

**Natural Resource Assessment
for the Proposed Beaverton Creek
Channel Enhancement Project
in Beaverton, Oregon**

(Township 1 South, Range 1 West, Section 9, Washington County)

Prepared for
City of Beaverton
Beaverton, Oregon 97076

Prepared by
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May 21, 2007

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1.0 INTRODUCTION

Pacific Habitat Services, Inc. (PHS) conducted a natural resource assessment for a section of Beaverton Creek that is proposed for a channel enhancement project. The primary purpose of the project is to increase stormwater detention and to decrease the flooding frequency of the SW Cedar Hills Boulevard and SW Hall Boulevard intersection area. The section of Beaverton Creek within the project area extends from the west side of SW Cedar Hills Boulevard to the east side of SW Hocken Avenue in Beaverton, Washington County, Oregon (T1S, R1W, Section 9). The generalized location is shown in Figure 1 (Figures are in Appendix A).

Beaverton Creek flows to the west. The north and south sides of the channel are bordered by commercial development. A carwash, a grocery store and parking lot are located to the north of the channel, and a car dealership and parking lot are located to the south. A strip of mown lawn with a few ornamental trees is located between the top of bank of the channel and the developed area to the north. This section of Beaverton Creek is very linear and channelized with near vertical banks. Site elevations to either side of the channel (top of bank and beyond) average approximately 175 feet National Geodetic Vertical Datum (NGVD), and normal surface water elevations within the channel average below 162 feet NGVD. Figure 2 is a PortlandMaps 2005 aerial photograph of the site.

This report presents the definitions and the methodology used to assess the natural resources within the project site as required by Clean Water Services (CWS). The natural resource assessment for this site includes a vegetated corridor analysis, and a wetland delineation that will be submitted as a separate report. The natural resource site assessment and wetland delineation were performed on May 11, 2007. This report also discusses the proposed channel enhancement plan.

2.0 NATURAL RESOURCE ASSESSMENT

2.1 Regulatory Jurisdiction

CWS, as part of their *Design and Construction Standards Resolution and Order 04-09* (R&O 04-09), requires that natural resource assessments be conducted for Sensitive Areas within their jurisdiction. Sensitive Areas include intermittent and perennial rivers, streams, and springs, existing and created wetlands, and natural lakes, ponds, and instream impoundments (CWS, 2004). CWS requires a wetland determination/delineation and a vegetated corridor assessment on projects that contain or are within 200 feet of a Sensitive Area.

Beaverton Creek is a perennial stream and considered to be a sensitive area, and therefore, necessitated the completion of this natural resource assessment prior to the channel enhancement project.

2.2 Natural Resource Assessment Methodology

The NRA contains two components: a delineation of the water quality sensitive areas and a vegetated corridor evaluation. A detailed discussion of the methodology is included in Chapter 3 and Appendix C of R&O 04-09 (CWS, 2004). A brief description of each component is included below.

Delineation of Water Quality Sensitive Areas

A delineation of water quality sensitive areas (wetland, intermittent/perennial streams, springs, and natural lakes or ponds) must first be conducted. For wetlands, the required criteria and suggested methodologies of the *Corps of Engineers Wetland Delineation Manual Technical Report Y-87-1*, (Environmental Laboratory, 1987) must be used to delineate the boundaries. This manual defines wetlands as requiring indicators of hydric soils, a dominance of hydrophytic vegetation, and wetland hydrology. A determination as to whether streams are intermittent or perennial must be made. The extent of all streams, springs, and natural lakes or ponds must also be determined.

Determine Vegetated Corridor Width and Condition

The width of the vegetated corridor must first be determined at least every 100 feet along the boundary of the water quality sensitive area. The corridor width can range between 15 and 200 feet and is measured horizontally from the outer edge of the water quality sensitive area. The boundaries of the sensitive areas and their vegetated corridors must be staked, surveyed, and mapped within the property and within 200 feet of the property line on a base map. The vegetated corridor width is based on the type of water resource (wetland, lake, stream), the size and nature of the water resource (acreage and/or perennial/intermittent), the size of the watershed, and the adjacent slope.

The existing condition of the vegetated corridor must be determined. This is accomplished by 1) identifying the plant community types present in the vegetated corridor, 2) documenting representative sample points, 3) characterizing each plant community type, 4) determining the cover by native species, invasive species, and noxious plants, and 5) based on this information determining whether the existing vegetated corridor condition for each plant community is good, marginal, or degraded.

3.0 DELINEATION OF WATER QUALITY SENSITIVE AREAS

On May 11, 2007, PHS conducted a wetland delineation within the project area and identified a total of approximately 0.23 acre of potentially jurisdictional waters of the state (Beaverton Creek). The 0.23 acre consists of a channelized section of Beaverton Creek with near vertical banks; no wetland fringe is present along this section of the creek. Figure 3 identifies the delineated waters of the state boundary.

4.0 VEGETATED CORRIDOR ASSESSMENT

4.1 Vegetated Corridor Width Determination

The on-site sensitive area primarily consists of a channelized section of Beaverton Creek. This section of the creek has near vertical banks. The topography along either side of the channel (top of bank and beyond) is relatively level with site elevations averaging approximately 175 feet NGVD. Normal surface water elevations within the channel average below 162 feet NGVD. The minimum regulated vegetated corridor width is 50 feet from the top of bank on the north and south sides of the channel; however, due to existing development along both sides of the channel, the actual vegetated corridor width ranges from approximately 16 to 50 feet. The results of the vegetated corridor width determination are presented in Table 1. Figure 4 identifies the on-site regulated vegetated corridor boundaries.

Table 1. Summary of Vegetated Corridor Width Determination

Sensitive Area	Stream Character		Intermittent stream Drainage area (acres)			Wetland size (acres)		Adjacent slope (%)		Width of Corridor (feet)
	Peren.	Inter.	10 - <50	50 - 100	>100	<0.5	>0.5	<25	>25	
Beaverton Creek	X							X		50

4.2 Vegetated Corridor Plant Communities

Two types of plant communities are present within the on-site vegetated corridor. Plant Community A comprises the majority of the vegetated corridor and consists of dense thickets of Himalayan blackberry (*Rubus discolor*) along the near vertical banks of the channel bordered by a fringe of intermittent plantings of sugar maple (*Acer saccharum*), English hawthorn (*Crataegus monogyna*) and shore pine (*Pinus contorta*) along the top of bank. Plant Community B consists of a strip of mown lawn with purple robe (*Robinia pseudoacacia*) trees and is located between the top of bank of the channel and the developed area to the north.

Figure 4 illustrates the locations of the plant communities and sample points, and Figures 5a and 5b show photographs of the plant communities. The following table summarizes the species distribution within the communities.

Table 2. Plant Community A

Botanical Name	Common Name	Cover (%)
Trees		5%
<i>Pinus contorta</i>	Shore pine	60
<i>Acer saccharum</i>	Sugar maple	40
Shrubs:		5%
<i>Crataegus monogyna</i> *	English hawthorn	100
Woody Vines:		90%
<i>Rubus discolor</i> *	Himalayan blackberry	100
% Cover by Natives		5%
%Tree Canopy		5%
%Invasive/Noxious		90%

* = Invasive species or noxious weed (ODA and Portland Plant List)

Table 3. Plant Community B

Botanical Name	Common Name	Cover (%)
Trees		5%
<i>Robinia pseudoacacia</i>	Purple robe	100
Ground Cover:		95%
<i>Poa annua</i>	Annual bluegrass	30
<i>Festuca arundinacea</i>	Tall fescue	60
<i>Hypochaeris radicata</i>	Spotted cat's ear	10
% Cover by Natives		<5%
%Tree Canopy		<5%
%Invasive/Noxious		10%

* = Invasive species or noxious weed (ODA and Portland Plant List)

4.3 Vegetated Corridor Plant Communities Condition

The following table summarizes the condition of each plant community in accordance with Clean Water Services standards.

Table 4. Summary of Plant Community

Corridor Condition		Plant Community	
		A	B
Good	>80% cover of native plants, <u>and</u> >50% tree canopy		
Marginal	50% -80% cover of native plants, <u>and</u> 26-50% tree canopy		
Degraded	<50% cover of native plants, <u>and</u> ≤ 25% tree canopy	X	X

4.4 Vegetated Corridor Discussion

Vegetated corridor condition is characterized on the basis of differing proportions of dominant native species, percent canopy cover, and invasive plant cover. The vegetated corridors to either side of the Beaverton Creek channel have very little native vegetation and tree canopy (≤5%) and upwards of 90% invasive plant cover. Therefore, in accordance with the CWS corridor classification system, the vegetated corridor within the project area is considered to be in “Degraded” condition.

5.0 PROJECT DESCRIPTION

5.1 Proposed Channel Enhancement

The proposed Beaverton Creek channel enhancement project will extend from the west side of SW Cedar Hills Boulevard to the east side of SW Hocken Avenue. The near vertical banks will be benched back in order to increase stormwater detention and to decrease the flooding frequency of the SW Cedar Hills Boulevard and SW Hall Boulevard intersection area. Currently, the slopes along the channel above ordinary high water (OHW) average approximately 1:1. The goal of the proposed channel enhancement project is to bench back the slopes to an average of approximately 4:1 or less steep. All grading work will take place above OHW, and therefore, will avoid impacting jurisdictional waters of the state.

The following aspects of project design further minimize and avoid impacts to waters of the state: before, during and following construction, proper preservation, restoration, and clean-up protocols will be followed, and sufficient erosion control methods, such as silt barriers, will be employed in order to prevent erosion and construction materials from entering the creek. Work will temporarily cease during storm events in order to avoid sediment from being deposited into the creek. In addition, newly exposed top soil will be seeded with an appropriate seed mix in order to prevent erosion. Staging areas and construction access shall be limited to the adjacent upland areas.

The project will not begin until preliminary erosion control measures are in place. Site erosion control measures may include, but are not limited to, methods such as silt fences, biobags, straw wattles, straw mulch, and/or seeding to be used as necessary to minimize sediment movement through the construction site. Figure 6 shows the proposed grading and erosion control plan and Figures 7a and 7b are cross-sections of the proposed channel enhancement.

5.2 Proposed Buffer Enhancement

The current condition of the existing buffer areas are considered to be in “Degraded” condition. The proposed channel enhancement project will also include buffer enhancement. As a result of the proposed grading, non-native invasive vegetation such as Himalayan blackberry will be removed. Following grading, approximately 1.05 acre of buffer area will be planted with native species of trees and shrubs, which will improve vegetation structure and diversity, and increase the quality of wildlife habitat. The overall goal of the buffer enhancement is to restore “Degraded” buffer areas to “Good” condition. Figures 8A-8C shows the proposed planting plan and Figure 9 shows the proposed irrigation plan.

5.3 Performance Standards

The success of enhancement activities requires the establishment of a desirable woody plant community. The target goal for establishing woody species is 80% overall survival each year for a minimum of three (3) years. The Applicant (City of Beaverton) will be responsible for replacement plantings, which will be required if the survival goals are not met, and the 3-year plant establishment period will start over from the time the replacement plantings are installed. In addition, the buffer areas will be contained in a conservation tract, and shall not be part of any parcel to be used for future development, and a conservation easement shall be established for the buffers and stream within the property.

6.0 PROJECT SUMMARY

- The City of Beaverton is proposing a channel enhancement project for a section of Beaverton Creek which extends from the west side of SW Cedar Hills Boulevard to the east side of SW Hocken Avenue in Beaverton, Oregon (Township 1 South, Range 1 West, Section 9, Washington County).
- Beaverton Creek, a jurisdictional water of the state (0.23 acre) is present within the project site.
- Beaverton Creek is a perennial stream and slopes adjacent to the stream channel are less than 25%, and therefore, the corresponding regulated buffer width is 50 feet. However, due to existing development on either side of the channel, the actual buffer width ranges from approximately 16 to 50 feet. Plant Communities within the vegetated corridor are considered to be in “Degraded” condition.

- The proposed channel enhancement project will consist of benching back the near vertical banks which currently average approximately 1:1 slopes, to 4:1 or less steep in order to increase stormwater detention and to decrease the flooding frequency of the SW Cedar Hills Boulevard and SW Hall Boulevard intersection area. All grading work will take place above OHW and will avoid impacting jurisdictional waters of the state.
- The proposed channel enhancement project also includes buffer enhancement. Following grading, approximately 1.05 acre of buffer area will be planted with native species of trees and shrubs, which will improve vegetation structure and diversity, and increase the quality of wildlife habitat. The overall goal of the buffer enhancement is to restore “Degraded” condition buffer areas to “Good” condition.

7.0 REFERENCES

Clean Water Services, 2004. *Design and Construction Standards Resolution and Order 04-09*

Oregon Department of Agriculture, 1998. *Noxious Weed Policy and Classification System*.

Pacific Habitat Services, Inc., 2007. *Wetland Delineation for a Section of Beaverton Creek West of SW Cedar Hills Boulevard and east of SW Hocken Avenue in Beaverton, Oregon (Township 1 South, Range 1 West, Section 9)*. Prepared for the City of Beaverton.

PortlandMaps, 2005. Aerial photograph.

Portland, City of, Bureau of Planning, 1991. *Portland Plant List*.

U.S.G.S., 1961 photorevised 1984. 7.5 Minute topographic map. Beaverton, Oregon quadrangle.

Appendix A

Figures