Critical Areas Report and Stream Buffer Mitigation Plan
for
Larsen Drive Subdivision
XXXX Larsen Drive
La Center, Washington

Prepared for:
Rob Risinger
MJS Investors
11201 SE 8th Street, Suite 116
Bellevue, WA 98004

Project 332.02

Prepared by:
Loowit Consulting Group, LLC
312 Gray Road
Castle Rock, WA 98611
360.431.5118
Thaderly42@gmail.com

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SIGNATURE PAGE

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned:

Timothy J. Haderly, Principal Scientist/Owner
Loowit Consulting Group, LLC

INTRODUCTION

Purpose and Need

Loowit Consulting Group, LLC (LCG) was retained by Rob Risinger of MJS Investors (Applicant) to complete a critical areas evaluation on a property located south of NW Pacific Highway and east of Larsen Drive, in the western portion of La Center, Washington (Figures 1 & 2). LCG investigated potential mapped critical areas according to municipal code requirements by the City of La Center. The Applicant proposes a residential subdivision (Larsen Drive Subdivision) project which will consist of dividing the existing parcels into 41 lots. The urban residential subdivision will be serviced by public sewer and water from the City of La Center (Figure 3).

The northern portion of the Subject Site, occupied by a single-family residence and associated outbuildings, is not part of the proposed development and will be placed in a separate parcel. The southern portion of the site will henceforth be referred to as the Subject Site for the purposes of this report.

Site Description

The Subject Site consists of two parcels totaling 8.61 acres. Site specifics include:

Site Address: See Table 1.

Current Owner: Rodney R. Peterson

Tax Parcel Number: See Table 1

Legal Description: Section 33, Township 5 North, Range 1 East, W.M.

Property Size: Approximately 8.61 acres

Jurisdiction: City of La Center

Table 1: Summary of the Subject Property

Parcel #	Address	Owner	Acres
258766000	34214 NW Pacific Hwy	Rodney R. Peterson	4.65
258631000	XXXX NW Larsen Drive	Rodney R. Peterson	3.96
	Total (acres)		**8.61**

The Subject Site is located south of NW Pacific Highway and east of Larsen Drive. The northern approximate one-third of the site is occupied by a single-family residence and associated outbuildings, and is surrounded by maintained landscaping (Photograph 1). The Subject Site, proposed for development, is the southern two-thirds of the subject site, east of Larsen Drive

and south of the single-family residence (Photograph 2-5). The majority of the Subject Site is comprised of a grass field that gently-slopes to the south and east that used for livestock pasture and/or grass hay production. There is a constructed drainage ditch (Photograph 4) along Larsen Drive on the western boundary of the Subject Site. The only improvement to the Subject Site, beyond the fencing on the perimeters, is a metal-sided barn (Photograph 2) which will be removed if the subdivision is approved. There is a sewer pump station (visible in Photograph 4) on the property immediately south of the Subject Site which services the housing development west of Larsen Drive. A north-south trending tributary of the East Fork of the Lewis River flows in a southerly direction, east of the eastern boundary of the Subject Site.

Photograph 1: Intersection of NW Pacific Hwy (left) and Larsen Drive (right). This is the northern portion of the Subject Site with the single-family residence visible in the middle of the photo. Photo is looking southeast. (Photo source: Google Maps)

Photograph 2: Looking northwest across the Subject Site towards Larsen Drive (in front of the houses in distance to left of photo) and the single-family residence (center of photo) in the northern third of the Subject Site. The Subject Site extends nearly to the single-family residence in the middle distance, and includes the tan barn (middle right of photo).

Photograph 3: Looking north along Larsen Drive from near the northwest corner of the Subject Site. Subject Site behind, and to the right, of the photographer.

Photograph 4: Looking south along Larsen Drive from near the northwest corner of the Subject Site. Subject Site on the left. The roadside drainage ditch is trending away from the viewer in the middle of the photo (left of Larsen Drive), and the sewer pump station on the neighboring property to the south is visible in the distance (also to the left of Larsen Drive).

Photograph 5: Looking west along the southern boundary. Photo taken near the southeast corner of the Subject Site.

Land uses adjacent to the Site include:

- To the North – Low density residential
- To the South – Rural residential
- To the East – Rural residential
- To the West – Urban residential

METHODS

Desktop Review

Prior to visiting the Site, LCG conducted a desktop review of readily available mapping resources and other pertinent information including:

- Clark County Web Map (http://gis.clark.wa.gov/mapsonline/).
  This source provided parcel information, aerial photographs, physical attributes, and other information from the Clark County Assessor.
- Federal Emergency Management Agency. Flood Map Service Center. (https://msc.fema.gov/portal/search) This site includes updated flood maps for the United States.
- Google Earth Pro (https://www.google.com/earth/) This source provided recent and past aerial photographs of the project area.
- US Fish and Wildlife Service National Wetlands Inventory Wetlands Mapper (https://www.fws.gov/wetlands/data/mapper.html). This mapping source depicts wetlands and streams throughout the United States.
- US Department of Agriculture Natural Resources Conservation Service Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). This source depicts mapped soils including hydric soils throughout the United States.
- Washington Department of Natural Resources Forest Practices Application Mapping Tool (https://fpamt.dnr.wa.gov/default.aspx). This mapping source depicts streams and wetlands in Washington State.
- Washington Department of Natural Resources Geologic Information Portal. (https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/landslides#find-mapped-landslides). This site maps known geologic hazard areas in Washington State.
- Washington Department of Fish and Wildlife Salmonscape (http://apps.wdfw.wa.gov/salmonscape/map.html). This mapping source depicts streams and fish distribution in Washington State.
- Washington Department of Fish and Wildlife Priority Habitat and Species (http://apps.wdfw.wa.gov/phsontheweb/). This mapping source depicts priority habitats and species throughout Washington State.

State Regulations

Wetlands are regulated by Washington Department of Ecology (Ecology) under the Water Pollution Control Act and the Shoreline Management Act. The State Environmental Policy Act (SEPA) process is also used to identify potential wetland-related concerns early in the permitting process. All proposed direct and identified indirect impacts to wetlands are reviewed and approved/denied by Ecology using the regulations previously listed.

Streams are regulated by Washington Department of Fish and Wildlife under the State Hydraulic Code, Chapter 77.55 Revised Code of Washington. Projects involving activities within, over, or beneath jurisdictional streams are subject to the Hydraulic Project Approval (HPA) permitting process administered by WDFW.

Federal Regulations

Wetlands are regulated as "Waters of the United States" under Section 404 of the Clean Water Act. Section 404 regulations are administered by the US Army Corps of Engineers (USACE).

Local Regulations

Critical Areas are regulated by the City of La Center Municipal Code (LCMC) *Chapter 18.300 – Critical Areas.*

Field Investigations

On July 10, 2023 LCG performed a site investigation to evaluate the potential critical areas within the Site. Site conditions were considered normal. Vegetation was intact, no recent soil grading was observed, and no recent ditching was observed. Weather conditions at the time of site investigation were overcast (65°F) with 0.00 inches of precipitation within the previous 24-hours. Recorded weather history from the weather station at the Vancouver Pearson Airport two weeks prior to visiting the site is characterized by high temperatures ranging from 76 to 95°F and low temperatures ranging from 52 to 61°F. Total recorded precipitation for the two weeks prior to the site visit (June 26th to July 9th) was recorded at 0.00 inches (Table 2, Appendix B).

Table 2: Daily Weather Data Summary at Vancouver Pearson Airport, Washington. NOAA Weather Station (Appendix B)

Date	Minimum Temp (Deg F)	Maximum Temp (Deg F)	Total Precipitation (in)
6/26/2023	56	79	0.00
6/27/2023	57	79	0.00
6/28/2023	58	86	0.00
6/29/2023	60	88	0.00
6/30/2023	60	84	0.00
7/1/2023	52*	84	0.00
7/2/2023	58	85	0.00
7/3/2023	58	88	0.00

7/4/2023	57	95	0.00
7/5/2023	59	96*	0.00
7/6/2023	61	88	0.00
7/7/2023	58	77	0.00
7/8/2023	56	76	0.00
7/9/2023	57	85	0.00
		Total	**0.00**
7/10/2023	59	71	T

Site investigation work tasks included:

- Documentation of current site conditions
- Documentation of adjacent land uses
- Determination of critical areas

Vegetation

The Subject Site consists of a large open field vegetated with various grasses (tall fescue, Kentucky Bluegrass, Velvet grass) and a mix of weeds (hairy cat's ear, Canada Thistle, Queen Anne's Lace, Common Tansy) with scattered Himalayan blackberries along the perimeter fencing and roadside ditches at the site. The field is used for pasture and grass hay production. The northern third of the subject site around the home is mown lawn and domestic landscaping plants. Table 3 summarizes vegetation observed at the Subject Site.

Table 3: Vegetation Observed

Scientific Name	Common Name	Wetland Indicator Code
Acer macrophyllum	Big Leaf Maple	FACU
Cirsium arvense	Canada Thistle	FAC
Daucus carota	Queen Anne's Lace	FACU
Holcus lanatus	Velvet Grass	FAC
Hypochaeris radicata	Hairy Cat's Ear	FACU
Lolium perenne	Perennial Ryegrass	FAC
Poa pratensis	Kentucky Bluegrass	FAC
Prunus emarginata	Bitter Cherry	FACU
Rubus armeniacus	Himalayan Blackberry	FAC
Schedonorus arundinaceus	Tall Fescue	FAC
Tanacetum vulgare	Common Tansy	FACU

Wetland Indicator Code
OBL = Obligate (Almost always occur in wetlands)
FACW = Facultative Wetland (Usually occur in wetlands, but may occur in non-wetlands)
FAC = Facultative (Occur in wetlands and non-wetlands)
FACU = Facultative Upland (Usually occur in non-wetlands, but may occur in wetlands)
UPL = Obligate Upland (Almost never occur in wetlands)

Soils

According to the US Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey for Clark County, there are three types of soil on the Subject Site and within the Subject Site: two Gee Series silt clay loams, and Odne silt loam. The majority of the Subject Site is overlain by the Gee silt loam series, the soils in this series are differentiated by the steepness of the slope they reside upon. They are all alluvial and are commonly found on ridges, slopes, and terraces in the local area. Gee silt loam (GeB) comprises the majority of the soils on the Subject Site, with the western edge of a larger deposit of Gee silt loam (GeE) along the eastern property boundary where the ground begins to drop off toward the creek. The only other soil in the Subject Site is a lobe of Odne silt loam that extends onto the northern portion of the Subject Site from the west. It is a hydric soil, alluvial derived, and commonly associated with drainageways and terraces in the local area. Table 4 summarizes the soils on Subject Site and Figure 4 represents the NRCS soil mapping on the site.

Table 4: Soil Summary.

Soil #	Soil Name	Slope %	Hydric %
GeB	Gee silt loam	0-8	0
GeE	Gee silt loam	20-30	0
OdB	Odne silt loam	0-5	100

Historic land disturbance activities including general grading and timber harvest may have historically altered natural soil conditions at the site resulting in soils that may be somewhat different than those mapped by NRCS.

Hydrology

The Subject Site is situated on a historic alluvial terrace which gently slopes to the south/southwest over the majority of the Subject Site. Near the eastern boundary of the Subject Site, the slopes become more easterly, and stronger as they drop into a stream corridor that is offsite and east of the Subject Site. Local precipitation either infiltrates, sheet flows to the stream to the east, or to the ditch adjacent to Larsen Drive.

According to the Washington Department of Natural Resources Forest Practices Application Mapping Tool (Figure 5) there is a mapped unnamed Type F (Fish) stream to the east of the Subject Site that flows from north to south where is eventually discharges to East Fork Lewis River, a Type S (shoreline) stream.

The National Wetlands Inventory Map (Figure 6) does not depict any wetlands on the subject site. This was confirmed by LCG during field investigations.

Mapping

Roads, property boundaries, and other site features were derived from public sources and project design drawings by PLS Engineering.

RESULTS and DISCUSSION

Wetlands

There were no wetlands identified within of adjacent to the Subject Site. A single test plot was used to collect site information and is included in Appendix A.

Streams

A single unnamed Type F (fish-bearing) stream was located and mapped off-site and to the east of the Subject Site (Figure 3). The stream flows from north to south through the neighboring property to the east eventually discharging to the East Fork Lewis River. This stream is in a steep sided, incised ravine with no associated floodplain or wetland areas associated with the stream course. PLS surveyed the OHWM and placed the location on the site drawing presented as Figure 3.

Stream Buffers

LCMC Table 18.300.090(2)(f) – Riparian Areas, requires buffers on all jurisdictional streams within the city limits of La Center as summarized in Table 5. The Type F stream requires a 200 foot wide buffer measured landward of the OHWM. The 200-foot stream buffer extends into the southeast portion of the Subject Site (Figure 3).

Table 5: Stream Summary.

Stream ID	Type[A]	Buffer[B] (feet)
Unnamed	F	200

[A] *WAC 222-16-030*

[B] *LCMC Table 18.300.090(2)(f) – Riparian Area Buffers*

BUFFER MITIGATION PLAN

Mitigation Sequencing

As a general rule, proposed projects within critical areas and buffers are required to go through a mitigation sequencing process including avoidance, minimization, and mitigation for unavoidable impacts. The City of La Center requires mitigation sequencing according to:

> *LCMC 18.300.120(2) Mitigation Sequencing*
> *(a) Prior to authorizing impacts to critical areas or their buffers, the applicant shall demonstrate and the city shall verify that the applicant has met the following sequence in order of priority:*
> > *(i) Avoidance. Avoid the impact altogether by not taking a certain action or parts of an action;*

(ii) Minimization. Minimize the impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
(iii) Rectification. Rectify the impact by repairing, rehabilitating, or restoring the affected environment to the conditions existing at the time of the initiation of the project or activity;
(iv) Reduction or elimination. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;
(v) Compensation. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments; and
(vi) Monitoring. Monitor the impact and the compensation projects and take appropriate corrective measures.

Storm water control and treatment is required for all residential subdivision projects in the City of La Center and with the absence of a regional storm water collection system in the area of the Subject Site, an on-site storm water must be designed and engineered to serve the finished subdivision. The proposed storm water facility in the southeast corner of the Subject Site is located at the lowest portion of the subject site which is a requirement to effectively gather and convey storm water from the up gradient subdivision. Avoiding the proposed storm water facility location is not feasible for a number of reasons including the fact that the southeast corner is the lowest portion of the subject site, residential subdivisions require a storm water facility, locating the facility north of the current location will still impact stream buffer, and locating the facility to the west will negatively impact required traffic flow serving the subdivision. Proposed impacts to the stream buffer were minimized by locating the facility as far from the stream and buffer as practicable as well as sizing the footprint of the facility as small as possible yet not jeopardizing the functionality of the facility. Mitigation for unavoidable impacts to the outer stream buffer area from the storm water facility is addressed in the Mitigation Approach section in this report.

No Net Loss of Area or Functions

The City of La Center requires that no net loss of area or functions according to:

LCMC 18.300.120(2) No Net Loss
(a) Mitigation efforts, when allowed, shall ensure that development activity does not yield a net loss of the area or function of the critical areas. No net loss shall be measured by:
(i) Avoidance or mitigation of adverse impacts to fish life; or
(ii) Avoidance or mitigation of net loss of habitat functions necessary to sustain fish life; or
(iii) Avoidance or mitigation of loss of area by habitat type.
(b) Mitigation to achieve no net loss should benefit those organisms being impacted.

(c) Where development results in a loss of wetland area, the mitigation plan shall demonstrate that wetland area is replaced consistent with the ratios described in Table 18.300.090(5)(l), Wetland Mitigation Ratios. The created or enhanced wetland shall be, acre for acre, of equal or greater biological values, including habitat value, and with equal or greater hydrological values including storage capacity.

(i) Wherever possible, mitigation, replacement or enhancement shall occur on site.

(ii) However, where the applicant can demonstrate that an off-site location is in the same drainage basin, and that equal or greater biological and hydrological values will be achieved, the city may approve such off-site mitigation.

(iii) Wetponds established and maintained for control of surface water shall not constitute mitigation for wetland alterations.

(iv) Where there is a wetland within 25 feet of the toe of a slope equal to or greater than 25 percent, the buffer shall be a minimum of 25 feet beyond the toe of the slope.

The proposed buffer mitigation plan was designed to achieve, at a minimum, no net loss of ecological functions and values of streams and associated stream buffers. No direct impacts to streams are proposed and impacts to stream buffers has been minimized to the fullest extent possible while allowing development of the site and properly treating storm water generated from the completed development. The primary mitigation measure to maintain or increase functions and values of the buffer is the removal of invasive species in installing dense plantings of native trees and shrubs in un-vegetated areas currently used as pasture and grass hay production. This will likely result in a net increase in functions and values as the eventual buffer will be comprised of dense native trees and shrubs with significantly less invasive species providing increased functions and values. The enhanced buffer will likely provide increased sediment retention, erosion control, habitat structure, wildlife usage, plant species diversity, light blocking, noise reduction, canopy complexity, and aesthetic value over current conditions. Additionally, a pedestrian trail will provide increased recreational values to the area.

Assessment of Impacts

The proposed storm water facility, located in the southeast corner of the subject site, was designed to best accommodate expected storm water volumes from the proposed subdivision. City code allows the placement of storm sewer systems within buffers as cited in: ***LCMC 18.300.050(4)(b), an above ground storm facility servicing a development that is consistent with the City of La Center comprehensive plan and development code may be an allowed use on critical areas and within buffer areas given that there no other reasonable alternatives, based on topographic and environmental conditions***.

Placement of the storm water facility in the southeast portion of the Subject Site will result in permanent impacts to the riparian buffer from the construction of the active portion of the

pond system including maintenance roads. Construction of the storm water facility will also result in temporary impacts to the riparian buffer as summarized in Table 6.

Table 6: Riparian Habitat Area Impact and Mitigation Summary.

Buffer Impact	Impact (sq ft)	Permanent/ Temporary	Proposed Mitigation Ratio	Proposed Mitigation (sq ft)	Mitigation Type
Storm Pond	7,573	Permanent		20,474	Buffer Enhancement
Sidewalk Landscaping	1,727				
Sub Total	**9,300**		**1:2.2**	**20,474**	
Storm Pond	4,700	Temporary		4,700	Buffer Enhancement
Sub Total	**4,700**		**1:1**	**4,700**	

The following narrative was developed by PLS Engineering, the project engineer, to address the proposed location of the storm water facility and how if conforms to City code:

> The natural discharge location of the proposed site is at the southeast corner of the property where the site reaches its lowest elevations. The sites lowest point is due to the sites natural slope draining runoff to a Type F stream located offsite to the east. Post flow control discharge from the storm water facility will have to be discharge at this location at pre-developed discharge rates, independent of the location of the stormwater facility.
>
> Discharging stormwater at any other location would be inconsistent with stormwater design requirements set forth by the City of La Center development code. It would be impractical and unreasonable to position the facility anywhere other than the currently proposed location near the required discharge location. Placing the pond at the lowest elevation and within the riparian buffer is the only reasonable location to ensure the facility operates as intended and does so safely.

> *LCMC 18.300.130 (6) Buffer Enhancement. Where a development avails itself of the buffer reduction opportunity described in this chapter, the following enhancement standards shall apply:*
>
> *(a) The applicant shall submit to the city a written request describing the extent and nature of the proposed development activity and shall submit a written enhancement plan.*
>
> *(b) The enhancement plan shall include calculations and maps that illustrate:*

(i) Required boundary locations of all critical areas and attendant buffers;
(ii) Proposed buffer areas after reduction;
(iii) Proposed areas to receive enhancement measures;
(iv) A timeline for completion of the enhancement plan;
(v) Methods and techniques to be used to mitigate impacts to critical areas;
(vi) An explanation of methods and techniques, such as construction practices to be used to implement the identified mitigation methods; and
(vii) Methods and techniques for monitoring said mitigation and a proposed time frame for monitoring.

(c) The enhanced area shall provide an equal or greater level of functions, including habitat functions.
(d) Enhancement shall occur on site.
(e) Wetponds established and maintained for control of surface water shall not constitute mitigation for wetland alterations.
(f) Surface water management or flood control shall not be considered enhancement. [Ord. 2019-26 § 2 (Exh. A), 2019; Ord. 2012-01 § 1 (Exh. A), 2012; Ord. 2007-2 § 1, 2007.]

Mitigation Approach

According to provisions outlined in *LCMC 18.300.090(2)(i),* impacts to Fish and Wildlife Habitat Conservation Areas requires mitigation. The code does not specifically list recommended types of mitigation or ratios for impacts to stream buffers but typically buffers are mitigated at a minimum 1:1 ratio. For proposed permanent impacts (9,300 sq ft) to the buffer from the active storm pond and sidewalk landscaping, the Applicant has proposed enhancing 20,474 sq ft of buffer that currently consists of a mowed grass hay field. This approach results in a 1:2.2 ratio. Temporary impacts to the stream buffer (4,700 sq ft) will be mitigated by installing native trees and shrubs in the disturbed areas. The area of temporary impact is also a mowed grass hay field so long-term there will be a net increase in functions and values of the buffer.

Buffer Signs

All-weather signs will be placed every 100 linear feet along the outer buffer boundary and anchored a minimum 4 feet above ground elevation on all-weather posts. Signs will be designed in conformance with design requirements of City of La Center.

Construction Sequencing

The following sequencing will be applied during the course of utilizing the area for mitigation:

1. Native trees and shrubs installed under supervision of the Project Biologist.
2. Seed mix (or similar) applied as needed to reduce erosion.
3. Buffer signage installed.

4. Periodic maintenance as described in the Monitoring and Maintenance Plan section of this report.

Planting Specifications

Plantings will consist of native trees, shrubs, and common forbs (seed mix) similar to those found in the local area of Clark County (Table 7).

Table 7: Riparian Habitat Buffer Area Enhancement (approximately 25,175 sq ft).

Common Name[A]	Scientific Name[A]	Material	Spacing/ Size	Number of Pieces[A]
Western Red Cedar	*Thuja plicata*	Bareroot or 1 gal containers	15 feet, Min 18" high	100
Douglas Fir	*Pseudotsuga menziesii*	Bareroot or 1 gal containers	15 feet, Min 18" high	250
Big Leaf Maple	*Acer macrophyllum*	Bareroot or 1 gal containers	15 feet, Min 18" high	100
Vine Maple	*Acer circinatum*	Bareroot or 1 gal containers	10 feet, Min 18" high	100
Beaked Hazelnut	*Corylus cornuta*	Bareroot or 1 gal containers	10 feet, Min 18" high	100
Oceanspray	*Holodiscus discolor*	Bareroot or 1 gal containers	10 feet, Min 18" high	100
Sword Fern	*Polystichum munitum*	Bareroot or 1 gal containers	5 feet, Min 18" high	150
Salal	*Gaultheria shallon*	Bareroot or 1 gal containers	5 feet, Min 18" high	150
			Total	1050

[A] The number and composition of species may vary by up to 10% as long as the overall total number of installed plants does not fall below the stated total. Substitute species may be allowed with prior approval of the project biologist.

Plant Material Specifications

Bare Root Stock

1. 12 to 18+ inch high bare root stock will be purchased from a native plant nursery.
2. Stock will be kept cool and moist prior to being planted.
3. Stock will have well-developed roots and sturdy stems.
4. Unplanted stock will be properly stored at the end of each day.

Containers

1. 1 or 2 gallon container stock will be purchased from a native plant nursery.

2. Stock will be kept cool and moist prior to being planted.
3. Stock will have well-developed roots and sturdy stems.
4. Unplanted stock will be properly stored at the end of each day.

Cover Seed

1. Dry seed will be scattered over bare soil to help prevent erosion (see below).
2. Application rate is 15-25 lbs/acre.

Information from River Refuge Seed Company, LLC

Planting Implementation

1. Plants will be installed in the fall (October-November) or early spring (March- April) according to specifications listed in Table 7. Spacing of the plants will be somewhat irregular and in groups to create heterogeneity.
2. A minimum 2-foot diameter circle at each planting location will be thoroughly grubbed before plant installation to help control completion from weeds.
3. Bare root and container stock will be hand planted with a tree shovel or comparable tool.
4. Bare root stock will be placed in excavated holes so that their roots are able to extend down entirely and do not bend upward or circle inside the hole (no "J" or "U" roots).
5. Root crowns will be at or slightly above the level of the surrounding soil.
6. Soil around the planted species will be firmly compacted to eliminate air spaces.

Goals, Objectives, and Performance Standards

The goal of the buffer enhancement will be to increase functions and values over current conditions by removing/controlling invasive plant species coupled with the installation of native trees and shrubs by maintaining plants for a minimum 5 years. To accomplish these goals, the following objectives and performance standards are appropriate to ensure the success of the restoration area (Table 8):

Objective 1. Install native vegetation to convert a maintained pasture to a functional stream buffer (approximately 25,174 sq ft).

Performance Standard 1a: In Year 0, install native plants
Performance Standard 1b: In Year 0, install dry seed mix at 20 lbs/acre as needed
Performance Standard 1c: In Year 0, install buffer signs

Performance Standard 2a: In Year 1, five (5) permanent monitoring stations established
Performance Standard 2b: In Year 1, installed plantings meet 100% survival
Performance Standard 2c: In Year 1, invasive species <10%

Performance Standard 3a: In Year 2, installed plantings meet 100% survival
Performance Standard 3b: In Year 2, invasive species <10%

Performance Standard 4a: In Year 3, installed plantings meet 100% survival
Performance Standard 4b: In Year 3, invasive species <10%

Performance Standard 5a: In Year 4, installed plantings meet 100% survival
Performance Standard 5b: In Year 4, invasive species <10%

Performance Standard 6a: In Year 5, installed plantings meet 100% survival
Performance Standard 6b: In Year 5, invasive species <10%

Table 8: Performance Standard Summary

Year	Objective	Performance Standard
Zero	1	• 1a – Install native plants • 1b – Install dry seed at 20lbs/acre • 1c – Install buffer signs
One	1	• 2a – Establish five (5) monitoring stations. • 2b – Plantings meet 100% survival • 2c – Invasive species <10%
Two	1	• 3a – Plantings meet 100% survival • 3b – Invasive species <10%
Three	1	• 4a – Plantings meet 100% survival • 4b – Invasive species <10%
Four	1	• 5a – Plantings meet 100% survival • bc – Invasive species <10%
Five	1	• 6a – Plantings meet 100% survival • 6b – Invasive species <10%

Monitoring and Maintenance Plan

The planted buffer areas will be monitored for a 5-year period following project construction, in Years 1, 2, 3, 4 & 5. Monitoring reports will be submitted to City of La Center by December 31st of each monitored year. The as-built report will be submitted to City of La Center no more than 60 days after complete installation of the buffer plantings. The mitigation area will be monitored once a year during the growing season, between March 15 and May 15 (Table 9). Five (5) monitoring and photo stations will be established to document the plant growth over time. Individual plants will be counted and recorded each monitoring year to assess the percentage survival rate; plants will be replaced as-needed.

Description of the monitoring approach and methods. For each performance standard being measured the following information will be provided in the monitoring reports:

a) Description of the sampling technique (e.g., monitoring point for soil or hydrology, line or point intercept method, ocular estimates in individually placed plots). If you are using a standardized technique, provide a reference for that method.
b) Size and shape of plots or transects.
c) Number of sampling locations

d) Percent of the mitigation area being sampled.
e) Location of sampling locations.
f) Date of sampling.
g) Description of how the data was evaluated and analyzed.

Table 9: Maintenance, Monitoring, and Reporting Summary

Year	Task	Reporting
Zero	• Fill ditches & compact soils • Install plantings	• Progress letter to City within 60 days of complete installation
One	• Routine maintenance • Replace dead plants • Monitor site between March 15 and May 15	• Year one monitoring report to City by December 31st • As-built drawing to City by December 31st
Two	• Routine maintenance • Replace dead plants • Remove invasive plant species • Monitor site between March 15 and May 15	• Year two monitoring report to City by December 31st
Three	• Routine maintenance • Replace dead plants • Remove invasive plant species • Monitor site between March 15 and May 15	• Year three monitoring report to City by December 31st
Four	• Routine maintenance • Replace dead plants • Remove invasive plant species • Monitor site between March 15 and May 15	• Year four monitoring report to City by December 31st
Five	• Routine maintenance • Replace dead plants	• Year five final monitoring report to City by December 31st

	• Remove invasive plant species • Monitor site between March 15 and May 15	

As-Built Report Contents

The as-built report will contain at least the following:

Background Information

1. Project name
2. Name and contact information of the person preparing the as-built report
3. Name of the landowner
4. Wetland professional on site during construction of the mitigation site(s)
5. Date the report was produced

Mitigation Project Information

1. Brief description of the final mitigation project with any changes from the approved plan made during construction.
2. Description of any problems encountered and solutions implemented (with reasons for changes) during construction.
3. List of any follow-up actions needed, with a schedule.
4. Vicinity map showing the geographic location of the site(s) with landmarks.
5. Mitigation site map(s), 8-1/2" x 11" or larger, showing the following:
    a. Boundary of the site(s).
    b. Installed planting scheme (quantities, densities, sizes, and approximate locations of plants, as well as the source(s) of plant material).
    c. Location of permanent photo stations and any other photos taken.

    Include the month and year when each map was produced or revised. The site map(s) should reflect on-the-ground conditions after the site work is completed
2. Photographs taken at permanent photo stations and other photographs, as needed. Photos must be dated and clearly indicate the direction from which each photo was taken. Photo pans are recommended.
3. A copy of any deed notifications, conservation easements, or other approved site protection mechanism.

Monitoring Report Contents

The annual monitoring reports will contain at least the following:

Background Information

1. Project name
2. Name and contact information of the person preparing the as-built report. Also, if different from the person preparing the report, include the names of:
3. Name of the landowner
4. Wetland professional on site during construction of the mitigation site(s)
5. Dates the monitoring data were collected
6. Date the report was produced

Restoration Project Information

5. Brief description of the restoration project
6. Description of the monitoring approach and methods. For each performance standard being measured provide the following information:
    a. Description of the sampling technique (e.g., monitoring point for soil or hydrology, line or point intercept method, ocular estimates in individually placed plots). If you are using a standardized technique, provide a reference for that method
    b. Size and shape of plots or transects
    c. Number of sampling locations and how you determined the number of sampling locations to use
    d. Percent of the mitigation area being sampled
    e. Locations of sampling (provide a map showing the locations), how you determined where to place the sampling locations (e.g., simple random sample), and whether they are permanent or temporary
    f. Schedule for sampling (how often and when)
    g. Description of how the data were evaluated and analyzed
7. Summary table(s) comparing performance standards with monitoring results and whether each standard has been met.
8. Discussion of how the monitoring data were used to determine whether the site is meeting performance standards.
9. Goals and objectives and a discussion of whether the project is progressing toward achieving them.
10. Summary, including dates, of management actions implemented at the site (e.g., maintenance and corrective actions).
11. Summary of any difficulties or significant events that occurred on the site that may affect the success of the project.
12. Specific recommendations for additional maintenance or corrective actions with a timetable.
13. Photographs taken at permanent photo stations and other photographs, as needed. Photos must be dated and clearly indicate the direction the camera is facing. Photo pans are recommended.
14. Vicinity map showing the geographic location of the site(s) with landmarks.
15. Restoration site map(s), 8-1/2” x 11” or larger, showing the following:
    a. Boundary of the site.
    b. Location of permanent photo stations and any other photos taken.
    c. Data sampling locations, such as points, plots, or transects.
    d. Approximate locations of any replanted vegetation.
    e. Changes to site conditions since the last report, such as a change in water regime.

    Include the month and year when each map was produced or revised. The site map(s) should reflect on-the-ground conditions during the most recent monitoring year

Site Protection

The mitigation areas will be owned, maintained, and managed by the current property owner, unless otherwise assigned. The property owner will be responsible for maintenance and monitoring of the mitigation areas for the 5-year period. Signage will be installed along the outer perimeter of the stream buffers area at 100-foot intervals and will be maintained by the property owner to raise awareness and help limit disturbances.

Maintenance Plan

Maintenance at the restoration areas may involve removing invasive species, re-installing failed plants, as necessary.

If any part of the restoration plan failing or the performance standards are not met, steps will be taken to rectify the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

1. Identify the cause(s) of the failure or potential failure.
2. Identify the extent of the failure or potential failure.
3. Implement corrective actions by replanting.
4. Document the activities and include this data in the annual monitoring and maintenance reports.
5. Consult with the appropriate agencies in the event that a routine corrective action will not correct the problem.
6. Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

Contingency Plan

If the performance standards are not met after 5 years at project completion or at any time during the 5 maintenance and monitoring period, a contingency plan will be developed and implemented. All contingency actions will be undertaken only after consulting and gaining approval from City of La Center. A contingency plan will include: (1) the causes of failure, (2) proposed corrective actions, (3) a schedule for completing corrective actions, and (4) whether additional maintenance and monitoring are necessary.

Surety Agreement

Per LCMC 18.300.170, surety bonds are required when projects propose mitigation of critical areas. Under this chapter for installation of improvements shall be an amount equal to one hundred fifty percent (150%) of the fair market cost of installation, including materials and labor, monitoring, and maintenance costs. Based on current materials and labor costs, implementation of the mitigation coupled with a 5 year maintenance and monitoring program total $15,000. Taking the total of $15,000 multiplied by 1.5 requires a total surety amount of $22,500. Typically partial bond release is allowed if performance standards are met and the local jurisdiction approves the release.

Table 11: Surety Budget Summary

Task	Estimated Cost
Plants and install	$5,000
Five year maintenance	$3,000
Five year monitoring and reporting	$4,000
Internal Contingency	$3,000
Estimated Subtotal	$15,000
150% of Subtotal	**$22,500**

CONCLUSIONS

Based on a desktop review of existing site resources, a visit to the subject site, a review of City of La Center codes, and best professional judgment; LCG has determined that an unnamed Type F (fish) jurisdictional stream is located off-site east of the Subject Site and requires a 200 foot wide buffer. Development of the subject site into a residential development requires the design and construction of a storm water collection and treatment facility to properly handle storm water generated from the completed project. Locating the storm water facility in the lowest portion of the site necessitated encroachment into the outer portion of the 200 foot stream buffer. Impacts to the buffer include 9,300 sq ft of permanent impact and 4,700 sq ft of temporary impact. Mitigation for the impacts will include planting the 4,700 sq ft of temporary impact area with native shrubs and trees as well as planting 20,474 sq ft of existing pasture north of the proposed storm pond. The City of La Center allows storm facilities to be placed in stream buffers as long as mitigation is mitigation sequencing is implemented, no net loss of functions is achieved, mitigation is supplied, and the proposed mitigation meets all performance standards. It is the opinion of LCG that construction of the proposed storm pond in the southeast corner of the subject site can be accomplished with no long-term impacts to the stream and no net loss of functions to the stream buffer. In fact, enhancing the existing stream buffer, which is currently pasture, will result in a net increase in functions including increased sediment retention, erosion control, habitat structure, wildlife usage, plant species diversity, light blocking, noise reduction, canopy complexity, and aesthetic value.

LIMITATIONS

The findings and conclusions contained in this document were based on information and data available at the time this document was prepared and evaluated using standard Best Professional Judgment. LCG assumes no responsibility for the accuracy of information and data generated by others. Local, State, and Federal regulatory agencies may or may not agree with the findings and conclusions contained in this document.

REFERENCES

Anderson, P., Meyer, S., Olson, P., Stockdale, E. 2016. Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State. Shorelands and Environmental Assistance Program Washington State Department of Ecology Olympia, Washington. Publication no. 16-06-029. October 2016 Final Review.

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U.S. Army Corps of Engineers. 2007. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook. 5/30/2007.

US Department of Agriculture Natural Resources Conservation Service Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx).

US Fish and Wildlife Service National Wetlands Inventory Wetlands Mapper (https://www.fws.gov/wetlands/data/mapper.html).

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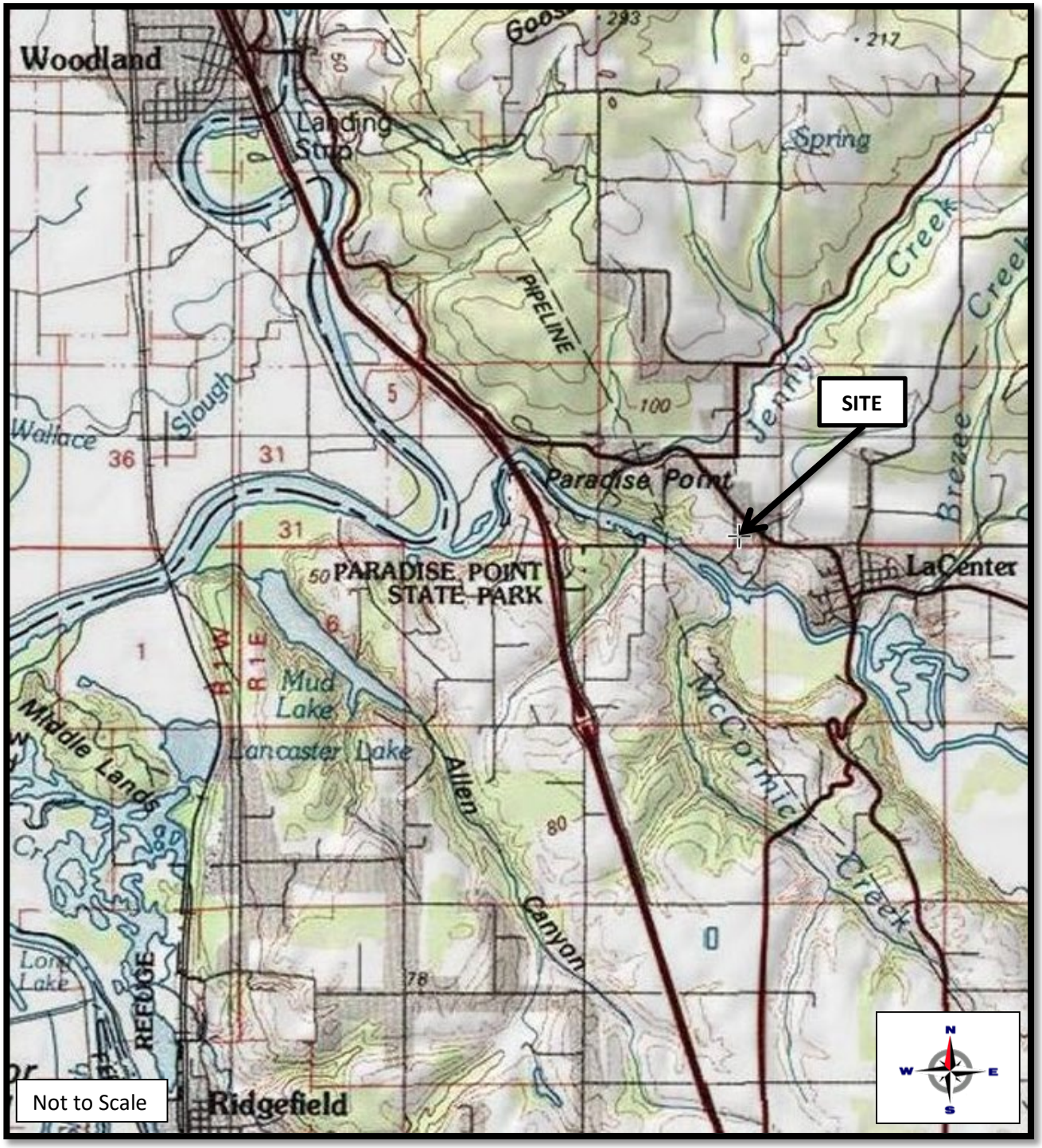
Washington Department of Fish and Wildlife Salmonscape (http://apps.wdfw.wa.gov/salmonscape/map.html).

Washington Department of Fish and Wildlife Priority Habitat and Species (http://apps.wdfw.wa.gov/phsontheweb/).

FIGURES



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360.431.5118

Figure 1
Site Location Map
Larsen Drive Subdivision

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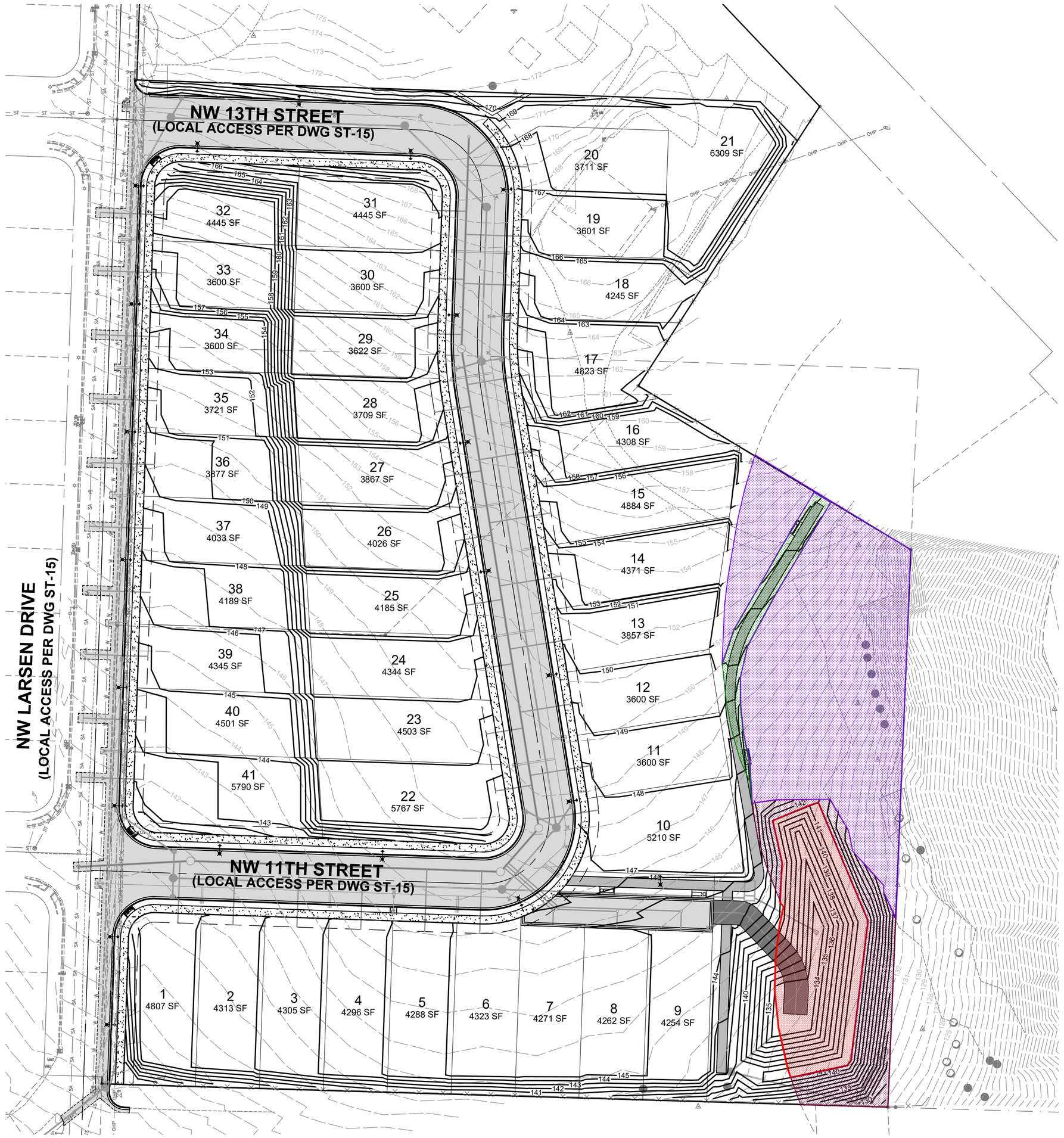
Figure 2
Parcel Map
Larsen Drive Subdivision



BUFFER ENHANCEMENT AREA
-20,474 SQFT

PERMANENT SIDEWALK LANDSCAPE IMPACTS
-1,727 SQFT

TEMPORARY STORM POND GRADING IMPACTS
-4,700 SQFT

PERMANENT STROM POND IMPACTS
-7,573 SQFT

Scale 1" = 40'

40 20 0 40

N

Legend

Proposed Asphalt	
Proposed Concrete	
Proposed Gravel	
Proposed Wood Chip Surfacing	

Preliminary Grading & Erosion Control Plan For:

Larsen Drive Subdivision

A Subdivision Located In The City Of La Center, Washington

PLS ENGINEERING

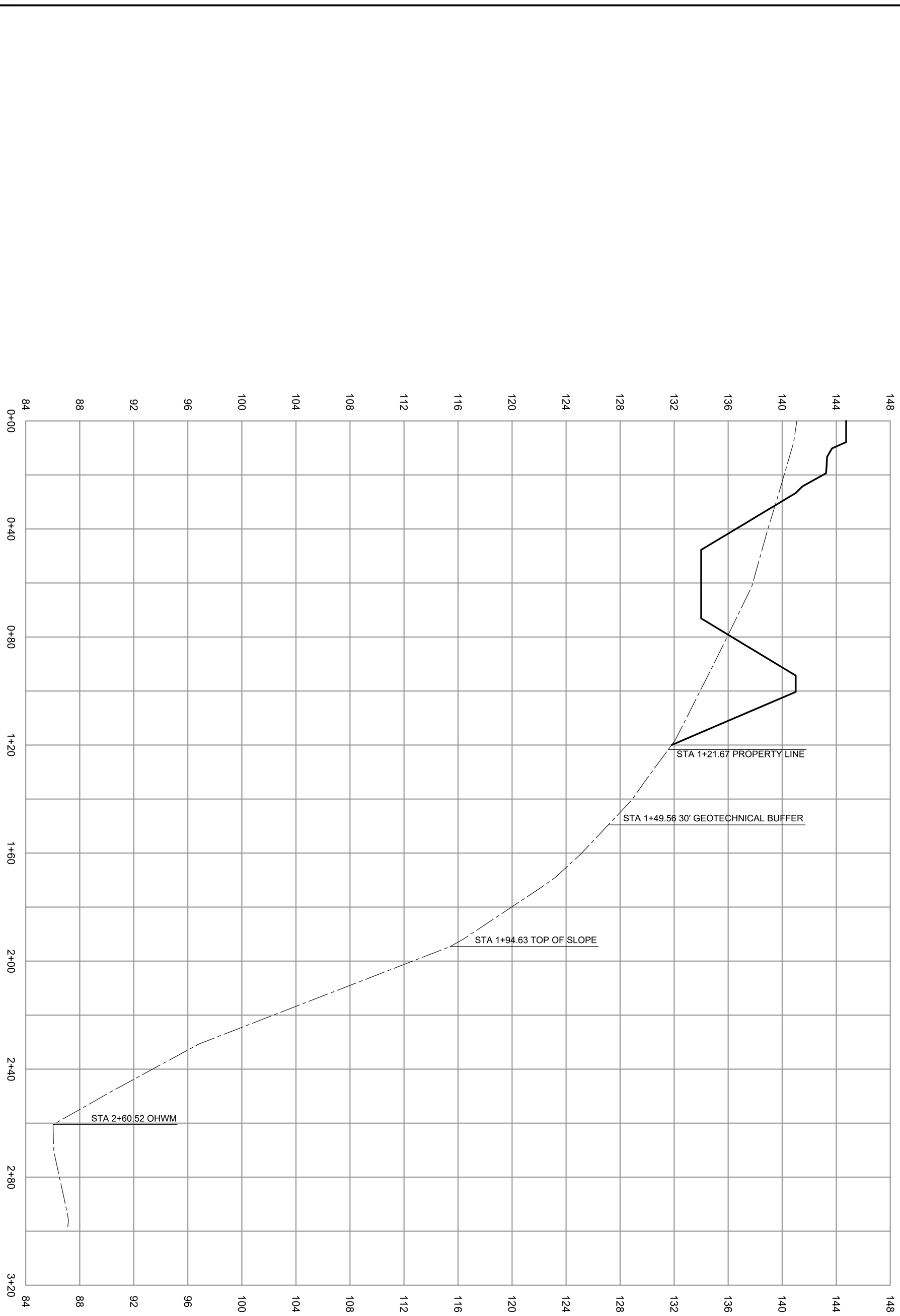
Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

Revisions

1	2	3	4	5	6

Project No. 3681

SCALE:	H: 1" = 40' V: N/A
DESIGNED BY:	MAG
DRAFTED BY:	MAG
REVIEWED BY:	TGJ



01
01

REVIEWED BY:
DRAFTED BY:
DESIGNED BY:
SCALE: H: 1" = 20'
V: 1" = 4'
Project No. 3681

Revisions			
1			
2			
3			
4			
5			
6			

Pond to Stream Cross Section For:

Larsen Drive Subdivision

A Subdivision Located In The City Of La Center, WA

Engineering - Surveying - Planning | 604 W. Evergreen Blvd., Vancouver, WA 98660 | PH (360) 944-6519 | Fax (360) 944-6539

PLS ENGINEERING

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GeB	Gee silt loam, 0 to 8 percent slopes	7.1	84.7%
GeE	Gee silt loam, 20 to 30 percent slopes	1.0	12.2%
OdB	Odne silt loam, 0 to 5 percent slopes	0.3	3.1%
Totals for Area of Interest		**8.4**	**100.0%**

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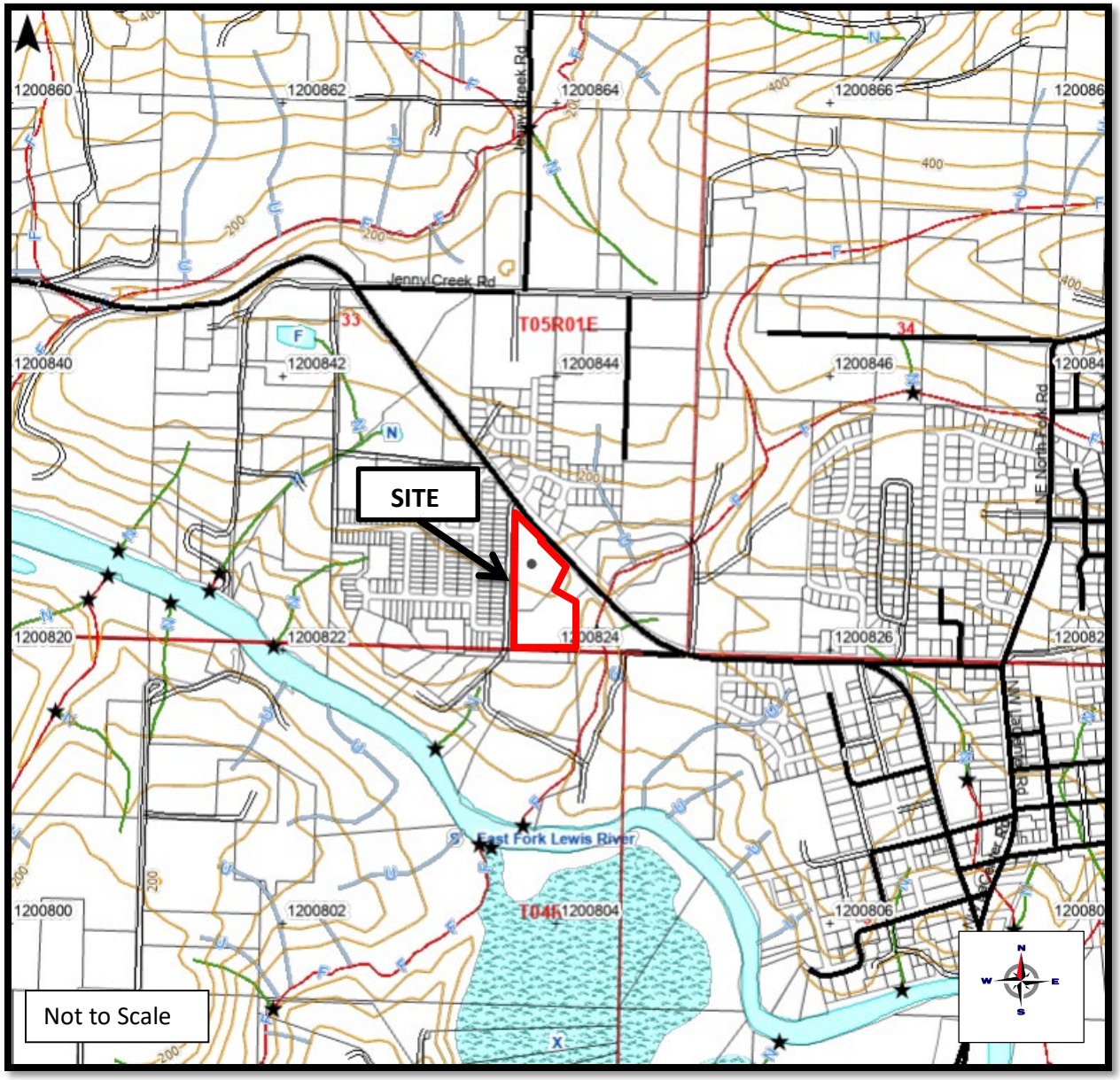
Natural Resources & Project Management
360.431.5118

Figure 4
Soils Map
Larsen Drive Subdivision



Type S
Type F
Type N, Np, Ns
U, unknown
X, non-typed per WAC 222-16

Watershed Analysis

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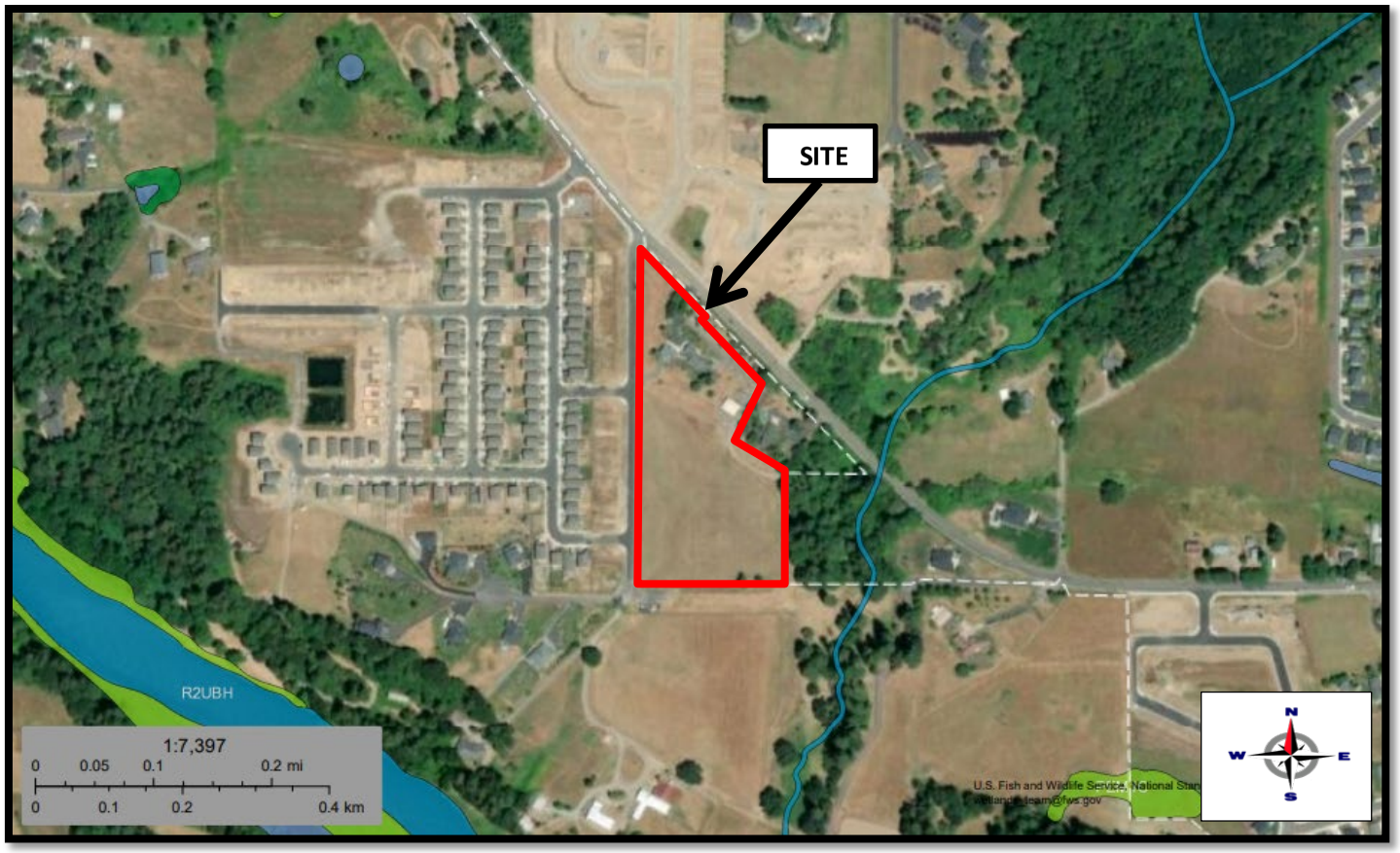
Figure 5
Stream Map
Larsen Drive Subdivision



Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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Figure 6
National Wetlands Inventory Map
Larsen Drive Subdivision

APPENDIX A – DATA SHEETS

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

Project/Site: Larsen Drive Property City/County: La Center/Clark Sampling Date: 7/10/2023
Applicant/Owner: MJS Investors State: WA Sampling Point: TP-1
Investigator(s): T. Haderly Section, Township, Range: Section 32, Township 21 North, Range 4 east
Landform (hillslope, terrace, etc.): Terrace Local relief: Concave Slope (%): 0 - 5%
Subregion (LRR): A Lat: 45.86697 Long: -122.68560 Datum: WGS84
Soil Map Unit Name: GEB - Gee silt loam NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes☐ No☒**
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
Total Cover:	%		
Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
Total Cover:	%		
Herb Stratum (Plot size: 5 ft radius)			
1. *Schedonorus arundinaceus*	30%	yes	FAC
2. *Poa pratensis*	30%	yes	FAC
3. *Lolium perenne*	20%	yes	FAC
4. *Hypochaeris radicata*	20%	yes	FACU
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	100%		
Woody Vine Stratum (Plot size: 30 ft radius)			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC 75 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species	80	x 3=	240
FACU species	20	x 4=	80
UPL species		x 5=	
Column Totals:	100 (A)		320 (B)

Prevalence Index = B/A=3.2

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes☐ No☒**

Remarks: FAC dominated pasture. Dominance test 75% but Prevalence Index 3.2

SOIL

Sampling Point: TP-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/4	100%		%			Silt loam	
5-18	10YR3/3	80%	7.5YR4/6	20%	D	M	Silt Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: _____

Depth (inches):

Hydric Soil Present? **Yes☐ No☒**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D4)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____

Water Table Present? Yes ☐ No ☒ Depth (Inches): _____

Saturation Present? Yes ☐ No ☒ Depth (Inches): _____

(Includes Capillary fringe)

Wetland Hydrology Present? **Yes ☒ No ☐**

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

Remarks:

APPENDIX B – CLIMATOLOGICAL SUMMARIES

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Local Climatological Data
Daily Summary
July 2023

Generated on 11/29/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 22 ft. Lat: 45.6210° N Lon: 122.6542° W

Station: **VANCOUVER PEARSON AIRPORT, WA US WBAN:94298 (ICAO:N/A)**

Date	Temperature (F)							Degree Days (base 65F)		Sun (LST)		Weather	Precipitation (in)			Pressure (inHg)		Wind	Maximum Wind Speed = MPH / Direction = Degrees			
	Max	Min	Avg	Dep	ARH	ADP	AWB	Heat	Cool	Rise	Set	Weather Type	TLC	Snow Fall	Snow Depth	Avg Stn	Avg SL	Avg Speed	Peak Speed	Peak Dir	Sust. Speed	Sust. Dir
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	84	52*	68	2.2				0	3	0425	2003		0.00			30.14		6.9	22	300	16	310
02	85	58	72	6.0				0	7	0426	2003		0.00			30.03		7.9	26	300	17	310
03	88	58	73	6.8				0	8	0426	2003		0.00			29.98		6.0	21	300	16	320
04	95	57	76	9.6				0	11	0427	2003		0.00			29.95		5.5	20	320	14	320
05	96*	59	78	11.4				0	13	0428	2002		0.00			29.86		5.6	20	300	14	310
06	88	61	75	8.2				0	10	0428	2002		0.00			29.88		4.6	18	310	13	320
07	77	58	68	1.0				0	3	0429	2002		0.00			29.91		4.4	19	320	12	320
08	76	56	66	-1.2				0	1	0430	2001		0.00			29.95		3.7	15	260	10	270
09	85	57	71	3.6				0	6	0431	2001		0.00			29.91		5.2	17	320	12	350
10	71	59	65	-2.5				0	0	0431	2000	HZ	T			30.07		3.2	11	330	8	290
11	82	62	72	4.3				0	7	0432	1959		0.00			30.04		5.9	18	280	12	320
12	83	60	72	4.1				0	7	0433	1959		0.00			30.03		5.2	20	320	13	320
13	87	59	73	4.9				0	8	0434	1958		0.00			30.08		5.6	19	240	13	290
14	93	58	76	7.7				0	11	0435	1958		0.00			30.06		5.8	20	290	14	290
15	95	59	77	8.6				0	12	0436	1957		0.00			30.00		6.7	24	290	17	300
16	92	61	77	8.4				0	12	0437	1956		0.00			29.99		6.9	24	320	17	300
17	77	63	70	1.3				0	5	0438	1955		0.00			30.11		5.0	17	320	13	290
18	87	56	72	3.1				0	7	0439	1954		0.00			30.05		7.6	24	290	16	310
19	95	63	79	10.0				0	14	0440	1954	HZ	0.00			30.00		5.7	22	320	14	310
20	88	60	74	4.9				0	9	0441	1953		0.00			30.08		3.9	15	010	10	340
21	87	62	75	5.8				0	10	0442	1952		0.00			30.08		5.5	16	290	13	270
22	88	59	74	4.6				0	9	0443	1951		0.00			30.03		5.2	21	310	14	310
23	87	60	74	4.5				0	9	0444	1950		0.00			29.95		5.4	22	300	15	310
24	76	56	66	-3.5				0	1	0445	1949	RA	T			30.04		4.9	20	250	15	260
25	79	63	71	1.4				0	6	0446	1948		T			30.15		6.7	18	290	14	290
26	83	55	69	-0.7				0	4	0447	1946		0.00			30.06		6.8	22	300	15	300
27	83	54	69	-0.8				0	4	0448	1945		0.00			30.03		5.2	19	350	13	300
28	83	59	71	1.2				0	6	0449	1944		0.00			30.04		6.0	17	290	13	290
29	82	59	71	1.1				0	6	0451	1943		0.00			30.10		6.1	21	320	15	330
30	82	57	70	0.1				0	5	0452	1942		0.00			30.12		5.9	18	290	13	320
31	84	54	69	-1.0				0	4	0453	1940		0.00			30.08		6.1	21	300	15	300
	85.1	58.5	71.8							Monthly Averages | Totals			T			30.03	30.05	5.6				
	5.1	1.6	3.4	Departure from Normal (1981-2010)									-0.69									

Degree Days

	Monthly		Season-to-date	
	Total	Departure	Total	Departure
Heating	0	-20	0	
Cooling	211	84	351	

Number of days with...

	Temperature				Precipitation		Snow	Weather	
	Max		Min						
	>=90°	<=32°	<=32°	<=0°	>=0.01"	>=0.1"	>=1"	T-Storms	Heavy Fog
Heating									
Cooling	6	0	0	0	0	0			

Date of 5-sec to 3-sec wind equipment change	Sea Level Pressure			Greatest...		
		Date	Time	24-Hr...		Snow Depth
N/A	Maximum 30.22	25	0947	Precip	Snowfall	
	Minimum 29.81	05	1815	T		
				Date		

Station Augmentation

Name:N/A Lat: N/A Lon: N/A Elevation: N/A Distance: N/A Elements: N/A Equipment: N/A

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Local Climatological Data
Daily Summary
June 2023

Generated on 11/29/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 22 ft. Lat: 45.6210° N Lon: 122.6542° W

Station: **VANCOUVER PEARSON AIRPORT, WA US WBAN:94298 (ICAO:N/A)**

Date	Temperature (F)							Degree Days (base 65F)		Sun (LST)		Weather	Precipitation (in)			Pressure (inHg)		Wind	Maximum Wind Speed = MPH / Direction = Degrees			
	Max	Min	Avg	Dep	ARH	ADP	AWB	Heat	Cool	Rise	Set	Weather Type	TLC	Snow Fall	Snow Depth	Avg Stn	Avg SL	Avg Speed	Peak Speed	Peak Dir	Sust. Speed	Sust. Dir
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	72	42*	57	-4.1				8	0	0425	1952		0.00			30.06		4.5	19	360	14	300
02	76	45	61	-0.2				4	0	0424	1953		0.00			30.10		4.7	17	310	13	310
03	80	49	65	3.6				0	0	0424	1954		0.00			30.11		6.5	22	310	16	300
04	76	51	64	2.5				1	0	0423	1955		0.00			30.12		10.6	31	320	22	310
05	81	52	67	5.4				0	2	0423	1956		0.00			29.99		9.2	30	310	22	310
06	91*	51	71	9.2				0	6	0423	1956		0.00			29.79		5.0	21	350	14	320
07	82	59	71	9.1				0	6	0422	1957		0.00			29.85		4.8	13	130	10	280
08	71	56	64	2.0				1	0	0422	1958	RA HZ	0.01			29.99		3.2	13	110	8	330
09	61	56	59	-3.2				6	0	0422	1958	RA	0.15			30.03		2.5	13	320	9	320
10	72	55	64	1.7				1	0	0421	1959		0.00			30.04		5.5	22	310	15	320
11	76	56	66	3.5				0	1	0421	2000		0.00			29.94		7.9	26	300	18	310
12	88	56	72	9.4				0	7	0421	2000		0.00			29.93		5.0	22	290	15	320
13	74	57	66	3.3				0	1	0421	2001		0.00			30.05		6.7	24	320	17	310
14	68	53	61	-1.9				4	0	0421	2001		0.00			30.14		6.7	27	300	16	300
15	76	46	61	-2.0				4	0	0421	2002		0.00			30.17		5.2	20	310	15	300
16	79	53	66	2.8				0	1	0421	2002	HZ	0.00			30.13		5.2	23	350	15	330
17	66	55	61	-2.3				4	0	0421	2002		0.00			30.03		7.1	21	320	14	320
18	58	50	54	-9.5				11	0	0421	2003	TS RA BR	0.46			29.91		3.7	16	270	13	260
19	62	46	54	-9.6				11	0	0421	2003	RA BR	0.16			29.98		3.1	23	300	20	280
20	67	52	60	-3.8				5	0	0421	2003		T			30.18		3.8	16	270	12	300
21	78	47	63	-1.0				2	0	0421	2003	BR	0.00			30.13		5.2	19	300	14	310
22	86	51	69	4.9				0	4	0422	2004		0.00			29.89		6.4	19	320	15	300
23	83	56	70	5.7				0	5	0422	2004	TS	0.00			29.94		4.5	20	330	14	310
24	82	53	68	3.5				0	3	0422	2004		0.00			30.06		5.6	20	310	14	290
25	82	54	68	3.3				0	3	0422	2004		0.00			30.04		6.4	22	330	15	290
26	79	56	68	3.2				0	3	0423	2004		0.00			30.01		6.2	19	310	14	310
27	79	57	68	3.0				0	3	0423	2004		0.00			29.94		4.5	17	260	12	270
28	86	58	72	6.8				0	7	0424	2004		0.00			29.98		5.0	18	300	12	320
29	88	60	74	8.6				0	9	0424	2004		0.00			30.02		5.7	19	310	13	330
30	84	60	72	6.4				0	7	0425	2004		0.00			30.06		7.2	24	310	15	320
	76.8	53.1	65.0							Monthly Averages | Totals			0.78			30.02	30.04	5.6				
	3.4	-0.2	1.7	Departure from Normal (1981-2010)									-1.01s									

Degree Days

	Monthly		Season-to-date	
	Total	Departure	Total	Departure
Heating	67	-24	4395	
Cooling	64	23	140	

Number of days with...

	Temperature				Precipitation		Snow	Weather	
	Max		Min						
	>=90°	<=32°	<=32°	<=0°	>=0.01"	>=0.1"	>=1"	T-Storms	Heavy Fog
Heating									
Cooling	1	0	0	0	4	3		2	

Date of 5-sec to 3-sec wind equipment change	Sea Level Pressure			Greatest...		
		Date	Time	24-Hr...		Snow Depth
N/A	Maximum 30.25	21	0657	Precip	Snowfall	
	Minimum 29.69	06	1837	0.55		
				Date		
				18-19		

Station Augmentation

Name:N/A Lat: N/A Lon: N/A Elevation: N/A Distance: N/A Elements: N/A Equipment: N/A