



HOUT RESIDENCE

New Residence Drainage Report

PROFESSIONAL ENGINEER: MOHAMED SAID MAHOUD
PE#23001965
EXPIRATION 06-12-2027

Site Address: 813 10TH AVE SW PUYALLUP WA

FOR: DS CUSTOM CONSTRUCTION
10925 SE 226TH ST
KENT, WA
98031

JMDESIGNS AND PERMITTING LLC

DATE: October 2, 2026

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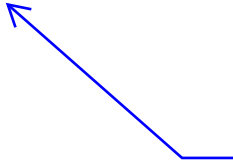
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APPENDICES

A – WWHM2012 Analysis

B - Soil Report



Update table of contents and appendices for consistency with the rest of the report. [Drainage Report, pg. 2]

Section I - Project Overview

Overview:

The project site is located on the east side of 9th St SW at the intersection with 10th Ave SW. This project consists of the construction of a single-family residence. The project will include 2,098 sf of roof, 970 sf of driveway, and 57 sf of walkways for a total of 3,125 sf of new hard surfaces. The existing water service will be extended to the new house.

Project Requiriments:

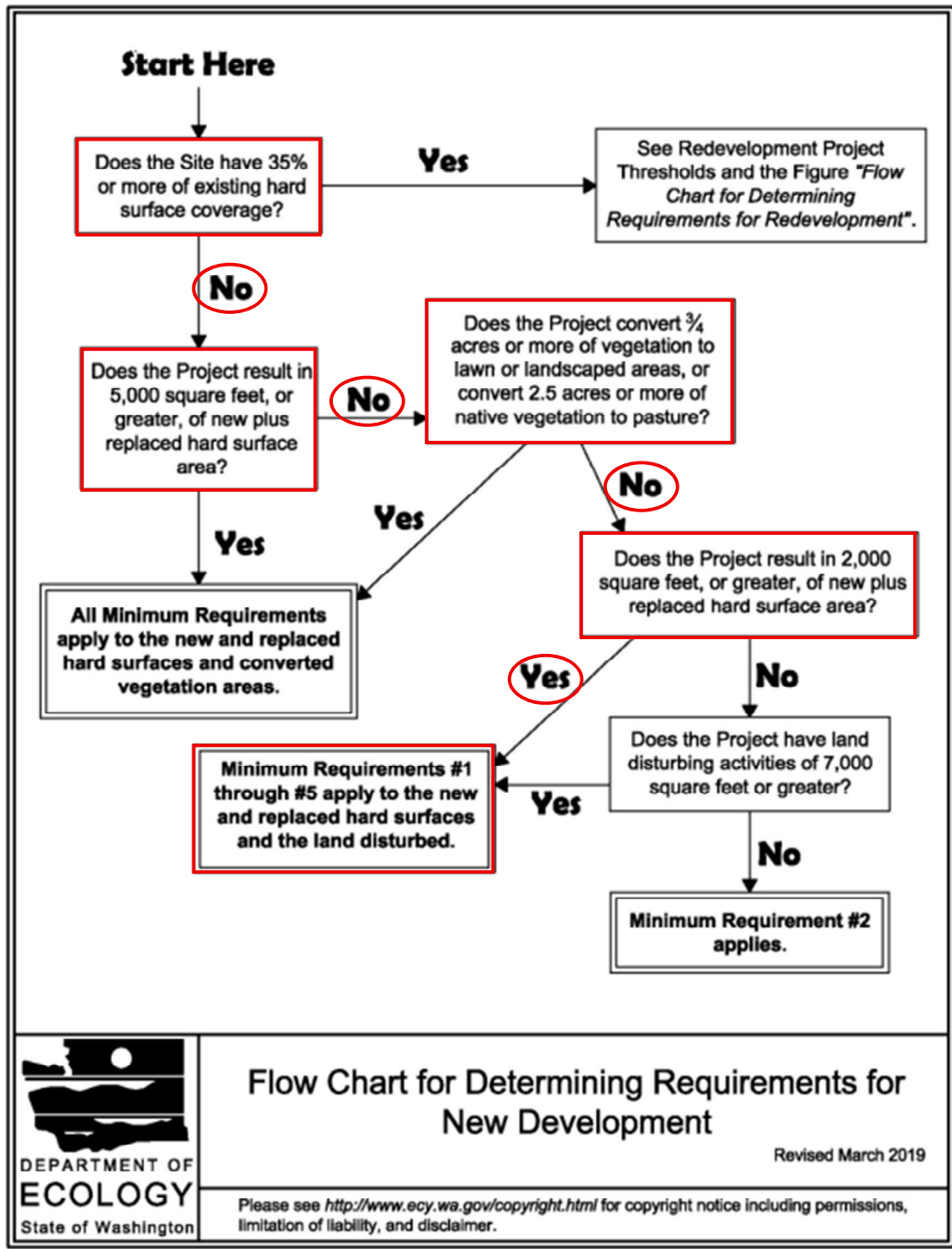
Determination of Applicable Minimum Requirements

Per PMC 21.10.040 the City of Puyallup has adopted the Washington State Department of Ecology Stormwater Management Manual for Western Washington (SMMWW), with the version in effect being "the most current version approved for city use by the council." The 2019 DOE Manual has been adopted by the City and is the controlling regulation and is referred to as "the Manual" or "SMMWW" hereinafter.

The project consists of 3,125 sf of new hard surfaces onsite. The existing hard surfaces are less than 35% of the site and therefore, the project is considered new development. Since the total new plus replaced hard surfaces for the project are less than 5,000 square feet, and less than 0.75 acres of vegetation will be converted to lawn, minimum requirements #1-5 apply to the new hard surfaces and the land disturbed.

The design has changed resulting in hard surface quantities changing, but this section remains the same as the previous submittal. Update to reflect the current site plan. Include all on and off-site improvements in hard surface quantities. [Drainage Report, pg. 3]

Figure 3: Flow Chart for Determining Requirements for New Development



Discussion of Minimum Requirements

The Minimum Requirements per Section I-3.4 of the Manual:

Minimum Requirement #1: Preparation of Stormwater Site Plans

The Stormwater Site Plan consists of a report and construction plans. This report and the civil plans for building permit submittal satisfy Minimum Requirement #1.

Minimum Requirement #2: Construction Stormwater Pollution Prevention (SWPPP)

The SWPPP consists of a narrative and drawings. The narrative is addressed in Section V of this report. The civil drawings include a TESC plan, notes, and details.

Minimum Requirement #3: Source Control of Pollution

This project is a single-family residential development and does not meet the applicability thresholds for Minimum Requirement #3 as defined in the Washington State Stormwater Management Manual for Western Washington (SWMMWW).

The SWMMWW specifies that Minimum Requirement #3 applies only to non-exempt projects that meet defined thresholds, and that different combinations of minimum requirements apply depending on project characteristics. Based on these criteria, this project is not required to prepare a Pollution Source Control Plan.

Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls

The vicinity of the site is very flat. The general gradient is to the west. Any surface flows will be to the west off the site. The proposed improvements will infiltrate all runoff from hard surfaces and no grading of the is proposed. This will preserve the natural drainage system.

Provide the referred to SWMMWW section in resubmittal. [Drainage Report, pg. 5]

Minimum Requirement #5: On-site Stormwater Management

Because the project only triggers MR #1-5, and is inside the urban growth area, the project must either use the LID BMPs from List #1 or use any Flow Control BMPs to meet the LID Performance Standard and apply BMP T5.13: Post-Construction Soil Quality and Depth. This project will use List #1. For each surface the BMP's must be considered in the order listed for that type of surface and use the first BMP that is considered feasible.

Lawn and Landscaped Areas:

- All lawn and landscaped areas will meet the requirements of BMP T5.13, Post Construction Soil Quality and Depth with notes on the plans to this effect.

Roofs:

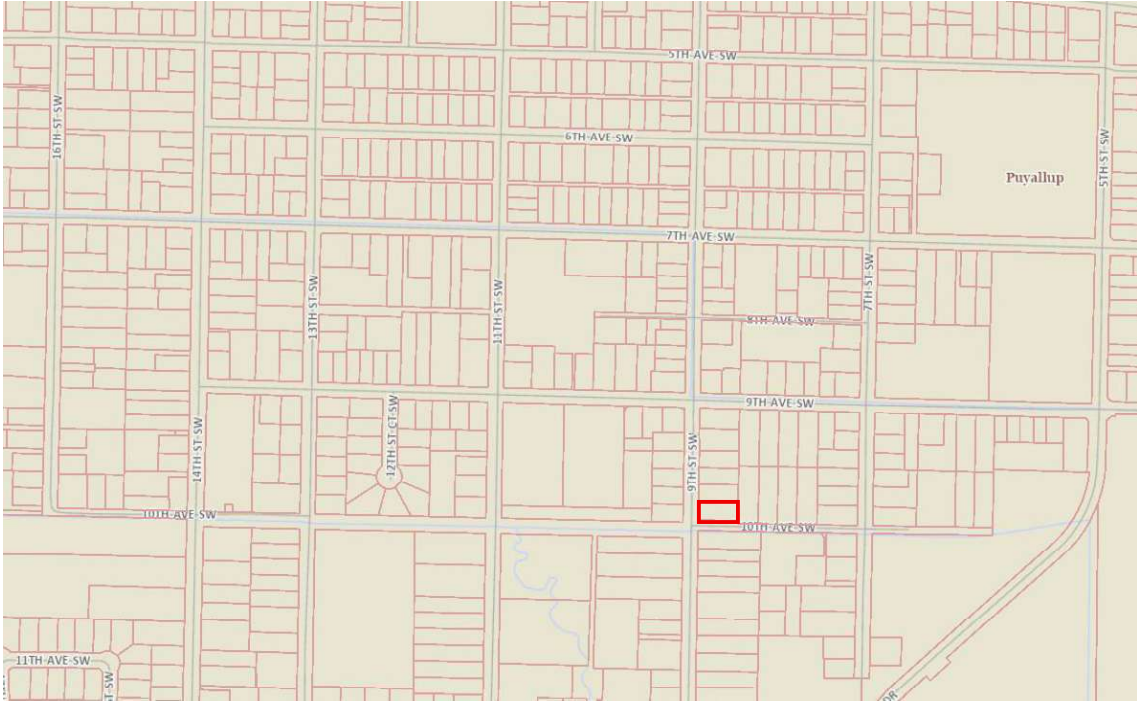
1. BMP T5.30: Full Dispersion – infeasible due to inadequate vegetated area to meet the 65:10 ratio.
2. BMP T5.10A: Downspout Full Infiltration – infeasible

Other Hard Surfaces:

1. BMP T5.30: Full Dispersion – infeasible due to inadequate vegetated area to meet the 65:10 ratio.
2. BMP T5.15: Permeable pavement – as an equivalent measure, full infiltration via the same infiltration trench for roof drains will be used. Both BMPs fully infiltrate all runoff.

If using the list method to meet MR 5, all list items will need to be assessed in the order listed in the manual. If found infeasible, list the specific infeasibility criteria. Please re-assess the list method options after addressing the soils condition/geotechnical report comment below. [Drainage Report, pg. 5]

Additional information will be required to assess the feasibility of infiltration. Per previous comment, the report provided does not indicate that an approved method of infiltration testing per the SWMMWW was performed, and does not indicate that the seasonal high groundwater table was monitored or identified. [Drainage Report, pg. 5]



Section II – Existing Conditions Summary

Topography

In existing conditions project area is generally flat. There is a very slight gradient down to the west.

Ground Cover

The site is covered with pasture.

Soils

See Geotech report.

Floodplain

The project site is within a floodplain.

Floodplain Grading and Fill Mitigation Response

The proposed project is located within a mapped floodplain; however, the residential structure will be constructed with the finished floor elevation set above the applicable base flood elevation in accordance with local and FEMA requirements.

Grading associated with the project has been designed to provide positive drainage away from the proposed structure while minimizing disturbance within the floodplain. The extent of fill placed within the floodplain is limited to that necessary to support the building pad and immediate access.

To address potential impacts associated with grading and fill within the floodplain, the project will incorporate the following measures:

Fill quantities within the floodplain are minimized to the greatest extent practicable.

Grading is balanced on-site to avoid unnecessary import of fill material. Compensatory storage will be provided, if required, to offset any net loss of floodplain storage volume.

Finished grades are designed to maintain existing drainage patterns and avoid adverse impacts to adjacent properties.

Based on the above, the proposed grading will not result in a measurable increase in flood elevations or adverse impacts to floodplain storage or conveyance. Therefore, the grading design is consistent with applicable floodplain management requirements. The proposed grading has been designed to minimize impacts within the floodplain area to the maximum extent practicable. The grading associated with the proposed residence is limited primarily to the immediate building footprint, access improvements, and required drainage transitions necessary to provide positive drainage away from the structure.

The design for this project is proposing to add fill (even if minimal) within the floodplain. To offset, compensatory storage will be required. Refer to section 21.07.060(f) for compensatory storage criteria. Being that this property is located fully within the regulated floodplain, compensatory storage would need to be provided in a location outside of the floodplain. Alternatively, revising the grading plan to remove filling within the floodplain will nullify the need for providing compensatory storage. If the building footprint is elevated using stem wall foundation, that specific area does not trigger compensatory storage. In this scenario, a garage with driveway may be placed at grade without filling (i.e. placed below the BFE). The house and garage would need to be designed with the appropriate flood venting. [Drainage Report, pg. 7]

The site grading strategy incorporates the following mitigation measures:

Finished grades adjacent to the residence are limited to the minimum elevations necessary to provide drainage away from the foundation at a minimum 2% slope for the first 10 feet, consistent with building code and stormwater requirements. Proposed grading transitions smoothly back to existing grades along the perimeter of the disturbed area to minimize fill quantities within the floodplain. No berms, retaining features, or concentrated fill areas are proposed that would obstruct or redirect flood flows.

Fill placement is confined primarily to the building pad and immediately adjacent access areas necessary for safe site access and ADA-compliant pedestrian circulation.

Existing drainage patterns are maintained to the extent feasible, and runoff is directed to approved stormwater collection facilities.

The proposed development does not significantly alter flood storage capacity or increase flood elevations on adjacent properties.

Disturbed areas outside the developed footprint will be stabilized and restored to prevent erosion and maintain existing drainage characteristics.

Additionally, the grading plan has been revised to reduce unnecessary fill areas within the floodplain by limiting grading extents and tying proposed contours into existing elevations as closely as practicable.

Section III – Off-Site Analysis

Problems

There are no known drainage problems along this downstream route.

Section IV – Permanent Stormwater Control Plan

Basin Summary

The disturbed area for the overall project is 10,860 sf. This is the entire area of the lot.

Existing Site Hydrology

42 inch, East rainfall zone and WWHM is run with 15- minute intervals. The table below shows the land cover delineation for the hydraulic analysis.

EXISTING	SF	AC
C, Pasture, Flat	10,860	0.2494

The peak runoff rates calculated by WWHM2012 for predeveloped conditions are:

Flow Frequency

Flow(cfs) 0501 15m

2 Year = 0.0060
5 Year = 0.0096
10 Year = 0.0124
25 Year = 0.0164
50 Year = 0.0198
100 Year = 0.0234

See Appendix A for WWHM analysis. POC 1 is used for all analyses.

Stormwater Management

To address MR #5,

DEVELOPED		
To Infiltration Trench	SF	AC
Roof	2098	0.048
Driveway, Flat	970	0.022
Walkway, Flat	57	0.0013
Total	3125	0.072

Developed Site Hydrology

All non-hard surface areas will be lawn in the developed condition and this area will continue to sheet flow to the east as in existing conditions. The table below shows the land cover delineation for the developed site hydrologic analysis.

DEVELOPED		
Direct Discharge	SF	AC
C, Lawn, Flat	7735	0.1776

The peak runoff rates calculated by WWHM2012 are:

Flow Frequency

Flow(cfs) 0801 15m

2 Year = 0.0063
5 Year = 0.0125
10 Year = 0.0183
25 Year = 0.0282
50 Year = 0.0378
100 Year = 0.0495

See Appendix A for WWHM analysis.

Per V1 comment:

Include all on-site and off-site surfaces in this analysis.
[Drainage Report, pg. 10]

There is no appendix A attached to this report. Additionally, elaborate on the purpose of section IV of this report as it pertains to the stormwater design. [Drainage Report, pg. 10]

Section V – Construction Stormwater Pollution Prevention Plan

Following are the 12 elements of the SWPPP. Where specific BMP's are prescribed, they are explained as shown on the engineering drawings for the project. Alternate BMP's may be acceptable in lieu of, or as a supplement to the prescribed BMP's. Where identified, alternate BMP's are listed and requirements included.

Element #1 – Mark Clearing Limits

Construction fencing will be used to mark property line which equals clearing limits, except where boundary fencing already exists.

Element #2 – Establish Construction Access

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads, and wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. All wash wastewater shall be controlled on site. The specific BMPs related to establishing construction access that will be used on this project include:

- Stabilized Construction Entrance (C105)

Element #3 – Control Flow Rates

Due to the limited scope of work, no BMPs to control flow rates are required.

Element #4 – Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMPs to be used for controlling sediment on this project include:

- Silt Fence (C233)

Element #5 – Stabilize Soils

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. The specific BMPs for soil stabilization that shall be used on this project include:

- Temporary and Permanent Seeding (C120)
- Mulching (C121)

No soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of the time of year, all soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on weather forecasts.

In general, cut and fill slopes will be stabilized as soon as possible and soil stockpiles will be temporarily covered with plastic sheeting. All stockpiled soils shall be stabilized from erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

Alternate BMP's:

- Plastic Covering (C123)
- Sodding (C124)
- Topsoiling (C125)

Element #6 – Protect Slopes

The slopes within the clearing limits/area to be disturbed are nearly flat. Additional protection is not needed.

Element #7 – Protect Drain Inlets

All storm drain inlets and culverts made operable during construction shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash water separate from entering storm drains until treatment can be provided. Storm Drain Inlet Protection (BMP C220) Will be implemented for all drainage inlets and culverts that could potentially be impacted by sedimentladen runoff on and near the project site. The following inlet protection measures will be applied on this project:

- Storm Drain Inlet Protection (C220)

Element #8 – Stabilize Channels and Outlets

Where site runoff is to be conveyed in channels or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion. No surface channels or outlets are proposed for this project.

Element #9 – Control Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

Specific construction related BMP's to be used include:

Material Delivery, Storage and Containment (C153)

Element #10 – Control Dewatering

Work will commence during the dry season, therefore no dewatering is likely to be required. If groundwater is encountered during construction, the water from all de-watering systems for trenches and foundations may be disposed of in one of the following manners:

- (1) Foundation, vault, and trench de-watering water which have similar characteristics to stormwater runoff at the site shall be discharged into a controlled conveyance system prior to discharge to a sediment trap or sediment pond.

(2) Clean, non-turbid de-watering water, such as well-point ground water, can be discharged to systems tributary to or directly into surface waters of the state, provided the de-watering flow does not cause erosion or flooding of receiving waters. Clean de-watering water should not be routed through stormwater sediment ponds. Other disposal options for clean, nonturbid de-watering water may include:

- (a) Infiltration;
- (b) Transportation off-site in a vehicle (such as a vacuum flush truck) for legal disposal in a manner that does not pollute state waters;
- (c) On-site chemical treatment or other suitable treatment technologies approved by the department and Washington State Department of Ecology;
- (d) Sanitary sewer discharge with local sewer district approval, if there is no other option; and
- (e) Use of a sedimentation bag with outfall to a ditch or swale for small volumes of localized de-watering water.

Element #11 – Maintain BMPs

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with each particular BMP's specifications. Visual monitoring of the BMPs will be conducted at least once every calendar week and within 24 hours of any rainfall event (typically around 0.5" in 24-hour period) that causes a discharge from the site. If the site becomes inactive, and is temporarily stabilized, the inspection frequency may be reduced to once every month, during the dry season.

All temporary erosion and sediment control BMPs shall be removed within 30 days after the final site stabilization is achieved or after the temporary BMPs are no longer needed. The need for TESC measures continuance or removal shall be determined by the designated site CESC lead person with concurrence of the County inspector. Trapped sediment shall be removed or stabilized on site. Disturbed soil resulting from removal of BMPs or vegetation shall be permanently stabilized.

Element #12 – Manage the Project

Erosion and sediment control BMPs for this project have been designed based on the following principles:

- Design the project to fit the existing topography, soils, and drainage patterns.
- Emphasize erosion control rather than sediment control.
- Minimize the extent and duration of the area exposed.
- Keep runoff velocities low.
- Retain sediment on site.
- Thoroughly monitor site and maintain all ESC measures. A Certified Erosion and Sedimentation Control Lead (CESCL) person shall be assigned to the

project and will file regular and special inspection reports with the County Planning and Land Services Department.

- Schedule major earthwork during the dry season.

In addition, project management will incorporate the key components listed below: As this project site is located west of the Cascade Mountain Crest, the project will be managed according to the following key project components:

Phasing of Construction

- The construction project is being phased to the extent practicable in order to prevent soil erosion, and, to the maximum extent possible, the transport of sediment from the site during construction.
- Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the clearing activities during each phase of construction, per the Scheduling BMP (C 162).

Seasonal Work Limitations

- From October 1 through April 30, clearing, grading, and other soil disturbing activities shall only be permitted if shown to the satisfaction of the local permitting authority that silt-laden runoff will be prevented from leaving the site through a combination of the following:
 - Site conditions including existing vegetative coverage, slope, soil type, and proximity to receiving waters; and

- Limitations on activities and the extent of disturbed areas; and
- Proposed erosion and sediment control measures.
- Based on the information provided and/or local weather conditions, the local permitting authority may expand or restrict the seasonal limitation on site disturbance.
- The following activities are exempt from the seasonal clearing and grading limitations:
 - Routine maintenance and necessary repair of erosion and sediment control BMPs;
 - Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil; and
 - Activities where there is 100 percent infiltration of surface water runoff within the site in approved and installed erosion and sediment control facilities.

Coordination with Utilities and Other Jurisdictions

- Care has been taken to coordinate with utilities, other construction projects, and the local jurisdiction in preparing this SWPPP and scheduling the construction work.

Inspection and Monitoring

- All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Site inspections shall be conducted by a person who is knowledgeable in the principles and practices of erosion and sediment control. This person has the necessary skills to:
 - Assess the site conditions and construction activities that could impact the quality of stormwater, and

- Assess the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges.
- A Certified Erosion and Sediment Control Lead shall be on-site or on-call at all times.
- Whenever inspection and/or monitoring reveals that the BMPs identified in this SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, appropriate BMPs or design changes shall be implemented as soon as possible.

Maintaining an Updated Construction SWPPP

- This SWPPP shall be retained on-site or within reasonable access to the site.
- The SWPPP shall be modified whenever there is a change in the design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the state.
- The SWPPP shall be modified if, during inspections or investigations conducted by the owner/operator, or the applicable local or state regulatory authority, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within seven (7) days following the inspection.

Specific management related BMP's to be used include:

- Certified Erosion and Sediment Control Lead (C160)
- Scheduling (C162)

Section VI – Special Reports and Studies

None.

Section VII – Other Permits

A building permit will be required for construction of the house.

Sewer and water service permits will be required.

Section VIII – Operation and Maintenance Manual

Minimum Requirement #9 is not triggered for this project so an Operations and Maintenance Manual is not required.

Section IX – Bond Quantities Worksheet

Any required bond amounts will be calculated if required for permit issuance.

The proposed residence has been designed to comply with applicable floodplain development requirements while minimizing impacts to flood storage and flood conveyance functions on the site. Existing site elevations within the proposed development area range generally from approximately Elev. 32.2 feet to Elev. 32.5 feet. The mapped floodplain elevation applicable to the site is Elev. 35.8 feet. The proposed grading has been specifically limited so that general site fill does not exceed Elev. 35.8 feet, except for the structure itself and immediate structural foundation components required to elevate the finished floor of the residence. The proposed Finished Floor Elevation (FFE) of the residence is Elev. 37.0 feet, which places the occupied structure above the applicable flood protection elevation. The elevated structure is intended to reduce flood risk to the residence while minimizing disturbance to surrounding floodplain areas.

Floodplain Fill Mitigation

The grading design minimizes floodplain impacts through the following measures:

General site grading associated with the yard, drainage transitions, and access improvements is limited to approximately Elev. 35.8 feet and does not extend above the mapped floodplain elevation outside the immediate building footprint. Structural elevation above Elev. 35.8 feet occurs only within the residential building footprint necessary to establish the required Finished Floor Elevation of Elev. 37.0 feet.

The grading plan has been designed to minimize the lateral extent of fill placement and avoid unnecessary raising of surrounding site areas. Existing drainage patterns are generally maintained and flood conveyance paths across the site are not obstructed by proposed improvements. No enclosed areas below the flood protection elevation intended for habitation are proposed. The project does not propose levees, berms, channel modifications, or other features that would redirect or concentrate flood flows onto adjacent properties.

Compensatory Flood Storage / Cut-Fill Balance

The proposed grading approach minimizes net floodplain displacement by restricting fill placement primarily to the building footprint and immediate drainage transitions adjacent to the residence. Because fill outside the structure footprint is limited to elevations at or below Elev. 35.8 feet, the project is not anticipated to result in a significant reduction in effective flood storage volume or measurable increase in flood elevations on adjacent properties.

The grading configuration maintains substantial existing pervious and undeveloped floodplain area across the site, allowing continued floodwater storage and overland conveyance during storm events.

Hydraulic Impact Statement

The proposed development is not anticipated to:

- increase base flood elevations,
- create adverse impacts to neighboring properties,
- obstruct flood conveyance,
- or materially alter existing floodplain hydraulics.

The residence is elevated above the applicable flood elevation while maintaining overall site drainage characteristics substantially consistent with existing conditions.

Floodplain Development Compliance

The proposed project shall comply with all applicable City of Puyallup floodplain development regulations, including:

- floodplain development permitting requirements,
- elevation certification requirements,
- and any additional FEMA or local flood hazard mitigation standards applicable to the site.

The grading plan has been prepared to minimize floodplain disturbance to the maximum extent practicable while allowing reasonable residential use of the property.