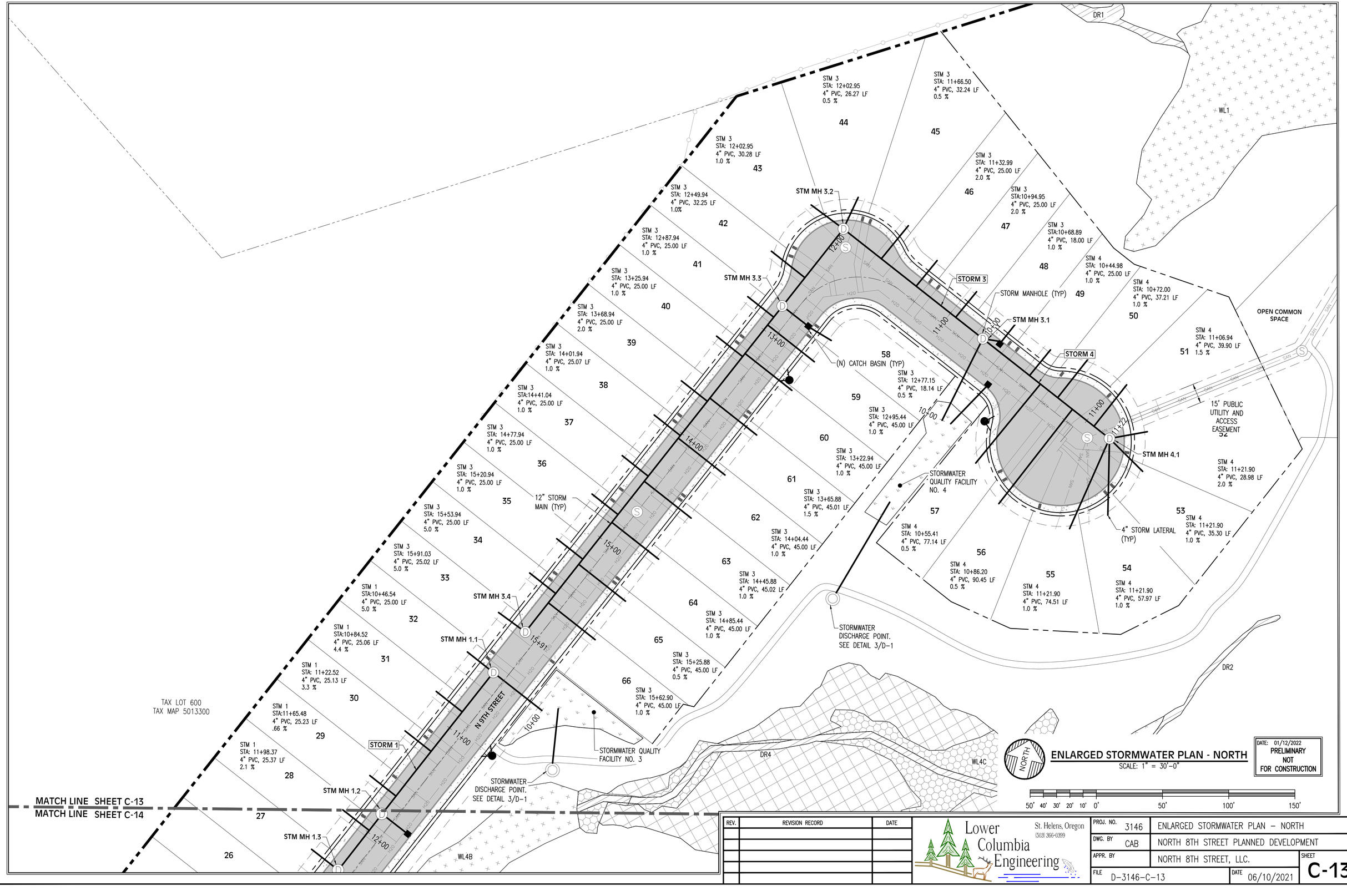
N 9TH STREET

N 10TH STREET

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	OVERALL STORMWATER PLAN	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-12
FILE	D-3146-C-12	DATE 06/10/2021	



DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	ENLARGED STORMWATER PLAN – NORTH		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-13
FILE D-3146-C-13	DATE 06/10/2021		

NOTE:
(E) STORMWATER INFRASTRUCTURE IN NORTH 8TH AND NORTH 9TH STREETS SLOPE SOUTHWARD AND WILL NOT CONNECT TO (N) INFRASTRUCTURE.

MATCH LINE SHEET C-13
MATCH LINE SHEET C-14

TAX LOT 600
TAX MAP 5013300

TAX LOT 100
TAX MAP 50133DB

TAX LOT 806
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

TAX LOT 1010
TAX MAP 50133DB

TAX LOT 1000
TAX MAP 50133DB

N 9TH STREET

N 8TH STREET

N 10TH STREET

N21°05'E 1054'

N14°00'E 160'

S79°32'07"W 806'

STM MH 3.4
STM MH 1.1
STM MH 1.2
STM MH 1.3
STM MH 1.4
STM MH 1.5
STM MH 1.6
STM MH 2.1
STM MH 2.2
STM MH 2.3

12" STORM MAIN (TYP)

STORM 1
STORM 2

4" STORM LATERAL (TYP)

(N) STORM CATCH BASIN (TYP)

STORMWATER QUALITY FACILITY NO. 1
STORMWATER QUALITY FACILITY NO. 2
STORMWATER QUALITY FACILITY NO. 3

STORMWATER DISCHARGE POINT. SEE DETAIL 3/D-1

OVERFLOW CONVEYANCE SYSTEM

15' PUBLIC UTILITY EASEMENT

10' STORM EASEMENT

8'X8' SIGN EASEMENT (TYP OF 4)

STM 1
STA: 12+74.50
4" PVC, 25.77 LF
2.0 %

STM 1
STA: 12+36.37
4" PVC, 25.59 LF
2.0 %

STM 1
STA: 13+12.50
4" PVC, 25.99 LF
2.0 %

STM 1
STA: 13+50.51
4" PVC, 26.21 LF
2.0 %

STM 1
STA: 13+88.52
4" PVC, 26.43 LF
5.0 %

STM 1
STA: 14+26.51
4" PVC, 26.65 LF
5.0 %

STM 1
STA: 14+59.69
4" PVC, 25.14 LF
8.0 %

STM 1
STA: 15+02.01
4" PVC, 26.54 LF
2.0 %

STM 1
STA: 15+55.37
4" PVC, 8.01 LF
1.0 %

STM 1
STA: 15+55.37
4" PVC, 7.98 LF
1.0 %

STM 1
STA: 16+11.28
4" PVC, 25.00 LF
1.0 %

STM 1
STA: 16+29.28
4" PVC, 25.00 LF
1.0 %

STM 1
STA: 15+26.37
4" PVC, 42.52 LF
2.0 %

STM 1
STA: 15+71.08
4" PVC, 18.00 LF
2.0 %

STM 1
STA: 15+97.32
4" PVC, 45.00 LF
0.5 %

STM 1
STA: 16+29.28
4" PVC, 45.00 LF
0.5 %

STM 2
STA: 12+47.57
4" PVC, 25.62 LF
2.3 %

STM 2
STA: 12+77.30
4" PVC, 25.00 LF
0.0 %

STM 2
STA: 13+17.27
4" PVC, 25.00 LF
1.5 %

STM 2
STA: 13+57.20
4" PVC, 25.00 LF
2.0 %

STM 2
STA: 12+14.36
4" PVC, 79.19 LF
0.5 %

STM 2
STA: 12+14.36
4" PVC, 53.55 LF
2.0 %

STM 2
STA: 12+14.36
4" PVC, 45.26 LF
2.0 %

STM 2
STA: 12+40.91
4" PVC, 45.00 LF
0.1 %

STM 2
STA: 12+79.80
4" PVC, 45.00 LF
2.2 %

STM 2
STA: 13+19.92
4" PVC, 45.00 LF
0.5 %

STM 2
STA: 13+57.20
4" PVC, 45.00 LF
2.0 %

WL4B
WL4C
WL4D
WL3
DR4

ENLARGED STORMWATER PLAN - SOUTH
SCALE: 1" = 30'-0"

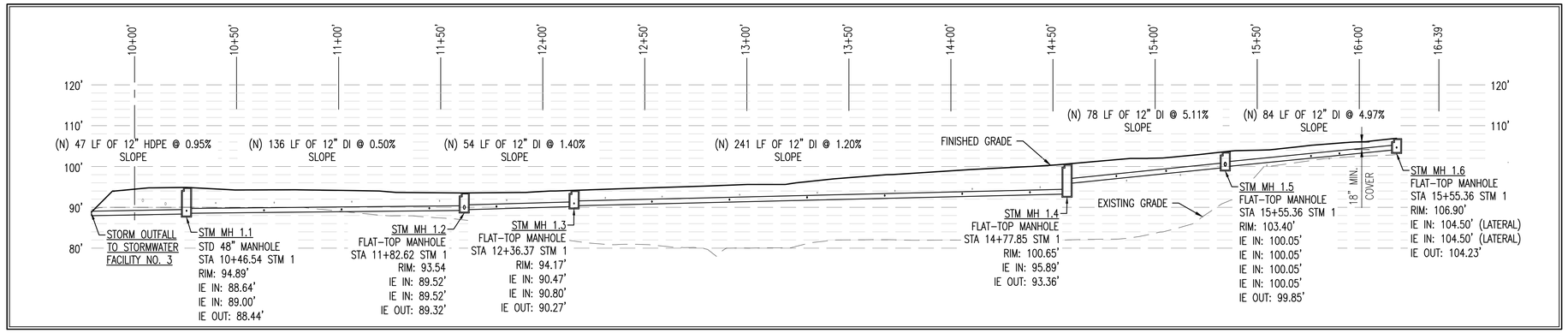
DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

50' 40' 30' 20' 10' 0' 50' 100' 150'

REV.	REVISION RECORD	DATE

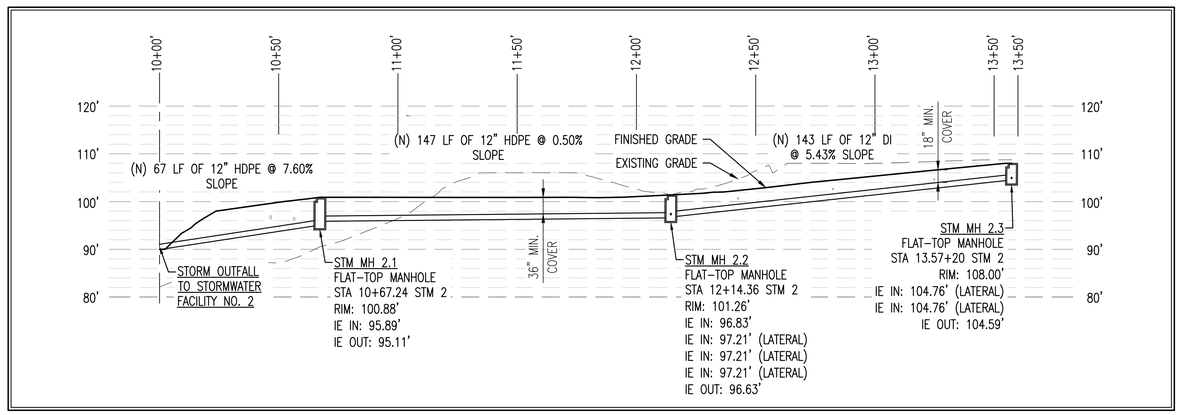
Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	ENLARGED STORMWATER PLAN – SOUTH
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT
APPR. BY	NORTH 8TH STREET, LLC.
FILE D-3146-C-14	DATE 06/10/2021
	SHEET C-14



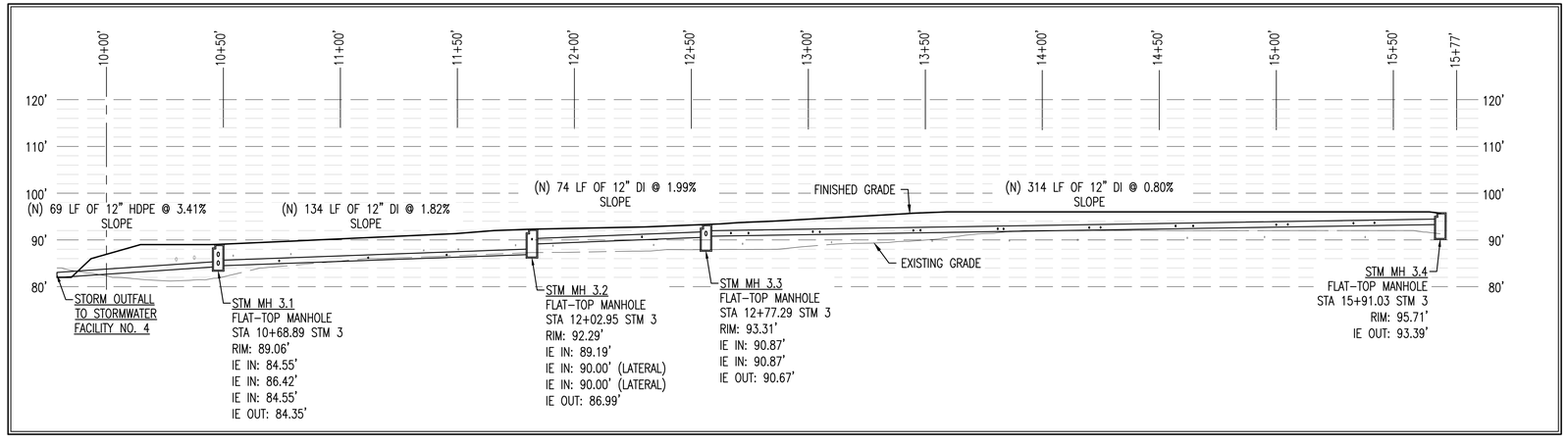
STORM 1

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



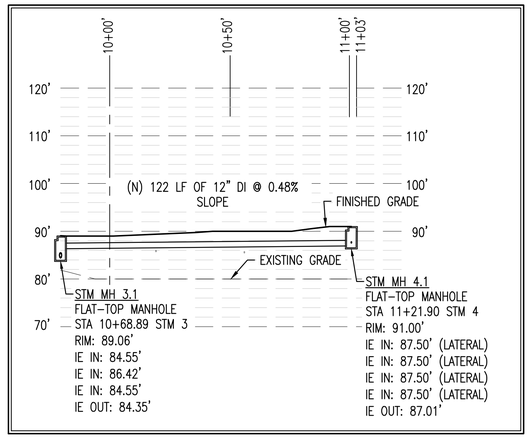
STORM 2

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



STORM 3

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



STORM 4

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

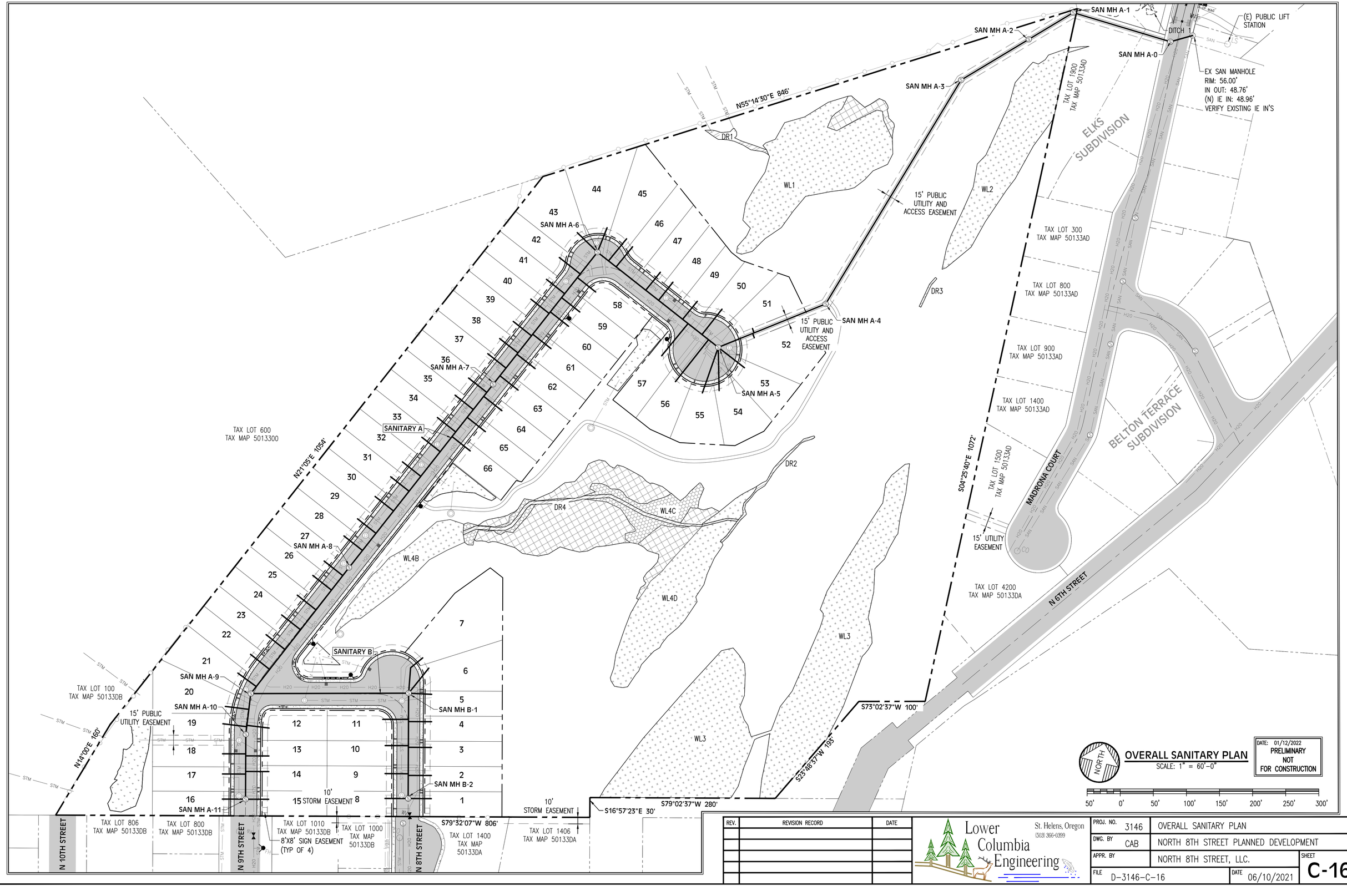
HORIZONTAL SCALE BAR

50' 40' 30' 20' 10' 0' 50' 100' 150'

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	STORMWATER PROFILES		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-15
FILE D-3146-C-15	DATE 07/01/2021		



REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	OVERALL SANITARY PLAN
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT
APPR. BY	NORTH 8TH STREET, LLC.
FILE D-3146-C-16	DATE 06/10/2021
	SHEET C-16

NOTE:
SANITARY LINE SHALL MAINTAIN A MINIMUM 10' SEPARATION FROM THE WATER LINE.

SAN A
STA: 22+04.27
4" PVC, 39.65 LF
1.0 %

SAN A
STA: 22+04.27
4" PVC, 42.47 LF
1.0 %

SAN A
STA: 21+83.01
4" PVC, 43.13 LF
0.5 %

SAN A
STA: 21+68.35
4" PVC, 39.26 LF
4.2 %

SAN A
STA: 22+46.27
4" PVC, 40.16 LF
1.0 %

SAN A
STA: 22+84.27
4" PVC, 35.00 LF
2.1 %

SAN A
STA: 21+11.43
4" PVC, 35.00 LF
3.4 %

SAN A
STA: 20+86.63
4" PVC, 35.00 LF
3.1 %

SAN A
STA: 20+40.41
4" PVC, 35.01 LF
1.0 %

SAN A
STA: 20+03.19
4" PVC, 48.79 LF
3.0 %

SAN A
STA: 23+22.27
4" PVC, 35.00 LF
2.9 %

SAN A
STA: 23+65.27
4" PVC, 35.00 LF
4.0 %

SAN A
STA: 23+98.27
4" PVC, 35.07 LF
2.9 %

SAN A
STA: 24+27.36
4" PVC, 35.00 LF
3.1 %

SAN A
STA: 24+74.27
4" PVC, 35.02 LF
3.1 %

SAN A
STA: 25+07.27
4" PVC, 35.07 LF
3.1 %

SAN A
STA: 25+50.27
4" PVC, 35.14 LF
1.5 %

SAN A
STA: 25+88.27
4" PVC, 35.20 LF
2.3 %

SAN A
STA: 26+35.63
4" PVC, 35.27 LF
1.0 %

SAN A
STA: 26+64.27
4" PVC, 35.36 LF
1.0 %

SAN A
STA: 27+02.27
4" PVC, 35.41 LF
1.0 %

SAN A
STA: 27+45.22
4" PVC, 35.44 LF
1.0 %

SAN A
STA: 27+78.06
4" PVC, 35.51 LF
0.5 %

SAN A
STA: 28+26.40
4" PVC, 35.59 LF
0.5 %

SAN A
STA: 28+54.24
4" PVC, 35.79 LF
0.5 %

SAN A
STA: 22+53.20
4" PVC, 35.23 LF
1.0 %

SAN A
STA: 22+91.77
4" PVC, 35.00 LF
1.0 %

SAN A
STA: 23+19.27
4" PVC, 35.00 LF
1.0 %

SAN A
STA: 23+62.20
4" PVC, 35.00 LF
2.9 %

SAN A
STA: 24+00.77
4" PVC, 35.00 LF
3.9 %

SAN A
STA: 24+42.20
4" PVC, 35.02 LF
3.0 %

SAN A
STA: 24+81.77
4" PVC, 34.96 LF
3.0 %

SAN A
STA: 25+22.20
4" PVC, 34.90 LF
3.0 %

SAN A
STA: 25+59.22
4" PVC, 34.85 LF
1.3 %

SAN A
STA: 19+13.53
4" PVC, 7.00 LF
5.8 %

SAN A
STA: 19+15.77
4" PVC, 7.01 LF
3.9 %

SAN A
STA: 19+71.89
4" PVC, 50.25 LF
1.0 %

SAN A
STA: 20+29.98
4" PVC, 62.94 LF
2.8 %

SAN A
STA: 19+90.62
4" PVC, 80.72 LF
2.1 %

SAN A
STA: 19+71.89
4" PVC, 73.01 LF
1.0 %

SAN A
STA: 19+71.89
4" PVC, 65.47 LF
1.0 %

SANITARY MANHOLE (TYP)

SAN MH A-6

SAN MH A-7

SAN MH A-4

SAN MH A-5

8" SANITARY MAIN (TYP)

4" SANITARY LATERAL (TYP)

SANITARY A

22+00

21+00

20+00

19+00

18+00

23+00

24+00

25+00

26+00

27+00

N 9TH STREET

15' PUBLIC UTILITY AND ACCESS EASEMENT

OPEN COMMON SPACE

WL1

WL4B

WL4C

DR2

DR4

TAX LOT 600
TAX MAP 5013300

MATCH LINE SHEET C-17
MATCH LINE SHEET C-18

NORTH

ENLARGED SANITARY PLAN - NORTH

SCALE: 1" = 30'-0"

50' 40' 30' 20' 10' 0' 50' 100' 150'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	ENLARGED SANITARY PLAN – NORTH	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-17
FILE	D-3146-C-17	DATE 06/10/2021	

NOTE:
SANITARY LINE SHALL MAINTAIN A MINIMUM 10' SEPARATION FROM THE WATER LINE.

MATCH LINE SHEET C-17
MATCH LINE SHEET C-18

TAX LOT 600
TAX MAP 5013300

TAX LOT 100
TAX MAP 50133DB

TAX LOT 806
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

TAX LOT 1010
TAX MAP 50133DB

N 10TH STREET

N 9TH STREET

N 8TH STREET

SANITARY A

SANITARY B

SAN MH A-8

SAN MH A-9

SAN MH A-10

SAN MH A-11

SAN MH B-1

SAN MH B-2

SAN A
STA: 26+64.27
4" PVC, 35.36 LF
1.0 %

SAN A
STA: 27+02.27
4" PVC, 35.41 LF
1.0 %

SAN A
STA: 27+45.22
4" PVC, 35.44 LF
1.0 %

SAN A
STA: 27+78.06
4" PVC, 35.51 LF
0.5 %

SAN A
STA: 28+26.40
4" PVC, 35.59 LF
0.5 %

SAN A
STA: 28+54.24
4" PVC, 35.79 LF
0.5 %

SAN A
STA: 28+92.25
4" PVC, 36.02 LF
0.5 %

SAN A
STA: 29+30.25
4" PVC, 36.24 LF
1.0 %

SAN A
STA: 29+68.27
4" PVC, 36.46 LF
1.5 %

SAN A
STA: 30+06.14
4" PVC, 36.68 LF
1.5 %

SAN A
STA: 30+39.06
4" PVC, 34.43 LF
2.0 %

SAN A
STA: 30+76.59
4" PVC, 35.73 LF
2.0 %

SAN A
STA: 31+02.92
4" PVC, 36.24 LF
2.0 %

SAN A
STA: 31+44.16
4" PVC, 35.00 LF
1.0 %

SAN A
STA: 31+74.71
4" PVC, 35.00 LF
0.5 %

SAN A
STA: 32+12.71
4" PVC, 35.00 LF
1.0 %

SAN A
STA: 24+81.77
4" PVC, 34.96 LF
3.0 %

SAN A
STA: 25+22.20
4" PVC, 34.90 LF
3.0 %

SAN A
STA: 25+59.22
4" PVC, 34.85 LF
1.3 %

SAN A
STA: 31+00.92
4" PVC, 33.77 LF
2.0 %

SAN A
STA: 31+47.19
4" PVC, 35.00 LF
2.0 %

SAN A
STA: 31+70.78
4" PVC, 35.00 LF
2.0 %

SAN A
STA: 32+12.71
4" PVC, 35.00 LF
1.0 %

SAN B
STA: 12+77.77
4" PVC, 38.84 LF
0.5 %

SAN B
STA: 13+17.50
4" PVC, 35.00 LF
0.5 %

SAN B
STA: 13+59.99
4" PVC, 35.00 LF
0.5 %

SAN B
STA: 13+97.40
4" PVC, 35.00 LF
0.5 %

SAN B
STA: 12+38.31
4" PVC, 62.31 LF
0.5 %

SAN B
STA: 11+98.37
4" PVC, 38.71 LF
2.1 %

SAN B
STA: 12+38.31
4" PVC, 35.03 LF
0.5 %

SAN B
STA: 12+81.11
4" PVC, 35.00 LF
0.5 %

SAN B
STA: 13+20.00
4" PVC, 35.00 LF
0.5 %

SAN B
STA: 13+62.49
4" PVC, 35.00 LF
0.5 %

SAN B
STA: 13+97.40
4" PVC, 35.00 LF
0.5 %

8" SANITARY MAIN (TYP)

4" SANITARY LATERAL (TYP)

SANITARY MANHOLE (TYP)

15' PUBLIC UTILITY EASEMENT

10' STORM EASEMENT

8'X8' SIGN EASEMENT (TYP OF 4)

10' STORM EASEMENT

26+00

27+00

28+00

29+00

30+00

31+00

31+97

WL4B

WL4C

WL4D

DR4

ENLARGED SANITARY PLAN - SOUTH

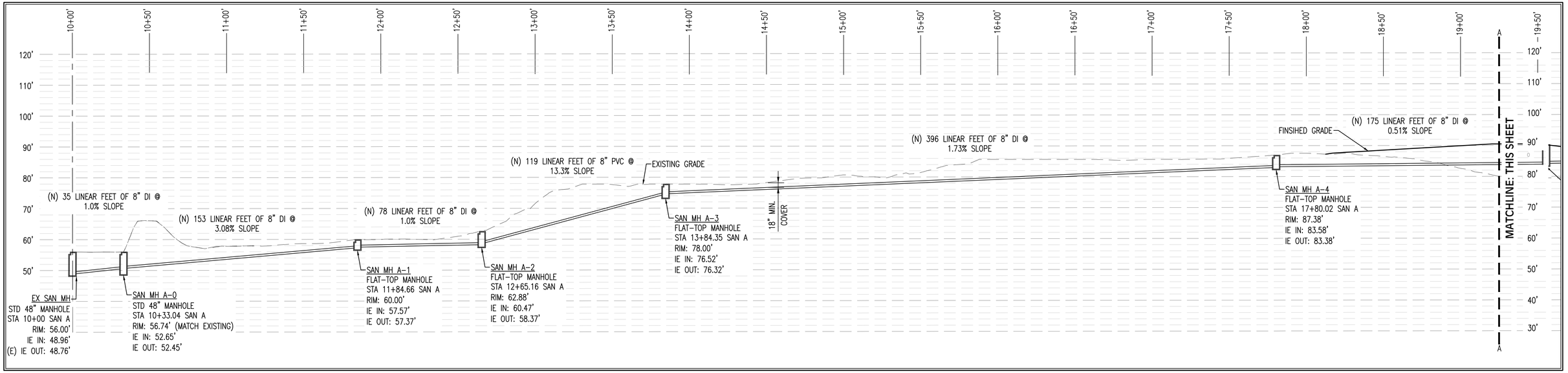
SCALE: 1" = 30'-0"

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

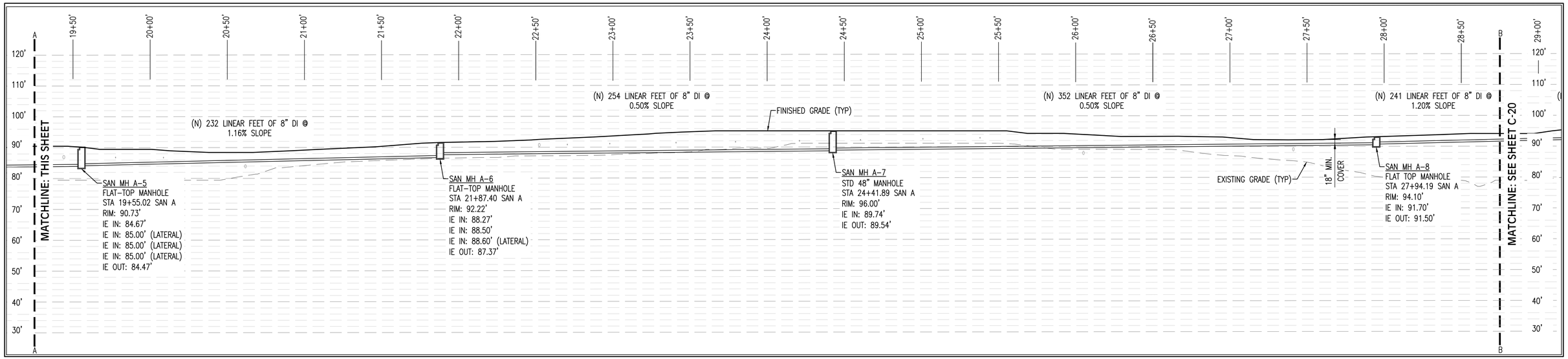
Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	ENLARGED SANITARY PLAN – SOUTH		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-18
FILE D-3146-C-18	DATE 06/10/2021		



SANITARY A

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



SANITARY A

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

NOTE:
MINIMUM 18" SEPARATION SHALL BE MAINTAINED BETWEEN SANITARY AND WATER LINE CROSSINGS.

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

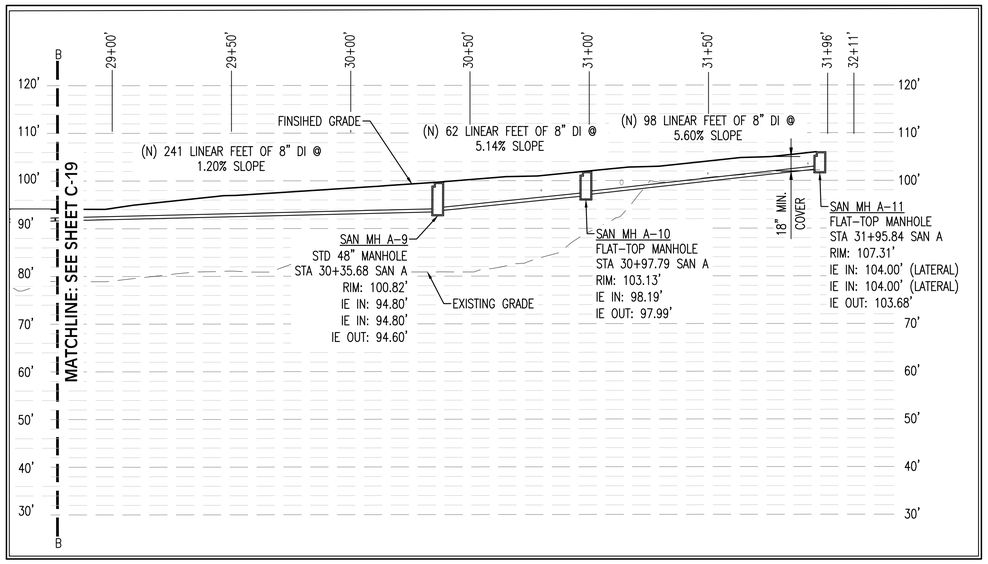
HORIZONTAL SCALE BAR

50' 40' 30' 20' 10' 0' 50' 100' 150'

REV.	REVISION RECORD	DATE

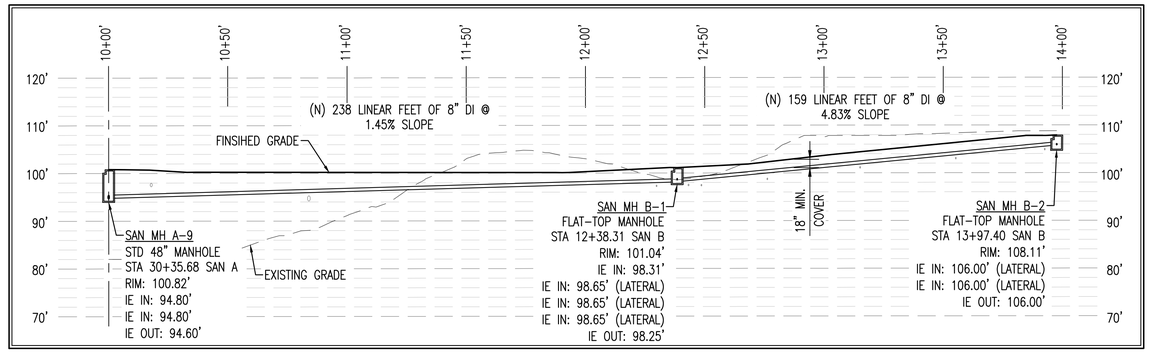
Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	SANITARY PROFILES	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-19
FILE	D-3146-C-19	DATE 07/01/2021	



SANITARY A

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



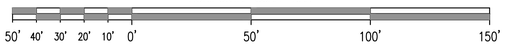
SANITARY B

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

NOTE:
MINIMUM 18" SEPARATION SHALL BE MAINTAINED BETWEEN SANITARY AND WATER LINE CROSSINGS.

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

HORIZONTAL SCALE BAR



REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	SANITARY PROFILES		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-20
FILE D-3146-C-20	DATE 07/01/2021		

N55°14'30"E 846'

DR1

WL1

15' PUBLIC UTILITY AND ACCESS EASEMENT

WL2

TAX LOT 1900
TAX MAP 50133AD

ELKS SUBDIVISION

TAX LOT 300
TAX MAP 50133AD

TAX LOT 800
TAX MAP 50133AD

DR3

15' PUBLIC UTILITY AND ACCESS EASEMENT

TAX LOT 900
TAX MAP 50133AD

TAX LOT 1400
TAX MAP 50133AD

BELTON TERRACE SUBDIVISION

MADRONA COURT

S04°25'40"E 1072'

TAX LOT 1500
TAX MAP 50133AD

15' UTILITY EASEMENT

TAX LOT 4200
TAX MAP 50133DA

N 6TH STREET

TAX LOT 600
TAX MAP 5013300

N21°05'E 1054'

N 9TH STREET WATER

(N) FIRE HYDRANT

DR2

DR4

WL4C

WL4B

WL4D

WL3

WL3

(N) FIRE HYDRANT

(N) FIRE HYDRANT

N 8TH STREET WATER

CONNECT TO EXISTING WATER MAIN

CONNECT TO EXISTING WATER MAIN

10' STORM EASEMENT

15' STORM EASEMENT

S73°02'37"W 100'

S23°48'37"W 195'

S79°02'37"W 280'

S16°57'23"E 30'

S79°32'07"W 806'

TAX LOT 100
TAX MAP 50133DB

15' PUBLIC UTILITY EASEMENT

N14°00'E 160'

8'X8' SIGN EASEMENT (TYP OF 4)

TAX LOT 1406
TAX MAP 50133DA

TAX LOT 1400
TAX MAP 50133DA

TAX LOT 1010
TAX MAP 50133DB

TAX LOT 1000
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

TAX LOT 806
TAX MAP 50133DB

N 10TH STREET

N 9TH STREET

N 8TH STREET

N 8TH STREET

NORTH

OVERALL WATER PLAN

SCALE: 1" = 60'-0"

50' 0' 50' 100' 150' 200' 250' 300'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	OVERALL WATER PLAN	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-21
FILE	D-3146-C-21	DATE 06/10/2021	


N55°14'30"E 846'
N21°05'E 1054'
DR1
WL1
OPEN COMMON SPACE
15' PUBLIC UTILITY AND ACCESS EASEMENT
(N) FIRE HYDRANT
(N) FIRE HYDRANT
SINGLE 1" WATER SERVICE WITH METER (TYP.)
N 9TH STREET WATER
(N) 8" DUCTILE IRON WATER MAIN
N 9TH STREET
(N) FIRE HYDRANT
TAX LOT 600
TAX MAP 5013300
DR2
DR4
WL4C
WL4B
MATCH LINE SHEET C-22
MATCH LINE SHEET C-23
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 58 59 60 61 62 63 64 65 66
ENLARGED WATER PLAN - NORTH
SCALE: 1" = 30'-0"
NORTH
50' 40' 30' 20' 10' 0' 50' 100' 150'
DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	ENLARGED WATER PLAN – NORTH		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.		SHEET C-22
FILE D-3146-C-22		DATE 06/10/2021	

MATCH LINE SHEET C-22
MATCH LINE SHEET C-23

1" SINGLE WATER SERVICE W/ METER (TYP)

(N) FIRE HYDRANT

8" DUCTILE IRON WATER MAIN (TYP)

N 9TH STREET

N 8TH STREET

N 10TH STREET

(N) FIRE HYDRANT

SINGLE 1" WATER SERVICE WITH METER (TYP.)

15' PUBLIC UTILITY EASEMENT

8'X8' SIGN EASEMENT (TYP OF 4)

N 9TH STREET WATER

N 8TH STREET WATER

10' STORM EASEMENT

10' STORM EASEMENT

CONNECT TO EXISTING WATER MAIN

CONNECT TO EXISTING WATER MAIN

(E) FIRE HYDRANT

N14°00'E 160'

DR4

WL4B

WL4C

WL4D

WL3

6+00

7+00

8+00

9+00

10+00

12+00

13+00

14+00

14+27

20+00

21+00

22+00

22+51

ENLARGED WATER PLAN - SOUTH

SCALE: 1" = 30'-0"

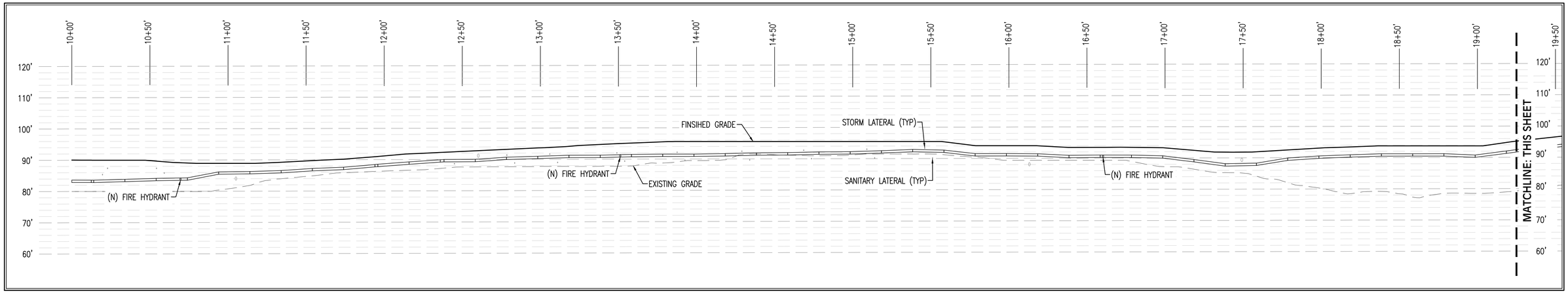
DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

50' 40' 30' 20' 10' 0' 50' 100' 150'

REV.	REVISION RECORD	DATE

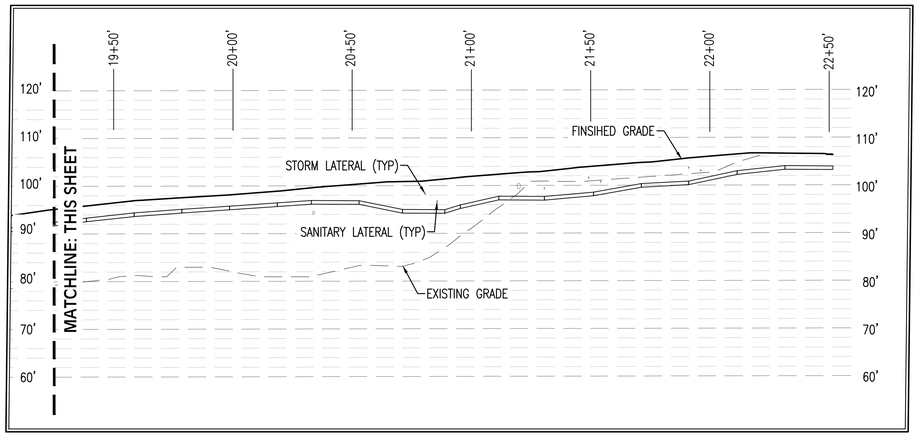
Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	ENLARGED WATER PLAN – SOUTH	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET C-23
FILE	D-3146-C-23	DATE 06/10/2021	



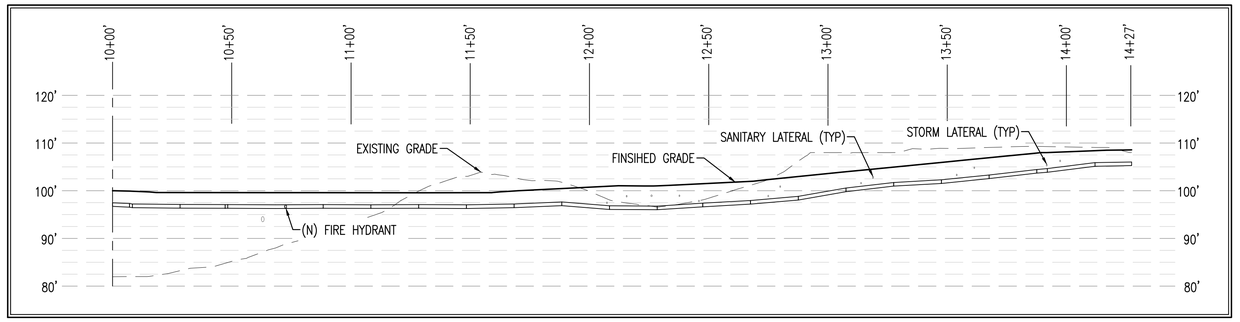
N 9TH STREET PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



N 9TH STREET PROFILE CONTINUED

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



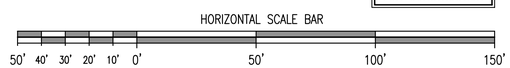
N 8TH STREET PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

NOTE:
MINIMUM 18" SEPARATION SHALL BE MAINTAINED BETWEEN SANITARY AND WATER LINE CROSSINGS.

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

HORIZONTAL SCALE BAR



REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	WATER PROFILES		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	C-24
FILE D-3146-C-24	DATE 07/01/2021		

MASTER LANDSCAPING LEGEND:

	STREET TREES PER SECTION 17.72.035: QUAKING ASPENS (10–12 FT, 2" CAL) SPACED AT 20 FEET ON CENTER	QUANTITY: 26
	BIGLEAF MAPLE (ACRE MACROPHYLLUM) SPACED AT 10 FEET ON CENTER	QUANTITY: 22
	DOUGLAS FIR (PSEUDOTSUGA MENZIESII) SPACING AT 15 FEET ON CENTER	QUANTITY: 35
	WESTERN HEMLOCK (TSUGA HETEROPHYLLA) SPACING 10 FEET ON CENTER	QUANTITY: 25
	NATIVE SHRUBS	QUANTITY: 46
	NATIVE GRASS SEED MIX	QUANTITY: 94,457 SF
	STORMWATER FACILITY VEGETATION	QUANTITY: 10,917 SF
○	EXISTING TREE (D) TO BE REMOVED	

① N 8TH ST

② N 9TH ST

MUTCD SIGN D3–1

N55°14'30"E 846'

10' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

DR1

WL1

OPEN COMMON SPACE

VISUAL CLEARANCE AREA

(N) STREET LIGHT (TYP)

(N) STORMWATER FACILITY

(N) STORMWATER FACILITY

(N) STORMWATER FACILITY

DR2

(N) PEDESTRIAN PATH

DR3

DR4

WL4C

WL4B

(N) 4' RETAINING WALL

(N) STORMWATER DISCHARGE LOCATION (TYP.)

(N) LOG FLOW SPREADERS. CONTRACTOR SHALL HAVE ENGINEER INSPECT LOG PLACEMENT TO VERIFY CORRECT LOCATIONS.

SEE SHEET D–1 AND JPA PLANS FOR MORE DETAILED INFORMATION ON WETLAND CREATION.

WL4D

WL3

WL3

REMOVED TREES FROM LOGGING IMPACTS TO BE REPLANTED AS REQUIRED

REMOVED TREES FROM LOGGING IMPACTS TO BE REPLANTED AS REQUIRED. ADDITIONAL MITIGATION FOR SANITARY LINE AND PEDESTRIAN PATH TO BE MITIGATED AS NECESSARY.

PROVIDE VEGETATED SCREENING ALONG 5' PATH. PLANTINGS ARE FOR VISUAL REPRESENTATION ONLY. ACTUAL PLANTINGS SHALL BE PLANTED WITHIN THE ACCESS EASEMENT.

28" MAPLE (D)
18" CEDAR (D)
19" OAK (D)
12" OAK (D)
12" MADRONE
16" FIR (D)
24" CEDAR
20" MAPLE
17" MAPLE
30" OAK (D)
21" OAK (D)
18" MAPLE (D)
15" MAPLE (D)
15" ALDER
27" CEDAR (DEAD)
20" MAPLE
8 13" OAK
3 12" TREES
12" FIR
22" OAK
22" TREE
12" OAK
12" FIR
16" CEDAR
12" CEDAR
14" FIR
14" FIR
12" FIR
14" FIR
14" FIR
12" FIR
13" FIR
14" FIR
14" FIR
14" FIR
24" FIR
12" FIR
22" FIR
5 MAPLES, 12–20"
18" FIR

TAX LOT 1900
TAX MAP 50133AD

TAX LOT 300
TAX MAP 50133AD

TAX LOT 800
TAX MAP 50133AD

TAX LOT 900
TAX MAP 50133AD

TAX LOT 1400
TAX MAP 50133AD

TAX LOT 1500
TAX MAP 50133AD

TAX LOT 4200
TAX MAP 50133DA

TAX LOT 600
TAX MAP 5013300

TAX LOT 100
TAX MAP 50133DB

TAX LOT 1010
TAX MAP 50133DB

TAX LOT 1000
TAX MAP 50133DB

TAX LOT 1400
TAX MAP 50133DA

TAX LOT 1406
TAX MAP 50133DA

ELKS SUBDIVISION

BELTON TERRACE SUBDIVISION

MADRONA COURT

N 9TH STREET

N 8TH STREET

N 10TH STREET

N 6TH STREET

N21°05'E 1054'

N14°00'E 160'

S04°25'40"E 1072'

S73°02'37"W 100'

S23°48'37"W 193'

S79°02'37"W 280'

S16°57'23"E 30'

S79°32'07"W 806'

25' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

VISUAL CLEARANCE AREA

(N) STREET TREE (TYP.)

10' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

8'X8' SIGN EASEMENT WITH ENTRANCE MONUMENT (TYP OF 4)

OFF–SITE STORMWATER DISCHARGE FROM INDUSTRIAL AREA

DATE: 11/30/2021
REVISED PRINT
VOID ALL PREVIOUS

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

NORTH

OVERALL LANDSCAPING PLAN

SCALE: 1" = 60'–0"

50' 0' 50' 100' 150' 200' 250' 300'

REV.	REVISION RECORD	DATE
1	1ST RESPONSE COMMENTS	11/09/2021

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	OVERALL LANDSCAPING PLAN
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT
APPR. BY	NORTH 8TH STREET, LLC.
FILE D–3146–L–1	DATE 07/01/2021
	SHEET L-1

10' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

N55°14'30"E 846'

N21°05'E 1054'

25' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

VISUAL CLEARANCE AREA (TYP)

OPEN COMMON SPACE

(N) STREET LIGHT (TYP)

15' PUBLIC UTILITY AND ACCESS EASEMENT

N 9TH STREET

(N) STORMWATER FACILITY

(N) PEDESTRIAN PATH

SEE SHEET D-1 AND JPA PLANS FOR MORE DETAILED INFORMATION ON WETLAND CREATION.

(N) STORMWATER FACILITY

(N) LOG FLOW SPREADERS. CONTRACTOR SHALL HAVE ENGINEER INSPECT LOG PLACEMENT TO VERIFY CORRECT LOCATIONS.

DR4

WL4C

TAX LOT 600
TAX MAP 5013300

(N) STORMWATER DISCHARGE LOCATION (TYP.)

(N) 4' RETAINING WALL

WL4B

MATCH LINE SHEET L-2
MATCH LINE SHEET L-3

NORTH

LANDSCAPING PLAN - NORTH

SCALE: 1" = 30'-0"

50' 40' 30' 20' 10' 0' 50' 100' 150'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO.	3146	LANDSCAPING PLAN – NORTH	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET L-2
FILE	D-3146-L-2	DATE 07/01/2021	

1 N 8TH ST

2 N 9TH ST

MUTCD SIGN D3-1

TAX LOT 600
TAX MAP 5013300

MATCH LINE SHEET L-2
MATCH LINE SHEET L-3

N21°05'E 1054'

N 9TH STREET

(N) STREET LIGHT (TYP.)

(N) STORMWATER FACILITY

(N) PEDESTRIAN PATH

(N) 4' RETAINING WALL

SEE SHEET D-1 AND JPA PLANS FOR MORE DETAILED INFORMATION ON WETLAND CREATION.

(N) LOG FLOW SPREADERS. CONTRACTOR SHALL HAVE ENGINEER INSPECT LOG PLACEMENT TO VERIFY CORRECT LOCATIONS.

WL4B

DR4

WL4C

WL4D

WL3

25' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

STM

TAX LOT 100
TAX MAP 50133DB

OFF-SITE STORMWATER DISCHARGE FROM INDUSTRIAL AREA

(N) STORMWATER FACILITY

N14°00'E 160'

15' PUBLIC UTILITY EASEMENT

VISUAL CLEARANCE AREA (TYP)

(N) STREET TREE (TYP.)

N 8TH STREET

8'X8' SIGN EASEMENT WITH ENTRANCE MONUMENT (TYP OF 4)

10' SCREENING BUFFER WITH 5' CEDAR SCREENING FENCE (TYP)

10' STORM EASEMENT

S79°32'07"W 806'

REMOVED TREES FROM LOGGING IMPACTS TO BE REPLANTED AS REQUIRED

N 10TH STREET

TAX LOT 806
TAX MAP 50133DB

TAX LOT 800
TAX MAP 50133DB

TAX LOT 1010
TAX MAP 50133DB

NORTH

LANDSCAPING PLAN - SOUTH

SCALE: 1" = 30'-0"

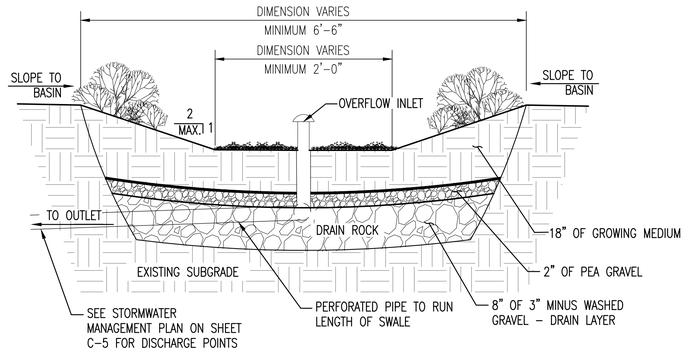
50' 40' 30' 20' 10' 0' 50' 100' 150'

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

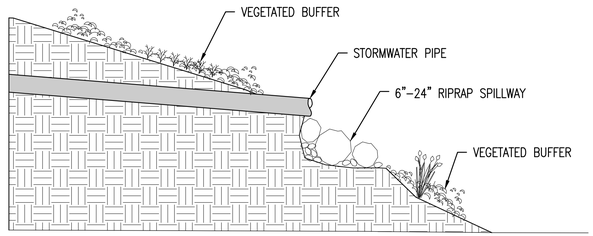
REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

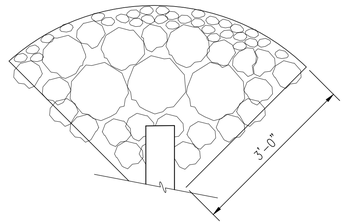
PROJ. NO.	3146	LANDSCAPING PLAN – SOUTH	
DWG. BY	CAB	NORTH 8TH STREET PLANNED DEVELOPMENT	
APPR. BY		NORTH 8TH STREET, LLC.	SHEET L-3
FILE	D-3146-L-3	DATE 07/01/2021	



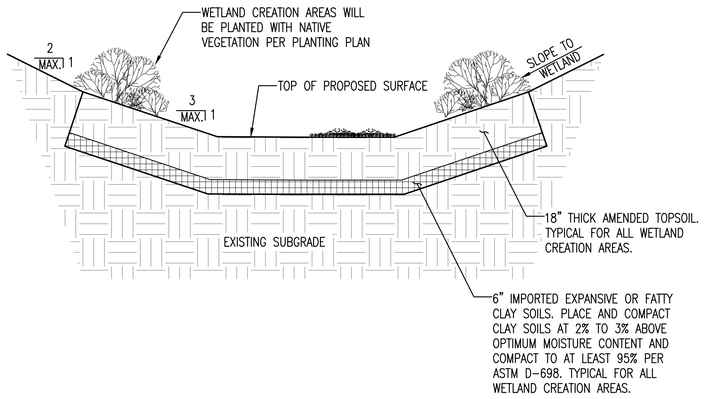
1 / D-1 **WATER QUALITY FACILITY**
SCALE: 1" = 30'-0"



2 / D-1 **STORMWATER OUTFALL**
SCALE: NTS

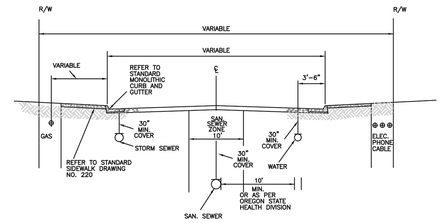


3 / D-1 **STORMWATER OUTFALL**
SCALE: NTS



4 / D-1 **WETLAND CREATION AREA DETAIL**
SCALE: 1" = 30'-0"

NOTE: A PERMIT MUST BE OBTAINED FOR ALL WORK TO BE DONE WITHIN RIGHT-OF-WAY FROM THE CITY OF ST. HELENS ENGINEERING DEPARTMENT



NOTES:

1. STORM SEWER AND GAS TO BE LOCATED ON SOUTH/WEST SIDE OF STREET. POWER, COMMUNICATIONS, WATER TO BE LOCATED ON NORTH/EAST SIDE OF STREET.
2. ALL UTILITIES SHALL BE INSTALLED AT MINIMUM 30" BELOW ROAD SURFACE TO TOP OF PIPE.
3. ALL CROSSINGS SHALL BE MADE USING JACKING METHOD UNLESS PREAPPROVED.
4. ALL TRENCHES CROSSING STREETS SHALL BE BACKFILLED & MECHANICALLY COMPACTED TO 2 FEET BELOW SURFACE. COMPACTED 8" LIFTS OF 3/4-0 SHALL BE BROUGHT OT THE SURFACE OF AGG. STREETS OR THE BASE OF PAVED STREETS. ALL TRENCHES SHALL BE PATCHED WITH LIKE MATERIALS TO THE ORIGINAL SURFACE.
5. ALL TRENCHES IN SHOULDERS SHALL BE BACKFILLED & MECHANICALLY COMPACTED TO 1 FOOT BELOW SURFACE. COMPACTED LIFTS OF 3/4-0 SHALL BE BROUGHT TO SURFACE.
6. ALL STREET PATCHING & SHOULDER REPAIR SHALL BE WARRANTIED FOR 1 YEAR.

DRAWN BY:	CITY OF ST.HELENS 265 THE STRAND, ST.HELENS, OR 97051 PH (503)397-6272 FAX (503)397-4016	REVISION:
CHECKED BY:		
DATE:	TITLE: STANDARD UTILITY LOCATIONS	DRAWING NO: 295
SCALE:		

DATE: 01/12/2022
PRELIMINARY
NOT
FOR CONSTRUCTION

REV.	REVISION RECORD	DATE

Lower Columbia Engineering
St. Helens, Oregon
(503) 366-0399

PROJ. NO. 3146	STANDARD DETAILS		
DWG. BY CAB	NORTH 8TH STREET PLANNED DEVELOPMENT		
APPR. BY	NORTH 8TH STREET, LLC.	SHEET	D-1
FILE D-3146-D-1	DATE 07/01/2021		