

# Chapter 4. Wetland, Stream and Buffer Impact Assessment

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

## 4.1 Existing Conditions of Wetlands and Buffers to be Impacted

Summaries of existing conditions for each wetland and buffer that will be impacted are provided in the Wetland Impacts Summary Sheets (Section 4.5). Refer also to the *SR-14 Marble Road to Cape Horn Road Safety Project Wetland and Stream Assessment Report* (Appendix A) for more details about each wetland, including rating forms and field data forms.

Wetlands were classified using:

- USFWS Classification of Wetlands and Deepwater Habitats of the United States system (Cowardin et al. 1979)
- Hydrogeomorphic Classification system (Brinson 1993)
- *Washington State Wetlands Rating System for Western Washington* (Hruby 2004)
- Skamania County (Columbia River Gorge National Scenic Area) Wetlands Ordinance, Title22 (Skamania County, 2004)

## 4.2 Permanent and Temporary Wetland Impacts

The proposed project will result in unavoidable permanent impacts to 0.16 acres of wetland, 0.15 acres of a category III slope wetland (Wetland H), and 0.01 acres of a Category III depressional wetland (Wetland I). See Figure 3. The slope wetland (H) is a narrow, cattail-dominated bench adjacent to the shoulder of SR 14 that will be completely impacted by clearing and grading activities associated with intersection improvements. Overland flow that provided hydrology to wetland H will be rechanneled into a new ditch and carried to a culvert. The depressional wetland (I) is an emergent system immediately north of SR-14 associated with an unnamed tributary (non-fish bearing) to the Columbia River and will have a small amount of permanent impact associated with culvert extensions. The impacted wetlands provide low levels of water quality function, moderate levels of hydrologic functions, and low levels of habitat functions depending on stream flow. A summary of the classification and impact acreages by individual wetland can be found in Table 2.

## 4.3 Stream, Wetland and Riparian Buffer Impacts

The proposed project will result in unavoidable permanent impacts to approximately 0.26 acres of wetland/riparian buffers. All of the impacts occur to the portions of the buffers located within 300 feet of adjacent transportation infrastructure, and are the result of fill/cut activity associated with the roadway improvements. An overview of the wetland/riparian buffer impacts can be seen in Figure 3. The proposed impacts are to one Category III wetland buffer (wetland I), and one WDNR Type Np riparian buffer that are adjacent to or cross under the roadway. As wetland H will be completely eliminated by the project, the buffer will cease to exist thus no

impacts have been calculated to its buffer. A summary of the classification and impact acreages by individual wetland is found in Table 2. The impacted portions of the wetland and riparian buffers provide low to moderate levels of water quality functions, and low habitat functions.

The project proposes 272 square feet of impacts, or 68 linear feet, to the channel of a small perennial WDNR Type NP stream in the western portion of the project corridor, noted as “West Unnamed Tributary” on the JARPA plan sheets. This unnamed tributary to the Columbia River is considered “non-fish bearing” by WDFW due to the extreme gradient (in excess of 20%) below its crossing of SR-14. An additional tributary to the Columbia occurs within the eastern portion of the project and is noted on the JARPA plan sheets, however, no earth disturbing activities will occur within this portion of the project and no impacts are planned.

17 linear feet of the channel flow through wetland I and will be impacted by the extension of an existing culvert and associated scour protection. Flow will not be impacted. The channel within wetland I is primarily non-vegetated (sediment substrate) with its edges dominated by *Phalaris arundinacea* (Reed Canarygrass). The impacted section within wetland I provides for conveyance of high surface flows through the southern end of the wetland prior just upstream of the existing 24-inch culvert (figure 2A).

The remaining 51 linear feet of channel impact will occur within the roadway prism to facilitate the replacement and/or extension of existing culverts. Culverts under Marble Road and SR-14 must be extended and connected for intersection improvements at Marble Road. The proposed intersection improvements have been moved away from wetland I to reduce wetland impacts as well as to avoid impacts to historic structures (Mt. Pleasant Grange Hall) and other private properties. The primary function of the impacted channel sections is water conveyance (figure 2B).



**Figure 2A. Stream in Wetland I**



**Figure 2B. Stream between SR-14 and Marble Rd.**

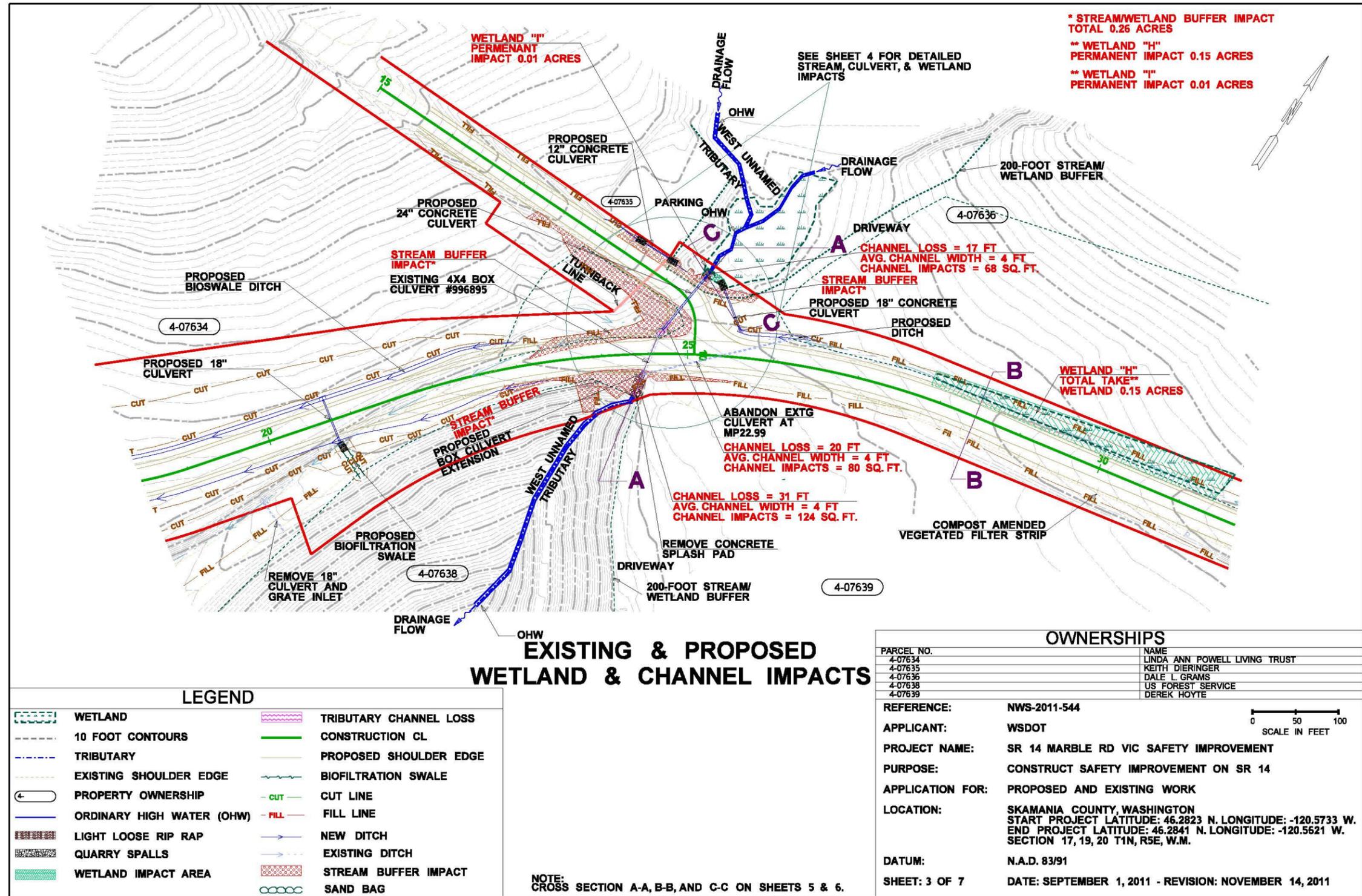


Figure 3. Wetland and Riparian Location and Impact Acreage

**Table 2. Wetland classification/area and Stream/Riparian Buffer area impacted by the proposed project.**

Wetland	Wetland Classification						Total Size	Buffer Width <sup>C</sup> (feet)	Impact Area (sf/acres <sup>D</sup> )	
	Cowardin <sup>A</sup>	HGM	Water Quality Score	Hydrologic Score	Habitat Score	Ecology <sup>B</sup>			Wetland (sf/acre)	Wetland Buffer (sf/acres)
<b>Permanent Impacts</b>										
<b>H</b>	PEM	Slope	16	12	8	III	0.15	200	6533 / 0.15	NA <sup>E</sup>
<b>I</b>	PEM	Depressional	20	12	16	III	1.0+, extends beyond RW limits	200	350 / 0.01 <sup>D</sup>	2178 / 0.05
<b>Total</b>									<b>6883 / 0.16<sup>D</sup></b>	<b>2178 / 0.05</b>
<b>Permanent Impacts</b>										
<b>Stream</b>									<b>Channel (sf)</b>	<b>Buffer (sf/acres)</b>
<b>WDNR Type Np</b>	Forested Riparian Buffer						NA	200	272	9150 / 0.21
<b>Total</b>									<b>272</b>	<b>9150 / 0.21</b>

**Notes:**

- A) Cowardin, et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent.
- B) Ecology rating according to Hruby (2004).
- C) Buffer Widths assigned according to Title 22 of Skamania County Critical Area Ordinance.
- D) Acreage was rounded up for accuracy purposes.
- E) Wetland Buffer will not exist as wetland H will be a “complete take”, thus no buffer impacts were calculated.

## 4.4 Wetland, Stream, and Wetland/Riparian Buffer Functions Impacted

Functions provided by existing wetlands within the project area were characterized using the revised *Washington State Wetland Rating System for Western Washington* (Hruby, 2004). Primary functions provided by existing wetlands within the project limits include water quality improvement; flood storage/flood flow alteration; and general habitat suitability. Not all wetlands provide all listed functions.

Functions provided by existing wetland/riparian buffers were evaluated using a qualitative approach based on the parameters outlined in the *Washington State Wetland Rating System for Western Washington* (Hruby, 2004). Although the functions provided by wetlands and riparian/wetland buffers are intrinsically different, the same parameters were used for evaluation in order to provide a consistent framework for assessment.

Although small in size (0.15 total acres), wetland H will be completely impacted by the proposed project. In addition, Wetland I will have 0.01 acres of permanent impact associated with a proposed culvert extension. Impacts associated with linear projects are difficult to avoid when bringing the transportation facility up to current safety standards for projects that require minor widening, realignment for safety purposes, intersection safety improvements, and drainage conveyance system upgrades. Long term negative impacts to the wetland/riparian buffer functions are not anticipated. The overall impact to functions is considered minimal, especially when factored against proposed temporary and permanent mitigation measures. The ecological benefits provided by the mitigation site are discussed in details in Section 6.6. A complete description of existing wetland functions and values is provided in the *SR-14 Marble Rd to Cape Horn Rd Safety Project Wetland assessment Report* (Appendix A).

The WDNR Type Np tributary to the Columbia River, shown as the “West Unnamed Tributary” in Figure 3, provides primarily water conveyance function. This tributary is considered “non-fish bearing” by WDFW due to the extreme gradient (in excess of 20%) below its crossing of SR-14.

The Potential impacts to these functions are described below:

### **Water Quality/Sediment and Nutrient Removal**

The impacted portions of Wetlands H and I provide low levels of water quality function. The high cover of persistent vegetation within the wetland improves water quality by acting as a filter to trap sediments and associated pollutants, and facilitates the sedimentation process by offering frictional resistance to surface water flows. In addition, a temporary erosion and sediment control plan will be developed and implemented for the project that will minimize any potential water quality issues during construction.

The impacted portions of the wetland/riparian buffers of Wetlands H and I consist mainly of the vegetated embankment of SR-14 and Marble Road, and provide similar water quality functions as those stated above. The proposed project may have short-term impacts to water

quality functions in the immediate project area, but the implementation of the Temporary Erosion and Sediment Control (TESC) plan, stormwater management improvements, and the revegetation of the newly constructed shoulders of SR-14 combined with high quality mitigation proposed at the Homestead Lake mitigation site will ensure that no long-term functional loss occurs.

The ecological benefits provided by the mitigation sites are discussed in details in Section 6.5.

#### **Flood Storage/Flood Flow Alteration**

The impacted portions of Wetland H and I provide minimal floodwater storage / flood flow alteration for the watershed. The vegetation within the wetland slows water velocities and thereby reduces the potential for erosive flows. The impacted portions of the wetland/riparian buffers associated with Wetland H and I may provide some minimal hydrologic function by infiltrating rainfall and reducing the velocity of surface water flows from adjacent uplands before they discharge into the adjacent aquatic system.

The loss of hydrologic function due to proposed impacts to Wetland H and I and associated wetland/riparian buffer are considered negligible when factored against the functions provided by the proposed stormwater facilities and the Homestead Lake mitigation site. The detained runoff will be stored and flow control devices will ensure the water is slowly released in order to reduce the possibility of erosive “flashy” flows and flooding events downstream. In addition, the project includes a large natural reversion area where abandoned sections of SR-14 will be removed, the area re-contoured and enhanced, and then reforested as native Oregon White Oak woodland. These project features, as well as the revegetation of all other disturbed areas with native vegetation will ensure minimal functional impact to local watersheds.

The ecological benefits provided by the mitigation sites are discussed in details in Section 6.5.

#### **General Habitat Suitability**

Most of the wetlands and wetland/riparian buffers in the project area are in close proximity to heavily used transportation corridors, and are therefore considered to have limited general habitat suitability for wetland-dependent and associated upland species. The wetlands and associated wetland/riparian buffers may provide food chain support by providing organic matter and large woody debris (LWD) to the adjacent aquatic systems, although impacts to this function will be minimal due to the lack of mature woody vegetation and overall nature of the impacted buffers (vegetated shoulders of SR-14 and minimal linear impact to Wetland H and I). In addition, Wetlands H and I provide low habitat function according to the *Washington State Wetland Rating System for Western Washington*.

The multiple Cowardin classes and associated structural complexity proposed at the Homestead Lake mitigation site will ensure a net gain of habitat function acreage in the small Columbia River tributaries, and the ecological benefits provided by the mitigation sites are discussed in details in Section 6.5.

## 4.5 Wetland Impacts Summary Sheets

The impacts to wetlands and associated functions that would result from the proposed project are summarized in the sheets that follow (**Table 3a and Table 3b**).

**Table 3a. Wetland H impact summary.**

Wetland H Impacts Summary Sheet																							
	<table border="1"> <tr> <td><b>Local Jurisdiction</b></td> <td>Skamania County</td> </tr> <tr> <td><b>WRIA</b></td> <td>28</td> </tr> <tr> <td><b>Ecology Rating (Hruby 2004)</b></td> <td>III</td> </tr> <tr> <td><b>Skamania County Buffer Width</b></td> <td>200 feet</td> </tr> <tr> <td><b>Cowardin Classification</b></td> <td>PEM</td> </tr> <tr> <td><b>HGM Classification</b></td> <td>Slope</td> </tr> <tr> <td colspan="2"><b>Wetland Rating System</b></td> </tr> <tr> <td>Water Quality Score</td> <td>16</td> </tr> <tr> <td>Hydrologic Score</td> <td>12</td> </tr> <tr> <td>Habitat Score</td> <td>08</td> </tr> <tr> <td><b>Total Score</b></td> <td><b>36</b></td> </tr> </table>	<b>Local Jurisdiction</b>	Skamania County	<b>WRIA</b>	28	<b>Ecology Rating (Hruby 2004)</b>	III	<b>Skamania County Buffer Width</b>	200 feet	<b>Cowardin Classification</b>	PEM	<b>HGM Classification</b>	Slope	<b>Wetland Rating System</b>		Water Quality Score	16	Hydrologic Score	12	Habitat Score	08	<b>Total Score</b>	<b>36</b>
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Wetland and Buffer Impact Summary																							
<b>Wetland Impacts</b>	Permanent 6533 sf, 0.15 ac																						
<b>Buffer Impacts</b>	Buffer not present once wetland is impacted 0																						
<b>Dominant Wetland Vegetation Impacted</b>	Wetland H is a palustrine emergent wetland dominated by <i>Typha latifolia</i> (broadleaf cattail) OBL.																						
<b>Dominant Vegetation Impacted</b>	The proposed impacts will impact <i>Typha latifolia</i> (broadleaf cattail) OBL.																						
Wetland/Riparian Buffer Functions Impact Summary																							
<b>Water Quality</b>	Wetland H provides moderate water quality functions by providing frictional resistance to surface water flows, which promotes the sedimentation process. Complete impact of wetland H will remove these functions from the area, although the TESC plan will ensure that no short term negative impacts to water quality occurs, and the installation of a stormwater treatment will ensure that no long term impacts to water quality occur.																						
<b>Hydrologic</b>	Ground disturbing activities associated with the impacts to wetland H and the removal of wetland buffer vegetation will result in a complete impact/take of wetland H.																						
<b>Habitat</b>	The majority of the wetland and buffer is within 200 feet of a heavily travelled transportation corridor and given the context of the location does not provide substantial habitat function. The creation of multiple Cowardin classes at the Homestead Lake mitigation site will create significant structural complexity, and therefore increased habitat function within the watershed.																						

**Table 3b. Wetland I impact summary.**

<b>Wetland I Impacts Summary Sheet</b>																							
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	<b>Ecology Rating (Hruby 2004)</b>	III																					
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	<b>HGM Classification</b>	Depressional																					
	<b>Wetland Rating System</b>																						
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Hydrologic Score	12																						
Habitat Score	16																						
<b>Total Score</b>	<b>48</b>																						
<b>Wetland and Buffer Impact Summary</b>																							
<b>Wetland Impacts</b>	Permanent 350 sf, 0.01 ac																						
<b>Buffer Impacts</b>	Permanent 2178 sf, 0.05 ac																						
<b>Dominant Wetland Vegetation Impacted</b>	Wetland I is a palustrine, emergent wetland dominated by <i>Solanum dulcamara</i> (climbing nightshade) FAC, <i>Juncus effusus</i> (soft rush) FACW, <i>Phalaris arundinacea</i> (reed Canarygrass) FACW, <i>Polygonum persicaria</i> (spotted lady's-thumb) FACW, <i>Veronica Americana</i> (American speedwell) OBL, and <i>Oenanthe sarmentosa</i> (water parsley) OBL.																						
<b>Dominant Vegetation Impacted</b>	The temporary impacts will impact <i>Phalaris arundinacea</i> (reed Canarygrass) FACW.																						
<b>Wetland/Riparian Buffer Functions Impact Summary</b>																							
<b>Water Quality</b>	Wetland I provides moderate water quality functions by providing frictional resistance to surface water flows, which promotes the sedimentation process. Complete impact of wetland I will remove these functions from the area, although the TESC plan will ensure that no short term negative impacts to water quality occurs, and the installation of a stormwater treatment will ensure that no long term impacts to water quality occur.																						
<b>Hydrologic</b>	Ground disturbing activities associated with the temporary impacts to wetland I will be completed in the dry season and are less than 2 weeks in duration. No impacts to hydrologic function are anticipated.																						
<b>Habitat</b>	The majority of the impacted buffer is within 200 feet of a heavily travelled transportation corridor and given the context of the location does not provide substantial habitat function. The creation of multiple Cowardin classes at the Homestead Lake mitigation site will create significant structural complexity, and therefore increased habitat function within the watershed.																						