



civil & structural  
engineering & planning

# DRAINAGE REPORT

## WaFd Bank Olympia

406 Water ST SW  
Olympia WA 98501



7/19/2024

CG Project No. 24072.20

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## **Section I – Project Overview**

### **Section I Summary**

#### *Overview*

#### *Predeveloped Condition*

#### *Developed Condition*

#### *List of Figures/Attachments:*

- *Site Location*
- *Aerial Photograph Map*
- *Site Drainage, Drainage Basins, Sub-basins, and Site Characteristics*

#### **Overview**

This Drainage Report is for the WaFd Bank development project. The project is the development of a new bank building with associated driveways and parking areas. Site work on Parcel 78507400100 & 78507400400, totaling 8,565 sf (0.197 ac) lot. The property currently contains a 5,770 sf building and a 2,520 sf parking area. Site pervious areas are only two rectangular patches of street frontage landscaping with small bushes.

The proposed development consists of clearing and grading the site and the construction of a new bank building with associated driveways and parking areas totaling 7,795 sf (0.175 ac) of new impervious surfaces on-site.

This report is based on the Drainage Report specifications as detailed in Chapter 3.8.1 in the 2022 Thurston County Drainage Design & Erosion Control Manual (herein referred to as the DDECM).

Address: 406 Water ST SW, Olympia WA 98501  
Tax Parcel Number: 78507400100, 78507400101, 78507400400, 78507400401  
Zoning: UWH  
Drainage Basin: Capitol Lake  
Watershed: Budd/Deschutes

#### **Predeveloped Condition**

The existing site contains a developed parcel totaling 0.197 acres. The property currently contains a 5,770 sf building and a 2,520 sf parking area. The site is almost entirely covered in imperious surface. The site is flat with topography sloping down southward at less than 5%. The property is bordered by 4<sup>th</sup> Ave to the north, Water St to the west, and lots zoned as urban waterfront housing to the east and south (see Figures I-1 and I-2 for vicinity map and aerial image). See civil sheet 3 for a plan view of the site in its existing condition and proposed TESC measures.

Per the report by Mud Bay Geotechnical Services, infiltration is infeasible on the site, prohibiting most on site stormwater management type facilities. Dispersion has been ruled out due to lack of space for flow paths.

The project's clearing limits were considered as this project's land-disturbing activity area. The total land-disturbing activity area for the project is the entire site, totaling 8,565 sf (0.197 ac).

Developed Condition

The site's proposed development on-site consists of clearing and grading the site and constructing a new bank building with associated driveways and parking areas.

The new impervious surfaces on-site are approximately 7,625 sf of bank roof with associated driveways and parking areas. See impervious surfaces table below.

The proposed impervious areas are as follows:

**On-Site Hard Surface:**

Bank Roof Area:	2,765 sf	(0.063 ac)
Walkways Area:	480 sf	(0.011 ac)
Driveway and Parking:	4,380 sf	(0.101 ac)
<b>Proposed On-Site Hard Surface:</b>	<b>7,625 sf</b>	<b>(0.175 ac)</b>

**Off-Site Hard Surface:**

Bank Roof Area:	1,333 sf	(0.031 ac)
Walkways Area:	480 sf	(0.009 ac)
<b>Proposed Off-Site Hard Surface:</b>	<b>1,736 sf</b>	<b>(0.040 ac)</b>



Figure I-1: Vicinity map (from Thurston County Property Map)



Figure I-2: Aerial image (from Google Maps)

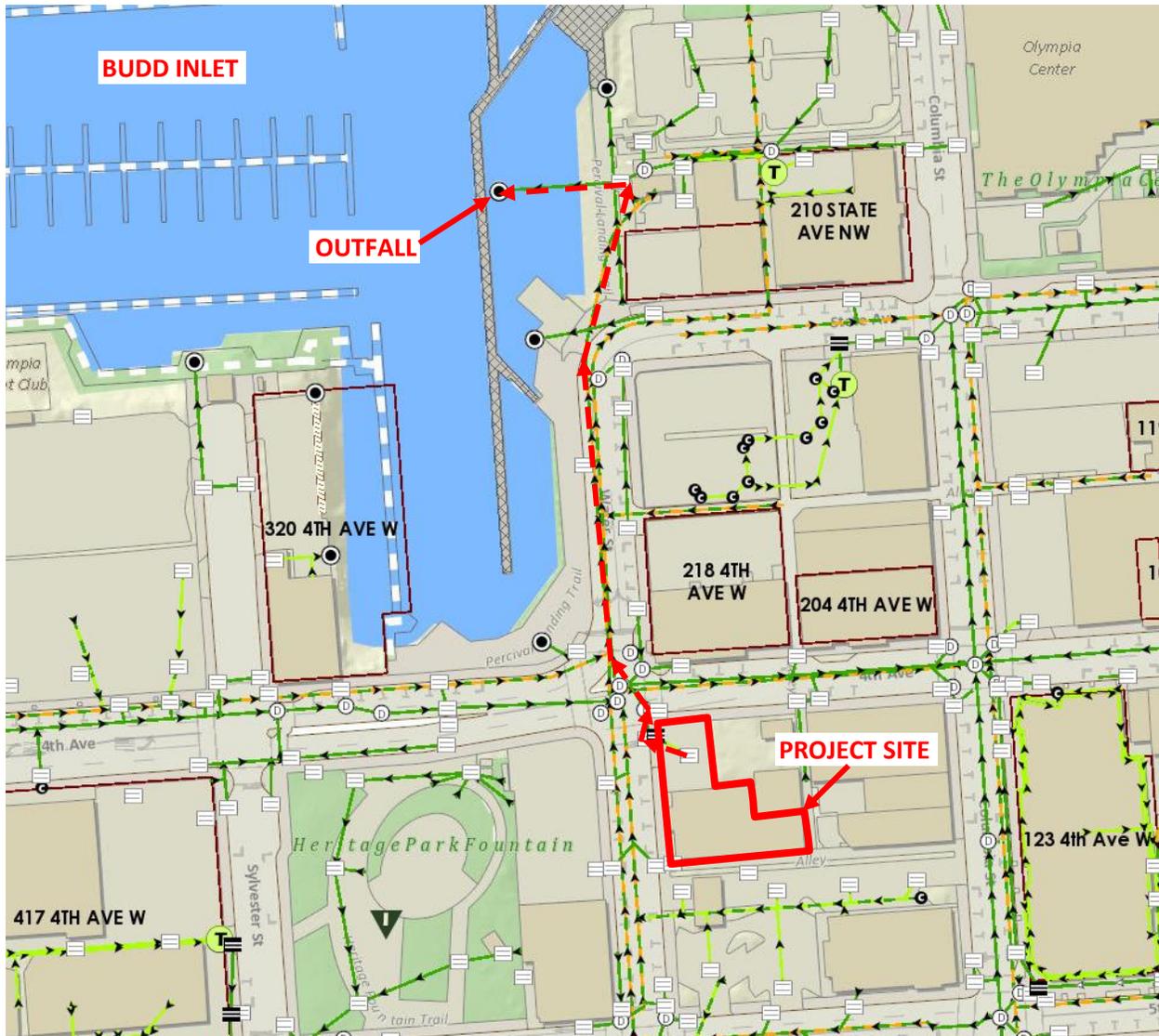


Figure I-3: Stormwater System Map (from City of Olympia Stormwater System Map)

## Section II – Core Requirements

### Section II Summary

*Narrative*

*Core Requirements*

### Core Requirements

Stormwater core requirements were determined per Volume I of the Olympia Manual and the 2019 Department of Ecology Stormwater Management Manual for Western Washington (SWMMWW). As the project has more than 5,000 sf of proposed impervious surface, the project will comply with Core Requirements #1-9 for new and replaced hard surfaces and the land disturbed by the project.

**Core Requirement 1: Preparation of Stormwater Site Plans:** The stormwater site plan consists of this report and the civil drawings and is prepared in accordance with Chapter 3 of Volume I of the SWMMWW.

**Core Requirement 2: Stormwater Pollution Prevention Plans (SWPPPs):** The SWPPP shall include a narrative and drawings. The SWPPP narrative shall include documentation that addresses the 13 elements of Construction Stormwater Pollution Prevention. Refer to **Error! Reference source not found.** and the civil drawings.

please list reference  
if available

**Core Requirement 3: Source Control of Pollution:** Source control BMPs during construction are described in Section IV, which addresses Core Requirement 2. It is not anticipated that permanent source control BMPs will be required as the site does not contain any of the activities listed in Vol IV Ch. 3-5 of the SWMMWW.

**Core Requirement 4: Preservation of Natural Drainage Systems and Outfalls:** Natural drainage patterns shall be maintained, and discharges from the project site shall occur at the natural location, to the maximum extent practicable. The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters and down-gradient properties. All projects shall submit an off-site qualitative analysis. A qualitative analysis of the upstream and downstream system entering the site is presented in Section III.

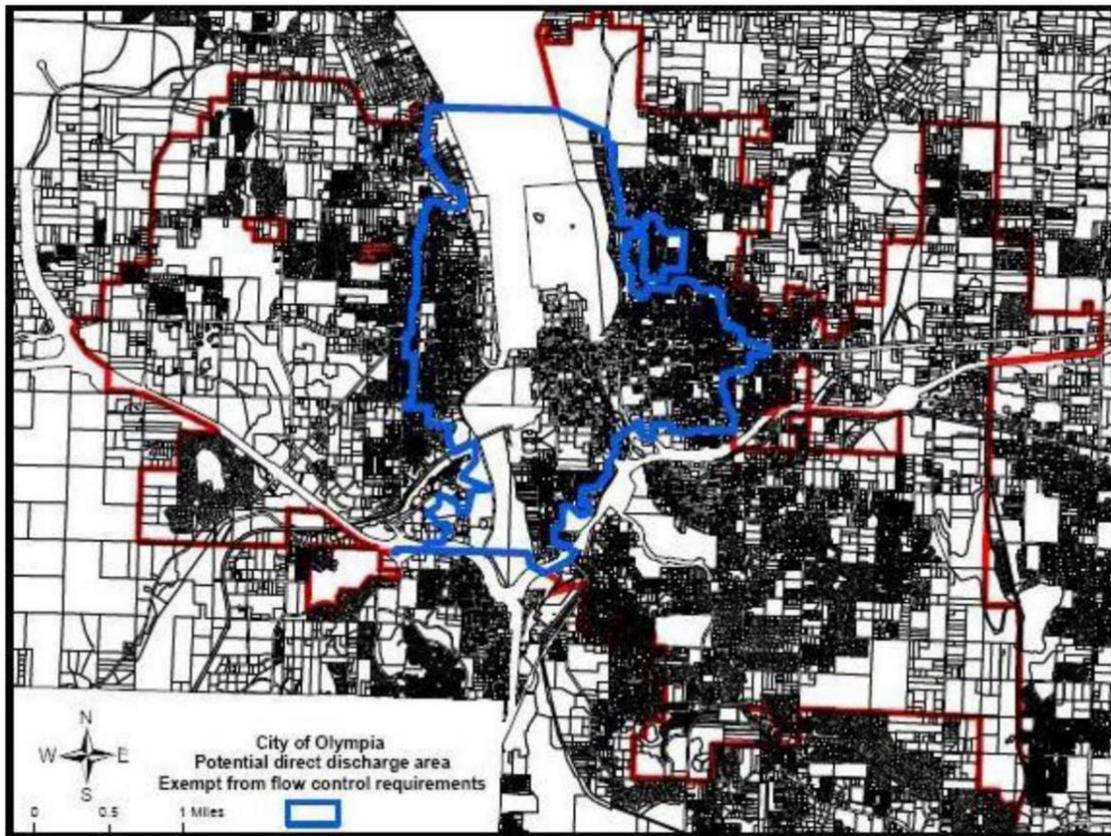
**Core Requirement 5: On-site Stormwater Management:** The project shall address the use of On-Site Stormwater Management BMPs from List No. 3 for all new plus replaced hard surfaces and land disturbed or demonstrate compliance with the LID Performance Standard. The project will address the use of On-Site Stormwater Management BMPs from List No. 3. See Section V for BMP feasibility review. Post-construction soil quality and depth in accordance with BMP T5.13 in Chapter 5 of Volume V of the SWMMWW will be used for all disturbed pervious areas.

**Core Requirement 6: Runoff Treatment:** This requirement applies to the new plus replaced hard surfaces and the converted vegetation areas. The following require construction of stormwater treatment facilities: i.) Projects in which the total of pollution-generating hard surface (PGHS) is 5,000 square feet or more in a threshold discharge area of the project, or ii.) projects in which the total of

pollution-generating pervious surfaces (PGPS) – not including permeable pavements is 0.75 acres or more in a threshold discharge area, and from which there will be a surface discharge in a natural or man-made conveyance system from the site. The project adds less than 5,000 sf of PGHS, and runoff treatment is not required. See Section V.

**Core Requirement 7: Flow Control:** Projects must provide flow control to reduce the impacts of stormwater runoff from hard surfaces and land cover conversions. The requirement below applies to projects that discharge stormwater directly, or indirectly through a conveyance system, into a fresh waterbody. The following circumstances require achievement of the standard flow control requirement for western Washington: i.) Projects in which the total of effective impervious surfaces is 10,000 square feet or more in a threshold discharge area, or ii.) projects that convert 0.75 acres or more of vegetation to lawn or landscape, or iii.) projects that through a combination of hard surfaces and converted vegetation areas cause a 0.15 cubic feet per second (cfs) increase or greater in the 100-year flow frequency from a threshold discharge area as estimated using the Western Washington Hydrology Model or other approved model and 15-minute time steps. The total target effective new/replaced hard surfaces in the threshold discharge area is less than 10,000 sf, and the project is in a flow control exemption zone per figure 2.5.2 Potential Direct Discharge Area. See Section IV.

**Figure 2.5.2 Potential Direct Discharge Area**



**Core Requirement 8: Wetlands Protection:** No wetlands are located near the site and wetlands protection is not required.

**Core Requirement 9: Operation and Maintenance:** An Operation and Maintenance Manual that is consistent with the provisions in Volume V of the Drainage Manual is required for proposed Stormwater Treatment and Flow Control BMPs/facilities. The party (or parties) responsible for maintenance and operation shall be identified in the operation and maintenance manual. For private facilities, a copy of the Operation and Maintenance Manual shall be retained on-site or within reasonable access to the site and shall be transferred with the property to the new owner. For public facilities, a copy of the operation and maintenance manual shall be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection. See Section VII.

Figure I-3.2: Flow Chart for Determining Requirements for Redevelopment

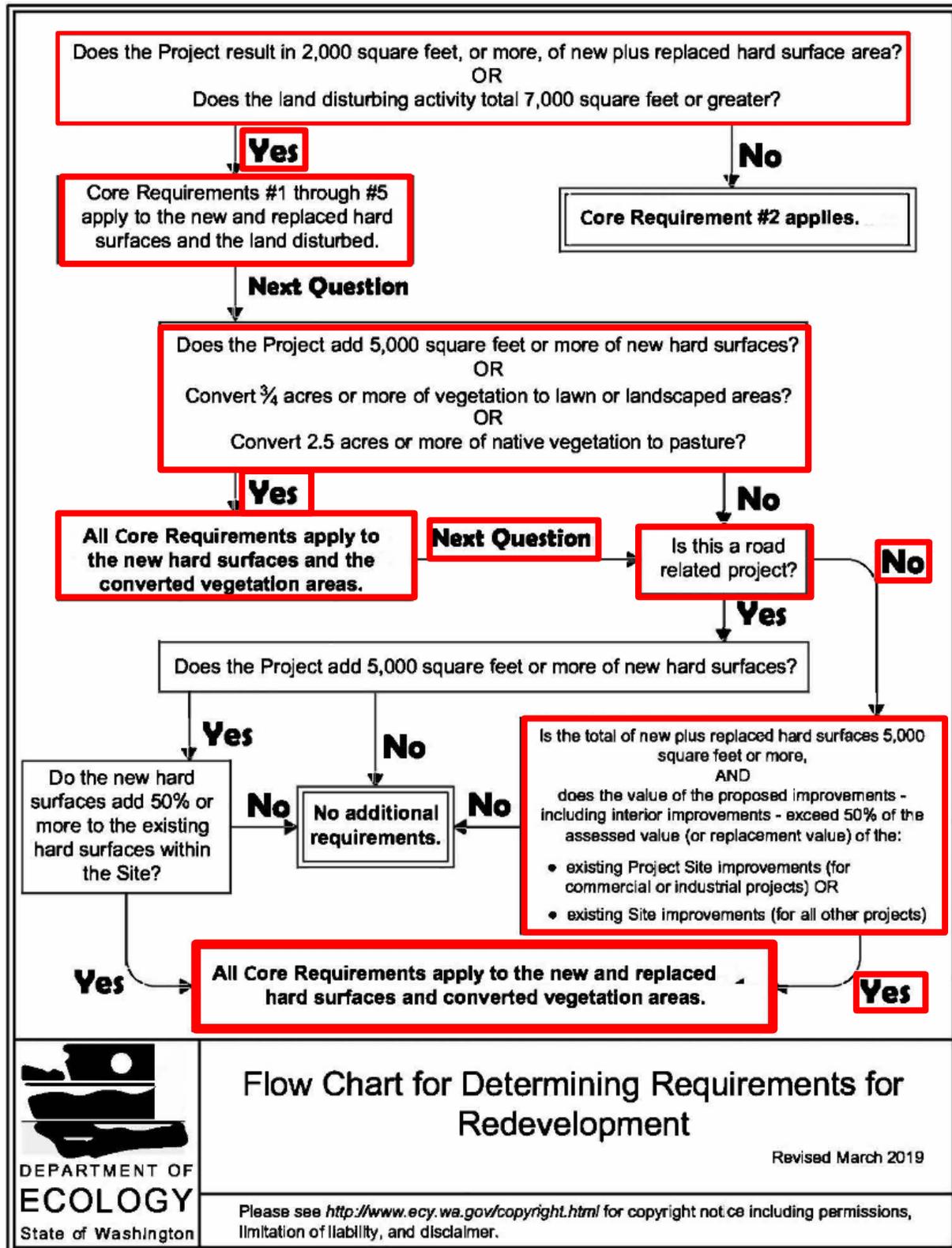


Figure I-1. Redevelopment flow chart from 2019 SWMMWW

## **Section III – Off-Site Analysis**

### **Section III Summary**

*Task 1: Study Area Definition and Maps*

*Task 2: Resource Review*

*Task 3: Field Inspection*

*Task 4: Drainage System Description and Problem Descriptions*

*Task 5: Mitigation of Existing or Potential Problems*

### **Task 1: Study Area Definition and Maps**

The study area is defined as the project site and the area one mile downstream (minimum flow path distance) from the proposed discharge location, for the purposes of Task 2, and is defined as the project site and a minimum of one-quarter mile downstream from the proposed discharge location for the purposes of Tasks 3, 4, and 5.

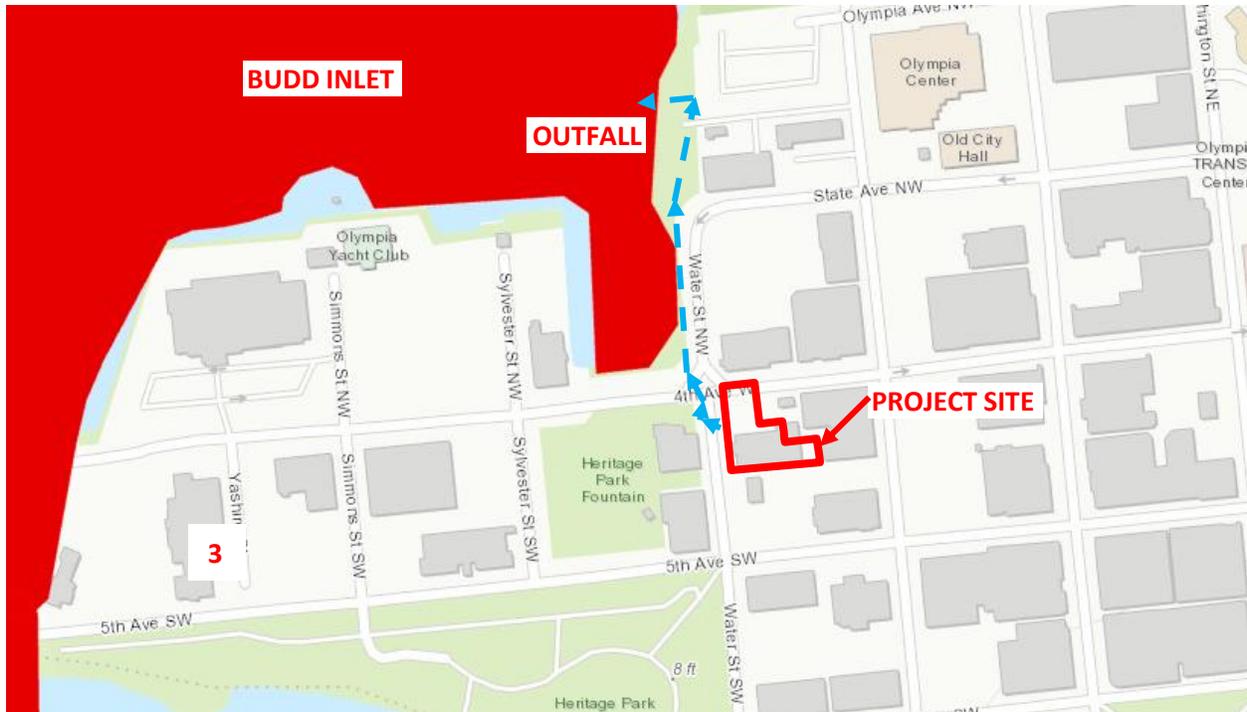
The site is located in the city of Olympia. The site currently has an existing building and parking area. Site pervious areas are only two rectangular patches of street frontage landscaping with small bushes. Site topography descends from south to north at an average slope of less than 5%.

### **Task 2: Resource Review**

Drainage and water quality problems and complaints were investigated using Olympia iMap and DOE's Water Quality Atlas. There do not appear to be any relevant complaints in recent years that pertain to the route that runoff would follow from the project site. DOE's Water Quality Atlas Categorizes Budd Inlet as Category 5. Figure III-1 shows a snip from DOE's Water Quality Atlas with the approximate flow route from the site and drainage complaints. The sensitive areas and complaints will be discussed in Task 5.

### **Task 3: Field Inspection**

A field inspection will be conducted following the stormwater scoping meeting and prior to permit submittal.



**Figure III-1: Approximate flow route ¼ mile downstream project site with water quality categories (from DOE water quality map)**

Task 4: Drainage System Description and Problem Descriptions

A field inspection will be conducted following the stormwater scoping meeting and prior to permit submittal. There are no known drainage issues at this time.

Task 5: Mitigation of Existing or Potential Problems

A field inspection will be conducted following the stormwater scoping meeting and prior to permit submittal. There are no known drainage issues at this time.

## **Section IV – Flow Control, Low Impact Development (LID) and Water Quality Facility Analysis and Design**

### **Section IV Summary:**

#### *Narrative*

#### *PART A: Existing Site Hydrology*

#### *PART B: Developed Site Hydrology*

#### *PART C: Performance Standards*

#### *PART D: Flow Control System*

#### *PART E: Water Quality System*

Flow control per Core Requirement #7 is required as the site adds more than 5,000 sf of new and/or replaced hard surface area. Core Requirement #8: Water Quality: Water Quality facilities from the Basic Water Quality menu are not required for the project since the project development proposes less than 5,000 sf of PGIS (4,380 sf). Flow Control Best Management Practices (BMPs) must also be evaluated per Core Requirement #5 to mitigate stormwater runoff impacts because the project proposes to add more than 2,000 sf of impervious surface.

#### **PART A: EXISTING SITE HYDROLOGY**

There are currently a building and a parking area. Site pervious areas are only two rectangular patches of street frontage landscaping with small bushes. The total lot area of the two parcels is approximately 8,565 sf (0.197 ac) and the proposed area of development on-site (the proposed clearing limits area) is approximately the entire site. Site topography slopes downward from south to north at an average slope of less than 5%. Therefore, the site's natural discharge location is to the north.

#### **PART B: DEVELOPED SITE HYDROLOGY**

The proposed development consists of clearing and grading the site and the construction of a new bank building with an associated driveway and parking area totaling 7,625 sf (0.175 ac) of new impervious surfaces on-site.

Design and infeasibility criteria from Appendix C of the SWDM were used to determine feasibility of Flow Control BMPs for this project's site improvements. Since the project is on a lot that is between ½ acre and 5 acres in area, the project must evaluate Large Lot BMP requirements of Section C.1.3.2 of the SWDM. Full Dispersion was found to be infeasible because of insufficient area for downstream flowpaths and native grow retention areas. Full Infiltration per Section C.2.2 of the SWDM was found to be feasible for the new and replaced impervious surfaces. See Part D for more.

The proposed impervious areas are as follows:

**On-Site Hard Surface:**

Bank Roof Area:	2,765 sf	(0.063 ac)
Walkways Area:	480 sf	(0.011 ac)
Driveway and Parking:	4,380 sf	(0.101 ac)
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**Off-Site Hard Surface:**

Bank Roof Area:	1,333 sf	(0.031 ac)
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PART C: PERFORMANCE STANDARDS

Flow control is not required per Core Requirement #7 because the site is in a direction discharge basin, please see the map in section II. Water Quality facilities from the Basic Water Quality menu are not required for the project since the project development proposes less than 5,000 sf of PGIS (4,380 sf).

PART D: FLOW CONTROL SYSTEM

The site is in a portion of the City exempt from flow control, see map in section II.

PART E: WATER QUALITY SYSTEM

The project proposes less than 5,000 square feet of PGIS. Therefore, water quality treatment is not required.

## Section V – Permanent Stormwater Control Plan Narrative

### Section V Summary

#### *Narrative*

#### *On-site Stormwater Management*

#### *Runoff Treatment*

#### *Flow Control*

The project triggers Core Requirements #1-9 of the SWMMWW. This section addresses MR #5: On-site Stormwater Management, MR #6: Runoff Treatment and MR #7: Flow Control.

### On-site Stormwater Management

To meet MR #5, the project must either use On-site Stormwater Management BMPs from List #3 or demonstrate compliance with the LID performance standard per Section 2.5.5 of Volume I of the 2019 SWMMWW. The project will comply with List #3 as follows:

#### Lawn and landscaped areas:

1. Post-construction soil quality and depth in accordance with BMP T5.13 in Chapter 5 of Volume V of the SWMMWW will be used for all disturbed pervious areas.

#### Roofs:

1. Downspout Infiltration in accordance with BMP T5.10A is **infeasible** per recommendation from the Geotech engineer.
2. Downspout Dispersion in accordance with BMP T5.10B is **infeasible** as site constraints do not allow for the 25-foot flowpath required.
3. Perforated Stub-out Connections in accordance with BMP T5.10C are **infeasible** per recommendation from the Geotech engineer.

#### Other Hard Surfaces:

1. Sheet Flow Dispersion in accordance with BMP T5.12 is **infeasible** since there is no room on-site to allow for a vegetated buffer and transition zone to disperse the runoff.
2. Concentrated Flow Dispersion in accordance with BMP T5.11 is **infeasible** since there is no room on-site to allow for a vegetated buffer and transition zone to disperse the runoff.

Due to the infeasibility of BMPs from List #3 for the project, stormwater runoff from the site will be conveyed directly to the public storm systems as described below.

### Runoff Treatment

Runoff Treatment per Core Requirement #6 of the SWMMWW is not required since the project adds less than 5,000 sf of PGHS.

Flow Control

Flow Control per Core Requirement #7 of the SWMMWW is not required since the project has a total effective impervious surface of less than 10,000 square feet. The project will directly discharge stormwater into the public storm system.

## **Section VI – Special Reports and Studies**

### **Section VI Summary:**

#### *Narrative*

The following reports are provided in this section:

1. Geotechnical Evaluation by Mud Bay Geotechnical Services

## **Section VII – Other Permits**

### **Section VII**

#### *Narrative*

It is not anticipated that other permits will be required for this project.

## Section VIII – CSWPPP Analysis and Design

### Section VIII Summary

*Narrative*

*ESC Measures*

*SWPPS Measures*

This section of the Drainage Report is a summary of erosion controls and source controls for the site and serves as a supplement to the erosion control plan civil drawing sheets.

In the proposed condition, a new bank building with associated driveways and parking areas resulting in 7,795 sf (0.175 ac) of new impervious surfaces on-site.

ESC and SWPP measures were chosen per I-3.4.2 of the 2022 City of Olympia Drainage Design and Erosion Control Manual. Less than 1 acre of land will be disturbed and, therefore, the Department of Ecology SWPPP and Construction Stormwater General Permit are not required.

### ESC Measures

The following ESC measures are suggested for each category below:

#### **1. Clearing Limits:**

To protect adjacent properties, existing trees to stay, and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. The BMPs relevant to marking the clearing limits that will be applied for this project include:

- High Visibility Plastic or Metal Fence

#### **2. Cover Measures**

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. Temporary cover shall be installed if an area is to remain unworked for more than seven days during the dry season (May 1 to September 30) or for more than two consecutive working days during the wet season (October 1 to April 30). The suggested BMPs for soil stabilization that shall be used on this project include:

- Temporary & Permanent Seeding
- Mulching
- Nets & Blankets
- Plastic Covering

#### **3. Perimeter Protection**

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

- Silt Fence

#### 4. Traffic Area Stabilization

The purpose of a stabilized construction entrance is to reduce the amount of sediment transported off site and to reduce erosion of areas disturbed by vehicle traffic. As the site does not contain a preexisting driveway traffic area stabilization BMP is anticipated to be needed to access the site from Water Street. The suggested BMPs for Traffic Area Stabilization that shall be used on this project include:

- Stabilized Construction Entrance

#### 5. Sediment Retention

The site is flat enough and vegetated sufficiently enough that sediment retention is not anticipated to be needed. Sediment transport should be prevented through the use of silt fence around the downstream work area. The BMPs relevant to dust control that will be applied for this project include:

- Silt Fence

#### 6. Surface Water Collection

The purpose of surface water control is to collect and convey surface water so that erosion is minimized. The site is flat enough that surface water collection is not anticipated to be needed.

#### 7. Dewatering Control

Dewatering is not anticipated to be necessary.

#### 8. Dust Control

Dust control will be used to minimize wind transport of soil. Water and/or other dust control measures may be used upon approval by the County. The BMPs relevant to dust control that will be applied for this project include:

- Dust Control

#### 9. Flow Control

Increases in the 2-year and 10-year runoff event are expected to be small due to the size and topography of the site and amount of impervious area proposed. Flow control facilities are not proposed on this site as flow control is not required per flow control exemption. The site falls within the potential direct discharge area shown in Figure 2.5.2 Potential Direct Discharge Area of volume 1 of the City of Olympia Drainage Design and Erosion Control Manual.

#### 10. Protect Existing and Proposed Flow Control BMPs

The proposed gravel-filled dispersion trenches should be protected during construction by placing high visibility plastic or metal fence around it. The BMPs relevant to protecting flow control BMPs that will be applied for this project include:

- High visibility plastic or metal fence

### **11. Maintain Protective BMPs**

BMPs will be maintained and repaired as necessary throughout construction. The CSWPP supervisor shall review the site for ESC and SWPPS at least weekly and within 24 hours of significant storms. All temporary erosion and sediment control BMPs will be removed within 30 days after achieving final site stabilization.

### **12. Manage the Project**

Projects shall assign a qualified CSWPPP supervisor to be the primary contact for ESC and SWPPP issues and reporting.

#### SWPPS Measures

Stormwater pollution prevention standard (SWPPS) measures are required to prevent, reduce, or eliminate the discharge of pollutants to on-site or adjacent stormwater systems. See Appendix D.2.2 of the 2021 SWDM for detailed specifications for the implementation of the following SWPPS Measures:

- **Concrete Handling:** Management practices per Section D.2.2.1 “Concrete Handling” shall be utilized to minimize and eliminate concrete, concrete process water, and concrete slurry runoff.
- **Concrete Washout Area:** Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout in an area designated by the CSWPP Supervisor to prevent pollutants from entering surface waters or ground water.
- **Sawcutting and Surfacing Pollution Prevention:** Utilize these management practices anytime sawcutting or surfacing operations take place. Sawcutting and surfacing operations include, but are not limited to, sawing, coring, grinding, roughening, hydrodemolition, bridge and road surfacing.
- **Material Delivery, Storage and Containment:** These procedures are suitable for use at all construction sites with delivery and storage of the following materials: Petroleum products such as fuel, oil and grease; Soil stabilizers and binders (e.g. Polyacrylamide); Fertilizers, pesticides and herbicides; Detergents; Asphalt and concrete compounds; Hazardous chemicals such as acids, lime, adhesives, paints, solvents and curing compounds; Any other material that may be detrimental if released to the environment.

## **Section IX – Bond Quantities, Facility Summaries, and Declaration of Covenant**

### **Section IX Summary:**

#### *Narrative*

Bond quantities, declaration of covenant, and facility summary sheets are not required for this report.

## **Section X – Operation and Maintenance Manual**

### **Section X Summary:**

#### *Narrative*

The Operation and Maintenance Manual is a standalone document that should be given to the homeowner following the construction of the project.

**WaFd Bank  
406 Water ST SW,  
Olympia WA 98501**

**OPERATION AND MAINTENANCE MANUAL**

**Date: July 2024**



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## Operation and Maintenance Manual

This Operation and Maintenance Manual has been created for the WaFd Bank. The permanent stormwater control plan consists of a direct discharge into the public storm system catch basins on-site and in the ROW. Flow control structure proposed for this project. Included in this Operation and Maintenance Manual is an 11" x 17" grading and drainage plan sheet showing the location of the facilities. Please note that this map is generated during the design phase and may not reflect all changes made in permitting and construction. CG Engineering may be contacted for an updated copy of this map once the as-built drawings are completed for the site.

Included in this manual are facility specific sheets indicating the various maintenance components of the following facilities:

**Catch Basins:** Concrete structures with steel grates that collect stormwater runoff from the site and act as junctions for storm conveyance pipes.

**Catch Basin Inserts:** Filter socks/traps to be placed in catch basins to prevent sediment-laden waters from entering the public storm system.

**Vegetation Management:** Landscaping can include grading, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering. Stormwater contaminants include toxic organic compounds, heavy metals, oils, total suspended solids, coliform bacteria, fertilizers, and pesticides.

Facilities shall be inspected for defects listed in the following facility sheets.

Most maintenance tasks are generally reactionary to a defect being found, rather than a matter of constant upkeep. It is generally expected that few to none of these defects will be present upon the yearly inspection of each facility. The facility sheets list the potential conditions warranting maintenance and the expected result following any maintenance. Several engineer's notes for specific tasks are provided within the facility sheets. **Unless otherwise noted on the facility sheets the maintenance tasks should be performed on an "as needed" basis: (a) when the described defect is visible to whomever performs the yearly inspection, or (b) should any defect become apparent between inspections.**

