McGRANAHANPBK

June 27, 2025

City of Olympia Permit Center
Olympia City Hall
601 4th Avenue E.
Olympia, WA 98501

Re: Pre-Submission Conference Narrative – NCAA Soccer Field
South Puget Sound Community College
State Project No. 2025-294

To Whom it May Concern,

We respectfully submit this narrative and pre-submission conference application materials for a new soccer field located at the South Puget Sound Community College, Olympia campus.

The campus address is 2011 Mottman Rd SW, Olympia, WA 98512, and the site is located to the south of Dr. Nels Hanson Way S, southeast of the intersection of Dr. Nels Hanson Way S and Dr. Nels Hanson Way N.

Parcel number is: 12828110500.

Project Scope Summary

The scope of the project consists of redevelopment of the existing sports field with a new NCAA Division 1 scale turf soccer field and a small warmup field, along with new field lighting, electronic score board, and prefabricated/pre-engineered metal bleachers with seating capacity of approximately 210 people (including 4 accessible seating locations).

New restrooms are not provided as part of this project, but existing restrooms (including ADA restrooms along an accessible route) are available for public use in Health & Wellness Building 31, within 500 feet of this project.

Site work will include stormwater management, electrical infrastructure, and sewer and domestic waterline improvements to support a future Fieldhouse (with concessions, restrooms & storage). Two handicap accessible parking stalls will be provided on the site, as well as emergency vehicle access to the field surface.

An owner-provided Conex box will be provided for storage use and is intended to be painted with the school colors.

Zoning and Building Code Summary

This project is located on the SPSCC Olympia Campus and is zoned as R-4-8. While the field does not have an occupancy classification per the 2021 IBC, the bleachers are considered an A-5 Assembly Group occupancy.

The existing sports fields are noted as a legally established nonconforming use and are allowed to continue in use pursuant to OMC 18.37.070. The proposed improvements to the fields do not increase the nonconformance.

This project was included in the SPSCC Campus Master Plan dated December 2024, which received Conditional Use Permit (CUP) 24-3809 approval in City of Olympia Hearing Examiner (HEX) decision dated March 21, 2025.

Parking

For the purpose of determining handicap parking stalls for the new field and bleachers, we assume the following:

1) Existing parking is adjacent to the site at the east side of the field in Parking Lot H.
2) We have a form of fixed seating with a capacity of 210 (including 4 handicap accessible) seats.

3) Per the Traffic and Parking Demand Scoping Analysis Technical Memo dated January 21, 2025 (which was included in the SPSCC Campus Master Plan report), the peak parking demand for the soccer field would be 45 parking stalls, which would require 2 accessible stalls per 2021 IBC Table 1106.2; one of which would be an accessible van stall.
4) (4) bike racks will also be provided as required by City Zoning Code.

The Traffic and Parking Demand Scoping Analysis Technical Memo determined existing campus parking capacity will adequately serve the new soccer field use. The CUP 24-3809 HEX decision stated, "As conditioned, the project satisfies all parking requirements set forth in Chapter 18.38 OMC."

Traffic

The Traffic and Parking Demand Scoping Analysis Technical Memo noted a total 45 trips generated on soccer game days with no change to peak hour traffic. The CUP 24-3809 HEX decision stated, "As conditioned, the project satisfies all engineering pursuant to EDDS, including traffic requirements."

Per CUP 24-3809 HEX Decision Condition 3.b, we sent a Traffic Scoping Analysis Technical Memo pertaining to the Traffic Analysis of the proposed SPSCC Soccer Field project to the City of Olympia and City of Tumwater on June 23, 2025, and we held a transportation scoping meeting with the City of Olympia and City of Tumwater on June 24, 2025. We understand it was agreed upon in the meeting that no additional traffic research (TIA) will be necessary, although the City of Tumwater may have some comments on the Memo and will respond with any potential comments in the near future.

Wetlands and Critical Areas

The existing site is adjacent to existing wetlands and their required buffers to the east, south and west, and it is also adjacent to an existing wetlands mitigation area to the east. These boundaries and buffers were noted in the Wetland Reconnaissance and Mitigation Study dated December 20, 2024, which was included in the Campus Master Plan report, and are in the process of being surveyed as part of this project. There are no intentions to develop or perform work within the existing wetlands, buffer areas, nor mitigation areas as part of this project.

Noise

Per the Project Specific Conditions (7.A.3, pg. 30) the college will provide proposed policies and procedures measures they propose to adopt that address noise generated activities and the field and how they plan to limit those events and meet Chapter 173-60 to have on file with the City. The CUP 24-3809 HEX decision stated, "As conditioned, the project satisfies all property development and protection standards, including those for lighting and noise, pursuant to Chapter 18.40 OMC."

Stormwater

The proposed soccer field and the associated development will cover approximately 4-acres of existing grass area with new impervious surfaces and landscaping. We anticipate flow control and water quality treatment will be required for this project. Currently we are proposing a detention system beneath the turf soccer field and a proprietary treatment system (modular wetland or equivalent) downstream of the detention system to provide metals stormwater treatment. The project is awaiting geotechnical results, but early indications are infiltration will be infeasible due to the low permittivity soils and relatively high groundwater at the site.

Water Service

The project will add a new domestic water service for field maintenance purposes. There will likely be hose bibs installed around the soccer field to aid maintenance activities.

Sewer Service

There is an existing sewer main that currently runs along the eastern side of the proposed field. The project proposes to intercept and re-route the sewer line to parallel the eastern edge of the field.

Electrical Service

The project will require electrical service for the new field lighting system. The project team is currently evaluating potential locations to serve the site from the existing campus infrastructure.

The SPSCC Soccer Field Lighting Analysis dated March 15, 2025, notes that with (4) 80-foot-tall poles, light spill at the residential area northwest of the site is nearly zero. The CUP 24-3809 HEX decision stated, "As conditioned, the project satisfies all property development and protection standards, including those for lighting and noise, pursuant to Chapter 18.40 OMC."

Emergency Vehicle Access

Emergency vehicle access to the field will be provided with a new access from Dr Nels Hanson Way S at the east end of the field.

Questions

Question 1: Per the Hearing Examiner Decision 24-3809, Finding of Fact item 58 notes that land use permitting may be waived if determined so by City Staff after a Presubmission Conference is held. Can land use permitting be waived for this project?

Question 2: We assume a building permit will be required for the new pre-engineered bleachers and their foundations. Please confirm if deferred submittals will be required for the pre-engineered bleachers.

City Staff Consulted for this Project:

Paula Smith, David Smith, Tiffani King

Schedule Summary

The following are draft schedule milestone targets, based on the requirements for the college's requested Certificate of Participation (COP) sale date of February 2026 and Substantial Completion prior to fall quarter 2026:

Design / CD phase:	June 2, 2025 – November 15, 2025
Construction Bid / Contract phase:	November 17, 2025 – January 9, 2026
Construction phase:	February 2 – August 31, 2026, Substantial Completion
Completion / Closeout phase:	August 31 – November 1, 2026, Final Completion

Please don't hesitate to contact me if you have any questions about this submittal.

Sincerely,
McGranahanPBK

Matt Lane, AIA, DBIA, LEED AP
Principal

McGRANAHANPBK

Distributions: Ed McManamna, McGranahanPBK; David Iyall, SPSCC; David Head, DES

Attachments: Vicinity Map
Pre-submission Plans - Preliminary Site Plan, Utility Plan, and Grading Plans
Aerial View Rendering of Project
SPSCC Campus Master Plan - 10 Year Plan
Traffic and Parking Demand Scoping Analysis, January 21, 2025
Wetland Reconnaissance and Mitigation Study, December 20, 2024
SPSCC Soccer Field Lighting Analysis, March 15, 2024

1. Future Student Housing (Not in Scope)
2. New NCAA Soccer Field
3. New Electronic Scoreboard & Field Lighting
4. New Warm-Up Field
5. New Bleachers
6. New Storage Container (By Owner)
7. Existing Natural Sciences Building
8. Existing Horticulture Building

AERIAL VIEW

NCAA SOCCER FIELD

SOUTH PUGET SOUND COMMUNITY COLLEGE

27 JUNE 2025

McGRANAHANPBK

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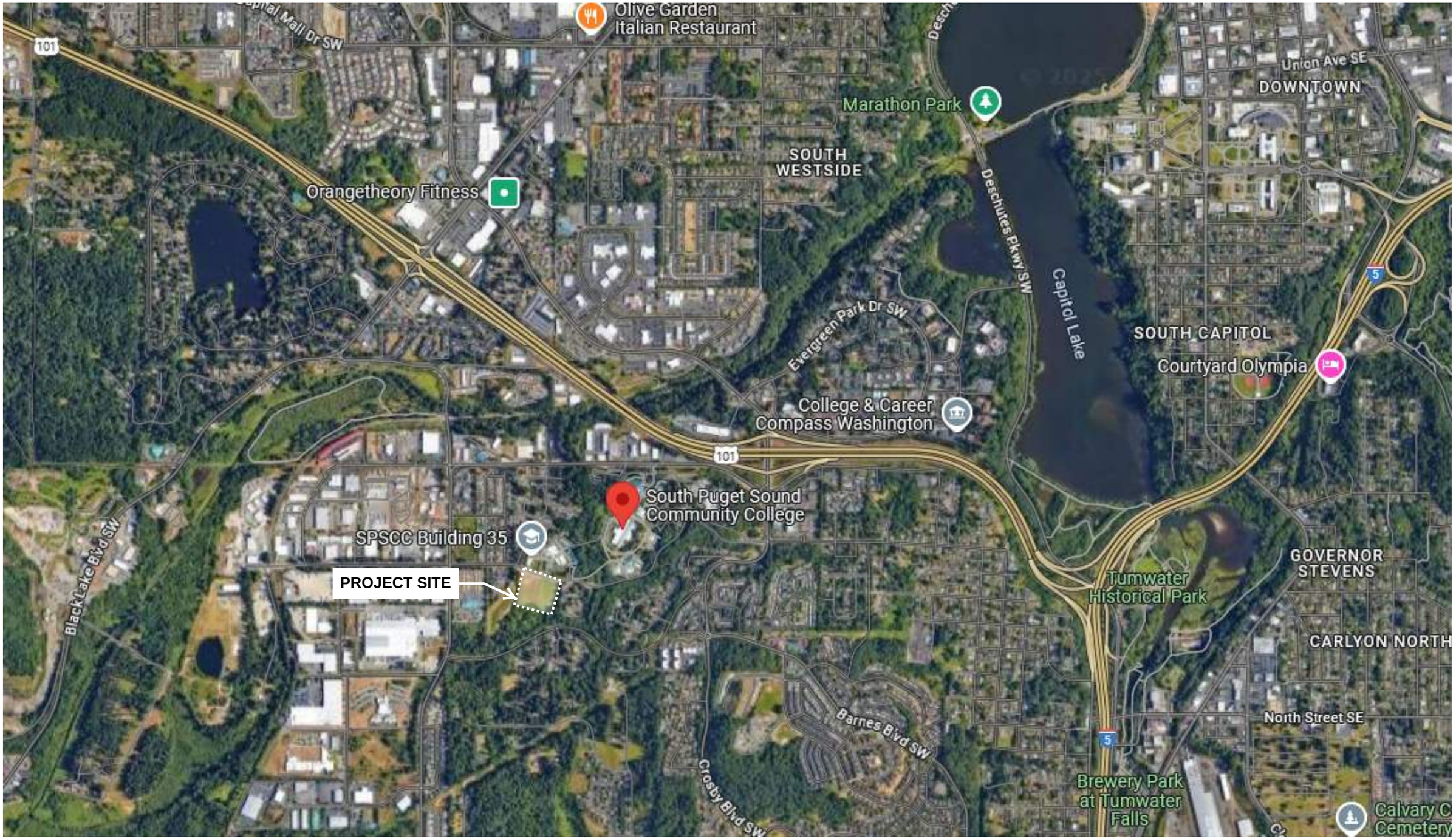

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822
kpff.com

South Puget Sound CC Soccer Field

Vicinity Map

PROJECT NO.

DATE 06/26/25

BY EKD/DRV

REFERENCE SHEET N/A

SKETCH NO. CSK-01

SCJ ALLIANCE
CONSULTING SERVICES

Technical Memo

To	Laura Price, Director of Facilities South Puget Sound Community College
From:	Ryan Shea, PTP, Senior Transportation Planner and Anne Sylvester, PTE
Date:	January 21, 2025
Project:	SPSCC Student Housing and Varsity Soccer Field
Subject:	Revised Traffic and Parking Demand Scoping Analysis

Introduction:

South Puget Sound Community College (SPSCC) is proposing to upgrade the existing soccer field located in the southwest corner of the Olympia campus, south of Dr Nels Hanson Way S, and to construct on-campus student housing. This Traffic and Parking Demand Scoping Analysis estimates the trip generation for the proposed development and provides an assessment of the peak parking demand for both the entire Olympia campus and the proposed varsity soccer field and student housing. **Figure 1** illustrates the SPSCC Olympia campus, highlighting the proposed project site.

Figure 1. SPSCC Olympia campus

SCJ ALLIANCE
CONSULTING SERVICES

Proposed Development

The proposed project consists of two elements:

- Construction of a varsity soccer field. This element would include reconstructing an existing soccer field with an upgraded facility that would support hosting soccer games for the college teams. This would include spectator seating.
- Construction of on-campus student housing. This element would be located within the same open space as the varsity soccer field and would consist of one student housing building with 152 beds. The housing building would include removal of approximately 13 existing parking stalls from lot H.

The conceptual site plan is shown in **Figure 2**.

Figure 2. Conceptual Site Plan

Site-Generated Traffic Volumes

Vehicle trip generation was calculated using the trip generation rates contained in the 11th edition of the *Trip Generation Manual* by the Institute of Transportation Engineers (ITE) when available and using independent studies as described. A description of each project element is provided below:

Varsity Soccer Field: For the varsity soccer field land use category Soccer Complex (land use code 488) with the independent variable fields is the best match. However, given that there is an existing soccer field on the site

today, this project element will functionally result in no change in the land use of the property. For typical, repeated peak hour traffic there is expected to be zero change. The reconstructed varsity soccer field will provide amenities for spectators and is expected to be used to host varsity soccer games, so while the daily usage of the field should mirror the usage today, there is likely to be an increase when games are held. We have prepared a summary of projected peak use that could occur during a home varsity game, to help inform the potential peak trip generation and parking demand of the field.

Soccer Game Assumptions

- Number of Home Team Player Trips 15
- Number of Home Team Coach Trips 3
- Number of Visiting Team Trips 1 (team bus)
- Number of Spectator Trips 20
  - Number of Spectators 40
  - Spectators per Vehicle 2
- Number of Staff Trips 6
- **Total Soccer Game Trips 45**

The trip generation rates for Soccer Complex are shown in **Table 1**.

Table 1. Soccer Complex (LUC 488) Trip Generation Characteristics

Time Period	Unit	Trip Rate	Enter %	Exit %
AM Peak Hour	Fields	0.99	61%	39%
PM Peak Hour	Fields	16.43	66%	34%
Daily	Fields	71.33	50%	50%

This data is provided to illustrate the traffic typical for a soccer field. However, as there is an existing soccer field at this location, the proposed varsity soccer field will result in no change to the typical, repeatable traffic volumes.

Student housing: ITE does not provide a land use code for on-campus housing. To provide a trip generation calculation for the proposed student housing, data was taken from a 2012 trip generation study of private student housing apartments prepared by Spack Consulting, which is attached. An additional consideration for the student housing traffic is the change it will have on the current traffic patterns of the community college. To support the calculation of trips associated with the proposed on-campus student housing, a calculation of the total community college trips before and after the proposed student housing has been done to assess the overall net change expected with the proposed student housing. This was done by calculating the trip potential of current commuter students that could be accommodated in the proposed student housing as residents. For that calculation, the land use category Junior/Community College (land use code 540) with the independent variable of headcount students is the best match.

The Student Housing and Junior/Community College trip rates are shown in **Table 2.**

Table 2. Student Housing and Junior/Community College (LUC 540) Trip Generation Characteristics

Time Period	Unit	Trip Rate	Enter %	Exit %
Student housing[1]				
AM Peak Hour	Beds	0.07	43%	57%
PM Peak Hour	Beds	0.13	53%	47%
Daily	Beds	1.42	50%	50%
Junior/Community College[2]				
AM Peak Hour	Students	0.20	81%	19%
PM Peak Hour	Students	0.18	56%	44%
Daily	Students	1.92	50%	50%

1. Source: Trip Generation Study - Private Student Housing Apartments Technical Memorandum (Spack Consulting, April 2012) NOTE: For this calculation a bed equates to a single headcount student.
2. Source: ITE Trip Generation Manual (11th Edition)

Using the trip generation rates shown in **Table 2** the projected net increase in trips associated with the proposed student housing has been calculated. The trip generation results are provided in **Table 3, Table 4,** and **Table 5**.

Table 3. AM Peak Hour Student Housing Trip Generation

Land Use	Headcount Students	Total Trips	Enter	Exit
Drop in Commuter Students	(152)	(30)	(13)	(17)
Addition of Resident Students	152	11	5	6
Total Net Change	**-**	**(19)**	**(8)**	**(11)**

Table 4. PM Peak Hour Student Housing Trip Generation

Land Use	Headcount Students	Total Trips	Enter	Exit
Drop in Commuter Students	-152	(27)	(15)	(12)
Addition of Resident Students	152	20	10	10
Total Net Change	**-**	**(7)**	**(5)**	**(2)**

Table 5. Daily Student Housing Trip Generation

Land Use	Headcount Students	Total Trips	Enter	Exit
Drop in Commuter Students	(152)	(292)	(146)	(146)
Addition of Resident Students	152	216	108	108
Total Net Change	**-**	**(76)**	**(38)**	**(38)**

Based on these calculations the proposed student housing would result in small reductions in traffic during all three time frames. Given the shift the student housing students will be making, no longer needing to commute to campus and instead walking to class, this small reduction in traffic is reasonable.

Peak Parking Demand

In addition to an assessment of the trip generation potential of the proposed varsity soccer field and student housing, the city has also asked for an assessment of the campus parking supply. To estimate the peak parking demand for the existing campus the identified parking rate of 0.22 parking stalls per student has been used. This parking ratio was previously identified by the hearing's examiner in 2009:

> *"The proposed parking ratio of 0.22 automobile parking stalls per student (headcount, not FTE) is approved. This parking ratio shall be reevaluated every 10 years."*

Data for specific elements related to the proposed soccer field and on-campus housing were taken from the 5th edition of the *ITE Parking Generation Manual* has been used when available. This data has been further supplemented with independent studies and usage assumptions described above. Peak parking demand estimates have been prepared for the existing college campus and the proposed project.

Existing College Campus

Currently the Olympia campus of SPSCC has a total headcount student enrollment of 2,771, with a full-time equivalent total of 1,495. For the Olympia campus approximately 53 percent of students attend class in person, with the remaining 47 percent attending either online only or hybrid, which is primarily online but requires occasional in-person attendance. This proportion of headcount students attending virtually has increased significantly in recent years and is expected to continue to be a major means of attendance going forward. For purposes of this analysis, it is assumed that 75% of the current Olympia campus students attend as in-person or hybrid learners, which would require on-site parking stalls at least some of the time.

A review of attendance over the last 12 years was done to identify a higher enrollment number that could be considered a realistic maximum attendance. Within the last 12 years the 2012-2013 school year represents a high point of attendance at the Olympia campus, with 10,158 headcount students and 4,399 full-time equivalent students. To help illustrate the overall SPSCC enrollment of the last 12 years, the annual enrollment numbers each year are provided in **Table 6**.

Table 6. SPSCC Overall Student Enrollment

School Year	Headcount Students	FTE Students
2012-2013	10,158	4,399
2013-2014	10,010	4,396
2014-2015	9,657	4,388
2015-2016	9,703	4,381
2016-2017	9,757	4,477
2017-2018	9,596	4,454
2018-2019	9,957	4,483
2019-2020	9,867	4,633
2020-2021	8,318	4,261
2021-2022	7,595	3,817
2022-2023	7,598	3,793
2023-2024	8,207	4,235

As shown in Table 6, overall attendance has been in decline, with attendance for the fall quarter of 2023-2024 at 5,073 headcount students and 3,819 FTE students, representing a significant decline from the 2012-2013 school year. Over the last several years SPSCC has expanded to multiple additional locations, which has caused at least part of the decline in enrollment at the Olympia campus. These additional locations are:

- Lacey Campus – Opened in 2015
- Dr Angela Bowen Center – Opened in 2019
- Craft Brewing and Distilling Center – Opened in 2019

With these additional locations, the number of enrolled students attending classes at the Olympia campus has further declined from the 2012-2013 school year. For the 2023-2024 fall quarter, only 55% of the total enrollment was attending classes at the Olympia campus.

Using the current student headcount the existing peak parking demand has been calculated. Calculations were also prepared for the 2012-2013 total enrollment on the Olympia campus to highlight the historic parking demand of the campus. These calculations are provided in **Table 7** based on headcount students. Currently the Olympia campus has a total parking supply of 1,514 parking stalls.

Table 7. SPSCC Olympia Campus Peak Parking Demand – Headcount Students

Alternative	Parking Supply	Total Campus Headcount Students	Olympia Campus In-Person Headcount Students	Peak Parking Demand Rate[3]	Peak Parking Demand	Remaining Available Stalls
2012-2013 SPSCC Attendance	1,514	10,158	10,158	0.22	2,235	(721)
Existing 2023-2024 SPSCC Attendance[1]	1,514	8,207	3,385	0.22	745	769
Projected 2034-2035 Enrollment[2]	1,514	10,000	4,125	0.22	908	606

1. Assumes 75% of these students will be attending in-person or as hybrid students, which requires occasional in-person attendance.
2. Assumes 55% of the total enrollment will attend Olympia campus. It assumes 75% of these students will be attending in-person or as hybrid students, which requires occasional in-person attendance.
3. Rate based on hearing examiner decision from 2009.

As shown in Table 7, the current enrollment levels for the SPSCC Olympia campus have a peak parking demand well short of the current parking supply. This finding validates the assumed peak parking demand rate of 0.22 stalls per headcount student that was developed in 2009 and continues to be appropriate for this analysis.

Evaluating the historic enrollment from 2012-2013, which could represent something close to maximum student capacity on the campus, suggests that the existing parking supply may not accommodate peak demand. However, given the expansion to multiple other locations it is unlikely that the Olympia campus will reach those totals again.

Lastly, an evaluation of the 2034 school year, which represents the ten-year horizon of the updated master plan, was conducted to ensure that the current parking supply at the Olympia campus will continue to accommodate the student population. SPSCC projects to have an overall enrollment of approximately 10,000 students for the 2034 school year, with 5,500 students attending the Olympia campus. While instances of virtual learning may increase over time it is unknown how that option will be utilized in the future. For the 2034 parking demand calculation the existing level of virtual learners, which for this analysis is assumed to be 75% as full time or hybrid learners, was used. This results in 4,125 students physically attending the Olympia campus at least some of the time in the 2034 school year, which would mean a peak parking demand of 908 stalls. This is well within the current parking supply.

It should be noted that the total campus headcount is expected to increase to levels similar to that of the 2012-2013 school year. However, based on the additional campus locations and the portion of students that opt for virtual learning, this similar level of overall students is expected to require much less parking stalls to serve.

Proposed Project

Varsity Soccer Field:

For the proposed varsity soccer field, the everyday use of the field is expected to mirror the usage of the existing field. As such, for this element of the proposed project an estimate of the peak parking demand for a varsity soccer home game has been provided. Based on the assumptions outlined above in the trip generation discussion, there would be 45 vehicles associated with a varsity soccer game, which would equate to a peak

parking demand of 45 parking stalls. This is shown below in **Table 8**. It should be noted that varsity games are expected to occur on weekday evenings and Saturdays, which will likely not correspond with peak usage of the college campus.

Student Housing:

The *ITE Parking Generation Manual* does not provide data for student housing parking demand. To provide an estimate of the peak parking demand for the proposed new use, independent studies of university parking ratios were referenced. Based on data from The University of Montana in Missoula, Rowan University in Glassboro, New Jersey, and Boise State University in Idaho the average resident student had a parking ratio approximately 2.5 times greater than that of a commuter student. Using this relationship the overall peak parking demand rate of 0.20 would be increased to 0.50 for resident students. The peak parking demand for student housing is shown in **Table 8**.

Table 8. Proposed Project Peak Parking Demand

Alternative	Size	Peak Parking Demand Rate[1]	Peak Parking Demand
Varsity Soccer Field	One Varsity Game	N/A	45
Student Housing	152 Beds	0.50	76
Total			121

1. Based on university parking demand studies that related commute parking demand and resident parking demand

Based on these peak parking demand estimates, the combined parking demand of both project elements would be 121 parking stalls, which assumes that both peak parking demand timeframes overlap.

Maximum Attendance Varsity Soccer Field:

In addition to providing a calculation of expected peak parking demand for a typical varsity soccer game, an additional calculation has been made to estimate the potential maximum parking demand for a varsity soccer game. This calculation is based on the proposed size of the spectator seating area, which is expected to hold as many as 250 people. Using this increased spectator total, a maximum potential vehicle activity for a varsity soccer game has been made using the following assumptions:

Maximum Soccer Game Assumptions

- Number of Home Team Player Trips 15
- Number of Home Team Coach Trips 3
- Number of Visiting Team Trips 1 (team bus)
- Number of Spectator Trips 125
  - Number of Spectators 250
  - Spectators per Vehicle 2
- Number of Staff Trips 6
- **Total Soccer Game Trips 150**

Combined with the peak parking demand for the proposed student housing, this would result in a peak parking demand of 226 parking stalls.

Existing Parking Occupancy Analysis:

Based on the location of the proposed project there are two existing parking lots that would be expected to serve the varsity soccer field and student housing. These two lots, Lot F and Lot H, currently provide 633 parking stalls. The proposed student housing footprint would reduce Lot H by approximately 13 stalls, resulting in a total available parking supply of 620 parking stalls for this portion of the campus.

Parking occupancy data will be collected over a two-day period for these two lots. This data will then be used to assess whether the existing parking supply can accommodate the estimated peak parking demand for the proposed project as outlined in this letter. Both a typical varsity soccer game and a maximum attendance varsity soccer game will be evaluated. It should be noted that varsity games are expected to occur on weekday evenings and Saturdays, which will likely not correspond with peak usage of the college campus.

It should also be noted that while the proposed student housing building will reduce the overall parking supply by approximately 13 stalls, the current enrollment trends for the campus indicate a large surplus of parking stalls through the 10-year horizon, such that this small reduction will not adversely impact the ability of the campus to accommodate the forecasted peak parking demand.

Thank you for reviewing the enclosed materials. We have presented this information for the City's use in determining if any additional traffic or parking analysis is required for the proposed project beyond the parking occupancy study for the adjacent parking lots.

If you have any questions or comments about the enclosed information, please contact me at (360) 352-1465.

Respectfully,

SCJ Alliance

Enclosures: Trip Generation Study - Private Student Housing Apartments Technical Memorandum (Spack Consulting, April 2012)
University Parking Studies

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Technical Memorandum

From: Mike Spack, P.E., P.T.O.E., Lindsay deLeeuw
Date: April 12, 2012
Re: Trip Generation Study – Private Student Housing Apartments

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A recent spike in new construction surrounding the University of Minnesota led to an interest in determining how trips generated by student housing apartments vary from trips generated by a generic apartment building (as defined by ITE's *Trip Generation, 8th Edition* Code 220). This report provides trip generation data for six student housing apartment buildings. Weekday daily, a.m., and p.m. peak hour trip generation rates are provided. In additon to providing trip generation rates per Dwelling Unit (as in *Trip Generation*), trip generation data is also provided based on number of bedrooms and number of parking stalls.

Overall, it was found student housing apartments generate approximately a third the amount of traffic compared to a similarly sized, generic apartment building. Using ITE's guideline of preparing full traffic impact studies only if a development will generate more than 100 peak hour trips, a student housing apartment complex would need to have 416 dwelling units to trigger the need for a full traffic impact study.

Methodology

Data was collected on Thursday, March 29, 2012 (while school was in full session) at six typical student-housing apartment buildings near the University of Minnesota – Twin Cities using COUNTcam video recording systems. Each building is specifically designated for students by the property managers but none are directly associated with the university. The range of total apartment units is 44 to 253, with an average of 118, and the apartment types vary from studios to four-bedroom units. Additionally, all the buildings observed have parking with the number of stalls ranging from 40 to 135, with an average of 57 stalls.

The parking lot for each student housing apartment building was recorded for 24 hours on a weekday (multiple cameras were used for parking lots with more than one entrance or exit). The videos were watched at high speeds with the PC-TAS counting software and the vehicles in and out were tallied in 15-minute intervals.

Findings

Statistics and data plots for each trip generation period studied are attached. A summary of the student housing average trip generation rates is shown in Table 1 alongside the trip generation rates for Apartments from the Institute of Transportation Engineers' *Trip Generation, 8th Edition* (ITE Code 220).

Table 1 – Average Trip Generation Rates for Student Housing and Apartment per Number of Dwelling Units

	Student Housing Apartments	Apartment from *Trip Generation, 8th Edition*
Weekday	2.82	6.65
Weekday A.M. Peak Hour (between 7-9 a.m.)	0.13	0.51
Weekday P.M. Peak Hour (between 4-6 p.m.)	0.24	0.62

The results in Table 1 show that student-housing apartments generate approximately one-third of the trips generated by regular apartment buildings. The student housing data was consistent where the fitted curves often resulted in R^2 values greater than 0.8 (anything higher than 0.75 indicates the data fits the best fit line equation well).

Similar trip generation reports (attached) were created based on the number of parking stalls and the number of bedrooms. The results for the number of parking stalls were as statistically significant as the number of dwelling units. However, the trip generation based on the number of bedrooms was less statistically valid with R^2 values less than 0.55.

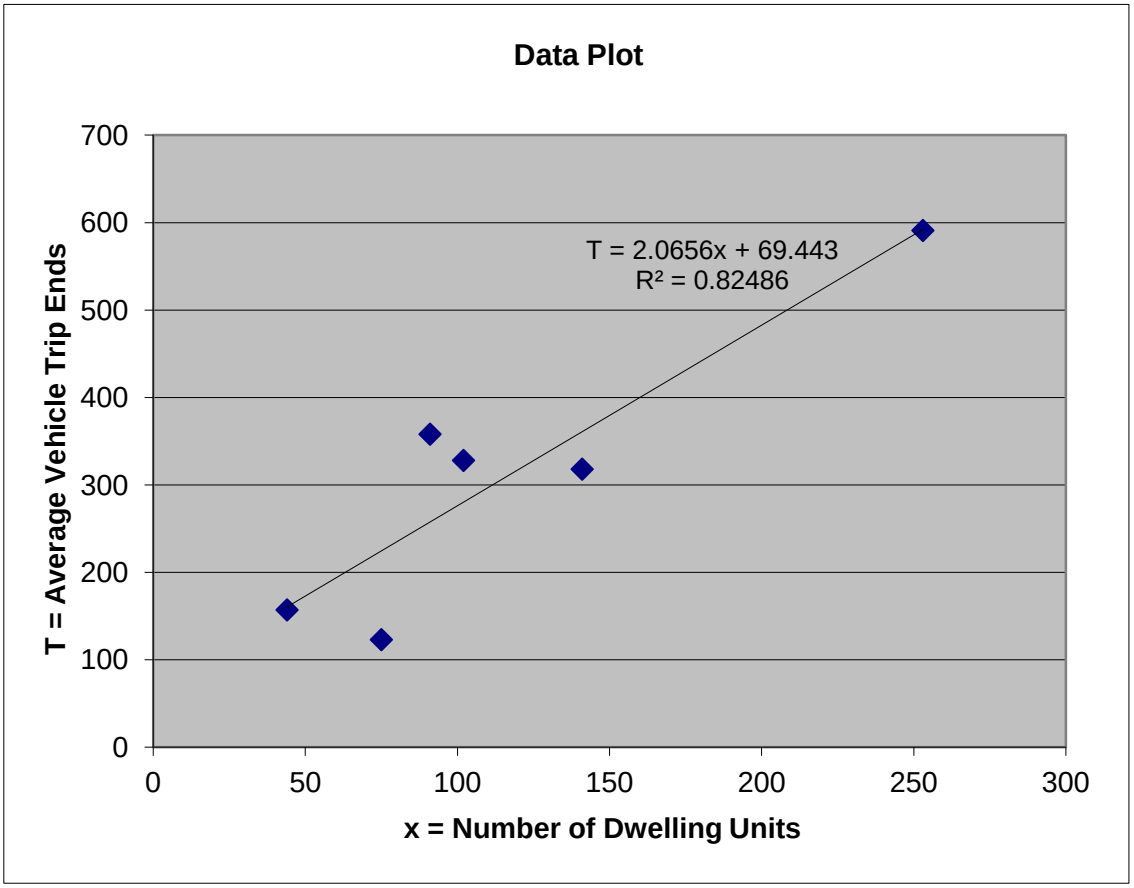
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Dwelling Units
On a: Weekday

Number of Studies: 6
Average Number of Units: 117.67
Directional Distribution: 50% Entering
50% Exiting

Trip Generation per Number of Dwelling Units

Average Rate	Range of Rates	Standard Deviation
2.82	1.64-3.93	0.88



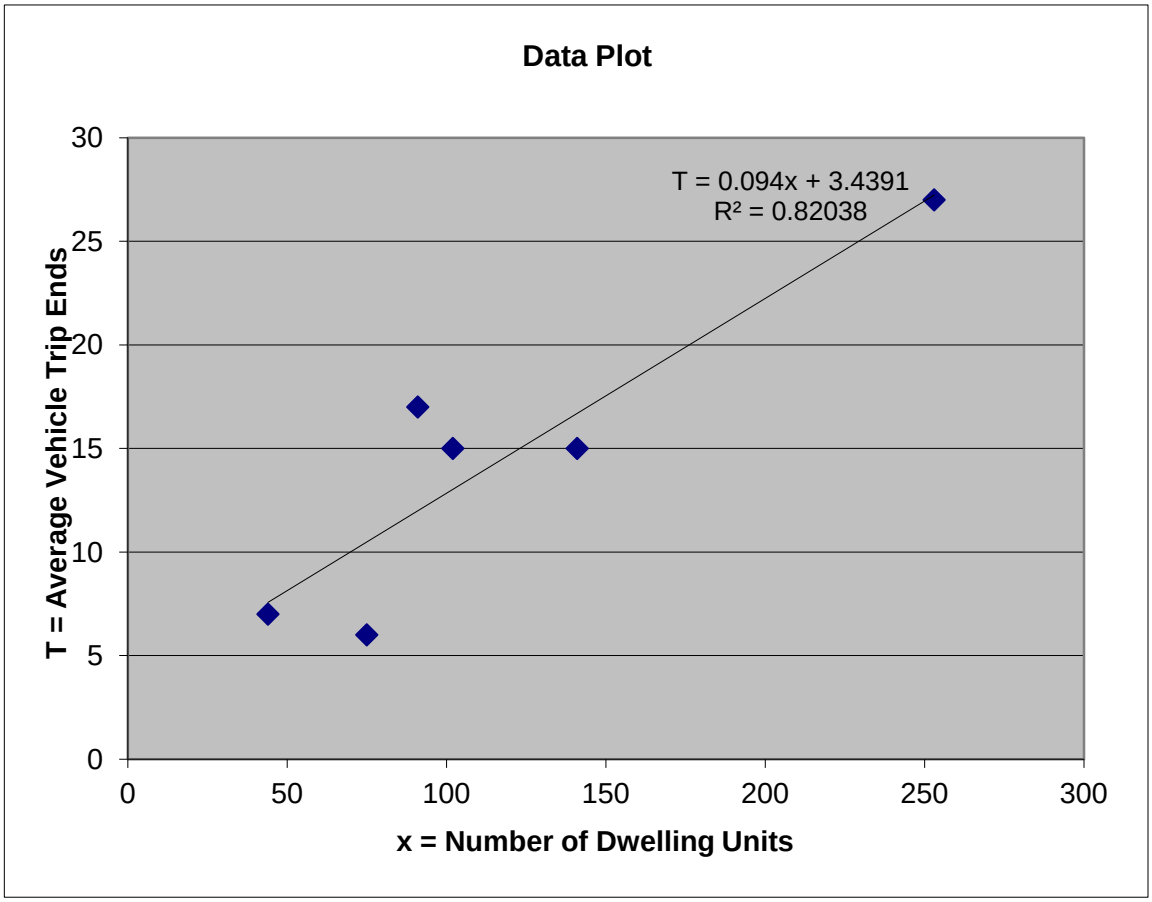
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Number of Studies: 6
Average Number of Units: 117.67
Directional Distribution: 39% Entering
61% Exiting

Trip Generation per Number of Dwelling Units

Average Rate	Range of Rates	Standard Deviation
0.13	0.08-0.19	0.04



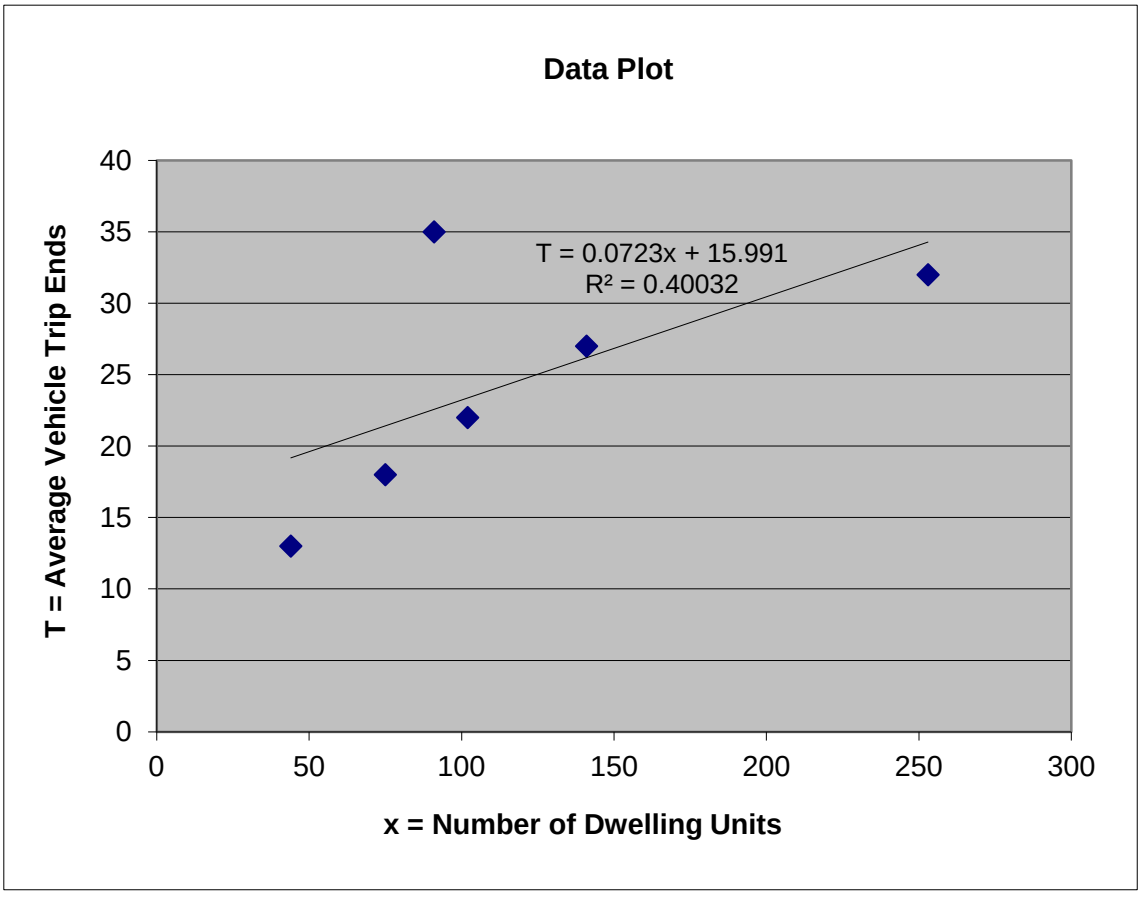
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Number of Studies: 6
Average Number of Units: 117.67
Directional Distribution: 54% Entering
46% Exiting

Trip Generation per Number of Dwelling Units

Average Rate	Range of Rates	Standard Deviation
0.24	0.13-0.38	0.09



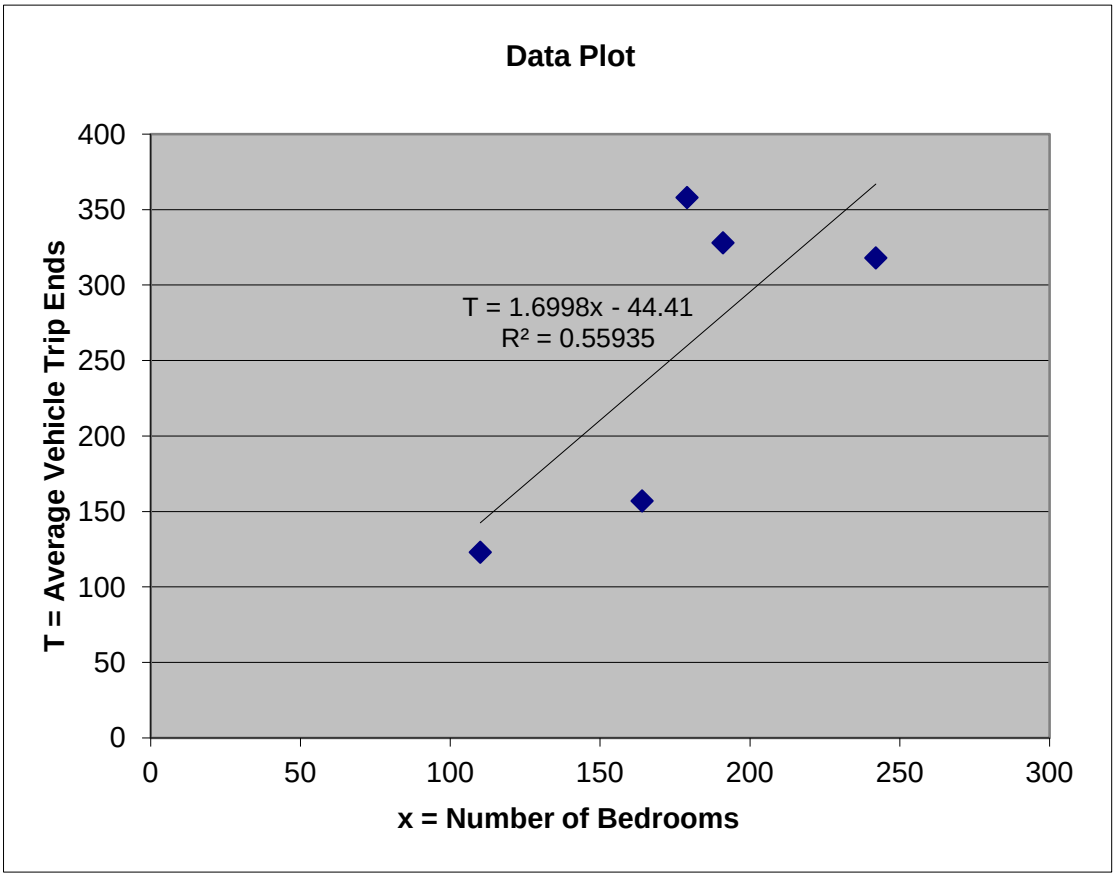
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Bedrooms
On a: Weekday

Number of Studies: 6
Average Number of Units: 147.67
Directional Distribution: 50% Entering
50% Exiting

Trip Generation per Number of Bedrooms

Average Rate	Range of Rates	Standard Deviation
1.42	0.96-2.00	0.43



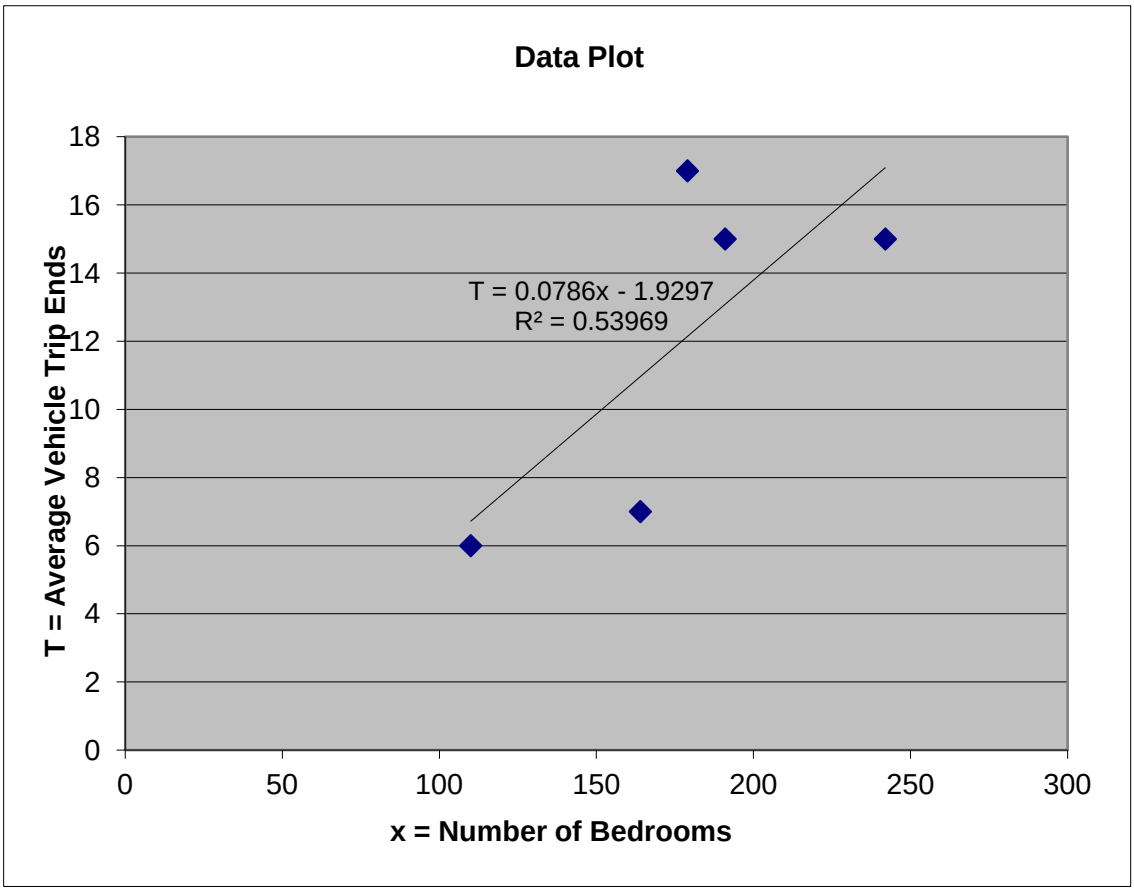
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Bedrooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Number of Studies: 6
Average Number of Units: 147.67
Directional Distribution: 43% Entering
57% Exiting

Trip Generation per Number of Bedrooms

Average Rate	Range of Rates	Standard Deviation
0.07	0.04-0.09	0.02



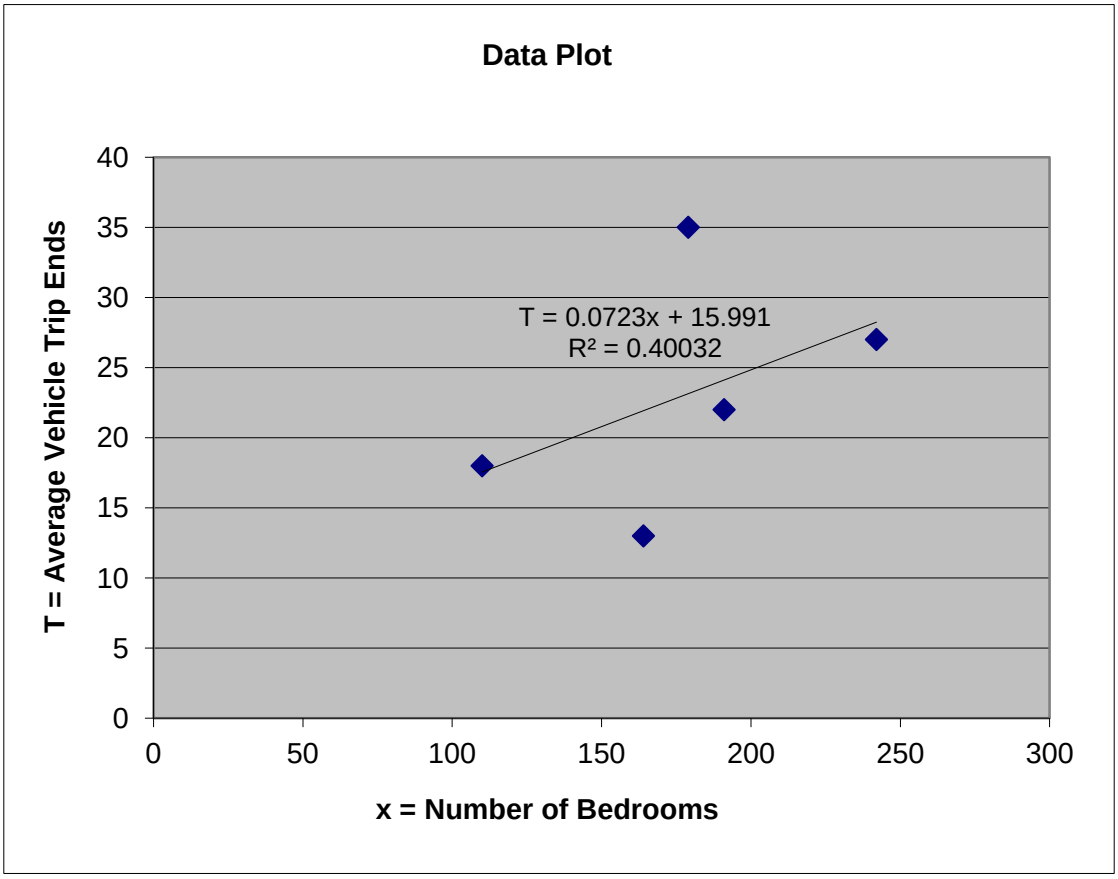
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Bedrooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Number of Studies: 6
Average Number of Units: 147.67
Directional Distribution: 53% Entering
47% Exiting

Trip Generation per Number of Bedrooms

Average Rate	Range of Rates	Standard Deviation
0.13	0.11-0.20	0.05



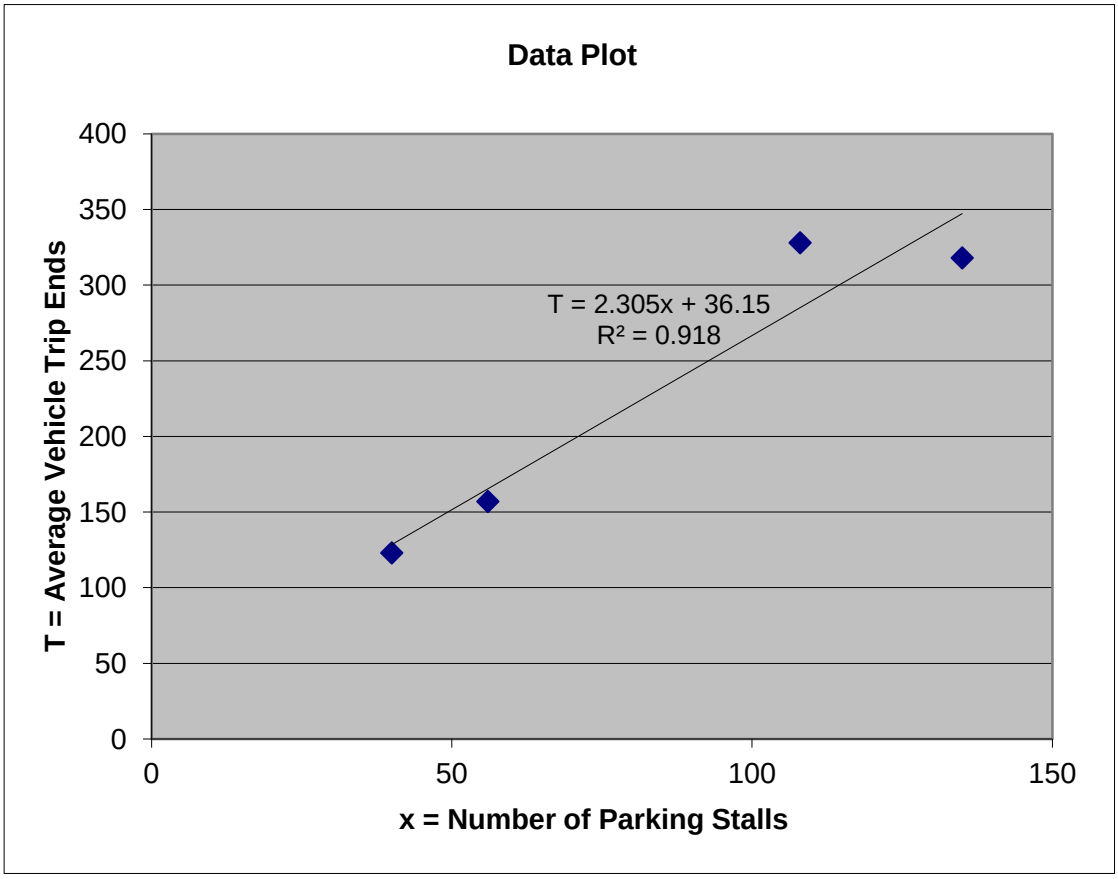
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Parking Stalls
On a: Weekday

Number of Studies: 6
Average Number of Units: 56.50
Directional Distribution: 50% Entering
50% Exiting

Trip Generation per Number of Parking Stalls

Average Rate	Range of Rates	Standard Deviation
2.82	2.36-3.08	0.33



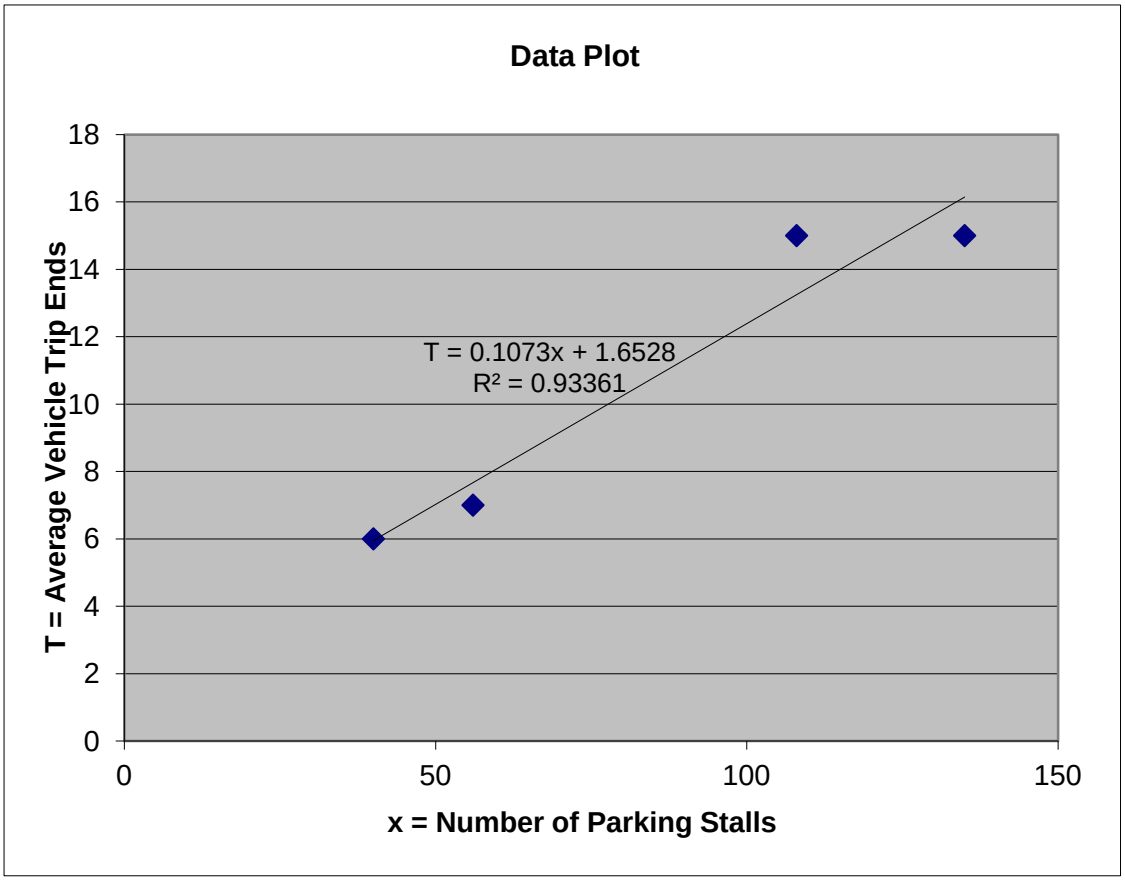
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Parking Stalls
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Number of Studies: 6
Average Number of Units: 56.50
Directional Distribution: 47% Entering
53% Exiting

Trip Generation per Number of Parking Stalls

Average Rate	Range of Rates	Standard Deviation
0.13	0.11-0.15	0.02



Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Parking Stalls
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Number of Studies: 6
Average Number of Units: 56.50
Directional Distribution: 54% Entering
46% Exiting

Trip Generation per Number of Parking Stalls

Average Rate	Range of Rates	Standard Deviation
0.27	0.20-0.45	0.12

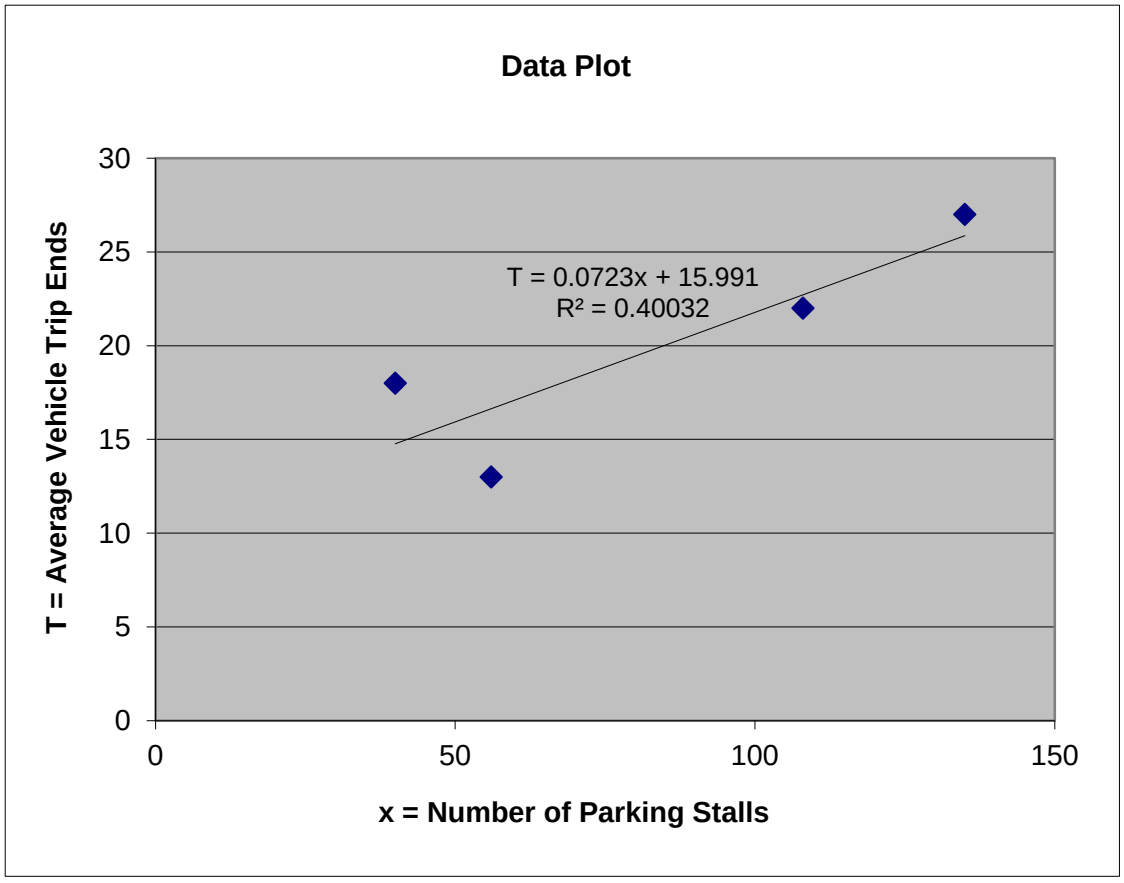


Table B-1. Examples of University Parking Ratios

University	Parking Demand	Population[1]	Parking Ratio	Reference	Notes
University of Washington (Tacoma, WA)					
- Students	1,381	3,662	0.38	Draft Parking Plan, 2012	Urban location in medium-sized city with good transit, bike and pedestrian access
- Faculty + Staff	312	578	0.54		
- Average/Head Count Student	1,693	3,662	**0.46**		
Reed College (Portland, OR)	551	1,490	**0.37**	Campus Facilities Master Plan, 2007	Urban location in large city with good transit, bike and pedestrian access
Pacific University (Forest Grove, OR)	980	2,200	**0.45**	Campus Transportation Assessment – Parking, 2017	Urban location in small city with good walkability
Christopher Newport University (Newport News, VA)	--	4,990	**0.33**	Newport News Zoning Ordinance	Suburban location in medium-sized city
University of Wisconsin, Platteville, WI	2,052	7,142	**0.29**	Transportation and Parking Demand Study, 2011	Suburban location in a small city with good bicycle and pedestrian accessibility
Cal State Stanislaus (Turlock, CA)				Master Plan, Campus Parking Study, 2008	Suburban location in smaller city with good bicycle and pedestrian accessibility
- Average/Head Count Student	2,452	8,810	**0.28**		
University of Montana (Missoula, MT)					
- Commuter Students	1,751	7,835	0.22	Parking and Transportation Demand Management Plan, 2016	Suburban location in smaller city with good bicycle and pedestrian accessibility, and several direct transit routes
- Resident Students	826	2,504	0.33		
- Faculty + Staff	783	2,374	0.33		
- Average/Head Count Student	3,360	10,339	**0.32**		
Indiana University (Terre Haute, IN)					Urban location in smaller city with good bicycle and pedestrian accessibility and direct transit service
- Students	2,390	11,494	0.21	Parking Plan, 2011	
- Faculty + Staff	1,505	1,807	0.83		
- Average/Head Count Student	3,895	11,494	**0.34**		
Rowan University (Glassboro, NJ)					
- Commuter Students	1,553	9,509	0.16	Strategic Parking Initiative Feasibility Study, 2015	Urban location in small city, good transit service
- Resident Students (dorms+apts)	2,215	3,840	0.58		
- Faculty + Staff	822	3,252	0.25		
- Average/Head Count Student	4,590	13,349	**0.34**		
New Mexico State (Las Cruces, NM)					
- Commuter Students	2,971	14,952	0.20	Transportation and Parking Analysis Final Report, 2011	Suburban location in medium-sized city with direct transit service
- Faculty + Staff	3,536	5,145	0.69		

Table B-1 Continued. Examples of University Parking Ratios

University	Parking Demand	Population[1]	Parking Ratio	Reference	Notes
Montana State University (Bozeman, MT)					
- Average/Head Count Student	4,666	15,688	**0.30**	Transportation Master Plan, 2017	Suburban location in a small city with good bicycle and pedestrian accessibility and multiple direct transit routes
East Carolina University (Greenville, NC)					
- Average/Head Count Student	7,010	17,405	**0.40**	Final Transportation Plan, 2012	Urban location in smaller city with bicycle and pedestrian accessibility with direct transit service
Boise State University (Boise, ID)					
- Commuter Students	2,288	17,467	0.13	Parking Master Plan Update, 2010	Larger, more urban university with many options for transit, bike and pedestrian access
- Resident Students	1,207	2,200	0.55		
- Faculty + Staff	2,070	2,960	0.70		
- Average/Head Count Student	5,565	19,667	**0.28**		
Iowa State University (Ames, IA)					
- Average/Head Count Student	6,491	26,380	**0.25**	Campus Parking Supply and Demand Feasibility Study, 2005	Urban location in smaller city with transit and bike/ped options
Colorado State University (Ft. Collins, CO)					
- Average/Head Count Student	7,751	33,183	**0.23**	Parking and Transportation Master Plan, 2014	Urban location in medium-sized city with good transit and bike/ped accessibility

[1] Headcount students unless otherwise noted.

South Puget Sound Community College
Olympia, WA

Wetland Reconnaissance and Mitigation Study

December 20, 2024

Prepared for
Laura Price, Director of Facilities
Olympia, WA

Land Services Northwest
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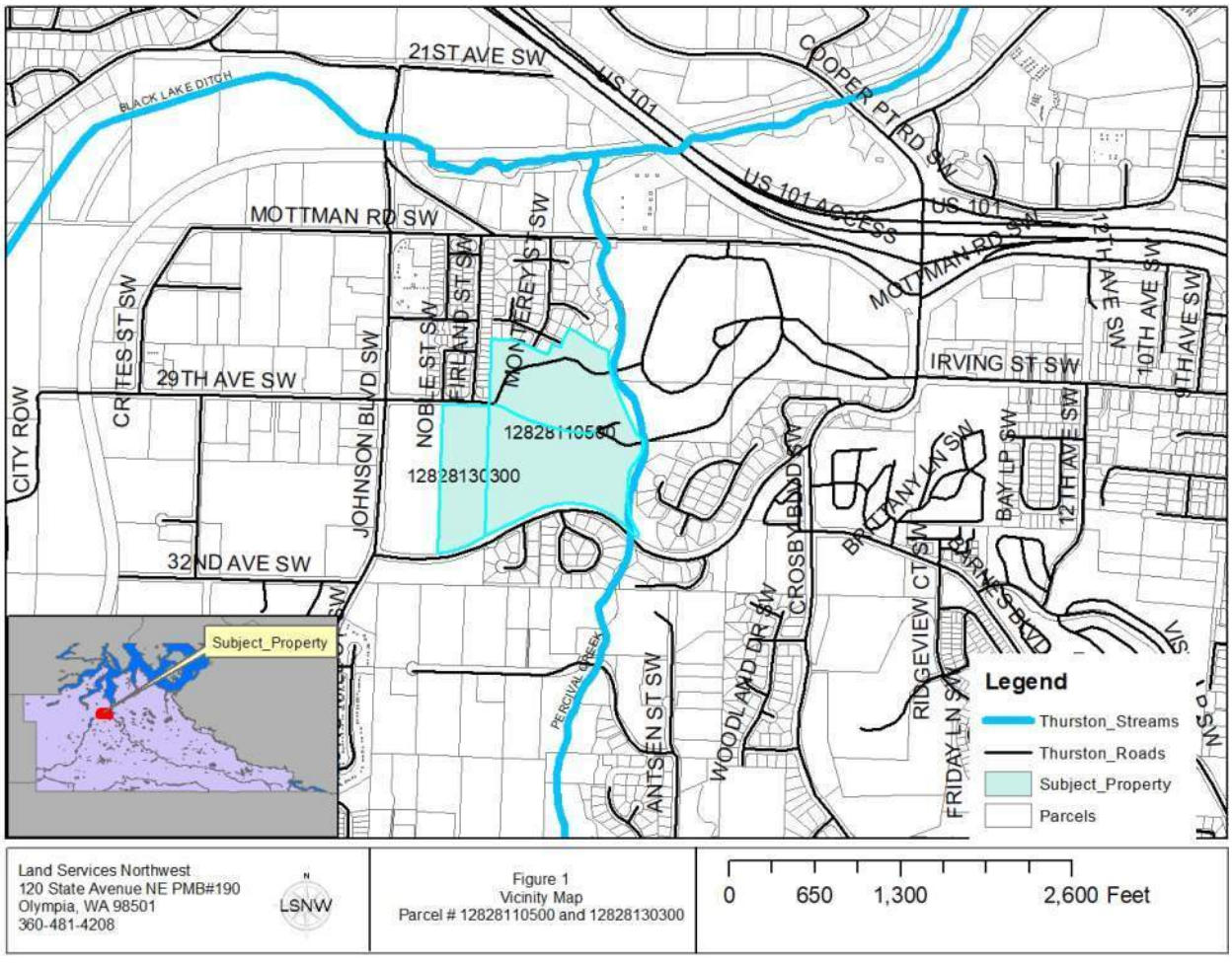
360.481.4208

INTRODUCTION

This report is the result of a critical areas study on a portion of parcel #12828110500 and #12828130300 located at 2011 MOTTMAN RD SW in the City of Olympia, Washington (**Figure 1**).

The purpose of this report is to 1) roughly identify wetland boundaries 2) identify expected impacts to wetlands or critical areas and their buffers due to a planned project, and 3) identify buffer reductions available in code, and apply conservation measures to off-set any critical areas or buffer impacts expected by the project for the purpose of a developing a Master Planning Document in the future.

This report should provide information to allow the City of Olympia to decide whether any development in the project area should be exempt from or require further critical area review.



WETLAND RECONNAISSANCE

Determination Guidelines

Land Services Northwest based its wetland identification and delineation upon the 1987 Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the regional specificity found in Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE, 2010). Generally, as outlined in the manuals, wetlands are distinguished from other landforms by three criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology.

General Field Guidelines

Plant species were identified according to the taxonomy in *Flora of the Pacific Northwest* (Hitchcock and Cronquist, 1973), and the wetland status of plant species was assigned according to*: The National Wetland Plant List: 2016* (Lichvar, 2016). Wetland classes were determined by the U.S. Fish and Wildlife Service's system of wetland classification (FGDC, 2013). The wetland determination was based on soils, vegetation, and hydrology characteristics indicative of wetland conditions.

The Corps Manual and Supplement describes soil, vegetation, and hydrological indicators of wetlands. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper par (National Technical Committee for Hydric Soils, 1994). Anaerobic conditions cause redoximorphic features to develop, which can be evidenced through the observation of mottling or gleying in the soil. Soils are hydric if they match the indicators in the supplement or meet the technical definition.

A soils evaluation was performed to determine if the area contained hydric soils. Additional test plots were sampled to gage wetland indicators and characteristics. Soils are normally excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions in both wetland and upland areas. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988).

The COE describes a wetland rating system for plants. Each plant species is assigned a probability of occurrence within wetlands, which is referred to as its wetland status. The wetland plant indicator system is as follows:

Table 1 Indicator Status Ratings

Indicator Status	Abrv.	Definitions - Short Version ( )
Obligate	OBL	Almost always occur in wetlands.
Facultative Wetland	FACW	Usually occur in wetlands but may occur in non-wetlands.
Facultative	FAC	Occur in wetlands and nonwetlands.
Facultative Upland	FACU	Usually occur in non-wetlands but may occur in wetlands.
Upland	UPL	Almost never occur in wetlands.
		(USACE, 2016)

In general, under the Federal methodology, more than 50 percent of the predominant plant species within a test plot must be rated FAC or wetter (i.e., FACW, OBL) to satisfy the wetland criteria for hydrophytic vegetation. Dominant species are those when ranked comprise 50% of the total or those that have a percent cover greater or equal to 20 percent within the test plot. Only dominant plant species were considered in the data analysis.

If wetland hydrology, including pooling, ponding, and soil saturation, is not clearly evident, hydrological conditions may be observed through surface or soil indicators. Indicators of hydrological conditions include drainage patterns, drift lines, sediment deposition, watermarks, historic records, visual observation of saturated soils, and visual observation of inundation.

Field Survey

A wetland reconnaissance was performed by Land Services Northwest biologist, Alex Callender, on February 16 and 21, 2024, to roughly identify wetlands, streams, and other habitats present on the subject property.

Alex Callender is a Professional Wetland Scientist and has 20 years of experience in these types of studies.

Observations were made of the general plant communities, wildlife habitats, and the locations of potential streams and wetland areas. Present and past land-use practices were also noted, as were significant geological and hydrological features.

Once likely wetland areas were located, the Routine Onsite Determination Method was used to identify the presence of wetland parameters and to determine the outer edge of the wetlands using the procedures outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987).

The Routine Onsite Determination Method was used in areas that maintained normal circumstances, were not significantly disturbed, and were not potential problem areas.

Test pits were dug February 16, 2024, to develop a better understanding of soil profiles onsite. Soils were excavated to 18 inches or more below the surface within the test pits to evaluate soil characteristics and hydrological conditions throughout the site. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988).

Findings: Wetland A is a regulated approximately 5.76-acre depressional wetland with associated stormwater features, found on and offsite in the vicinity of the south end of the Athletic fields on the South Puget Sound Community College (SPSCC) Campus (**Figure 2**).

The wetland edge was found to the south of the athletic fields at the edge of the fill pad about 6 inches above the base of the slope for the fields. There is a wooded swale between the storm pond to the west at the base of the storm pond slope that flows toward and becomes part of the wetland. There is also a swale between the mitigation plantings to the east and the soccer field and a grass swale between the two fields that serves to drain the fields.

It does not appear that much water was draining from this area during the February 16, 2024, site visit or during a subsequent visit on February 21, 2024. There were periods of rain before and during these visits and water did not appear to be draining like it does in the western swale.

The wetland edge is stable due to an effective drain. Water does not get much higher than the drain and results from the 2024 reconnaissance were similar to a delineation in 2005. The main change is that the mitigation areas have been successfully growing since they were installed. The wetland now has the added benefit of nutrient uptake, erosion control, sediment filtration, food source and screening that the mitigation was designed to provide.

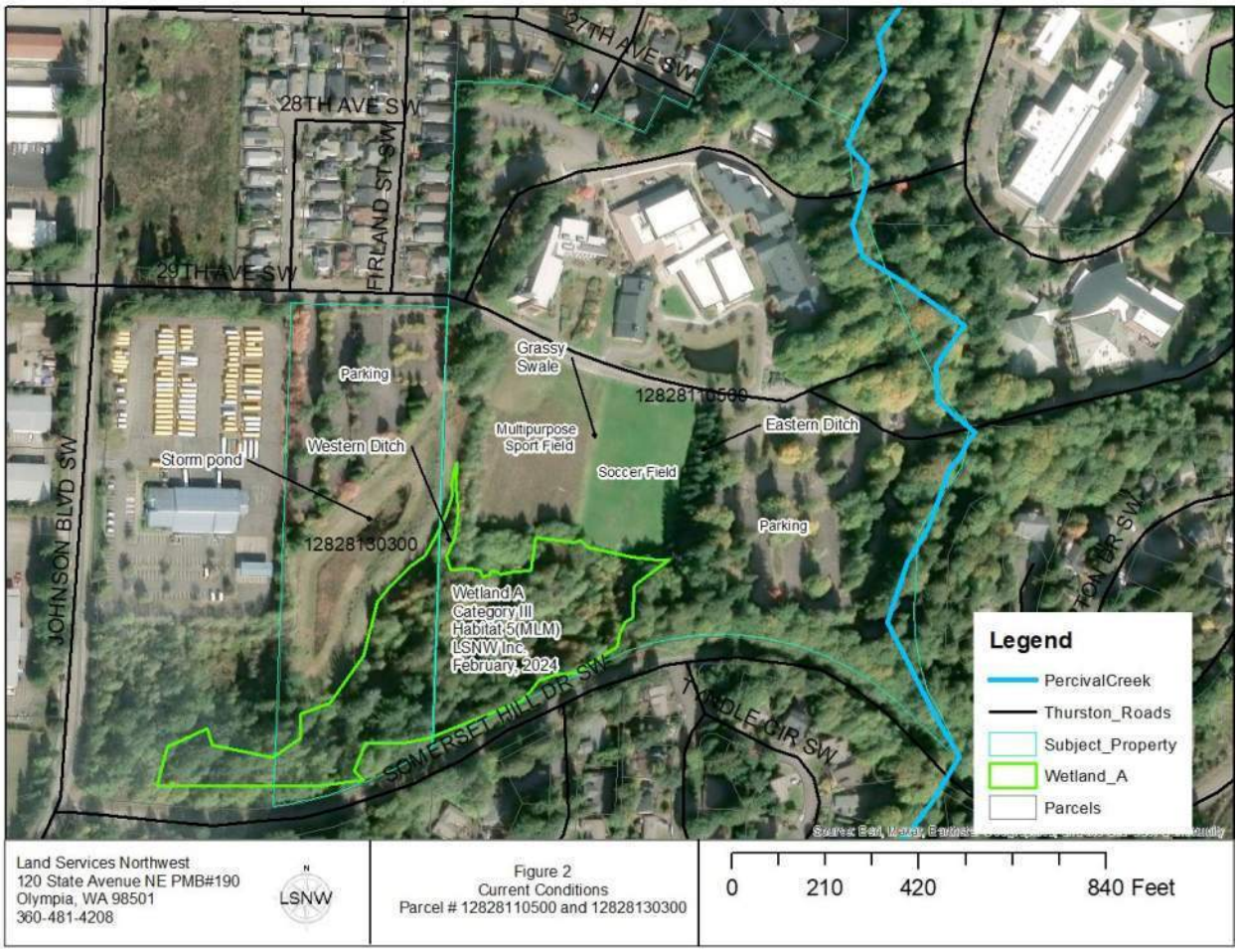


Figure 2 – Current Conditions

Regulatory Review

Jurisdiction

The South Puget Sound Community College Campus is found in both Olympia and Tumwater jurisdictions. The proposed development will be located in the City of Olympia, however, we have provided the City of Tumwater Code for reference as other developments may require it as wetland A is in Olympia and Tumwater jurisdictions (**Figure 3**).

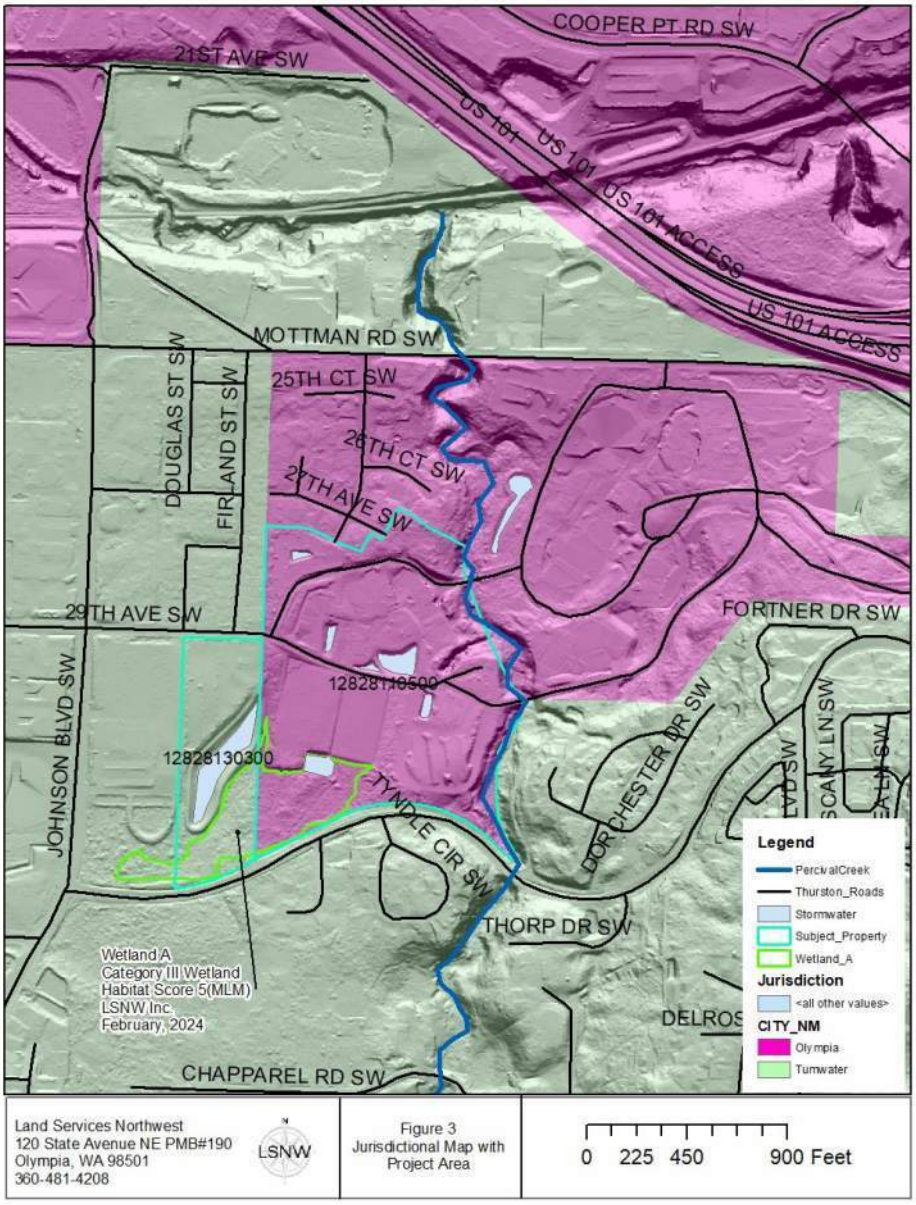


Figure 3 – Jurisdictional Map

Olympia

The wetland was rated with the Wetland Ratings System for Western Washington (Hruby, 2014) in accordance with City of Olympia Code. Wetland A was rated as a Category III wetland with an overall score of 19 and a habitat score of five (MLM). According to OMC 18.32.535 Wetlands – Wetland Buffers the standard buffer would be 140-feet.

Olympia code must follow the mitigation sequence which is found in OMC 18.32.135 General Provisions – Mitigation Sequencing and General Measure which states:

A. Applicants shall demonstrate that all reasonable alternatives have been examined with the intent to avoid and minimize impacts to critical areas. When alteration to a critical area is proposed, the alteration shall be avoided, minimized, or compensated in the following order of preference:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;

The applicant has worked hard to avoid impacts. Reduction efforts have included changing the configuration of the building and moving the location of the building to avoid all impacts to wetlands and their buffers, so no impacts are now expected to the wetland or its buffers due to the project.

2. Minimizing 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;

The size of the building is limited to that which would fit into the available building area. Some impacts to existing upland mitigation area will be required, but that will provide an opportunity to improve the remaining wetlands and buffers as well as create new buffer mitigation in places that will have a greater effect to the wetland and its ecological functions.

3. Rectifying the impact by repairing, rehabilitating or restoring the affected environment;

*The proposal is to restore the areas in and along the edge of the wetlan*d.

4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

A ten-year monitoring and maintenance plan will follow.

5. Compensating for the impact by replacing, enhancing or providing substitute resources or environments;

There will be an equivalent amount of enhancement mitigation to maintain wetland ecological functions.

6. Monitoring the impact and taking appropriate corrective measures.

Mitigation for individual actions may include a combination of the above measures.

B. Unavoidable impacts to critical areas often can and should be minimized by sensitive site design and deliberate actions during construction and implementation.

We have produced a sensitive site design that will not impact the wetland or its buffers.

The City of Olympia recognizes some developments as existing, which can be modified without further critical area review under 18.37.070 Nonconforming Structures and Uses Within Critical Area Buffers which states:

A. Existing structures and uses. Existing structures and uses which are located within a critical area or its buffer prior to the effective date of Chapter 18.32, which is June 20, 2005, may continue pursuant to the provisions of this Chapter.

The existing structure would be the athletic fields. The fields were built before June 20, 2005 (Figure 4).

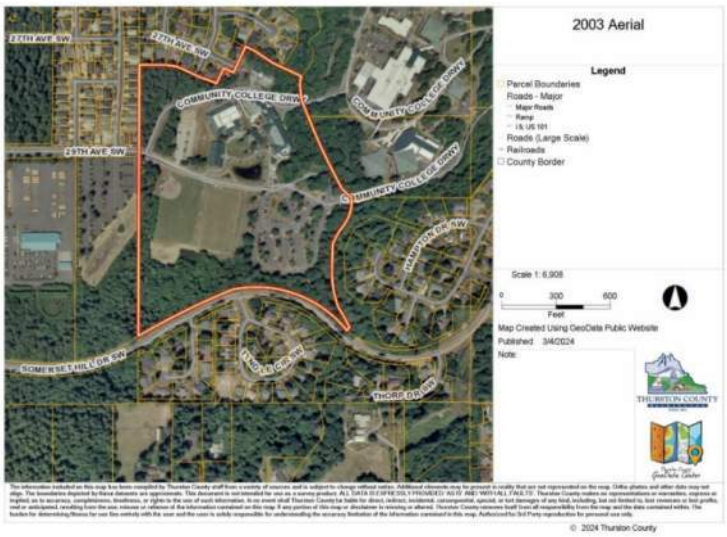


Figure 4 – Soccer Fields and Parking Lots in place in 2003

B. Appurtenant structures and related development. If there is **no negative impact to critical area buffers**, the Department may include as "existing structures and uses," pursuant to OMC 18.37.070(A) appurtenant structures and related development such as but not be limited to: garages, out-buildings, lawns, landscaping, gardens, athletic fields, sport courts, picnic areas, play equipment, trails and driveways which also existed prior to the effective date of Chapter 18.32.

The related structures and appurtenances would comprise the athletic fields which would meet the related development as a sports court. The adjacent area is also maintained as lawn for baseball and spectators, so it too would meet the intent, and be included as an existing structure and use.

C. Critical area review. That portion of a parcel which contains existing structure, appurtenant structures, and related development as defined by OMC 18.37.010(A) and 18.37.070(B), shall be exempt from further review of OMC Chapter 18.32, except as provided in OMC 18.32.215. Expansion or additions of structures and uses listed in OMC 18.37.070(A) and 18.37.070(B) into undisturbed parts of the property which are within a critical area or its buffer will require a critical area review per OMC Chapter 18.32.

None of the structures that are proposed will be entering into any regulated undisturbed areas and should be exempt from further critical area review.

Tumwater

These same wetland ratings used for the city of Olympia can be used to make a determination of the buffer according to the City of Tumwater Code.

It should be noted that the City of Tumwater does have jurisdiction nearby, but not necessarily in the study area, which is in the City of Olympia jurisdiction. However, the wetland does extend into portions of the City of Tumwater and if work were needed, we would consider the code applying to the City of Tumwater CAO for wetlands, streams and other critical areas where appropriate.

The City of Tumwater uses land use intensity. This Category III wetland with a habitat score of five (MLM) would carry a 150-foot-high intensity land use buffer which could be reduced from a high intensity buffer to a 110-foot moderate intensity buffer if the following are done In TMC 28.170.C.

C. Buffer Width Reduction. The buffer widths recommended for land uses with high-intensity impacts to wetlands can be reduced to those widths recommended for moderate-intensity impacts under the following conditions:

Table 16.28.170(3): Category III Wetland Buffer Widths

(Buffers for wetlands scoring sixteen to nineteen points for all functions)

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Moderate level of function for habitat (score for habitat 5 – 7 points) If wetland scores 8 – 9 habitat points, use Table 16.28.170(2): Category II Wetland Buffer Widths	Low – 75 ft **Moderate – 110 ft** High – 150 ft	No recommendations at this time (1)
Score for habitat 3 – 4 points	Low – 40 ft Moderate – 60 ft High – 80 ft	No recommendations at this time (1)

Table 16.28.170(3) Explanatory Notes:

1. For wetlands that score moderate or high for habitat (five points or more), the width of the buffer around the wetland can be reduced if both the following criteria are met:

a. A relatively undisturbed vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats as defined by the Washington State Department of Fish and Wildlife. The corridor must be protected for the entire distance between the wetland and the priority habitat via some type of legal protection such as a conservation easement; and

b. Measures to minimize the impacts of different land uses on wetlands, such as the examples summarized in Table 16.28.170(5), are applied.

The table 16.28.170(5) is shown below.

Table 16.28.170(5): Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Lights	Direct lights away from wetland	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland	Manufacturing, residential
Toxic runoff (1)	Route all new runoff away from wetland while ensuring that wetland is not dewatered Establish covenants limiting use of pesticides within 150 ft of wetland Apply integrated pest management	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development Prevent channelized flow from lawns that directly enters the buffer	Parking lots, roads, manufacturing, residential areas, commercial, landscaping
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns	Impermeable surfaces, lawns, tilling
Pets and human disturbance	Use privacy fencing Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion Place wetland and its buffer in a separate tract	Residential areas
Dust	Utilize best management practices to control dust	Tilled fields

Table 16.28.170(5) Explanatory Notes:

(1) These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.

Tumwater allows for a reduction of the buffer, where roads or structures lie within the buffer. The sport fields are a built facility that has a prism and would serve the same function as it is a relatively impervious surface created for a specific use. Putting a building on this surface would not increase the land use

intensity as it would remain impervious, and no increase of runoff would occur here. The college will likely provide enhancements to the buffer surrounding the field and add a fence which does not now exist so the buffer functions will not suffer due to the proposed development.

D. Reductions in Buffer Widths Where Existing Roads or Structures Lie Within the Buffer. Where a legally established, nonconforming use of the buffer exists, such as a road or structure that lies within the width of buffer recommended for that wetland, proposed actions in the buffer may be permitted as long as they do not increase the degree of nonconformity. This means no significant increase in the impacts to the wetland from activities in the buffer.

The City of Tumwater requires fencing in some instances where there is a reasonable expectation of encroachment of the buffer.

(2) I. Signs and Fencing of Wetlands.

(3) 1. Temporary Markers. The outer perimeter of the wetland or buffer and the limits of those areas to be disturbed pursuant to an approved permit or authorization shall be marked in the field in such a way as to ensure that no unauthorized intrusion will occur and is subject to inspection by the community development director prior to the commencement of permitted activities. This temporary marking shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.

(4) 2. Permanent Signs. As a condition of any permit or authorization issued pursuant to these requirements, the community development director may require the applicant to install permanent signs along the boundary of a wetland or buffer. Permanent signs shall be made of an enamel coated metal face and attached to a metal post, or another untreated material of equal durability. Signs must be posted at an interval of one per lot or every fifty feet, whichever is less, and must be maintained by the property owner in perpetuity. The sign shall be worded as follows or with alternative language approved by the community development director:

(5) Protected Wetland Area

(6) Do Not Disturb

(7) Contact Tumwater Community Development 754-4180

(8) Regarding Uses and Restrictions

(9) 3. Fencing. The community development director shall determine if fencing is necessary to protect the functions and values of the critical area. If found to be necessary, the community development director shall condition any permit or authorization issued pursuant to these regulations to require the applicant to install a permanent fence at the edge of the wetland buffer, when fencing will prevent future impacts to the wetland. The applicant will be required to install a permanent fence around the wetland or buffer when domestic grazing animals are present or may be introduced on site.

The City also allows for buffer averaging which is not necessary in this case, as we are avoiding impacts, and would meet the code. Buffer Averaging is not proposed at this time.

E. Standard Wetland Buffer Width Averaging. Standard wetland buffer zones may be modified by averaging buffer widths if it will improve the protection of wetland functions, or if it is the only way to allow for reasonable use of a parcel.

Averaging cannot be used in conjunction with the provisions for reductions in buffer widths. Wetland buffer width averaging shall be allowed to improve wetland protection only where a qualified wetlands professional demonstrates all of the following:

1. The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or a "dual-rated" wetland with a category I area adjacent to a lower rated area;

2. The buffer is increased adjacent to the higher functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower functioning or less sensitive portion;

3. The total area contained in the buffer area after averaging is not less than that which would be contained within the standard buffer; and

4. The buffer at its narrowest point is never less than three-fourths of the required width.

We should not need any buffer averaging. The 110-foot buffer Tumwater Buffer would not reach the development for either the Student housing or the Athletic bleachers or Sports Facility.

F. Averaging to allow reasonable use of a parcel may be permitted when all of the following are met:

1. There are no feasible alternatives to the site design that could be accomplished without buffer averaging;

2. The averaged buffer will not result in degradation of the wetland's functions and values as demonstrated in the critical area report;

3. The total buffer area after averaging is equal to the area required without averaging; and

4. The buffer at its narrowest point is never less than three-fourths of the required width.

G. Except as otherwise specified, wetland buffer zones shall be retained in their natural undisturbed condition. Where buffer disturbance has occurred during construction, revegetation with native vegetation may be required.

Project Proposal

Student Housing and Sports Field Improvements

The current project proposes soccer field improvements and student housing. All new work in undisturbed areas will be within previously developed areas or outside of the standard 140 -foot buffer, so no new impacts to wetlands will occur and wetland functions will be maintained. Existing disturbed areas would meet the exemptions or qualifications found in both the City of Olympia's code as well as the City of Tumwater's CAO as shown above. Both the City of Olympia and the City of Tumwater require that the project provide no net loss of wetland ecological functions. An assessment is provided to show that the project will maintain functions.

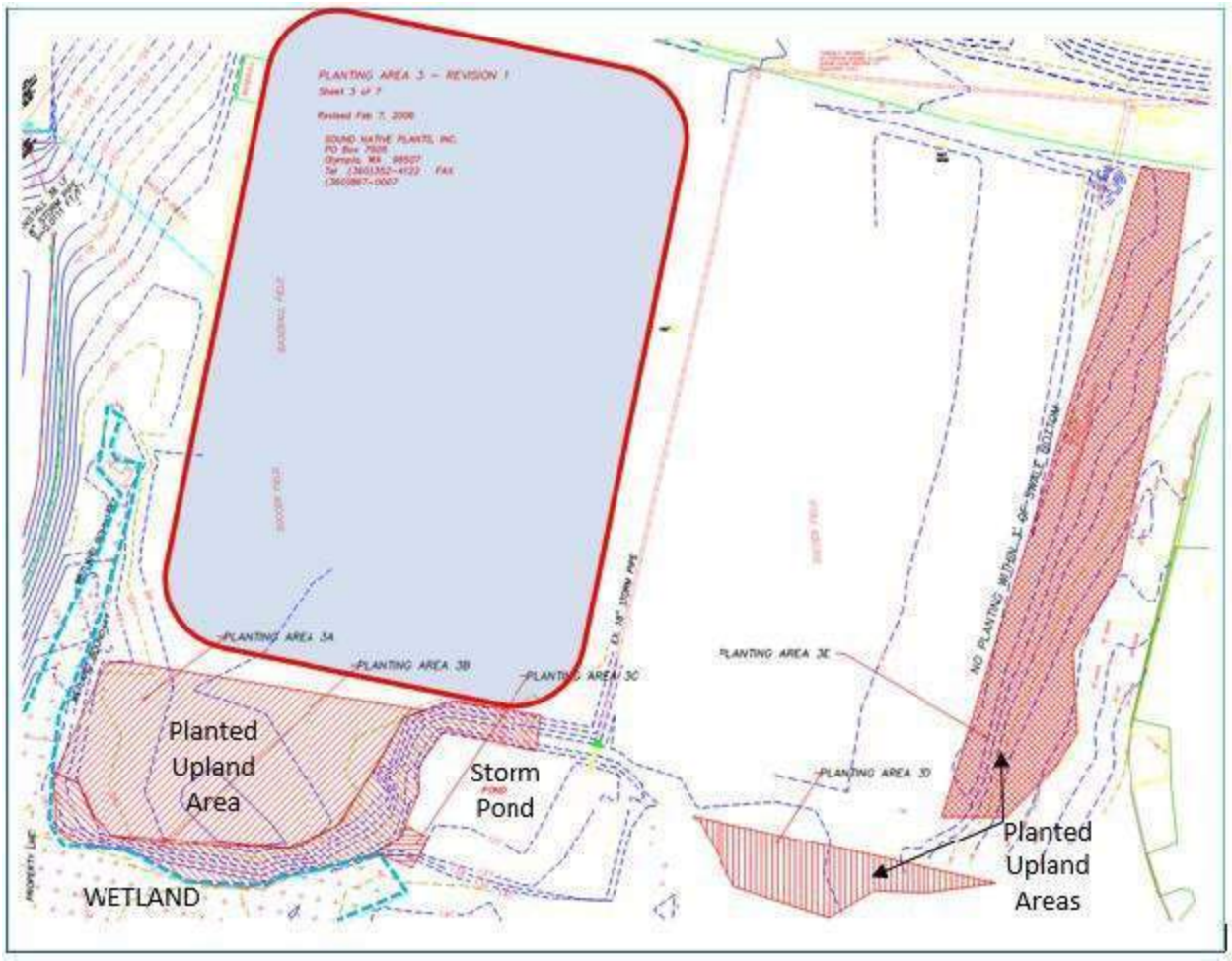
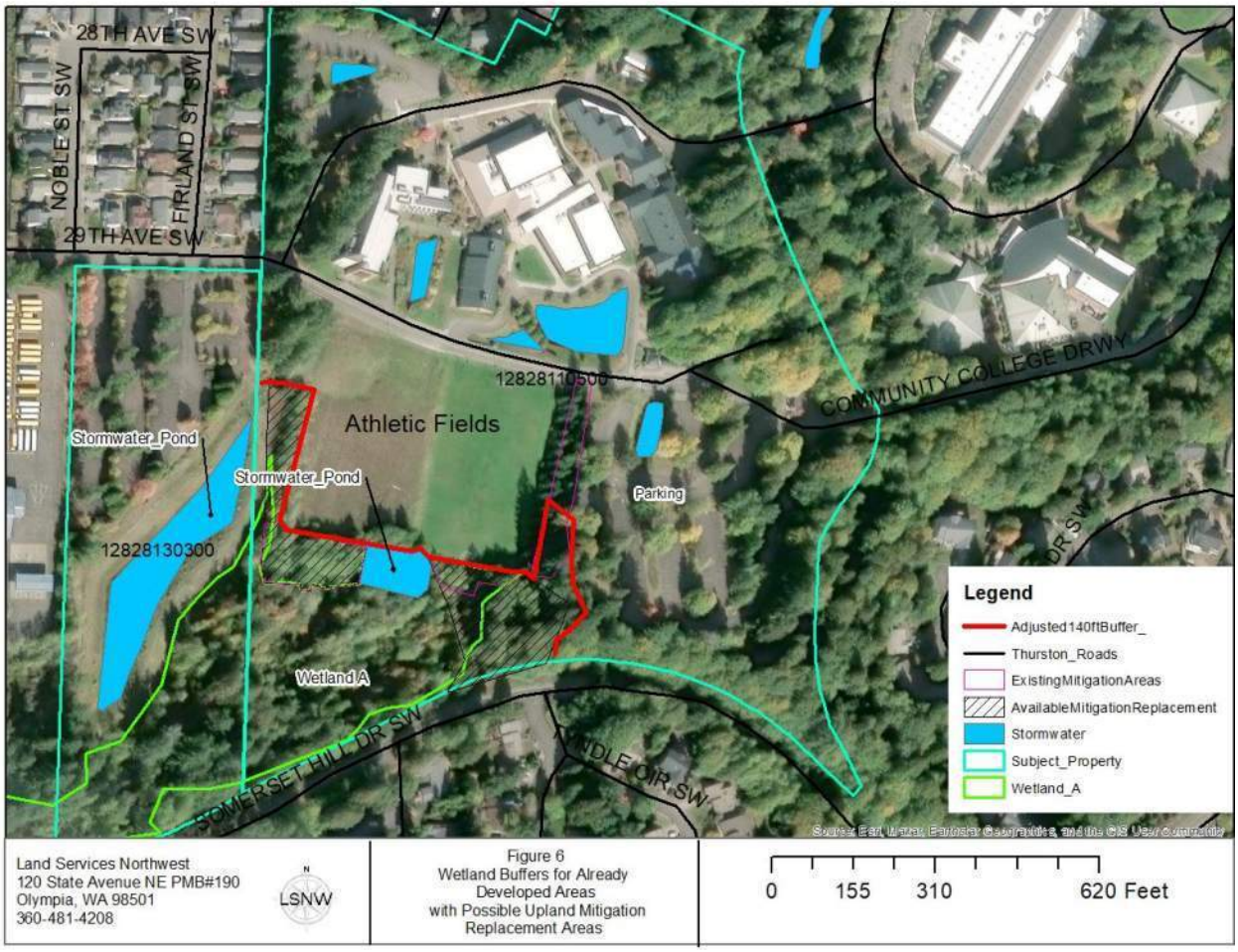


Figure 5 – Previously Existing Mitigation Near Project Areas

Mitigation Needs

The current conditions are the result of previous planning and execution of the project that resulted in the current athletic fields and their wetland mitigation plans. At that time, areas were designated for the mitigation of impacts due to the fields and parking. Mitigation was conducted south of the athletic fields and to the east of the athletic fields between the parking lot and a drainage swale along the eastern edge of the athletic fields (**Figure 5**).

The newly planned four-story student housing building will likely be located in a portion of the designated upland mitigation area, but outside of the standard 140-foot buffer. It is expected that the impacts to the existing planted upland mitigation areas could encompass up to approximately 10-20,000 sq feet of the available mitigation enhancement area (**Figure 6 and 7**).



Insert Figure 6 – Project Area with Adjusted Buffers and Possible Mitigation Areas

Wetlands and their buffers have different functions and values, and the Wetland Rating System for Western Washington was used to evaluate the existing wetland to determine the wetland functions (**Appendix I)**. The wetland was rated as a Category III wetland with a habitat score of five (MLM). Wetlands in the City of Olympia with a habitat score of five typically carry a 140-foot buffer. This wetland was rated high for habitat and rated moderate for water quality and hydrologic functions.

Lower value wetland functional attributes can be improved with mitigation. The existing native vegetation mitigation has done well, but during the site visit for the wetland evaluation, social trails were noted at the edge of the wetland and through the wetland, and there are invasive species in the wetland. Social trails could be replanted. It was noted also that the diversity of the existing mitigation could be improved with conifer underplanting as an adaptive management to improve those areas.

These enhancements would be very effective at improving the functions of the wetland. It is estimated that there is approximately 40,000 sq ft of existing wetland and buffer area that could benefit from this type of mitigation if replacement mitigation was deemed necessary due to loss of existing mitigation by the student housing (**Figure 7**).

Figure 7 – Planned Housing and Field with Mitigation and Buffers

Discussion

The Wetland was visited on February 16 and 21, 2024. The conditions of the wetland has improved over time when you compare the current mature mitigation planting areas with the conditions before the mitigation . The reconnaissance determined that the current extent of the wetland is similar to what was delineated in 2005.

The sport fields are extensively drained to maintain the playing surface and the runoff from the drainage ditches are treated by the stormwater pond before discharge. The sport field's hydrology is routed to the stormwater treatment area to the south and would remain separate from the wetland until after treatment. The reconfiguration of these areas would not create additional impacts.

The addition of the buildings would require drainage improvements to meet the current City of Olympia stormwater manual, and there would be no change in the overall functions of the wetland due to the new building if the existing mitigation areas are maintained, improved or replaced.

As mentioned earlier, the mitigation areas have matured. The existing mitigation to the southwest is remarkably effective at screening the wetland and the very thick salmonberry prevents most people from encroaching on the wetland buffers while providing other functions like food source, erosion control and other functions.

The likely issue to develop if a new student housing building were to be installed is that the wetland might be accessed by the new residents. Since the wetland is well vegetated in some areas, an effective

fence would be all that is needed to prevent encroachment on the wetland and replanting the remaining degraded buffer would help maintain wetland functions. There is already a fence along Sommerset Drive that appears to be very effective for this purpose. There are some tradeoffs as there would be limited terrestrial access by animals, however the corridor between the Percival Creek and the wetland could be left unencumbered and maintain that access to wildlife. If a fence is determined to be too difficult, evergreen conifers like western red cedar should be added to the southern edge of the wetland with the mitigation replacement enhancements.

A planting plan to enhance the wetland will improve wetland functions and improve the overall landscape as well by:

- Removing invasive species
- providing low lying species that the Oregon spotted frog prefer for breeding and oviposition.
- reduce invasive reed canary grass for improved breeding habitat
- Provide open unshaded thermal habitat,
- Produce food for wildlife and structure.

Currently, the area that will be impacted is low-functioning buffer with invasive reed canary grass and blackberry. The wetland would be improved with native vegetation, so an enhancement plan will provide an enhanced vegetated mix that will increase diversity of the browse in the area, where it matters most, in and surrounding the wetland. A enhancement plan will provide species diversity and structure as well as roughness. The plants should take hold if the reed canary grasses are removed via a line trimmer and replanted.

Because there is already a native planting area, the new plantings will provide a larger contiguous native wetland area with the benefits already mentioned but will also become a landscape amenity that combines the practical plantings with aesthetic attributes of our native flora.

The following analysis uses the qualitative scoring values like the values developed in the Wetland Rating System for Western Washington. The best available science has found that the resolution of value can only be rated using a qualitative system and maintain a rapid assessment of less than one day. Therefore, we have examined common buffer functions for wetland protection and other habitats to show the overall expected lift by an enhancement plan. The table 2 shows that there will be improvement to some of the functions after enhancement mitigation.

TABLE 2 - Buffer Functions Comparison Before and After Mitigation

Buffer Perf criteria	Screening	Invasive Control	Nutrient uptake	Snags and Logs	Structure	Surface roughness	Temperature attenuation	Erosion control
Before mitigating measures	Low	Low	Medium	Low	Low	Medium	Low	High
After mitigating measures	High	High	Medium	Low	Medium	Medium	Low	High

Conclusion

The College would like to redevelop the athletic fields and build new student housing. The housing will be located in a portion of upland forest which was mitigation for a previously installed storm pond. The housing would be outside of the wetland buffer for the City of Tumwater and Olympia.

The athletic fields would be considered existing development, and any reconfiguration in this area would be allowed because no additional impacts would occur to the wetlands. Functions will be maintained after development in these areas. They should be allowed without further critical area review.

The student housing will impact existing upland mitigation, but these impacts would be outside of the standard buffers. The impacted upland mitigation areas could be easily replaced with an equal amount of wetland enhancement. The enhancement would result in improved wetland functions as shown in our assessment, so the student housing should be allowed as well.

This project will not degrade the wetland. After replacement of the upland mitigation with wetland enhancement the wetland functions and values will improve and provide for the continued protection of the wetland for the life of the project to the benefit of the citizens of Olympia and Tumwater.

REFERENCE

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Department of the Interior. FWSOBS-70/31.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

Hitchcock, C.L., and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press. 730 pp.

Hruby, T. (2014). Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029). Olympia, WA: Washington Department of Ecology.

Iowa State University. 1995. Hydric Soils of Washington State. U.S. Department of Agriculture, Natural Resources Conservation Service. December 5.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016.
The National Wetland Plant List: 2016 wetland ratings.
Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

Munsell Color. 1988. *Munsell Soil Color Charts*. Kollmorgen Instruments Corp., Baltimore, Maryland.

National Technical Committee for Hydric Soils (NTCHS). 2015. The hydric soil technical standard. Hydric Soils Technical Note 11. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051608.pdf (accessed 19 September 2016).

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Field Indicators of Hydric Soils in the United States, Version 7.0. G.W. Hurt and L.M. Vasilas (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USDA, NRCS. 2016. The PLANTS Database (http://plants.usda.gov, 5/28/2017). National Plant Data Team, Greensboro, NC 27401-4901 USA. http://plants.usda.gov

U.S. Fish and Wildlife Service. 1973. *National Wetlands Inventory Map, Lacey Quadrangle.*

Washington State Department of Ecology. 2014. Washington State Wetland Rating System for Western Washington. Ecology Publication # 04-06-025. August.2014

Washington Department of Ecology. 2012. Water Quality Assessment for Washington. Accessed March 2, 2024. http//fortress.wa.gov/ecy/wqamapviewer/default.aspx? res-1280x720

Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1). Washington State Department of Ecology Publication #06-06-011a. Olympia, WA.

Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1). Washington State Department of Ecology Publication #06-06-011b. Olympia, WA.

Washington State Department of Natural Resources. 1994. *Endangered, Threatened and Sensitive Vascular Plants of Washington*.

Washington State Department of Fish and Wildlife. 1999. Species of concern: State candidate species. WDFW. Olympia, WA.

Appendix A - Photographs

Eastern Mitigation Area


LSNW
Project: SPSCC
02.16.2024 01:00 PM
10TET 0502 07474
2445 Tyndall Ct SW, Tumwater, WA 98512


LSNW
Project: SPSCC
02.16.2024 01:00 PM
10TET 0502 07491
32 Dr Nels Hansen Way S, Olympia, WA 98512

Ditch and Mitigation Plantings on Eastern Edge of Sport Fields

Stormwater Drain Outlet in Stormwater Portion of Wetland A

Mitigation Area

Eastern Wetland Edge

Uplands Southeast of Sport Fields

Stormwater Pond looking West to Ballfields

`

Wetland to the South of the Western Drainage Ditch

Eastern Edge of Storm Pond Outlet to Wetland Area (City of Tumwater)

Center Drainage between Fields


LSNW
Project: SPSCC
East Side of Soccer
02.16.2024 12:58 PM
10TET 05022 07430
2445 Tyndell Cir SW, Tumwater, WA 98512


LSNW
Project: SPSCC
Tp3
02.16.2024 01:25 PM
10TET 04996 07426
2445 Tyndell Cir SW, Tumwater, WA 98512


LSNW
Project: SPSCC
Tp4
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2445 Tyndell Cir SW, Tumwater, WA 98512


LSNW
Project: SPSCC
Tp5
02.16.2024 02:08 PM
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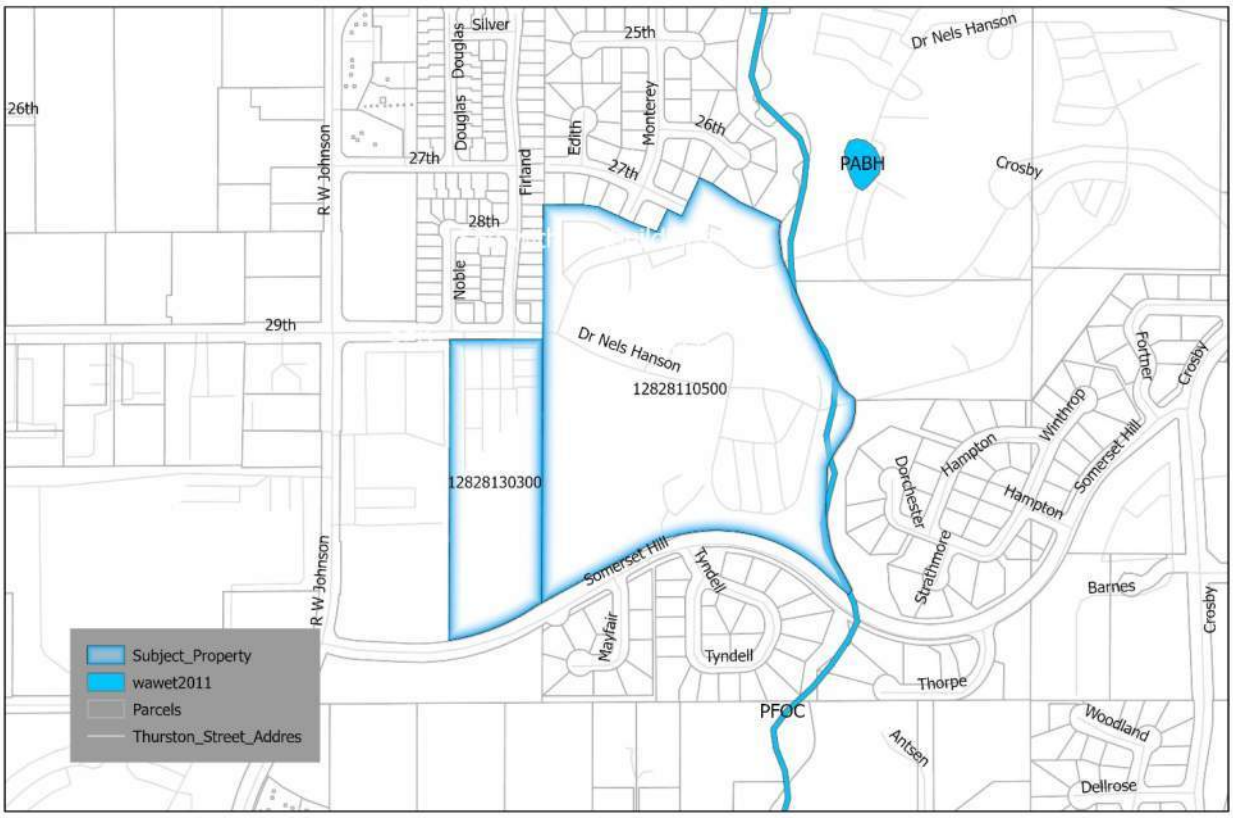
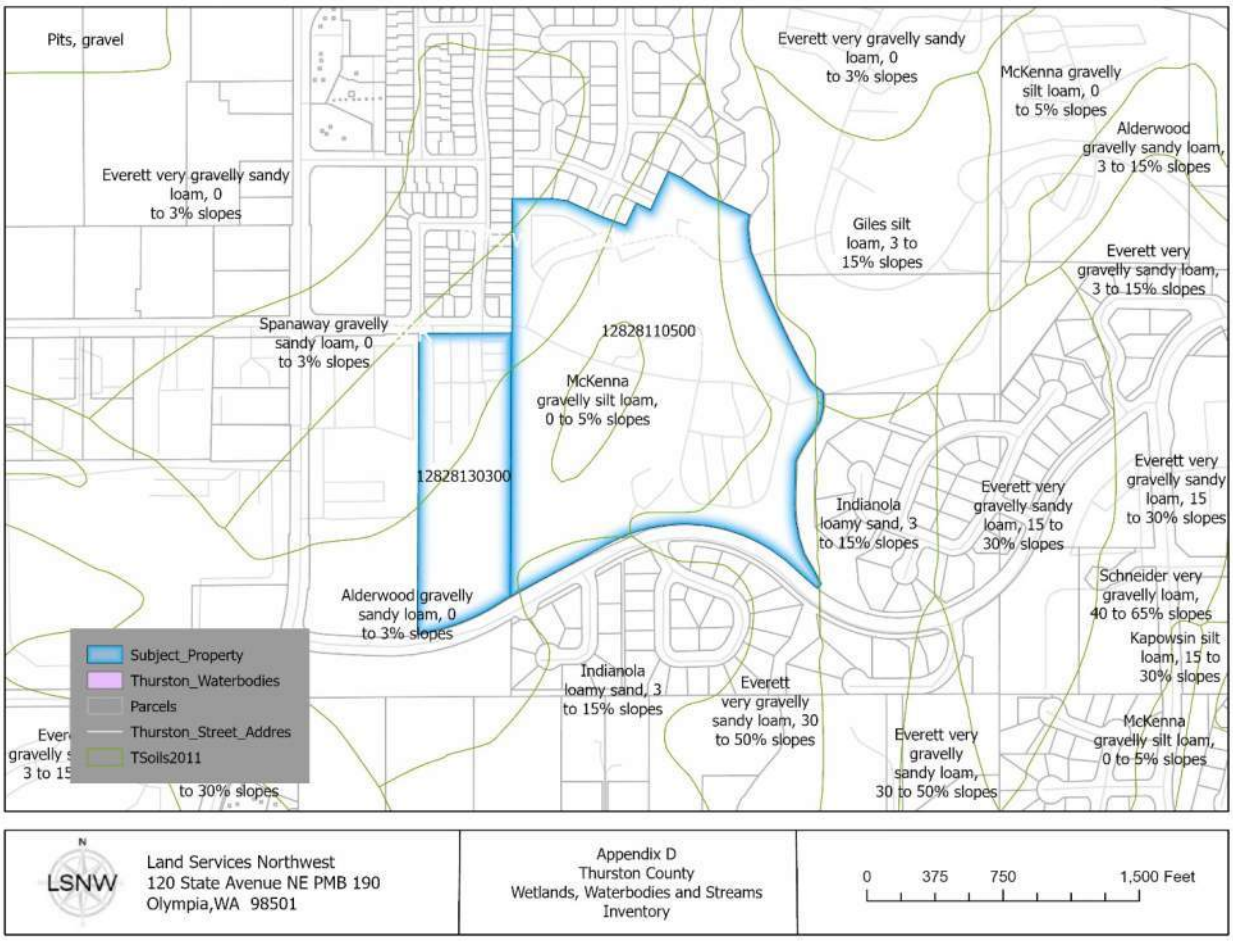
Dr Nels Hanson Way S, Olympia, WA 98512

Drainage Ditch to the West of the Field

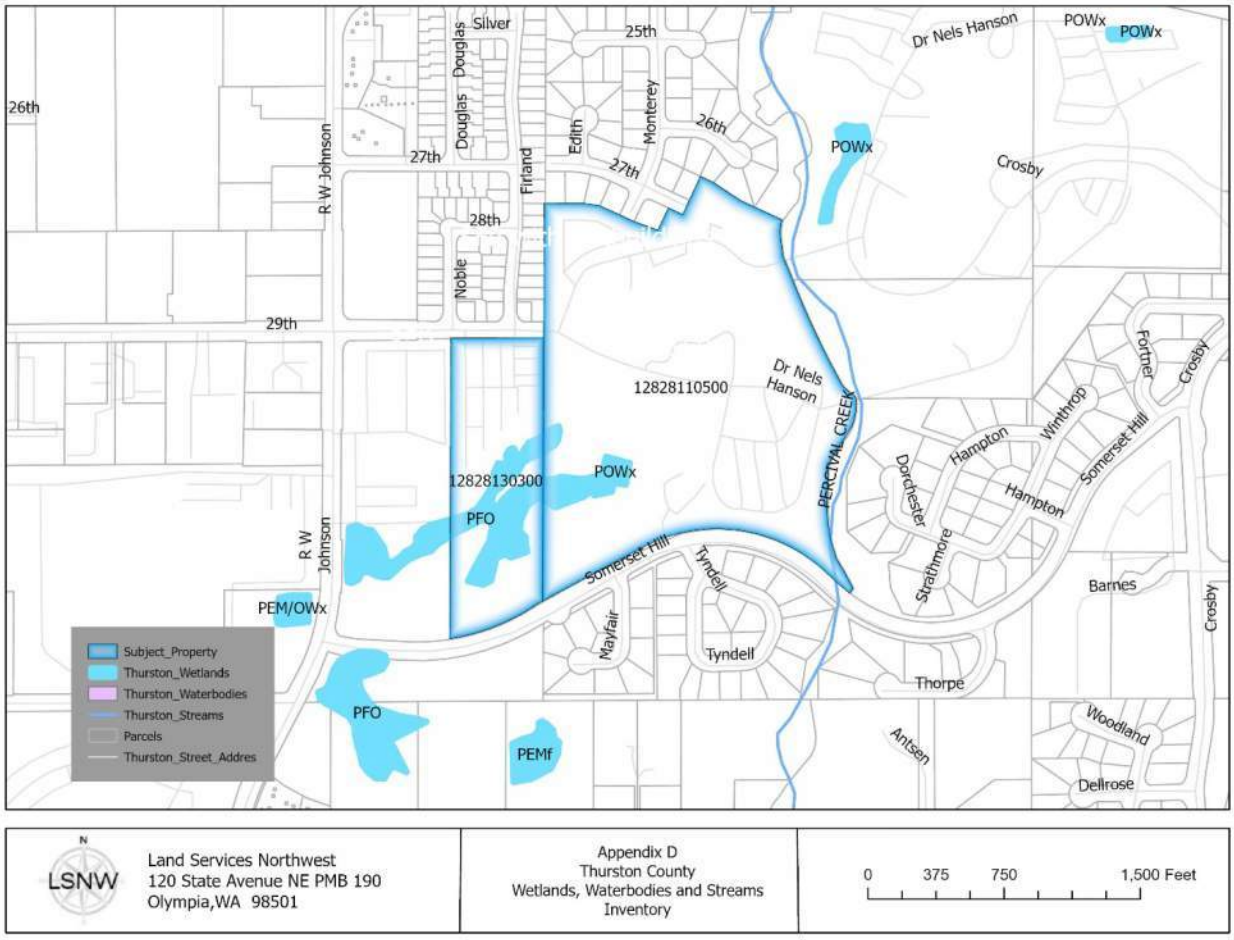
Appendix B - U.S. Fish and Wildlife Service NWI MAP



Appendix C - Thurston County NRCS Soil Survey Map



Appendix D – Thurston County Stream and Wetland Inventory




Thurston County HCP Map
Legend
Species Screen (Areas Need Staff Check)
Oregon Vesper Sparrow
Taylor's Checkerspot Butterfly
Oregon Spotted Frog
Roads - Major
<all other values>
I 5 ACCESS; US 101 ACCESS; US 101 SB OFF RAMP
I 5; US 101
Roads
Railroads
County Border
Olympia Municipal Airport
Water Bodies (River - Small Scale)
Water Bodies (Other)
Parks
Cities
Capital Forest
County Background
Roads - Major
Major Roads
Ramp
I 5; US 101
Roads (Large Scale)
Railroads
County Border
Scale 1: 27,631
0
1500
3000
Feet
Map Created Using GeoData Public Website
Published: 3/4/2024
Note:
THURSTON COUNTY
GeoData Center
KEN LAKE
Kaiser Woods Park
101
US-101 ACCESS
COOPER PT RD SW
BURLINGTON NORTHERN (ACTIVE)
BLACK LAKE BLVD SW
SAPP RD SW
LINWOOD AVE SW
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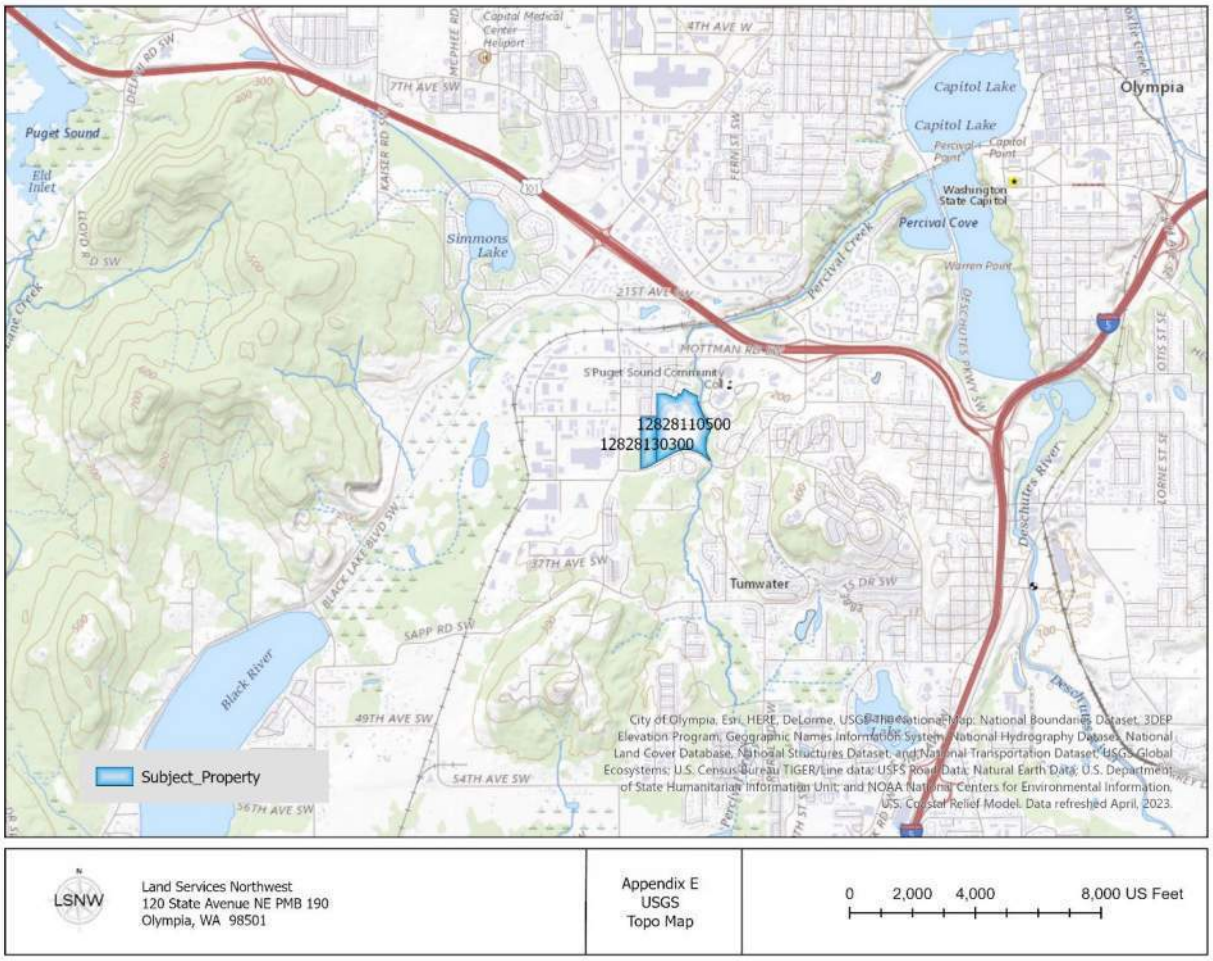
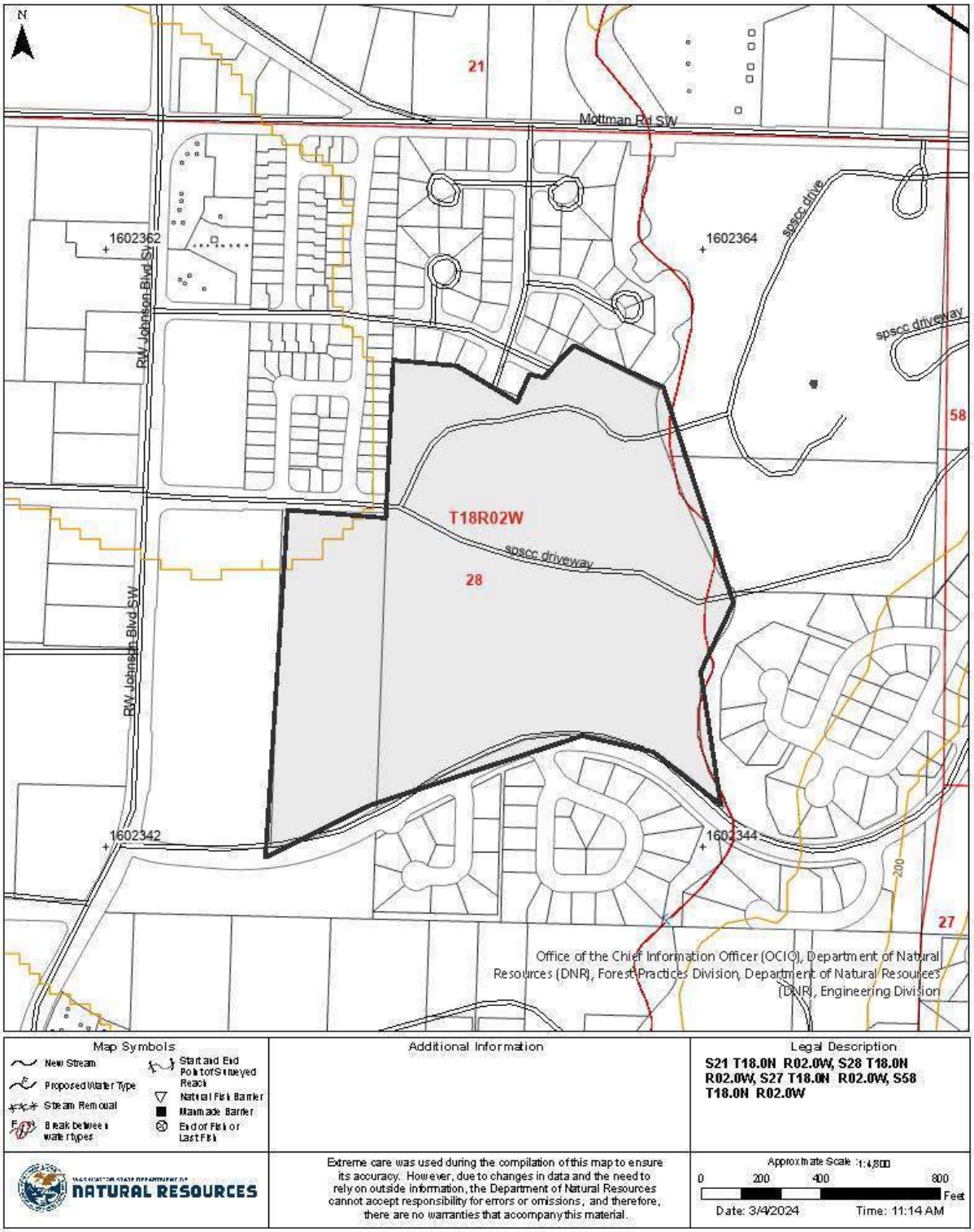
Appendix E - USGS 7.5 Minute Topographic Map



Appendix F - WDNR Forest Practices Application Map

Forest Practices Water Type Map



Appendix G - WDFW Priority Habitats and Species and Salmonscape

Priority Habitats and Species on the Web

Buffer radius: 315 Feet

Report Date: 03/04/2024

PHS Species/Habitats Overview:

Fall Chinook	
Scientific Name	*Oncorhynchus tshawytscha*
Priority Area	Breeding Area
Site Name	Percival Creek
Accuracy	NA
Notes	LLID: 1229079470365, Fish Name: Chinook Salmon, Run Time: Fall, Life History: Anadromous
Source Record	56073
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	http://wdfw.wa.gov/wlm/diversty/soc/soc.htm
Geometry Type	Lines

Coho	
Scientific Name	*Oncorhynchus kisutch*
Priority Area	Occurrence/Migration
Site Name	Percival Creek
Accuracy	NA
Notes	LLID: 1229079470365, Fish Name: Coho Salmon, Run Time: Unknown or not Applicable, Life History: Anadromous
Source Record	56076
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	http://wdfw.wa.gov/wlm/diversty/soc/soc.htm
Geometry Type	Lines

Fall Chum	
Scientific Name	*Oncorhynchus keta*
Priority Area	Occurrence/Migration
Site Name	Percival Creek
Accuracy	NA
Notes	LLID: 1229079470365, Fish Name: Chum Salmon, Run Time: Fall, Life History: Anadromous
Source Record	56074
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	http://wdfw.wa.gov/wlm/diversty/soc/soc.htm
Geometry Type	Lines

Freshwater Pond	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Pond - NWI Code: PABH
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFOC
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

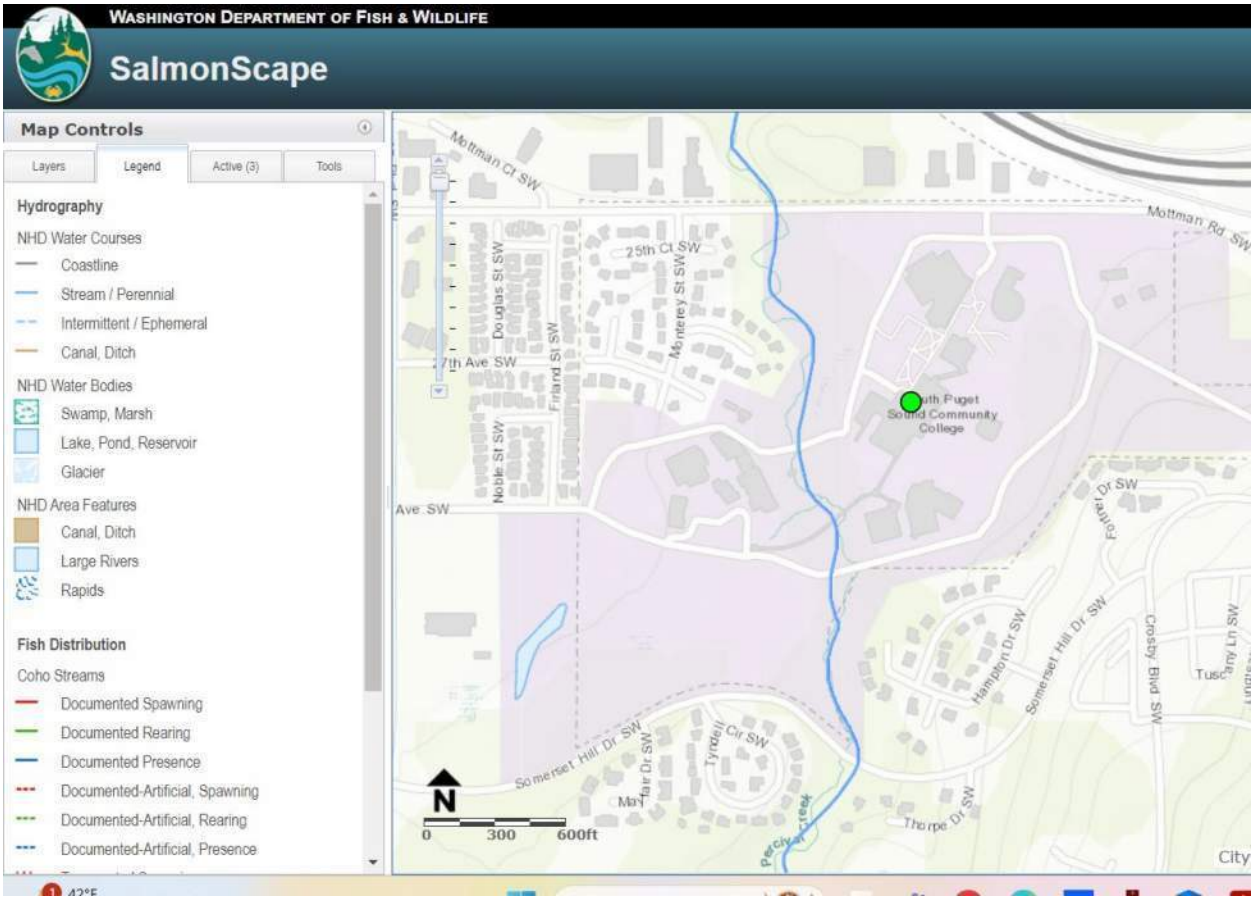
Big brown bat	
Scientific Name	*Eptesicus fuscus*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

Little Brown Bat	
Scientific Name	*Myotis lucifugus*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

myotis spp	
Scientific Name	*Myotis yumanensis/lucifigus*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP

Yuma myotis	
Scientific Name	*Myotis yumanensis*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.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SalmonScape
Map Controls
Layers
Legend
Active (3)
Tools
Hydrography
NHD Water Courses
Coastline
Stream / Perennial
Intermittent / Ephemeral
Canal, Ditch
NHD Water Bodies
Swamp, Marsh
Lake, Pond, Reservoir
Glacier
NHD Area Features
Canal, Ditch
Large Rivers
Rapids
Fish Distribution
Coho Streams
Documented Spawning
Documented Rearing
Documented Presence
Documented-Artificial, Spawning
Documented-Artificial, Rearing
Documented-Artificial, Presence
Mottman Ct SW
Mottman Rd SW
25th Ct SW
Douglas St SW
Monterey St SW
Finland St SW
Noble St SW
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Tyrdall Cir SW
Thorpe Dr SW
N
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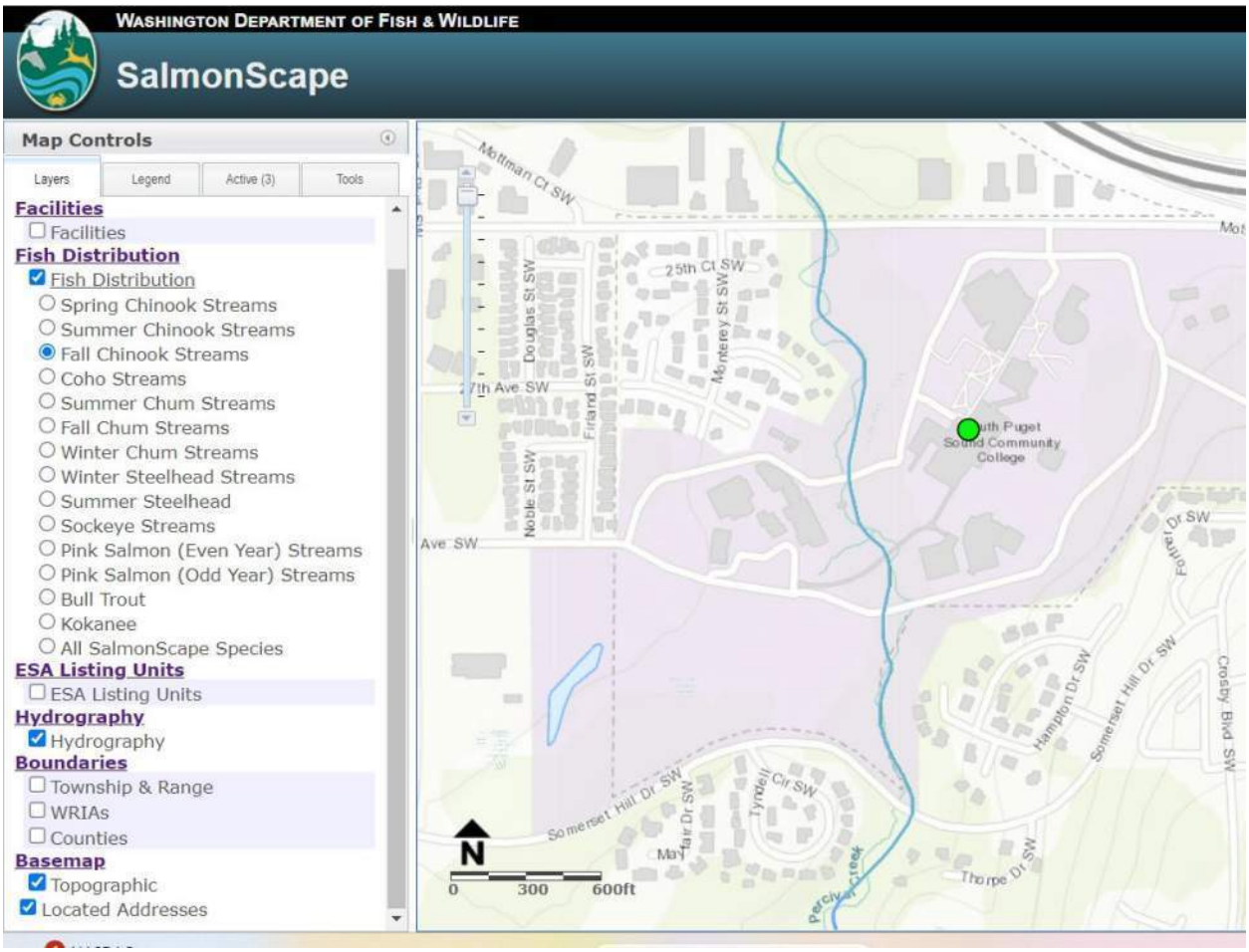
600ft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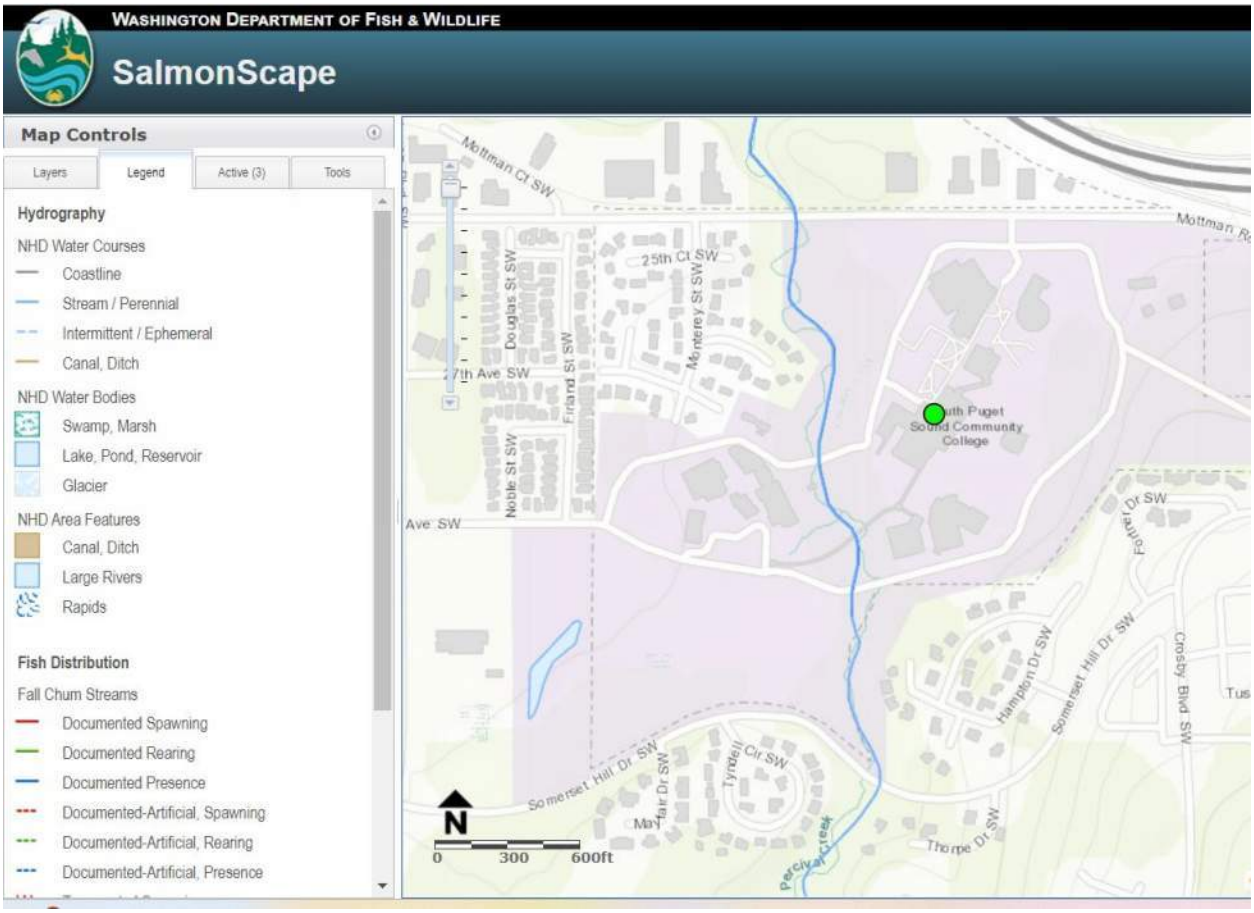
SalmonScape
Map Controls
Layers
Legend
Active (3)
Tools
Facilities
Facilities
Fish Distribution
Fish Distribution
Spring Chinook Streams
Summer Chinook Streams
Fall Chinook Streams
Coho Streams
Summer Chum Streams
Fall Chum Streams
Winter Chum Streams
Winter Steelhead Streams
Summer Steelhead
Sockeye Streams
Pink Salmon (Even Year) Streams
Pink Salmon (Odd Year) Streams
Bull Trout
Kokanee
All SalmonScape Species
ESA Listing Units
ESA Listing Units
Hydrography
Hydrography
Boundaries
Township & Range
WRIAs
Counties
Basemap
Topographic
Located Addresses
Mottman Ct SW
25th Ct SW
Douglas St SW
Monterey St SW
27th Ave SW
Firland St SW
Noble St SW
Ave SW
Somerset Hill Dr SW
Tyndell Cir SW
Thorpe Dr SW
Hampton Dr SW
Crosby Blvd SW
N
0
300
600ft


WASHINGTON DEPARTMENT OF FISH & WILDLIFE
SalmonScape
Map Controls
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Tools
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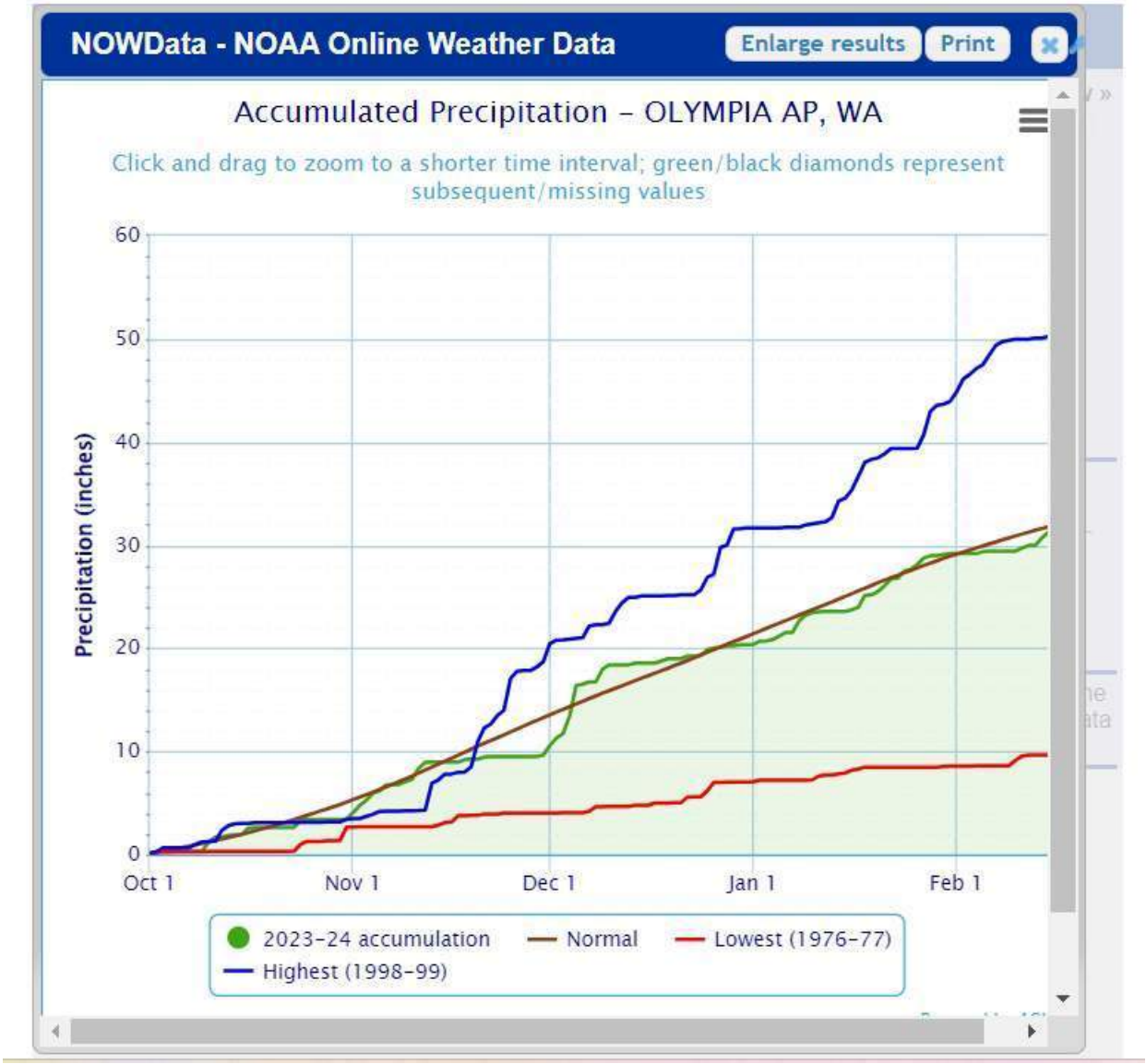
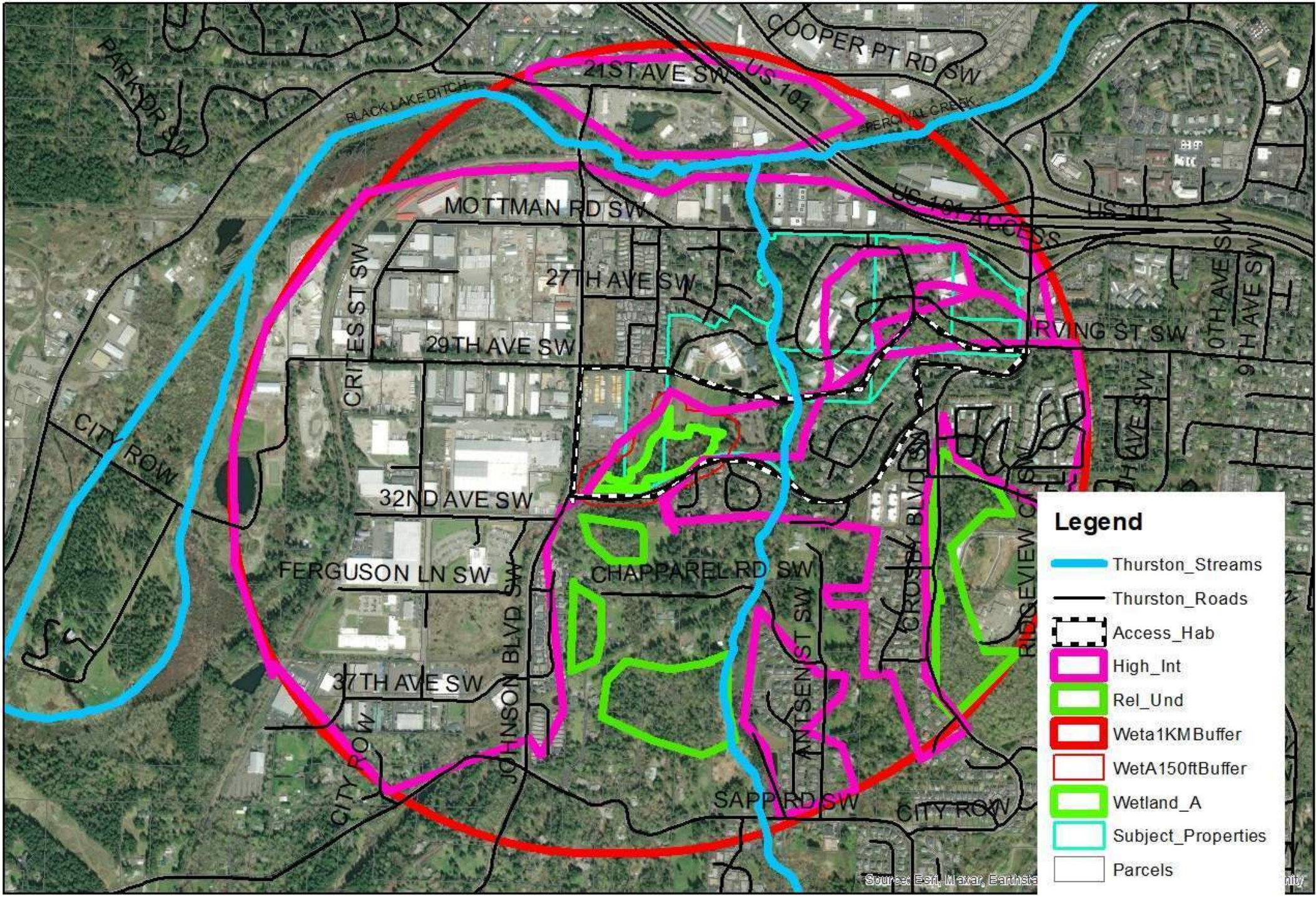
Coastline
Stream / Perennial
Intermittent / Ephemeral
Canal, Ditch
NHD Water Bodies
Swamp, Marsh
Lake, Pond, Reservoir
Glacier
NHD Area Features
Canal, Ditch
Large Rivers
Rapids
Fish Distribution
Fall Chum Streams
Documented Spawning
Documented Rearing
Documented Presence
Documented-Artificial, Spawning
Documented-Artificial, Rearing
Documented-Artificial, Presence
Mottman Ct SW
25th Ct SW
Douglas St SW
Monterey St SW
Firland St SW
Noble St SW
Ave SW
Somerset Hill Dr SW
Tyndall Cir SW
Hampton Dr SW
Crosby Blvd SW
Thorpe Dr SW
Percival Creek
N
0
300
600ft

Appendix H - NOAA NOW DATA



Appendix I – Wetland Rating System for Western Washington



Land Services Northwest
120 State Avenue NE PMB#190
Olympia, WA 98501
360-481-4208

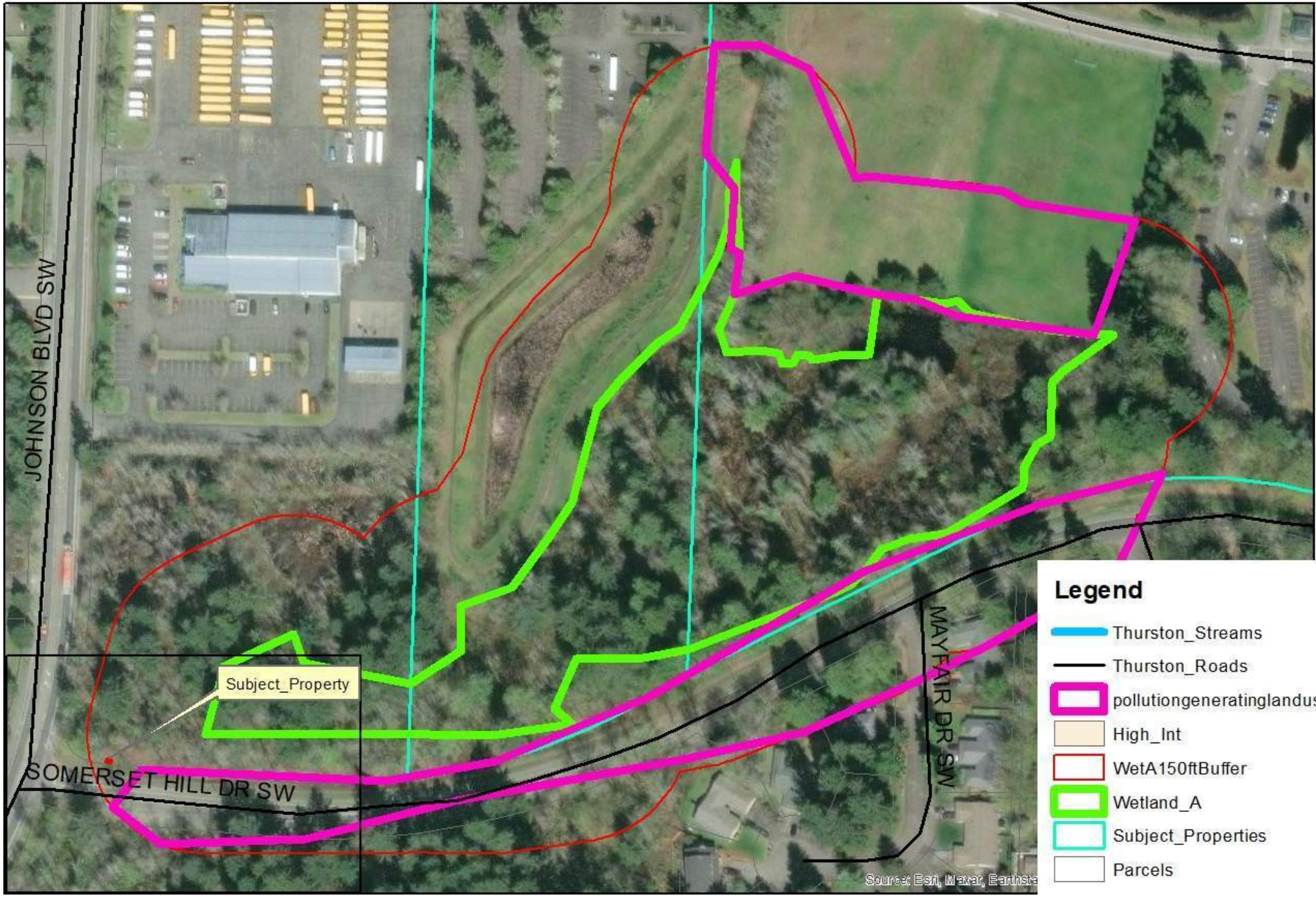
LSNW

Wetland A
1KM Land Use Map

0 850 1,700 3,400 Feet

Land Use Calculations

	ACRES		%
1KM	921		
Wetland A	5.76061		
1KM-Wetland A	915.2394		100
High Intensity	672	0.734234	73.42341
Relatively Undisturbed	44	0.048075	4.807485
Low Medium Use	199.2394	0.217691	21.7691
Accessible Habitat	70	0.076004	
Wetland A	5.76061		
Accessible Habitat-Wet A	64.23939	0.070189	
RU	0	0	0
Low/Medium LU	4.23939	0.005042	0.504204
High Intensity	60	0.065147	6.514658



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LSNW

Wetland A
Pollution Generating Land Use

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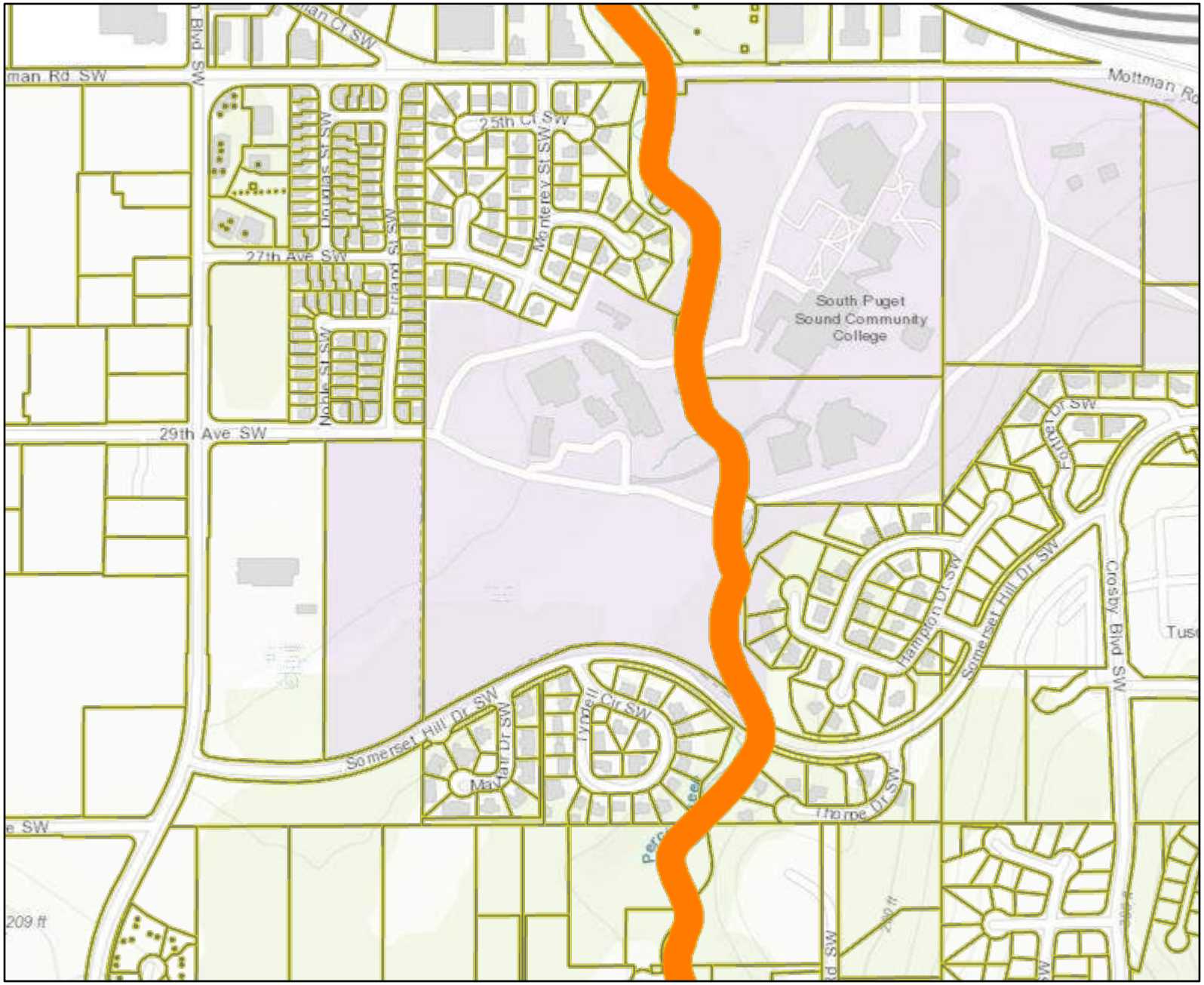

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3DUFHO ERXQGDU\

6XEEDVLQV GLJL

+8& ERXQGDU\

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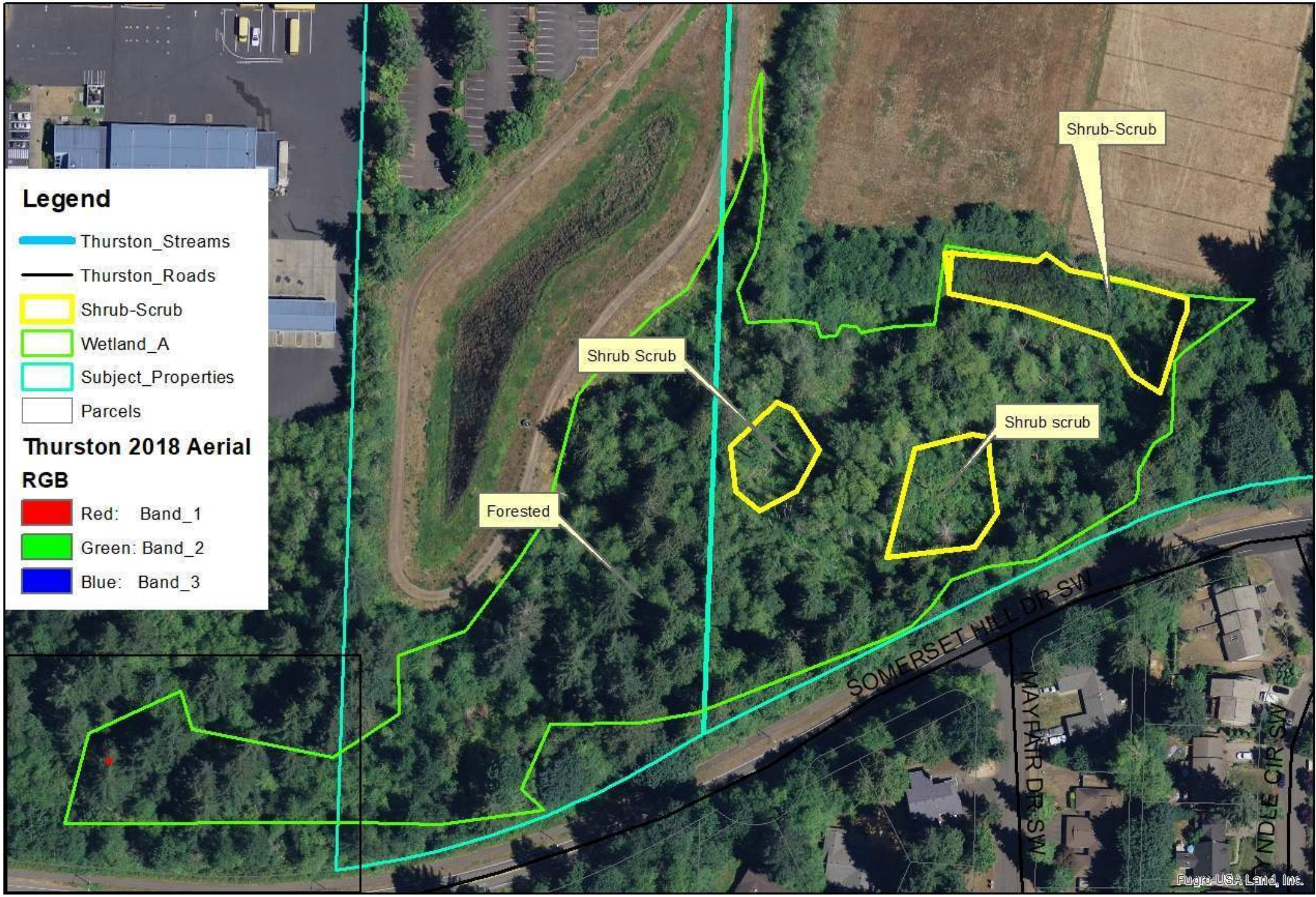

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LSNW

Wetland A
Cowardin Classification Map

0 95 190 380 Feet

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LSNW

Wetland A
Hydroperiod Classification Map

0 125 250 500 Feet

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SPSCC Wetland A Date of site visit: 2.21.2024

Rated by Alex Callender Trained by Ecology? ☑ Yes ☐ No Date of training Dec-13

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

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map 2018 Geodata

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

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 23 - 27
_____ **Category II** - Total score = 20 - 22
X **Category III** - Total score = 16 - 19
_____ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		List appropriate rating (H, M, L)		
Site Potential	M	M	M	
Landscape Potential	M	H	L	
Value	H	M	M	**Total**
Score Based on Ratings	7	7	5	**19**

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	

None of the above	X

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Cowardin
Hydroperiods	D 1.4, H 1.2	Hydro
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	Outlet
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	150ft
Map of the contributing basin	D 4.3, D 5.3	303d
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	1KM
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	303d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (*can be added to another figure*)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to another figure*)	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	

polygons for accessible habitat and undisturbed habitat		
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☑ NO - go to 2 ☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☑ NO - go to 3 ☐ **YES** - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
- ☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
- ☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☑ NO - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
- ☐ The wetland is on a slope (*slope can be very gradual*),
- ☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
- ☐ The water leaves the wetland **without being impounded.**

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
- ☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
- ☐ The overbank flooding occurs at least once every 2 years.

☑ NO - go to 6 ☐ **YES** - The wetland class is **Riverine**

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

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

☐ NO - go to 7 ☑ **YES** - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO - go to 8 ☐ **YES** - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

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

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

NOTES and FIELD OBSERVATIONS:

3

Wetland name or number SPSCC Wetland A

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 ☐ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*). Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1 Add the points in the boxes above	**11**

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

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

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

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

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

Wetland name or number SPSCC Wetland A

DEPRESSIONAL AND FLATS WETLANDS

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

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 ☐ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 ☐ The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	5
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* ☐ The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 ☐ Entire wetland is in the Flats class points = 5	3
Total for D 4 — Add the points in the boxes above	**10**

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

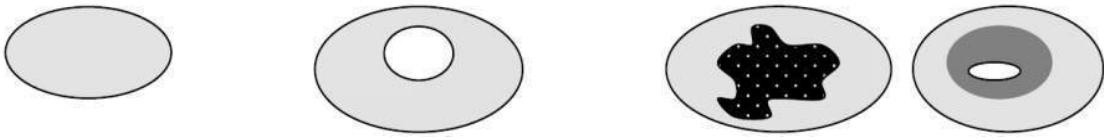
D 5.0. Does the landscape have the potential to support hydrologic function of the site?	
D 5.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 — Add the points in the boxes above	**3**

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 ☐ • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 ☑ Flooding from groundwater is an issue in the sub-basin. points = 1 ☐ The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why points = 0 ☐ There are no problems with flooding downstream of the wetland. points = 0	1

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	**1**

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

These questions apply to wetlands of all HGM classes.	
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: points = 4 ☐ Emergent — 3 structures: points = 2 ☑ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points - 1 ☑ Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if*: ☑ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	2
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☑ Permanently flooded or inundated — 4 or more types present: points = 3 ☑ Seasonally flooded or inundated — 3 types present: points = 2 ☐ Occasionally flooded or inundated — 2 types present: points = 1 ☑ Saturated only — 1 types present: points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	2
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3 points 	1

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☑ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) ☑ Standing snags (dbh > 4 in) within the wetland ☑ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☑ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	4
Total for H 1 Add the points in the boxes above	**10**

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

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 0 % undisturbed habitat + (0.46 % moderate & low intensity land uses / 2) = 0.23% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 4.8 % undisturbed habitat + (21 % moderate & low intensity land uses / 2) = 15.3% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**-1**

Rating of Landscape Potential If Score is: ☐ **4 - 6 = H** ☐ **1 - 3 = M** ☑ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated*. Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a	1

watershed plan		
Site has 1 or 2 priority habitats (listed on next page) with in 100m	points = 1	
Site does not meet any of the criteria above	points = 0	

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

WDFW Priority Habitats

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

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

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds**: Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies**: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☐ **Instream**: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☑ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are >

12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes - Go to **SC 1.1** ☐ No = **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina* , see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☐ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 2.4** ☐ No = **Not WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions*** . SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes - Go to **SC 3.3** ☐ No - Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes - Go to **SC 3.3** ☐ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No - Go to **SC 3.4** **NOTE**: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir,	

western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.

☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐ Yes = **Category I** ☐ No = **Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1** ☐ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐ Yes = **Category I** ☐ No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

☐ Long Beach Peninsula: Lands west of SR 103

☐ Grayland-Westport: Lands west of SR 105

☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to **SC 6.1** ☐ No = **Not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?

☐ Yes = **Category I** ☐ No - Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐ Yes = **Category II** ☐ No - Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = **Category III** ☐ No = **Category IV**

Category of wetland based on Special Characteristics

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

A Division of TranSystems

March 15, 2024

Attn: Matt Lane

RE: SPSCC Soccer Field Lighting Analysis

Dear Matt,

Thank you for contacting BCE to review the lighting impacts of a new Soccer Field at SPSCC.

As part of the analysis, BCE ensured the calculation included adequate lighting levels on the field for collegiate Soccer. We also reviewed the amount of light that spills out of the field and into the surrounding areas- particularly the nearby residential areas. The following narrative describes the lighting approach, anticipated lighting levels, light spill and utility impacts.

Sports Lighters

Modern exterior athletic field lighting is almost exclusively LED. LED fixtures offer lower power consumption, better light control, and longer life than previous metal halide (bulb) technology. They also don't have a "warm up" period before hitting maximum brightness. Cost and reliability were primary concerns with LEDs in the past, but modern fixtures have addressed these issues. BCE utilized Musco Lighting as the basis of design- primarily because of their life cycle cost effectiveness and number of years that they've been building sports lighting (over 40). Competition is available via other brands that have similar price points and performance characteristics.

Modern fixtures are mounted to cross arms on tall steel poles. In this case, we are utilizing (4) 80' poles to hold approximately 60 total fixtures. Each fixture is aimed separately to maximize lighting levels on the field and minimize spill lighting off the field. These are often aimed and mounted in the factory to minimize the number of adjustments required in the field. Additional height can be added to the poles if a larger grandstand is considered in the future.

Lighting Levels

Collegiate sports require higher lighting levels than high school or recreational leagues- primarily due to television cameras. The increased competition level also plays a part in lighting levels. We selected 50 footcandles as the optimal lighting level on the field for this particular application. This is adequate for some televised/recorded events and more than adequate for the players on the field. This level is similar to what one would expect inside a college classroom or at a modern high school football stadium.

Light Spill

The selection of LED lighting allows the fixtures to be carefully aimed to limit light "spill" and glare into the surrounding areas. Some light spill around the field is desirable for spectators, but excessive spill is a waste of energy and can impact neighbors if the field is near a property line. In this case, calculations were made at a 100' distance from the field.

This particular location on the campus is contained by parking lots on the East and West, academic buildings on the North, and an undeveloped wooded area on the south. A small residential area is located North West of the field. Lighting levels in that direction are nearly zero. The majority of light spill ends up in the East and West parking lots. The contribution from the spill is less than from the parking lot lighting itself.

Maintaining a dark sky at night is of particular concern with sports lighting. The selected fixture, and most modern LED fixtures, have a substantially lower impact on the night sky. There is still a contribution, but that majority of that is from lighting bouncing off of the ground and back up into the sky- not illumination from the fixtures themselves.

Utility Impacts

The overall electrical power draw for the calculated lighting is approximately 55kW (less than 100 amps at 480V, 3-phase). This equates to a small transformer and could potentially be added to an existing building service or be a stand-alone electrical service.

Conclusions

Utilizing LED sports lighters on 80' poles will provide a well-lit playing surface for soccer (or similar) field sports. Having a highly controllable optic will also ensure only a minimal amount of light will end up outside of the field area- particularly in the direction of existing residential buildings. Lighting contribution to the night sky is also limited. Any utility impacts are relatively small.

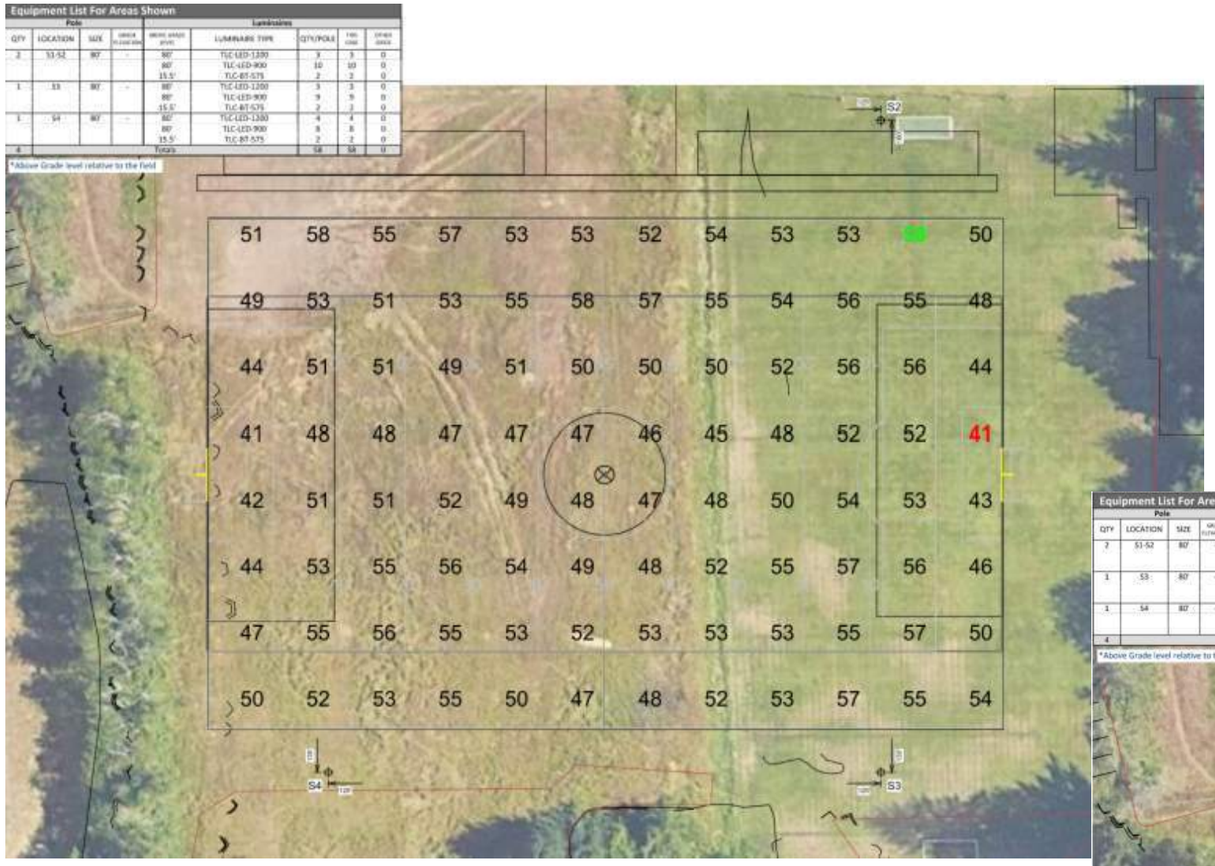
See attached for backup information and calculations.

Please do not hesitate to call with any questions or concerns.

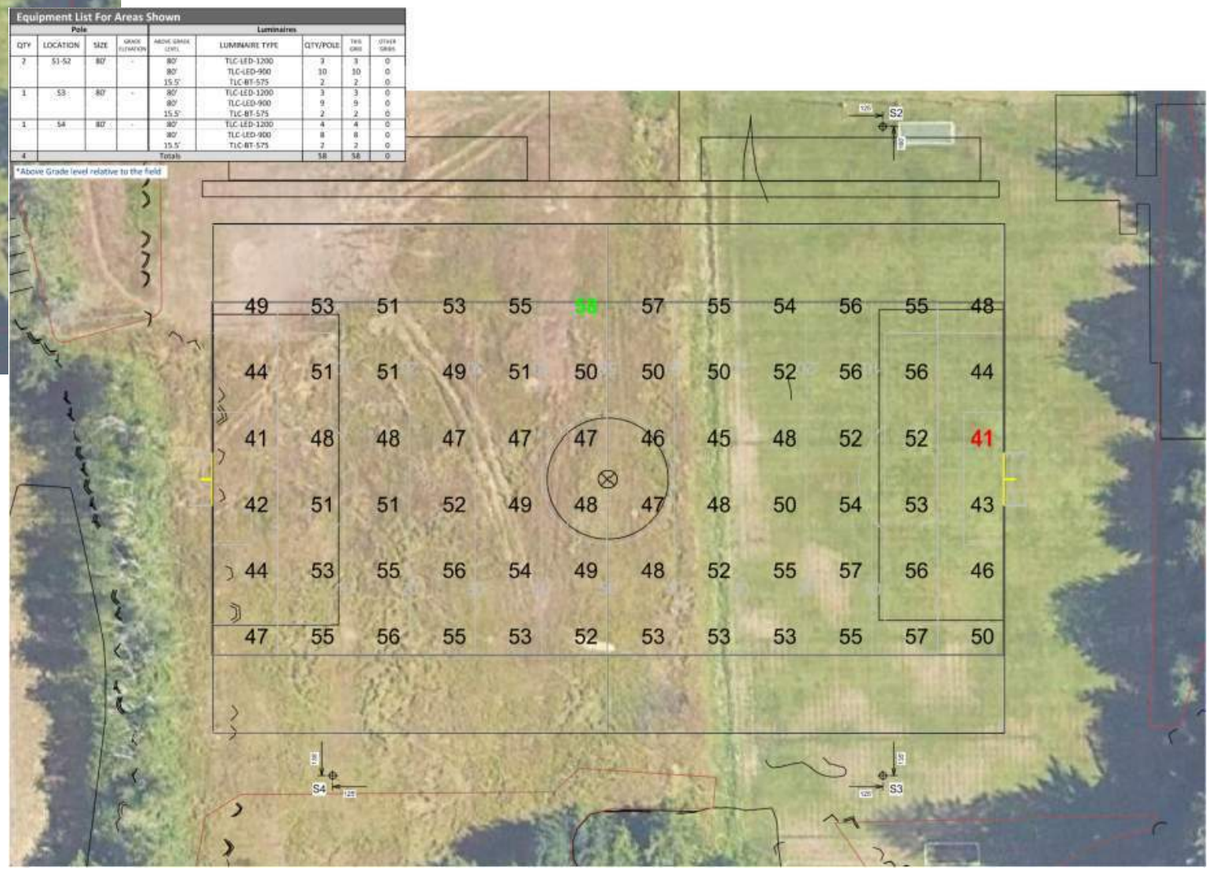
Sincerely,

BCE ENGINEERS,

Ben Hedin, P.E.
Principal



HORIZONTAL LIGHTING LEVELS (SOCCER)



HORIZONTAL LIGHTING LEVELS (FOOTBALL)

Equipment List For Areas Shown								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	ABOVE GRADE LEVEL	LUMINAIRE TYPE	QTY/POLE	THIS SIDE	OTHER SIDES
2	S1-S2	80'	-	80'	TLC-LED-1200	3	3	0
				80'	TLC-LED-900	10	10	0
				15.5'	TLC-BT-575	2	2	0
1	S3	80'	-	80'	TLC-LED-1200	3	3	0
				80'	TLC-LED-900	9	9	0
				15.5'	TLC-BT-575	2	2	0
1	S4	80'	-	80'	TLC-LED-1200	4	4	0
				80'	TLC-LED-900	8	8	0
				15.5'	TLC-BT-575	2	2	0
4				Totals		58	58	0

*Above Grade level relative to the field

HORIZONTAL LIGHT SPILL LEVELS

Equipment List For Areas Shown								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	ABOVE GRADE LEVEL	LUMINAIRE TYPE	QTY/POLE	THIS SIDE	OTHER SIDES
2	S1-S2	80'	-	80'	TLC-LED-1200	3	3	0
				80'	TLC-LED-900	10	10	0
				15.5'	TLC-BT-575	2	2	0
1	S3	80'	-	80'	TLC-LED-1200	3	3	0
				80'	TLC-LED-900	9	9	0
				15.5'	TLC-BT-575	2	2	0
1	S4	80'	-	80'	TLC-LED-1200	4	4	0
				80'	TLC-LED-900	8	8	0
				15.5'	TLC-BT-575	2	2	0
4				Totals		58	58	0

*Above Grade level relative to the field

VERTICAL LIGHT SPILL LEVELS