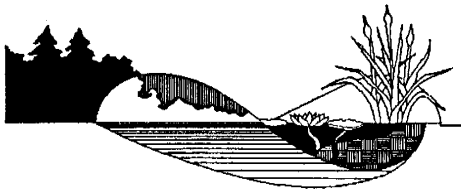
Appendix J:

Wetland & Stream Analysis Report – Montevallo



B-12 Wetland Consulting, Inc.

MONTEVALLO

Wetland and Stream Analysis Report

CITY OF WOODINVILLE, WA

Prepared For:

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PO Box 3167
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September 6, 2005
Job#A3-153

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MONTEVALLO

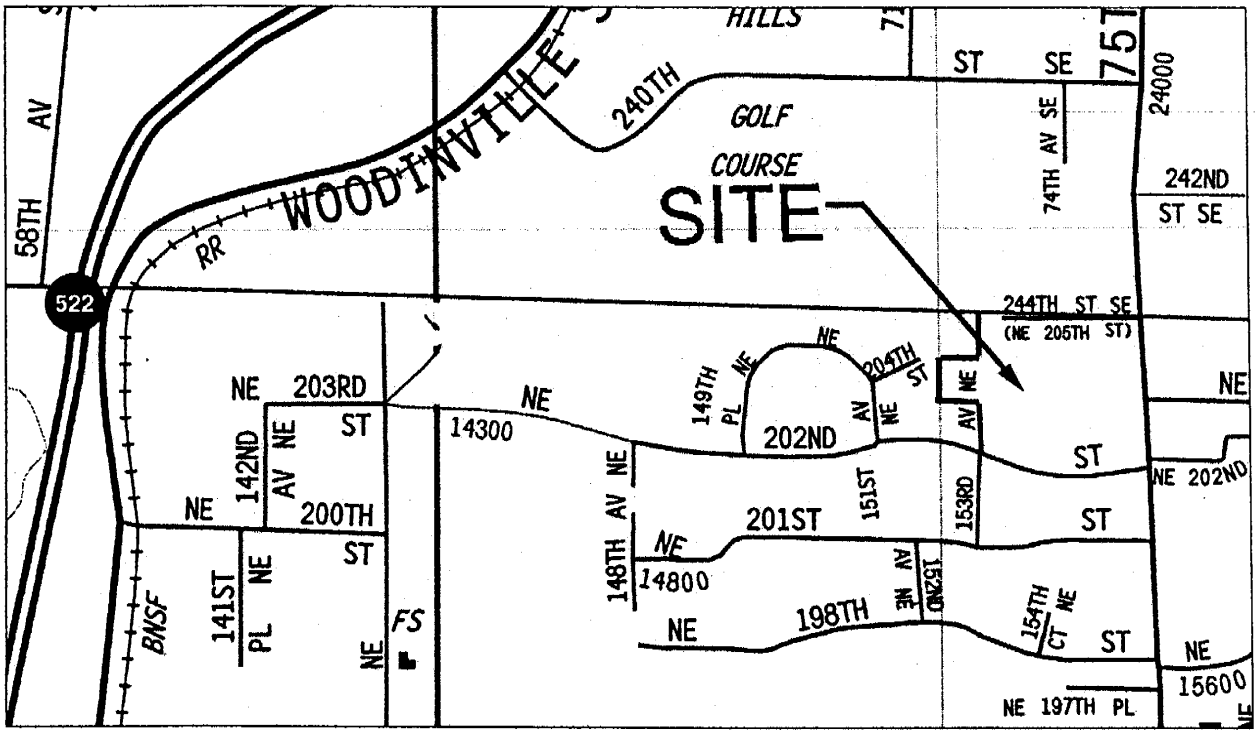
WETLAND AND STREAM ANALYSIS REPORT

City of Woodinville, Washington

1.0 INTRODUCTION

1.1 Location

This report describes the jurisdictional wetlands and streams on the irregularly shaped 16.6 acre property known as the Plat of Montevallo. The property is located at the west end of 244th Street, SE (NE 205th St) in the City of Woodinville, Washington (the "site").



Vicinity Map

1.2 Existing Use

The west side of the site contains a single family residence with a barn and associated out buildings. A pasture currently used for grazing horses is located west and south of the barn and home. Forested wetlands, as well as a small portion of forested upland area, are located to the west of the pasture. Pasture used for grazing is also located to the east of this residence and barn. The east side of the site contains four single family residences, outbuildings and pasture/lawn areas.

2.0 METHODOLOGY

Ed Sewall and Aaron Will of B-12 Wetland Consulting, Inc. inspected the site for jurisdictional wetlands on December 19, 2004. The wetland edges were flagged with pink "Wetland Delineation" flagging labeled consecutively "A-1, A-2..." and "B-1, B-2..." The data points were marked with orange and black-striped flagging labeled DP #__. The wetland flags were surveyed by Triad Associates.

A combination of field indicators, including vegetation, soils, and hydrology, was used to determine the presence of wetlands. The methodology used to identify any jurisdictional wetlands on the site is described in the *Washington State Wetlands Identification and Delineation Manual* (WADOE, March 1997). This is the methodology currently recognized by City of Woodinville and the State of Washington for wetland determinations and delineations. The wetland areas identified would also be considered wetlands using the methodology described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987), as required by the US Army Corps of Engineers.

The *Washington State Wetlands Identification and Delineation Manual* and the *Corps of Engineers Wetlands Delineation Manual* both require the use of the three-parameter approach in identifying and delineating wetlands. A wetland should support a predominance of hydrophytic vegetation, have hydric soils and display wetland hydrology. To be considered hydrophytic vegetation, over 50% of the dominant species in an area must have an indicator status of facultative (FAC), facultative wetland (FACW), or obligate wetland (OBL), according to the National List of Plant Species That Occur in Wetlands: Northwest (Region 9) (Reed, 1988). A hydric soil is "a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part". Anaerobic conditions are indicated in the field by soils with low chromas (2 or less), as determined by using the Munsell Soil Color Charts; iron oxide mottles; hydrogen sulfide odor and other indicators. Generally, wetland hydrology is defined by inundation or saturation to the surface for a consecutive period of 12.5% or greater of the growing season. Areas that contain indicators of wetland hydrology between 5%-12.5% of the growing season may or may not be wetlands depending upon other indicators. Field indicators include visual observation of soil inundation, saturation, oxidized rhizospheres, water marks on trees or other fixed objects, drift lines, etc. Under normal circumstances, indicators of all three parameters will be present in wetland areas.

Streams were identified by the presence of a defined channel that contains flowing surface water at some time of the year.

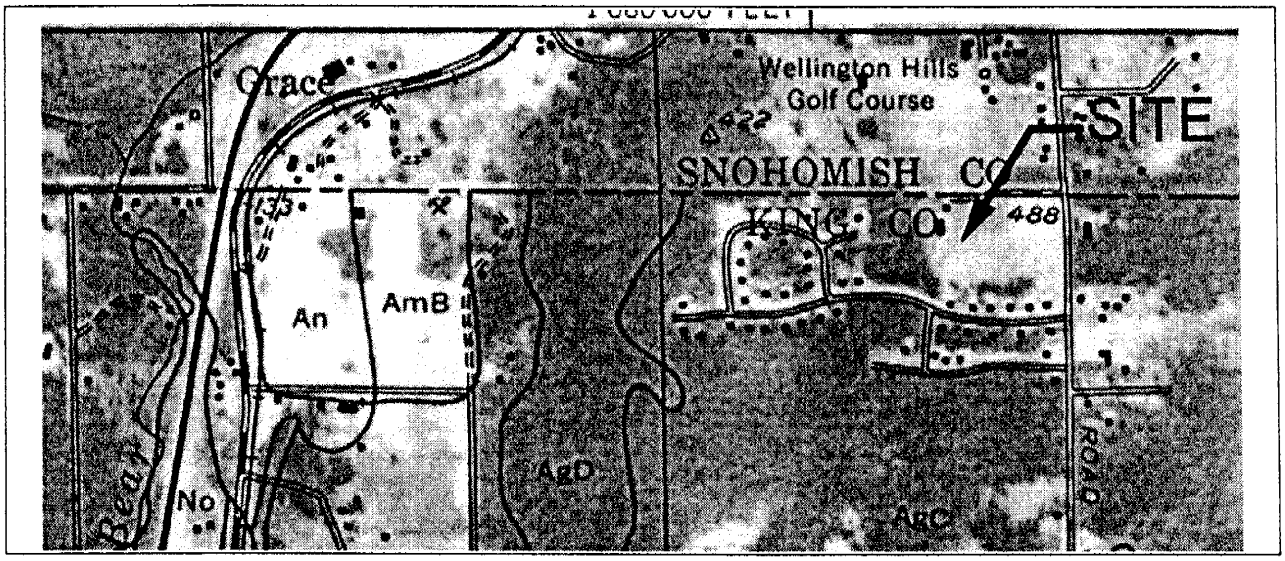
3.0 OBSERVATIONS

3.1 Existing Site Documentation

Prior to visiting the site, a review of several natural resource inventory maps was conducted. Resources reviewed included the King County Soil Survey (Snyder et al. 1973), King County Sensitive Areas Folio: Streams and Wetlands and the National Wetlands Inventory Map.

3.1.1 King County Soil Survey

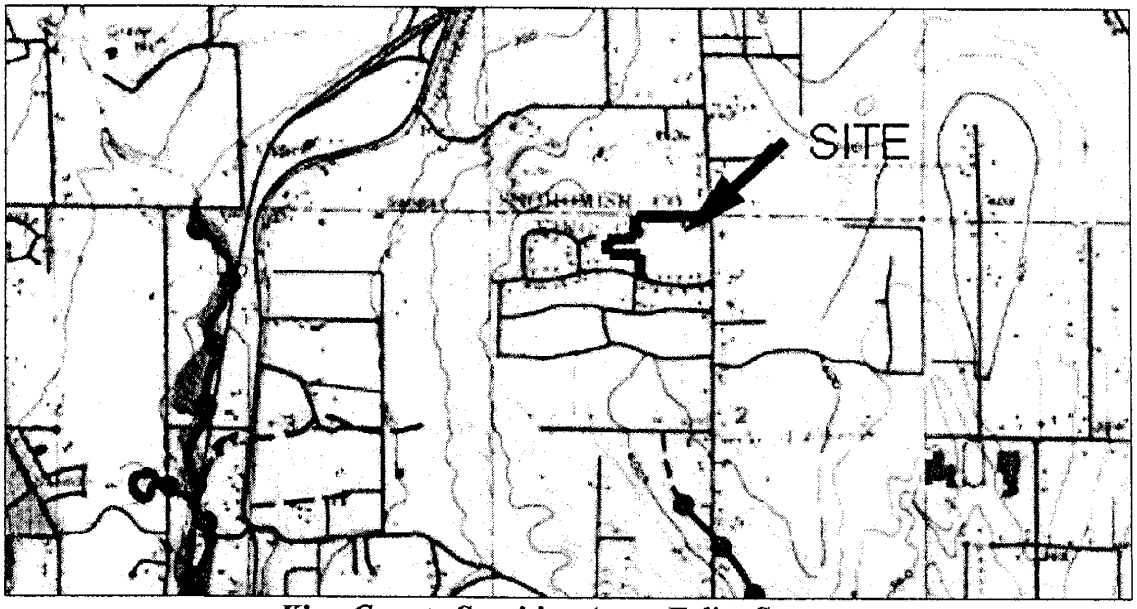
According to the King County Soil Survey the site is mapped as Alderwood gravelly sandy loam (AgC). Alderwood soils are moderately well drained soils formed in glacial till. According to the publication *Hydric Soils of the United State* Alderwood soils are not considered a "hydric" or wetland soil. However, Alderwood soils can include small inclusions of hydric soils.



King County Soil Survey

3.1.2 King County Sensitive Areas Folio: Streams

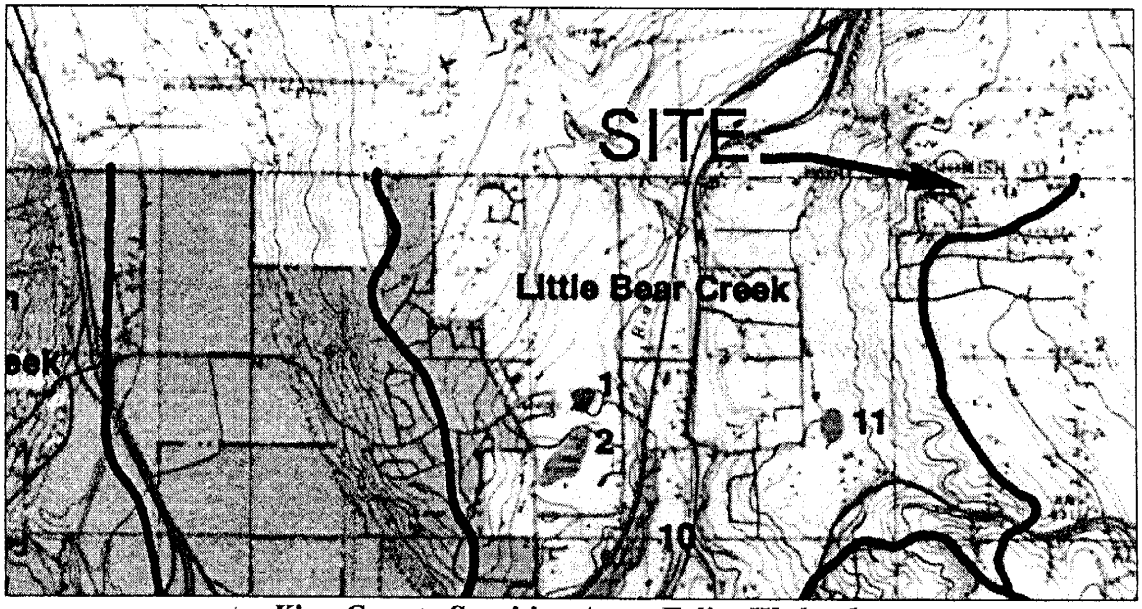
According to the King County Sensitive Areas Folio: Streams, there are no streams located on the site.



King County Sensitive Areas Folio: Streams

3.1.3 King County Sensitive Areas Folio: Wetlands

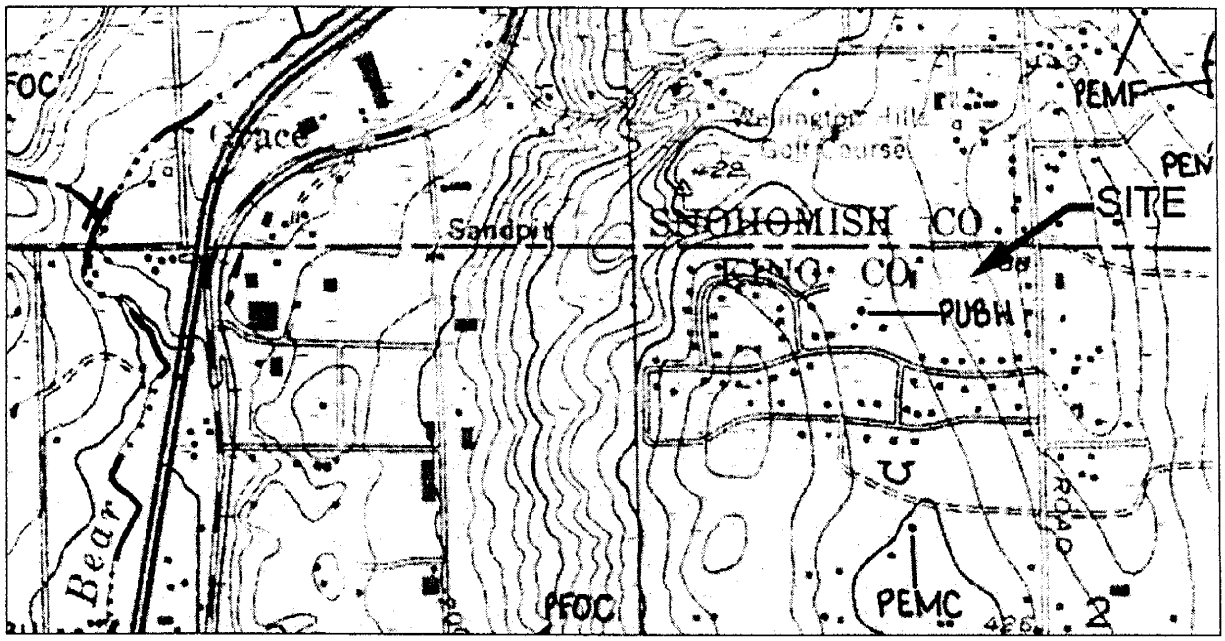
According to the King County Sensitive Areas Folio: Wetlands, there are no wetlands located on the site.



King County Sensitive Areas Folio: Wetlands

3.1.4 National Wetland Inventory

According to the National Wetland inventory there are no wetlands or streams located on the site.

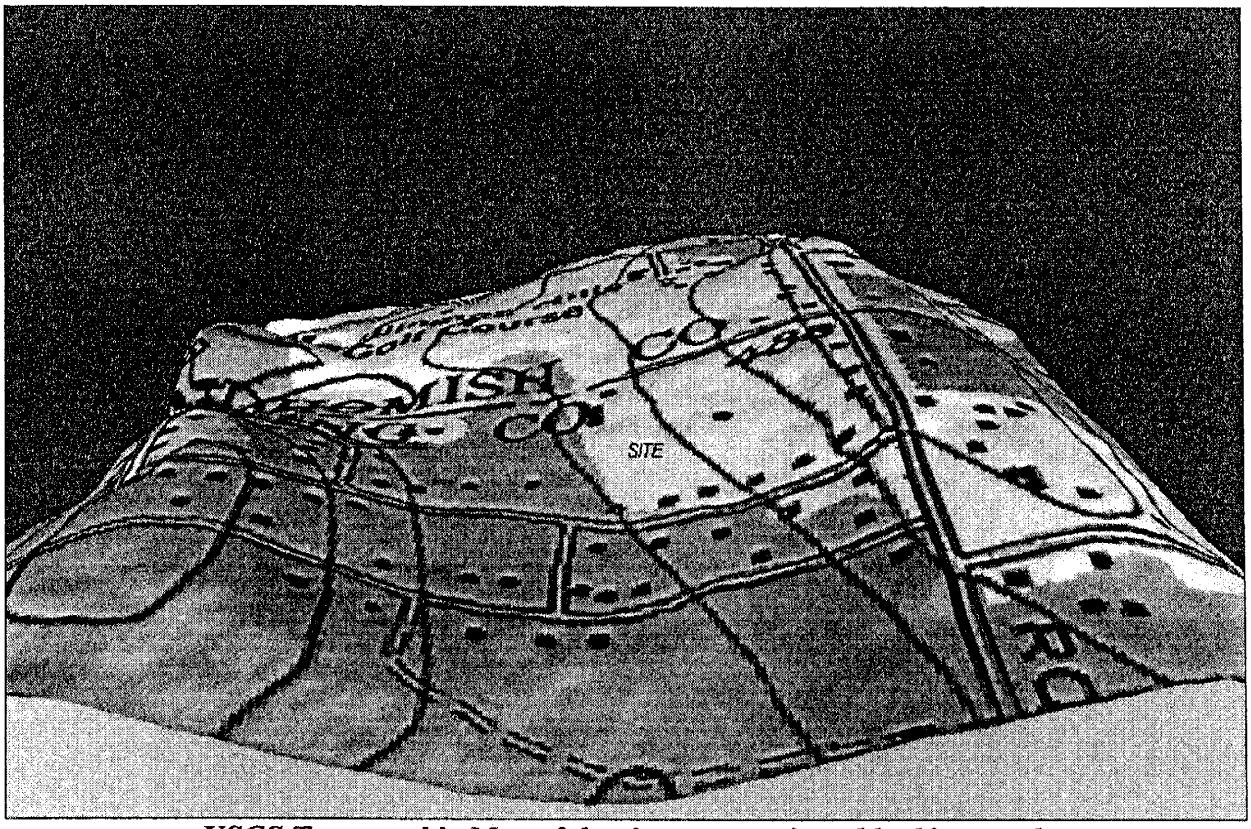


National Wetland Inventory Map

3.2 Field Observations

3.2.1 Topography

The site generally slopes to the west towards the sites low point, which is the wetland located near the west side of the site. Water within this wetland drains to the north off-site in an intermittent flow, ditched stream feature. This stream eventually enters a more defined ravine off-site to the west which flows several thousand feet down a steep hillside before being culverted under the highway (SR 522) and eventually entering Little Bear Creek. Due to the length of its culverted channel just east of SR 522, as well as the very steep topography along the hillside to the north and west of the site, fish cannot enter or access the tributary that the sites wetland drains into on the east side of SR 522.



USGS Topographic Map of the site area as viewed looking north

3.3 Uplands

The upland area of the site is characterized by areas that are completely developed with homes, outbuildings, lawns and landscaped areas, as well as grazed pastures and some forested upland on the west side of the site. The forested upland areas surround the sites single wetland and are vegetated with a mix of douglas fir (*Psuedotsuga menziesii*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), indian plum (*Oemlaria cerasiformis*),vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), sword fern (*Polystichum munitum*)and stinging nettle (*Urtica dioica*).

Upland pasture portions of the site are vegetated with a mix of bentgrass (*Agrostis spp.*), English plantain (*Plantago lanceolata*), dandelion (*Taraxacum officinale*), and creeping buttercup (*Ranunculus repens*).

Soil pits excavated within the upland areas revealed a 6-inch gravelly sandy loam A-horizon with a matrix color of 10YR 3/2. The underlying gravelly sandy loam B-horizon reveal a soil color of 10YR 3/6. During our site visit soils within the upland area were dry.

3.4 Wetlands

A single forested and emergent wetland is located near the west side of the site comprising 71,567sf. This wetland (labeled as Wetland A/B) is located at the head of a drainage that flows out of the wetland in wetter months in a dug ditch to the north. This wetland was flagged on the east edge with pink "Wetland Delineation" flagging labeled A-1 though A-13. The west side of the wetland was flagged with pink "Wetland Delineation" flagging labeled B-1 through B-11. The majority of flags A-1 through A-13 were located ion the slope of the pasture. At the toe of the slope where the tree line and the pasture meet there is a small ditch that is oriented in a north south direction. Based upon visible topography, the ditch feature appears to flow to the north, although no surface flow was present during our site visit. To the west of the pasture portion of the wetland a small area of forested wetland is located.

Vegetation within Wetland A/B in the forested areas includes western red cedar (*Thuja plicata*), red alder, black cottonwood, salmonberry (*Rubus spectabilis*), slough sedge (*Carex obnupta*), and lady fern (*Athyrium Filix-femina*).

Soil pits excavated within Wetland A/B revealed a shallow muck layer with a soil color of 10YR 2/1 and an underlying B-horizon with a matrix color of 10YR 3/2 with both common, fine distinct and common, medium distinct redoximorphic features. During our site visit soils were saturated within 12-inches from the soil surface. Soils at the eastern edge of the wetland were only moist but are assumed to be wetter in the early growing season based upon the presence of hydrophytic vegetation and hydric soils.

Hydrology of Wetland A/B appears to be a mix of direct precipitation, road runoff from streets located to the south and west of the site, as well as roof runoff from the barn on-site. We also noted a drain draining water into the wetland with what appears to be gray water from a laundry machine or sinks in the western residence. This water drains directly into the wetland from a small culvert located within the pasture near the north side of the home.

According to the United States Fish and Wildlife (USFWS) wetland classification method (Cowardin et al. 1979), Wetland A/B would consist of areas that would be considered palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C) and palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded (PSS1C).

According to the Woodinville Municipal Code (WMC §21.06.710) Wetland A/B would be considered a Class 2 wetland due to its size >1 acre and forested wetland class. Typically Class 2 wetlands have a 50-foot buffer measured from the wetland edge (WMC §21.24.310).

4.0 Proposed project, impacts and concept mitigation

The proposed project is the construction of a residential plat with 66 single family lots, associated roads and stormwater facility. The requirements to tie the sewer system into the City's sewer on the west side of the wetland, as well as the City's requirement for a path to cross from the site to 204th street require some permanent and some temporary impacts to the wetland and buffer. Alterations of wetlands and buffers are generally not allowed under City of Woodinville Code except for specific conditions which are not met by this proposal. However, there is no alternative location for the sewer location other than through the wetland as proposed, and the trail through the wetland and buffer is a requirement imposed on the plat by the City. The Planning Director may determine the proposed wetland impacts require a Variance from the Code.

The sewer line tie-in will require a temporary impact to the wetland of 2,920sf (600sf of forested wetland and 2,320sf of emergent wetland) and a temporary impact of 5,866sf of buffer (*see attached B-12 Wetland Consulting Inc. - Montevallo Concept Mitigation Plan*). In addition, a narrow pedestrian walkway will cross the wetland. The walkway will be placed upon pin piles which require no fill of wetlands (from a US Army Corps perspective) or impacts to wetland hydrology. The use of pin piles also allows small animals and amphibians to migrate through the area of the path unencumbered. However, it is still considered a permanent impact of wetland vegetation by the City. This impact equates to 385sf of wetland vegetation impact and 695sf of buffer impact.

The proposed project will be constructed on the narrowest construction corridor possible and it is likely less wetland and buffer will be temporarily impacted than the total width of the easement. Following construction of the sewer line and footpath, the wetland and its buffer will be re-graded to original grades, hydroseeded with a native grass mix, and in the areas of existing woody vegetation, re-planted with a mix of native trees and shrubs.

To compensate for the permanent impact to 385sf of wetland vegetation, the City requires a mitigation ratio of 2:1 for Category 2 wetlands. Therefore 772sf of wetland will be enhanced with a dense planting of native trees and shrubs. To compensate for the 695sf of buffer impact, 695sf of buffer will be added to the wetland buffer on the west side of the wetland using buffer averaging. Additionally, 1,390sf of existing degraded wetland buffer will be enhanced with a dense planting of native tree and shrub species.

The final plans will include details on the sewer line construction (including the use of impervious dams in the trench to prevent dewatering of the wetland) as well as the stockpiling of soil and revegetation, plant placement, specifications, performance standards, monitoring methods and contingency measures. This area will be monitored for 3 years as required by Code to insure successful restoration of the wetland and buffer.

Following approval of this concept, a Final Detailed Mitigation Plan will be prepared for review and approval by the City.

If you have any questions or need any additional information please contact our office at 253.859.0515 or by e-mail at ed@b12assoc.com .

Sincerely,
B-12 Wetland Consulting, Inc.

Ed Sewall
President/Senior Wetland Ecologist, PWS #212

ROUTINE WETLAND DETERMINATION DATA FORM

(Washington State Wetlands Identification & Delineation Manual, 1997)

B-12 WETLAND CONSULTING, INC.
1103 West Meeker Street
Kent, Washington 98032
(253) 859-0515

Project Name/#: Monteville Date: 12-19-03 Investigator: SJ Scholl Data Point: DP#1
Jurisdiction: Woodinville State: WA Atypical Analysis: Problem Area:

VEGETATION

Dominant plant species	Stratum	Indicator	Coverage %
1. Dactylis glomerata	H	FACU	
2. Ranunculus repens	H	FACW	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

% of species OBL, FACW and/or FAC: 50 Hydrophytic vegetation criteria met: Yes No (Marginal)
Comments:

SOILS

Mapped Soil Series: On Hydric Soils List?: Yes No Drainage Class:

Depth(0 in)	*Matrix color*	*Redox concentration color*	*Texture*
6 in.	10YR 3/2		
16 in.	10YR 3/3		
in.			
in.			

Organic soil__, Histic epipedon__, Hydrogen sulfide__, gleyed__, redox concentrations__, redox depletions__, pore linings__, irc concretions__, manganese concretions__, organic matter in surface horizon (sandy soil)__, organic streaking (sandy soils)__, organic pan (sandy soil)__.
Hydric soil criteria met: Yes (No) Basis: no indicators
Comments:

HYDROLOGY

Recorded data__, inundation_____, saturation_____,watermarks_____, drift lines_____, sediment deposits_____, drain patterns_____.
Wetland hydrology criteria met: Yes (No) Basis: no indicators
Comments:

SUMMARY OF CRITERIA

Soil Temp. at 19.7" depth:_____ Growing Season?: Y(N)
Hydrophytic vegetation: Y/N ~ Hydric soils: Y/N Wetland hydrology: Y(N)
Data point meets the criteria of a jurisdictional wetland?: Yes (No)

ROUTINE WETLAND DETERMINATION DATA FORM
(Washington State Wetlands Identification & Delineation Manual, 1997)

B-12 WETLAND CONSULTING, INC.
1103 West Meeker Street
Kent, Washington 98032
(253) 859-0515

Project Name/#: Monterra II/o Date: 12-19-03 Investigator: Ed Sewall Data Point: DP#2
Jurisdiction: Woodinville State: WA Atypical Analysis: Problem Area:

VEGETATION

Dominant plant species	Stratum	Indicator	Coverage %
1. Ranunculus repens	H	FACW	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

% of species OBL, FACW and/or FAC: 100 Hydrophytic vegetation criteria met: (Yes) No Marginal
Comments:

SOILS

Mapped Soil Series: On Hydric Soils List?: Yes No Drainage Class:

Depth(0 in)	*Matrix color*	*Redox concentration color*	*Texture*
16 in.	10YR 3/2	common, med, distinct	gsL
in.			
in.			
in.			

Organic soil__, Histic epipedon__, Hydrogen sulfide__, gleyed__, redox concentrations X, redox depletions__, pore linings__, ir concretions__, manganese concretions__, organic matter in surface horizon (sandy soil)__, organic streaking (sandy soils)__, organic pan (sandy soil)__.
Hydric soil criteria met: (Yes) No Basis: chroma of 2 w/redox Features
Comments:

HYDROLOGY

Recorded data__, inundation_____, saturation 0"__, watermarks_____, drift lines_____, sediment deposits_____, drai patterns_____.
Wetland hydrology criteria met: (Yes) No Basis: sat. at surface
Comments:

SUMMARY OF CRITERIA

Soil Temp. at 19.7" depth: _____ Growing Season?: Y/(N)
Hydrophytic vegetation: (Y)/N Hydric soils: (Y)/N Wetland hydrology: (Y)/N
Data point meets the criteria of a jurisdictional wetland?: (Yes) No

ROUTINE WETLAND DETERMINATION DATA FORM

(Washington State Wetlands Identification & Delineation Manual, 1997)

B-12 WETLAND CONSULTING, INC.
1103 West Meeker Street
Kent, Washington 98032
(253) 859-0515

Project Name/#: Montevallo Date: 12-19-03 Investigator: Ed Sewall Data Point: DP#3
Jurisdiction: Woodinville State: WA Atypical Analysis: Problem Area:

VEGETATION

Dominant plant species	Stratum	Indicator	Coverage %
1. Agrostis spp.	H	FAC	
2. Dactylis glomerata	H	FACU	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

% of species OBL, FACW and/or FAC: 50% Hydrophytic vegetation criteria met: Yes No Marginal
Comments:

SOILS

Mapped Soil Series: On Hydric Soils List?: Yes No Drainage Class:

Depth(0 in)	*Matrix color*	*Redox concentration color*	*Texture*
16 in.	10YR 3/3		
__in.			
__in.			
__in.			

Organic soil__, Histic epipedon__, Hydrogen sulfide__, gleyed__, redox concentrations__, redox depletions__, pore linings__, i concretions__, manganese concretions__, organic matter in surface horizon (sandy soil)__, organic streaking (sandy soils)__, organic pan (sandy soil)__.
Hydric soil criteria met: Yes No Basis: No indicators
Comments: mixed w/ burned soil + debris

HYDROLOGY

Recorded data__, inundation_____, saturation_____, watermarks_____, drift lines_____, sediment deposits_____, drai patterns_____.
Wetland hydrology criteria met: Yes No Basis:
Comments: No indicators

SUMMARY OF CRITERIA

Soil Temp. at 19.7" depth:_____ Growing Season?: Y/N
Hydrophytic vegetation: Y/N Hydric soils: Y/N Wetland hydrology: Y/N
Data point meets the criteria of a jurisdictional wetland?: Yes No

ROUTINE WETLAND DETERMINATION DATA FORM

(Washington State Wetlands Identification & Delineation Manual, 1997)

B-12 WETLAND CONSULTING, INC.
1103 West Meeker Street
Kent, Washington 98032
(253) 859-0515

Project Name/#: Montevallo Date: 12-19-03 Investigator: Ed Small Data Point: DP #4
Jurisdiction: Woodinville State: WA Atypical Analysis: Problem Area:

VEGETATION

Dominant plant species	Stratum	Indicator	Coverage %
1. Agrostis spp.		FAC	
2. Epilobium watsonii		FACW	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

% of species OBL, FACW and/or FAC: 100 Hydrophytic vegetation criteria met (Yes) No Marginal
Comments:

SOILS

Mapped Soil Series: On Hydric Soils List?: Yes No Drainage Class:

Depth(0 in)	*Matrix color*	*Redox concentration color*	*Texture*
6 in.	10YR 3/2		
16 in.	10YR 3/6		
in.			
in.			

Organic soil__, Histic epipedon__, Hydrogen sulfide__, gleyed__, redox concentrations__, redox depletions__, pore linings__, i concretions__, manganese concretions__, organic matter in surface horizon (sandy soil)__, organic streaking (sandy soils)__, organic pan (sandy soil)__.
Hydric soil criteria met: Yes (No) Basis: No indicators
Comments:

HYDROLOGY

Recorded data__, inundation_____, saturation_____,watermarks_____, drift lines_____, sediment deposits_____, drai patterns_____.
Wetland hydrology criteria met: Yes (No) Basis: No ind. caters
Comments:

SUMMARY OF CRITERIA

Soil Temp. at 19.7" depth: _____ Growing Season?: Y (N)
Hydrophytic vegetation: (Y) N Hydric soils: Y (N) Wetland hydrology: Y (N)
Data point meets the criteria of a jurisdictional wetland?: Yes (No)

ROUTINE WETLAND DETERMINATION DATA FORM
(Washington State Wetlands Identification & Delineation Manual, 1997)

B-12 WETLAND CONSULTING, INC.
1103 West Meeker Street
Kent, Washington 98032
(253) 859-0515

Project Name/#: Montevallo Date: 12-19-03 Investigator: Ed Sewell Data Point: DP#5
Jurisdiction: Woodinville State: WA Atypical Analysis: Problem Area:

VEGETATION

Dominant plant species	Stratum	Indicator	Coverage %
1. Holcus lanatus	H	FAC	
2. Ranunculus repens	H	FACW	
3. Juncus effusus	H	FACW	
4.			
5.			
6.			
7.			
8.			
9.			
10.			

% of species OBL, FACW and/or FAC: 100 Hydrophytic vegetation criteria met: (Yes) No Marginal
Comments:

SOILS

Mapped Soil Series: On Hydric Soils List?: Yes No Drainage Class:

Depth(0 in)	*Matrix color*	*Redox concentration color*	*Texture*
8 in.	10YR 3/2		
16 in.	10YR 3/2	C, M, D	
in.			
in.			

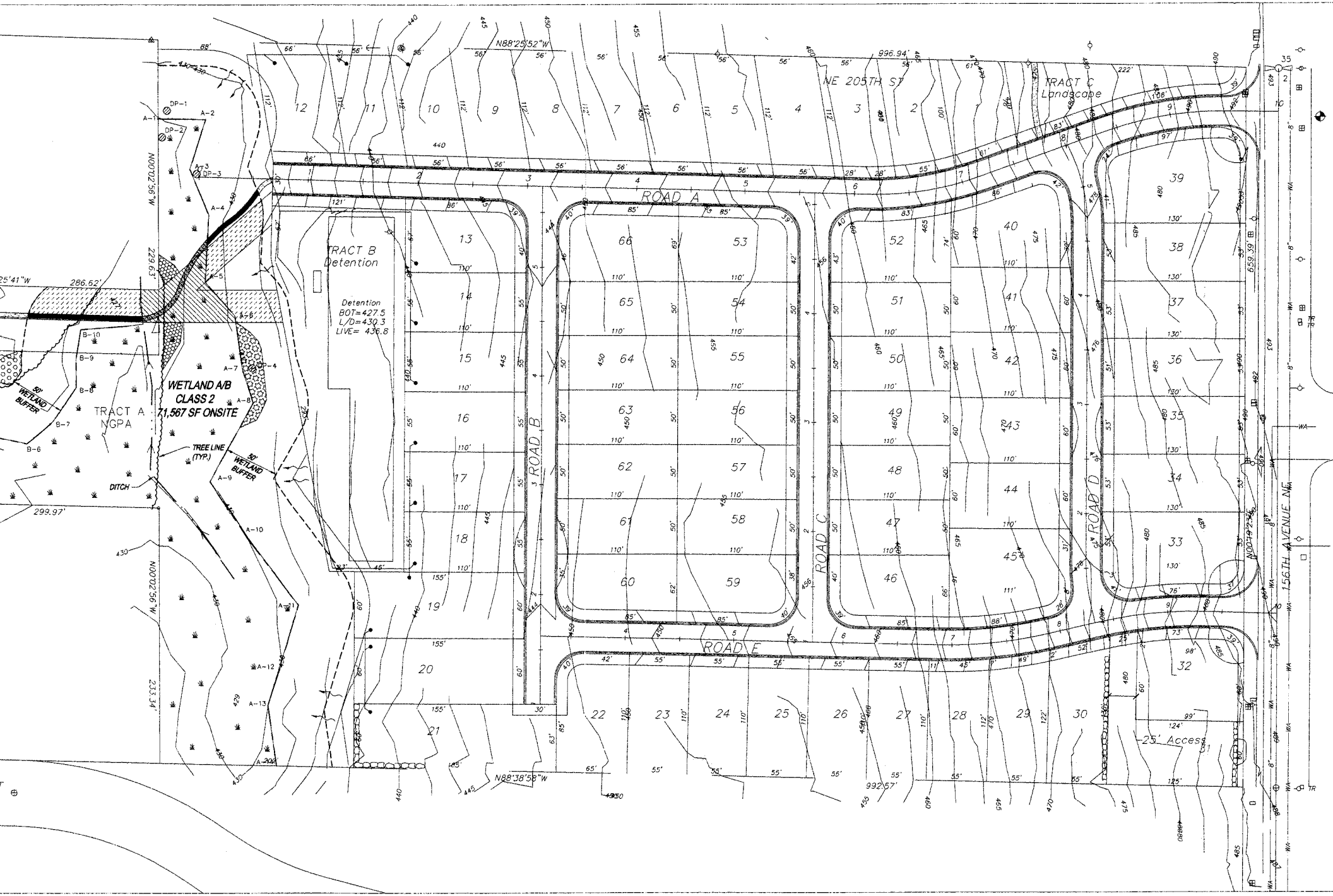
Organic soil__, Histic epipedon__, Hydrogen sulfide__, gleyed__, redox concentrations X, redox depletions__, pore linings__, i concretions__, manganese concretions__, organic matter in surface horizon (sandy soil)__, organic streaking (sandy soils)__, organic pan (sandy soil)__.
Hydric soil criteria met: (Yes) No Basis: chroma of 2 w/ redox features in B hor
Comments:

"HYDROLOGY

Recorded data__, inundation_____, saturation 6 ,watermarks_____, drift lines_____, sediment deposits_____, dra patterns_____.
Wetland hydrology criteria met: (Yes) No Basis: sat within 12"
Comments:

SUMMARY OF CRITERIA

Soil Temp. at 19.7" depth: _____ Growing Season?: (Y) N
Hydrophytic vegetation: (Y) N Hydric soils: (Y) N Wetland hydrology: (Y) N
Data point meets the criteria of a jurisdictional wetland?: (Yes) No



TEMPORARY BUFFER IMPACT TO BE RESTORED: 5,866 SF

TEMPORARY WETLAND IMPACT TO BE RESTORED: 2,920 SF

PERMANENT WETLAND VEGETATION IMPACT: 385 SF

ENHANCED WETLAND: 772 SF

ENHANCED BUFFER: 1,390 SF

PERMANENT BUFFER IMPACT : 695 SF