

# Abbreviated Drainage Report for Lift Station 6 Rehabilitation

City of Lacey

*July 2023*

Conсор

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7/17/2023

I hereby state that this Abbreviated Drainage Plan Report for Lift Station 6 Rehabilitation has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that the City of Lacey does not and will not assume liability for the sufficiency, suitability, or performance of stormwater BMPs prepared by me.

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- Appendix 1: Lift Station 60% Drawings
- Appendix 2: Critical Areas Report
- Appendix 3: Geotechnical Report

## Attachments

- Attachment 1: Construction Stormwater Pollution Prevention Plan

## CHAPTER 1 PROJECT OVERVIEW

### 1.1 Site Information

The City of Lacey (City) Lift Station 6 (LS6) is nearing the end of its useful life and needs to be rehabilitated. The project is twofold: onsite rehabilitation of LS6 and offsite replacement of underground utilities. The onsite rehabilitation project location is 5611 32nd Court SE, Lacey WA, 98503; parcels 83450100000 and 11828110801. The offsite replacement of underground utilities is along 32<sup>nd</sup> Ct SE to Ruddell Rd SE. A vicinity map is included in **Appendix 1**. The site is bordered to the east and west by residential properties, to the north by 32<sup>nd</sup> Ct SE, and to the south by a hillside which leads down to a wetland area.

### 1.2 Project Description

The onsite LS6 rehabilitation includes: removal of existing lift station, valve vault, and appurtenances; removal and replacement of existing water meter, wash hydrant, water service, electrical panel, mechanical and electrical equipment, sewer manhole, and emergency generator; removal and abandonment of existing sewer force main and gravity sewer; conversion of existing offline storage structure into new wet well; installation of new submersible pumps, valve and meter vault, emergency generator, electrical equipment and grading/resurfacing. The offsite replacement of underground utilities includes: abandonment in-place and replacement of approximately 510 linear feet (LF) of 6-inch diameter water main; abandonment in-place and replacement of approximately 620 LF of 4 inch diameter sanitary sewer force main; installation of approximately 45 LF of 12-inch diameter concrete storm drain and three new catch basins; upgrading electrical power to lift station; and complete hot mix asphalt (HMA) roadway restoration.

### 1.3 Proposed Stormwater Drainage Design

This project is exempt from most Core Requirements and includes three new catch basins to drain both the onsite and offsite areas. Two of the catch basins are offsite and the third catch basin is onsite. The project site will be graded such that all runoff from hard surfaces will be routed to the catch basins and the City's existing storm drain system.

### 1.4 Subarea Data Tabulation

Table 1 Existing Subarea Data Tabulation

Existing Surface	Surface Type	Area (square feet)	Area (acres)
Street	Hard/Impervious	21,651	0.497
Driveway	Hard/Impervious	1,456	0.033
Native Vegetation	Pervious	1,916	0.044
	Total Parcel Area	3,372	0.077
	Total Site Area	25,023	0.574

## CHAPTER 2 DEVELOPMENT CONDITIONS AND REQUIREMENTS

### 2.1 Vesting

This report follows the City of Lacey 2022 Stormwater Drainage Manual (SDM).

### 2.2 Permits Required

The following table includes the other permits required for this project. None of the other permits conflict with the requirements set out by the SDM.

Table 2 Permits Required

Agency	Permit/Approval
City of Lacey	Conditional Use Permit
City of Lacey	Right-of-Way Access Permit
City of Lacey	SEPA Environmental Checklist

### 2.3 Project Type and Size

The project is considered redevelopment since the existing hard surfaces are more than 35% of the project area, see Table 1.

Table 3 Proposed Subarea Data Tabulation

Proposed Surface	Surface Type	Area (square feet)	Area (acres)
Street	Hard/Impervious	21,651	0.497
Driveway	Hard/Impervious	1,996	0.046
Area to be Disturbed on Lift Station Site	Hard/Impervious AND Pervious	2,255	0.052

The offsite replacement of underground utilities fall under the exemption for underground utility projects. This exemption states that underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics are only subject to Core Requirement #2: Construction Stormwater Pollution Prevention. The project proposes in-kind replacement of 32<sup>nd</sup> Ct SE and adjacent impacted driveways and lawn/landscaped areas.

The onsite rehabilitation of LS6 creates less than 2,000 square feet (sf) of new plus replaced hard surface area and disturbs less than 7,000 sf of land. According to the flow chart, Figure 2.2 of the City's Stormwater Design Manual (SDM), only Core Requirement #2 applies.

## 2.4 Critical Areas

The project site abuts a slope to a wetland at the southern edge. The wetland is a Category II with limited fish and wildlife habitat. The entirety of the onsite LS6 rehabilitation is within the 110 ft wetland buffer. However, no native tree or vegetation removal is required for this project. Additionally, the utility facility improvements, which are allowed within wetland buffers, will occur within the existing developed lift station site. The critical areas report is attached to this report in Appendix 2. The only significant change that may impact the wetland is to pull the development away from the slope at the southeast corner of the site. No adverse impacts are anticipated due to work on site.

## 2.5 Core Requirements

This section discusses each Core Requirement, its applicability to the project, and how it will be addressed. Per the SDM, projects which fall under the utility exemption are required to prepare an Abbreviated Drainage Plan and comply with Core Requirement #2. Per Figure 2.2 of the SDM, the LS6 rehabilitation is only required to comply with Core Requirement #2.

### 2.5.1 Core Requirement #1 Stormwater Site Plan

This report satisfies Core Requirement #1, as an Abbreviated Drainage Plan Report.

### 2.5.2 Core Requirement #2 Construction Stormwater Pollution Prevention

Both the onsite rehabilitation of LS6 and the offsite replacement of underground utilities require Construction Stormwater Pollution Prevention Plans (SWPPP). The SWPPP is included with this report as Attachment 1.

### 2.5.3 Core Requirement #3 Source Control of Pollution

The project is not required to address Core Requirement #3 source control of pollution.

### 2.5.4 Core Requirement #4 Preservation of Drainage Systems and Outfalls

The project is not required to address Core Requirement #4 preservation of drainage systems and outfalls.

### 2.5.5 Core Requirement #5 Onsite Stormwater Management

The project is not required to address Core Requirement #5 onsite stormwater management.

### 2.5.6 Core Requirement #6 Runoff Treatment

The project is not required to address Core Requirement #6 runoff treatment

### 2.5.7 Core Requirement #7 Flow Control

The project is not required to address Core Requirement #7 flow control.

### 2.5.8 Core Requirement #8 Wetlands Protection

The project is not required to address Core Requirement #8 wetlands protection.

## 2.5.9 Core Requirement #9 Operations and Maintenance

The project is not required to address Core Requirement #9 operations and maintenance.

## CHAPTER 3 SITE AND VICINITY DESCRIPTION

### 3.1 Existing Physiography

The project site is flat except for a sloped section at the southern end of the site. The project site is the existing LS6, which covers over half of the site with impervious area and the rest with native trees and vegetation. There is a wetland downgradient of the property, as discussed in Section 2.4.

### 3.2 Existing Improvements

The existing LS6 contains a wet well, valve vault, electrical panel, generator and associated fuel tank, and offline storage tank. There is a sanitary sewer force main leaving the site and gravity sewer entering the site. There is a water service to a wash hydrant on site. There are no wells, active or abandoned, on the site. There are no septic systems, active or abandoned, on site; only the LS6 and its appurtenances.

### 3.3 Drainage Patterns

The site and surrounding areas are relatively flat, therefore no significant run-on from adjacent properties is anticipated. Runoff from the site is sheet flow from the north end of the site to the south end of the site. There are no existing drains, channels, or swales on the site.

The top layer of soil at the site is fill, medium dense gravel with silt, sand and occasional cobbles, to a depth of 5 to 8 feet (ft) below ground surface (bgs). Below the fill is recessional outwash, loose to medium dense silty sand and sand with silt, to the full depth of exploration or 26 to 31 ft bgs. Surface conditions of trees on the sloped area of the site indicate surficial creep. Full discussion of the geotechnical conditions of the site is provided in the Geotechnical Report, included with **Appendix 3**.

### 3.4 Qualitative Analysis

Qualitative analysis is required for Core Requirement #4 preservation of drainage systems and outfalls. This project is not required to address Core Requirement #4, therefore qualitative downstream analysis is not required. The onsite rehabilitation site area is small enough that no significant impact is anticipated. The offsite underground utility replacement will replace existing surfaces in kind, which will produce no impact to the existing drainage patterns.

### 3.5 Quantitative Analysis

A quantitative analysis is not anticipated to be required for the project.

## CHAPTER 4 SOILS AND INFILTRATION ANALYSIS

Infiltration analysis was not performed as no infiltration BMPs will be utilized for this project.



## CHAPTER 5 ON-SITE STORMWATER MANAGEMENT AND LID

The project is not required to consider Core Requirement #5 on-site stormwater management and low impact development (LID)

## CHAPTER 6 RUNOFF TREATMENT AND FLOW CONTROL

This project is not required to consider Core Requirement #6 flow control nor Core Requirement #7 runoff treatment.

## CHAPTER 7 RUNOFF COLLECTION AND CONVEYANCE SYSTEM

This project is connecting to an existing 8-inch diameter storm drain with three new catch basins. One catch basin will be onsite to collect the runoff from LS6. The other two catch basins will be offsite on 32<sup>nd</sup> Ct SE to better collect the runoff from this street. The existing system will not be significantly impacted by the new catch basins as the only new input will be for LS6, which collects from less than 2,000 sf of impervious surface.

## CHAPTER 8 SOURCE CONTROL

This project is not required to consider Core Requirement #3 source control.

## CHAPTER 9 COVENANTS, DEDICATIONS, EASEMENTS, AGREEMENTS, AND GUARANTEES

The project site is owned by the City, therefore no covenants, dedications, easements, agreements, or guarantees are required.

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