draft/final wetland and stream MitiGation Plan

Project Name

Project County, Washington

Work Order:

WIN:

PIN:

Prepared By

WSDOT XX Region

Office Name

Month Day, Year



draft/final wetland and stream Mitigation Plan

Project Name

Month Day, Year

**Prepared By:**

Biologist Name, Title

Phone Number

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**Project Engineer**:

PE Name, Project Engineer

Phone Number

WSDOT Office

**Other Contributors and Role:**

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Contributor Name, Title, WSDOT Office/Consultant Name, role

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# Executive Summary

Text

1. Summary of project wetland impacts and compensatory mitigation.

|  |  |
| --- | --- |
| **Region** | \_\_\_\_ Region |
| **Contract Name and Number (NWR only)** | ##-### ####(###) |
| **Township/Range/Section (impact)** | TRS |
| **Permanent Wetland Impact** | ##.## acres |
| **Indirect Wetland Impact** | ##.## acres |
| **Shading Impact** | ##.## acres |
| **Long-term Temporary Wetland Impact** | ##.## acres |
| **Short-term Temporary Wetland Impact** | ##.## acres |
| **Permanent Buffer Impact** | ##.## acres |
| **Temporary Buffer Impact** | ##.## acres |
| **Compensatory Mitigation Site Location** | Location description, XX County, TRS |
| **Total Area of Compensatory Mitigation Site** | ##.## acres |
| **Wetland Establishment** | ##.## acres  |
| **Wetland Re-establishment** | ##.## acres  |
| **Wetland Rehabilitation** | ##.## acres  |
| **Wetland Enhancement** | ##.## acres  |
| **Wetland Preservation** | ##.## acres  |
| **Buffer Enhancement** | ##.## acres / ### foot wide buffer |
| **Years of Monitoring** | X Years |

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# Acronyms and Abbreviations

Ecology Washington State Department of Ecology

LWD large woody debris

MP milepost

NRCS Natural Resources Conservation Service

NWI National Wetlands Inventory

PEM palustrine emergent

PUS palustrine unconsolidated shore

PFO palustrine forested

PSS palustrine scrub-shrub

SR state route

USACE U.S. Army Corps of Engineers

USFWS U.S. Fish and Wildlife Service

WSDOT Washington State Department of Transportation

WRIA water resource inventory area

## Proposed Project

### Introduction

Text

### Project Location

Text

\*\*\*Insert Figure Here and Fill Entire Page \*\*\*

Figure 1. Project vicinity Map.

### Project Purpose and Description

Text

### Project Schedule

Text

### Responsible Parties

Text

## Existing Conditions

This chapter summarizes the landscape setting, existing conditions of the wetlands and streams within or near the project setting, and watershed conditions. Summaries of existing conditions for each wetland and buffer that will be impacted are provided in the *Wetland and Stream Assessment Report* (author, date) that includes rating forms and field data forms.

### Landscape Setting

#### Wetlands

Text

#### Streams

Text

#### Buffers/Uplands

Text

### Land Use History

Text

### Watershed Context

Text

## Impact Assessment

This chapter summarizes the landscape setting, the existing conditions of the wetlands to be impacted, and the assessment of impacts to wetlands and functions related to the proposed project.

### Wetlands

Text

#### Permanent Wetland Impacts

The proposed project will result in unavoidable permanent impacts to # wetlands (Table 2).

#### Permanent Conversions

Text

#### Short-term Temporary Wetland Impacts

Text

#### Long-term Temporary Wetland Impacts

Text

#### Indirect Wetland Impacts

Text

#### Shading

Text

1. Wetland size, classification, and area impacted by the proposed project.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Wetland Number** | **Cowardina** | **HGM** | **Ecology Ratingb** | **Local Jurisdiction Ratingc** | **Wetland Size (acre)** | **Permanent****Impact Area (acre)**  | **Percent Impacted** | **Long-Term Temporary Impact Area (acre)** | **Short-term Temporary Impact Area (acre)** | **Indirect Impact Area (acre)** | **Shading Impact Area (acre)** |
|  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | **Total** |  |  |  |  |  |  |  |

aCowardin, et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PUS = Palustrine Unconsolidated Shore; PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested.

bEcology rating according to Hruby (2014).

cList local jurisdiction ordinance code that determines wetland rating category.

### Impacts on Wetland Functions

Text

1. Impacted wetland functions.

|  |  |
| --- | --- |
| **Function/Valuea** | **Wetland** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **Water Quality Functions** |
| Sediment Removal |  |  |  |  |  |  |  |  |  |  |  |
| Nutrient and Toxicant Removal |  |  |  |  |  |  |  |  |  |  |  |
| **Hydrologic Functions** |
| Flood Flow Alteration |  |  |  |  |  |  |  |  |  |  |  |
| Erosion Control & Shoreline Stabilization |  |  |  |  |  |  |  |  |  |  |  |
| **Habitat Functions** |
| Production & Export of Organic Matter |  |  |  |  |  |  |  |  |  |  |  |
| General Habitat Suitability |  |  |  |  |  |  |  |  |  |  |  |
| Habitat for Aquatic Invertebrates |  |  |  |  |  |  |  |  |  |  |  |
| Habitat for Amphibians |  |  |  |  |  |  |  |  |  |  |  |
| Habitat for Wetland-Associated Mammals |  |  |  |  |  |  |  |  |  |  |  |
| Habitat for Wetland-Associated Birds |  |  |  |  |  |  |  |  |  |  |  |
| General Fish Habitat |  |  |  |  |  |  |  |  |  |  |  |
| Native Plant Richness |  |  |  |  |  |  |  |  |  |  |  |
| **Special Characteristics** |
| Educational or Scientific Value |  |  |  |  |  |  |  |  |  |  |  |
| Uniqueness and Heritage |  |  |  |  |  |  |  |  |  |  |  |

**a** “-“ indicates that the function is not present

“X” indicates the function is present

“X\*” indicates a principal function of the wetland

### Wetland Impact Summary Tables

The impacts to wetlands and associated functions that would result from the proposed project are summarized in the sheets that follow (Tables # to #).

1. Wetland X impact summary

|  |  |  |
| --- | --- | --- |
|  \*\*\*Delete this Text, then Insert Photo\*\*\* | **Local Jurisdiction** | City of XX/XX County |
| **WRIA** |  |
| **Ecology Rating (2014)** |  |
| **City of XX/XX County** **Rating** |  |
| **City of XX/XX County****Buffer Width** | XX feet  |
| **Wetland Size** | XX.XX acres |
| **Cowardin Classification** |  |
| **HGM Classification** |  |
| **Wetland Rating System Points** |
| Water Quality ScoreHydrologic ScoreHabitat ScoreTotal Score | ######## |
| **Wetland Impacts** | Permanent ## acres (#% of Wetland #)Temporary 0Indirect 0 |
| **Dominant Vegetation Impacted** |  |
| **Soil Series Impacted** |  |
| **Hydrology Impacted** |  |
| **Water Quality Functions Impacted** |  |
| **Hydrologic Functions Impacted** |  |
| **Habitat Functions Impacted** |  |

### Streams

Text

#### Permanent Stream Impacts

Text

#### Temporary Stream Impacts

Text

### Stream Impact Summary Tables

The impacts to streams and associated functions that would result from the proposed project are summarized in the sheets that follow (Tables # to #).

1. Stream # impact summary

|  |  |  |
| --- | --- | --- |
| \*\*\*Delete this Text, then Insert Photo\*\*\* | **Stream Name** |  |
| **WRIA** |  |
| **WDFW Site ID** |  |
| **Local Jurisdiction(s)** |  |
| **WDNR Stream Type** |  |
| **Local Jurisdiction Stream Rating** |  |
| **Local Jurisdiction Stream Buffer Width** |  |
| **Description** |  |
| **Fish Use** |  |
| **Stream Impacts** |  |
| **Riparian Conditions Impacted** |  |
| **Channel and Habitat Conditions Impacted** |  |

### Wetland & Stream Buffers

Wetland and stream buffers overlap within the project area. Where buffers of different widths overlap, the regulatory buffer with the greatest extent was used to calculate impacts.

#### Permanent Buffer Impacts

The proposed project will permanently impact ## acres of existing buffer (Table 6).

#### Temporary Buffer Impacts

The proposed project will temporarily impact ## acres of existing buffer (Table 6).

1. Wetland and Stream Buffer Area Impacts.

|  |  |  |
| --- | --- | --- |
| **Jurisdiction** | **Permanent Buffer Impacts** | **Temporary Buffer Impacts** |
|  |  |  |
|  |  |  |
| **Total** |  |  |

## Mitigation Strategy

The mitigation strategy described in this chapter involves avoidance, minimization of wetland impacts, and compensatory mitigation for unavoidable wetland impacts.

### Impact Avoidance & Minimization

WSDOT has avoided and minimized impacts to wetlands and wetland buffers to the greatest extent practicable. Total avoidance was not possible due to constraints associated with safety and design guidelines. Impacts were minimized primarily through site-specific design techniques including (list impact reduction techniques). Compensatory mitigation will replace wetland area and functions lost because of these unavoidable impacts.

Ways in which impacts to wetlands have specifically been minimized during the roadway design include the following:

### Compensatory Mitigation

#### Regulatory Requirements

**Wetland Compensatory Mitigation Requirements**

Text

1. Recommended compensatory mitigation ratios for projects in Western Washington.\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category and Type of Wetland Impacts** | **Re-establishment or Creation** | **Rehabilitation only** | **Re-establishment or Creation (R/C) and Rehabilitation (RH)** | **Re-establishment or Creation (R/C) and Enhancement (E)** | **Enhancement Only** |
|  |  |  |  |  |  |
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|  |  |  |  |  |  |

\*Ecology et al. (2021)

According to the Local Jurisdiction Wetlands Ordinance (Local Jurisdiction, date), the following standard ratios shall apply to creation/restortion/enhancement of wetlands, which are disturbed on this project:

Text

The results of applying the recommended ratios for Ecology et al. (2006a) and Local Jurisdiction are shown in Tables 10 and 11 respectively. Applying the Ecology mitigation ratios for creation with enhancement results in ## acres of wetland creation and ## acres of wetland enhancement (Table 11). Applying the Local Jurisdiction compensatory mitigation ratios results in ## acres of wetland creation or restoration (Table 12).

1. Compensatory mitigation area recommendations per *Wetland Mitigation in Washington State* (Ecology et al. 2021).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ecology Wetland Category** | **Direct Impact Area (acres)** | **Ratio** | **Proposed Establishment Area (acres)** | **Ratio** | **Proposed Enhancement Area (acres)** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Total** |  |  |  |  |  |

1. Compensatory mitigation area required per local jurisdiction.\*

|  |  |  |  |
| --- | --- | --- | --- |
| **Local Jurisdiction Wetland Category** | **Direct Impact Area (acres)** | **Ratio** | **Proposed Establishment Area (acres)** |
| I |  |  |  |
| II |  |  |  |
| III |  |  |  |
| IV |  |  |  |
| **Total** |  |  |  |

\*Local jurisdiction Wetlands Ordinance (Local jurisdiction, date).

**Wetland and Stream Buffer Compensatory Mitigation Requirements**

Text

**Stream Compensatory Mitigation Requirements**

Text

#### Project Compensatory Mitigation Proposal

The proposed project will adversely impact a total of ## acres of depressional/slope/riverine/estuarine/lacustrine fringe/flat wetland area, Category I/II/III/IV, PFO/PSS/PEM/PAB/POW, (## acres of permanent, ## acres of temporary, ## acres of indirect impacts). These impacts will reduce or eliminate the following wetland functions: \_\_, \_\_, \_\_.

To satisfy the Governor’s Executive Order 89-10, Ecology/USACE joint guidance, and local jurisdiction CAO requirements, WSDOT will create/re-establish/rehabilitate ## acre of new Category II/III (HGM) wetland, enhance ## acres of existing Category # (HGM) wetland to a Category II/III/IV wetland, and enhance ## acres of wetland buffer area. The created and enhanced wetland will provide the following wetland functions: \_\_, \_\_, \_\_. The compensatory mitigation site will have a \_\_ foot wide upland buffer.

#### Temporary Wetland and Buffer Impact Restoration

Text

## Compensatory Mitigation

This chapter describes the key elements of the proposed compensatory mitigation site.

### Site Location

Text

Figure 2. Map showing the location of the compensatory mitigation site in relation to the project impact site.

#### Landscape Position

Text

#### Ecological Connectivity

Text

#### Historic and Current Land Use

Text

### Rationale for Site Selection

Text

### Compensatory Mitigation Site Existing Conditions

Text

#### Uplands

Text

#### Wetlands

Text

1. Compensatory mitigation site wetland summary.

|  |  |
| --- | --- |
| **Location** |  |
|  \*\*\*Delete this Text, then Insert Photo\*\*\* | **Local Jurisdiction** | City of XX/XX County |
| **WRIA** |  |
| **Ecology Rating (2014)** |  |
| **Local Rating** |  |
| **City of XX/XX County****Buffer Width** | XX feet  |
| **Wetland Size** | XX.XX acres |
| **Cowardin Class** |  |
| **HGM Class** |  |
| **Wetland Rating System Points**Water Quality ScoreHydrologic ScoreHabitat Score**Total Score** | ######## |
| **Dominant Vegetation** |  |
| **Soils** |  |
| **Hydrology** |  |
| **Rationale for Local Rating** |  |
| **Functions of Entire Wetland** |  |
| **Buffer Condition** |  |

#### Stream

Text

1. Stream impact and compensatory mitigation.

|  |  |  |  |
| --- | --- | --- | --- |
| **Impact** | **Functions Affected** | **Compensatory Mitigation** | **Functions Improved** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

#### Wildlife Habitat and Use

Text

Figure 3. Aerial photograph of the compensatory mitigation site and surrounding properties.

Figure 4. Photo of Name Compensatory Mitigation Site.

### Compensatory Mitigation Site Design

Text

#### Site Hydrology

Text

**Stream Flow**

Text

**Groundwater**

Text

1. Groundwater monitoring well data from wells located onsite.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Well #1** | **Well #2** | **Well #3** | **Well #4** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

To document soil textures and groundwater elevations, # test pits were dug onsite in month/day/year (Table 14).

#### Invasive Species Control Strategy

Text

#### Grading Design

Text

#### Planting Design

Text

1. Plant list proposed for wetland creation and enhancement areas.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wetland Community** | **Common Name** | **Scientific Name** | **Indicator Status** | **Community Composition** |
| PEM |  |  |  |  |
| PEM |  |  |  |  |
| PSS |  |  |  |  |
| PSS |  |  |  |  |
| PFO |  |  |  |  |
| PFO |  |  |  |  |

#### Habitat Features

Text

#### Buffers

Text

1. Plant list proposed for upland buffer areas.

|  |  |  |
| --- | --- | --- |
| **Common Name** | **Scientific Name** | **Community Composition** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

#### Site Protection

Text

#### Implementation Schedule

Text

### Ecological Benefits

#### Wetland Functions

The compensatory mitigation design will create a Category II/III wetland that will substantially improve water quality, hydrologic, and habitat functions (Appendix F). Functional attributes of the compensatory wetlands that will be improved and added compared to the existing impacted wetlands area:

 **Improved Functional Attributes—**Text

 **New Functional Attributes--**Text

Table 17 shows which functions and values will be present at the compensatory wetland, as well as which type of mitigation provides which functions. Table 18 compares, in more specific terms, the characteristics of the wetland and buffer areas of the impacted versus compensatory mitigation sites.

1. Wetland functions provided by various areas of the compensatory mitigation site.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function/Value** | **Creation** | **Enhancement** | **Re-establishment** | **Rehabilitation** |
| Flood Flow Alteration |  |  |  |  |
| Sediment Removal |  |  |  |  |
| Nutrient & Toxicant Removal |  |  |  |  |
| Erosion Control &Shoreline Stabilization |  |  |  |  |
| Production & Export of Organic Matter |  |  |  |  |
| General Habitat Suitability |  |  |  |  |
| Habitat for Aquatic Invertebrates |  |  |  |  |
| Habitat for Amphibians |  |  |  |  |
| Habitat for Wetland-Associated Mammals |  |  |  |  |
| Habitat for Wetland-Associated Birds |  |  |  |  |
| General Fish Habitat |  |  |  |  |
| Native Plant Richness |  |  |  |  |
| Educational or Scientific Value |  |  |  |  |
| Uniqueness and Heritage |  |  |  |  |

a “-“ means that the function will not be present; “X” means that the function present is of low quality; and “+” means the function will be present and will be of high quality.

1. Comparison of the typical wetland functions at impacted wetlands and compensatory wetlands.

|  |  |  |
| --- | --- | --- |
| **Function/Value** | **Impacted Wetland** | **Compensatory Mitigation Site** |
| Flood Flow Alteration |  |  |
| Sediment Removal |  |  |
| Nutrient & Toxicant Removal |  |  |
| Erosion Control &Shoreline Stabilization |  |  |
| Production & Export of Organic Matter |  |  |
| General Habitat Suitability |  |  |
| Habitat for Aquatic Invertebrates |  |  |
| Habitat for Amphibians |  |  |
| Habitat for Wetland-Associated Mammals |  |  |
| Habitat for Wetland-Associated Birds |  |  |
| General Fish Habitat |  |  |
| Native Plant Richness |  |  |
| Educational or Scientific Value |  |  |
| Uniqueness and Heritage |  |  |

#### Buffer Functions

Text

#### Watershed Functions

Text

## Compensatory Mitigation Site Goals, Objectives, & Performance Criteria

The proposed compensatory mitigation site will be monitored for 5/10 years to demonstrate that the intended goals and objectives are established. Goals describe the overall intent of compensatory mitigation efforts, and objectives describe individual components of the compensatory mitigation site in detail. Performance measures and performance standards describe specific on-site characteristics that indicate a function is being provided. Performance measures are used to guide management of the compensatory mitigation site. Performance standards are used to evaluate compliance with regulatory permits in the final year of monitoring. Contingency plans describe what actions can be taken to correct site deficiencies.

WSDOT uses the adaptive management process to improve compensatory mitigation success. Adaptive management involves learning from monitoring and implementing management activities, such as implementing parts of the site management or contingency plans. Information from monitoring is used to direct subsequent site management activities. As part of the adaptive management process, mid-course corrections may necessitate a change in vision for the site if nature takes its course and things turn out differently than planned. A change in vision may require renegotiation with regulators for a new set of performance standards.

### Goals

The following is the overall goal for the compensatory mitigation project:

The proposed compensatory mitigation is intended to replace wetland acreage and functions lost or impacted by the proposed project.

### Objectives

Text

### Performance Criteria

Text

### Monitoring

WSDOT staff will monitor the compensatory mitigation site for 5/10 years after installation. If all the performance standards are achieved in less than 5/10 years, WSDOT may terminate monitoring with approval of the review agencies. Quantitative monitoring will be completed and documented 1, 3, 5, 7, and 10 years after initial acceptance of the compensatory mitigation site construction. The site should be evaluated informally during the summer following plant installation to assess survival rates and document the presence of non-native invasive species. WSDOT Headquarters Wetlands Program will also complete informal (qualitative) assessments of the compensatory mitigation site in years 2, 4, 6, 8 for adaptive management purposes only. Monitoring will be designated to determine if the performance measures or performance standards have been met. Monitoring reports will be submitted for review and comment to the recipients listed in Table 21 by April following the formal monitoring activities conducted the previous year.

1. Wetland compensatory mitigation monitoring report recipients.

|  |  |
| --- | --- |
| **Permitting Agency or Organization** | **Contact Name and Address** |
| U.S. Army Corps of Engineers |  |
| Department of Ecology |  |
| \_\_Tribe of Indians |  |
| \_\_City |  |
| \_\_County |  |
| Others? |  |

WSDOT has established a comprehensive set of monitoring methods that are based primarily on Elzinga *et al.* (1998). The actual methods used to monitor each site are documented in annual monitoring reports prepared by WSDOT’s Wetlands Program, which is based in the Environmental Services Office in Olympia, Washington. Some variation of the methods occurs as techniques are improved, or standards change.

### Contingency Plan

Text

### Site Management

WSDOT will manage the site annually for the first ten years. Site management shall include noxious weed control and may include plant replacement, mulching, fertilizing, supplemental watering, and maintaining access, repairing damage from vandals, correcting erosion or sedimentation problems, or litter pickup. The first year of plant establishment includes supplemental water and care of all replacement plants installed during the first year. Management of the site will continue until it has been determined that performance standards have been met. WSDOT will retain ownership of the sites in perpetuity.

### Long-Term Management

A draft Long-Term Management (LTM) Plan will be submitted to the Corps and Ecology for approval before the end of the compliance monitoring period.

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1. Impact Plan Sheets
2. Compensatory Mitigation Site Wetland and Stream Assessment Report
3. Compensatory Mitigation Site Plan Sheets
* Schematic Mitigation Plan
* Grading Plan
* Cross Section
* Planting Plan
* Habitat Structures