CRITICAL AREAS ASSESSMENT

Church Property

Woodinville, Washington

June 11, 2014
Revised November 4, 2014
Revised February 11, 2015
Revised May 15, 2015

RAEDEKE ASSOCIATES, INC.

Raedeke Associates, Inc.

Wetland & Aquatic Sciences
Wildlife Ecology
Landscape Architecture

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Title:

Critical Areas Assessment for the Church Property, Woodinville, Washington

Project Number:

2014-013-003

Date:

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1.0 INTRODUCTION

1.1 PURPOSE

This report documents the results of our field investigations and critical areas assessment of the Church property in Woodinville, Washington (Figure 1). The objectives of this study are to: (1) identify and delineate any portions of the property that could be classified as wetlands or streams, (2) provide baseline biological information on the wildlife habitat on the Church property and (3) propose buffer enhancement for a reduction of standard stream buffer width.

1.2 PROJECT LOCATION

The Church property is comprised of two parcels totaling approximately 2.98 acres, located at the southwest corner of the intersection of NE 205th Street and 136th Avenue NE in the City of Woodinville, Washington (Figure 1). This places the property in Section 3, Township 26 North, Range 5 East W.M.

1.3 SITE DESCRIPTION

The property is developed and contains houses, garages, sheds, and barns. The area near the houses is maintained as lawn while the remainder of the site contains a mixed deciduous and coniferous forest plant community. A stream occurs along the western property boundary (Figure 2).

1.4 PROPOSED DEVELOPMENT PLAN

The proposed development would convert the site to 15 single-family residential lots with a common access from 136th Avenue NE. A stormwater detention vault would be located in the eastern portion of the site (Figure 3).

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2.0 METHODS

2.1 DEFINITIONS AND METHODOLOGIES

Wetlands and streams are protected by federal law as well as by state and local regulations. Federal law (Section 404 of the Clean Water Act) prohibits the discharge of dredged or fill material into "Waters of the United States", including certain wetlands, without a permit from the U.S. Army Corps of Engineers (COE 2012). The COE makes the final determination as to whether an area meets the definition of a wetland and whether the wetland is under their jurisdiction.

The COE wetland definition was used to determine if any portions of the project area could be classified as wetland. A wetland is defined as an area "inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Federal Register 1986:41251).

We based our investigation upon the guidelines of the COE Wetlands Delineation Manual (Environmental Laboratory 1987), as further clarified in the Regional Supplement to the Corps of Engineers Delineation Manual: Western Mountains, Valleys, and Coasts Region (COE 2010). The COE wetlands manual is required by state law (WAC 173-22-035, as revised) for all local jurisdictions. As outlined in the 1987 wetland delineation manual, wetlands are distinguished by three diagnostic characteristics: hydrophytic vegetation (wetland plants), hydric soil (wetland soil), and wetland hydrology. Definitions for these terms are provided below.

Hydrophytic vegetation is defined as "macrophytic plant life growing in water, soil or substrate that is at least periodically deficient in oxygen as a result of excessive water content" (Environmental Laboratory 1987). The U.S. Fish and Wildlife Service (USFWS) Wetland Indicator Status (WIS) ratings were used to make this determination (Lichvar and Kartesz 2009). The WIS ratings "reflect the range of estimated probabilities (expressed as a frequency of occurrence) of a species occurring in wetland versus non-wetland across the entire distribution of the species" (Reed 1988:8). Plants are rated, from highest to lowest probability of occurrence in wetlands, as obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and upland (UPL), respectively. In general, hydrophytic vegetation is present when the majority of the dominant species are rated OBL, FACW, and FAC.

A hydric soil is defined as "a soil that is formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Federal Register 1995: 35681). The morphological characteristics of the soils in the study area were examined to determine whether any could be classified as hydric.

According to the 1987 methodology, wetland hydrology could be present if the soils were saturated (sufficient to produce anaerobic conditions) within the majority of the rooting zone (usually the upper 12 inches) for at least 5% of the growing season, which in this area is usually at least 2 weeks (COE 1991a). It should be noted, however, that areas having saturation to the surface between 5% and 12% of the growing season may or may not be wetland (COE 1991b). Depending on soil type and drainage characteristics, saturation to the surface would occur if water tables were shallower than about 12 inches below the soil surface during this time period.

Positive indicators of wetland hydrology include direct observation of inundation or soil saturation, as well as indirect evidence such as driftlines, watermarks, surface encrustations, and drainage patterns (Environmental Laboratory 1987). Hydrology was further investigated by noting drainage patterns and surface water connections between wetlands and streams within and adjacent to the project area.

Delineation of the ordinary high water mark (OHWM) of streams found within the project area was based upon the Washington State Shoreline Management Act of 1971 definitions found in RCW 90.58.030 (2) (b) and WAC 173-22-030 (6).

2.2 Background Research

2.2.1 Wetlands and Streams

Prior to conducting our field investigations, we collected and analyzed background information available for the site from the U.S. Fish and Wildlife Service (USFWS 2014) National Wetland Inventory (NWI) and the U.S.D.A. Natural Resources Conservation Service (USDA NRCS 2014) Web Soil Survey. Washington Department of Natural Resources (WDNR 2014) Forest Practices Base Map, Snohomish County (2014a, 2014b) reference maps, and City of Woodinville (2007, 2009) reference maps. We reviewed aerial photographs (King County iMap 2014) to assist in the definition of existing plant communities, drainage patterns, and land use.

2.2.2 Wildlife

In preparation for our wildlife reconnaissance site visit, we reviewed information from the PHS database (WDFW 2014a) for documented information on the potential occurrence of federal- or state-listed endangered, threatened, sensitive, candidate, other priority, or monitor wildlife species (hereafter "species of concern"), or priority habitats on the project site and vicinity. State priority species are defined as those fish and wildlife species "requiring protective measures and/or management actions to ensure their survival", and State priority habitats are defined as habitat types "with unique or significant value to many species" (WDFW 2008). We also reviewed database information maintained by the Washington Natural Heritage Program (2011) for occurrence of endangered, threatened, and sensitive plants in the vicinity of the project site.

Reference lists maintained by the WDFW (2008) were consulted for information on the status of wildlife species of concern that could use the site during at least some part of the year. Species accounts and management recommendations provided by WDFW (e.g., Rodrick and Milner 1991, Larsen 1997, Azerrad 2004, Larsen et al. 2004) were consulted to determine habitat associations of such species and to evaluate the likelihood of their occurrence on the project site. During the field investigation, we searched for the presence of these species, or signs thereof, which could be found on the property.

2.3 Field Sampling Procedures

We visited the site on February 4, 2014 to search for wetlands or streams and describe vegetation communities and wildlife habitat conditions.

2.3.1 Wetlands

During our field investigation, we inventoried, classified, and described representative areas of plant communities, soil profiles, and hydrologic conditions in both uplands and wetlands. We searched specifically for areas with positive indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

Vegetation, soils, and hydrology were examined in representative portions of the study area according to the procedures described in the Regional Supplement (COE 2010). Plant communities were inventoried, classified, and described during our field investigation. We estimated the percent coverage of each species. Plant identifications were made according to standard taxonomic procedures described in Hitchcock and Cronquist (1976), with nomenclature as updated by COE National Wetland Plant List (Lichvar and Kartesz 2009). Wetland classification follows the USFWS wetland classification system (Cowardin et al. 1992).

We excavated pits to at least 18 inches below the soil surface, where possible, in order to describe the soil and hydrologic conditions throughout the study area. We sampled soil at locations that corresponded with vegetation sampling areas and potential wetland areas. Soil colors were determined using the Munsell Soil Color Chart (Munsell Color 2009). We used the indicators described in the Regional Supplement (COE 2010) to determine the presence of hydric soils and wetland hydrology.

Our evaluation of potential occurrence of wetlands boundaries was based on a determination of whether hydric soil, hydrophytic vegetation, and indicators of wetland hydrology are present on the site. Topographic changes within the context of the landscape were used to aid in our review of the previously delineated the wetland boundaries.

2.3.2 Wildlife

During this field investigation, we documented wildlife presence, sign, and habitat while inventorying and describing plant communities. We recorded information regarding reproduction, habitat use, and activities of all wildlife species observed. In addition, we noted special habitat features such as large and/or hollow trees, snags [standing dead or partly dead trees at least 4 inches diameter at breast height (dbh) and 6 feet tall], and large down logs. Historic and present land-use of the site and immediate vicinity were noted from direct observations in the field and analysis of aerial photographs.

During our field surveys, we also searched specifically for the presence, sign, or habitats of any wildlife species of concern that may occur on the project site or vicinity. In particular, we searched for the presence of large stick-type nests, hollow trees, tree cavities, and pileated woodpecker foraging sign. Large stick nests are built and used by several species of concern, including bald eagles and great blue herons. Tree cavities are created and used by woodpeckers, including species of concern such as the pileated woodpecker, and can provide habitat for a host of bird and mammal species, including species of concern such as purple martins, various cavity-nesting duck species, and various bats. Hollow trees are used as daytime roost for priority species including various bat species, as well as Vaux's swifts.

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3.0 EXISTING CONDITIONS

3.1 RESULTS OF BACKGROUND INVESTIGATION

3.1.1 Wetlands

The USFWS NWI (2014) shows no wetlands within the project site. The map does depict a wetland (palustrine scrub-shrub, seasonally flooded) approximately 500 feet to the northwest of the property.

Soils on the project site are mapped as Everett gravelly sandy loam, 5% to 15% slopes (USDA NRCS 2014). Everett soils are well-drained (non-hydric) soils formed in glacial till.

3.1.2 Streams

The City of Woodinville (2009) critical areas map does not identify a stream on the property. However it does depict a stream segment downstream of the site to the south that is mapped as Type 3. The on-site stream is also not shown on the Washington Department of Natural Resources (2014) Forest Practices Water Type map or on the WDFW (2014b) Salmonscape map. However, the SalmonScape map depicts Rowland Creek tributary to Little Bear Creek north of 205th Street, several hundred feet northeast of the project site. The Snohomish County (2014a, 2014b) reference maps show an unnamed stream drainage that flows easterly along the north side of NE 205th Street, and the WDFW (2014b) Salmonscape map shows two blockages to fish passage along this drainage course northeast of the site. The on-site stream appears to flow northerly into this unnamed stream via a buried pipe and culvert under NE 205th Street.

3.1.3 Wildlife

The WDFW (2014a) PHS database map shows no occurrences of species of concern, including endangered, threatened, sensitive, or other priority species or habitats on or adjacent to the project site. The Washington Natural Heritage Program (2011) database contains no records of Natural Heritage Features (e.g., listed plant species) in the section in which the project site occurs.

3.2 RESULTS OF FIELD INVESTIGATIONS

3.2.1 General Property and Site Description

The Church property consists of fairly flat terrain that slopes down sharply on the northeast and northwest corners of the site, and is bordered by NE 205th Street on the north, and 136th Avenue NE to the east. The site contains houses, driveways, barns, sheds, and garages. The undeveloped northeastern and southern portions of the property contain a mixed coniferous deciduous forest. Undeveloped area occurs to the west of the site. A subdivision of residences occurs directly south of the Church property.

3.2.2 Vegetation and Habitat Descriptions

Vegetation Community

Raedeke Associates, Inc. did not identify or delineate any wetlands on the property. The upland forest was dominated by Douglas fir and western red cedar, and included a well-developed but patchy layer of tall shrubs, primarily Himalayan blackberry, with smaller amounts of salmonberry, red elderberry, and western sword-fern (see Appendix A for sample plot data). The vegetation community would not be considered hydrophytic, as most of the dominant species were not rated FAC or wetter (Reed 1988; Lichvar and Kartesz 2009).

Soils were generally consistent with the Everett soil series mapped for the site, with no positive indicators of hydric soil. The soil profile within the topographic swale consisted a brown (10YR 4/3) sandy loam to at least 16 inches, with no redoximorphic features (see Appendix A).

On-site Stream

Raedeke Associates, Inc. did identify and delineate the ordinary high water mark (OHWM) of a stream along the western boundary of the site (Figure 3). The stream flows north along the western property boundary before flowing below NE 205th Street via a culvert. The stream channel is 3- to 5-feet wide and was approximately 6- to 8-inches deep during our February 4, 2014 site visit. The substrate of the stream is sand, silt, and small gravel. The on-site portion of the stream has a slope of less than 5%. Portions of the stream west of the site received a Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW) on February 24, 2005. In that HPA, the WDFW determined that "fish passage is not a concern", indicating that the stream is not fish bearing. The upland area adjacent to the east side of the stream contains existing structures, driveways, and non-native plant species, such as a lawn, and as such is considered degraded and not in a natural condition.

Special Habitat Features

Special habitat features include biologic elements such as snags, coarse woody debris (down logs), and edges between plant communities or successional stages, which are often important to wildlife (Brown 1985, Thomas and Verner 1986). Snags provide important foraging habitat, as well as breeding and cover sites for invertebrates and a variety of vertebrate wildlife species. Raedeke Associates, Inc. noted a few small snags and downed logs in the southern portion of the site. We observed no evidence of foraging on the snags or downed logs. The WDFW (2014a) PHS database does not depict any occurrences of priority species or habitats on the site or immediate vicinity.

3.2.3 Wildlife

Wildlife Use and Observations

A wide variety of wildlife species may be expected to inhabit lowland mixed forest communities in the Pacific Northwest, such as that found on the Church site. Of the more than 300 vertebrate wildlife species expected to occur in west side forests of Oregon and Washington, over 230 species occur within west side lowland mixed coniferous and deciduous forests (Johnson and O'Neil 2001). A more limited number of species are expected to occur within lowland mixed forests of western Washington, particularly King County: over 80 species, nearly 60% of which are birds, about 25% are mammals, and the rest are amphibians and reptiles (King County 1987). The number of species expected to inhabit a particular forest stand depends on its size, landscape context, and surrounding uses. Relatively small stands such as that on the Church property that are surrounded by urban residential uses, would be expected to support a more limited number of wildlife species. Those that do occur there may be further adversely affected by surrounding human activity and predation or other influences from urban-adapted species (such as crows and starlings), or other invasive species.

A variety of bird species are likely to inhabit the site and vicinity at different times of the year. Many of these are spring and summer residents that migrate out of the area for the fall and winter, as well as year-round residents. We observed no raptors (eagles, hawks, falcons and related species) during our field reconnaissance, and no raptor nests were found on any of the trees within the site. Most of the larger trees had intact tops and lacked appropriate branching structures to support large raptor nests such as bald eagles.

We observed no mammals or their sign during our field reconnaissance. Several species of small and medium-sized mammals likely use the site, though many are secretive and/or nocturnal and are therefore unlikely to be observed during a general site reconnaissance. The limited down woody debris was widely scattered within the site. This, along with areas of dense areas of shrub and ground cover, provide potential cover and breeding habitat for small mammals. In addition, on-site trees and snags provide potential cover and breeding locations for medium-sized mammals such as raccoons and squirrels. The presence of domestic dogs and cats in the area may limit the suitability of the forest on site, as they can act as highly effective predators on native wildlife species in urban and suburban areas, particularly those that nest or inhabit the ground (Penland 1984, Maestas et al. 2003, Odell and Knight 2001, Leu et al. 2008).

We did not observe any reptiles, amphibians, or their sign during our field reconnaissance, though a small number of species of each group could be present. The minimal amount of down woody debris on the site may limit the number of Puget Sound lowland terrestrial-breeding amphibians that could occupy the site. Potential cover and foraging habitat is present on the site for some reptiles, including garter snakes, and some amphibians. In addition, the relatively undeveloped nature of off-site areas to the west of

the property provide for potential source populations of amphibians and reptiles, which may use portions of the project site.

Endangered, Threatened, Sensitive, or Other Priority Species

We observed no species listed as endangered, threatened, or sensitive within the project site or immediate vicinity, nor are any of these species considered to have a primary association with the project site. No snags appeared to be large and tall enough to provide suitable nesting or roosting habitat for pileated woodpeckers. No other priority or other species of concern were observed or likely to occur within the project site.

Wildlife Habitat Movement Corridors and Networks

Wildlife habitat networks or corridors can take different forms, depending on the landscape. Corridors can be in the form of hedgerows or fencerows connecting woodlots in an agricultural landscape. In a fragmented forested landscape, corridors are linear patches of forest or forested riparian zones connecting larger patches of forest. They can also be non-forested linear patches, such as utility easements, or wetland and stream systems, in a landscape that is forested. In an urbanizing environment, open space or native forestland can act as corridors connecting otherwise disjunct habitat for wildlife species.

Corridors can provide (1) habitat for certain species; (2) movement pathways; (3) extensions of foraging ranges for large, wide-ranging species; and (4) escape from predators (Harris 1984, Levenson 1981, Noss 1987, Noss and Harris 1986, Simberloff and Cox 1987). Corridors may also have disadvantages, such as (1) providing conduits for disease, fire, pests, and exotic species; (2) increasing exposure to predation; and, (3) potentially having negative genetic impacts on a population (Noss 1987, Simberloff and Cox 1987).

The Church property is situated generally within a larger area of residential development. The forested habitat of the site (primarily in the northeastern and southern parts of the site) is separated from other forested habitat in the area by existing roads on the north, east, south, and just off-site to the west. The on-site stream flows north into a culvert under NE 205th, then easterly along NE 205th Street. The road separates off-site riparian habitat from the on-site area. Because of the surrounding development, these habitats are relatively isolated from other native habitats within the City of Woodinville or in Snohomish County to the north and therefore do not provide linkages to other such habitats.

4.0 REGULATORY CONSIDERATIONS

4.1 STREAMS

Streams and other waters of the United States are protected by Section 404 of the Federal Clean Water Act and other state and local policies and ordinances including the City of Woodinville (2014) code. The stream along the west property boundary appears to meet the City of Woodinville (2014) criteria as a Type 3 stream. The feature was rated as a Type 3 Stream because the stream is not depicted on the City of Woodinville (2009) critical areas map, which shows a mapped stream segment to the south of the site that is mapped as Type 3. The stream is also not mapped on the WDNR (2014) Forest Practices Water Type map. The on-site stream is also not shown on the WDFW (2014b) SalmonScape map. However, the Salmonscape map depicts two Total Blockage culverts (102 L009 and 102 L008) along an unnamed stream shown on Snohomish County (2014a, 2014b) reference maps along the north side of NE 205th Street east of the property. Since these blockages to fish passage are located downstream of the on-site stream segment, the on-site stream is not considered accessible to salmonid fish. City of Woodinville Code (WMC 21.24.370) identifies Type 3 streams as those with perennial or intermittent flow, used by fish other than salmonids as Type 3 streams. No study of fish use was conducted as part of this study. However, the presence of two downstream total blockage culverts likely precludes use of this stream segment by salmonids, and therefore the classification of Type 3 is the highest classification the stream can receive.

As stated previously, the WDFW issued a HPA for in-stream work to the west of the Parkwood Terrace in February 2005. That HPA documents that the stream is not fish bearing and as such would be a Type 4 water under WAC 222-16-031. WDFW Type 4 waters and City of Woodinville Type 3 streams are analogous.

The City of Woodinville (2014) code requires a 75 foot buffer on Type 3 streams. The code (WMC 21.24.380(1)(a)) allows for reduction of the buffer to 50 feet wide provided that certain criteria are met and the retained buffer is enhanced to protect stream functions:

> *(a) The standard buffer width will be established unless the existing stream buffer is significantly degraded. If the existing stream buffer is significantly degraded, the applicant may use the reduced buffer as referenced in subsection (1) of this section as long as enhancement measures are implemented to provide a net improvement in overall stream and buffer function and value as determined by a qualified biologist. Enhancement measures shall be conducted in accordance with a plan approved by the Development Services Director.*

As stated above, the stream buffer is considered degraded, as it contains existing structures, an access drive, and a lawn, its basin is already developed with residential housing and associated roads, approximately 17% of the standard buffer area on-site is

currently impervious surface. Consequently, the City code allows provision of a reduced buffer of 50 feet as long as buffer enhancement is proposed.

4.2 WILDLIFE

4.2.1 State of Washington

State law provides protections for wildlife species listed as endangered (WAC 232-12-014), as well as threatened, sensitive, or "other protected" species (WAC 232-232-011). Recently, bald eagles have been de-listed at the State and federal level. However, eagles in Washington, currently listed as state sensitive, are still protected by the Bald Eagle Protection Act of 1984 (RCW 77.12.655), and the Bald Eagle Protection Rules (WAC 232-12-292). The Bald Eagle Protection rules have been amended such that state bald eagle management plans are no longer required unless bald eagles are again listed as Threatened or Endangered in Washington State. WDFW will not be asking local governments to require a bald eagle management plan prior to issuing local permits.

The WDFW (2014a) PHS and HRTG databases show no known nest or roost sites of eagles or other listed raptor species in the vicinity of the project site. In addition, we found no nests or potentially suitable nest trees on the project site or in the vicinity. In addition, the WDFW (2008) has developed management recommendations for "species of concern," which include state listed and other priority species, as well as priority habitats. Occurrences or signs of priority species or habitats in the vicinity of the project site are noted above. These management recommendations are often referenced in local critical area ordinances, such as the City of Woodinville in protection of "Fish and Wildlife Habitat Conservation Areas," or FWHCA.

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5.0 IMPACTS

5.1 IMPACTS TO VEGETATION

The proposed development would remove the forest habitat on the site and replace it with single-family residential housing and associated access road and landscaping. The on-site stream and a 50-foot buffer would be retained. As outlined below, existing structures, access drives, and non-native plant species within the retained buffer would be replaced with a native plant community of trees, shrubs, and ground covers. Existing native trees within the 50-foot buffer would be retained.

5.2 IMPACTS TO STREAMS

No direct impacts to streams would occur under the proposal. The planned development would reduce the buffer width adjoining the stream to 50 feet (Figure 3). Under current conditions the standard 75 foot wide buffer is not functional. The buffer contains a driveway, mowed and managed lawn, and a well. A total of 3,690 square-feet of the buffer area is comprised of impervious surfaces, approximately 17% of the 21,415 square-feet of buffer area. The proposal would remove the existing development within 50 feet of the stream and replace it with a mix of native shrubs, trees, and ground covers that would provide a functional buffer to the stream. Existing native trees within the 50-foot buffer would be retained. Figures 3 and 4 detail the proposed buffer restoration on the Church property.

The Woodinville Code (WMC 21.24.380) allows for reduction of stream buffers in situations where the existing stream buffer is degraded. The stream is not a Type 1 stream, the stream is piped below NE 205th Street in a buried culvert, the buffer is developed, and the sub-basin is highly developed. The buffer meets all criteria for buffer reduction identified in the code.

5.3 IMPACTS TO WILDLIFE

Direct alteration (reduction) to the distribution, composition, and amount of native vegetation resulting from the proposed residential development would affect the distribution and composition of native wildlife on the property.

Upon completion, the proposed residential development would eliminate the forest habitat available for native wildlife on the site. This would reduce the local populations of most native species on the property. Grading and construction activities associated with the proposed development, as well as increased levels of human activity on-site, would also result in increased short- and long-term disturbance to wildlife species. Over the long term, native forest vegetation would be expected to develop in the enhanced buffer area along the on-site stream and provide some on-site habitat for wildlife.

5.4 Impacts to Endangered, Threatened, Sensitive, or Other Priority Species or Habitats

Because endangered, threatened, and sensitive wildlife species are not known or likely to occur on or in the site or have a primary association with any impacted habitats, no impacts to these species are expected.

No other priority species, or species of local importance, are known or likely to inhabit the site. Thus, the proposed development would not adversely affect such species.

The proposed site development plan would have no direct impact to streams or other habitats designated as fish and wildlife conservation areas, because none occur within the site. Consequently, no habitats or habitat features known or suspected to be used by other priority species or species of local importance would be affected by the proposed site plan.

6.0 MITIGATION

Mitigation has been defined by the State Environmental Policy Act (SEPA) (WAC 197-11-768; cf. Cooper 1987), and more recently in a Memorandum of Agreement between the Environmental Protection Agency and the U.S. Army Corps of Engineers (Anonymous 1989). In order of desirability, mitigation may include:

1. ***Avoidance*** - avoiding impacts by not taking action or parts of an action;

2. ***Minimization*** - minimizing impacts by limiting the degree or magnitude of the action and its implementation;

3. ***Compensation*** - which may involve:

    a) repairing, rehabilitating, or restoring the affected environment;

    b) replacing or creating substitute resources or environments;

    c) mitigation banking.

6.1 AVOIDANCE AND MINIMIZATION

Conversion of the Church property to a residential development would incorporate one or more mitigating measures that would avoid, or minimize for impacts to on-site habitat (Figures 3 and 4):

- Direct impacts to the Type 3 on-site stream would be avoided, and the stream would be protected with a 50-foot buffer within a designated open space tract;
- No residential structures, impervious surfaces, or trails would be located within the designated open space tract;
- The proposed development would route stormwater runoff to a detention pond to provide water quality treatment and discharge it at controlled rates to existing conveyance facilities to protect downstream resources;
- Temporary erosion and sediment control (TESC) measures would be installed during construction and would utilize appropriate best management practices (BMPs) designed to prevent sediment from on-site open space tracts and off-site areas;

6.2 Compensatory Mitigation

6.2.1 Proposed Buffer Enhancement

Compensation for the proposed buffer reduction of approximately 8,300 square feet would be provided by enhancement of the retained 50-foot buffer (more than 13,100 square feet) in accordance with City of Woodinville Code (WMC 21.24.400) by removing existing structures, access drive, 1,245 square-feet of impervious surface, and non-native plant communities and planting a mixture of native trees, shrubs, and ground covers (Figures 3 and 4). The buffer enhancement is intended to restore native forest community adjacent to the stream that currently flows through degraded lawn. Successful implementation of the enhancement plan would over time result in enhanced functioning of the stream buffer for protection of stream functions, such as protection of water quality, wildlife habitat, and recruitment of organic matter, compared with current degraded conditions of the buffer.

Water Quality

The existing condition of the buffer allows untreated stormwater runoff to flow directly into the stream from driveways, roofs and managed lawn areas. The proposed buffer enhancement would remove the impervious surface and replace lawn with native plant communities that would intercept stormwater runoff and slow the rate at which water reaches the stream and promote infiltration, thus improving water quality.

Wildlife Habitat

The existing 75-foot buffer does not provide functional habitat to wildlife. The outermost 25 feet is comprised of managed lawn, driveway, and storage buildings. Removal of the impervious surfaces and replanting of the inner 50 feet of buffer area will provide wildlife habitat where none currently exists.

Shade

The planting of 130 trees within the retained and enhanced buffer will provide additional shading to the stream. Under current conditions, there are five trees providing shade to the stream. Each of the existing trees would be retained. The inclusion of deciduous trees within the buffer will provide organic matter to the stream as leaves fall each autumn.

Stream Channel

No work is proposed in the stream channel, thus no impact to the habitat is anticipated. The establishment of a well vegetated buffer will stabilize the stream bank and alleviate any erosion that may have occurred under existing conditions.

All plant materials would be locally grown and be of local origin. Tree stock would be two or five gallon container, 3- to 4-feet tall, and well-rooted and branched. Trees would be planted on 9-foot centers. Shrub stock would be one gallon, 18- to 24-inches tall, well-rooted and branched. Shrub plantings would be spaced on 5-foot centers. Existing native trees within the 50-foot buffer would be retained. Specific listing of plant species, sizes and quantities are found on Figure 4.

Prior to planting, a minimum of 12 inches of topsoil would be installed throughout the buffer enhancement area, as needed, to provide favorable growing conditions for the tree and shrub plantings establishment and growth. Topsoils must be approved by the project biologist prior to installation. Soil amendments, such as compost that has been prior-approved by the project biologist, may be added to salvaged on-site soils in order to create favorable soil conditions for tree and shrub planting establishment and growth.

The project biologist would review plant materials, soil amendment, and mulch for quality and quantity for consistency with the approved plans, as well as review and approve plant locations and supervise installation procedures. Tree and shrub plantings and all soils, soil amendments, or mulch cannot be installed within the buffer enhancement and buffer restoration areas without prior review and approval by the project biologist

All grading or other soil disturbing activities for site preparation should occur between March 1 and September 30 unless otherwise required by the City. All such work at any time of the year during inclement weather will not be permitted to occur without prior approval by the project biologist and may require use of techniques or equipment designed to minimize impacts to the stream.

Planting would occur between October 1 and March 1 to take advantage of seasonal rains and greater availability of plant material. Planting at any other time or during periods of abnormally hot, dry, or freezing weather conditions would not occur without prior approval by the project biologist and may require plant substitutions and supplemental irrigation.

A temporary irrigation system will be installed to provide supplemental water for all tree and shrub plantings during the first two growing seasons following installation. Irrigation will occur from June 1 through September 30 or other periods of hot, dry weather and will deliver approximately 1 inch of water per week throughout the buffer enhancement area. Any erosion will be rectified immediately upon discovery.

The enhanced buffer is designed to be self-sustaining. To ensure the success of the plantings, additional replanting and control of undesirable plant species may be necessary after initial installation. Invasive species would be controlled by methods that do not

compromise the rest of the buffer plantings. Manual removal of invasive species is preferred, but does require early detection and action to be effective.

The on-site stream and its buffer would be placed into a sensitive areas tract and recorded with the City of Woodinville. A 3 to 4-foot-tall, split-rail cedar fence would be installed along the outer perimeter of the on-site portion of the wetland buffers in order to mark boundary of the environmentally sensitive area.

6.2.2 Monitoring

Because of the variable success of wetland and stream mitigation projects in the Pacific Northwest, the City of Woodinville (2014) requires that mitigation areas be monitored in order to evaluate their success in replacing lost wetland values and functions. Therefore, this plan includes a systematic monitoring program of the enhanced stream buffer to evaluate the success of the mitigation efforts. The results of the monitoring will be used to develop needed modifications to or alterations of the site in subsequent years.

The monitoring process would consist of three distinct phases: (1) construction monitoring; (2) compliance monitoring; and (3) long-term monitoring. Construction monitoring serves to ensure proper site preparation and plant placement relative to actual site conditions. The "time-zero" or baseline composition, structure, and cover abundance would be documented during the compliance monitoring phase. The long-term monitoring program would document the survival of planted vegetation and rates of colonization by other plants (i.e., in bare soil areas) over a five-year period after implementation of the mitigation plant is completed.

During long-term monitoring, plant species would be identified, and the cover and abundance would be estimated for each plant species within sample plots established during compliance monitoring. Vegetation descriptors measured at each sample plot consist of percent cover and species composition. In addition, plant counts would be made during monitoring in order to document the percent survival of each planted species. Plant identifications would be made according to standard taxonomic procedures described in Hitchcock and Cronquist (1976), with nomenclature as updated by the U.S. Army Corps of Engineers National Wetland Plant List (Lichvar and Kartesz 2009). Signs of planting stress or damage, presence of invasive species, as well as signs of vigor, and rates of colonization by other plants (i.e., in bare soil areas) would be documented during each year of the long-term monitoring.

Photos would be taken annually to provide physical documentation of the condition of the enhancement area. Photographs would be taken from all locations established during the compliance monitoring site visit and each year thereafter of the monitoring period from the established location points.

Formal monitoring of the enhanced stream buffer would occur after the season's growth is virtually complete (recommended during August or September). In addition, spring and mid-summer site checks would be conducted during each year of the three-year long-term monitoring period to assess site progress and to determine whether site maintenance is needed.

Monitoring reports would be prepared following the completion of the growing season of each year of the five-year long-term monitoring period for submittal to the City of Woodinville. The long-term monitoring period will commence following acceptance of the compliance report and "as-built" drawings by the City of Woodinville.

Monitoring reports would be submitted for review and approval by the City of Woodinville as soon as possible after the monitoring has been completed, with a target date of December 31 of each monitoring year. The report would document conditions within the enhanced areas and make recommendations for correcting any problems encountered.

6.2.3 Performance Standards

Specific performance standards to be used in the five-year long-term monitoring are the following:

- 100% survival of all planted shrubs and trees in the enhanced and restored buffers following completion of the first year after planting. All plantings that do not survive during the first year must be replaced with the same or similar species and specifications. Upon installation of replacement plantings at the conclusion of the first year, the 100% survival performance standard will be considered to be met;
- 90% survival of all planted shrubs and trees in the enhanced and restored buffers following completion of the third year after planting. Sufficient plantings will be replaced, as necessary, with the same or similar species and specifications in order to meet the 90% survival standard. If the mitigation site fails to meet this performance standard, the reason for the failure will be evaluated, replacement plantings will be provided, and additional monitoring may be required by the City to verify that a self-sustaining native plant community has been established;
- 80% survival of all planted shrubs and trees in the enhanced and restored buffers following completion of the fifth year after planting. Sufficient plantings will be replaced, as necessary, with the same or similar species and specifications in order to meet the 80% survival standard. If the mitigation site fails to meet this performance standard, the reason for the failure will be evaluated, replacement plantings will be provided, and additional monitoring may be required by the City to verify that a self-sustaining native plant community has been established;

- There will be no more than 10% cover by Himalayan blackberry or other invasive plant species, as identified by the project biologist at any time during the five-year monitoring period;

6.2.4 Contingency Plan, Implementation Schedule, and Bonding

Contingency plans are needed if post-buffer enhancement monitoring shows that objectives and performance standards have not been met. It should be noted, however, that it is not possible to develop a detailed contingency plan until the specific problems that need to be addressed are known. It would be unproductive to try to anticipate all possible problems and their solutions at this time.

However, common problems, both human and natural, that might arise can be identified and general remedial recommendations proposed. For example, if after the second year, area cover or species composition by planted trees and shrubs is not at an acceptable level, it may be necessary to replant with new or different stock, provide additional watering or irrigation during critical seasons, or augment the soil.

Spring and late summer site checks will be made during each year of the long-term monitoring to determine if there are any developing problems within the mitigation site prior to the long-term monitoring site visits. With early identification, plant replacement, additional irrigation, or maintenance can be accomplished prior to the long-term monitoring site visits and thus, development of the mitigation site can be better assured.

Implementation of a contingency plan may require extension of the monitoring phase of the project, especially if major changes in the plan are required. The project biologist should make recommendations for identified problems. All contingency measures must be reviewed and approved by the City of Woodinville.

Upon approval of this conceptual enhancement plan, final construction documents would be prepared for review and approval by the City of Woodinville. In addition to plant species, sizes, quantities, and locations, the final documents would specify such items as: (1) general notes, (2) planting details, (3) construction timing, (4) protection of existing vegetation, (5) source of plant material, (6) soil amendments, (7) watering, (8) maintenance, and (9) a bond estimate.

Bond provisions, to ensure that mitigation is completed as designed and that restoration or rehabilitation is performed if any portion of the project fails within five years of implementation, are required by the City of Woodinville. These will be prepared upon final review of permits from the City of Woodinville, based on the final buffer enhancement plans, which as noted above would include detailed planting plans and construction notes.

7.0 LIMITATIONS

We have prepared this report for the exclusive use of Quadrant Homes and their consultants. No other person or agency may rely upon the information, analysis, or conclusions contained herein without permission from Quadrant Homes.

The determination of ecological system classifications, functions, values, and boundaries is an inexact science, and different individuals and agencies may reach different conclusions. With regard to wetlands, the final determination of their boundaries for regulatory purposes is the responsibility of the various agencies that regulate development activities in wetlands. We cannot guarantee the outcome of such determinations. Therefore, the conclusions of this report should be reviewed by the appropriate regulatory agencies.

We warrant that the work performed conforms to standards generally accepted in our field, and prepared substantially in accordance with then-current technical guidelines and criteria. The conclusions of this report represent the results of our analysis of the information provided by the project proponent and their consultants, together with information gathered in the course of the study. No other warranty, expressed or implied, is made.

8.0 LITERATURE CITED

Anonymous. 1989. Memorandum of Agreement between the U.S. Environmental Protection Agency and the Department of Army Concerning the Determination of Mitigation under the Clean Water Act, Section 404 B1 Guidelines. Effective 7 November 1989.

Azerrad, J.M., editor. 2004. Management recommendations for Washington's priority species, Volume V: mammals. Washington Department of Fish and Wildlife, Olympia, Washington.

Brown, E.R. (tech. ed.). 1985. Management of wildlife and fish habitats in forests of western Oregon and Washington. Publ. No. R6-F&WL--192-1985. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region, Portland. 332 pp.

Cooper, J.W. 1987. An overview of estuarine habitat mitigation projects in Washington State. Northwest Environmental Journal 3(1): 112-127.

Cowardin, L., F. Golet, V. Carter, and E. LaRoe. 1992. Classification of wetlands and deepwater habitats of the United States. U.S.D.I. Fish and Wildlife Service Publ. FWS/OBS-79/31. 103 pp.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineers Waterways Experiment Station, Vicksburg, Mississippi. 100 pp.

Federal Register. 1986. 40 CFR Parts 320 through 330: Regulatory programs of the Corps of Engineers; final rule. Vol. 51. No. 219. pp. 41206-41260, U.S. Government Printing Office, Washington, D.C.

Federal Register. 1995. U.S. Department of Agriculture, Soil Conservation Service: Changes in Hydric Soils of the United States. Volume 59, No 133, July 13, 1994. Revised September 15, 1995.

Harris, L.D. 1984. The fragmented forest: island biogeographic theory and the preservation of biotic diversity. University of Chicago Press. Chicago, Illinois. 210 pp.

Hitchcock, C., and A. Cronquist. 1976. Flora of the Pacific Northwest. Univ. of Washington Press, Seattle, Washington. 730 pp.

Johnson, D.H., and T.A. O'Neil. 2001. Wildlife habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis, OR. 736 pp.

King County. 1987. Wildlife habitat profile. King County Open Space Program. Parks, Planning and Resources Development. Seattle, Washington. 111 pp.

King County. 2014. iMAP GIS Interactive map center, King County, Washington. http://www.metrokc.gov/gis/iMAP_main.htm#. Accessed January 2014.

Larsen, E.M., editor. 1997. Management recommendations for Washington's priority species, Volume III: amphibians and reptiles. Washington Department of Fish and Wildlife, Olympia, Washington. 122 pp.

Larsen, E.M., J.M. Azerrad, and N. Nordstrom, editors. 2004. Management recommendations for Washington's priority species, Volume IV: Birds. Washington Department of Fish and Wildlife, Olympia, Washington. 268 pp.

Leu, M., S.E. Hanser, and S.T. Knick. 2008. The human footprint in the West: a large-scale analysis of anthropogenic impacts. Ecological Applications 18:1119-1139.

Levenson, J.B. 1981. Woodlots as biogeographic islands in southeastern Wisconsin. In: Burgess, R.L., and D.M. Sharpe, eds. Forest island dynamics in man-dominated landscapes. New York, New York: Springer-Verlag.

Lewis, J.C., and J.M. Azerrad. 2004. Pileated woodpecker (*Dryocopus pileatus*). Pages 29-1 to 29-9 *in* E.M. Larsen, J.M. Azerrad, and N. Nordstrom, editors. Management Recommendations for Washington's Priority Species, Volume IV: Birds. Available at http://wdfw.wa.gov/publications/00026/wdfw00026.pdf

Lichvar, Robert W. and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil) U.S. Army Corps of Engineers, Engineering Research and Development Center, Cold regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.

Maestas, J.D., R.L. Knight, and W.C. Gilgert. 2003. Biodiversity across a rural land-use gradient. Conservation Biology 17:1425-1434.

Munsell Color. 2009. Munsell soil color charts. Munsell Color, Grand Rapids, MI.

Noss, R.F. 1987. Corridors in real landscapes: a reply to Simberloff and Cox. Conservation Biology 1:159-164.

Noss, R.F., and L.D. Harris. 1986. Nodes, networks, and MUMs: preserving diversity at all scales. Environmental Management 10:299-309.

Odell, E.A., and R.L. Knight. 2001. Songbird and medium-sized mammal communities associated with exurban development in Pitkin County, Colorado. Conservation Biology 15:1143-1150.

Penland, S. 1984. Avian response to a gradient of urbanization. PhD. Dissertation, University of Washington, Seattle, Washington. 407 pp.

Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northwest (Region 9). U.S.D.I. Fish and Wildlife Service. Biological Report 88 (26.9). 89 pp.

Reed, P.B., Jr. 1993. 1993 Supplement to list of plant species that occur in wetlands: Northwest (Region 9). U.S.D.I. Fish and Wildlife Service. Supplement to Biological Report 88 (26.9) May 1988.

Rodrick, E.A. and R.L. Milner, editors. 1991. Management recommendations for Washington's priority habitats and species. Washington Department of Fish and Wildlife, Fish Management and Habitat Management Divisions. Olympia, Washington.

Snohomish County. 2014a. Surface water management drainage inventory. Available at: http://gismaps.snoco.org/SilverlightViewer_1_10/Viewer.html?ViewerConfig=http://gismaps.snoco.org/Geocortex/Essentials/REST/sites/Drainage/viewers/Drainage_Inventory_1_10/virtualdirectory/Config/Viewer.xml. Last accessed November 4, 2014.

Snohomish County. 2014b. Permit, planning, and zoning map. Available at: http://gis.snoco.org/maps/permits/viewer.htm. Last accessed November 4, 2014.

Simberloff, D., and J. Cox. 1987. Consequences and costs of conservation corridors. Conservation Biology 1:63-71.

Thomas, J.W., and J. Verner. 1986. Forests. Pages 73-91 *in* A. Cooperrider, R. Boyd, and H. Stuart, eds. Inventory and monitoring of wildlife habitat. U.S. Department of the Interior, Bureau of Land Management Service Center, Denver, Colorado.

U.S. Army Corps of Engineers. 1991a. Special notice. Subject: Use of the 1987 wetland delineation manual. U.S. Army Corps of Engineers, Seattle District. August 30, 1991.

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U.S. Army Corps of Engineers. 1991b. Memorandum. Subject: Questions and answers on the 1987 manual. U.S. Army Corps of Engineers, Washington D.C. October 7, 1991. 7 pp. including cover letter by John P. Studt, Chief, Regulatory Branch.

U.S. Army Corps of Engineers. 2010. Regional supplement to the Corps of Engineers wetland delineation manual: western mountains, valleys, and coast region (Version 2.0). Wakeley, J.S., R.W. Lichvar, and C.V. Noble, eds. May 2010. ERDC/EL TR-10-3. U.S. Army Engineer Research and Development Center, Vicksburg, MS.

U.S. Army Corps of Engineers. 2012. Special Public Notice. Final Regional Conditions, 401 Water Quality Conditions, Coastal Zone Management Consistency Responses, for Nationwide Permits for the Seattle District Corps of Engineers for the State of Washington. U.S. Army Corps of Engineers, Seattle District. June 15, 2012. 111 pp.

U.S. Fish and Wildlife Service. 2014. National Wetland Inventory, Wetlands Online Mapper. http://wetlandsfws.er.usgs.gov/wtlnds/launch.html . Accessed November, 2012.

U.S.D.A. Natural Resources Conservation Service. 2014. On-line Web Soil Survey. http://websoilsurvey.nrcs.usda.gov . Accessed January 2014.

Washington Department of Fish and Wildlife. 2005. Hydraulic Project Approval Control # 100642-1. Issued February 24, 2005.

Washington Department of Fish and Wildlife. 2008. Priority habitats and species list. August 2008. Olympia, Washington. 174 pp. http://wdfw.wa.gov/publications/pub.php?id=00165.

Washington Department of Fish and Wildlife. 2014a. PHS on the web. Available at: http://wdfw.wa.gov/mapping/phs/. Last accessed January 2014.

Washington Department of Fish and Wildlife. 2014b. Salmonscape web site. http://apps.wdfw.wa.gov/salmonscape/map.html#. Accessed November 4, 2014.

Washington State Department of Natural Resources. 2014. Forest Practices Application Review System Activity Map. http://wa.gov/dnr/app1/fpars/viewer.htm. Accessed November 4, 2014.

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Washington Natural Heritage Program. 2014. Sections that contain Natural Heritage Features. Data current as of September 24, 2014. Washington Department of Natural Resources, Natural Heritage Program, Olympia, Washington. http://www.dnr.wa.gov/Publications/amp_nh_trs.pdf.

Woodinvilee, City of. 2007. Hydrologic Areas map. Revised April 4, 2007. Available at: http://www.ci.woodinville.wa.us/Live/MapsView.asp.

Woodinvilee, City of. 2009. Figure A13-1, Identified Critical Areas. Revised December 16, 2009. Available at: http://www.ci.woodinville.wa.us/Live/MapsView.asp.

Woodinvile, City of. 2014. Municiple Code Chapter 21.24: Development Standards – Critical Areas. Current through Ordinance 584 and legislation passed through March 18, 2014. Available at: http://www.codepublishing.com/wa/woodinville/. Accessed June 9, 2014.

FIGURES

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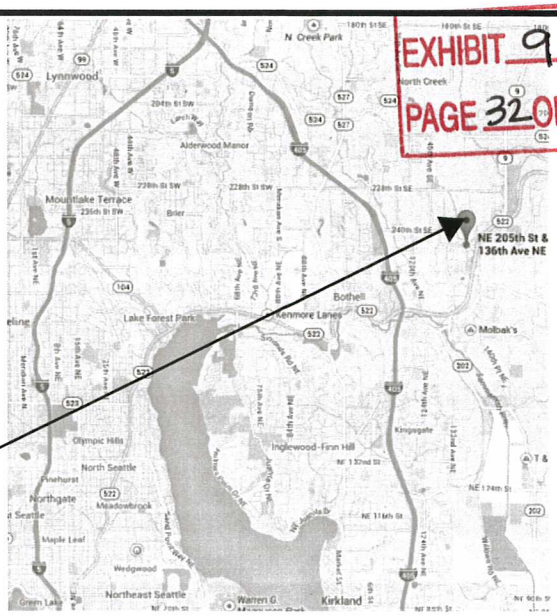
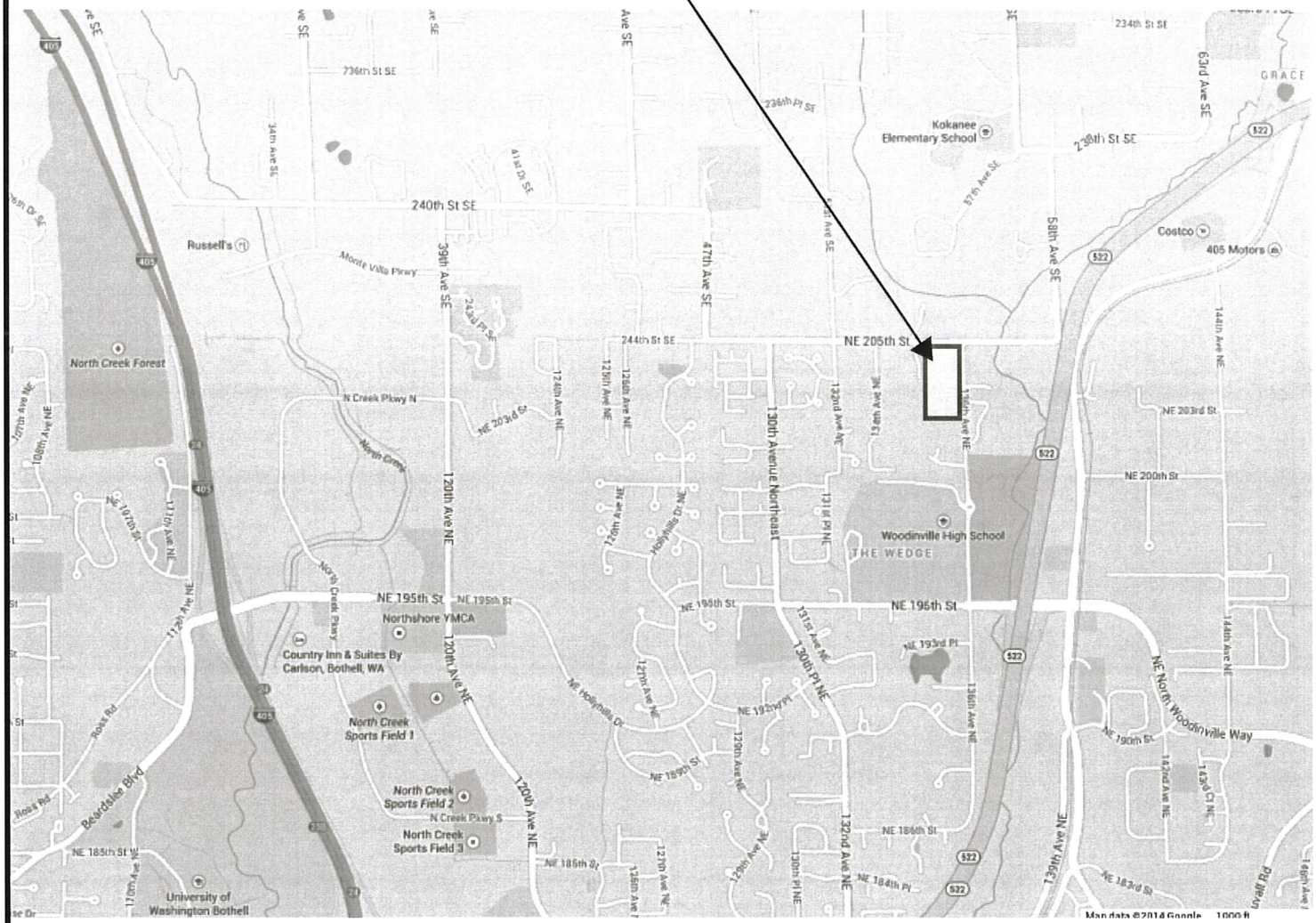


PROJECT LOCATION



SOURCE: Google Maps. Available at: https://www.google.com/maps. Accessed on 6/09/14.

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FIGURE 1

REGIONAL & VICINITY MAP

CHURCH PROPERTY
WOODINVILLE, WA

Raedeke Associates, Inc.
9510 Stone Avenue North
Seattle, WA 98103

RAI # 2014-013

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FIGURE 2
QUADRANT
CHURCH PROPERTY
CRITICAL AREAS ASSESSMENT
EXISTING CONDITIONS

NE 205TH STREET
N 88°45'15" W 1318.82'
363.15'
STREAM 1
EX. DRIVEWAY
TPN 032605-9049-06
LAWN
EX. BUILDING
75' STREAM 1 BUFFER
GEORGIAN HEIGHTS PHASE 4
14"F T2"A
16"F
24"COT
16"F
18"F
18"D
EX. DRIVEWAY
437.18'
STREAM 1 CONTINUES OFF-SITE
EX. BUILDING
LAWN
EX. BUILDING
BARN
EX. BUILDING
136TH AVE NE
N 00°22'51" W 455.31'
TPN 032605-9095-09
BOUNDARY 1
GEORGIAN HEIGHTS PHASE 5

LEGEND

- PROJECT BOUNDARY
- STREAM OHWM
- 75' STREAM BUFFER
- EXISTING TREES

BUFFER
STREAM CHANNEL

NORTH

0 25' 50' 100'
SCALE: 1" = 50'

Raedeke Associates, Inc.
9510 Stone Avenue North
Seattle, WA 98103

RAI PROJECT: 2014-013-002
DATE: MAY 11, 2015
DRAWN BY:AC | PM:CW
BASE INFORMATION: SURVEY & SITE PLAN
BLUELINE | 25 Central Way, Suite 400
Kirkland, WA 98033 Ph: 425.216.4051

T:\2014\2014-013 Quadrant Church\11x17 2014-013 Church.dwg

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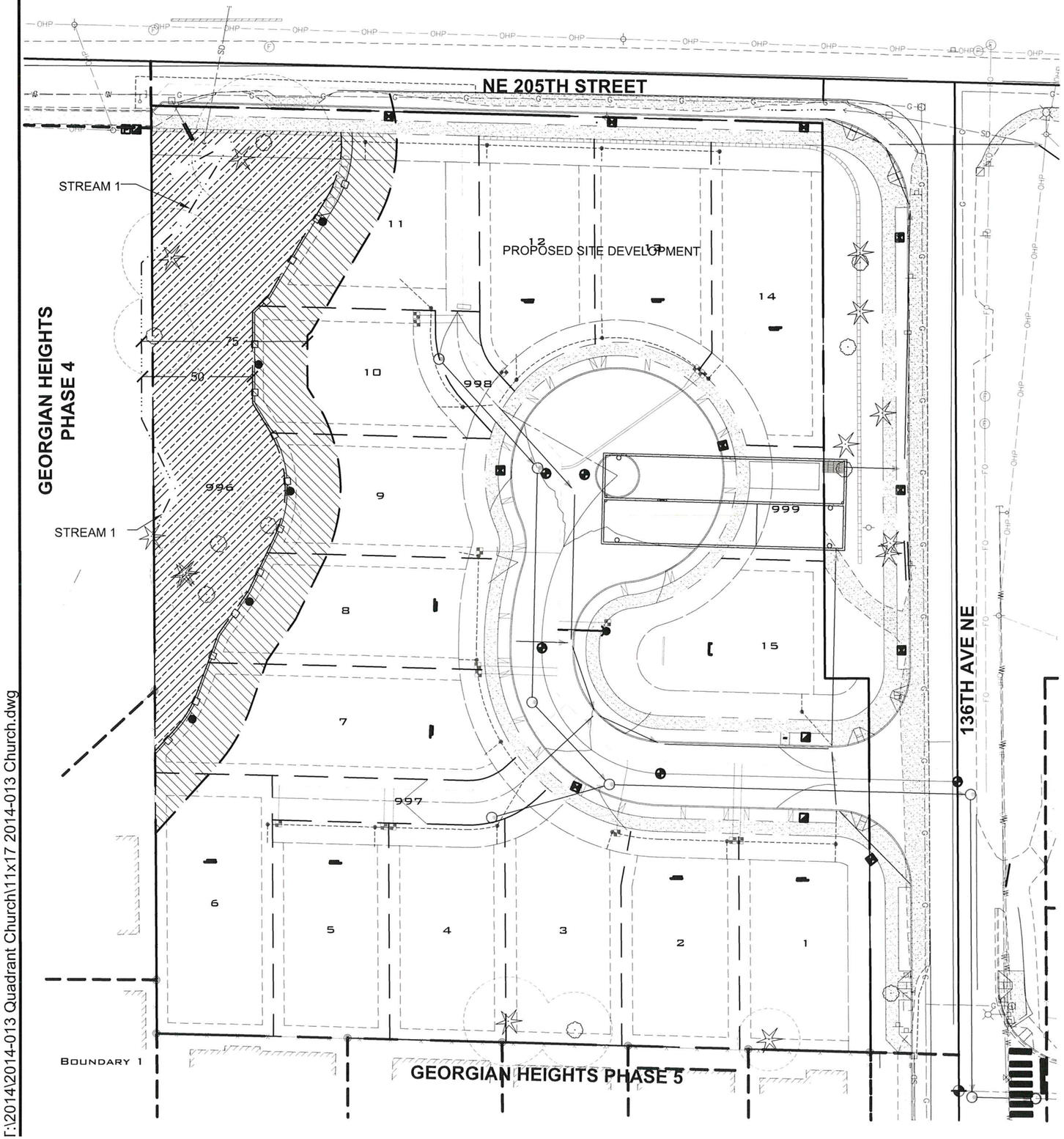
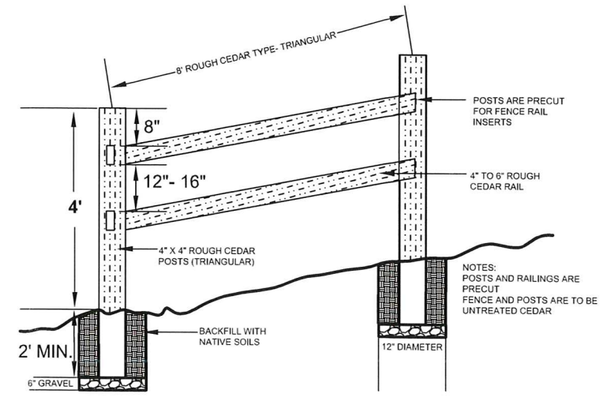
FIGURE 3
QUADRANT
CHURCH PROPERTY
CRITICAL AREAS ASSESSMENT
PROPOSED SITE PLAN & MITIGATION

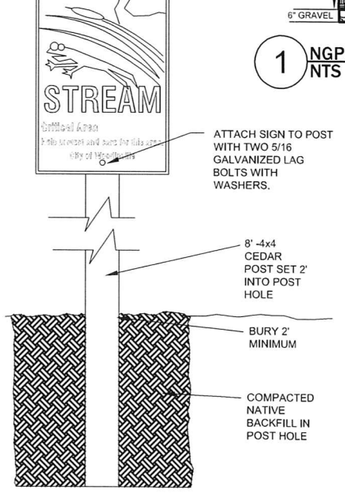


LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOURS
- STREAM OHWM
- 75' STREAM BUFFER
- PROPOSED 50' STREAM BUFFER
- REMAINING TREES
- BUFFER REDUCTION 8,300 SF APPROX.
- BUFFER ENHANCEMENT 13,115 SF APPROX.
- SPLIT RAIL NGPA FENCE (SEE DETAIL 1)
- CRITICAL AREAS SIGN (SEE DETAIL 2)



1 NGPA SPLIT RAIL CEDAR FENCE
NTS



NOTES:
Critical Area signs shall be mounted on posts set into the ground at 100' intervals or 1 per lot for smaller lots.

2 CRITICAL AREA SIGN
NTS

NORTH

0 25' 50' 100'
SCALE: 1" = 50'

Raedeke Associates, Inc.
9510 Stone Avenue North
Seattle, WA 98103

RAI PROJECT: 2014-013-002
DATE: MAY 11, 2015
DRAWN BY:AC | PM:CW
BASE INFORMATION: SURVEY & SITE PLAN
BLUELINE | 25 Central Way, Suite 400
Kirkland, WA 98033 Ph: 425.216.4051

F:\2014\2014-013 Quadrant Church\11x17 2014-013 Church.dwg

PLANT LEGEND

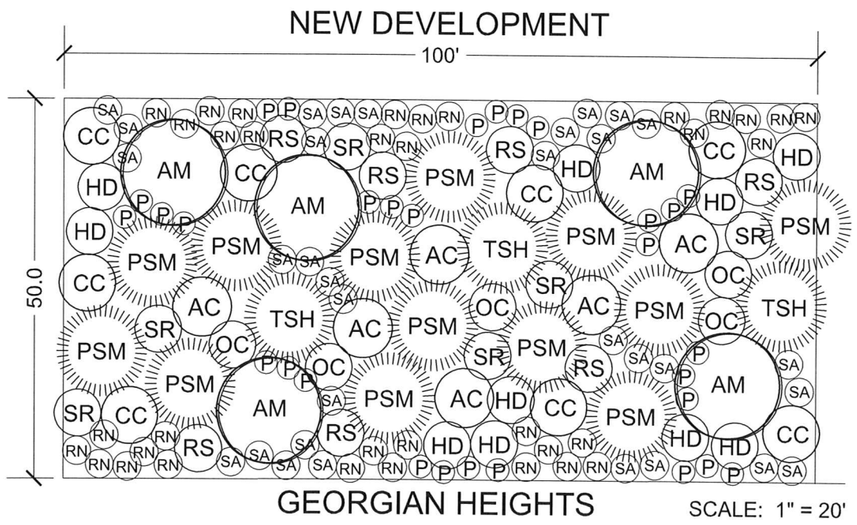
TREES

SYMBOL	SCIENTIFIC NAME	COMMON NAME	MIN. SIZE	SPACING	QTY.
AM	*Acer macrophyllum*	Big Leaf Maple	2" caliper*	10' O.C.	43
PSM	*Pseudotsuga menziesii*	Douglas Fir	6' tall*	10' O.C.	44
TP	*Thuja plicata*	Western red Arborvitea	6' tall*	10' O.C.	43

*Tree sizes per City of Woodinville comments

SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	MIN. SIZE (container)	SPACING	QTY.
AC	*Acer circinatum*	Vine Maple	5 gal.	5' O.C.	58
CC	*Corylus cornuta*	Beaked Hazelnut	2 gal.	5' O.C.	38
HD	*Holodiscus discolor*	Creambush	2 gal.	5' O.C.	58
OC	*Oemleria cerasiformis*	Osoberry	2 gal.	5' O.C.	38
P	*Polystichum munitum*	Pineland Swordfern	1 gal.	5' O.C.	78
RS	*Ribes sanguineum*	Redflower Currant	2 gal.	5' O.C.	58
rn	*Rosa nutkana*	Nootka Rose	1 gal.	5' O.C.	78
SR	*Sambucus racemos*	Red Elder	2 gal.	5' O.C.	38
S	*Symphoricarpos albus*	Common Snowberry	1 gal.	5' O.C.	78



SCALE: 1" = 20'

PLANT TYPICAL

CONSTRUCTION SEQUENCE

1. CONTRACTOR SCHEDULES AND ATTENDS A PRE-CONSTRUCTION MEETING WITH THE PROJECT BIOLOGIST, LANDSCAPE DESIGNER/ ARCHITECT AND CITY OF WOODINVILLE BIOLOGIST.
2. CONTRACTOR WILL FLAG ALL THE LIMITS OF THE ENHANCEMENT AREAS FOR PROJECT BIOLOGIST APPROVAL. CONTRACTOR WILL WALK THE SITE WITH THE PROJECT BIOLOGIST TO CLARIFY LIMITS OF CONSTRUCTION AND THE WORK TO BE PERFORMED.
3. CONTRACTOR WILL INSTALL TEMPORARY EROSION/SEDIMENT CONTROL MEASURES AS REQUIRED FOR PROJECT BIOLOGIST APPROVAL PRIOR TO THE COMMENCEMENT OF WORK.
4. CONTRACTOR WILL REMOVE ALL GARBAGE, DEBRIS, HARD SURFACE MATERIAL, GRAVEL AND INVASIVE SPECIES FROM BUFFER ENHANCEMENT AREA AS DIRECTED BY THE PLANS AND PROJECT BIOLOGIST.
5. CONTRACTOR WILL DE-COMPACT SOIL AS NECESSARY AND AMEND EXISTING SOIL WITH COMPOST AS NECESSARY.
6. CONTRACTOR WILL LAY OUT NURSERY-GROWN PLANTS PER PLANS FOR APPROVAL BY THE PROJECT BIOLOGIST. FOLLOWING LAYOUT APPROVAL, CONTRACTOR TO INSTALL PLANTS, SEED AND MULCH AS DIRECTED BY PLANS.
7. THE PROJECT BIOLOGIST WILL APPROVE PLANT INSTALLATION.
8. CONTRACTOR SUBMITS AS-BUILT DRAWING AND COPIES OF INVOICES FOR ALL PLANT, SOIL AMENDMENT, AND MULCH MATERIALS USED TO THE PROJECT BIOLOGIST.
9. PROJECT BIOLOGIST SUBMITS AS-BUILT REPORT TO THE CITY OF WOODINVILLE FOR REVIEW AND APPROVAL.

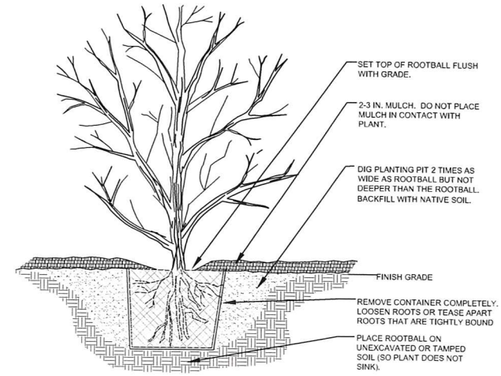
GOALS AND OBJECTIVES

THE OVERALL CRITERIA FOR THE ENHANCED BUFFER AREA IS TO CREATE A NATIVE PLANT COMMUNITY THAT WILL BUFFER THE STREAM FROM THE HOUSING COMMUNITY WITH NATIVE PLANTS APPROPRIATE FOR THE PROXIMITY OF THE ROAD. THE OVERALL CRITERIA FOR THE ENHANCED BUFFER WOULD BE BASE ON THE SUCCESSFUL ESTABLISHMENT OF DESIRED PLANT COMMUNITIES. EVALUATION CRITERIA FOR SUCCESS OF THE MITIGATION PLAN WOULD NOT BE 100 PERCENT SURVIVAL OF INDIVIDUAL PLANT MATERIALS (EXPECT AS NOTED BELOW) BUT RATHER THE ESTABLISHMENT OF DESIRABLE PLANT COMMUNITIES WITHIN THE ENHANCED BUFFER. OBJECTIVES OF THE MITIGATION PLAN CONSIST OF THE FOLLOWING

1. ENHANCE EXISTING STREAM AND BUFFER FUNCTIONS THROUGH THE INSTALLATION OF NATIVE TREES AND SHRUBS
2. REMOVE INVASIVE SPECIES IDENTIFIED BY THE PROJECT BIOLOGIST FORM THE AREAS OF ENHANCEMENT.

PERFORMANCE STANDARDS

1. 100% SURVIVAL OF ALL PLANTED SHRUBS AND TREES FOR ONE YEAR AFTER PLANTING. ALL PLANTINGS THAT DO NOT SURVIVE THROUGH THE END OF THE FIRST GROWING SEASON WILL BE REPLACED WITH THE SAME OR SIMILAR SPECIES AND SPECIFICATIONS. UPON INSTALLATION OF REPLACEMENT PLANTING AT THE CONCLUSION OF THE 1ST YEAR, THE 100% SURVIVAL STANDARD WILL BE CONSIDERED TO BE MET:
2. 90% SURVIVAL OF ALL PLANTED SHRUBS AND TREES AFTER THREE YEARS. SUFFICIENT PLANTINGS WILL BE REPLACED, AS NECESSARY, WITH THE SAME OR SIMILAR SPECIES AND SPECIFICATIONS IN ORDER TO MEET THE 90% SURVIVAL. UPON INSTALLATION OF REPLACEMENT PLANTING AT THE CONCLUSION OF THE 3RD YEAR, THE 90% SURVIVAL STANDARD WILL BE CONSIDERED TO BE MET:
3. TOTAL COVERAGE BY SHRUB AND TREE SPECIES (INCLUDING NATIVE VOLUNTEER SPECIES) WITHIN THE BUFFER ENHANCEMENT AREA SHALL BE:
   - AT LEAST 5% AFTER ONE YEAR
   - AT LEAST 20% AFTER THREE YEARS
   - AT LEAST 50% AFTER FIVE YEARS
4. AT THE TIME OF COMPLIANCE MONITORING THERE SHALL BE 0% INVASIVE SPECIES. THERE SHALL BE LESS THAN 10% CUMULATIVE COVER OF THE FOLLOWING INVASIVE PLANT SPECIES WITHIN THE BUFFER ENHANCEMENT AREA AT THE END OF THE FIVE YEAR MONITORING PERIOD: HIMALAYAN BLACKBERRY (*RUBUS ARMENIACUS*), CUTLEAF BLACKBERRY (*RUBUS LACINATUS*), REED CANARYGRASS (*PHALARIS ARUNDINACEA*), SCOT'S BROOM (*CYTISUS SCOPARIUS*), OR OTHER SPECIES AS DETERMINED BY THE PROJECT BIOLOGIST.



1 CONTAINER TREE OR SHRUB PLANTING DETAIL
NTS

PERFORMANCE BOND

IF THE APPLICANT SEEKS A DEVELOPMENT PERMIT THAT IS CONTINGENT ON THE PERFORMANCE OF A MITIGATION PROJECT, AN ASSIGNMENT OF FUNDS FOR 150% OF THE COST OF THE MITIGATION MUST BE SUBMITTED TO THE PERMIT CENTER PRIOR TO ISSUANCE OF THE DEVELOPMENT PERMIT. THE ASSIGNMENT OF FUNDS WILL BE HELD UNTIL THE MITIGATION HAS BEEN COMPLETED AND APPROVED BY THE CITY OF WOODINVILLE'S ENVIRONMENTAL SPECIALIST. ONCE THE MITIGATION HAS BEEN APPROVED, THE ASSIGNMENT OF FUNDS WILL CONVERT TO A MAINTENANCE MONITORING ASSIGNMENT OF FUNDS.

Raedeke Associates, Inc.
9510 Stone Avenue North
Seattle, WA 98103

RAI PROJECT: 2014-013-002

DATE: MAY 11, 2015

DRAWN BY:AC | PM:CW

BASE INFORMATION: SURVEY & SITE PLAN
BLUELINE | 25 Central Way, Suite 400
Kirkland, WA 98033 Ph: 425.216.4051

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FIGURE 4
QUADRANT
CHURCH PROPERTY
CRITICAL AREAS ASSESSMENT
BUFFER ENHANCEMENT PLAN

F:\2014\2014-013 Quadrant Church\11x17 2014-013 Church.dwg

APPENDIX A:

Sample Plot Data Sheets

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WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Quadrant Church City/County: Woodinville/King Sampling Date: 2-4-14

Applicant/Owner: Quadrant State: WA Sampling Point: SP-1

Investigator(s): Chris Wright Section, Township, Range: S3 T26N R5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR): Northwest forests & coasts (LRR-A) Lat: 47 46 31.73N Long: 122 09 36.37W Datum: unknown

Soil Map Unit Name: Alderwood gravelly sandy loam, 8 to 16 percent slopes. NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: Sample point is located near wetland boundary flag 1. Sample plot is located within a pasture that is actively grazed by cattle.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata (western red cedar)	25	Y	FAC
2.			
3.			
4.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 3m radius)			
1. Rubus armeniancus (Himalayan blackberry)	25	Y	FACU
2. Rubus spectabilis (Salmon rasberry)	20	Y	FAC
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 1m radius)			
1. Gramineae spp.	20	NA	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 3m radius)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: Sample plot between driveway and west boundary fence

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SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 4/3	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: lack of hydric indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology to 16 inches

EXHIBIT 9
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WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Quadrant Church City/County: Woodinville/King Sampling Date: 2-4-14

Applicant/Owner: Quadrant State: WA Sampling Point: SP-2

Investigator(s): Chris Wright Section, Township, Range: S3 T26N R5E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR): Northwest forests & coasts (LRR-A) Lat: 47 46 31.73N Long: 122 09 36.37W Datum: unknown

Soil Map Unit Name: Alderwood gravelly sandy loam, 8 to 16 percent slopes. NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: Sample point is located near wetland boundary flag 1. Sample plot is located within a pasture that is actively grazed by cattle.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata (western red cedar)	25	Y	FAC
2. Alnus rubra (red alder)	30	Y	FAC
3.			
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m radius)			
1. Rubus armeniancus (Himalayan blackberry)	40	Y	FACU
2.			
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 1m radius)			
1. Polystichum munitum (sword fern)	20	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 3m radius)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species 55	x 3 = 165
FACU species 60	x 4 = 240
UPL species	x 5 =
Column Totals: 115 (A)	405 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: Sample plot in southwestern portion of site

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SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 4/3	100					gr. s. loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: lack of hydric indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
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- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
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- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology to 16 inches