

## **TECHNICAL MEMORANDUM**

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Date: September 26, 2022  
To: Shelly Henderson; Director of Capital Projects  
Project Name: Mukilteo School District  
Project Number: 220819

### **Re: Mukilteo Elementary School, Wetland and Stream Assessment**

On September 02, 2022, Ecologists Nell Lund and Sage Presster visited the Mukilteo Elementary and Middle School properties located at 2600 Mukilteo Speedway (parcels #28040900102200, 28040900104200, 00591100000102, and 00591100000701) in the City of Mukilteo to screen for jurisdictional wetlands and streams. This technical memo summarizes the findings of the study.

The following documents are enclosed:

- Site Photos
- Wetland and Stream Assessment Sketch
- Wetland Determination Data Forms
- Mukilteo Elementary Grading and Drainage Plan (August 14, 1979)

### **Summary**

No jurisdictional wetlands or streams were found within or directly adjacent to the study area. A stormwater feature meeting wetland criteria is located in the forested northwest corner of the study area. The stormwater feature was intentionally created from non-wetland sites to detain stormwater from the adjacent school properties, and it does not meet the City's definition of a regulatory wetland.

### **Study Area**

The study area is defined as Mukilteo Elementary School located at 2600 Mukilteo Speedway (parcels #28040900102200, 28040900104200, 00591100000102, and 00591100000701) in the City of Mukilteo (Figure 1). The study area is approximately 29.12 acres per the Snohomish County Assessor. Adjacent public or private property was screened from the edge of the study area or nearest publicly accessible property and using aerial photos; no private property was accessed.



Figure 1. Vicinity map of the study area (source: Snohomish County PDS Map Portal, 2020).

## Methods

The study area was evaluated for wetlands using methodology from the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (U.S. Army Corps of Engineers 2010). Presence or absence of wetlands was determined based on an examination of vegetation, soils, and hydrology. Adjoining properties were viewed from the subject property but were not entered.

The study area was evaluated for the presence or absence of an ordinary high water mark as defined by Section 404 of the Clean Water Act, the Washington Administrative Code (WAC) 220-660-030, and the Revised Code of Washington (RCW) 90.58.030 and guidance documents including *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson 2016) and *A Guide to Ordinate High Water Mark*

(OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States (Mersel 2016).

Characterization of climatic conditions for precipitation in the Wetland Determination Data Forms were determined using the WETS table methodology (USDA, NRCS 2015). The “Everett” station from 1991-2020 was used as a source for precipitation data (<http://agacis.rcc-acis.org/>). The WETS table methodology uses climate data from the three months prior to the site visit month to determine if normal conditions are present in the study area region.

Public-domain information on the subject site and surrounding area was reviewed for this wetland and stream assessment report and is summarized below in Table 1.

Table 1. Summary of online mapping and inventory resources.

Resource	Summary
USDA NRCS: Web Soil Survey	<i>Alderwood – Urban land complex, 8 to 15 percent slopes mapped in the northeast and southern portion of the study area. Everett very gravelly sandy loam, 8 to 15 percent slopes centrally mapped in the study area.</i>
USFWS: NWI Wetland Mapper	<i>No wetlands or streams mapped in the study area. Puget Sound (E2AB/USN and E1UBL) mapped approximately 1,400 feet west of the study area.</i>
WDFW: PHS on the Web	<i>No wetlands or streams mapped within the study area. Japanese Gulch Ravine Biodiversity Area and Corridor mapped approximately 1,600 feet east of the study area.</i>
WDFW & NWIFC: Statewide Washington Integrated Fish Distribution	<i>No wetlands or streams mapped within the study area.</i>
WA-DNR: Forest Practices Application Mapping Tool	<i>No wetlands or streams mapped within the study area.</i>
Snohomish County PDS Map Portal	<i>No wetlands or streams mapped within the study area. Seismic hazard area mapped throughout study area. An unknown and untyped stream mapped approximately 330 feet north of the study area.</i>
City of Mukilteo Critical Areas GIS Map	<i>Stream mapped in the northwest portion of the study area. Stream mapping stops at the northern portion of Clover PI (Parcel #0610080505400099700). Stream does not have an applied buffer as other streams on City of Mukilteo mapping.</i>
WETS Climatic Condition	<i>Drier than normal.</i>

## Findings

The study area is within the Everett drainages sub-basin of the Snohomish River Watershed (WRIA 7); Section 9 of Township 28 North, Range 04 East of the Public Land Survey System. Surrounding land use is categorized by high intensity residential and relatively undisturbed natural areas with Japanese Gulch conservation area to the east and a forested ravine to the southwest.

The study area is comprised of Mukilteo Elementary School (parcel #28040900104200), Olympic View Middle School (parcel #00591100000701), associated playfields (parcel #00591100000102), and a forested property used for environmental education and stormwater detention (parcel #28040900102200). No wetlands or streams were identified on either of the two schools or associated playfields. A constructed stormwater featured meeting wetland criteria was identified in the forested property located in the northwest portion of the study area.

The identified stormwater feature was designed in preparation of Mukilteo Elementary School (see attached grading and drainage plan). The stormwater feature captures drainage via two inlets, a 12" corrugated metal culvert to the east and an 18" corrugated metal culvert to the south (Photo 1). Stormwater is stored in a concave depression, centrally located in the forested property. A concrete weir is located along the northwest and western edge of the stormwater feature, containing stormwater in the concave depression (Photo 2). The stormwater feature has an outlet along western edge via an 18" metal corrugated culvert and overflow structure with debris cage (Photo 3).

A small area of seepage is located at the base of the retaining wall spillway in a shallow depression (Photo 4). This area meets wetland criteria of hydrophytic vegetation, hydric soils, and wetland hydrology, but is part of the stormwater feature and is not naturally occurring (see DP-3. Immediately downslope of the seepage, non-wetland soils and hydrology are present within the depression. City of Mukilteo GIS identifies a stream downslope of the stormwater feature; however, no evidence bed and bank characteristics, scour, sorted sediments, drainage patterns or other indicators were observed in the vicinity as hydrology is contained in the stormwater feature.

The surrounding forested canopy is dominated by big-leaf maple (*Acer macrophyllum*), western red cedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and red alder (*Alnus rubra*). Dominant understory vegetation consists of salmonberry (*Rubus spectabilis*), oceanspray (*Holcus discolor*), snowberry (*Symphoricarpos albus*),

dull Oregon grape (*Mahonia nervosa*), evergreen huckleberry (*Vaccinium ovatum*), and western swordfern (*Polystichum munitum*). The forested property is comprised of several nature trails, active restoration, and used for environmental education (Photo 5).

## Local Regulations

The City of Mukilteo regulates streams and wetlands under the Mukilteo Municipal Code (MMC) 17.52 – Critical Areas and defines them under MMC 17.08 – Definitions.

Wetlands are defined per MMC 17.08 (bold emphasis added):

“...**Wetlands do not include** those artificial wetlands intentionally created from non-wetland sites, including but not limited to, irrigation and drainage ditches, grass-lined swales, canals, **detention facilities**, wastewater treatment facilities, farm ponds, and landscape amenities.”

Site observations and the enclosed drainage plan indicate the stormwater feature is an artificial wetland intentionally created from non-wetland conditions to detain stormwater from the adjacent developed schools.

Streams are defined per MMC 17.08 (bold emphasis added):

“‘**Stream**’ means water contained within a channel, either perennial or intermittent, and classified according to WAC 222-16-030 and as listed under water typing system. Streams also include open natural watercourses modified by man. **Streams do not include** irrigation ditches, waste ways, **drains, outfalls, operational spillways**, channels, **stormwater runoff facilities or other wholly artificial watercourses**, except those that directly result from the modification to a natural watercourse.”

## Disclaimer

The information contained in this document is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria referenced above. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, state, and federal regulatory authorities. No warranty, expressed or implied, is made.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Sage Presster". The signature is fluid and cursive, with a long horizontal stroke at the end.

Sage Presster  
Ecologist

## Site Photos



Photo 1. Inlet to stormwater feature via an 18" metal corrugated culvert.



Photo 2. Concrete retaining wall containing stormwater in concave depression.



Photo 3. Stormwater feature outlet and overflow structure with bird cage.



Photo 4. Seepage occurring downslope of the retaining wall and spillway structure, saturated soils noted on left.

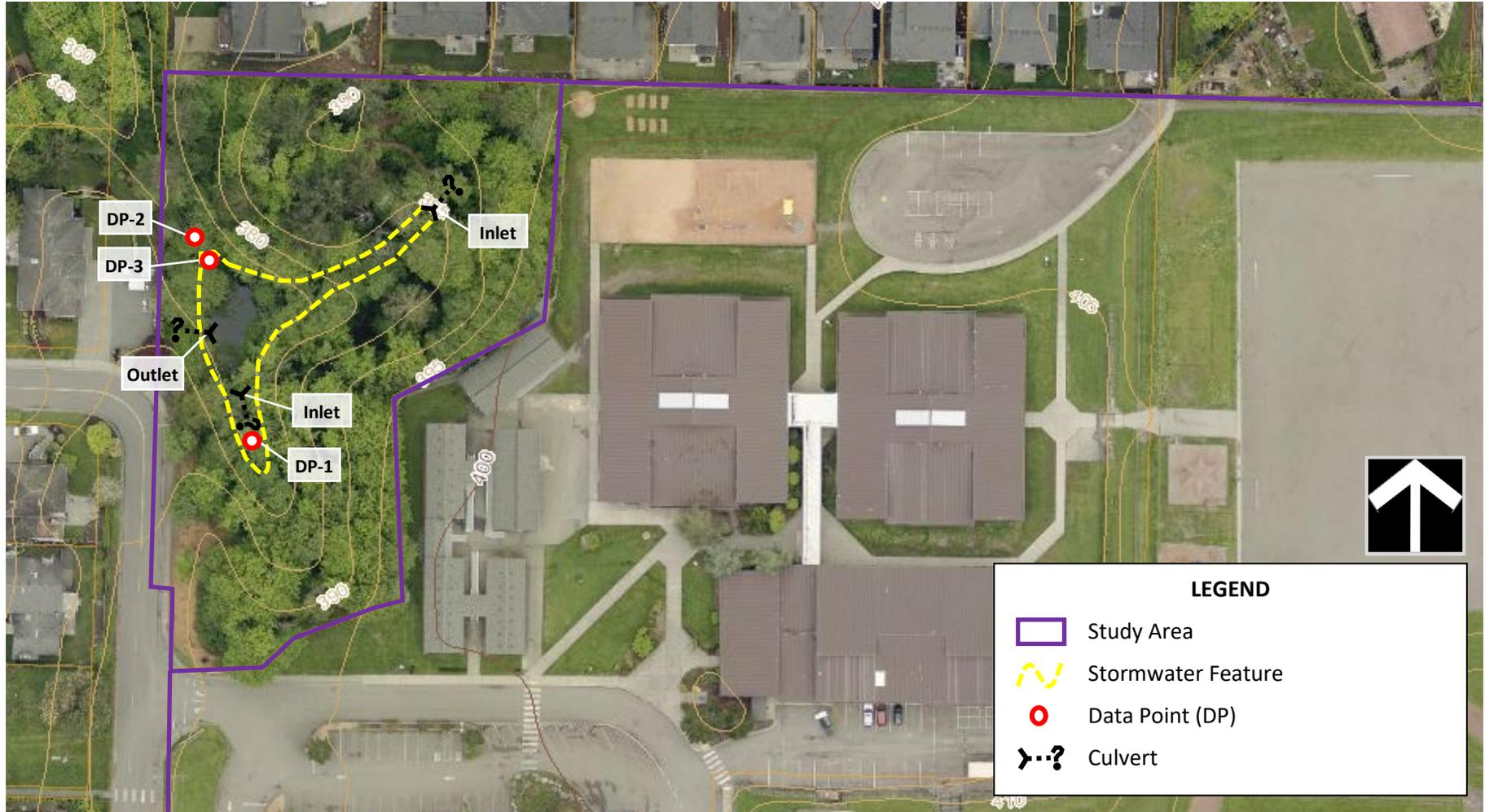


Photo 5. Nature trails throughout forested upland.

## Wetland and Stream Assessment Sketch – Mukilteo Elementary School

Site Address: 2600 Mukilteo Speedway, Mukilteo, WA 98275  
 Parcel Number: 28040900104200, 28040900102200, 00591100000102, 00591100000701  
 Site Visit Date: September 02, 2022

Prepared for: Mukilteo School District  
 TWC Ref. No.: 220819



**Note:** Field sketch only. Features depicted are approximate and not to scale. Data points are marked with yellow- and black-striped flags. All observations were made from within the study area; adjoining private properties were not entered. Study area focused on forested patch (parcel #2804090014200) where a documented stormwater feature was present. Parcels #28040900102200, 00591100000102, and 00591100000701 were also screened in this study but no wetlands or streams were identified.

Project/Site: Mukilteo Elementary School (Parcel #28040900104200) City/County: City of Mukilteo Sampling date: 09-02-2022  
 Applicant/Owner: Mukilteo School District State: WA Sampling Point: DP-1  
 Investigator(s): N. Lund, S. Yuasa Section, Township, Range: S9, T28N, R4E  
 Landform (hillslope, terrace, etc): Depression/Slope Local relief (concave, convex, none): Concave Slope (%): <5%  
 Subregion (LRR): A Lat: - Long: - Datum: -  
 Soil Map Unit Name: Alderwood-Urban land complex, 8 to 15 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 on the site?  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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soils Present?                    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present?            Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <b>Drier than normal per WETS Methodology. Data point taken within storm water pond. Stormwater pond meets wetland criteria but is a constructed stormwater feature.</b>	

**VEGETATION – Use scientific names of plants.**

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: 5-m diameter)				
1. <u><i>Thuja plicata</i></u>	15	N	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Alnus rubra</i></u>	99	Y	FAC	
3. _____				
4. _____				
<u>114</u> = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: 3-m diameter)				
1. <u><i>Holcus discolor</i></u>	45	N*	FACU	<b>Prevalence Index worksheet:</b> 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 =
2. <u><i>Rubus spectabilis</i></u>	10	Y	FAC	
3. _____				
4. _____				
5. _____				
<u>55</u> = Total Cover				
<b>Herb Stratum</b> (Plot size: 1-m diameter)				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is > 50% <input type="checkbox"/> 3 – Prevalence Index is ≤ 3.0 <sup>1</sup> <input type="checkbox"/> 4 – Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 – Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>0</u> = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: 3-m diameter)				
1. _____				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum: <u>100</u>				

Remarks:            \*Overhanging stormwater pond, would be rooted located outside area meeting wetland criteria.

**SOIL**

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color	(moist) %	Color (moist)	%				
0-6	10YR 2/2	100	-	-	-	-	Sandy loam	-
6-14	10YR 5/2	93	7.5YR 4/6	7	C	M	Sandy clay loam	-
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.						<sup>2</sup> Loc: PL=Pore Lining, M=Matrix.		
<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>					<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2cm Muck (A10)						
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)						
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)						
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)						
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)							
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)							
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)							
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)							
						<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<b>Restrictive Layer (if present):</b>					<b>Hydric soil present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Type: _____								
Depth (inches): _____								
Remarks:								

**HYDROLOGY**

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface water (A1)	<input type="checkbox"/> <del>Water-Stained Leaves (except MLRA 1, 2, 4A &amp; 4B) (B9)</del>	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (explain in remarks)	<input type="checkbox"/> Frost-Heave Hummocks	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (in):	-
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (in):	-
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (in):	-
(includes capillary fringe)			
<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Project/Site: Mukilteo Elementary School (Parcel #28040900104200) City/County: City of Mukilteo Sampling date: 09-02-2022  
 Applicant/Owner: Mukilteo School District State: WA Sampling Point: DP-2  
 Investigator(s): N. Lund, S. Yuasa Section, Township, Range: S9, T28N, R4E  
 Landform (hillslope, terrace, etc): Depression/Slope Local relief (concave, convex, none): Concave Slope (%): <5%  
 Subregion (LRR): A Lat: - Long: - Datum: -  
 Soil Map Unit Name: Everett very gravely sandy loam, 8 to 15 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 on the site?  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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soils Present?                    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present?          Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: <b>*Drier than normal per WETS Methodology. Data point located down slope of stormwater pond weir in concave swale feature.</b>	

**VEGETATION** – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: 5-m diameter)				
1. <u><i>Alnus rubra</i></u>	90	Y	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Salix lucida</i></u>	30	Y	FACW	
3. _____				
4. _____				
<u>120</u> = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: 3-m diameter)				
1. <u><i>Rubus spectabilis</i></u>	30	Y	FAC	<b>Prevalence Index worksheet:</b> 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 = _____
2. <u><i>Sambucas racemose</i></u>	5	N	FACU	
3. _____				
4. _____				
5. _____				
<u>35</u> = Total Cover				
<b>Herb Stratum</b> (Plot size: 1-m diameter)				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is > 50% <input type="checkbox"/> 3 – Prevalence Index is ≤ 3.0 <sup>1</sup> <input type="checkbox"/> 4 – Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 – Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>0</u> = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: 3-m diameter)				
1. <u><i>Rubus bifrons</i></u>	10	Y	FAC	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
<u>10</u> = Total Cover				
<b>% Bare Ground in Herb Stratum:</b> 90				
Remarks:				

**SOIL**

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color	(moist) %	Color (moist)	%				
0-10	10YR 2/2	100	-	-	-	-	Silt loam	Quarry spalls throughout
10-20	10YR 2/2	99	7.5YR 4/6	1	C	M	Silt loam	-
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.						<sup>2</sup> Loc: PL=Pore Lining, M=Matrix.		
<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>					<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2cm Muck (A10)						
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)						
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)						
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)						
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.						
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)							
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)							
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)							
<b>Restrictive Layer (if present):</b>					<b>Hydric soil present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
Type: _____								
Depth (inches): _____								
Remarks:								

**HYDROLOGY**

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)			
Primary Indicators (minimum of one required: check all that apply)							
<input type="checkbox"/> Surface water (A1)	<input type="checkbox"/> <del>Water-Stained Leaves (except MLRA 1, 2, 4A &amp; 4B) (B9)</del>			<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)			<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)			<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)			<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)			<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)			<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)			<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)			<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)			
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (explain in remarks)			<input type="checkbox"/> Frost-Heave Hummocks			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)							
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)							
<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (in):	-				
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (in):	-				
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (in):	-				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:							
Remarks:      Soils were damp, but not saturated.							

Project/Site: Mukilteo Elementary School (Parcel #28040900104200) City/County: City of Mukilteo Sampling date: 09-02-2022  
 Applicant/Owner: Mukilteo School District State: WA Sampling Point: DP-3  
 Investigator(s): N. Lund, S. Yuasa Section, Township, Range: S9, T28N, R4E  
 Landform (hillslope, terrace, etc): Depression/Slope Local relief (concave, convex, none): Concave Slope (%): <5%  
 Subregion (LRR): A Lat: - Long: - Datum: -  
 Soil Map Unit Name: Everett very gravely sandy loam, 8 to 15 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 on the site?  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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soils Present?                    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present?            Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <b>Drier than normal per WETS methodology. Located directly behind concrete weir of stormwater pond. Small patch of seepage from stormwater pond.</b>	

**VEGETATION** – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: 5-m diameter)				
1. <u>Salix lucida</u>	40	Y	FACW	<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Alnus rubra</u>	70	Y	FAC	
3. _____				
4. _____				
<u>110</u> = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: 3-m diameter)				
1. <u>Rubus spectabilis</u>	30	Y	FAC	<b>Prevalence Index worksheet:</b> 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 = _____
2. <u>Cornus sericea</u>	2	N	FAC	
3. _____				
4. _____				
5. _____				
<u>32</u> = Total Cover				
<b>Herb Stratum</b> (Plot size: 1-m diameter)				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is > 50% <input type="checkbox"/> 3 – Prevalence Index is ≤ 3.0 <sup>1</sup> <input type="checkbox"/> 4 – Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 – Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>0</u> = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: 3-m diameter)				
1. _____				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum:    100				
Remarks:				

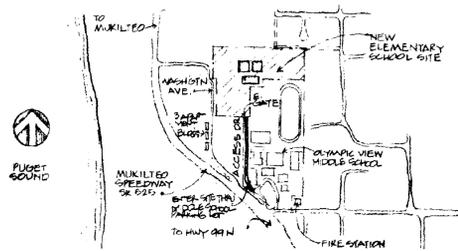


That portion of the S<sub>4</sub> of the S<sub>4</sub> of the NW<sub>4</sub> of the NE<sub>4</sub> of Section 9, Township 28 North, Range 4 East, N.W., and that portion of Tracts 1 and 2, Sunny Side Land Company's First Plat of South Everett, as per plat recorded in Volume 6 of Plats, page 4, records of Snohomish County, Washington, described as follows:

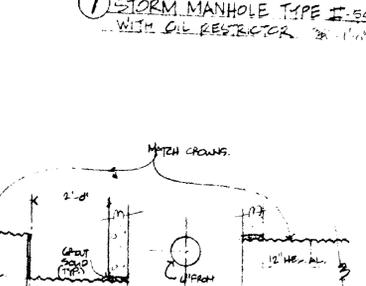
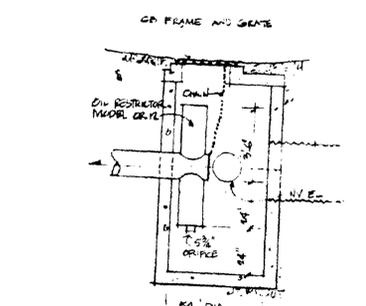
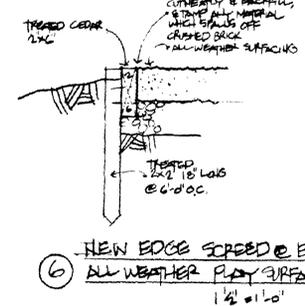
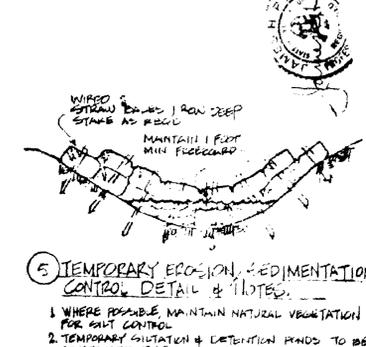
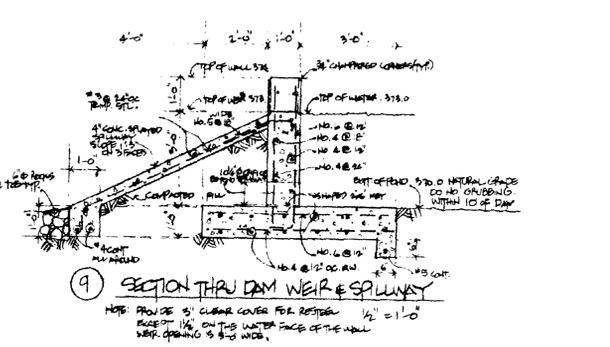
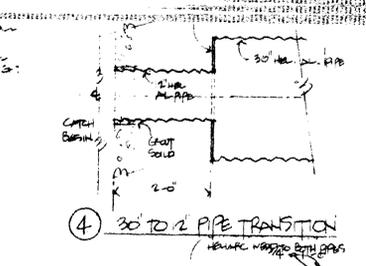
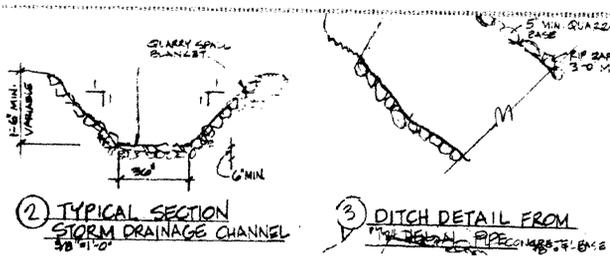
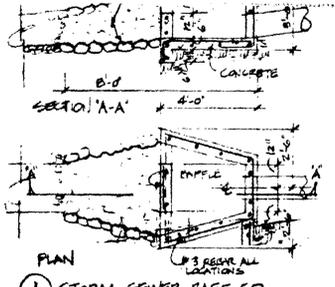
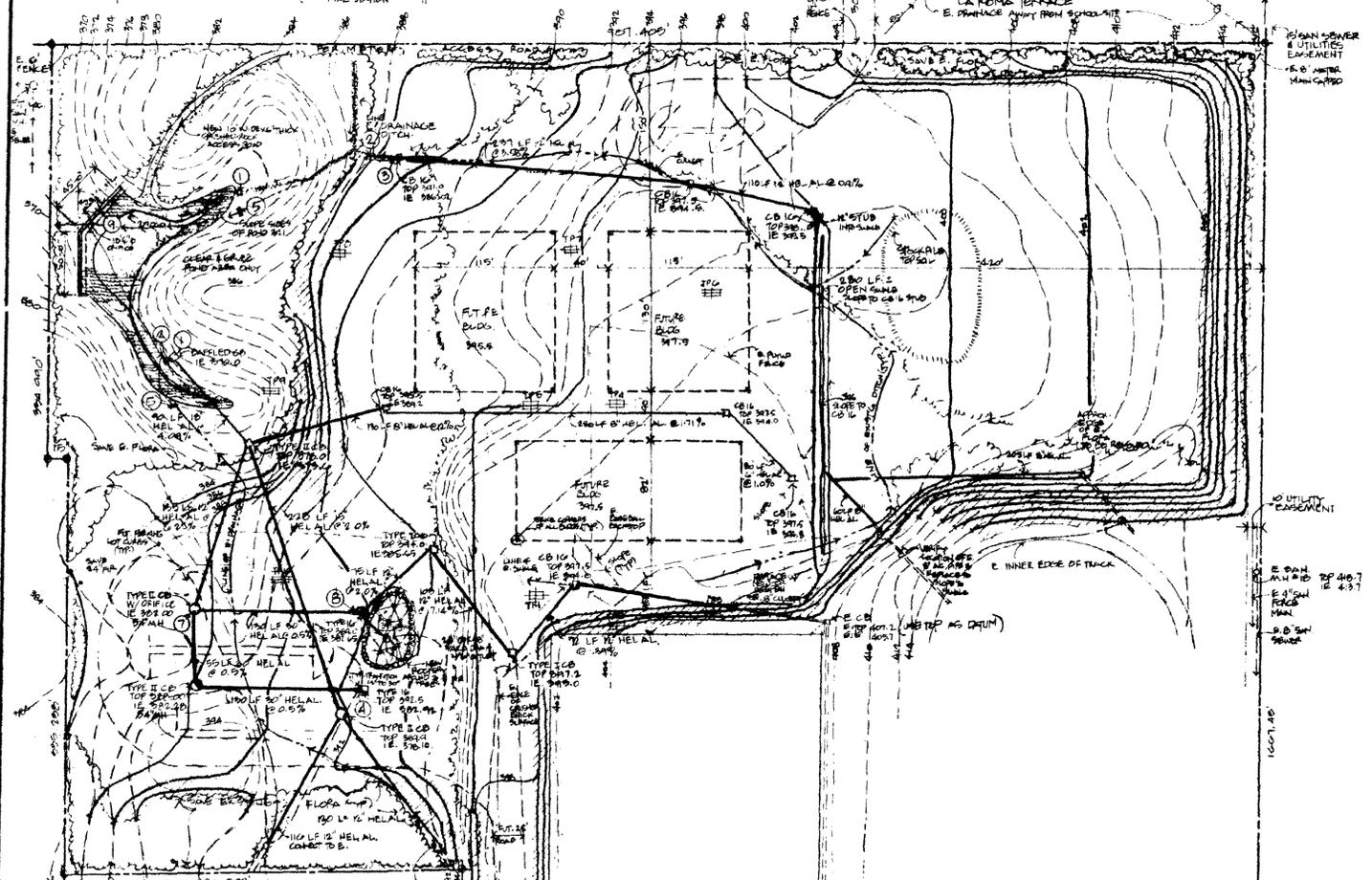
Beginning at the southwest corner of the W<sub>4</sub> of said Tract 1; thence S 89°08'13" E along the south line thereof 306.10 feet; thence N 0°51'47" E 180.00 feet; thence S 89°08'13" E 270.00 feet; thence N 0°51'47" E 65.00 feet; thence S 89°08'13" E 319.02 feet to the westerly line of the westerly 330.00 feet of said Tract 2; thence N 1°23'27" E along said westerly line 68.48 feet to the north line of said Tract 2; thence N 89°02'02" W 1.14 feet to the southeast corner of the S<sub>4</sub> of the SE<sub>4</sub> of the NW<sub>4</sub> of the NE<sub>4</sub> of said Section 9; thence N 1°23'27" E 333.43 feet to the northeast corner thereof; thence N 88°56'35" W 597.41 feet to the northwest corner of the S<sub>4</sub> of the SW<sub>4</sub> of the NW<sub>4</sub> of said Section 9; thence S 1°23'27" W 334.89 feet to the southwest corner thereof; thence S 89°02'02" E 15.00 feet to the northeast corner of said Tract 2; thence S 1°23'27" W 335.24 feet to the point of beginning.

BEARING AND DISTANCE TO CORNER OF SECTION 9, T28N, R4E, N.W. ALSO EXCEPT ANY ROADS WITHIN THE S<sub>4</sub> OF THE SE<sub>4</sub> OF THE NW<sub>4</sub> OF THE NE<sub>4</sub> OF SAID SECTION 9.

**VICINITY MAP**



1. TOPOGRAPHIC INFORMATION SHOWN IS TAKEN FROM A SURVEY MADE BY KEEL & ASSOCIATES, INC. DATED FEBRUARY 1974 (COPY AVAILABLE IN ARCHITECT'S OFFICE)
2. SOILS INFORMATION SHOWN IS TAKEN FROM SOILS AND FOUNDATION INVESTIGATION DATED 7-11-74 BY NIELSEN TWELKER & ASSOC. (COPY AVAILABLE IN ARCHITECT'S OFFICE)
3. LANDSCAPING - SEE ALTERNATE NO. 1
4. PROVIDE LANDSCAPING AS SPECIFIED FOR ALL NEWLY GRADED BANK AREAS WHERE THE SLOPE IS 1 FOOT VERTICAL TO 3 FEET HORIZONTAL OR STEEPER. NO OTHER LANDSCAPING OR SPREADING OF TOPSOIL IS REQUIRED FOR THIS CONTRACT.
5. ALL CONSTRUCTION IS SUBJECT TO THE INSPECTION OF THE CITY OF MUKILTEO AND THE CONTRACTOR SHALL NOTIFY THE CITY OF THEIR SCHEDULE IN SUFFICIENT TIME TO PERMIT INSPECTION PRIOR TO AND DURING THE WORK.
6. EXISTING UNDERGROUND FACILITIES HAVE NOT BEEN SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING EXISTING UTILITIES IN THE FIELD AND CHECKING FACILITIES WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND FACILITIES RESULTING FROM HIS OPERATIONS.
7. ALL BUILDING AND DRIVING AREAS SHOULD BE CLEARED AND GRUBBED OF ALL ORGANIC AND DELETERIOUS MATERIALS. THESE AREAS SHOULD BE "CARPIED" TO A DEPTH OF 1 FOOT AND COMPACTED TO 95% OF MAXIMUM DENSITY EMPLOYING AN ASTM DISC. THIS MATERIAL ON THE IMMEDIATE SURFACE WILL BE HIGHLY ACCEPTABLE TO MOISTURE AND DURING BATHING OPERATION CARE SHOULD BE GIVEN TO COMPACTION OF MATERIAL AT NEAR OPTIMUM MOISTURE CONDITIONS. ON SITE MATERIAL IS FREE OF ORGANICS AND OF PROPER MOISTURE CONTENT WILL BE SUITABLE FOR SITE FILLING. MATERIALS PLACED IN PAVING AND BUILDING AREAS SHOULD BE PLACED IN EIGHT INCH LIFTS AND COMPACTED TO 95% BASED ON ASTM DISC. IS ACCEPTABLE IN OTHER AREAS.
8. FINAL ADJUSTMENT OF DRAINAGE CUTS & FILL TO BE MADE ON THE PLAYFIELD.
9. SLOPE DOWN FROM EAST TO WEST TO BE A CONSTANT 1%.
10. CONTRACTOR TO BE RESPONSIBLE FOR ADEQUATE SURVEY TO PREPARE AN ACCURATE RECORD DRAWING SHOWING FINAL GRADES, SLOPES, HEIGHTS, ETC.
11. A COPY OF THE CUT & FILL CALCULATIONS PREPARED BY 200 VADOPAN & ASSOC. IS AVAILABLE TO THE CITY OF MUKILTEO AS WELL AS AT THE ARCHITECT'S OFFICE.
12. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
13. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
14. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
15. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
16. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
17. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
18. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.
19. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FROM THE CITY OF MUKILTEO.



**LEGEND, SYMBOLS, NOTES**

- EXISTING CONTOURS (SEE REF. TO SURVEY)
- NEW CONTOURS
- PROPERTY LINE
- GROUND GRADE ELEVATION
- TEST PIT NO. 16 (SEE REF. TO SOILS REPORT)
- LOCATION OF FUTURE NEW CONSTRUCTION
- LINE OF EXISTING FLORA TO REMAIN UNDISTURBED
- LINE OF EXISTING FLORA TO BE REMOVED
- STOCKPILE AREAS FOR TOPSOIL
- SWALE OR DITCH TO DRAIN
- DETAIL OR SECTION NUMBER
- LINE OF STORM DRAINAGE CHANNEL
- DRAINAGE PIPES & C.B. OR M.H.
- NEW CRUSHED ROCK OR E. CRUSHED BRICK SURFACING
- NEW LAWN ON CUT BANKS OR FILLS

Drawing NOT To Scale

**GRADING & DRAINAGE PLAN**  
SCALE: 1" = 30'-0"

MUKILTEO ELEMENTARY SCHOOL STORM DRAINAGE PLAN  
ADVANCE CIVIL & GRADING WORK

AEHLE, TITZ ARCHIT.

GRADING & DRAINAGE ENGINEER

ELEMENTARY SCHOOL NO. 6  
SCHOOL DISTRICT NO. 6

NET901