CITY OF
MUKILTEO

REQUEST FOR COMMENTS

DATE: May 11, 2020

	Alderwood Water District – Mike Graves		Pilchuck Audubon Society (President)
	Burlington Northern Santa Fe Railway (Marvinique Hill)		Port of Everett (Laura Gurley)
	City of Edmonds (Rob Chave)	X	Puget Sound Clean Air Agency (SEPA Email / Air Resource Specialist)
X	City of Everett (Allan Giffen)	X	Puget Sound Energy (Dom Amor)
X	City of Everett (Steve Ingalsbe)		Puget Sound Regional Council
	City of Lynnwood (Todd Hall)		Seattle Dist. Corps of Engineers (Dept. Army-Reg. Branch)
	City of Mill Creek (Tom Rogers)	X	Snohomish Co. Airport/Paine Field (A. Rardin/R. Zulauf)
X	City of Mukilteo (Building Official)		Snohomish Co. Assessor's Office ***(Ordinances Only)***
X	City of Mukilteo (Fire Chief)		Snohomish Co. Conservation District
X	City of Mukilteo (Fire Marshal)		Snohomish Co. PW/ Environmental (Shannon Flemming)
X	City of Mukilteo (Engineering)		Snohomish Co. Marine Res. Comm. (Kathleen Herrmann)
X	City of Mukilteo (Com. Dev. Dir.)		Snohomish Co. Planning & Dev. Srvc. (Ryan Countryman)
X	City of Mukilteo (Police, Cheol Kang, Myron Travis)	X	Snohomish Co. PUD: Dist. Eng. Services (Mary Wicklund)
X	Comcast of Washington (Casey Brown, John Warrick)		Snohomish Health District (Bruce A. Straughn)
X	Community Transit (Kate Tourtellot)		Sound Transit Authority (Perry Weinberg)
	Dept. of Commerce (Growth Mgmt. Svcs Rev. Team)		South Snohomish Co. Fire Dist. (Kevin Zweber)
	Dept. of Natural Resources (James Taylor)	X	Tulalip Tribes – (Zachary Lamebull)
	Economic Alliance of Snohomish County	X	Tulalip Tribes – (Richard Young)
	FAA/Air Traffic Division, ANM-0520 (Daniel Shoemaker)	X	United States Postal Service (Soon H. Kim)
	FEMA (John Graves)	X	Verizon Company of the NW, Inc. (Tim Rennick.)
	Island County MRC (Rex Porter) (*Shoreline Only)*	X	Washington Dept. of Ecology (Peg Plummer)
	Master Builders King/Sno. Counties (Mike Pattison)		Washington Dept of Fish & Wildlife (Jamie Bails)
X	Mukilteo School District (Cindy Steigerwald)	X	WSDOT (Leah Bolotin)
X	Mukilteo School District (Josette Fisher)	X	WSDOT (Dawn Anderson)
X	Mukilteo Water & Wastewater District (Jim Voetberg, Manager; Rick Matthews; Kendra Chapman)		WSDOT Ferries(Kevin Bartoy) (*Shoreline Only)*
	National Marine Fishery Service		WRIA 7 Water Resources
	Office of Archaeology & Historic Pres. (Allyson Brooks)		Other:
	Ogden, Murphy, Wallace (Daniel Kenny) ***(Ordinances Only)***		

FILE NO.: PPR-2020-001

PROPONENT: Salinas Construction

PROJECT NAME: Salinas Construction Contractor Laydown Yard

PROJECT DESCRIPTION: Construct a paved construction yard that is approximately 4.5 acres in size with associated grading, parking, landscaping, and street frontage improvements. An environmental review is necessary due to grading quantities being more than 1,000 cubic yards.

Japanese Gulch Creek runs along the northeast portion of the property but is not impacted by the proposed development. The yard will be located west of the existing concrete access road for an existing Mukilteo Water and Wastewater District sewer lift station. The contractor laydown yard will be used to facilitate the operations of Salinas' concrete paving company.

FILE NO: PPR-2020-001 PROPONENT: Salinas Construction

PROJECT NAME: Salinas Construction Contractor Laydown Yard

ATTACHED IS:

X	Notice of Application		Plat Map (Reduced)
	DNS ( )	X	Site Plan (Reduced)
X	Environmental Checklist	X	Location Map
X	Application	X	Geotechnical Report
X	Narrative Statement(s)	X	Wetland & Watercourse Field Assessment

NOTE: _____

_____

****

Please review this project as it relates to your area of concern and return your comments with this cover sheet by, May 28, 2020 to Linda Ritter, Senior Planner, City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275.

Linda Ritter
Senior Planner

5/14/20
Date

****

RESPONSE SECTION:

_____ Comments Attached _____ No Comments

COMMENTS: _____

_____

_____ _____
Signature Date

_____
Company

DO YOU WANT A COPY OF OUR NOTICE OF DECISION YES __ NO __

CITY OF MUKILTEO

11930 Cyrus Way
Mukilteo, WA 98275
(425) 263-8000

Notice of Application and Optional SEPA Notice

Salinas Construction Contractor Laydown Yard

4007 78th Street SW

Salinas Construction applied for a Project Permit with the City of Mukilteo on April 7, 2020. The application became complete on April 30, 2020. (PPR 2020-001 and ENG 2020-002)

Description of Proposal: This is a proposal by Salinas Construction to construct a paved construction yard that is approximately 4.5 acres in size with associated grading, parking, landscaping, and street frontage improvements. An environmental review is necessary due to grading quantities being more than 1,000 cubic yards.

Japanese Gulch Creek runs along the northeast portion of the property but is not impacted by the proposed development. The yard will be located west of the existing concrete access road for an existing Mukilteo Water and Wastewater District sewer lift station. The contractor laydown yard will be used to facilitate the operations of Salinas' concrete paving company.

Location of Proposal: Parcel No. 00611600009400 of WEST & WHEELERS SEAVIEW FIVE AC TRS BLK 000 D-00 TR 94 ACCORDING TO PLAT THOF EXC S 10FT THOF CONV TO SNO CO PER DEED REC AF NO 182031 & ALSO EXC N 10FT OF S 20FT OF TR 94 CONV TO SNO CO PER DEED RECAF NO 2305330; otherwise known as 4007 78th Street SW, Mukilteo WA 98275

Optional DNS Process to be Used:
The City's State Environmental Policy Act (SEPA) responsible official has a reasonable basis for determining that significant adverse impacts are unlikely and/or can be mitigated, and expects to issue a Mitigated Determination of Non-Significance (MDNS) pursuant to the optional DNS process under Washington Administrative Code 197-11-355 and Mukilteo Municipal Code (MMC) 17.84.105. **This may be the only opportunity to comment on the environmental impacts of the proposal**. Project approval may include mitigation measures under MMC Chapter 13.12 – Drainage Management and MMC Chapter 17.52 – Critical Areas Regulations, 17.52B – Wetland Regulations and 17.52C - Fish and Wildlife Habitat Conservation Areas (Outside Shoreline Jurisdiction). Also, the project review process may incorporate or require mitigation measures regardless of whether an Environmental Impact Statement is prepared. A copy of the subsequent threshold determination for the proposal may be obtained upon request.

Environmental Documents Prepared for the Proposal:

- Environmental Checklist prepared by Ryan Withrow dated March 23, 2020
- Critical Areas Study prepared by Environmental Corporation dated April 6, 2020
- Drainage Report prepared by ESM Consulting Engineers, LLC dated March 16, 2020
- Geotechnical Report prepared by HWA GeoSciences Inc. dated August 4, 2006

List of Required Permits:

- Engineering
- Project Permit
- Any applicable State and Federal Permits

Applicable Policies and Requirements

The project will be reviewed for consistency with the following policies, standards and regulations:

- ☐ Possession Shores Master Plan
- ☒ Comprehensive Plan, Shoreline Master Plan
- ☐ International Building Code (2015 Edition)
- ☒ International Fire Code (2015 Edition)
- ☐ Sector Plan & Amendments
- ☒ Mukilteo Municipal Code
- ☒ Mukilteo Development Standards

Mitigation Measures Being Considered

Measures being considered to mitigate environmental impacts if an MDNS is issued include:

1. Construction, grading, and associated site development shall follow recommendations presented in approved drainage report prepared by ESM Consulting Engineers, LLC dated March 16, 2020 for the Salinas Construction Contractor Laydown Yard project.
2. The applicant shall comply with all other applicable codes, regulations and requirements.

Comment Period

This application and all supporting documents are available for public review on City's website at http://www.mukilteowa.gov/land-use-action-notices (File No. PPR-2020-001 and ENG 2020-002). The public is invited to submit written comments on the project to the Community Development Department by **4:30 PM** on **Thursday, May 28, 2020**. Due to COVID-19, staff are unable to accept comments in person at this time. Comments must be delivered by mail, personal delivery to the drop box outside City Hall or by email to lritter@mukilteowa.gov. City Hall is located at 11930 Cyrus Way, Mukilteo, WA 98275.

The City will not act on this application until the end of the 14-day public comment period. Upon completion of project review, the proposed application will be administratively approved, approved with conditions, or denied. You may request a copy of the final decision on the project by making a written request to the City contact person named below.

Public Hearing

There will not be a public hearing conducted on this project.

Appeals

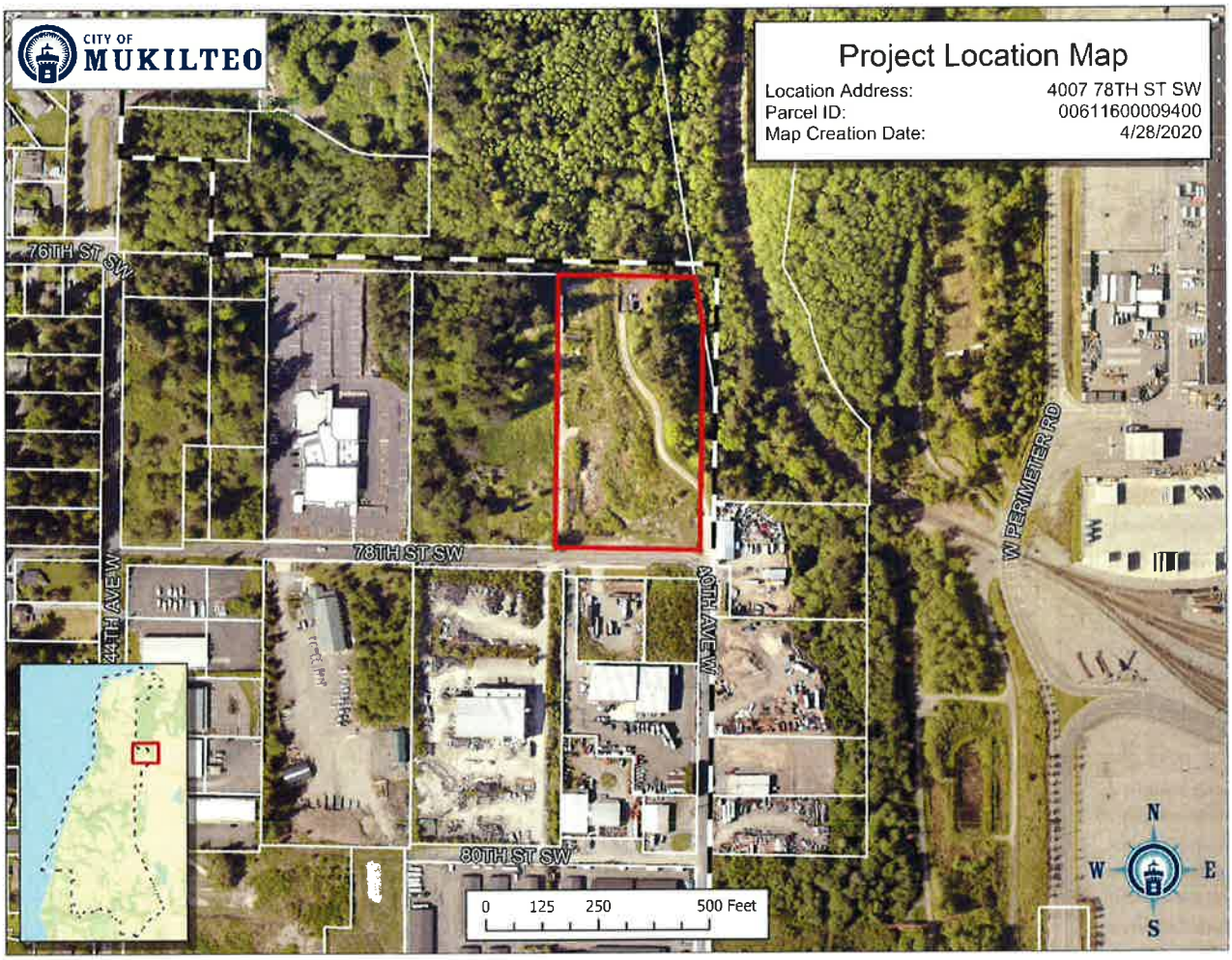
The final decision on this project is administratively appealable. An appeal must be filed within 14 days after the final decision on the project is issued. Only parties of record may initiate an administrative appeal of a land use development permit application. Parties of record include the applicant, any person who testified at the open record hearing on the application (if a public hearing was held), and/or any person who submitted written comments concerning the application (excluding persons who have only signed petitions or mechanically produced form letters).

Staff Contact: Linda Ritter, Senior Planner **Email:** lritter@mukilteowa.gov

Signature: _____ Date: 5/14/20

David Osaki, Community Development Director
on behalf of
Linda Ritter, Senior Planner

Location Map



Date Issued: Thursday, May 14, 2020
Date Advertised: Thursday, May 14, 2020
End Comment Period: Thursday, May 28, 2020

pc: Applicant/Representative
Reviewing Agencies
Interested Parties
CDD Director
Permit Services Coordinator
Permit Services Assistants (2)
Property File
Property Owners (300')

O:\Dev Review\2020\PROJECT PERMIT\PPR-2020-001 4007 78th St SW\Salinas Construction Contractor Laydown Yard NOA.docx

City of Mukilteo
Land Use Permit Application

11930 Cyrus Way
Mukilteo, WA 98275
(425) 263-8000
www.mukilteowa.gov

RECEIVED
By Sarah Kress at 9:33 am, Apr 08, 2020

GENERAL INFORMATION

ADDRESS/LOCATION: 4707 78th St SW, Mukilteo, WA 98275 PARCEL NO: 00611600009400

DESCRIPTION OF WORK: A new paved construction yard with associated stormwater improvements.

COMP PLAN DESIGNATION: Industrial ZONING: Planned Industrial

DATE OF PREAPPLICATION MEETING (if held): _____

APPLICANT INFORMATION

NAME: Ryan Withrow PHONE: 206-979-5850 EMAIL: ryan@salinasconcrete.com

ADDRESS: 7804 40th Ave W CITY: Mukilteo STATE: WA ZIP: 98275

PROPERTY OWNER INFORMATION ☐ Same as Above

NAME: SCS Development PHONE: 206-979-5850 EMAIL: ryan@salinasconcrete.com

ADDRESS: 12912 Hwy 99 S CITY: Everett STATE: WA ZIP: 98204

CONTACT INFORMATION ☒ Same as Above Applicant

NAME: _____ PHONE: _____ EMAIL: _____

ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____

Project Type (check all that apply):

*Supplemental Application Required

- ☐ Accessory Dwelling Unit*
- ☐ Binding Site Plan
- ☐ Comprehensive Plan Amendment*
- ☐ Conditional Use*
- ☐ Lot Line Adjustment*
- ☐ Reasonable Use*
- ☐ Rezone*
- ☐ Shoreline:
  - ☐ Conditional Use*
  - ☐ Exemption
  - ☐ Substantial Development*
  - ☐ Variance*
- ☐ Special Use*
- ☐ Subdivision*:
  - ☐ Preliminary Short
  - ☐ Preliminary Long
  - ☐ Final Short
  - ☐ Final Long
  - ☐ Amendment
- ☐ Variance*
- ☐ Wireless Communication Facility
- ☐ Other*: _____
- ☒ SEPA

SIGNATURE:

I/We certify that the information provided in this application, including all submittals and attachments, is true and correct under penalty of perjury by the laws of the State of Washington.

Applicant / Authorized Agent Signature — Date: 4/7/2020

Owner Signature (required) — Date: 4/7/2020

RECEIVED
By Sarah Kress at 9:33 am, Apr 08, 2020

CITY OF MUKILTEO

11930 Cyrus Way, Mukilteo, WA 98275
Phone: (425) 263-8000
http://mukilteowa.gov
permittech@mukilteowa.gov

Engineering Permit Application

Application Type – Mark all those that apply

☑ Clearing & Grading (Land Surface Modification) Per MMC 15.16.010

☑ Right-of-Way Per MMC 12.01.010

☑ Stormwater Per MMC13.12

General Permit Information

PROJECT NAME: Salinas Construction Mukilteo Yard

PROJECT ADDRESS: 4007 78th St SW, Mukilteo, WA 98275

1. CONTRACTOR ☐ **Applicant**

Name
Address
City/State/Zip
24 Hour Phone
State License #
Mukilteo License #
E-mail

2. PROPERTY OWNER ☐ **Applicant**

Name SCS Development
Address 12912 Hwy 99 S
City/State/Zip Everett, WA 98204
Phone
E-mail

3. PRIMARY CONTACT ☑ **Applicant**

Name Ryan Withrow
Address 7804 40th Ave W
City/State/Zip Mukilteo, WA 98275
24 HR Phone (206) 979-5850
E-mail ryan@salinasconcrete.com

4. PARCEL NUMBER(S)

00611600009400

5. PROJECT DESCRIPTION

Paved Construction Yard with associated stormwater improvements

6. TOTAL PROJECT AREA (INCLUDE ROW, IF ANY) (SF)

129,809

7. TOTAL SITE AREA (SF)

129,809

8. TOTAL GRADING QUANTITIES (CY)
(Use Total from pg. 2 , #4)

6,574

9. IS A RETAINING WALL PROPOSED? YES or **NO**

10. EXISTING SITE IMPERVIOUS SURFACE COVER (%)
(Report Item 2 from Page 4)

0

11. TOTAL NEW PLUS REPLACED HARD SURFACES (SF) (Report Item 6 from Page 5)

86684

12. TOTAL PROPOSED LOT HARD SURFACE COVERAGE (SF) - (Report Item 7 from page 5)

86684

Clearing & Grading (Land Surface Modifications)

1. **Total Area of Land Surface Disturbance** (SF): 129,809

2. **Vegetation to be Removed:**

☑ Evergreen Trees: 1 (canopy area) ☑ Deciduous Trees: 1 (canopy area)
☐ Shrubs / Lawn: 1 (area) ☐ Invasive(s): _____ (area)
☐ Other: _____ (area) Invasive types _____

3. **Method of Land Disturbance:** ☐ Hand Clearing ☑ Machine

4. **Land Disturbance Outside the Building Footprint:**

☑ Exported: 385 (CY) ☐ Imported to Site: _____ (CY)
☐ Re-Graded on Site: 6,189 (CY) ☐ Other: _____ (CY)

Total 6,574 **(Add all Land Disturbance, Report on Page 1, #8)**

5. **Provide Address for Materials Disposal Site** _____

6. **Maximum Height of Fill:** 10 **Maximum Depth of Cut:** 14

7. **Identify any stream, surface water, drainage course, wetlands, or critical areas on or within 200 feet of the property:**

Japanese Gulch, steep slopes

Retaining Walls:

If a retaining wall is proposed, please check which applies (*Height is measured from bottom of footing)*

☑ No retaining wall proposed ☐ ≥ 4 feet ☐ ≤ 4 feet and not load bearing ☐ Any height and load bearing

Right-of-Way:

Type of work being performed in City right-of-way:

☑ Stormwater ☑ Frontage Improvements ☑ Driveway
☐ Natural Gas ☐ Sewer ☐ Water
☐ Telephone ☐ Power ☐ Cable
☐ Other: _____

Is this project adjacent to a State Route? ☐ Yes ☑ No

If Yes, WSDOT approval shall be required, and a copy provided with this application, including the WSDOT approved Traffic Control Plan.

Stormwater

WHAT ARE HARD SURFACES and IMPERVIOUS SURFACES?

Hard surfaces include permeable pavement, decks, vegetated roofs, and all impervious surfaces. **Impervious surfaces** are non-vegetated surface areas that either prevent or impair water entry into the soil. These surfaces cause water to run off the surface in greater quantities or at increased flow rates from natural conditions. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, gravel, asphalt, concrete and bricked surfaces. (See MMC 17.08 for complete definition.)

Step 1. Determine if a Stormwater Permit is Needed

Does the project propose to:

A. Add new or replace 2,000 square feet or more of hard surface area? ☑ YES ☐ NO

B. Disturb 7,000 square feet or greater of land? ☑ YES ☐ NO

C. Connect to the City's stormwater system? ☑ YES ☐ NO

If the answer to ANY of the above is "YES," then a Stormwater Permit is required. Complete entire Stormwater Permit Application and provide required submittals.

If the answer to ALL of the above is "NO," then a Stormwater Permit is NOT required. Complete Steps #2 through #6 and include a Short SWPPP form with your application.

Step 2. Calculate Existing Impervious Surface Area

Enter the area for all existing impervious surfaces on the property. Only include those items that are impervious. Hard surfaces, such as porous pavement, will be considered in Step 3. If there are none to add, enter "0".

TABLE 1 – EXISTING IMPERVIOUS SURFACES		
Types of improvements to consider (not a complete list)	**Existing Impervious Surfaces Area (sf)**	**Describe area(s) included in SF (e.g. house, driveway, etc.)**
Roof Structures (all buildings)	0	
Sidewalks / Walkways	0	
Covered Porch / Deck / Patio	0	
Driveway (include gravel areas)	0	
Parking Lot (incl. gravel areas)	0	
Other		
TOTAL →	Item 1 0	

Step 3. Determine if the Project is New Development or Redevelopment

TABLE 2 – PERCENT EXISTING IMPERVIOUS COVER CALCULATION		
A. Enter the total from Item 1 above →		0
B. Total Site Square Footage →		129,809
Existing Site Impervious Cover %	(A ÷ B) x 100	Item 2 0%

- Report Item 2 on Page 1, #10.
- Use result for Step 7. If <35%, project is new development. If >35%, project is redevelopment

Step 4. Calculate Existing Hard Surface Area

Enter any existing hard surfaces **not included** in the impervious surface calculation in Step 2. If there are none to add, enter "0".

TABLE 3 – EXISTING HARD SURFACES		
Types of improvements to consider (not a complete list)	**Existing Hard Surfaces Area (sf)**	**Describe area(s) included in SF (e.g. house, driveway, etc.)**
Green Roof Structures	0	
Porous Sidewalks / Walkways	0	
Porous Porch / Deck / Patio	0	
Porous Driveway / Parking	0	
Other		
TOTAL →	Item 3 0	

- Use Item 3 in Step 6.

Step 5. Calculate Proposed New and Replaced Hard Surfaces

Include all types of hard (and impervious) surfaces in the table. No "credit" is taken for replaced hard surfaces. For example, if 1,500 sf of gravel is replaced with a 1,500 sf garage, this is entered as 1,500 sf replaced hard surface. There is no deduction for the replaced gravel.

TABLE 4 – PROPOSED NEW PLUS REPLACED HARD SURFACES (Enter "0" for sections not applicable to your project)			
Proposed new PLUS replaced hard surfaces	**Describe area(s) included in SF? (e.g. house, driveway, etc.)**	**New SF**	**Replaced SF**
Roof Structures (all buildings)			
Green Roof (not included above)			
Sidewalks / Walkways			
Covered Porch / Deck / Patio			
Uncovered Porch / Deck / Patio			
Driveway (impervious)			
Parking (impervious)	Paved Construction Yard	84,506	0
Pervious Paving surfaces (all			
All Right-of-Way Improvements	Fronage Improvments	2,178	0
Others			
SUBTOTALS	→	Item 4 86,684	Item 5 0
TOTAL NEW PLUS REPLACED HARD SURFACES	Add Items 4 & 5	Item 6 86684	

- Report Item 6 on Page 1, #11.
- Use Item 4 in Step 6 (do not include Item 5).

Step 6. Calculate Total Proposed Hard Surfaces

TABLE 5 – TOTAL PROPOSED HARD SURFACES		
A. Report Item 1 Subtotal (from Step 2)		0
B. Report Item 3 Subtotal (from Step 4)		0
C. Report Item 4 Subtotal (from Step 5)		86,684
TOTAL PROPOSED LOT HARD SURFACE COVER	Add A, B, & C	Item 7 86684

- Report Item 7 on Page 1, #12.

Step 7. Determine the Stormwater Minimum Requirements

Is the result on page 1, #10; 35% or more? ☑ YES ☐ NO If yes, use Figure 2.4.2. If no, use Figure 2.4.1.

Figure 2.4.1
Flow Chart for Determining Requirements for New Development (from Ecology Manual)

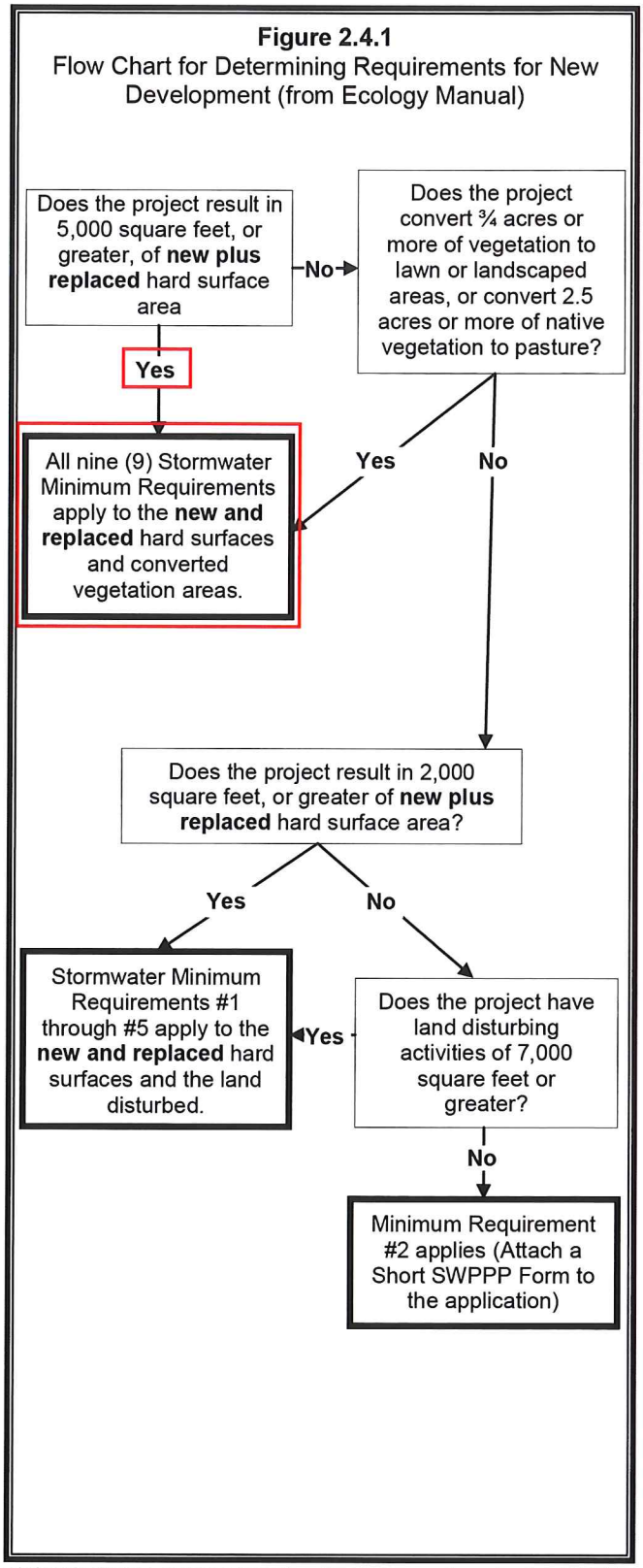
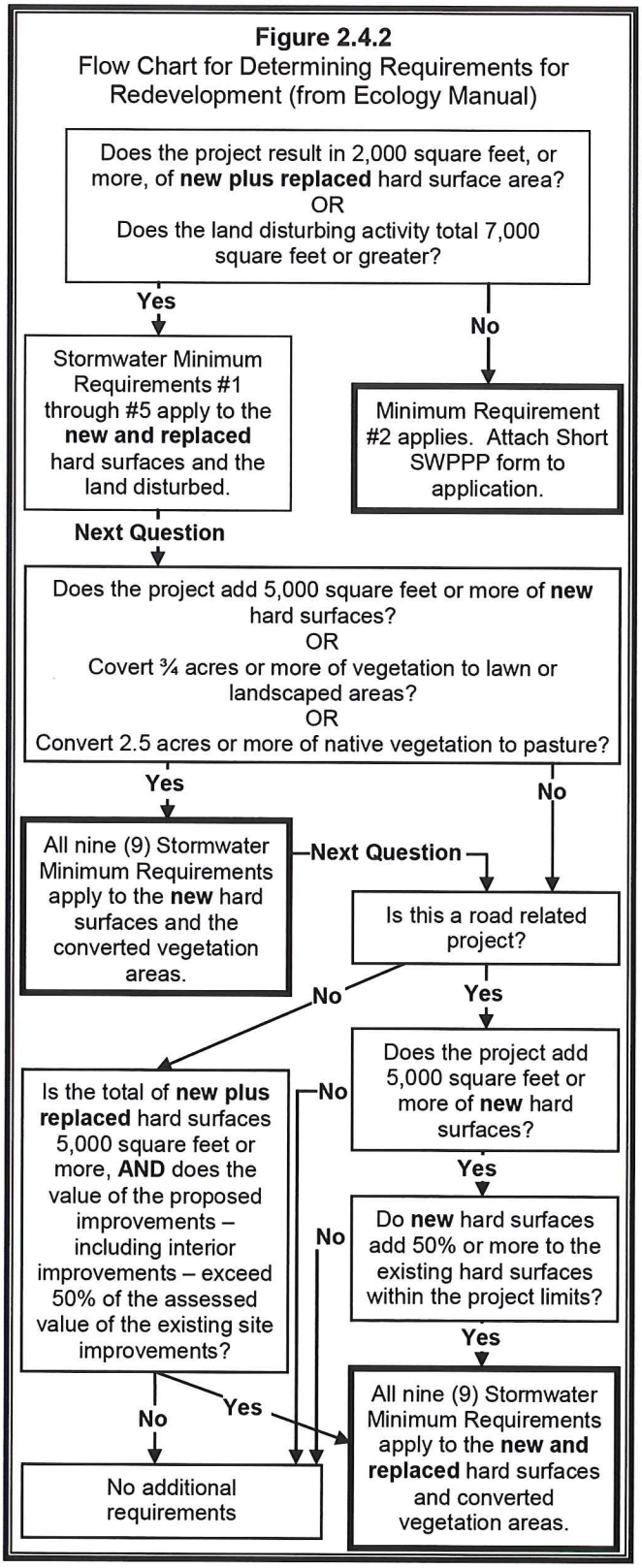


Figure 2.4.2
Flow Chart for Determining Requirements for Redevelopment (from Ecology Manual)



Other

Anticipated Start Date: 04/01/2020 Anticipated Completion Date: 08/01/2020

A Department of Ecology Construction Stormwater Permit is required for projects that disturb ≥1 acre. Will your project disturb ≥1 acre of land through clearing, excavating, or stockpiling of fill? ☐ Yes ☐ No

If yes, complete NOI at http://www.ecy.wa.gov/programs/wq/stormwater/construction/enoi.html

A Forest Practice Permit is required for all projects removing and selling timber from the property site. Will your project remove and sell timber? ☐ Yes ☑ No

A BNSF Permit is required for all projects that will discharge stormwater onto BNSF property (ROW). Does your project discharge to BNSF ROW? ☐ Yes ☑ No

A Hydraulic Permit from the Department of Fish and Wildlife and / or from the Army Corps of Engineers is required for all fill, or work within, over, or under a stream or wetland. Will your project involve stream or wetland? ☐ Yes ☑ No

The list above is meant to provide guidance; it is the project applicant's responsibility to identify and obtain all required permits. All State, Federal, and/ or other applicable Permits shall be obtained and a copy provided to the City of Mukilteo prior to issuance of the City of Mukilteo Engineering Permit.

The permittee shall indemnify, defend and hold harmless the City, its officers, agents and employees, from and against any and all claims, losses or liability, including attorney's fees, arising from injury or death to persons or damage to property occasioned by the construction, installation, operation, location, maintenance, or any other cause related to the improvement for which this permit is granted. With respect to this permit and as to claims against the City, its officers, agents and employees, the permittee expressly waives its immunity under Title 51 of the Revised Code of Washington, the Industrial Insurance Act, for injuries to any employees the permittee may have, and agrees that the obligation to indemnify, defend and hold harmless provided for in this paragraph extend to any claim brought by or on behalf of any employee of the permittee. This waiver has been mutually negotiated by the parties as part of the permitting process and is given, as is the indemnification agreement contained within this paragraph, as consideration for issuance of a right-of-way use permit by the City. This paragraph shall not apply to any damage or injury resulting from the sole negligence of the City, its agents or employees. To the extent any of the damages or injuries referenced by this paragraph were caused by or resulted from the concurrent negligence of the City, its agents or employees, this obligation to indemnify, defend and hold harmless is valid and enforceable only to the extent of the negligence of the permittee, its officers, agents or employees, if any.

The acceptance of the conditions upon which this permit is granted shall be evidenced by the beginning of the installation of said FACILITIES as set forth herein.

SEE ATTACHED INSURANCE REQUIREMENTS AND ACKNOWLEDMENTS. ADDITONAL SIGNATURE REQUIRED.

I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS PERMIT APPLICATION IN ITS ENTIRETY AND KNOW THE SAME TO BE TRUE AND CORRECT. I AGREE TO COMPLY WITH ALL CONDITIONS, CITY ORDINANCES AND STATE / FEDERAL LAWS REGULATING ACTIVITIES COVERED BY THIS PERMIT APPLICATION. I ALSO ACKNOWLEDGE THAT IT IS MY RESPONSIBILITY TO MAINTAIN PUBLIC STREETS FREE OF DIRT AND DEBRIS.

John Salivar — *Property Owner Signature* — 4/7/2020 — *Date*

Applicant Signature (if different than property owner) — 4/7/2020 — *Date*

ENGINEERING APPLICATION CHECKLIST

Provide the following information as part of your submittal as required in Mukilteo Municipal Code 17.13 and the City of Mukilteo Development Standards.

Submitted		
Yes	**N/A**	**Document**
☑	☐	Engineering Permit Application – 1
☑	☐	Stormwater Pollution Prevention Plan (SWPPP) – 3 originals
☑	☐	Stormwater Site Plan (Drainage Report) – 2 originals
☐	☐	Geotechnical Report – 2 originals
☑	☐	Civil Plan Set – 3 originals
☐	☑	Wetland and Streams Report – 2 originals
☐	☑	Transportation Impact Study – 1 original
☐	☑	Transportation Concurrency Evaluation and Determination of Transportation Impact Fees Form (if over 10 pm peak trips) – 1 original
☐	☑	Temporary Traffic and Pedestrian Control Plan – 2 originals
☑	☐	Soil Management Plan – 2 originals
☐	☑	Tree Preservation Plan – 2 originals
☐	☑	Maximum Extent Feasible (MEF) Documentation – 1 original
☑	☐	Draft Statutory Warranty Deed (Right-of-Way Dedication), including Title Report, Map, and Real Estate Excise Tax Affidavit Form – 1 of each original
☐	☑	Evidence of Vesting Rights – 1 original
☐	☑	Application for Alternate Material, Design, or Method of Construction – 1 original
☐	☑	Application for Exception from Stormwater Minimum Requirements – 1 original
☑	☐	Draft Declaration of Covenant/Maintenance Plan for Stormwater – 1 original
☑	☐	Draft Access Easement for Stormwater – 1 original
☐	☑	Draft Joint-Use and Maintenance Agreement for Private Roads/Joint-use Driveways – 1 original
☐	☑	WSDOT approval if adjacent to State Route – 1 original
☐	☐	Other agency permits (list) – (1 original each) _____ _____
☐	☐	Wildlife Habitat Report – 2 originals
☐	☐	Archaeology Report – 2 originals

INSURANCE

A. Insurance Term

The Permittee shall procure and maintain for the duration of the Permit, insurance against claims for injuries to persons or damage to property which may arise from or in connection with operations or activities performed by or on the Permittee's behalf with the issuance of this Permit.

B. No Limitation

Permittee's maintenance of insurance as required by the Agreement shall not be construed to limit the liability of the Permittee to the coverage provided by such insurance, or otherwise limit the City's recourse to any remedy available at law or in equity.

C. Minimum Scope of Insurance

Applicant shall obtain insurance of the types and coverage described below:

1. Commercial General Liability insurance shall be at least as broad as ISO occurrence form CG 00 01 and shall cover liability arising from operations, products-completed operations, and stop-gap liability. There shall be no exclusion for liability arising from explosion, collapse or underground property damage. The City shall be named as an additional insured under the Permittee's Commercial General Liability insurance policy using ISO Additional Insured-State or Political Subdivisions-Permits CG 20 12 or a substitute endorsement providing at least as broad coverage.

2. Automobile Liability insurance covering all owned, non-owned, hired and leased vehicles. Coverage shall be at least as broad as Insurance Services Office (ISO) form CA 00 01.

D. Minimum Amounts of Insurance

Permittee shall maintain the following insurance limits:

1. Commercial General Liability insurance shall be written with limits no less than $1,000,000 each occurrence, $2,000,000 general aggregate and a $2,000,000 products-completed operations aggregate limit.

2. Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident.

E. Other Insurance Provision

The Permittee's Commercial General Liability insurance policy or policies are to contain, or be endorsed to contain that they shall be primary insurance as respect to the City. Any insurance, self-insurance, or self-insured pool coverage maintained by the City shall be excess of the Applicant's insurance and shall not contribute to it.

F. Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best rating of not less than A:VII.

G. Verification of Coverage

Permittee shall furnish the City with original certificates and a copy of the amendatory endorsements, including the additional insured endorsement, evidencing the insurance requirements of the Permittee before issuance of the Permit.

H. Notice of Cancellation

The Permittee shall provide the City with written notice of any policy cancellation, within two (2) business days of their receipt of such notice.

I. Failure to Maintain Insurance

Failure on the part of the Permittee to maintain the insurance as required shall constitute a material breach of the Permit, upon which the City may, after giving five (5) business days' notice to the Permittee to correct the breach, immediately terminate the Permit, or at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the City on demand.

J. City Full Availability of Consultant Limits

If the Permittee maintains higher insurance limits than the minimums shown above, the City shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the Permittee, irrespective of whether such limits maintained by the Permittee are greater than those required by this contract or whether any certificate of insurance furnished to the City evidences limits of liability lower than those maintained by the Permittee.

The acceptance of the conditions upon which this permit is granted shall be evidenced by the beginning of the installation of said FACILITIES as set forth herein.

I HEREBY ACKNOWLEDGE THAT I HAVE READ AND AGREE TO COMPLY WITH THE REQUIREMENTS REGARDING INSURANCE.

Applicant Signature

4/7/2020
Date

ESM CONSULTING ENGINEERS LLC

MEMORANDUM

RE: SALINAS CONSTRUCTION YARD
PROJECT NARRATIVE

DATE: APRIL 29, 2020

PROJECT #: PPR-2020-001

Project Description

The project site is approximately 4.5 acres with an existing concrete access road that provides access an Olympus Terrace Sewer District pump station. The proposal is to construct a paved construction yard to facilitate the operations of a concrete paving company.

The proposal includes grading and paving activities in addition to new stormwater manage system to provide the necessarily mitigation measures as a result of the proposed land use.

A new access approach is proposed at the southwest corner of the property off 78th Street SW. The frontage improvements along 78th Street SW include road widening, restriping, sidewalk, as well as curb and gutter.

A soil management plan has been introduced that will leave the northeast portion of the project site undisturbed with the rest of the non-impervious portion of the site containing soil that has been scarified, stockpiled, and reapplied.

Project Location

The proposed development area consists of 3.04 acres (everything west of the sewer access road). The area east of the property site will remain undeveloped. The project property is bounded by 78th Street SW to the south, 79th Street SW to the north (unopened ROW, beyond which is the City of Everett), an undeveloped industrial zoned property to the west, and the City of Everett to the east. The site is accessed from 40th Avenue W and 78th Street SW. The site is in an over-grown/wooded area near the south end of Japanese Gulch, west of where the Boeing Railroad enters the Boeing property in Mukilteo, Washington.

Existing Conditions

Most of the project site is undeveloped and covered by second and third generation forest consisting of fir cedar, and deciduous trees. The undergrowth is relatively open and consists of ferns, nettles, and small bushes and trees. The site slopes gradually downward to the north and east. A minor drainage channel runs south to north across the middle of the site. To the east of the site, a steep ravine drops steeply into Japanese Gulch. A Portland Cement Concrete Pavement (PCCP) roadway exists along the top of this steep ravine providing access to a sewer lift station at the northeast corner of the property.

Stormwater flow enters the property from the south frontage along the 78th Street SW right-of-way. These flows travel in a 12' pipe and through a flow splitter and then conveyed to Japanese Gulch via two flow paths east of the onsite concrete driveway. Stormwater from the site along with other surrounding tributaries enter the Japanese Gulch and remain within the gulch until reaching the Puget sound approximately 8,500 feet downstream.

From the site, water is conveyed to Japanese Gulch. This area and stream have not been classified with any categories by the Department of Ecology and not on the 303(d) or 305(b) list.

Ownership Information

The parcel number for the site is: 00611600009400 and is located at 4007 78th Street SW, Mukilteo, WA 98275. The tax code area is 00667 and the use code is 641: automobile repair and services. The total site area is 4.50 acres and is currently owned by SCS Development, located at 12912 HWY 99 S, Everett, WA 98204. The engineering site design will be conducted by ESM Consulting Engineers, LLC, located at 33400 8th Avenue S, Suite 205, Federal Way, WA 98003.

Infrastructure

The proposed development will clear the existing site and rework the grade to better suit the propose land use. Most of the site will be paved with asphalt. Catch basins will be installed along the northern perimeter to collect and convey intercepted runoff to the detention pond.

The proposed stormwater pond is a combined water quality and detention pond. The first 5 feet of the pond will provide a settling area for suspended solids which includes 1 foot of sediment storage. This water quality volume will provide stormwater treatment to Basic treatment standards. Above this wet pond/settling area, 4.5 feet of live storage is proposed to provide the necessary detention storage volume while flow the release rate of stormwater is attenuated by the control structure.

Prior to the detention pond, a hydrodynamic separator is proposed to provide stormwater pretreatment by capturing and retaining 100% of floatables and buoyant debris 4.7mm or larger.

Newly cleared area that will not be covered by an impervious surface will be seeded and stabilized. The soils will be amended to reintroduce organics and soil moisture holding capacity of the worked soils.

Additional to the onsite work, frontage improvements are proposed within the 78th Street SW right-of-way. This includes widening the travelled way to 18.5 feet, vertical curb and gutter, and a 6-foot sidewalk. To accommodate these improvements, an additional 10 feet of right-of-way will be dedicated to the City upon completion of this project. The existing catch basin within the 78th Street SW right-of-way that collects runoff will need to be removed and replaced with a new catch basin located within the realigned flow line. Runoff from 78th Street SW will then continue to be collected and conveyed by the existing 12" main running through the project site.

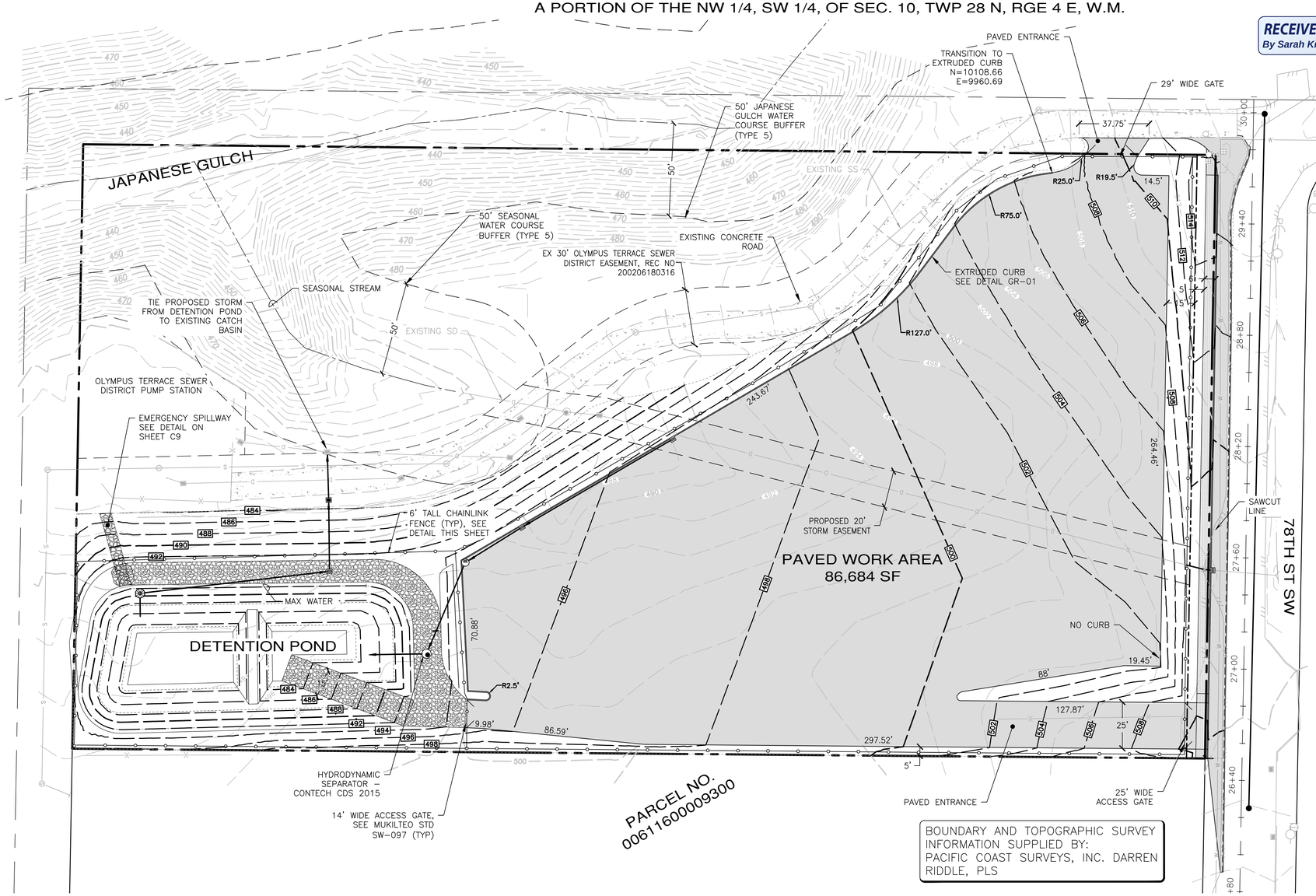
Grading
The site will be prepared by stripping loose, saturated fill within the roadway, and in areas where structural fill is to be placed. Silt fences will be placed along the grading extents to prevent sediment runoff from being transported onto adjoining properties or streets. The permanent stormwater detention facility will be utilized as a temporary sediment pond during construction.
The grading quantities are as follows:

CUT: 6574 cy
FILL: 6189 cy
NET: 385 cy (CUT)

Notes, a shrink/swell factor has not been applied to these volumes. Volumes included any top stripping.

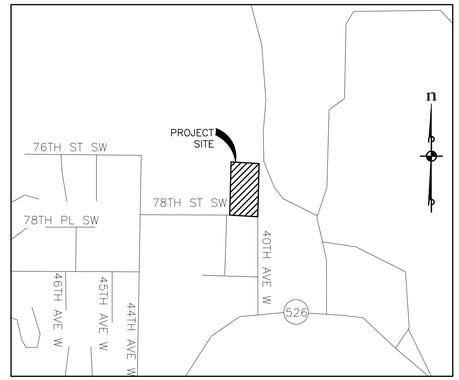
Scheduling
It is anticipated the project will be being mid-2020 and take 3 months to complete.

A PORTION OF THE NW 1/4, SW 1/4, OF SEC. 10, TWP 28 N, RGE 4 E, W.M.



SCALE: 1" = 30'

CONTOUR INTERVAL = 2'



VICINITY MAP
NTS

ROAD MAINTENANCE

78TH ST SW PAVING

PROJECT AREAS

SITE AREA SUMMARY:		
EXISTING IMPERVIOUS	0 SF	
NEW SITE IMPERVIOUS	86,684 SF	(1.99 AC)
TOTAL DISTURBANCE	132,422 SF	(3.04 AC)
TOTAL SITE AREA	196,020 SF	(4.50 AC)

SITE DATA

PARCEL NUMBER: 00611600009400
SITE ADDRESS: 4007 78TH ST SW
MUKILTEO, WA 98275

TAX CODE AREA: 00667
USE CODE: 641 AUTOMOBILE REPAIR & SERVICES
STATUS: ACTIVE, LOCALLY ASSESSED

TOTAL SITE AREA: 4.50 ACRES

PROJECT CONTACTS

ENGINEER
ESM CONSULTING ENGINEERS
33400 8TH AVE SOUTH, SUITE 205
FEDERAL WAY, WA 98003
(253) 838-6113

SURVEYOR
PACIFIC COAST SURVEYS
16300 MILL CREEK BLVD
MILL CREEK, WA 98082
(425) 512-7099

APPLICANT/OWNER
SCS DEVELOPMENT
12912 HWY 99 S
EVERETT, WA 98204

BIOLOGIST
ENCO ENVIRONMENTAL
PO BOX 1236
GIG HARBOR, WA 98335
(253) 841-9710

SHEET INDEX

DATUM: NGVD 1988
BENCH MARK: TACK IN SEAM OF CONCRETE ENTRANCE ROAD TO SEWER PUMP STATION, ELEV. = 486.47'

CONTRACTOR NOTE

ALL EXISTING UTILITIES SHOWN ON PLANS ARE TO BE VERIFIED HORIZONTALLY AND VERTICALLY PRIOR TO ANY CONSTRUCTION. ALL EXISTING FEATURES SHOWN AS INDICATED ON RECORD MAPS AND SURVEY FURNISHED BY OTHERS. ESM CONSULTING ENGINEERS ASSUMES NO LIABILITY FOR THE ACCURACY OF THOSE RECORDS AND SURVEY, FOR THE FINAL LOCATION OF EXISTING UTILITIES IN AREAS CRITICAL TO CONSTRUCTION CONTACT THE UTILITY OWNER/AGENCY

REVISIONS

NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUCKS
STATE OF WASHINGTON
22085
REGISTERED
PROFESSIONAL ENGINEER
04/07/2020

CONSULTING ENGINEERS LLC
33400 8th Ave S, Suite 205
Federal Way, WA 98003
FEDERAL WAY (253) 838-6113
EVERETT (425) 297-9900
www.esmcivil.com
Civil Engineering
Public Works
Land Planning
Landscape Architecture
Land Surveying
Project Management

SALINAS CONSTRUCTION

MUKILTEO YARD
SITE PLAN / HORIZONTAL CONTROL
CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C1
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C1

1 OF 10 SHEETS

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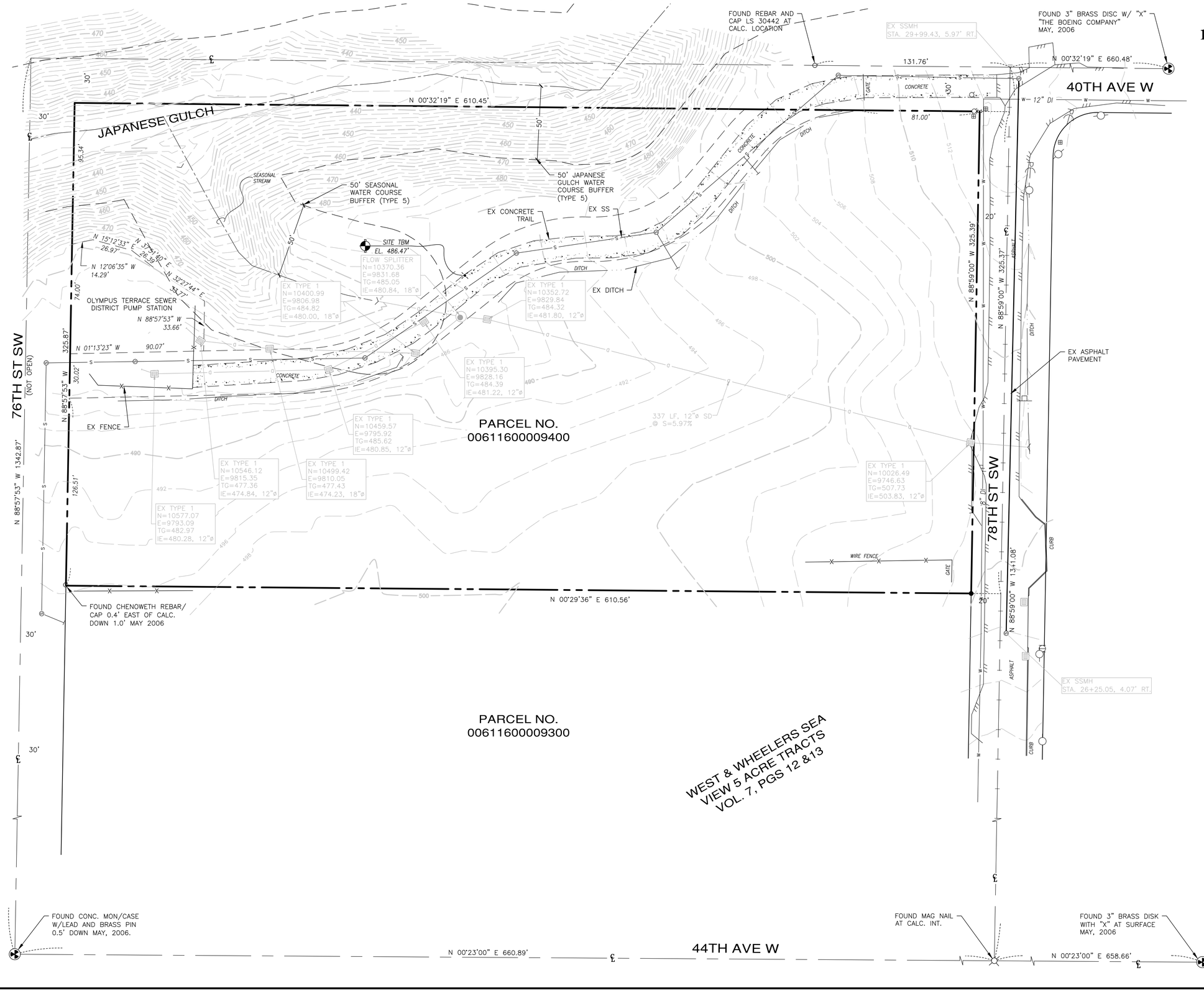

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SCALE: 1" = 30'

30 15 0 30 60

CONTOUR INTERVAL = 2'

REVISIONS		
NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUCKS
STATE OF WASHINGTON
50085
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SALINAS CONSTRUCTION

MUKILTEO YARD

CITY OF MUKILTEO EXISTING CONDITIONS / HORIZONTAL CONTROL WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C2
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C2

2 OF 10 SHEETS

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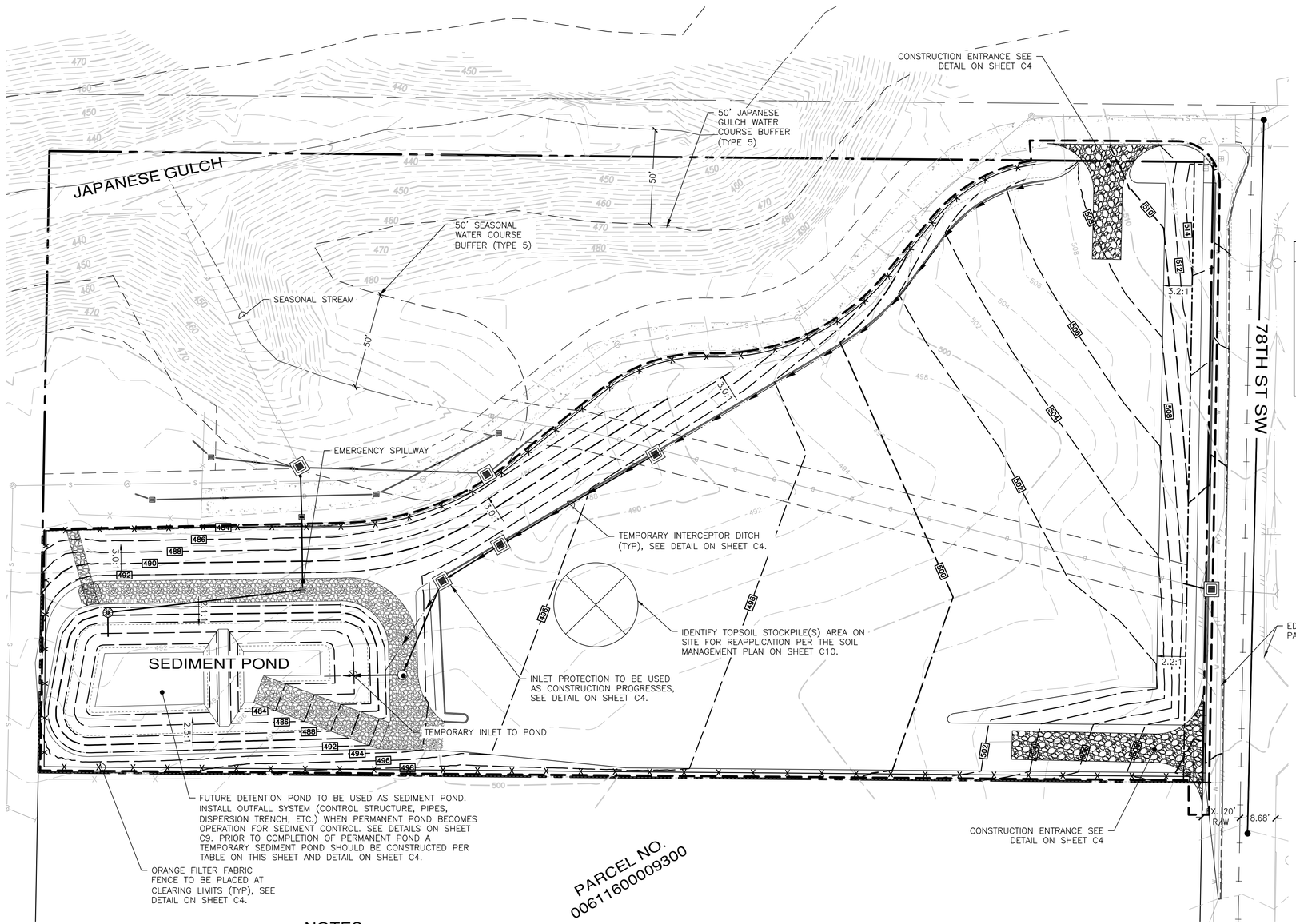
A PORTION OF THE NW 1/4, SW 1/4, OF SEC. 10, TWP 28 N, RGE 4 E, W.M.

DATUM: NGVD 1988

BENCH MARK: TACK IN SEAM OF CONCRETE ENTRANCE ROAD TO SEWER PUMP STATION, ELEV. = 486.47'



SCALE: 1" = 30'

30 15 0 30 60

CONTOUR INTERVAL = 2'

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- CLEARING LIMITS
- FILTER FABRIC FENCE
- INTERCEPTOR DITCH
- CONSTRUCTION ENTRANCE
- INLET PROTECTION

TEMPORARY SEDIMENT POND

SUB BASIN AREA	= 2.68 AC
INFLOW 24HR	= 1.05 CFS
SURFACE AREA (REQ'D)	= 2,118 SF
SURFACE AREA PROVIDED	= 10,000 SF
TOP BERM ELEV.	= 493.0
TOP OF RISER PIPE	= 491.0
EMERGENCY SPILLWAY ELEV.	= 492.0
EMERGENCY SPILLWAY WIDTH	= 6'
POND BOTTOM ELEV.	= 487.50
POND TOP LENGTH	= 170'
POND TOP WIDTH	= 75'
ORIFICE DIA.	= 1.77"
DEWATERING TUBE DIA.	= 4"
RISER PIPE DIA.	= 12"

TESC STANDARD NOTES

THE IMPLEMENTATION OF THE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE TESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED, AND THE POTENTIAL FOR ON-SITE EROSION HAS PASSED.

THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED AS OUTLINED IN THE CONSTRUCTION SEQUENCE AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS.

THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED (E.G. ADDITIONAL SUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS.

THE CONTRACTOR SHALL SWEEP AND/OR WASH DOWN ACCESS STREETS AT LEAST DAILY OR MORE FREQUENTLY AS MAY BE NECESSARY AND SO DIRECTED BY THE CITY.

AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.

STOCKPILES ARE TO BE LOCATED IN SAFE AREAS AND ADEQUATELY PROTECTED BY TEMPORARY SEEDING AND MULCHING. HYDROSEEDING IS PREFERRED.

WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF TWO INCHES.

ANY AREA STRIPPED OF VEGETATION, INCLUDING ROADWAY EMBANKMENTS, WHERE NO FURTHER WORK IS ANTICIPATED FOR A PERIOD OF 15 DAYS, SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED TESC METHODS (E.G. SEEDING, MULCHING, NETTING, EROSION BLANKETS, ETC.)

VEGETATION SHALL BE ESTABLISHED ON AREAS DISTURBED OR ON AREAS OF CONSTRUCTION AS NECESSARY TO MINIMIZE EROSION. AREAS TO BE ROUGH GRADED WITH FINISHED GRADING TO FOLLOW NEAR PROJECT COMPLETION ARE TO BE SEEDED WITH ANNUAL, PERENNIAL OR HYBRID RYE GRASS. THIS ALSO INCLUDES PERIMETER DIKES AND THE SEDIMENT BASIN EMBANKMENT. HYDROSEEDING IS PREFERRED.

IMMEDIATELY FOLLOWING FINISH GRADING, PERMANENT VEGETATION WILL BE APPLIED AS APPROVED PER THE APPROVED PLANS, CURRENT WSDOT STANDARDS AND SPECIFICATIONS AND THE CITY OF MUKILTEO REQUIREMENTS.

NOTES FOR FILL PLACEMENT

1. STRUCTURAL FILL PLACEMENT AND COMPACTION ACTIVITIES SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION.
2. SOILS PLACED IN STRUCTURAL AREAS SHALL BE PLACED IN LOOSE LIFTS NOT TO EXCEED 12 INCHES AND SHALL BE COMPACTED TO A RELATIVE COMPACTION OF AT LEAST 95%, BASED ON THE LABORATORY MDD AS DETERMINED BY ASTM D1557.
3. SOILS SHALL BE PLACED AT (OR SLIGHTLY ABOVE) OPTIMUM MOISTURE CONTENT.
4. WHERE LOOSE OR UNSUITABLE MATERIAL IS EXPOSED AT SUBGRADE ELEVATIONS, OVEREXCAVATIONS SHOULD EXTEND TO A COMPETENT, NATIVE BEARING SUBGRADE PRIOR TO RESTORING GRADES WITH STRUCTURAL FILL.

NOTES

1. DURING CONSTRUCTION THE CONTRACTOR SHALL PROVIDE INLET PROTECTION TO EXISTING DOWNSTREAM STORM DRAINAGE STRUCTURES, AS SHOWN ON THE PLAN.
2. FOLLOWING CONSTRUCTION THE CONTRACTOR SHALL REMOVE ANY SEDIMENT FROM THE DOWNSTREAM STORM DRAINAGE CONVEYANCE SYSTEM AS WELL AS ANY COLLECTED IN THE DOWNSTREAM STORM DRAINAGE FACILITIES.
3. TEMPORARY SEDIMENT POND TO BE INTEGRATED WITHIN DETENTION POND AND ASSOCIATED OVERFLOW SPILLWAY AND RISER, SEE TABLE THIS SHEET AND DETAIL ON SHEET GR-03.
4. THE GEOTECHNICAL ENGINEER SHALL BE NOTIFIED TO OBSERVE EXCAVATIONS IN STRUCTURAL AREAS TO ENSURE ADEQUATE BEARING CONDITIONS AT SUBGRADE ELEVATIONS. AREAS OF UNCONTROLLED, EXISTING FILL WERE IDENTIFIED IN THE PROJECT GEOTECHNICAL REPORTS AND WILL BE EXPOSED AT VARIOUS SITE LOCATIONS DURING CONSTRUCTION. WHERE EXISTING FILL CONTAINS SIGNIFICANT ORGANIC, DELETERIOUS, OR OTHERWISE UNSUITABLE MATERIAL, COMPLETE OVEREXCAVATION AND REPLACEMENT WITH SUITABLE GRANULAR STRUCTURAL FILL SHALL BE COMPLETED, AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. WHERE EXISTING FILL IS PRIMARILY FREE OF DETRITUS, AS OBSERVED BY THE GEOTECHNICAL ENGINEER, THE EXISTING FILL MAY BE SUITABLE FOR REUSE AS STRUCTURAL FILL. OVEREXCAVATIONS IN EXISTING FILL SHALL EXTEND TO A SUITABLE BEARING LAYER, AND GRADES SHALL BE RESTORED WITH SUITABLE GRANULAR STRUCTURAL FILL.
5. NO CLEARING/GRADING WORK IS ALLOWED BEYOND THE APPROVED CLEARING LIMITS.
6. ALL EXCAVATED MATERIAL SHALL BE STOCK-PILLED ON-SITE WITHIN APPROVED CLEARING LIMITS.

TEMPORARY/PERMANENT SEEDING

1. SEEDING MAY BE USED THROUGHOUT THE PROJECT ON DISTURBED AREAS THAT HAVE REACHED FINAL GRADE OR THAT WILL REMAIN UNWORKED. SEED AND MULCH ALL DISTURBED AREAS NOT OTHERWISE VEGETATED OR STABILIZED.
2. SEED DURING SEASONS MOST CONDUCIVE TO PLANT GROWTH. FOR WASHINGTON THIS IS BETWEEN APRIL 1 THROUGH JUNE 30 AND SEPTEMBER 1 THROUGH OCTOBER 1. SEEDING THAT OCCURS BETWEEN JULY 1 AND AUGUST 30 WILL REQUIRE IRRIGATION UNTIL 5 PERCENT GRASS COVER IS ESTABLISHED. SEEDING THAT OCCURS BETWEEN OCTOBER 1 AND MARCH 30 WILL REQUIRE A MULCH OR PLASTIC COVER UNTIL 75 PERCENT GRASS COVER IS ESTABLISHED.
3. REFER TO BMP 120 IN THE LATEST SNOHOMISH COUNTY STORMWATER MANUAL FOR FURTHER DETAILS.

CALL 48 HOURS BEFORE YOU DIG 811

REVISIONS

NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUCKS — STATE OF WASHINGTON — 50085 — REGISTERED PROFESSIONAL ENGINEER

04/07/2020

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SALINAS CONSTRUCTION

MUKILTEO YARD

TESC AND DEMO PLAN

CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C3
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C3

3 OF 10 SHEETS

SITE GRADING AND TESC NOTES

1. ALL GRADING SHALL COMPLY TO CHAPTER 18 OF THE INTERNATIONAL BUILDING CODE.

2. TESC MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE WORK (SEE ATTACHED DETAILED T.E.S.C. PLAN).

3. PUBLIC STREETS ARE TO BE KEPT CLEAR OF DIRT AND DEBRIS DURING EXCAVATION AND FILL OPERATIONS.

4. NONCOMPLIANCE WITH THE EROSION CONTROL REQUIREMENTS, WATER QUALITY REQUIREMENTS AND/OR CLEARING LIMITS MAY RESULT IN REVOCATION OF PROJECT PERMITS, PLAN APPROVAL AND BOND FORECLOSURES.

5. CONSTRUCTION ACCEPTANCE WILL BE SUBJECT TO A WELL ESTABLISHED GROUND COVER THAT FULFILLS THE REQUIREMENT OF THE APPROVED CONSTRUCTION PLANS AND TITLE 30, SNOHOMISH COUNTY DRAINAGE ORDINANCE.

6. ALL AREAS TO BE SEEDED SHALL BE CULTIVATED TO THE SATISFACTION OF THE COUNTY INSPECTOR. THIS MAY BE ACCOMPLISHED BY DISCING, RAKING, HARROWING OR OTHER ACCEPTABLE MEANS. PERFORM ALL CULTURAL OPERATIONS ACROSS OR AT RIGHT ANGLES TO THE SLOPE. IF NECESSARY, SURFACE RUNOFF CONTROL MEASURES SUCH AS GRADIENT TERRACES, INTERCEPTOR DIKE/SWALES, LEVEL SPREADERS, AND SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO SEEDING.

7. ALL DISTURBED AREAS SUCH AS DETENTION FACILITIES, ROADWAY BACK-SLOPES, ETC. SHALL BE SEEDED WITH A PERENNIAL GROUND COVER GRASS TO MINIMIZE EROSION. GRASS SEEDING WILL BE DONE USING AN APPROVED HYDROSEEDER OR AS OTHERWISE APPROVED BY SNOHOMISH COUNTY.

8. IMMEDIATELY FOLLOWING FINISH GRADING, PERMANENT VEGETATION (CONSISTING OF RAPID, PERSISTENT AND LEGUME) WILL BE APPLIED. (MINIMUM 80# PER ACRE). THIS IS TO INCLUDE THE FOLLOWING: 20% ANNUAL, PERENNIAL OR HYBRID RYE GRASS, 40% CREEPING RED FESCUE, 40% WHIT CLOVER. HYDROSEED REQUIRED.

9. FERTILIZER SHALL BE APPLIED AT 400# PER ACRE OF 10-20-20 (10 POUNDS PER 1100 SQUARE FEET) OR EQUIVALENT. DEVELOPMENTS ADJACENT NO WATER BODIES SHALL USE NON-PHOSPHOROUS FERTILIZER.

10. ALL CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 2:1.

11. STOCKPILES ARE TO BE LOCATED IN SAFE AREAS AND ADEQUATELY PROTECTED WITHIN 24 HOURS TO PREVENT EROSION. HYDROSEED PREFERRED.

12. DURING PERIODS OF WET WEATHER, THE GRADING CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO LIMIT SURFACE DISTURBANCE AND PROTECT THE SITE GRADING AREA FROM EXCESSIVE RUNOFF EROSION.

13. AREAS TO RECEIVE FILL SHALL BE CLEARED OF ALL VEGETATION AND DELETERIOUS MATTER.

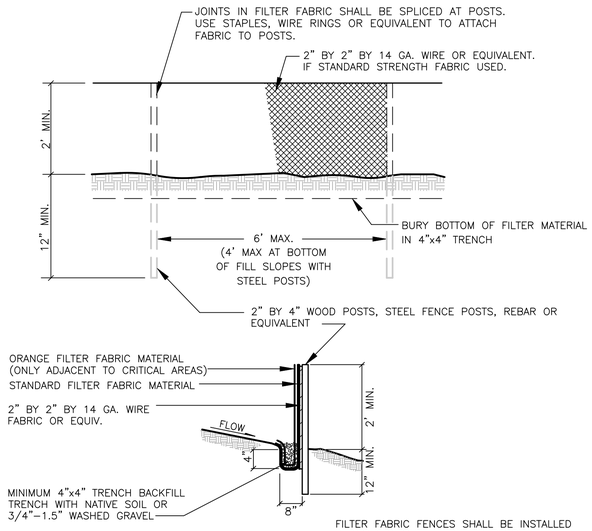
14. ALL FILL MATERIALS USED SHALL BE FREE OF VEGETATION AND DELETERIOUS MATTER AND SHALL NOT CONTAIN ROCKS GREATER THAN 6 INCHES IN DIAMETER.

15. STRUCTURAL FILLS SHALL BE PLACED IN 8" TO 10" THICK LOOSE HORIZONTAL LIFTS AND SPREAD UNIFORMLY.

16. ALL STRUCTURAL FILLS SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY MODIFIED PROCTOR TEST (ASTM D-1557-70).

17. THE SURFACE OF ALL SLOPES SHALL BE COMPACTED. THIS MAY BE ACCOMPLISHED BY OVER-BUILDING THE SLOPES, THEN CUTTING BACK TO FINAL GRADES, OR BY RUNNING THE COMPACTOR OVER THE SLOPE AS EACH FILL LIFT IS BEING PLACED. ALL SLOPES SHALL BE COMPACTED BY THE END OF EACH WORKING DAY.

18. DISTURBED AREAS TO BE STABILIZED WITH HYDROSEED OR STRAW MULCH WITHIN 24 HOURS OF COMPLETION OF FINAL GRADING DURING WET WEATHER.



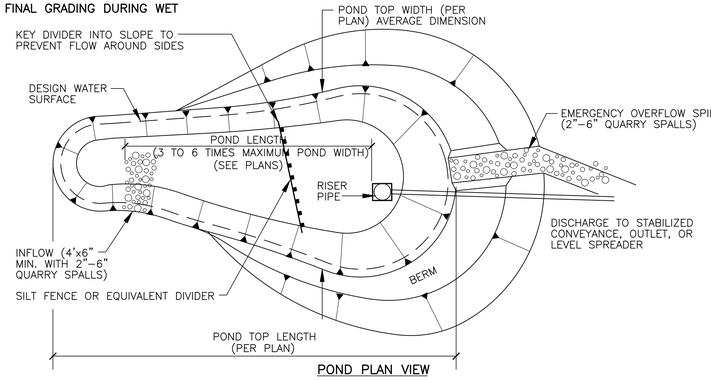
FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE.

NOTES:

1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT TRAP OR POND.
3. IT IS IMPORTANT TO CHECK THE UPHILL SIDE OF THE FENCE FOR SIGNS OF THE FENCE CLOGGING AND ACTING AS A BARRIER TO FLOW AND THEN CAUSING CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE AND/OR REMOVE THE TRAPPED SEDIMENT.
4. SEDIMENT MUST BE REMOVED WHEN THE SEDIMENT IS 6" HIGH.
5. IF THE FILTER FABRIC HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN, IT SHALL BE REPLACED.

TYPICAL ORANGE FILTER FENCE DETAIL

NTS



POND PLAN VIEW

SEDIMENT POND

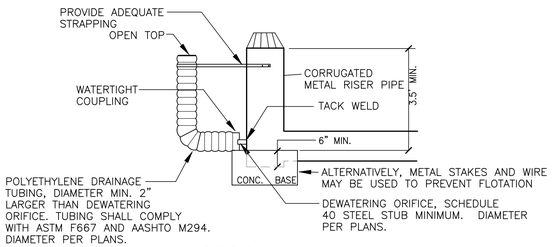
NTS

NOTES:

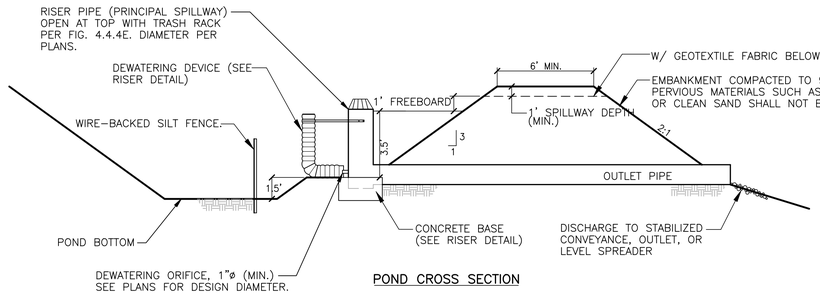
1. POND DETAILS ARE SHOWN FOR REFERENCE. ACTUAL POND SIZE AND SHAPE IS SHOWN ON PLANS.
2. ONE FOOT INTERVALS SHALL BE PROMINENTLY MARKED ON THE RISER.

CONSTRUCTION SEQUENCE

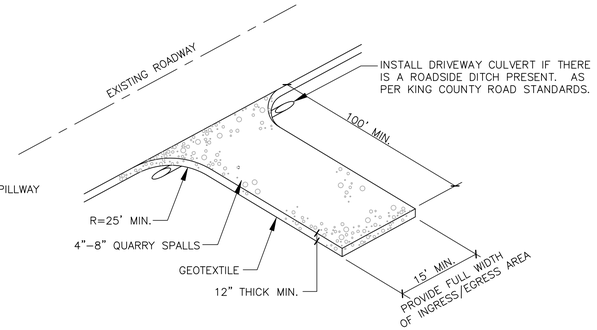
1. FLAG CLEARING LIMITS AS SHOWN.
2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE.
3. INSTALL SILT FENCE AS SHOWN ON THE TESC PLAN AND/OR DIRECTED BY THE INSPECTOR.
4. CLEAR AND GRADE SITE. ANY AREAS STRIPPED OF VEGETATION WHERE NO FURTHER WORK IS ANTICIPATED FOR A PERIOD OF 2 DAYS IN THE WET SEASON (OCTOBER 1 THROUGH APRIL 30) AND 7 DAYS IN THE DRY SEASON (MAY 1 THROUGH SEPTEMBER 30), SHALL BE STABILIZED WITH THE APPROVED EROSION & SEDIMENT CONTROL METHODS, (E.G., SEEDING, MULCHING. NETTERING, EROSION & SEDIMENT CONTROL METHODS).
5. ROUGH GRADE PROJECT SITE
6. INSTALL FOUNDATIONS AND BACKFILL.
7. CONSTRUCTION BUILDING, DRIVEWAY, STORM DRAINAGE SYSTEM AND OTHER IMPROVEMENTS SHOWN ON THE PLANS.
8. SEED (OR HYDROSEED) AND MULCH ALL EXPOSED AREAS. SEE AMENDED SOIL SPECIFICATIONS ON SHEET C3.
9. REMOVE TEMPORARY EROSION CONTROL FACILITIES INCLUDING INLET FILTERS AFTER ENTIRE SITE IS STABILIZED AND THE POTENTIAL FOR EROSION HAS PASSED.
10. CLEAR ANY SILT THAT HAS ACCUMULATED IN THE PERMANENT STORM DRAINAGE SYSTEM.



RISER DETAIL



POND CROSS SECTION



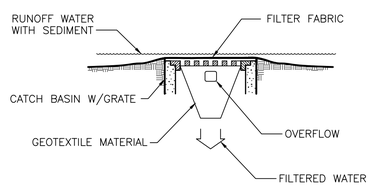
AS PER KING COUNTY ROAD STANDARDS, DRIVEWAYS SHALL BE PAVED TO THE EDGE OF R-O-W PRIOR TO INSTALLATION OF THE CONSTRUCTION ENTRANCE TO AVOID DAMAGING THE ROADWAY.

IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THAT RUNOFF DRAINS OFF THE PAD.

THE LENGTH OF THE ROCK-LINED CONSTRUCTION ENTRANCE MUST BE A MINIMUM OF 100 FEET ON SITES WITH MORE THAN ONE ACRE OF EXPOSED SOIL.

ROCK-LINED CONSTRUCTION ENTRANCE DETAIL

NTS



INLET PROTECTION DETAIL

NTS

File: \\esm4\ENGR\ESM-JOBS\2118\001\020\plots\C4.dwg
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NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL ONCKS — STATE OF WASHINGTON — 50082 — REGISTERED PROFESSIONAL ENGINEER
04/07/2020

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SALINAS CONSTRUCTION

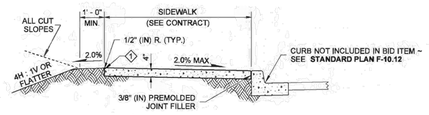
MUKILTEO YARD
TESC NOTES AND DETAILS
CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C4
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C4

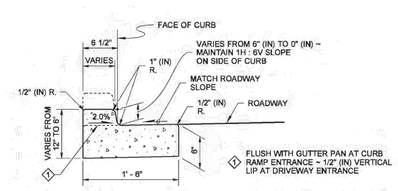
4 OF 10 SHEETS

A PORTION OF THE NW 1/4, SW 1/4, OF SEC. 10, TWP 28 N, RGE 4 E, W.M.



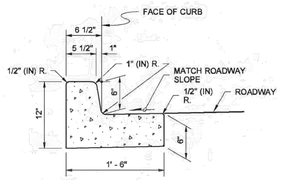
CEMENT CONCRETE SIDEWALK

WSDOT STD F-30.10-03 NTS



DEPRESSED CURB

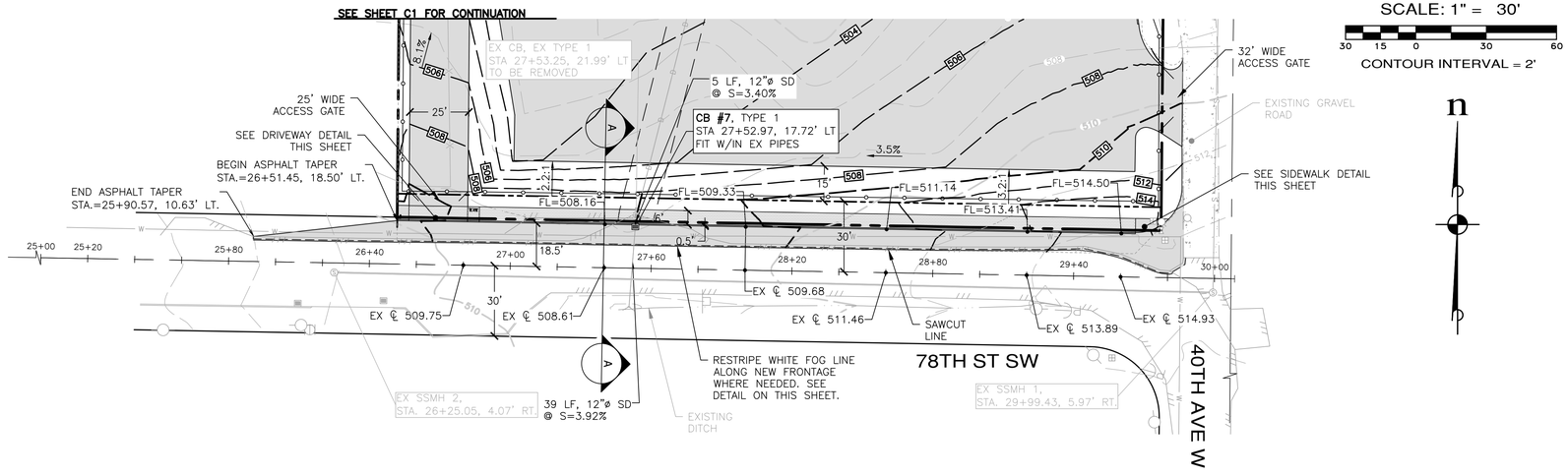
WSDOT STD F-40.12.03 NTS



VERTICAL CURB

WSDOT STD F-40.12.03 NTS

SEE SHEET C1 FOR CONTINUATION

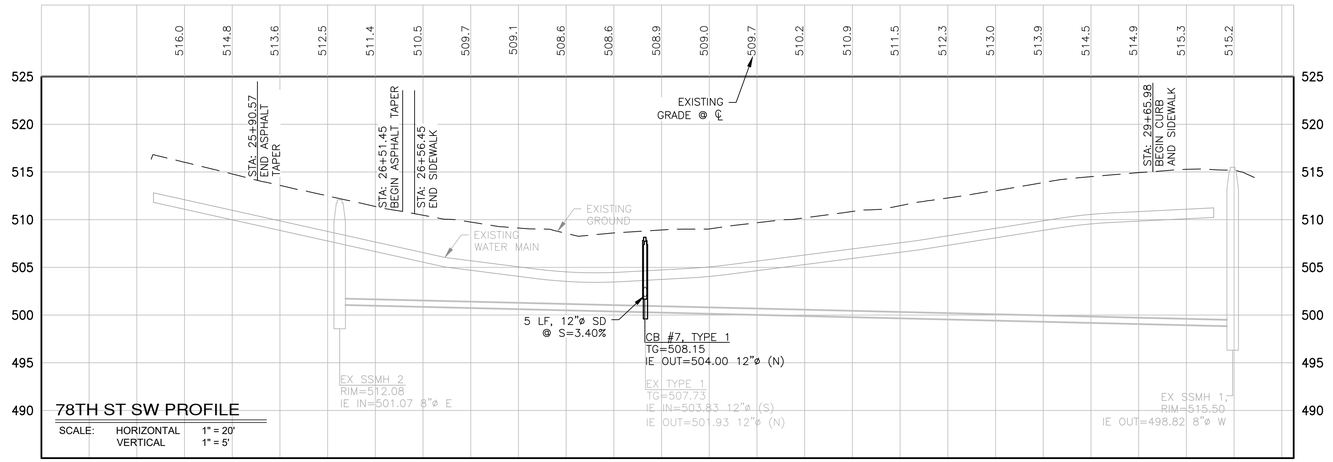


SCALE: 1" = 30'

30 15 0 30 60

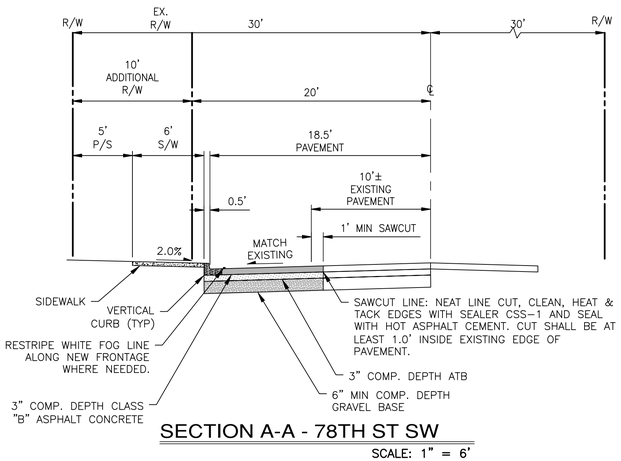
CONTOUR INTERVAL = 2'

n



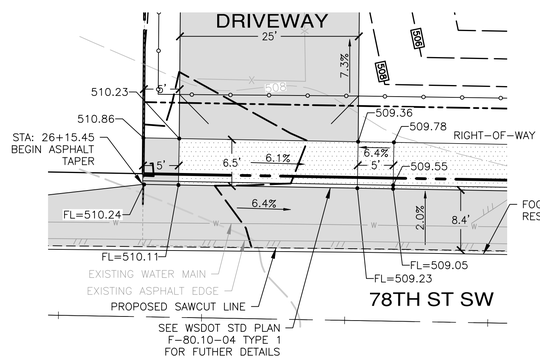
78TH ST SW PROFILE

SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'



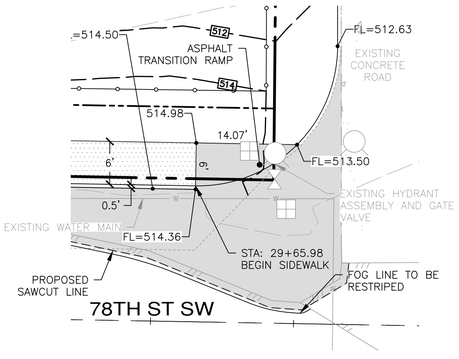
SECTION A-A - 78TH ST SW

SCALE: 1" = 6'



DRIVEWAY DETAIL

SCALE: 1" = 10'



SIDEWALK DETAIL

SCALE: 1" = 10'

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SALINAS CONSTRUCTION

MUKILTEO YARD

FRONTAGE IMPROVEMENTS

CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C5
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
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C5

5 OF 10 SHEETS

File: \\esm6\ENGR_ESM-JOBS\2118\001\020\plots\C5.dwg
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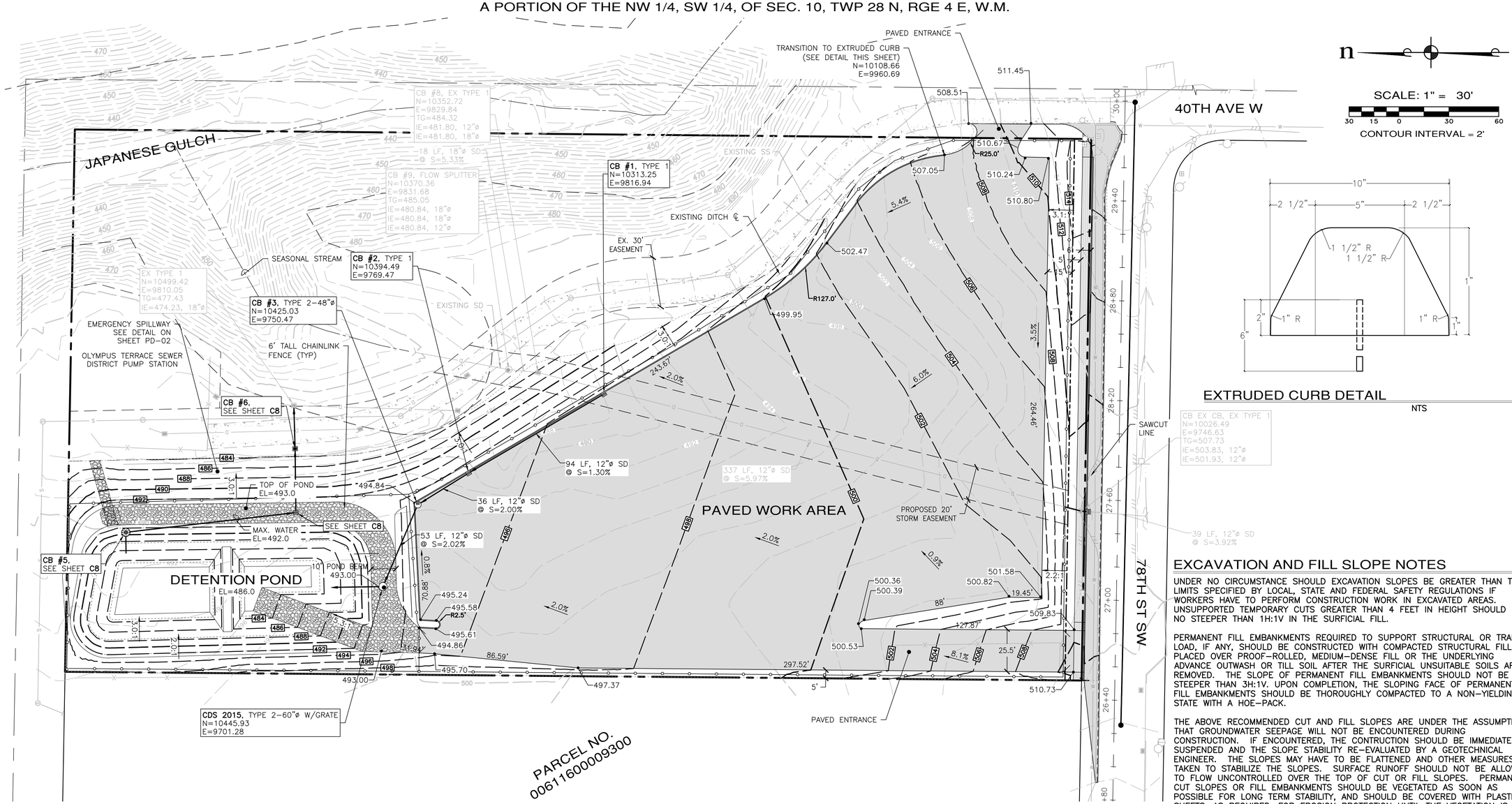


SCALE: 1" = 30'

30 15 0 30 60

CONTOUR INTERVAL = 2'

EXTRUDED CURB DETAIL

NTS

EXCAVATION AND FILL SLOPE NOTES

UNDER NO CIRCUMSTANCE SHOULD EXCAVATION SLOPES BE GREATER THAN THE LIMITS SPECIFIED BY LOCAL, STATE AND FEDERAL SAFETY REGULATIONS IF WORKERS HAVE TO PERFORM CONSTRUCTION WORK IN EXCAVATED AREAS. UNSUPPORTED TEMPORARY CUTS GREATER THAN 4 FEET IN HEIGHT SHOULD BE NO STEEPER THAN 1H:1V IN THE SURFICIAL FILL.

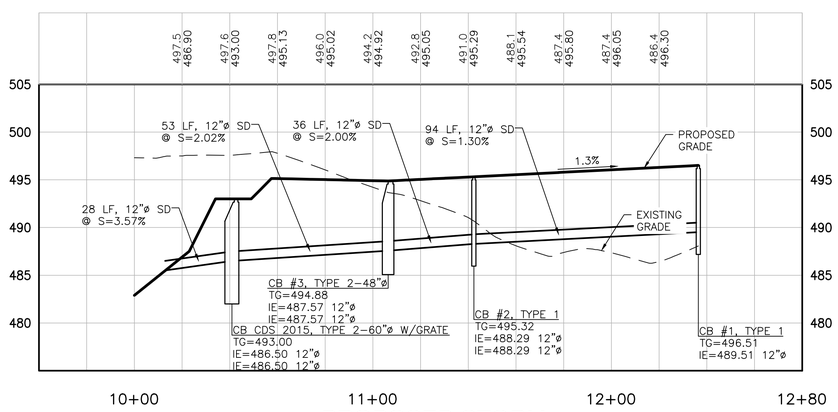
PERMANENT FILL EMBANKMENTS REQUIRED TO SUPPORT STRUCTURAL OR TRAFFIC LOAD, IF ANY, SHOULD BE CONSTRUCTED WITH COMPACTED STRUCTURAL FILL PLACED OVER PROOF-ROLLED, MEDIUM-DENSE FILL OR THE UNDERLYING ADVANCE OUTWASH OR TILL SOIL AFTER THE SURFICIAL UNSUITABLE SOILS ARE REMOVED. THE SLOPE OF PERMANENT FILL EMBANKMENTS SHOULD NOT BE STEEPER THAN 3H:1V. UPON COMPLETION, THE SLOPING FACE OF PERMANENT FILL EMBANKMENTS SHOULD BE THOROUGHLY COMPACTED TO A NON-YIELDING STATE WITH A HOE-PACK.

THE ABOVE RECOMMENDED CUT AND FILL SLOPES ARE UNDER THE ASSUMPTION THAT GROUNDWATER SEEPAGE WILL NOT BE ENCOUNTERED DURING CONSTRUCTION. IF ENCOUNTERED, THE CONTRUCTION SHOULD BE IMMEDIATELY SUSPENDED AND THE SLOPE STABILITY RE-EVALUATED BY A GEOTECHNICAL ENGINEER. THE SLOPES MAY HAVE TO BE FLATTENED AND OTHER MEASURES TAKEN TO STABILIZE THE SLOPES. SURFACE RUNOFF SHOULD NOT BE ALLOWED TO FLOW UNCONTROLLED OVER THE TOP OF CUT OR FILL SLOPES. PERMANENT CUT SLOPES OR FILL EMBANKMENTS SHOULD BE VEGETATED AS SOON AS POSSIBLE FOR LONG TERM STABILITY, AND SHOULD BE COVERED WITH PLASTIC SHEETS, AS REQUIRED, FOR EROSION PROTECTION UNTIL THE VEGETATION IS FULLY ESTABLISHED.

SITE PREPARATION NOTES

LOOSE, SATURATED FILL OVER THE SITE SHOULD BE COMPLETELY STRIPPED WITHIN THE ROADWAY, BUILDING PADS, AND IN AREAS WHERE STRUCTURAL FILL IS TO BE PLACED. THE EXPOSED SURFACE SHOULD BE COMPACTED TO A NON-YIELDING STATE WITH A VIBRATORY ROLLER COMPACTOR AND PROOF-ROLLED WITH A FULLY LOADED DUMP TRUCK OR WATER TRUCK. DURING CONSTRUCTION, STORM RUNOFF SHOULD BE INTERCEPTED WITH DITCHES OR CURTAIN DRAINS, AS REQUIRED, AND DISCHARGED INTO A TEMPORARY STORAGE POND OR A NEARBY STORM SEWER INLET. THE STORM INLET SHOULD BE COVERED WITH A FILTER FABRIC SAC TO PREVENT SEDIMENTS FROM GETTING INTO THE STORM SEWER.

THE ON-SITE SOILS CONTAIN A HIGH PERCENTAGE OF FINES AND ARE SENSITIVE TO MOISTURE. A LAYER OF CLEAN QUARRY SPALLS PLACED OVER EXCAVATED AREAS AND AREAS OF FREQUENT TRAFFIC, SUCH AS ENTRANCE TO THE SITE AND EXCAVATED BUILDING FOOTPRINTS, MAY BE REQUIRED TO PROTECT THE SUBGRADE SOILS FROM DISTURBANCE BY CONSTRUCTION TRAFFIC. SILT FENCES SHOULD BE ERECTED ALONG THE PERIMETER OF THE SITE TO PREVENT SEDIMENTS BEING TRANSPORTED ONTO ADJOINING PROPERTIES OR STREETS.



PROPOSED STORM

STRUCTURAL FILL NOTES

STRUCTURAL FILL IS THE FILL THAT SUPPORTS STRUCTURAL OR TRAFFIC LOAD. STRUCTURAL FILL SHOULD CONSIST OF CLEAN SOILS FREE OF ORGANIC AND OTHER DELETERIOUS SUBSTANCES AND WITH PARTICLES NOT LARGER THAN FOUR INCHES. STRUCTURAL FILL SHOULD HAVE A MOISTURE CONTENT WITHIN ONE PERCENT OF ITS OPTIMUM MOISTURE CONTENT AT THE TIME OF PLACEMENT. THE OPTIMUM MOISTURE CONTENT IS THE WATER CONTENT IN THE SOILS THAT ENABLE THE SOILS TO BE COMPACTED TO THE HIGHEST DRY DENSITY FOR A GIVEN COMPACTION EFFORT.

THE ON-SITE SOILS CONTAIN TOO MUCH FINES AND MAY BE USED AS STRUCTURAL FILL ONLY UNDER FAIR WEATHER CONDITION WHEN ITS MOISTURE CONTENT CAN BE CONTROLLED TO CLOSE TO ITS OPTIMUM MOISTURE CONTENT. IMPORTED MATERIAL FOR STRUCTURAL FILL SHOULD BE CLEAN, FREE-DRAINING, GRANULAR SOILS CONTAINING NO MORE THAN 5 PERCENT BY WEIGHT FINER THAN NO. 200 SIEVE BASED ON THE FRACTION OF THE MATERIAL PASSING NO 4 SIEVE, AND SHOULD HAVE INDIVIDUAL PARTICLES NOT GREATER THAN FOUR INCHES. IMPORTED STRUCTURAL FILL SHOULD BE STOCKPILED AND COVERED SEPARATELY FROM ON-SITE SOILS.

STRUCTURAL FILL SHOULD BE PLACED IN LIFTS OF NO MORE THAN 10 INCHES THICK IN LOOSE STATE, WITH EACH LIFT COMPACTED TO A MINIMUM PERCENTAGE OF THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D1557 (MODIFIED PROCTOR METHOD) AS FOLLOWS:

APPLICATION	% OF MAXIMUM DRY DENSITY
WITHIN BUILDING PADS OF THE BUILDING LOTS	95%
ROADWAY/DRIVEWAY SUBGRADE	95% FOR TOP 3 FEET AND 90% BELOW
RETAINING WALL BACKFILL	95%
UTILITY TRENCH BACKFILL	95% FOR TOP 4 FEET AND 90% BELOW

BOUNDARY AND TOPOGRAPHIC SURVEY INFORMATION SUPPLIED BY:
PACIFIC COAST SURVEYS, INC. DARREN RIDDLE, PLS

REVISIONS		
NO.	DESCRIPTION/DATE	BY

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03/17/2020

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SALINAS CONSTRUCTION

MUKILTEO YARD

GRADING AND UTILITY PLAN

CITY OF MUKILTEO

WASHIN

JOB NO.:	2118-001-020
DWG. NAME:	C6
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
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C6

6 OF 10 SHEETS

Plan: \\esm6\DATA\ESM-2085\2118\001\020\plans\C6.dwg
Plotted: 4/6/2020 2:48 PM Plotted By: Brandon Loucks

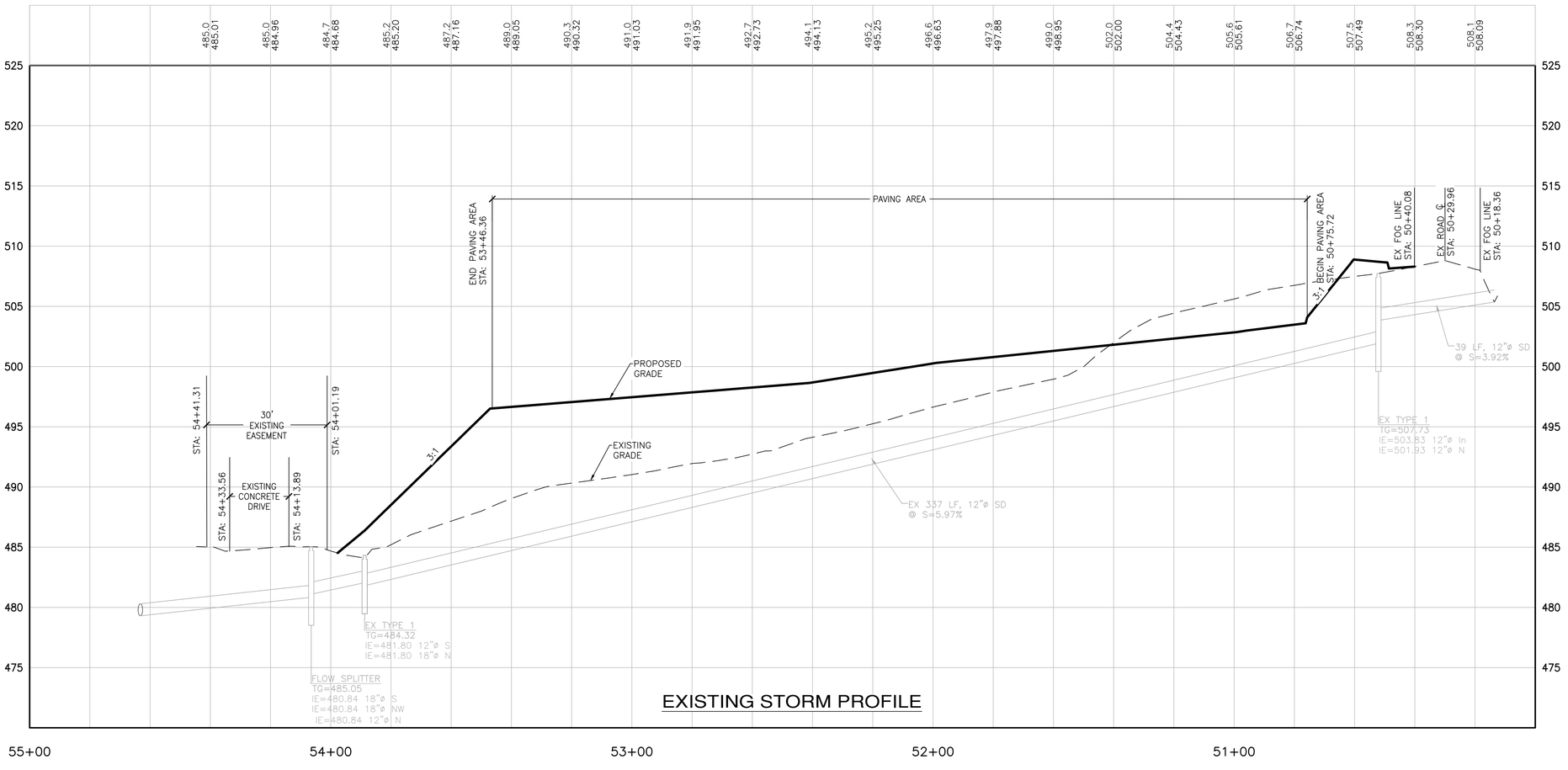
DATUM: NGVD 1988

BENCH MARK: TACK IN SEAM OF CONCRETE ENTRANCE ROAD TO SEWER PUMP STATION, ELEV. = 486.47'

SCALE: 1" = 20'

20 10 0 20 40

CONTOUR INTERVAL = 2'



EXISTING STORM PROFILE

REVISIONS		
NO.	DESCRIPTION/DATE	BY

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PROFESSIONAL ENGINEER
04/07/2020

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SALINAS CONSTRUCTION

MUKILTEO YARD

EXISTING STORM PROFILE

CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C7
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

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7 OF 10 SHEETS

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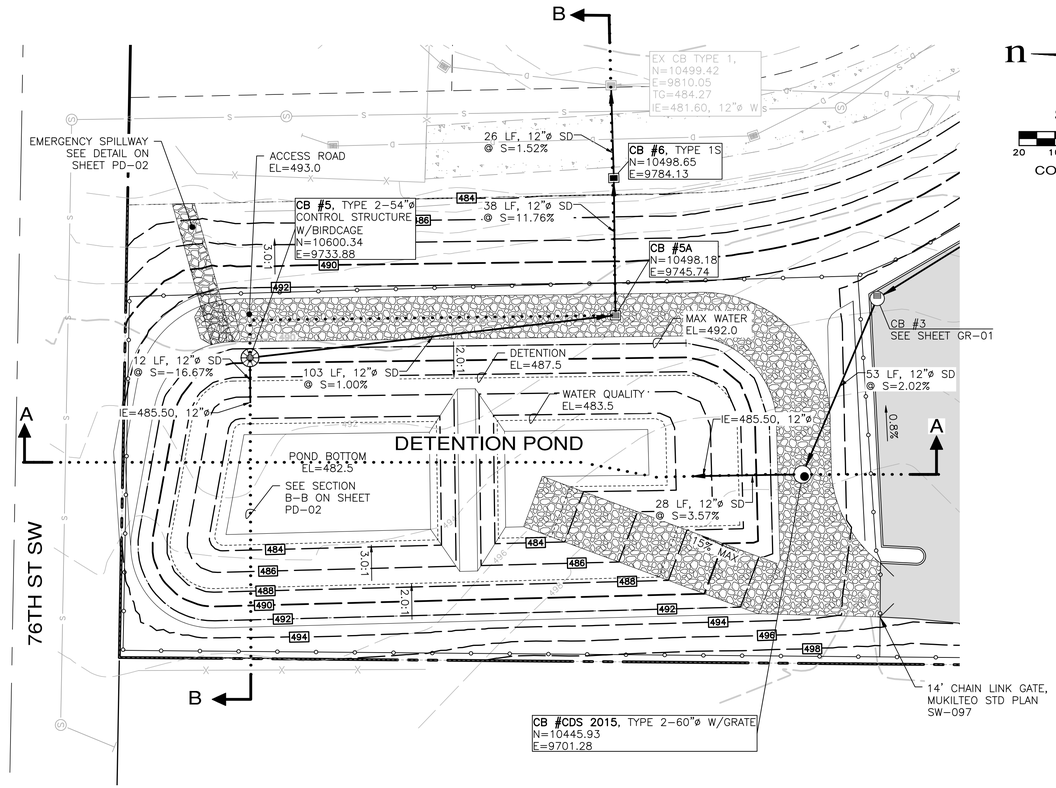
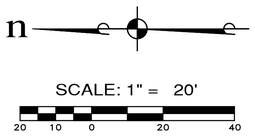
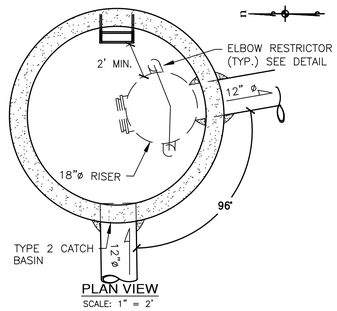
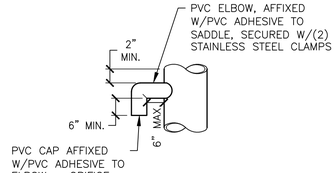


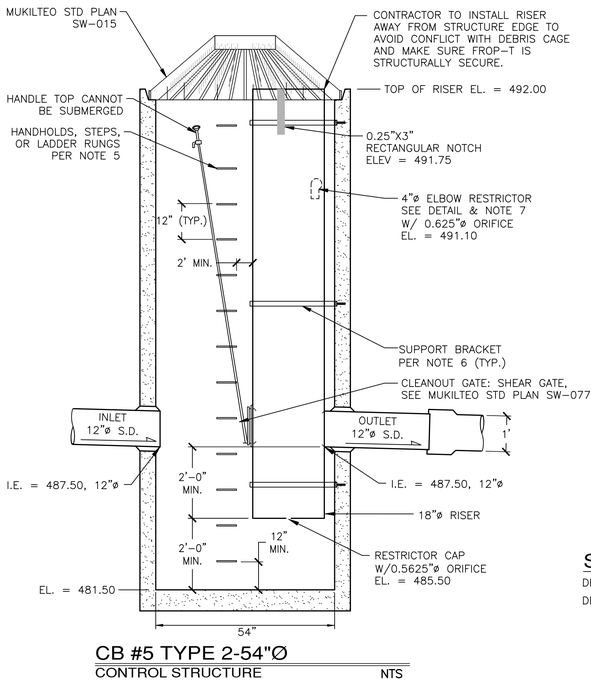




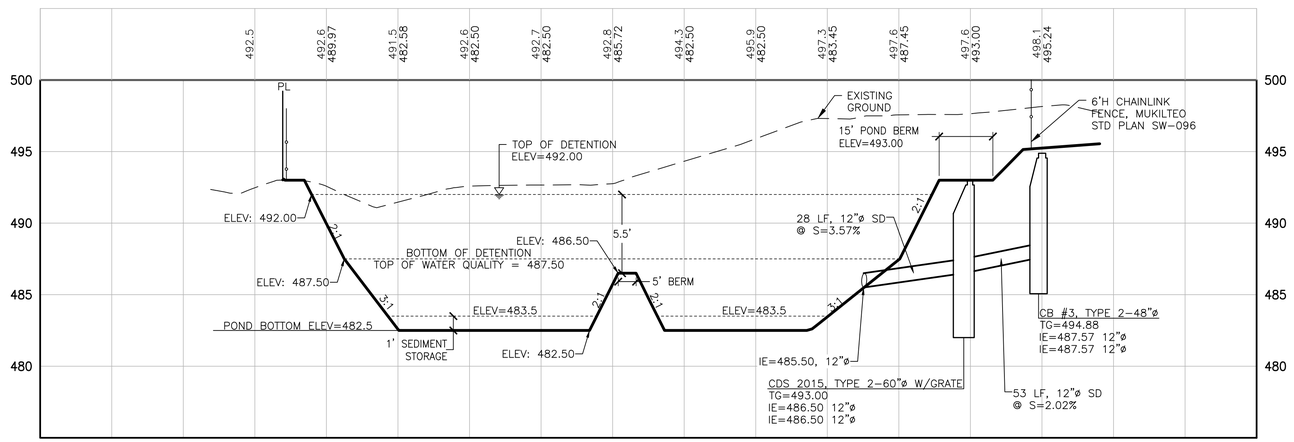
PLAN VIEW
SCALE: 1" = 2'



ELBOW RESTRICTOR DETAIL
NTS



CB #5 TYPE 2-54"Ø
CONTROL STRUCTURE NTS



SECTION A-A

CONTROL STRUCTURE NOTES:

1. USE A MINIMUM OF A 54" DIA. TYPE 2 CATCH BASIN.
2. OUTLET CAPACITY SHALL BE 100-YR. DEVELOPED PEAK FLOW.
3. RESTRICTOR TO BE MADE WITH NO-GASKETED PVC, SDR-35.
4. FLOW RESTICTOR TO BE CONNECTED TO OUTLET PIPE WITH GASKETED CONNECTION OR ROMAC COUPLER.
5. BASIN LID FRAME AND LADDER RUNGS OR STEPS ARE OFFSET SO THAT:
   A. RESTRICTOR IS VISIBLE FROM TOP.
   B. ACCESS SPACE IS CLEAR OF RISER AND RESTRICTOR.
   C. COVER FRAME IS CLEAR OF CURB
6. PROVIDE AT LEAST TWO 3"x0.090 GAUGE STAINLESS STEEL SUPPORT BRACKET ANCHORED 2" INTO CONCRETE WALL WITH MAX. 3' VERTICAL SPACING.
7. LOCATE ELBOW RESTRICTOR(S) AS NECESSARY TO PROVIDE MINIMUM CLEARANCE AS SHOWN. PIPE SIZES AND SLOPE PER PLAN. SHOW ALLOWABLE DISCHARGE "Q".

STORM DRAINAGE FACILITY

DETENTION REQUIRED:	0.925 AC-FT
DETENTION PROVIDED:	1.087 AC-FT

CALL 48 HOURS
BEFORE YOU DIG
811

REVISIONS

NO.	DESCRIPTION/DATE	BY

BRANDON M. MICHAEL LOCKS
STATE OF WASHINGTON
20088
REGISTERED
PROFESSIONAL ENGINEER
04/07/2020

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SALINAS CONSTRUCTION

MUKILTEO YARD
DETENTION POND PLAN AND SECTIONS
CITY OF MUKILTEO
WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C8
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C8

8 OF 10 SHEETS

File: \\esm81\ENGR\ESM-JOBS\2118\001\020\plot\C8.dwg
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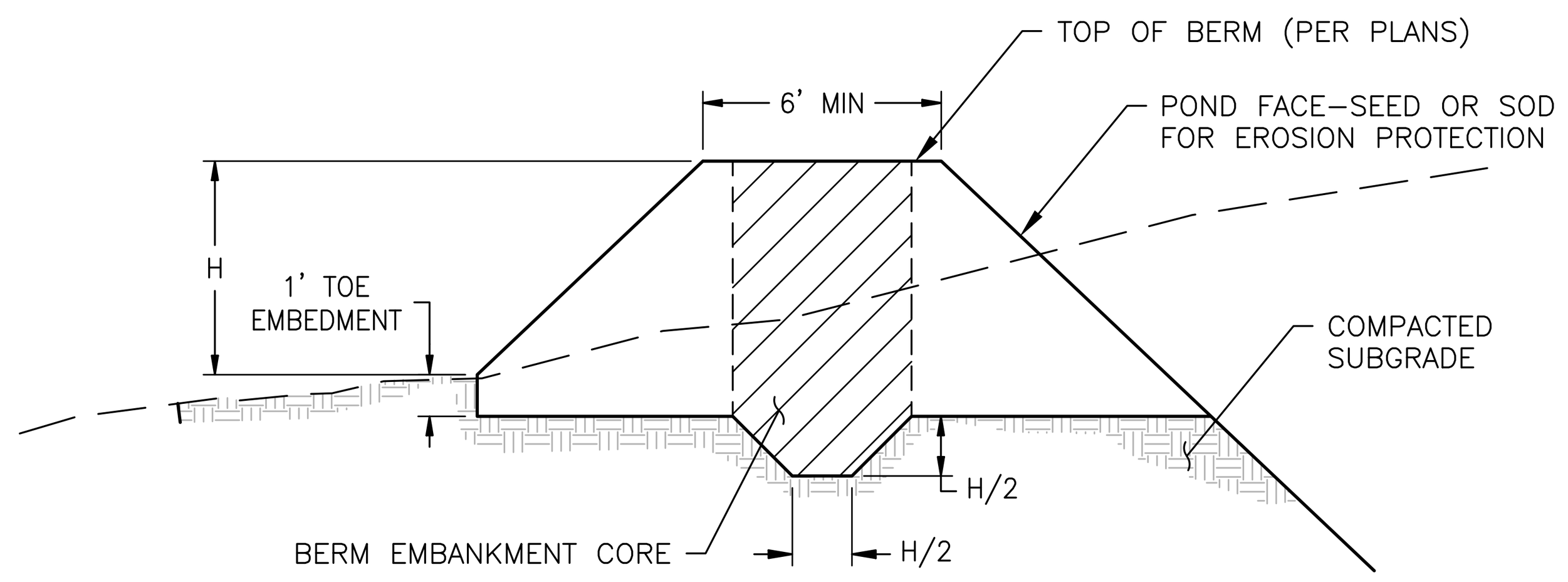


NOTES:

1. BERM EMBANKMENT CORE SHALL BE CONSTRUCTED OF COMPACTED SOIL (95% OF MAXIMUM DRY DENSITY–ASTM–D1557) PLACED IN 6–INCH LIFTS USING MATERIAL CONSISTING OF MINIMUM 30% CLAY, A MAXIMUM 60% SAND, A MAXIMUM OF 60% SILT, WITH NOMINAL GRAVEL AND COBBLE CONTENT OR AS RECOMMENDED BY GEOTECHNICAL ENGINEER TO MAKE THE CORE IMPERVIOUS.

BERM EMBANKMENT DETAIL

NTS

STORM DRAINAGE NOTES

ALL REQUIRED STORM WATER RETENTION/DETENTION FACILITIES SHALL BE CONSTRUCTED AND OPERABLE PRIOR TO PAVING AND BUILDING CONSTRUCTION UNLESS OTHERWISE APPROVED BY MUKILTEO DEPARTMENT OF PUBLIC WORKS.

ALL PIPES WITHIN PUBLIC RIGHT–OF–WAY SHALL MEET CURRENT WSDOT/APWA STANDARDS AND SPECIFICATIONS AND/OR AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS AND SHALL BE INSTALLED PER WSDOT SECTION 7–08.

BACKFILL SHALL BE PLACED EQUALLY ON BOTH SIDES OF THE PIPE OR PIPE–ARCH IN LAYERS WITH A LOOSE AVERAGE DEPTH OF 6", COMPACTED TO A DENSITY OF 95%. REFER TO WSDOT STD. SPEC. 7–08.3(3) AND STD. SPEC. 2–03.3(14)C, METHOD B & C.

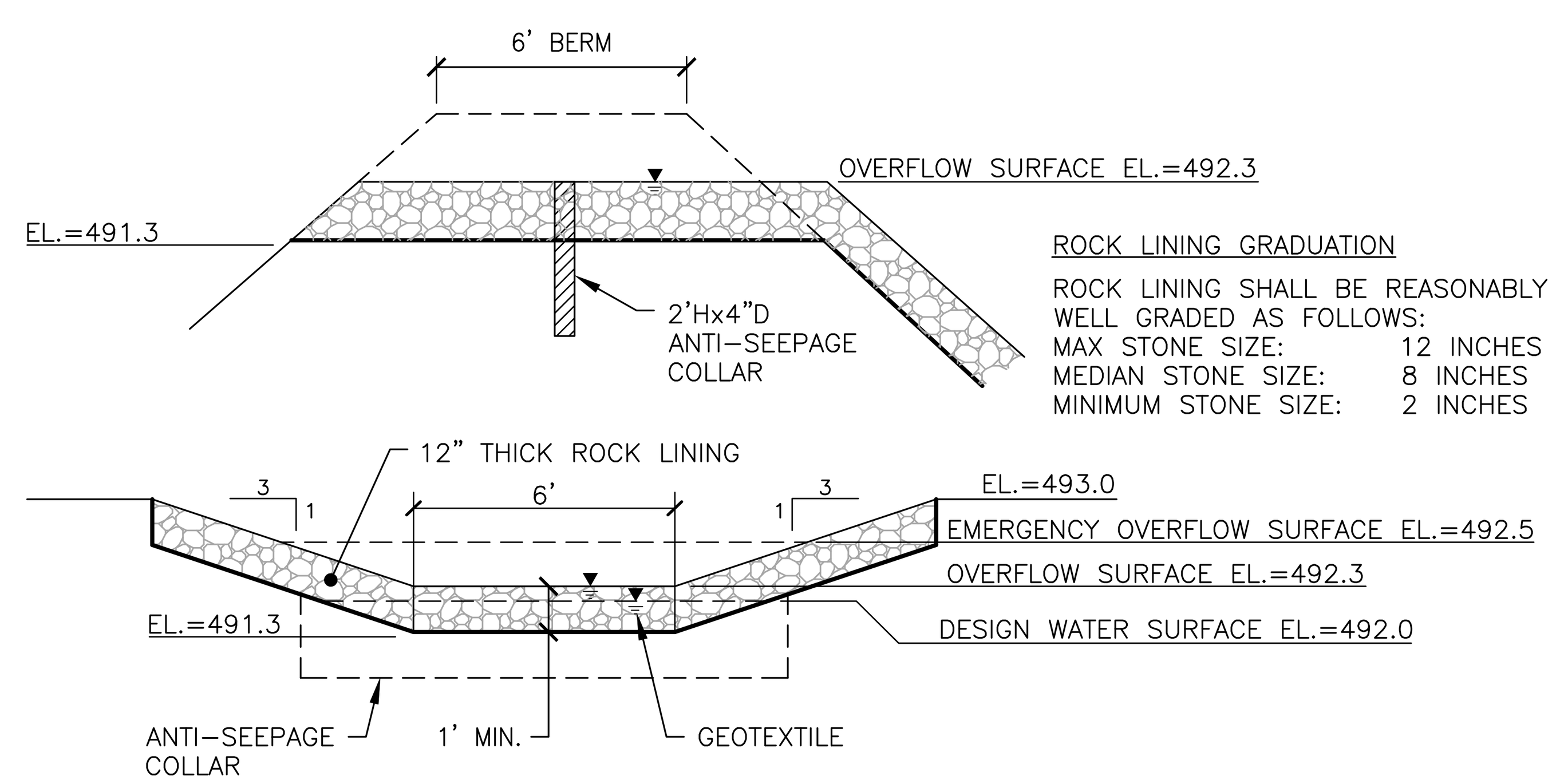
WHERE SHOWN ON THE PLANS OR WHERE DIRECTED BY THE ENGINEER OR DIRECTOR OF PUBLIC WORKS, THE EXISTING MANHOLES, CATCH BASINS, OR INLETS SHALL BE ADJUSTED TO THE GRADE AS STAKED. ALL PIPE AND STRUCTURES SHALL BE STAKED FOR SURVEY LINE AND GRADE PRIOR TO THE START OF CONSTRUCTION. ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND DIRECTOR OF PUBLIC WORKS PRIOR TO COMMENCING CONSTRUCTION.

ALL STORM CATCH BASINS WITH A DEPTH OVER 5 FEET TO FLOW LINE SHALL BE TYPE 2 STRUCTURES PER CURRENT WSDOT/APWA STANDARDS. LADDER ACCESS IS REQUIRED ON ALL TYPE 2 STRUCTURES WHEN 4 FEET OR GREATER IN DEPTH AS MEASURED TO THE INSIDE FINISH FLOOR OR AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

FINAL CLEANING AS REQUIRED PER WSDOT SPEC7–04.3(1) AND AS DIRECTED BY THE CITY OF MUKILTEO PUBLIC WORKS INSPECTOR.

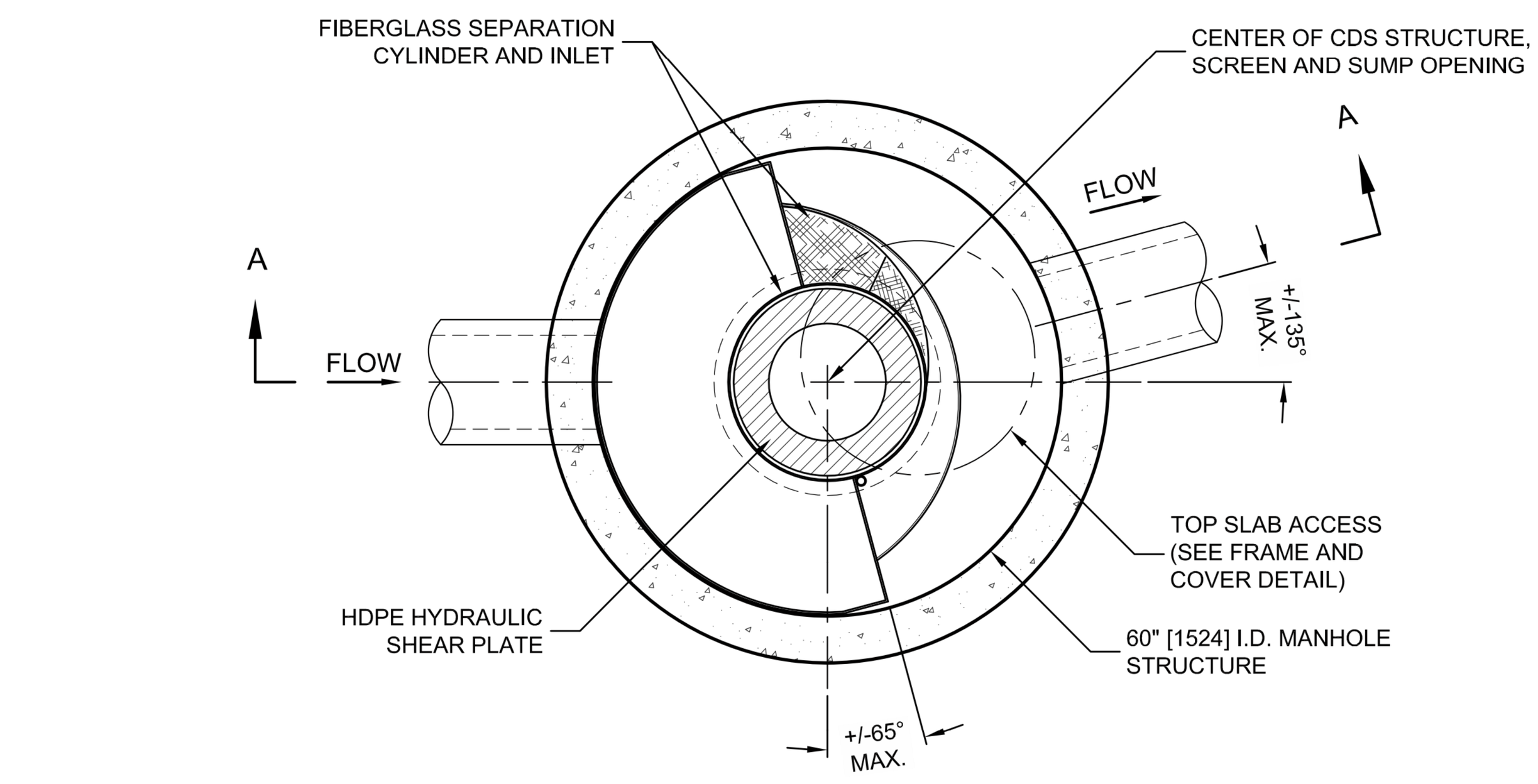
ALL PIPE MATERIAL SHALL CONFORM TO THE APPROVED PLANS AND/OR CURRENT WSDOT/APWA STANDARDS AND SPECIFICATIONS. ALL SUBSTITUTIONS SHALL SUBJECT TO APPROVAL BY THE ENGINEER AND CITY OF MUKILTEO DIRECTOR OF PUBLIC WORKS PRIOR TO CONSTRUCTION.

THE APPLICANT/CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LOCATIONS OF ALL STUB–OUT CONVEYANCE LINES WITH RESPECT TO THE UTILITIES (E.G. POWER, GAS, TELEPHONE).



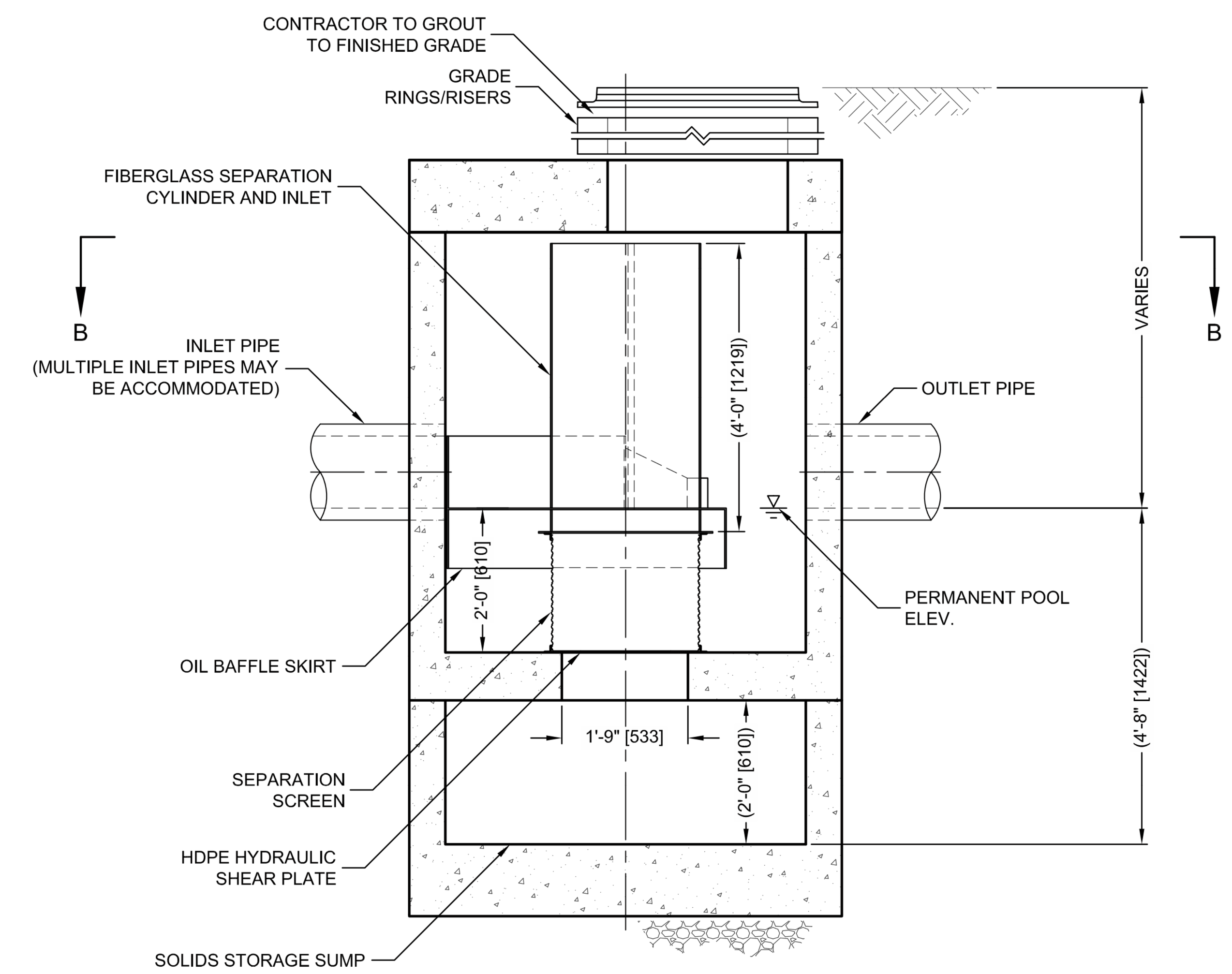
OVERFLOW SPILLWAY DETAIL

NTS



PLAN VIEW B-B

N.T.S.



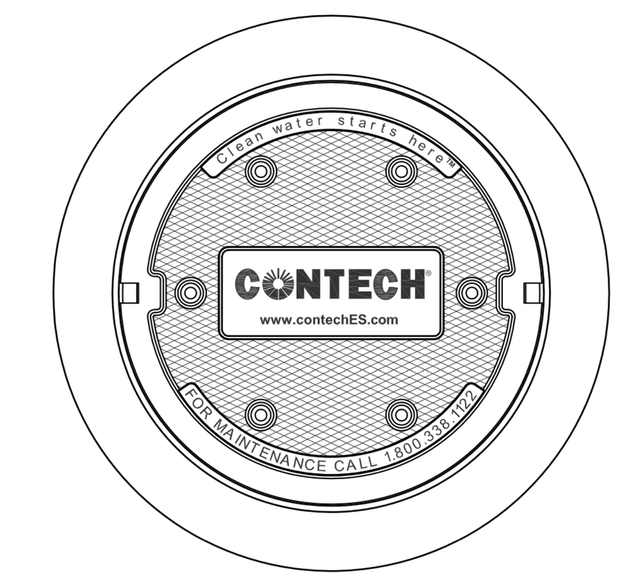
ELEVATION A-A

N.T.S.

CDS2015-5-C DESIGN NOTES

THE STANDARD CDS2015-5-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES ←
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER

(DIAMETER VARIES)

N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	CB #5A
WATER QUALITY FLOW RATE (CFS OR L/s)	0.2444
PEAK FLOW RATE (CFS OR L/s)	1.68
RETURN PERIOD OF PEAK FLOW (YRS)	100
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	491.171	PVC	12"
INLET PIPE 2	*	*	*
OUTLET PIPE	491.171	PVC	12"

RIM ELEVATION	493.000

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

SOLID LID, ONLINE FLOW

* PER ENGINEER OF RECORD

GENERAL NOTES

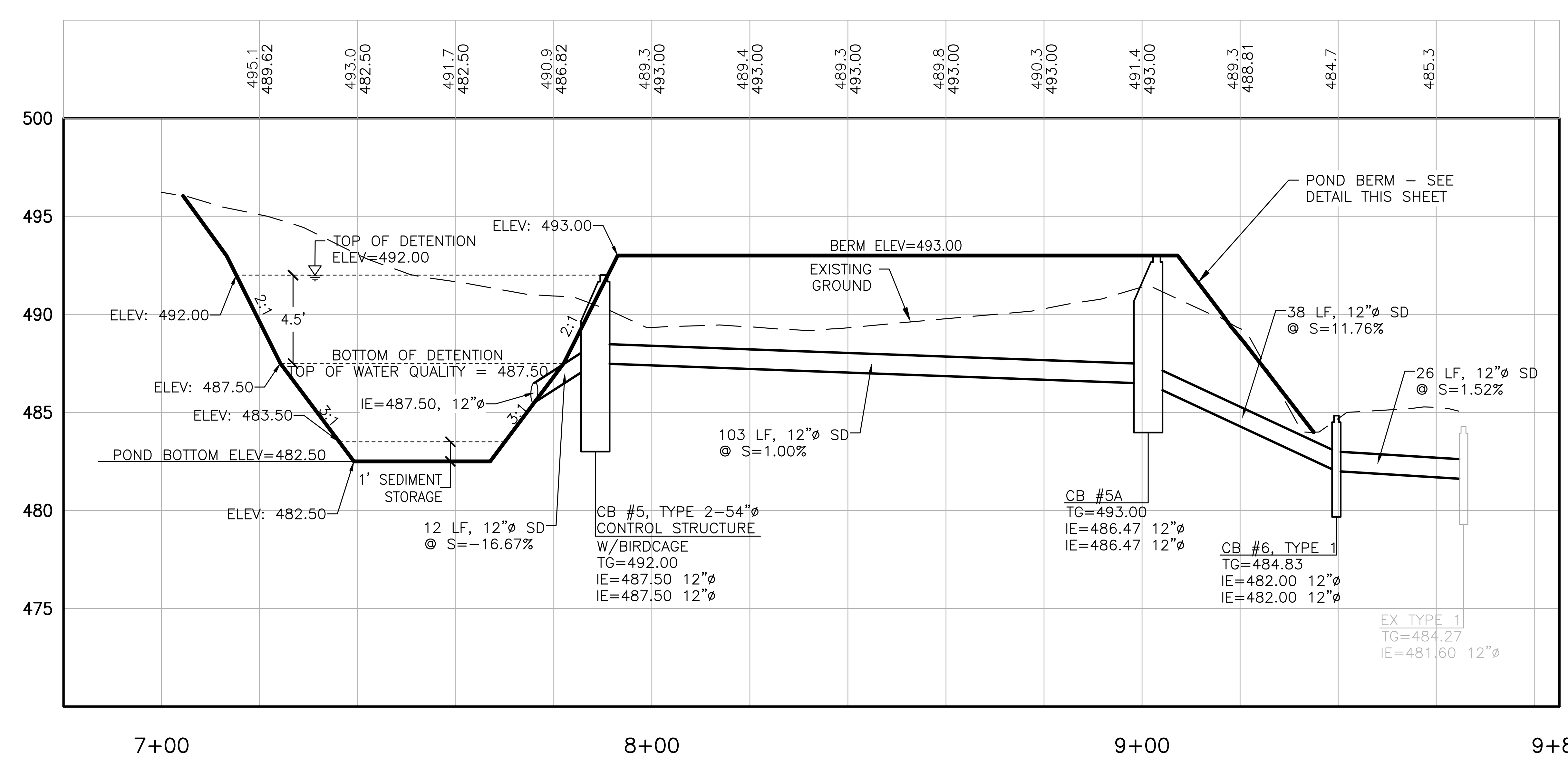
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-5-C
INLINE CDS
STANDARD DETAIL



SECTION B-B

ESM CONSULTING ENGINEERS LLC
33400 8th Ave S, Suite 205
Federal Way, WA 98003
www.esmcivil.com
Civil Engineering | Land Surveying | Land Planning
Public Works | Project Management | Landscape Architecture
BRANDON MICHAEL LOUCKS, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER 04/07/2020

REVISIONS

NO.	DESCRIPTION/DATE	BY

SALINAS CONSTRUCTION

MUKILTEO YARD

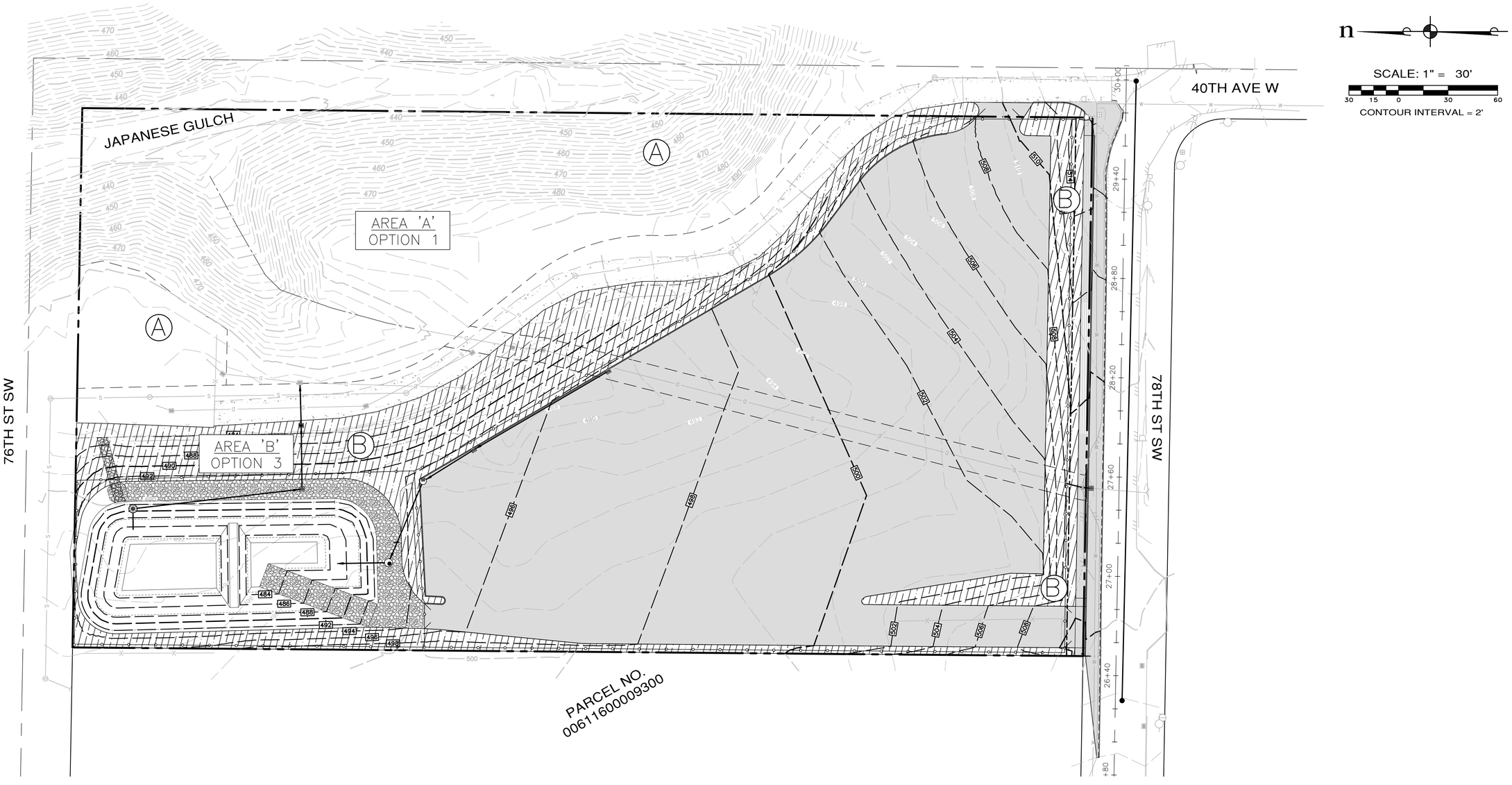
DETENTION POND NOTES AND DETAILS

CITY OF MUKILTEO — WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C9
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C9

A PORTION OF THE NW 1/4, SW 1/4, OF SEC. 10, TWP 28 N, RGE 4 E, W.M.



LEGEND

A — UNDISTURBED (OPTION 1)
LEAVE NATIVE SOIL UNDISTURBED, PROTECT FROM COMPACTION

B — LAW/TURF (OPTION 3)
STOCK PILE SITE SOIL AND COVER WITH WEED BARRIER. SCARIFY TO DEPTH YIELDING 12" UNCOMPACTED SOILS. REAPPLY AND AMEND IN PLACE. REAPPLY STOCKPILED SOIL. ROTOTILL 1.75" OF COMPOST INTO 6.25" SOIL (9.5" UNSETTLED, 8" SETTLED DEPTH) (32,978 SF)

REVISIONS

NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUBAK — STATE OF WASHINGTON — 22008 — REGISTERED PROFESSIONAL ENGINEER
04/07/2020

CONSULTING ENGINEERS LLC
33400 8th Ave S, Suite 205
Federal Way, WA 98003
FEDERAL WAY (253) 838-6113
EVERETT (425) 297-1900
www.esmcivil.com
ESM
Civil Engineering
Public Works
Land Planning
Landscape Architecture
Land Surveying
Project Management

SALINAS CONSTRUCTION

MUKILTEO YARD

SOIL MANAGEMENT PLAN

CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C10
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C10

10 OF 10 SHEETS

File: \\esm8\ENGR\ESM-JOBS\2118\001\020\plots\C10.dwg
Plotted: 3/16/2020 4:04 PM Plotted By: Drew Phillips

RECEIVED
By Sarah Kress at 3:54 pm, Apr 07, 2020

CITY OF MUKILTEO

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:

Salinas Construction, Mukilteo Yard

2. Name of applicant:

Salinas Construction

3. Address and phone number of applicant and contact person:

Ryan Withrow
Salinas Construction
7804 40th Ave W
Mukilteo, WA 98275

4. Date checklist prepared:

March 23, 2020

5. Agency requesting checklist:

City of Mukilteo

6. Proposed timing or schedule (including phasing, if applicable):

May 2020 through August 2020

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

None at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Wetland and Stream Delineation and Conceptual Mitigation Report, prepared for Olympus Terrace Sewer District ULID No. 11, by Jones & Stokes, dated April 2001

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No others are known at this time outside of the currently proposed project with the City of Mukilteo.

10. List any government approvals or permits that will be needed for your proposal, if known.

Engineering Permit with City of Mukilteo

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The property contains approximately 4.5 acres acres with an existing concrete access road that accesses an Olympus Terrace Sewer District pump station. The proposal is to construct a paved construction yard, approximately 4 acres, west of the existing concrete access road to facilitate the operations of a concrete paving company.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The property is located within the Northwest quarter of the Southwest quarter of Section 10, Township 28 North, Range 4 East, W.M. on the north side of the intersection of 78th Street Southwest and 40th Avenue West, parcel 00611600009400.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slope on the project property is approximately 100% surrounding Japanese Gulch. This area will remain undeveloped. The steepest slope within the project site is approximately 15 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

A geotechnical study was conducted by HWA GeoSciences and documented in their report, *Geotechnical Investigation Report, Salinas Construction Development,* dated August 4, 2006. In summary, 11 test pies were dug ranging from 4 feet to 9 feet below ground surface. Generally, the site is underlain by 12 to 18 inches of organic topsoil, with abundant roots and rootlets, over a thin layer of recessional outwash, over weathered glacial till grading to unweathered till at depth. Based on the results of the subsurface investigation, it is of the option of GeoSciences that the site is suitable for the proposed developed. However, the native weathered and unweathered till soils have low to very low permeability and will not be suitable for infiltration of stormwater. As a result, infiltration BMPs have been deemed infeasible for this site.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading activities will involve moderate cut and filling activities over the 3 acre construction site. Fill depths up to 10 feet and cut depths up to 14 feet for a total of approximately 6,574 cy of cut and 6,189 cy of fill. Export is expected with the source of fill coming from the project site.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Erosion could occur as a result of clearing and construction, particular if earthwork is completed during periods of rainfall. TESC measure will be implemented as approved by the city prior to construction.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 100,000 sf of impervious including the existing impervious will existing onsite,

about 50% of the parcel. All parcel impervious areas will primarily be either paved with concrete or asphalt.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The developer will institute an erosion control plan to be used during earthwork and construction.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Emission from the project would result from exhause from trucks and heavy equipment used in the excavation, filling, grading, installation, removal, and disposal of carious material during site development.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None known

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

All construction equipment will be im proper working order and regulated for emission by the manufacturer and local emissions laws. During construction, the site will be watered as necessary to keep any dust from impacting surrounding air quality.

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Japanese gulch is located in the east portion of the site and runs through this edge of the property. There is also a seasonal water course that conveys water from upstream public right-of-way runoff. This water course leads in to Japanese gulch

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Grading work will take place approximately 150 feet of Japanese gulch. Paving starts approximately 190 feet from Japanese gulch. All proposal work will take place west of the existing concrete road running through the site.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Currently there is no planned filling or dredging activities proposed from known surface water or wetlands.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Not Applicable

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Runoff from impervious will be collected into stormwater detention and water quality systems and released into the existing stormwater network on site that eventually discharges water to Japanese Gulch.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Not as proposed

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project contractors, users and personnel will utilize Best Management Practicies. Attached drainage plan shows how runoff from impervious surfaces will be directed to onsite stormwater detention system.

4. **Plants**

a. Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
__x__evergreen tree: fir, cedar, pine, other
__x__shrubs
__x__grass
__x__pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other

____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Approximately 86,000 sf of vegetation will be removed. The vegetation consists of second and third generation forest consisting of fir, cedar, and deciduous trees. The undergrowth is relatively open and consists of fern, nettles, and small bushes and trees.

c. List threatened and endangered species known to be on or near the site.

No threatened or endangered species known to be on or near the site

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The disturbed areas of the site will be seeded for stabilization

e. List all noxious weeds and invasive species known to be on or near the site.

None known

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

None known

c. Is the site part of a migration route? If so, explain.

No

d. Proposed measures to preserve or enhance wildlife, if any:

None

e. List any invasive animal species known to be on or near the site.

None known

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The site as proposed will not require energy.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The proposed site would not affect the potential use of solar energy, all proposed site features are at ground level

b. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None, not applicable

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

None known

1) Describe any known or possible contamination at the site from present or past uses.

None is known

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None are proposed

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None are proposed.

4) Describe special emergency services that might be required.

None are proposed

5) Proposed measures to reduce or control environmental health hazards, if any:

State regulations regarding safety and the handling of hazardous materials will be followed during the construction process. Equipment refueling areas would be located in areas where spill could be quickly contained and where hazardous materials entering surface water is minimized.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

The primary source of noice near the project is vehicular traffic along 78th St SW. Additionally, Payne Field is located just to the east of the project parcel. These sources will not affect the project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Short term noise associated with the operation of heavy machinery and removal materials would be created during the execution of the proposed work. No long-term noise impacts are anticipated from the proposed work.

3) Proposed measures to reduce or control noise impacts, if any:

Construction activity will be limited to permitted construction hours and construction equipment will not be allowed to idle for continuous periods of time, which will hehlp mitigate the impact of potential construction noise.

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The property is currently vacant except for a small portion of the site which includes a sewer lift station for the Olympus Terrace Sewer District and associated sewer infrastructure. Additionally, a storm main runs down the middle of the site for the benefit of the City of Mukilteo to convey runoff from adjacent public rights-of-way to Japanese Gulch. Adjacent properties are developed and undeveloped industrial zoned parcels. The current proposal will not affect the land use on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Unknown

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No impact

c. Describe any structures on the site.

Sewer lift station

d. Will any structures be demolished? If so, what?

No

e. What is the current zoning classification of the site?

Industrial

f. What is the current comprehensive plan designation of the site?

Not applicable

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

None known

i. Approximately how many people would reside or work in the completed project?

Proposal is a construction yard. There are no plans for employees to work at the completed project.

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project will be developed in accordance with applicable City of Mukilteo development and land use codes to ensure the project is consistent with the goals and policies of the city.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

None proposed

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

None proposed

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable

b. What views in the immediate vicinity would be altered or obstructed?

Not applicable

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not applicable

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not applicable

c. What existing off-site sources of light or glare may affect your proposal?

No

d. Proposed measures to reduce or control light and glare impacts, if any:

None

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

None

b. Would the proposed project displace any existing recreational uses? If so, describe.

No

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None proposed

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

No

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

None

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

None proposed

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

None proposed

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Two driveway approaches are proposed off of 78th St SW that will provide access to the site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The site is not currenty served by public transit. The nearest bust stop is less than a mile a way.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

No parking spaces are proposed or required.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). _____

New imrovements to the 78th St SW right-of-way is proposed. The improvmeents are proposed along the north half of the ROW which includes approximately 8 feet of road widening, new curb, gutter, and sidewalk. To accommodate these improvements, 10 feet of additional right-of-way will be dedicated to the City of Mukilteo.

e. Describe the existing condition of the proposed access road, including width of easement, width of pavement or roadway, curbs, gutters, and/or sidewalks.

The existing right-of-way is 60 feet with approximately 20 feet of existing pavement. There are currently no curbs, cutter, or sidewalks.

f. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No

g. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Unknown, however minimal traffic is anticipated due to the proposed use of the site, being primarily storage.

h. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No

i. Proposed measures to reduce or control transportation impacts, if any:

None

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

None

b. Proposed measures to reduce or control direct impacts on public services, if any.

None proposed

16. **Utilities**

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Utilities proposed are limited to a new stormwater network

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee _____

Position and Agency/Organization _____

Date Submitted: _____

D. supplemental sheet for nonproject actions

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

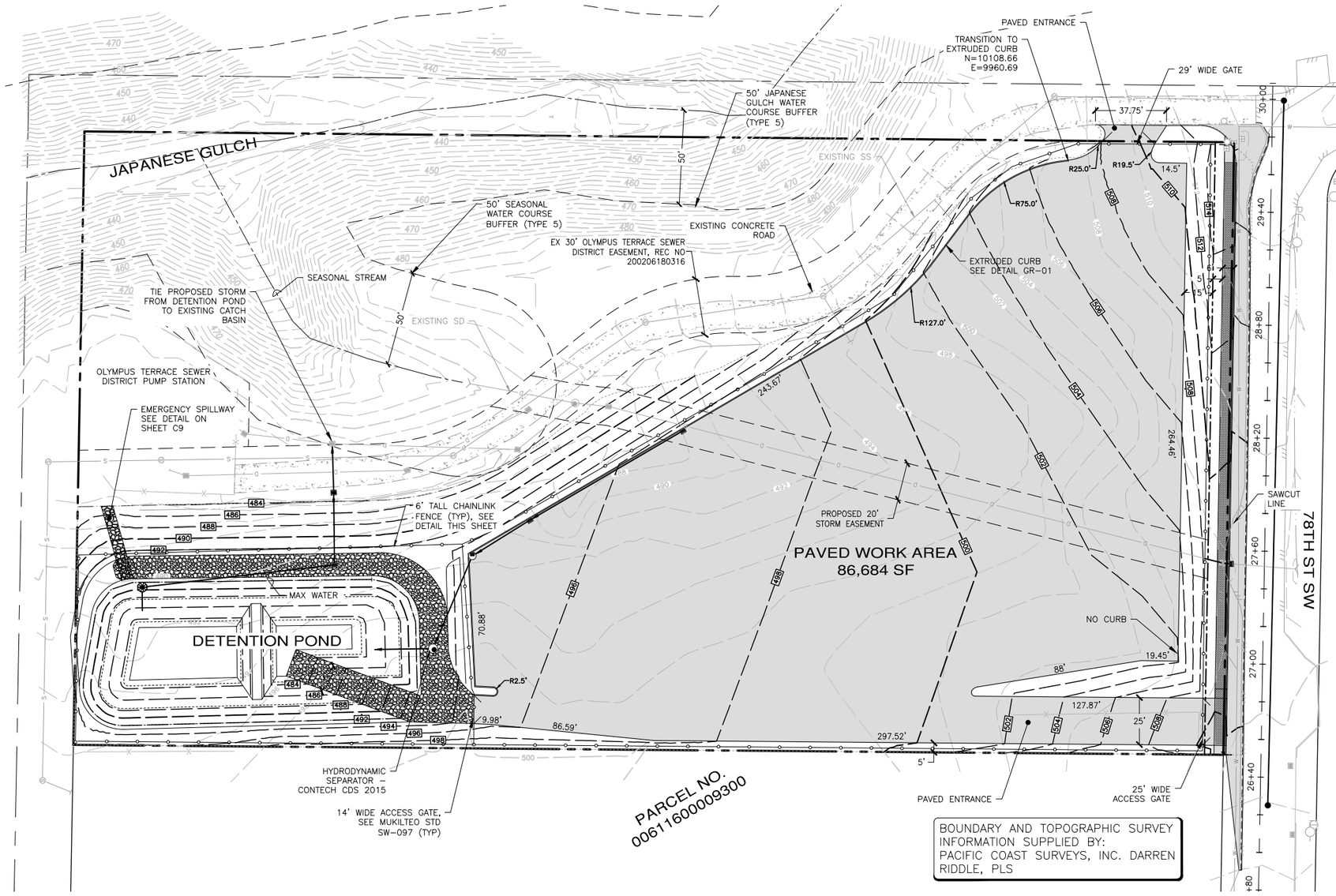
Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

A PORTION OF THE NW 1/4, SW 1/4, OF SEC. 10, TWP 28 N, RGE 4 E, W.M.



BOUNDARY AND TOPOGRAPHIC SURVEY INFORMATION SUPPLIED BY:
PACIFIC COAST SURVEYS, INC. DARREN RIDDLE, PLS

DATUM: NGVD 1988
BENCH MARK: TACK IN SEAM OF CONCRETE ENTRANCE ROAD TO SEWER PUMP STATION, ELEV. = 486.47'

CONTRACTOR NOTE

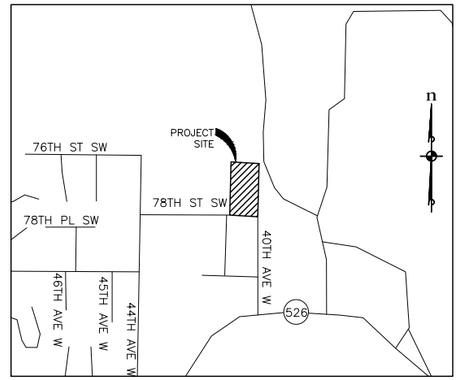
ALL EXISTING UTILITIES SHOWN ON PLANS ARE TO BE VERIFIED HORIZONTALLY AND VERTICALLY PRIOR TO ANY CONSTRUCTION. ALL EXISTING FEATURES SHOWN AS INDICATED ON RECORD MAPS AND SURVEY FURNISHED BY OTHERS. ESM CONSULTING ENGINEERS ASSUMES NO LIABILITY FOR THE ACCURACY OF THOSE RECORDS AND SURVEY, FOR THE FINAL LOCATION OF EXISTING UTILITIES IN AREAS CRITICAL TO CONSTRUCTION CONTACT THE UTILITY OWNER/AGENCY

n

SCALE: 1" = 30'

30 15 0 30 60

CONTOUR INTERVAL = 2'



VICINITY MAP
NTS

ROAD MAINTENANCE

78TH ST SW PAVING

PROJECT AREAS

SITE AREA SUMMARY:		
EXISTING IMPERVIOUS	0 SF	
NEW SITE IMPERVIOUS	86,684 SF	(1.99 AC)
TOTAL DISTURBANCE	132,422 SF	(3.04 AC)
TOTAL SITE AREA	196,020 SF	(4.50 AC)

SITE DATA

PARCEL NUMBER: 00611600009400
SITE ADDRESS: 4007 78TH ST SW
MUKILTEO, WA 98275

TAX CODE AREA: 00667
USE CODE: 641 AUTOMOBILE REPAIR & SERVICES
STATUS: ACTIVE, LOCALLY ASSESSED

TOTAL SITE AREA: 4.50 ACRES

PROJECT CONTACTS

ENGINEER
ESM CONSULTING ENGINEERS
33400 8TH AVE SOUTH, SUITE 205
FEDERAL WAY, WA 98003
(253) 838-6113

SURVEYOR
PACIFIC COAST SURVEYS
16300 MILL CREEK BLVD
MILL CREEK, WA 98082
(425) 512-7099

APPLICANT/OWNER
SCS DEVELOPMENT
12912 HWY 99 S
EVERETT, WA 98204

BIOLOGIST
ENCO ENVIRONMENTAL
PO BOX 1236
GIG HARBOR, WA 98335
(253) 841-9710

SHEET INDEX

REVISIONS		
NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUCKS
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50085
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Public Works
Land Planning
Landscape Architecture
Land Surveying
Project Management

SALINAS CONSTRUCTION

MUKILTEO YARD

SITE PLAN / HORIZONTAL CONTROL

CITY OF MUKILTEO WASHINGTON

JOB NO.:	2118-001-020
DWG. NAME:	C1
DESIGNED BY:	BML
DRAWN BY:	ADP
CHECKED BY:	
DATE:	03/16/2020
DATE OF PRINT:	

C1

1 OF 10 SHEETS

File: \\esm8\ENGR\ESM-JOBS\2118\001\020\plots\C1.dwg
Plotted: 4/6/2020 2:43 PM Plotted By: Brandon Loucks

RECEIVED
By Sarah Kress at 4:03 pm, Apr 14, 2020

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Mr. Ryan Withrow, Project Manager
Salinas Construction
7804 40th Avenue West
Mukilteo, WA 98275

April 06, 2020

RE: SUMMARY OF FINDINGS – WETLAND & WATERCOURSE FIELD ASSESSMENT
Project: Proposed Laydown Yard, 4007 78th Street SW, Mukilteo WA 98275
Current Land Use: Undeveloped **Proposed Land Use**: Heavy Equipment Laydown Yard
Snohomish County Tax Parcel Number: 00611600009400

Dear Mr. Withrow:

1.0 INTRODUCTION

EnCo Environmental Corporation (EnCo) has completed the wetland, watercourse, and fish and wildlife field assessment on the above-referenced property. The work generally followed the scope of work as presented in the EnCo proposal dated March 23, 2020.

It is my understanding that the landowner wishes to obtain a fill and grade permit to construct a heavy equipment laydown yard for a concrete road paving, curb, and sidewalk construction company. There will be no utilities or buildings constructed on the parcel with the exception of an engineered and designed laydown pad and a stormwater conveyance and treatment system.

The purpose for performing the work was to determine if the project site parcel and areas within about 315 feet from the project site parcel contains wetlands, watercourses, state priority and federal listed habitat and species, and associative critical area buffers.

The work effort included:

1. Researching and reviewing published information and readily available critical area and natural resource maps prior to going into the field.

2. Performing a pedestrian survey by walking several transects across the project site parcel and contiguous parcels for an evaluation of local drainage and erosion patterns and clear evidence of the passage of water, including but not limited to, bedrock channels, gravel beds, sand and silt beds, defined-channel swales, sediment deposits,

drift lines, water marks, and estimated width of drainageways. Watercourses must be landscape positioned to be contiguous to a Water of the State per WAC 222-16-031. The survey included walking over the site to assess the three regulatory indicators of wetlands by observing dominant vegetations patterns, soil conditions, and surface / near surface hydrology. In addition, the assessment included making observations for state priority and federal listed habitat and species and other baseline environmental conditions such as topography, aspect, and degree of disturbance.

3. Establishing 11 test plots (on-site and off-site) to determine the presence or absence of wetlands and watercourses, based on the regulatory approved criteria for delineating wetlands and typing watercourses. Assessed the location of off-site wetlands and watercourses within about 315 feet from property to determine if their associative buffers encroach onto the project site.

4. Reviewing previously completed critical area and geotech reports (Wetland Resources, Inc. – 2018, Jones & Stokes – 2001, and HWA Geosciences – 2006), as referenced in **SECTION 13 – REFERENCES**.

5. Preparing one figure: **FIGURE A – WETLAND & WATERCOURSE FIELD ASSESSMENT (APPENDIX A)**.

6. Preparing two tables: **TABLE 1 – WETLAND / NON-WETLAND DETERMINATION RATIONAL** and **TABLE 2 – WATERCOURSE / NON-WATERCOURSE DETERMINATION RATIONAL**.

7. Preparing a report of the observed and assessed findings with conclusions.

2.0 SCHEDULE & WEATHER CONDITIONS

The assessment was performed by Mr. Jonathan Kemp, Professional Wetland Scientist, of EnCo on March 27, 2020. Mr. Ryan Withrow, representative of the landowner, provided access to the project site parcel and clarified the project parcel boundaries.

The site visit was not performed during the growing season. Weather conditions consisted of cloudy skies with ambient air temperatures ranging from 44°F to 48°F and wind speeds ranging from 6 mph to 10 mph from the west. Very light rain showers fell during the field assessment. The amount of rainfall recorded during the winter months of 2020 in western Washington has been near normal.

3.0 DESCRIPTION & CURRENT LAND USE

The project site parcel is located within the jurisdictional boundary of the City of Mukilteo. The site is located near the south end of Japanese Gulch, west of where the Boeing railroad tracks enters the Boeing property. A concrete access road exists near the top of this steep ravine, providing access to a City of Mukilteo sewer pump station that is located near the northeast corner of the property.

The property is undeveloped and has been cleared of most trees with scrub / shrub, sapling, and emergent vegetation remaining. Much of the property has been graded and filled over the years. Vegetation across the project site is dominated by saplings of Douglas fir, red alder, big leaf maple, and black cottonwood with an understory of scotch brome, Himalayan blackberry, salal, red huckleberry, salmon berry, American holly, osoberry, trailing blackberry, stinging nettle, dandelion, hairy cat's ear, sword fern, bracken fern, creeping bentgrass, pasture grasses, bird's foot trefoil, cleavers, dove foot geranium, and herb Robert with patches of reed canary grass and creeping buttercup. Evidence of gravel fill and piles of concrete rubble lay scattered across the western portion of the parcel. Access to the site is provided along the north side of 78th Street SW via a gravel driveway that meanders northerly along the west property boundary.

The project site parcel consists of one tax parcel of real estate as listed below.

LEGAL DESCRIPTION & OTHER DATA					
Tax Parcel(s)	**Jurisdiction City/County**	**Address and Current Owner or Taxpayer**	**Zoning or Use Code Land Use**	**Size (Acres)**	**Legal Lat/Long**
00611600009400	Mukilteo City	Salinas John A / Juan & Sullivan A	Planned Industrial (P-1)	Rectangle 326' EW 610' NS	NWQ of SWQ of SEC 10, TWN 28N, RGE 04E Lat. 47.928333 N Long. -122.288611 W
			Total Project Parcel Acres: ~4.50		

4.0 GROUNDWATER & SOIL SETTING

4.1 Groundwater

Groundwater Observations

Based on field assessment groundwater seepage on the project site parcel was observed at about 1 foot below ground surface in **Test Plots 1, 2, & 7**. The cascading seepage was observed on top of a thin layer of compressed sandy gravel fill material under a top layer of less dense silty loam at these test holes. The soils under this thin compacted seepage layer of soil was not saturated; it was slightly moist. Groundwater was not observed at less than 18 inches below ground surface in **Test Plots 3, 4, 5, 6 & 8**. It is the professional opinion of this writer that the observed groundwater seepage in areas near **Test Plots 1, 2, & 7** is due to recent rainfall events. Groundwater wells were not observed on the project site parcel, therefore, the measured depth to the near surface groundwater table is not known at this time.

HWA Geosciences

At the time of the HWA Geosciences field investigation in August 2006, slight pockets of trapped ground water / seepage were observed in only two of their 11 test pits; TP-2 and TP-6. In TP-2, the seepage was observed in the weathered till layer, while in TP-6 the seepage appeared in the garbage layer and weathered till below. In both test pits, the seepage stopped shortly after excavation, likely indicating a trapped pocket of water. No other ground

water seepage was observed in the remaining 8 test pits during their investigation. These 8 dry test pits were dug down to depths ranging from 4 feet to 8 feet below ground surface. However, ground water level is expected to vary with rainfall and other factors. In wet periods, perched water could locally occur above the dense till and/or other less permeable layers for short periods of time.

4.2 Soil

NRCS Mapped Soils

The soil type covering almost 98 percent of project site parcel is mapped in Snohomish County by the Natural Resources Conservation Service (NRCS) as Alderwood Gravelly Sandy Loam (1) with a 0 percent to 8 percent slope. In areas close to Japanese Gulch the site is mapped as Alderwood Gravelly Sandy Loam (1) with a 25 percent to 70 percent slope. The Alderwood series is not listed as a hydric soil.

HWA Geosciences

According to the Geotechnical Soils Report prepared on August 4, 2006 by HWA Geosciences, Inc. the site geology was obtained from the published geological map entitled Distribution and Description of Geologic Units in the Mukilteo Quadrangle, Washington (Minard, 1982). This map indicates that the near surface deposits in the vicinity of the site consist of Vashon Till. The map describes the till as a non-sorted, highly compacted mixture of clay, silt, sand, gravel, and boulders deposited directly by glacier ice. A total of 11 test pits were dug on the site with a back hoe at depths ranging from 4 feet to 9 feet below ground surface. All of the 11 test pits advanced were terminated in glacial till, typically situated below weathered till and/or fill, as described below.

In general, the site is underlain by 12 inches to 18 inches of organic topsoil, with abundant roots and rootlets, over a thin layer of recessional outwash, over weathered glacial till grading to un-weathered till at depth. Four of the eleven test pits, TP-4 through TP-7, encountered undocumented fill. Cobbles and boulders were encountered in the test pits and should be anticipated during construction excavations on site.

Generalized soil descriptions are provided below, in their descending order of occurrence (with the exception of the fill, which is discussed at the end).

Topsoil: The top l foot to 1.5 feet consisted of loose, dark brown, fine sandy silt with organics, including roots and rootlets. Some gravel was also present in this unit.

Recessional Outwash: This layer varied between about 1 foot to 3 feet in thickness and consisted of loose to medium dense, reddish brown, silty sand with gravel and cobbles, and was likely deposited as the glaciers retreated. This layer contains a significant number of roots.

Weathered Till: Weathered till was encountered in all of the test pits and varied between 1 foot to 4 feet in thickness. The weathered till typically consists of medium dense to dense,

mottled tan and gray with oxidation stains, silty, gravelly, fine to medium sand. Some cobbles were present, as were trace rootlets.

Glacial Till: Below the weathered till, very dense/hard glacial till was encountered in all of the test pits, with the exception of TP-5, extending to the bottom of each test pit. In TP-5, the weathered till appears to extend to at least 8 feet below ground surface (bottom of exploration). The glacial till typically consists of dense to very dense, olive gray, gravelly, silty sand. Cobbles and boulders were also encountered in the till. Glacial till is relatively impermeable and will provide suitable bearing for structure foundations

Fill: Undocumented fill was encountered in four of the eleven test pits; TP-4 through TP-7. In test pits TP-4 and TP-5, the fill appears to be related to the existing gravel driveway running along the west side of the property, and extended to depths of about 3 feet and 1 foot, respectively. Test pits TP-6 and TP-7 encountered 2 feet to 3 feet of till fill. In TP-6, the till fill had been placed over about 4 feet of garbage / trash containing plastic sheets, asphalt, wood debris, root balls, metal debris, etc. In TP-7, the till fill had been placed over weathered glacial till.

5.0 TOPOGRAPHY & DRAINAGE

5.1 Topography

Elevation contours, as professionally land surveyed by ESM are depicted on Sheet C2 on the site engineering plans as referenced in **SECTION 13 – REFERENCES**. The ESM figure displays elevations with 2-foot contours using the identified brassie benchmarks that were referenced to mean sea level. The elevations within the segment of land proposed for the heavy equipment laydown yard are presented in the table below: **ELEVATION & SLOPE DATA**.

ELEVATION & SLOPE DATA

Feature	High Elevation	High Location	Low Elevation	Low Location	Total Relief	Length[1]	Average Slope (%)	Down Slope
South to North	514’	SE	486’	Central-East	28’	429’	6.5%	NNW
West to East	500’	Central-West	486’	Central-East	14’	121’	11.6%	ENE

[1]Length was measured as the shortest straight-line distance between the two referenced elevation points on the project site.

The surveyed elevation of the project site ranges from a low of about 482 feet above mean sea level near the City of Mukilteo sanitary sewage pump station (NE) to a high of about 514 feet at the southeast corner of the property.

5.2 Drainage

The overall trending downward slope on the project site is to the northeast. A piped drainage channel runs from the southwest downward to the northeast across the middle of the site. A steep ravine drops steeply down into Japanese Gulch along the eastern segment of the site. One artificially created, man-made ditch (**Ditch A**) is located on the west side of the City of Mukilteo access road for the sanitary sewer pump station. The man-made ditch did not

contain flowing water; a few inches of stagnant water from recent rain events was observed in portions of the ditch near the pump station.

5.3 Steep Slope Hazard

Steep slopes are susceptible to erosion, sliding, earthquake, or other geological events and conditions. These areas can pose a threat to the health and safety of citizens when improper and incompatible development is sited in these areas.

In areas close to Japanese Gulch portions of the project site is mapped as Alderwood Gravelly Sandy Loam (1) with a 25 percent to 70 percent slope. Based on this limited information it is the professional opinion of this writer that parts of the Japanese Gulch on the project site parcels is considered a steep slope in the City of Mukilteo (Slopes Greater Than 40 percent 17B.52A.020.H. – Designation of Geologic Sensitive Areas – "Areas of steep slopes; slopes that have forty percent (forty percent or a twenty-two-degree angle) or steeper gradients and having a vertical relief greater than ten feet, excluding constructed slopes".

6.0 CRITICAL AREA CODE & OTHER REGULATORY PROVISIONS

City Critical Area Code

Mukilteo WA, Mukilteo Municipal Code – Title 17B – Shoreline Management Regulations, Chapter 17B.08 – Definitions; Chapter 17B.52B – Wetland Regulations; Chapter 17B.52C – Fish and Wildlife Habitat Conservation Areas, and Chapter 17B.52A-020.H – Geological Sensitive Area Regulations – Steep Slopes, November 4, 2019.

Wetland Determination

The wetland determination method followed the latest version (Version 2.0: May 2010) of the United States Army Corps of Engineers (ACOE) Wetland Delineation Manual for Western Mountains, Valleys, and Coast Region.

Watercourse Determination

Watercourse typing followed the WDNR, Washington Forest Practices Manual, Washington Forest Practices Board, Updated December 2010 stream and river classification system.

Fish & Wildlife Habitat & Species Determination

The presence or absence of state priority and federal listed critical habitat and threatened, endangered, candidate, and sensitive species was undertaken by reviewing readily available priority habitat and species PHS maps and lists on the Washington Department of Fish & Wildlife (WDFW) web site and by reviewing the Threatened and Endangered Species by County Report published by the U.S. Fish & Wildlife Environmental Conservation Online System.

7.0 OFFICE ASSESSMENT

Published information and readily available critical area and natural resource maps were reviewed prior to going into the field. These maps were reviewed in the office for evidence or confirmation of wetlands, watercourses, floodplains, riparian habitat zones, and local, state, and federal listed threatened and endangered species, designated federal defined critical habitat critical, and species of local importance on the project site parcel and within about 315 feet from the project site parcel.

These maps included aerial photography, professional land surveys, site plans, soils, Lidar, topography, wetlands, watercourses, floodplains, riparian habitat zones, fish presence, state priority and federal listed habitat and species, threatened and endangered species, surrounding land use, zoning, and other applicable natural features.

A partial listing of the agency maps reviewed for this project are presented below.

1. WDFW Priority Habitat & Species
2. WDFW Salmon Scape
3. WDFW State Fish Passage
4. ECOLOGY Water Quality Atlas
5. USGS Stream
6. USDA Natural Resource Conservation Service
7. WDNR Forest Practice Activity
8. Snohomish County Critical Area
9. City of Mukilteo Critical Areas & Topography
10. FEMA Floodplain
11. LiDAR / Hillshade
12. U.S. Fish & Wildlife Service National Wetlands Inventory

8.0 FIELD ASSESSMENT

The field procedures undertaken followed acceptable industry practices. The presence or absence of wetlands, watercourses, riparian habitat zones and state priority and federal listed fish and wildlife habitats and species was assessed by walking several transects across the project site followed by collecting scientific data at the established test plots.

The field assessment included making an assessment on off-site property. A meander survey with a few test plots was undertaken for the purpose of assessing the vegetation, soil, hydrology, and drainage patterns on these contiguous off-site parcels.

The test plots were established at the approximate locations as depicted on **FIGURE A – WETLAND & WATERCOURSE FIELD ASSESSMENT**.

Test Plot ID	**Approximate Location**
Test Plots 1, 2, & 8	West near the northwest corner (Upland)
Test Plot 3	West near the southwest corner (Upland)

Test Plot 4, 5	Central at the end of man-made ditch (Upland)
Test Plot 6	Northwest corner
Test Plot 7	Central – west in man-made ditch (**Ditch A**)
Test Plots 9, 10, 11	**Wetland A** located west of project site parcel

The test plots were dug with a trenching shovel with a 1.3-foot-long blade. The dimensions of the test plot holes were at least 18 inches deep by about 9 inches wide. A wooden stake or flag marked with colored tape was placed at each test plot. Each wooden stake or flag was marked using indelible ink with a discrete test plot number (i.e. **Plot -1**) and date (i.e. **03.27.20**).

Each test plot was sized and used to determine whether or not the established test plots exhibited wetland characteristics and indicators according to the three regulatory wetland criteria: hydric soil, wetland hydrology, and dominant hydrophytic vegetation with emphasis on areas observed to have facultative or wetter plant species. Each test plot was used to evaluate whether or not the established test plots exhibited watercourse characteristics and indicators such clear evidence of the passage of water including but not limited to bedrock channels, gravel beds, sand and silt beds and defined-channel swales, sediment deposits, drift lines, water marks, and estimated width of drainageways.

The data collected from each test plot in concert with the pedestrian survey of the land and surrounding views beyond the project site were used to make the determination. These data and observations were recorded in a field log book and on pre-printed field data forms by the professional wetland scientist. The log books, maps, and test plot field data forms will remain in the EnCo office files for at least seven years. Based on this process a final analysis was made to determine if the areas assessed was a wetland and / or a watercourse.

9.0 PREVIOUSLY COMPLETED CRITICAL AREA REPORTS

The office assessment included reviewing readily available and previously completed critical area reports for the documented presence and extent of critical areas on and in the near vicinity to the project site as summarized below and referenced in **SECTION 13 – REFERENCES**.

Jones & Stokes

According to Jones & Stokes (2001), there were no wetlands located on the project site parcel or within about 225 feet from the project site parcel. Jones & Stokes identified two watercourses on the site; **Watercourse A** and **Watercourse B** as depicted on **FIGURE A**.

Watercourse A is an un-named, intermittent / seasonal watercourse that emerges from a 10-inch diameter culvert about 22 east of the City's access road to the pump station. In 2001 Jones & Stokes classified **Watercourse A** as a Class I with a 25-foot buffer. Note: Current City of Mukilteo Municipal Code (MMC) critical area regulations have changed since 2001 and **Watercourse A** is now typed as a Type 5 with a 50-foot buffer. Watercourse A conveys to Japanese Creek (**Watercourse B**) which currently is typed as a Type 5 with a 50-foot buffer. Japanese Creek empties into Possession Sound about 1.5 miles downstream from the site. Japanese Creek is not a fish-bearing stream in the vicinity to the project site.

Wetland Resources, Inc.

According to Wetland Resources, Inc. (2018), one Category III wetland (**Wetland A**) is located about 225 feet west of the project site parcel as depicted on **FIGURE A**. According to the Cowardin System **Wetland A** is classified as a palustrine, forested, broad-leaf deciduous, seasonally flooded wetland. The wetland scored 17 points on the 2014 Wetland Rating Form for Western Washington, with 6 points for habitat functions. Category III wetlands with 6 habitat points affords a 165-foot protective buffer according to MMC critical area regulations.

10.0 FINDINGS

10.1 Wetlands

Agency maps did not identify wetland polygons on the project site parcel or within about 225 feet from the project site parcel. Based on field study, wetlands were not identified on the project site parcel or within about 225 feet from the project site parcel. EnCo concurs with the findings and conclusions presented in the Jones & Stokes and Wetland Resources, Inc. critical area reports. According the conversations with City of Mukilteo staff by ESM Japanese Creek does not afford a wetland buffer.

The following wetlands were identified within about about 315 feet from the project site as depicted on **FIGURE A**.

Wetland A (Wetland Resources) – Category III with 165-foot buffer

A summary of the rationale for making the wetland vs. non-wetland determination at the test plots is presented in **TABLE 1 – WETLAND / NON-WETLAND DETERMINATION RATIONAL**.

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TABLE 1 WETLAND / NON-WETLAND DETERMINATION RATIONALE				
Plot No.	**Hydric Soil Indicators**	**Hydrophytic Vegetation Indicators**	**Wetland Hydrology Indicators**	**Wetland / Non-Wetland**
1	Hydric Soil Present: No Value <4 Matrix 0-8" Fill, <6" Value of 4 in top 10"	Hydrophytic Present: Yes Dominance Test: >50% Red alder (FAC) Reed canary grass (FACW) Soft rush (FACW) Colonial bentgrass (FAC)	Hydrology Present: Yes Saturation (A3) From recent rain events Not in growing season	Non-Wetland
2	Hydric Soil Present: No Value <4 Matrix 0-8" Fill, <6" Value of <4 in top 10"	Hydrophytic Present: Yes Dominance Test: >50% Douglas fir, red alder, Himalayan blackberry, colonial bentgrass, pasture grasses	Hydrology Present: Yes Saturation (A3) From recent rain events Not in growing season	Non-Wetland
3	Hydric Soil Present: No High Chroma Matrix No depletions / concentrations	Hydrophytic Present: Yes Dominance Test: >50% Himalayan blackberry, reed canary grass, colonial bentgrass, pasture grasses	Hydrology Present: No	Non-Wetland
4	Hydric Soil Present: No No depletions / concentrations	Hydrophytic Present: Yes Dominance Test: >50% Black cottonwood, creeping bentgrass, creeping buttercup, reed canary grass	Hydrology Present: No	Non-Wetland
5	Hydric Soil Present: No No depletions / concentrations	Hydrophytic Present: Yes Dominance Test: >50% Black cottonwood, creeping bentgrass, creeping buttercup, reed canary grass	Hydrology Present: No	Non-Wetland
6	Hydric Soil Present: No No depletions / concentrations	Hydrophytic Present: Yes Dominance Test: >50% Himalayan blackberry, red alder, reed canary grass, colonial bentgrass	Hydrology Present: No	Non-Wetland
7	Hydric Soil Present: No Value of 4, chroma 2 does not have >2% redox in top 12"	Hydrophytic Present: Yes Dominance Test: >50% Himalayan blackberry, reed canary grass	Hydrology Present: Yes Surface Water (A1) High Water Table (A2) Saturation (A3) From recent rain events Not in growing season	Non-Wetland
8	Hydric Soil Present: No No depletions / concentrations	Hydrophytic Present: Yes Dominance Test: 100%	Hydrology Present: No	Non-Wetland

TABLE 1 WETLAND / NON-WETLAND DETERMINATION RATIONALE				
Plot No.	**Hydric Soil Indicators**	**Hydrophytic Vegetation Indicators**	**Wetland Hydrology Indicators**	**Wetland / Non-Wetland**
9	Hydric Soil Present: Yes Redox Dark Surface (F6)	Hydrophytic Present: Yes Dominance Test: 100% Red alder, Himalayan blackberry, reed canary grass, creeping bentgrass, slough sedge	Hydrology Present: Yes High Water Table (A2) Saturation (A3)	Wetland A (Off-Site)
10	Hydric Soil Present: Yes Redox Dark Surface (F6)	Hydrophytic Present: Yes Dominance Test: 100% Red alder, Himalayan blackberry, reed canary grass, creeping bentgrass, slough sedge	Hydrology Present: Yes High Water Table (A2) Saturation (A3)	Wetland A (Off-Site)
11	Hydric Soil Present: Yes Redox Dark Surface (F6)	Hydrophytic Present: Yes Dominance Test: 100% Red alder, Himalayan blackberry, reed canary grass, creeping bentgrass, slough sedge	Hydrology Present: Yes High Water Table (A2) Saturation (A3)	Wetland A (Off-Site)

10.2 Watercourses

Agency maps did identify watercourse polygons on the project site parcel and within about 225 feet from the project site parcel. Based on field study, watercourses were identified on the project site parcel and within about 225 feet from the project site parcel. EnCo concurs with the findings and conclusions presented in the Jones & Stokes and Wetland Resources, Inc. critical area reports. According the conversations with City of Mukilteo staff by ESM Japanese Creek (**Watercourse B**) affords a 50-foot watercourse buffer and the daylighted segment of the un-named watercourse (**Watercourse A**) affords a 50-foot watercourse buffer.

The following watercourses were identified within about about 225 feet from the project site as depicted on **FIGURE A**.

Watercourse A – Daylighted (un-named) – Type 5 with 50-foot buffer
Watercourse B – Daylighted (Japanese Gulch) – Type 5 with 50-foot buffer

A summary of the rationale for making the watercourse vs. non-watercourse determination at the test plots, across the site, and / or on contiguous property is presented in **TABLE 2 – WATERCOURSE / NON-WATERCOURSE DETERMINATION RATIONAL**.

TABLE 2 WATERCOURSE / NON- WATERCOURSE DETERMINATION RATIONALE							
Location	**Scour Channel**	**Bank Height**	**Defined Bed**	**Average Width >24"**	**Gradient** (% Slope)	**Watercourse**	**Type Buffer**
East of Access Road	Yes	1'	Yes	1.5' – 3'	25%	Watercourse A	Type 5 50'
Japanese Gulch	Yes	1.5'	Yes	6' – 10'	3.3%	Watercourse B	Type 5 50'

The Snohomish County critical areas map identified the two un-named watercourses on the project site parcel. The mapped watercourse that traverses the site from the southwest downward to the northeast was determined to be piped under the site until the drainage daylights about 22 feet east of the City of Mukilteo's pump station access road into **Watercourse A**. The mapped, shorter, watercourse on the Snohomish County map that traverses the site from the west downward to the northeast was determined not to exist.

10.3 Ditches

The following man-made ditches were identified on the project site parcel.

Ditch ID	**Location**	**Intended Use**
Ditch A	22' East of Access Road	Stormwater Drainage

According to MMC critical area regulations:

> "*Wetland" means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. 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, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands*".

It is the professional opinion of this writer that **Ditch A** does not meet the municipal code definition of a wetland or watercourse. The ditch was not re-configured from a natural flowing stream when it was constructed sometime after the Jones & Stokes critical areas report and there was no evidence and no indicators of natural surface water in the ditch during the assessment. The small volume of water in the ditch was from the access road stormwater runoff from recent rain events. The ditch does not drain wetlands from the vantage point of

the observer. The ditch was artificially created from the result of the construction of the access road that was created after July 1, 1990.

10.4 Priority Habitat & Species

The following priority habitat and species were identified within about about 315 feet from the project site.

Biodiversity Area – Japanese Gulch Ravine (Terrestrial Habitat)

11.0 CONCLUSIONS

Based on evaluation of readily available maps, review of readily available critical area and geotech reports, observed site conditions, and review of the collected data in the field it is the professional opinion of this writer that:

1. There are no regulated wetlands on the project site parcel or within 225 feet of the project site parcel. The 165-foot buffer associated with **Wetland A** does not encroach onto the project site parcel. The proposed project will occur outside of wetlands and outside of wetland buffers.
2. There are 2 regulated watercourses on the project site parcel and there are no other watercourses within 225 feet of the project site parcel. The proposed project will be designed to occur outside of the 50-foot buffers associated with **Watercourse A** and **Watercourse B**.
3. There is one priority habitat (**Biodiversity Area – Japanese Gulch Ravine**) on the project site and there are no other priority habitats and species withing 315 feet of the project site parcel. This priority habitat is located east of the access road.

12.0 LIMITATIONS

The assessment was limited to the portions of the project site that was studied and assessed as defined in this report and as directed by the client and project engineer (ESM). The assessment was limited to the observations and data collected from the vantage point of the observer while walking several transects across the project site, from the information obtained at the test plots established on the project site as defined in this report, and from information gathered from readily available local, state, and federal agency critical area mapping programs.

A cursory assessment was performed on lands located contiguous to the project site as observed from the project site or from accessible public access ways such as roads, trails, easements, or alley ways. The work did not include detailed assessment of any off-site properties in order to prevent trespassing except to provide brief and very limited access to off-site areas suspected to be a critical area and to obtain information on baseline vegetation and drainage patterns on parcels located contiguous to the project site.

For this report a critical area did not include assessing aquifer recharge zones, erosion prone topography, geologic sensitive areas, historic cultural land uses, stormwater infiltration, and

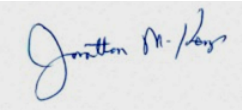
geological hazardous areas. The work did not provide a detailed study or assessment beneath any man-influenced fill material or of any topsoil removed, land slipped, and/or disturbance due to vegetation clearing (except as noted in this report), cutting, scarifying, tilling, dumping, grading, compacting, filling, and/or ditching.

The work effort included creating one figure as presented in **APPENDIX A – WETLAND & WATERCOURSE FIELD ASSESSMENT**. The work effort did not include typing up the test plot field data forms or creating a photographic log at this time. The test plot field data forms and photo log will be made available upon request for an additional fee. These field data forms and digital photographs will remain in the EnCo files for up to seven years.

The work did not include placing any riparian habitat zone or wetland delineation flags, category rating wetlands, flagging any drainageway or watercourse, performing a detailed study of state priority and federal listed critical habitat and species, geologic interpretation, professional civil engineering, review by any local, state, and federal agency, applying for or securing any permits, or performing a professional land survey to accurately locate the test plots or any other features discussed herein. Buffers were determined based on previously completed critical area reports and based on ESM discussions with staff at the City of Mukilteo.

This report is presented without warranty, expressed, or implied. The services associated with this report are rendered by EnCo in good faith and according to the standards generally practiced by professional wetland scientists in the area of wetland and watercourse evaluation and state priority and federal listed critical habitat and species assessment.

Sincerely,



Jonathan M. Kemp
President, EnCo Environmental Corporation, PWS No. 2110

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APPENDIX A

FIGURE A – WETLAND & WATERCOURSE FIELD ASSESSMENT

WETLAND & WATERCOURSE ASSESSMENT
OFF-SITE WETLANDS NOT DELINEATED by EnCo,
CATEGORY RATED, OR BUFFER DETERMINED

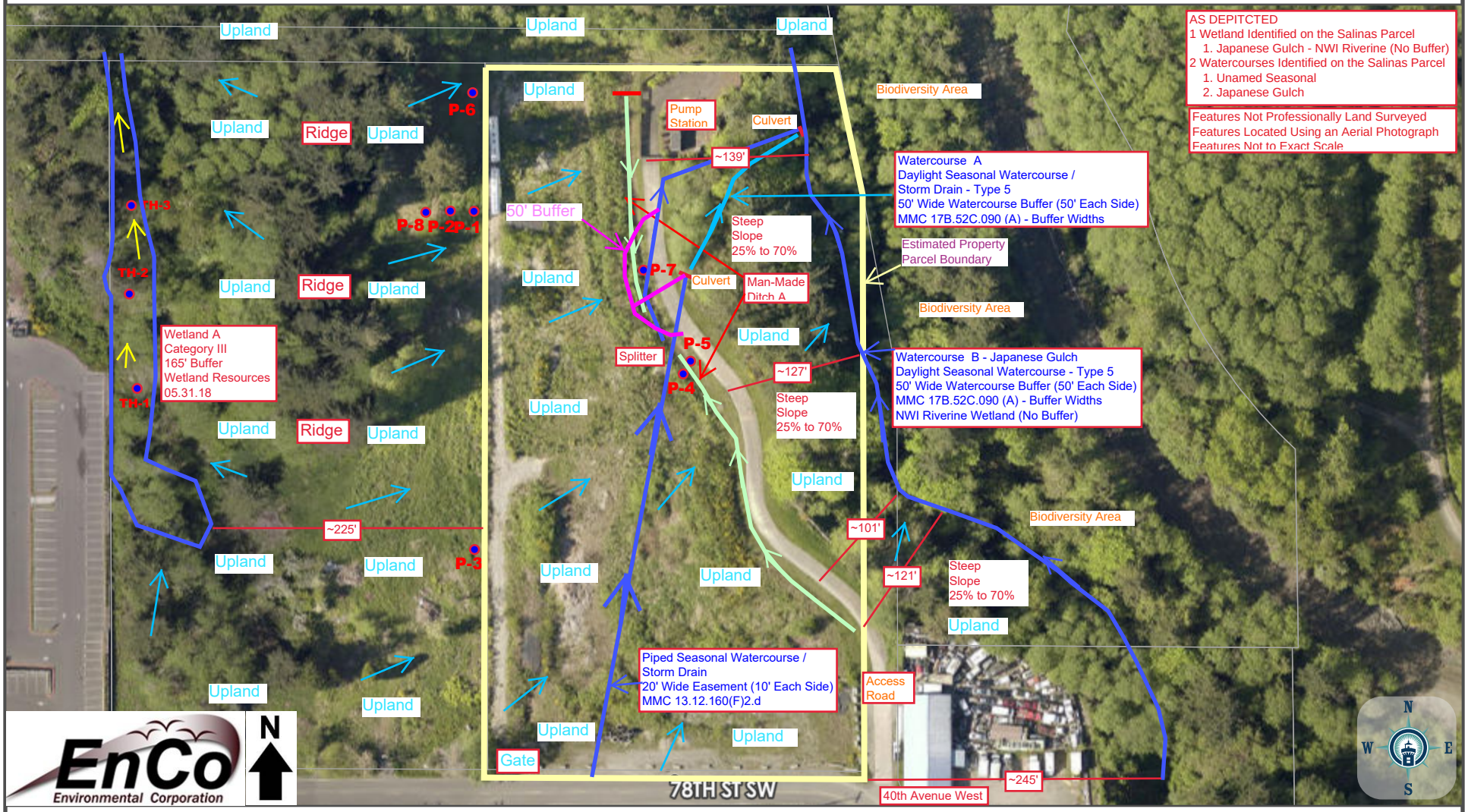

FIGURE A WETLAND & WATERCOURSE FIELD ASSESSMENT

Salinas Construction Laydown Yard, 4007 78th Street SW, Snohomish County, Mukilteo WA 98272

Map Source: Mukilteo MUKMAPS - 2020 Approximate Scale: 1" = 127' (8.5" x 11")

Tax Parcel Number: 00611600009400 Test Plot Locations Referenced Using Color Aerial

Jonathan M. Kemp
P.W.S No. 2110

The geospatial accuracy of this FIGURE may not be an accurate depiction of the site features. This FIGURE carries no warranties and is simply a graphic representation. EnCo Job Number: WTJK-Salinas-Mukilteo-1. Field: 03.27.20, Exhibit: 04.06.20

GEOTECHNICAL REPORT
Salinas Construction Development
4007 78th Street, Mukilteo, Washington
HWA Project No. 2006-077-21

Prepared for
Waite Architects

August 4, 2006

6-15-16 PROJECT WITHDRAWN

HWA GEOSCIENCES INC.
• Geotechnical Engineering
• Hydrogeology
• Geoenvironmental Services
• Inspection & Testing

HWA GEOSCIENCES INC.
Geotechnical & Pavement Engineering · Hydrogeology · Geoenvironmental · Inspection & Testing

August 4, 2006
HWA Project No. 2006-077-21

Waite Architects
111 Durbin Street
Edmonds, Washington 98020

Attention: Mr. Steve Waite

SUBJECT: Geotechnical Investigation Report
Salinas Construction Development
4007 78th Street SW
Mukilteo, Washington

Dear Mr. Waite:

As authorized, HWA GeoSciences Inc. (HWA) completed a geotechnical engineering investigation for the proposed new Salinas Construction Development located at 4007 78th Street SW in Mukilteo, Washington. The objective of our investigation was to evaluate the subsurface conditions and provide geotechnical recommendations for the new two-story office/warehouse building and other site improvements. Our scope of work included field reconnaissance, test pit logging, laboratory testing, engineering analyses and preparation of the attached geotechnical report summarizing the investigation results and our recommendations related to geotechnical aspects of the project.

We appreciate the opportunity to provide geotechnical services on this project.

Sincerely,

HWA GEOSCIENCES INC.

Bryan K. Hawkins, P.E.
Geotechnical Engineer

Enclosure: Geotechnical Report

19730 - 64th Avenue W.
Suite 200
Lynnwood, WA 98036.5957

Tel: 425.774.0106
Fax: 425.774.2714
www.hwageosciences.com

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GEOTECHNICAL INVESTIGATION REPORT
SALINAS CONSTRUCTION DEVELOPMENT
4007 78th STREET SW
MUKILTEO, WASHINGTON

1. INTRODUCTION

1.1 GENERAL

This report summarizes the results of a geotechnical engineering investigation undertaken by HWA GeoSciences Inc. (HWA) at the proposed site of the new Salinas Construction Development in Mukilteo, Washington.

1.2 PROJECT UNDERSTANDING

The project involves construction of an approximately 10,000 square feet, two—story, office building, an equipment shop and associated driveways/parking lots and storage areas. Project location and site layout are shown on the Vicinity Map (Figure 1) and the Site and Exploration Plan (Figure 2), respectively.

Authorization for HWA to proceed with this study was provided by Steve Waite, of Waite Architects. Our work scope included field reconnaissance, sampling and logging test pits, laboratory testing, engineering analyses, and preparation of this report summarizing the investigation results and our recommendations for the proposed improvements.

2. FIELD AND LABORATORY TESTING

2.1 SUBSURFACE INVESTIGATION

Subsurface investigations for the planned development consisted of eleven test pits, designated TP-1 through TP-11. The test pits were excavated by Salinas Construction using a Cat 312BL Excavator. The pits were advanced to depths ranging from about 4 to 9 feet below ground surface.

The exploration locations were determined in the field by Salinas Construction personnel, by taping distances from survey control points, and are plotted on the Site and Exploration Plan, Figure 2. Because taping required measuring through brush and around trees, the test pit locations shown should be considered approximate.

An HWA geotechnical engineer monitored the test pit excavations. Soil samples obtained from the test pits were classified in the field and representative portions were placed in plastic bags and returned to our Lynnwood, Washington, laboratory for further examination and testing.

A Legend of Terms and Symbols Used on Exploration Logs is presented in Figure A-1, Appendix A. Summary soil exploration logs are presented in Figures A-2 through A-12, Appendix A. It should be noted that the stratigraphic contacts shown on the individual exploration logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The soil and ground water conditions depicted are only for the specific date and locations reported and, therefore, are not necessarily representative of other locations and times.

2.2 LABORATORY TESTING

Laboratory tests were conducted on selected soil samples to characterize engineering properties of the on-site soils. Laboratory tests, as described below, included moisture content determination and grain size distribution.

Moisture Content of Soil: The moisture content (percent by dry mass) of selected soil samples was determined in accordance with ASTM D 2216. The results are shown at the sampled intervals on test pit logs in Appendix A.

Particle Size Analysis of Soils: Selected samples were tested to determine the particle size distribution of material in accordance with ASTM D 422. The results are summarized on Figures B-1 and B-2, which also provide information regarding the classification of the samples and the moisture content at the time of testing.

3. SITE CONDITIONS

3.1 SITE DESCRIPTION

The site is located in an over-grown/wooded area near the south end of Japanese Gulch, west of where the Boeing Railroad enters the Boeing property in Mukilteo, Washington. Most of the project site is undeveloped and covered by second and third generation forest consisting of fir, cedar, and deciduous trees. The undergrowth is relatively open and consists of ferns, nettles and small bushes and trees. The site slopes gradually downward to the north and east. A minor drainage channel runs south to north across the middle of the site. To the east of the site, a steep ravine drops steeply into Japanese Gulch. A Portland Cement Concrete Pavement (PCCP) roadway exists along the top of this steep ravine, providing access to a sewer lift station at the northeast corner of the property. No evidence of pavement distress/cracking due to slope movement was observed at the time of our investigation.

Figure 2 shows the proposed development plan. The proposed office structure and associated parking area are located just north of 78th Street, while the proposed shop, material bays and heavy truck areas lie to the north. All proposed development is to the west of the existing PCCP pavement, which will remain in place.

3.2 General Geologic Conditions

Geological information for the site location was obtained from the published geological map entitled Distribution and Description of Geologic Units in the Mukilteo Quadrangle, Washington (Minard, 1982). This map indicates that the near surface deposits in the vicinity of the site consist of Vashon Till. The map describes the till as a non-sorted, highly compacted mixture of clay, silt, sand, gravel and boulders deposited directly by glacier ice.

All of our test pits were terminated in glacial till, typically situated below weathered till and/or fill, as described below.

3.3 Subsurface Conditions

In general, the site is underlain by 12 to 18 inches of organic topsoil, with abundant roots and rootlets, over a thin layer of recessional outwash, over weathered glacial till grading to unweathered till at depth. Four of the eleven test pits, TP-4 through TP-7, encountered undocumented fill. Generalized soil descriptions are provided below, in their descending order of occurrence (with the exception of the fill, which is discussed at the end):

Topsoil: The top 1 to 1.5 feet consisted of loose, dark brown, fine sandy silt with organics, including roots and rootlets. Some gravel was also present in this unit.

Recessional Outwash: This layer varied between about 1 to 3 feet in thickness and consisted of loose to medium dense, reddish brown, silty sand with gravel and cobbles, and was likely deposited as the glaciers retreated. This layer contains a significant amount of roots.

Weathered Till: Weathered till was encountered in all of the test pits and varied between 1 to 4 feet in thickness. The weathered till typically consists of medium dense to dense, mottled tan and gray with oxidation stains, silty, gravelly, fine to medium sand. Some cobbles were present, as were trace rootlets.

Glacial Till: Below the weathered till, very dense/hard glacial till was encountered in all of the test pits, with the exception of TP-5, extending to the bottom of each excavation. In TP-5, the weathered till appears to extend to at least 8 feet below ground surface (bottom of exploration). The glacial till typically consists of dense to very dense, olive gray, gravelly, silty sand. Cobbles and boulders were also encountered in the till. Glacial till is relatively impermeable and will provide suitable bearing for structure foundations.

Fill: Undocumented fill was encountered in four of the eleven test pits; TP-4 through TP-7. In test pits TP-4 and TP-5, the fill appears to be related to the existing gravel driveway running along the west side of the property, and extended to depths of about 3 feet and 1 foot, respectively. Test pits TP-6 and

TP-7 encountered 2 to 3 feet of till fill. In TP-6, the till fill had been placed over about 4 feet of garbage/trash containing plastic sheets, asphalt, wood debris, root balls, metal debris, etc. In TP-7, the till fill had been placed over weathered glacial till.

At the time of our field investigation, slight pockets of trapped ground water/seepage were observed in only two of the test pits; TP-2 and TP-6. In TP-2, the seepage was observed in the weathered till layer, while in TP-6 the seepage appeared in the garbage layer and weathered till below. In both test pits, the seepage stopped shortly after excavation, likely indicating a trapped pocket of water. No other ground water seepage was observed during the investigation. However, ground water level is expected to vary with rainfall and other factors. In wet periods, perched water could locally occur above the till and/or other less permeable layers.

Cobbles and boulders were encountered in the test pits and should be anticipated during construction excavations on site.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

Based on the results of the subsurface investigation, it is our opinion that the site is suitable for the proposed development, provided they are constructed as described herein. Design recommendations for foundations, general earthwork, seismic considerations and drainage are presented the following sections.

4.2 FOUNDATIONS

4.2.1 Footing Design

Based on our evaluation, it is our opinion that the proposed structures can be supported on conventional spread footing foundations bearing on either the dense to very dense, unweathered till, on medium dense to dense weathered glacial till (free from significant roots/organics), or on properly compacted structural fill placed on the weathered till/unweathered till.

Footings bearing on till, weathered till, or properly compacted structural fill placed over competent native soils should be designed for an allowable bearing capacity of 3,000 pounds per square foot (psf). Design bearing pressures may be increased by 1/3 for transient conditions, which include wind or seismic loading. The depth to weathered till (free of significant organic debris) typically varied between 2 to 5 feet below existing ground surface. However, in the vicinity of TP-6, where the garbage deposit was encountered, depths to weathered till may be 7 feet or greater. In the vicinity of test pit

TP-2, located in a lower-lying drainage swale running north south through the site, soft/wet clay deposits were observed in the weathered till, likely related to the drainage feature. Greater depths to competent bearing soils should be anticipated in this vicinity as well. In view of these observations, a geotechnical engineer should be on site to evaluate the soil conditions during the footing excavations. If, during excavation of the footings, unsuitable soil is encountered, it should be over-excavated to dense, native soil.

Continuous strip footings and isolated pad column footings should have a minimum width of 18 and 24 inches, respectively. Minimum footing widths may govern footing design. Exterior footings should bear at least 18 inches below the lowest adjacent finished exterior grade, for frost protection considerations, and interior footings should be founded at least 12 inches below the existing ground surface or finished floor level.

Structural fill used to backfill footing excavations should consist of crushed surfacing base course (CSBC) meeting the requirements of Section 9-03.9(3) of the WSDOT *Standard Specifications* (WSDOT, 2006). The backfill should be placed in lifts no greater than 8 inches (uncompacted thickness) and compacted to at least 95% of the maximum dry density as determined by the Modified Proctor test (ASTM D 1557). The footprint of any structural fill materials should extend out from the footing edges a distance equal to the depth of the structural fill (i.e. if 5 feet of poor soils are excavated, the base of the structural fill should extend out from the footing edges a distance of 5 feet on each side), measured at the base of the excavation.

4.2.2 Footing Construction

After rough excavation, any loose soil in the excavation base should be carefully removed to expose undisturbed native materials of suitable density, as determined by a geotechnical engineer or qualified earthworks inspector. A smooth edge bucket should be employed on excavator equipment to minimize foundation base disturbance. Minor amounts of loose material in the base may be compacted with a plate compactor, hoe-pack or jumping jack to a relatively dense condition. If disturbance is excessive, however, sub-excavation should be performed to remove such zones and the footings thickened accordingly to replace the excavated soils. A representative of HWA should observe all footing excavations, and verify that the appropriate bearing stratum is exposed and is suitably prepared. Although wet weather construction is not recommended at this site for foundation elements, a thin skin coat of lean concrete should be placed after inspection and approval to protect exposed foundation bases if wet weather conditions are anticipated.

As indicated in Section 3.3, slight ground water seepage was observed in several of the test pits, likely from trapped pockets of water. We, therefore, recommend that excavations for footings not remain open for significant periods of time prior to placing

concrete. If the bottom of the footing excavations become wet, over-excavation of the loosened wet soils will be required.

4.2.3 Settlement

We estimate that settlement of foundations supported on weathered till or on properly compacted structural fill placed over weathered till soils will be about 1 inch or less, and will occur largely as elastic compression, essentially as the building is constructed. Where structural fill is utilized for footing support, this estimate assumes the fill is placed as described in the preceding section. Significantly larger settlements could result if structural fill is inadequately compacted or consists of materials different than recommended.

4.2.4 Lateral Load Resistance

The lateral load resistance of foundations may be provided by a combination of sliding resistance on the base of the foundations and the passive pressure against the sides of the foundations and buried walls. We recommend a coefficient of friction of 0.40 be used for estimating friction between the base of the foundations and the native soils or structural fill. An allowable passive earth pressure equivalent to that generated by a fluid with an equivalent fluid unit weight of 275 pounds per cubic foot (pcf) may be assumed for structural fill placed against the sides of the foundation and basement walls. This value assumes the ground surface adjacent to the footing and walls is essentially level. The passive pressure values will be significantly lower for fills sloping downward away from the walls and higher for fills sloping upward away from the walls. If such is the case, the allowable passive resistance value to be used for design purposes, should be evaluated by HWA, as applicable for the specific circumstance.

4.3 FLOORS

Floors for the proposed structure may be constructed as slabs-on-grade bearing on a prepared subgrade comprised of medium dense to dense native soil, or on structural fill compacted to 95 percent of its Modified Proctor (ASTM D1557) maximum density. After subgrade preparation is complete, we recommend that the floor slab areas be proof-rolled with a large steel-drum roller, or similar heavy construction equipment, under the supervision of HWA. Any areas that deflect, heave, or appear soft or disturbed should be over-excavated to the depth determined by the representative of HWA and replaced with compacted structural fill.

For slab-on-grade design, we recommend a modulus of subgrade reaction value of 250 pounds per cubic inch (pci) be used.

We recommend the floor slabs be underlain by a 6-inch minimum thickness of 3/8-inch washed pea gravel, drain rock, or other open-graded gravel material to serve as a

capillary break. The capillary break layer should be placed on properly prepared native subgrade soils or additional structural fill. A vapor barrier consisting of 10-mil minimum thickness plastic sheeting should be placed over the capillary break layer.

4.4 LATERAL EARTH PRESSURES FOR PERMANENT STRUCTURES

Retaining walls and walls of below-grade structures should be considered as earth retaining elements that will yield somewhat under design seismic loading conditions such that active earth pressure conditions will apply. On this basis, we recommend the buried walls of the structures should be designed for an equivalent fluid pressure of 38 and 66 pounds per cubic foot (pcf) for static and seismic conditions, respectively. Retaining walls restrained against rotation should be designed for an at-rest static lateral earth pressure equal to that generated by a fluid with a unit weight of 60 pcf, increasing to 85 pcf for seismically loaded and restrained conditions.

These design values are based on level backfill conditions above the design ground water elevation (i.e. fully drained conditions). The above recommendations regarding active earth pressures also assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, with a bulk unit weight of 135 pcf and with no adjacent surcharge loads. Walls that are subject to traffic loading or area (slab) and footing loads above and behind the walls should be designed to resist the additional surcharge from these loads.

4.5 RETAINING WALLS

4.5.1 General

Based on conversations with Steve Waite, we understand short retaining walls may be required on site for grading purposes. We further understand that wall construction is proposed to comprise either Lock-Block™ type walls or cast-in-place concrete walls. However, at the time this report was completed, wall locations and heights were not available. Accordingly, the following sections provide general recommendations pertaining to wall construction.

4.5.2 Lock- Block™ Wall Design

Because of their rectangular shape, and the presence of two-way interlocks on the top of each block, Lock-Blocks can be stacked in a variety of ways to form gravity retaining walls to heights exceeding 10 feet. We have provided recommendations for maximum height configurations of 3, 4 and 5 blocks. For wall heights of 3 blocks or less, the blocks should be stacked so that the wall face is parallel to the slope, and battered 5V:1H (vertical to horizontal), as shown in Figure 3. For a 4-block high wall, the bottom row should be perpendicular to the wall face or slope, and the remaining rows should be

parallel to the slope, all battered at 5V:1H, as shown in Figure 4. For a 5-block high configuration, the bottom row will consist of a row of parallel and perpendicular blocks. The second row should be perpendicular to the slope and the remaining three rows parallel to the slope, as shown in Figure 5.

As shown on Figures 3 through 5, and described below, excavations for the new walls should extend to weathered or unweathered glacial till free from significant roots or organics. The blocks should be founded on a structural fill base consisting of CSBC meeting the requirements of Section 9-03.9(3) of the WSDOT *Standard Specifications* (WSDOT, 2006), at least 12 inches thick below the lower course of blocks. However, we anticipate that several feet of structural fill may be required in places to bring the excavation to dense glacial till back up to grade. All structural fill should be compacted to at least 95% of the maximum dry density as determined by ASTM D1557 Modified Proctor. A minimum of 18 inches of the block face should be embedded below ground surface, as shown in Figures 3 through 5.

Backfill behind the wall should consist of CSBC, compacted to at least 95% of the maximum dry density as determined by ASTM D1557. A four-inch diameter, Schedule 40, perforated, plastic drain pipe should be embedded in clean drain rock (pea gravel) below and behind the wall as a subdrain, as shown in Figures 3 through 5. The subdrain pipe discharge should be tightlined to the storm drain system or suitable outlet, with cleanouts provided at periodic intervals.

4.5.3 Cast-In-Place Concrete Retaining Walls

For cast-in-place concrete retaining walls, the foundations recommendations presented in Section 4.2 should be used for footing design. The recommendations presented in Section 4.2.4 should be used for sliding resistance. Section 4.4 provides recommendations for lateral earth pressures.

Backfill behind the wall should consist of CSBC, compacted to at least 95% of the maximum dry density as determined by ASTM D1557. A four-inch diameter, Schedule 40, perforated, plastic drain pipe should be embedded in clean drain rock (pea gravel) below and behind the wall as a subdrain. The subdrain pipe discharge should be tightlined to the storm drain system or suitable outlet, with cleanouts provided at periodic intervals.

4.6 DRAINAGE

4.6.1 Footing Drains

Subsurface drains, consisting of 4-inch minimum diameter perforated pipe, should be installed around the perimeter of all footings and should be founded at or below the level of the bottom of the footing. The trenches should be backfilled with washed drain rock

such that a minimum of 6-inches of drain rock encompasses the drain pipe around its perimeter. Roof drain downspouts should not be hydraulically connected to the footing drains to prevent potential clogging and flooding of the drain system. All drains should be tightlined to appropriate storm drainage outlets.

4.7 EARTHWORK

4.7.1 Subgrade Preparation

All loose soil, fill, topsoil, and soil containing significant organics and roots should be removed from beneath building areas, areas to be paved, and areas to receive structural fill. Following removal of topsoil/organic soils, the exposed surface should be thoroughly compacted and evaluated by a geotechnical engineer prior to placement of any structural fill or construction of facilities. All loose soils should be over-excavated to reach competent material free from significant roots and organics. Backfill should consist of structural fill as described in the following report section. We recommend that the subgrade for areas to be paved or to receive structural fill be proof-rolled with a fully-loaded dump truck, water truck, or similar heavy equipment, under the observation of the geotechnical engineer or qualified earthworks inspector. Areas that exhibit pumping or yielding should be over-excavated to dense native soils and backfilled as described below.

It should be noted that test pit TP-6 encountered what appears to be an old garbage pit below about 3 feet of till fill material. Till fill was also encountered in TP-7. The extent of the garbage and fill is unknown. All fill and garbage should be removed from areas to be developed and replaced with properly compacted structural fill, as described below. Additionally, soft wet clay was observed to be interbedded between weathered and unweathered glacial till, in the vicinity of TP-2. Such material should also be removed from below foundation and floor slab areas to expose suitable unweathered glacial till soil for foundation and floor slab support.

4.7.2 Structural Fill Materials and Compaction

For the purposes of this report, material used to raise grades, or placed adjacent to or under structures for support purposes, should be considered structural fill. Imported structural fill should preferably consist of relatively free-draining, well-graded, granular soil that is free from organic matter or other deleterious materials. Such materials should have a maximum particle size of 4-inches, with less than 7% fines (portion passing the U. S. Standard No. 200 sieve), meeting the requirements of Gravel Borrow as described in Section 9-03.14(1) of the WSDOT *Standard Specifications* (WSDOT, 2006). The fine-grained portion of structural fill soils should be non-plastic.

As indicated in Sections 4.2 and 4.5, structural backfill used in footing excavations and behind retaining walls should consist of crushed surfacing base course (CSBC), as described in Section 9-03.9(3) of the WSDOT *Standard Specifications* (WSDOT, 2006).

The native on-site soil is extremely moisture sensitive; hence, we do not recommend re-use of the on-site soils as structural fill. Moreover, we recommend earthwork portions of the construction occur during the summer months.

A sufficient number of Modified Proctor moisture-density tests should be performed on the materials to be used as structural fill to properly evaluate the compaction characteristics of the material. A geotechnical engineer or qualified field technician should perform full-time construction monitoring of all fill placement and compaction operations. If the on-site soils are placed either too wet or too dry of optimum moisture content, or if the soils are inadequately compacted, significant settlement should be anticipated. Soils with less than 5% fines are required if drainage considerations are important.

Structural fill soils should be moisture conditioned, placed in loose horizontal lifts no greater than 8-inches thick, and compacted to at least 95% of the maximum dry density (MDD) as determined using test method ASTM D1557 (Modified Proctor). Achievement of proper density of a compacted fill depends on the size and type of compaction equipment, the number of passes, thickness of the layer being compacted, and soil moisture-density properties. In areas where limited space restricts the use of heavy equipment, smaller equipment can be used, but the soil must be placed in thin enough layers to achieve the required relative compaction. Generally, loosely compacted soils result from poor construction technique and/or improper moisture content. Soils with high fines contents are particularly susceptible to becoming too wet, and coarse-grained materials easily become too dry, for proper compaction.

Where structural fill is to be placed on sloped surfaces, the slope should be benched in horizontal steps, such that structural fill is placed on relatively level surfaces. This is especially applicable to the backfill placed behind structural walls. The structural fill placed behind these walls will likely support floor slabs and possibly structural footings, and should be rigorously inspected during construction. It is critical that the fill be placed in thin enough lifts behind these walls such that specified compaction can be achieved with the smaller equipment likely used to compact these areas.

4.7.3 Slopes

All finished permanent slopes (both cut and fill) should be inclined no steeper than 3H:1V; unless otherwise reviewed and approved by our firm on a case by case basis. All permanent slopes should be protected from erosion by suitable application of straw-mulch, erosion control matting (ECM), and vegetation, as necessary.

4.7.4 Temporary Excavations

Any temporary excavations deeper than 4 feet should be sloped or shored in accordance with current State of Washington Labor and Industries Safety and Health guidelines. Per these guidelines, the onsite fill and outwash soils classify as Type C soils. Unsupported excavations in Type C soils should be sloped no steeper than 1½H:1V. The onsite weathered till and till soils classify as Type B soils. Unsupported excavations in Type B soils should be sloped no steeper than 1H:1V. These recommended maximum slopes are applicable to temporary excavations above the water table only; flatter side slopes would be required for excavations where ground water seepage is encountered.

The contractor should monitor the stability of the temporary cut slopes and adjust the construction schedule and slope inclination accordingly. The contractor should be responsible for control of ground and surface water and should employ sloping, slope protection, ditching, sumps, dewatering, and other measures, as necessary, to prevent sloughing of soils.

4.8 SEISMIC CONSIDERATIONS

We understand the new buildings will be designed to meet the requirements of the International Building Code (IBC) 2003 (ICC, 2003).

The seismic ground motion procedure contained in IBC 2003 is based upon a Maximum Considered Earthquake (MCE) with a 2 percent probability of exceedance in 50 years (i.e. recurrence interval of approximately 2500 years). Ground motions for the MCE in the IBC 2003 are linked to probabilistic earthquake hazard mapping efforts that have been conducted by the United States Geological Survey (Frankel, et al., 2002). Table 1 presents seismic coefficients for use with the General Procedure described in Section 1615.1 of IBC 2003.

Table 1: Seismic Coefficients for IBC 2003 Code Based Evaluation

Site Class	MCE PGA (g)	Spectral Acceleration at 0.2sec. (g) S_s	Spectral Acceleration at 1.0sec. (g) S_1	Site Coefficients		Design Spectral Response Parameters		Control Periods	
				F_a	F_v	S_{DS}	S_{D1}	T_0	T_s
D	0.57	1.25	0.40	1.0	1.60	0.83	0.43	0.10	0.52

Based on the results of our field exploration program, the medium dense to dense native soils or properly compacted fill underlying the proposed structure are considered to have a low to negligible liquefaction potential under design earthquake conditions. Additionally, the geologic depositional setting of the site suggests that liquefaction at

depth is also an improbable condition and design concern.

4.9 INFILTRATION

The native weathered and unweathered till soils have low to very low permeability and will not be suitable for infiltration of storm water. However, detention ponds and/or settling basins could be constructed on site for stormwater management, provided their location and design is approved by HWA and the outlets discharge to suitable approved locations.

4.10 UTILITY PIPE BEDDING AND BACKFILL

In addition to the new structures, we anticipate that new utility lines will be required on site. General recommendations relative to pipe bedding and utility trench backfill are presented below:

- Pipe bedding material, placement, compaction, and shaping should be in accordance with the project specifications and the pipe manufacturer's recommendations. As a minimum, the pipe bedding should meet the gradation requirements for Pipe Zone Bedding, Section 9-03.12(3) of the WSDOT *Standard Specifications* (WSDOT, 2006).
- Pipe bedding materials should be placed on relatively undisturbed native soils, or compacted fill soils. If the native subgrade soils are disturbed, the disturbed material should be removed and replaced with compacted bedding material.
- Although an improbable condition, in areas where the trench bottom encounters very soft or organic-rich subgrade soils, it will be necessary to over-excavate the unsuitable material and backfill with pipe bedding material. In wet conditions, 1¼-inch minus crushed rock meeting the gradation requirements for Crushed Surfacing, as described in Section 9-03.9 of the WSDOT *Standard Specifications* (WSDOT, 2006), should be used to backfill the over-excavated portions of the trench.
- Pipe bedding should provide a firm, uniform, cradle for support of the pipe. We recommend that a minimum 4-inch thickness of bedding material beneath the pipe be provided. Greater thicknesses may be necessary to prevent loosening and softening of the natural soils during pipe placement.
- Pipe bedding material and/or backfill around the pipe should be placed in layers and tamped to obtain complete contact with the pipe.

Except in non-critical landscaped areas, where settlements will be tolerable, we recommend that trench backfill meet the specifications for structural fill, as described in

this report. During placement of the initial lifts, the trench backfill material should not be bulldozed into the trench or dropped directly on the pipes. Furthermore, heavy equipment should not be permitted to operate directly over the pipes until a minimum of 2 feet of backfill has been placed. Trench backfill should be placed in 8-inch (maximum) lifts and compacted using mechanical equipment to at least 92% of its maximum dry density, as determined by testing in general accordance with ASTM D 1557, up to within 2 feet of finished subgrade elevations. The upper 2 feet of backfill should be compacted to at least 95% of its maximum dry density. As an alternative to compacted granular backfill, controlled density fill (CDF) per WSDOT Standard Specification 2-09.3(1)E may be used.

4.11 Site Drainage Considerations

We anticipate that surface runoff can be controlled during construction by properly installing silt fences around the lower perimeters of work areas and covering exposed soils and slopes with plastic sheeting, straw, ECM, etc. Permanent control of surface water should be incorporated in the final grading design. Adequate surface gradients and drainage systems should be incorporated into the design such that surface runoff is directed away from structures and pavements and into swales or other controlled drainage devices.

4.12 Wet Weather Earthwork

The native soils are silty and highly moisture sensitive, and may be difficult to handle with construction equipment during periods of wet weather. Accordingly, wet weather earthwork is not recommended for this site. If necessary, however, general recommendations relative to earthwork performed in wet weather or in wet conditions are presented below. These recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soil should be followed promptly by the placement and compaction of clean structural fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a smooth bucket backhoe to minimize subgrade disturbance caused by equipment traffic.
- Material used as structural fill in wet weather should consist of clean granular soil with less than 5 percent passing the U.S. No. 200 sieve, based on wet sieving the fraction passing the ¾-inch sieve. The fine-grained portion of the structural fill soils should be non-plastic.

- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water.
- Excavation and placement of structural fill material should be monitored by a geotechnical engineer experienced in wet weather earthwork to determine that the work is being accomplished in accordance with the project specifications and the recommendations contained herein.

5. CONDITIONS AND LIMITATIONS

We prepared this report for Salinas Construction and Waite Architects for use in design and construction of this project. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented herein should not be construed as a warranty of the subsurface conditions. Experience shows that soil and ground water conditions can vary significantly over small distances. Inconsistent conditions may occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, HWA should be notified to review the recommendations made in this report, and revise, if necessary. If there is a substantial lapse of time between submission of this report and the start of construction, or if conditions change due to construction operations, it is recommended that this report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

This report is issued with the understanding that it is the responsibility of the owner, or the owner's representative, to ensure that the information and recommendations are brought to the attention of the appropriate design team personnel and incorporated into the project plans and specifications, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

We recommend that we be provided an opportunity to review the project plans and specifications before the contract is advertised. We also recommend we be retained to monitor construction, evaluate soil and ground water conditions as they are exposed, and verify that subgrade preparation, backfilling, and compaction are accomplished in accordance with the specifications.

Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of

wetlands or hazardous or toxic substances in the soil, surface water, or ground water at this site.

HWA does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and cannot be responsible for the safety of personnel other than our own on the site. As such, the safety of others is the responsibility of the contractor. The contractor should notify the owner if any of the recommended actions presented herein are considered unsafe.

We appreciate this opportunity to be of service.

Sincerely,

HWA GEOSCIENCES INC.

8/4/06

Bryan K. Hawkins, P.E.
Geotechnical Engineer

for Lorne A. Balanko, P.E.
Principal Geotechnical Engineer

6. REFERENCES

Frankel, Arthur D., M. D. Petersen, C. S. Mueller, K. M. Haller, R. L. Wheeler, E.V. Leyendecker, R. L. Wesson, S. C. Harmsen, C. H. Cramer, D. M. Perkins, and K. S. Rukstales, 2002, Documentation for the 2002 National Seismic Hazard Maps Update, U.S. Geological Survey, Open-File Report 02-420.

International Code Council (ICC), *2003 International Building Code.*

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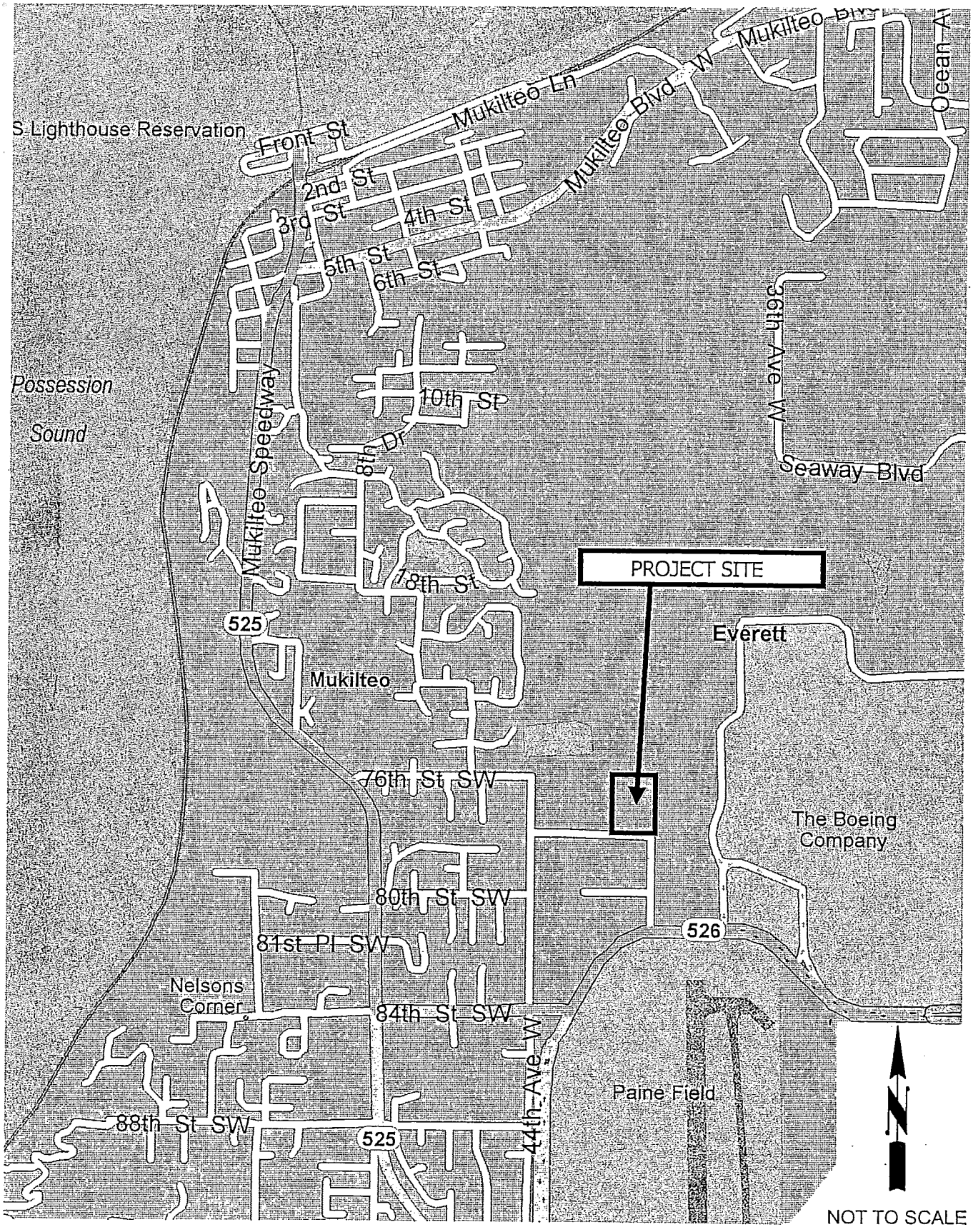


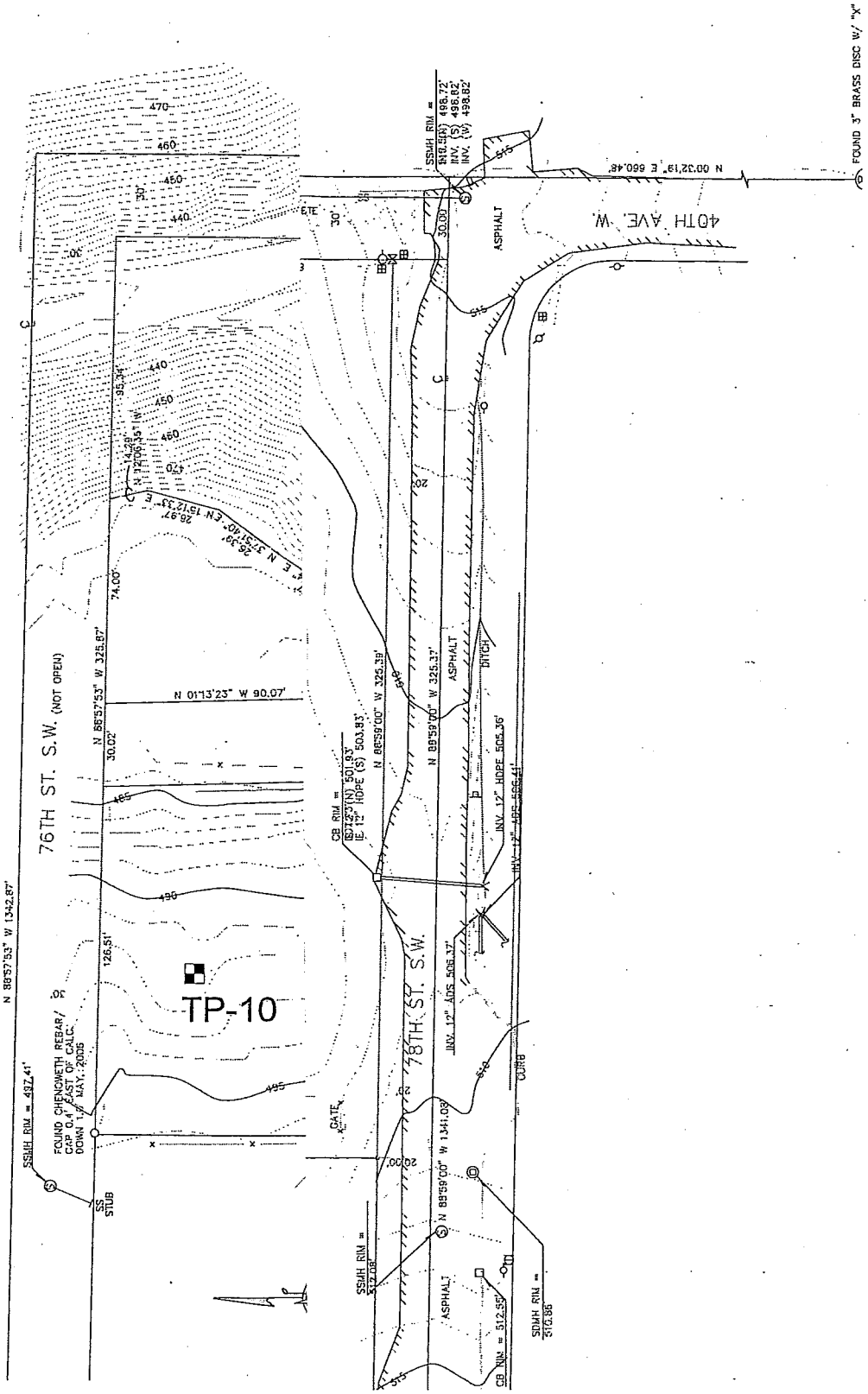
HWA GeoSciences Inc.

VICINITY MAP

SALINAS CONSTRUCTION
MUKILTEO, WASHINGTON

DRAWN BY EFK	FIGURE NO. 1
CHECKED BY BKH	
DATE 06-20-06	PROJECT NO. 2006-077-21

FILE



LEGEND

TP-1

TEST PIT DESIGNATION AND APPROXIMATE LOCATION

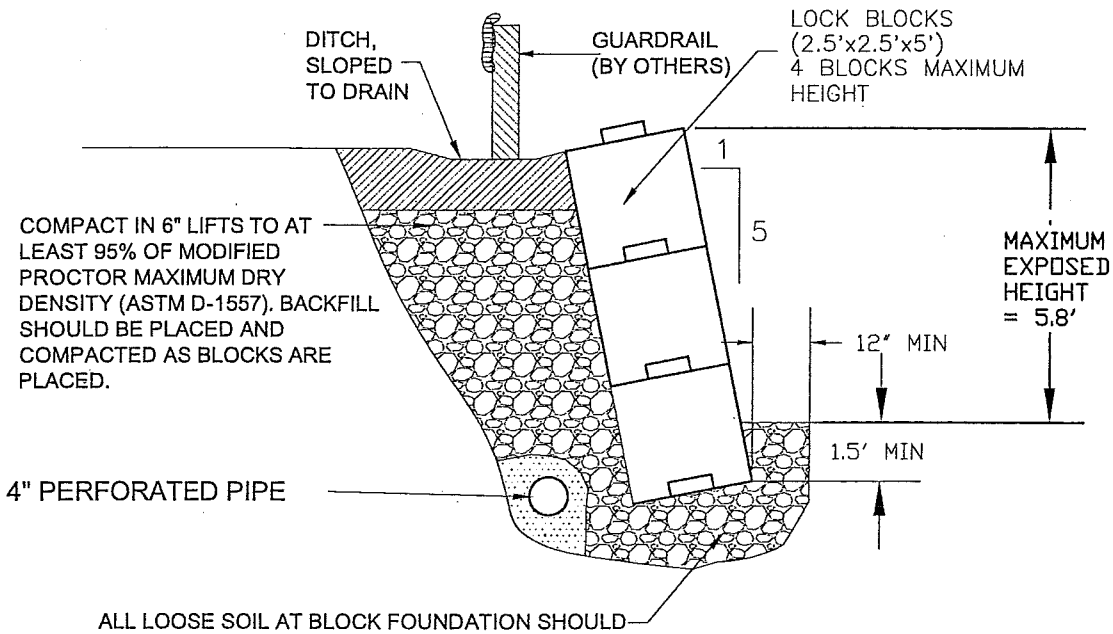
BASE MAP PROVIDED BY: SCS DEVELOPMENT

H:\1PROJECTS\2006 PROJECTS\2006-077-21 SALINAS CONSTRUCTION MUKITEO\CAD\SCS TOPO

SITE AND EXPLORATION PLAN

DRAWN BY EFK	FIGURE NO. 2
CHECKED BY BKH	
DATE 06-20-06	PROJECT NO. 2006-077-21

REV 00 EFK X/X/XX



LEGEND:

IMPERVIOUS SURFACE LAYER

BACKFILL: CRUSHED SURFACING BASE, COURSE MEETING THE REQUIREMENTS OF SECTION 9-03.9(3) OF THE WSDOT STANDRADS SPECIFICATIONS

PEA GRAVEL: WASHED 3/8" PEA GRAVEL (6" COVER AROUND PIPE), SLOPED TO DRAIN AND CONNECTED BY TIGHTLINE TO STORM DRAIN OUTFALL. CLEANOUTS SHOULD BE PROVIDED.

HWA GEOSCIENCES INC.

TYPICAL LOCK BLOCK WALL - 3 BLOCKS HIGH	DRAWN BY EFK	FIGURE NO. 3
SALINAS CONSTRUCTION MUKILTEO, WASHINGTON	CHECKED BY BKH	
	DATE 06-20-06	PROJECT NO. 2006-077-21

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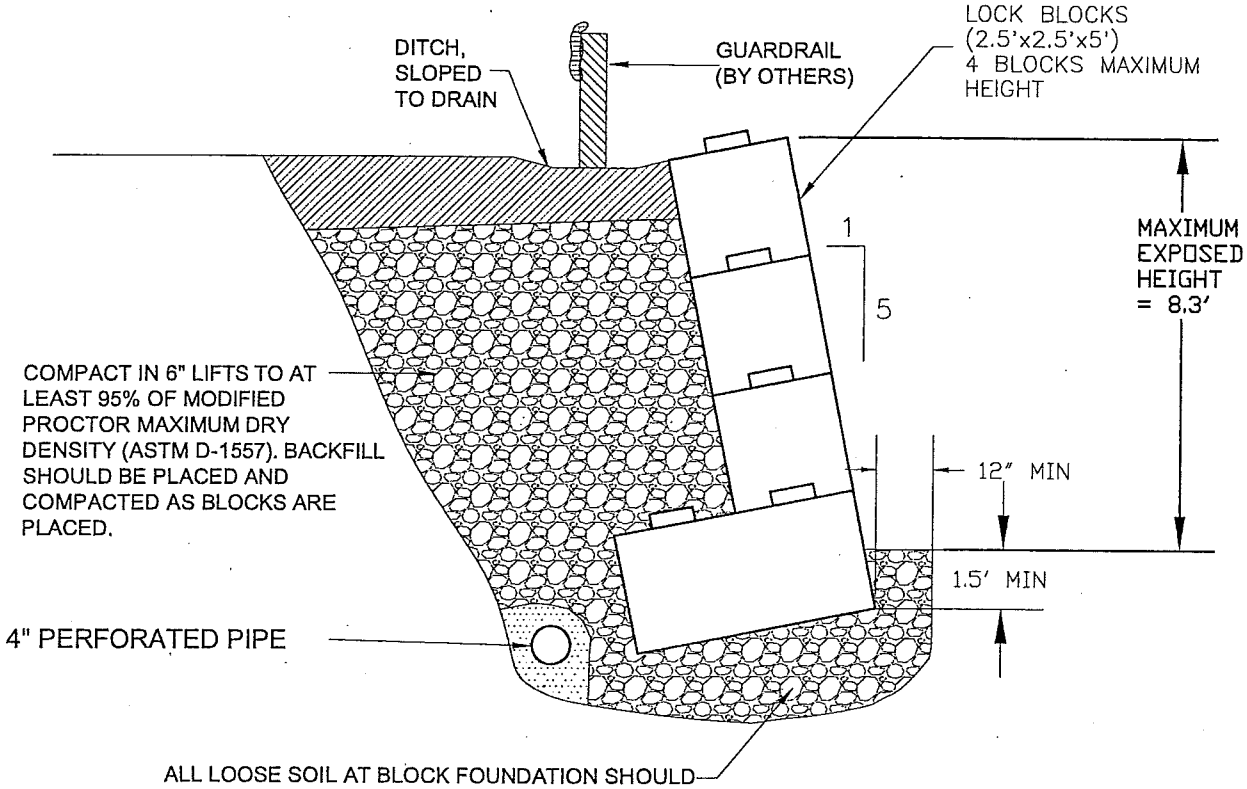

LEGEND:

IMPERVIOUS SURFACE LAYER

BACKFILL: CRUSHED SURFACING BASE, COURSE MEETING THE REQUIREMENTS OF SECTION 9-03.9(3) OF THE WSDOT STANDRADS SPECIFICATIONS

PEA GRAVEL: WASHED 3/8" PEA GRAVEL (6" COVER AROUND PIPE), SLOPED TO DRAIN AND CONNECTED BY TIGHTLINE TO STORM DRAIN OUTFALL. CLEANOUTS SHOULD BE PROVIDED.

HWA GEOSCIENCES INC.

TYPICAL LOCK BLOCK WALL - 4 BLOCKS HIGH

SALINAS CONSTRUCTION
MUKILTEO, WASHINGTON

DRAWN BY EFK	FIGURE NO. 4
CHECKED BY BKH	
DATE 06-20-06	PROJECT NO. 2006-077-21

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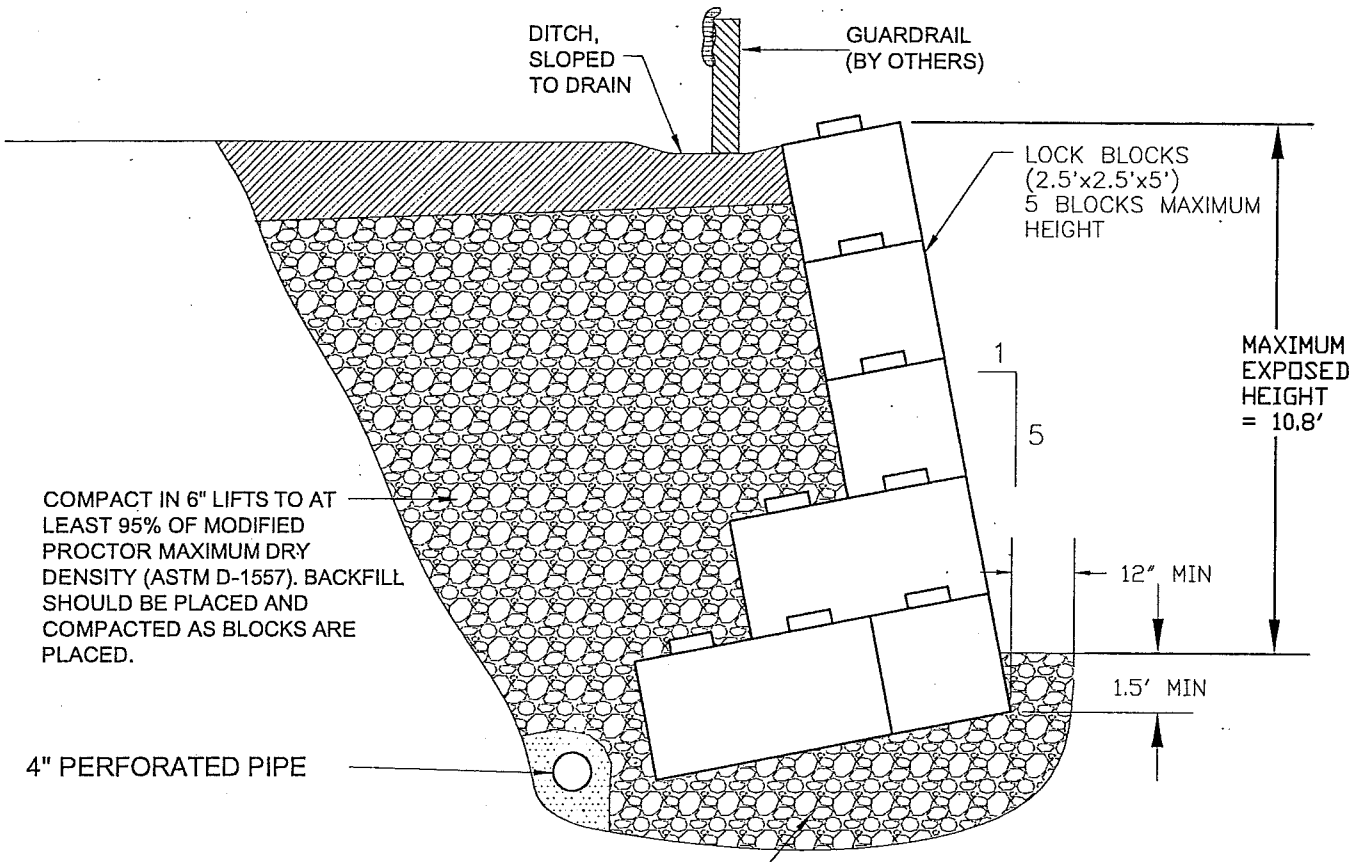

LEGEND:

IMPERVIOUS SURFACE LAYER

BACKFILL: CRUSHED SURFACING BASE, COURSE MEETING THE REQUIREMENTS OF SECTION 9-03.9(3) OF THE WSDOT STANDRADS SPECIFICATIONS

PEA GRAVEL: WASHED 3/8" PEA GRAVEL (6" COVER AROUND PIPE), SLOPED TO DRAIN AND CONNECTED BY TIGHTLINE TO STORM DRAIN OUTFALL. CLEANOUTS SHOULD BE PROVIDED.

HWA GEOSCIENCES INC.

TYPICAL LOCK BLOCK WALL - 5 BLOCKS HIGH

SALINAS CONSTRUCTION
MUKILTEO, WASHINGTON

DRAWN BY EFK	FIGURE NO. 5
CHECKED BY BKH	
DATE 06-20-06	PROJECT NO. 2006-077-21

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RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS	
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravel (little or no fines)	GW	Well-graded GRAVEL
	More than 50% of Coarse Fraction Retained on No. 4 Sieve		GP	Poorly-graded GRAVEL
		Gravel with Fines (appreciable amount of fines)	GM	Silty GRAVEL
			GC	Clayey GRAVEL
More than 50% Retained on No. 200 Sieve Size	Sand and Sandy Soils	Clean Sand (little or no fines)	SW	Well-graded SAND
	50% or More of Coarse Fraction Passing No. 4 Sieve		SP	Poorly-graded SAND
		Sand with Fines (appreciable amount of fines)	SM	Silty SAND
			SC	Clayey SAND
Fine Grained Soils	Silt and Clay	Liquid Limit Less than 50%	ML	SILT
			CL	Lean CLAY
			OL	Organic SILT/Organic CLAY
50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit 50% or More	MH	Elastic SILT
			CH	Fat CLAY
			OH	Organic SILT/Organic CLAY
Highly Organic Soils			PT	PEAT

TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit, LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
PID	Photoionization Device Reading
PP	Pocket Penetrometer Approx. Compressive Strength (tsf)
SG	Specific Gravity
TC	Triaxial Compression
TV	Torvane Approx. Shear Strength (tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

- 2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
- Shelby Tube
- 3-1/4" OD Split Spoon with Brass Rings
- Small Bag Sample
- Large Bag (Bulk) Sample
- Core Run
- Non-standard Penetration Test (3.0" OD split spoon)

GROUNDWATER SYMBOLS

- Groundwater Level (measured at time of drilling)
- Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)
Components are arranged in order of increasing quantities.	

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments. (GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

PROJECT NO.: 2006-077 FIGURE: A-1

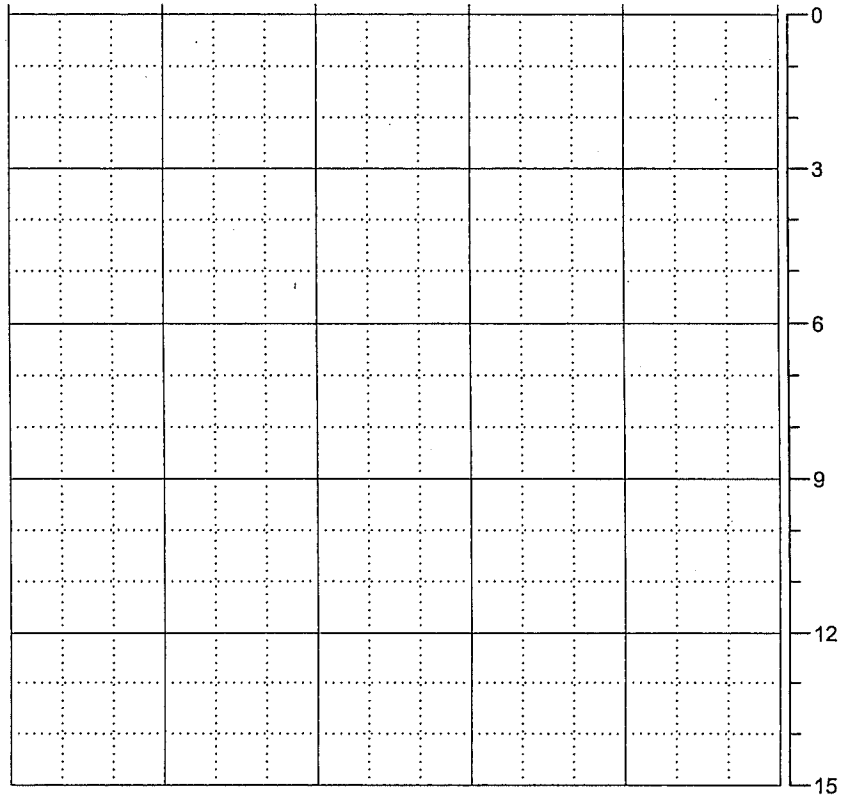
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 499 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		ML SM	Loose, dark brown and red brown, very silty, fine to medium SAND to sandy SILT, moist. Roots and rootlets noted. Cobbles noted. [TOPSOIL/ORGANIC LAYER]		S-1	28		
		SP SM SM	Loose to medium dense, yellowish brown, slightly silty, fine to medium SAND, moist. [RECESSIONAL OUTWASH]					
3		SM	Medium dense to dense, olive brown and gray, fine to coarse gravelly, silty, fine to medium SAND, moist. [WEATHERED GLACIAL TILL]		S-2	12		
			Dense to very dense, oilve gray, fine to coarse gravelly, silty, fine to medium SAND, moist. Cemented. [GLACIAL TILL]		S-3	12		
6								
9								
12								
15								

Total depth = 6 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls noted.

SKETCH OF South SIDE OF PIT



NOTE: For a proper understanding of the nature of subsurface conditions, this exploration log should be read in conjunction with the text of the geotechnical report. This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 1

PROJECT NO.: 2006-077 FIGURE: A-2

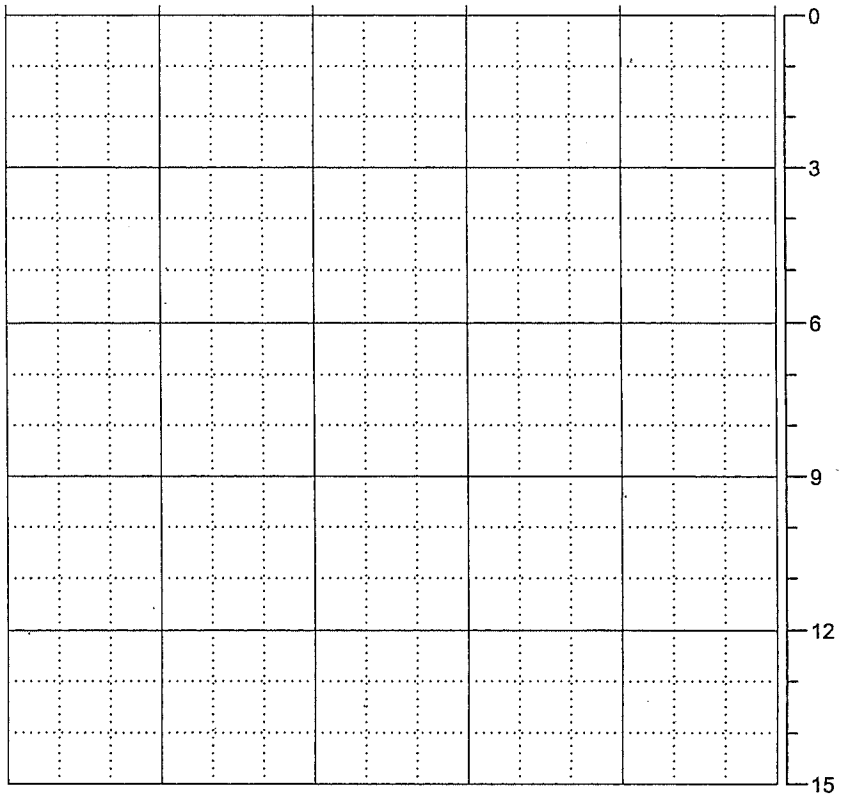
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 496 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		OL	Loose, dark brown, slightly gravelly, sandy, organic SILT, moist. Root/rootlets/organics noted.					
			[TOPSOIL]					
		SM	Loose, dark red brown, slightly fine to coarse gravelly, very silty, fine to medium SAND, moist. Roots and rootlets noted. Cobbles noted.		S-1	34	GS	
3		SM	[RECESSIONAL OUTWASH] Medium dense, light yellowish brown, slightly fine to coarse gravelly, very silty, fine to medium SAND, moist. Occasional cobbles.		S-2	15		
		CL	[WEATHERED GLACIAL TILL] Soft, purplish gray, CLAY with sand and silt, wet. Pockets/seams of wet/sloppy clay noted in weathered till layer.		S-3	36		
6		SM	Medium dense, mottled reddish brown and gray, gravelly, silty, fine to medium SAND, very moist.		S-4	10		
		SM	Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. Occasional cobbles noted. [GLACIAL TILL]					
9								
12								
15								

Total depth = 7 feet.
Slight ground water seepage noted from soft clay pockets in weathered till layer - apperas to be trapped pockets of water.
Test pit walls stood mostly vertical with minor sloughing observed in soft clay layers.

SKETCH OF North SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 2

PROJECT NO.: 2006-077 FIGURE: A-3

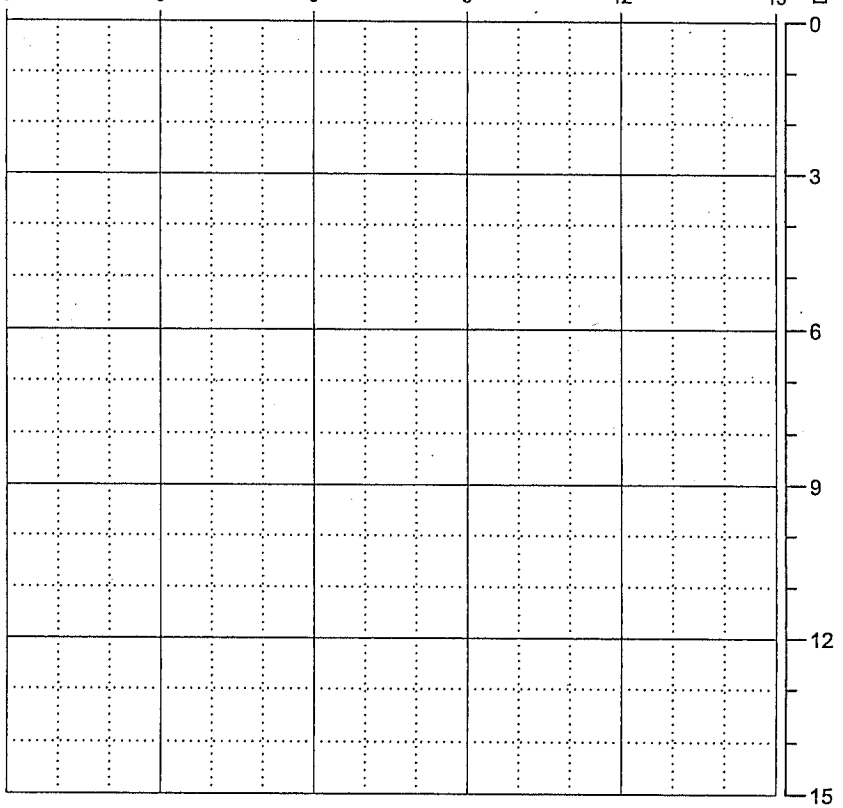
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 501 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		OL	Loose, dark brown and red brown, very silty, fine to medium SAND to sandy SILT, moist. Roots and rootlets noted. Cobbles noted. [TOPSOIL]					
		SM	Loose to medium dense, dark red brown, very silty, fine to medium SAND, moist. [RECESSIONAL OUTWASH]		S-1	20		
3		SM	Medium dense to dense, olive gray, fine to coarse gravelly, very silty, fine to medium SAND, moist to very moist. Cobbles noted. Oxidation stains/mottling noted. [WEATHERED GLACIAL TILL]		S-2	14		
6		SM	Dense to very dense, olive gray, fine to coarse gravelly, very silty, fine to medium SAND, moist. [GLACIAL TILL]		S-3	15	GS	
9								
12								
15								

Total depth = 8 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls noted.

SKETCH OF South SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 3

PROJECT NO.: 2006-077 FIGURE: A-4

TP15 2006-077.GPJ 6/26/06

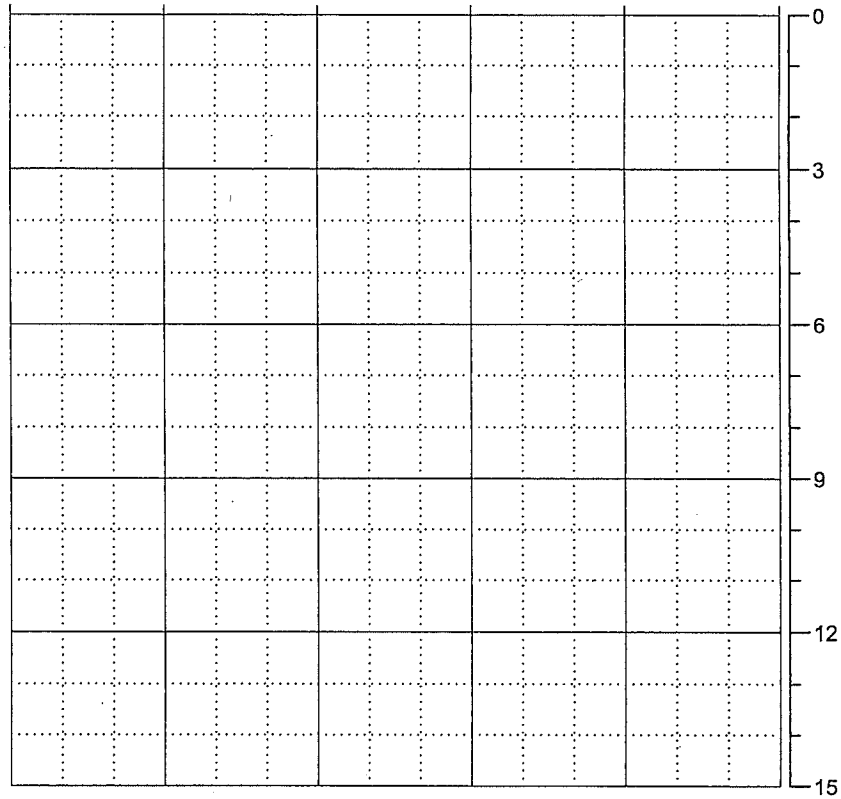
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 507 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		GP	Medium dense, brown gray, fine to coarse sandy, fine to coarse GRAVEL, moist. Cobbles noted. **[PIT RUN FILL]**		S-1	4		
3		ML	Medium dense, dark brown and black, slightly fine to coarse gravelly, sandy SILT, moist. Brick fragments noted. **[FILL]**		S-2	28		
		SP	Medium dense, reddish brown, slightly fine to coarse gravelly, fine to medium SAND, moist. Cobbles noted. **[RECESSIONAL OUTWASH]**		S-3	13		
6		SM	Medium dense to dense, olive gray with oxidation stains, fine to coarse gravelly, silty, fine to medium SAND, moist. **[WEATHERED GLACIAL TILL]**					
		SM	Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. **[GLACIAL TILL]**					
9								
12								
15								

Total depth = 8 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls noted.

SKETCH OF South SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 4

PROJECT NO.: 2006-077 FIGURE: A-5

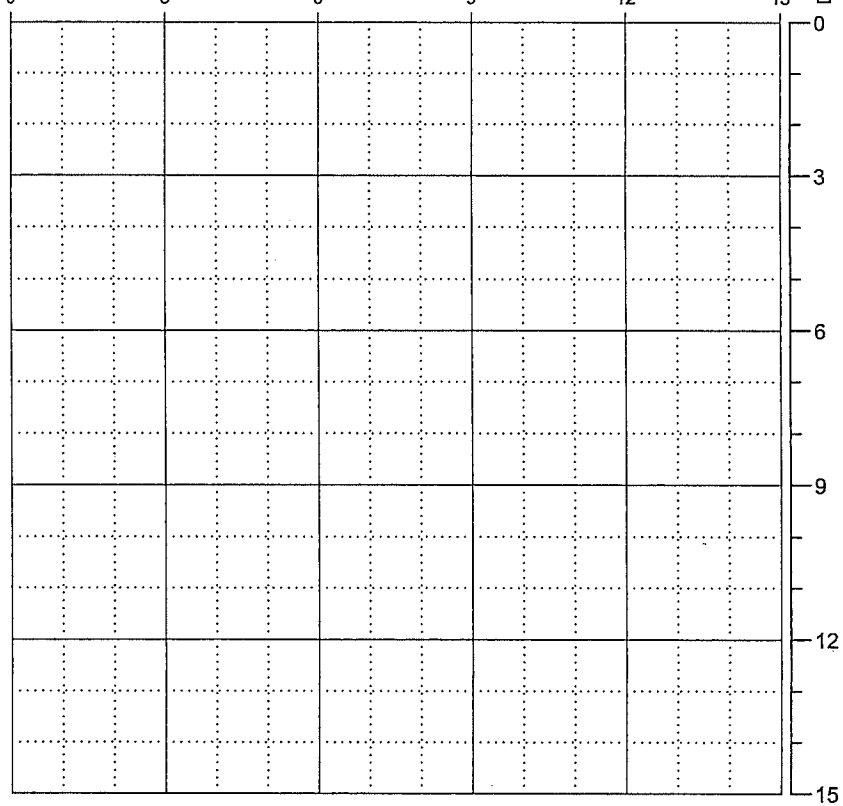
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 503 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		GP GM	Medium dense, brown gray, sandy, fine to coarse GRAVEL with silt, moist.		S-1	3		
			[CRUSHED GRAVEL FILL]					
		SM	Medium dense, reddish brown, slightly fine to coarse gravelly, very silty, fine to medium SAND, moist. Occasional black organics and rootlets noted.		S-2	23		
3		SM	[RECESSIONAL OUTWASH]		S-3	12		
			Medium dense to dense, olive gray, fine to coarse gravelly, very silty, fine to medium SAND, moist to very moist. Oxidation stains noted.					
			[WEATHERED GLACIAL TILL]					
6		SM	Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist.		S-4	11		
			[GLACIAL TILL]					
9								
12								
15								

Total depth = 8 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls noted.

SKETCH OF West SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 5

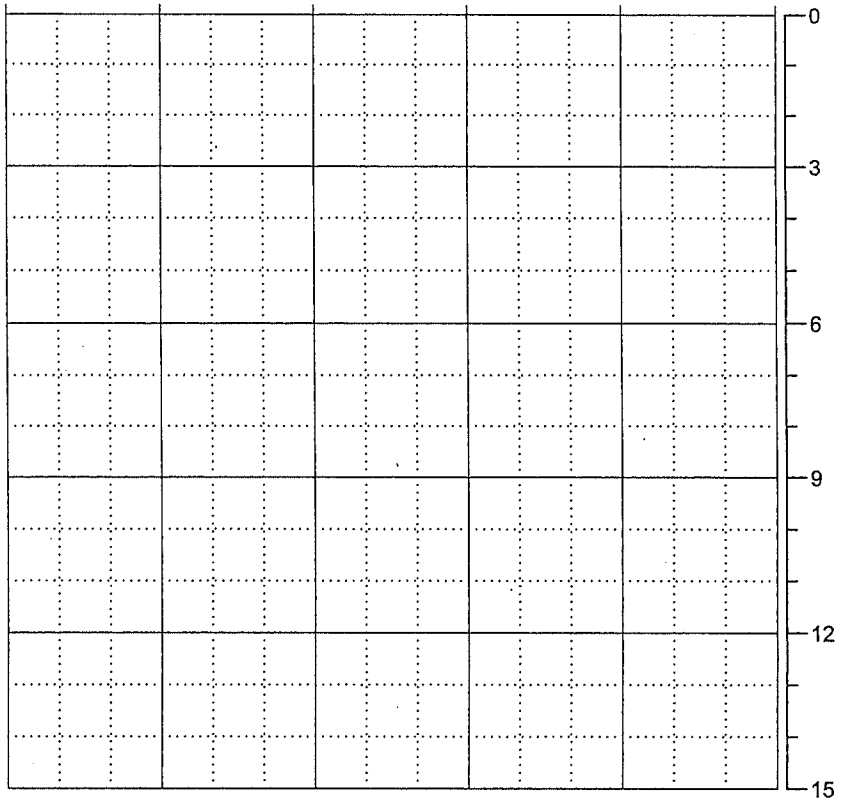
PROJECT NO.: 2006-077 FIGURE: A-6

EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 497 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		SM	Loose to medium dense, olive gray, fine to coarse gravelly, silty SAND, moist. Cobbles noted. Roots and rootlets noted. **[TILL FILL]**					
3			At 3 feet excavation encountered old trash pit. Debris includes asphalt, wood, plastic sheeting, metal and plastic wire, tree roots, etc. Bottom several feet of fill consists of loose, dark brown and black, organic silt with ash and burn debris. **[GARBAGE FILL]**					
6		SM	Medium dense, mottled red brown and gray, fine to coarse gravelly, silty, fine to medium SAND, very moist. Oxidation stains. Some pockets of seepage/trapped water noted. **[WEATHERED GLACIAL TILL]**		S-1	14		
9			Scraping sounds noted at 9 feet - becoming dense to very dense.					
12			Total depth = 9 feet. Slight pockets of seepage observed in garbage layer and in weathered till layer. Significant caving obsered in garbage layer.					
15								

SKETCH OF East SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 6

PROJECT NO.: 2006-077 FIGURE: A-7

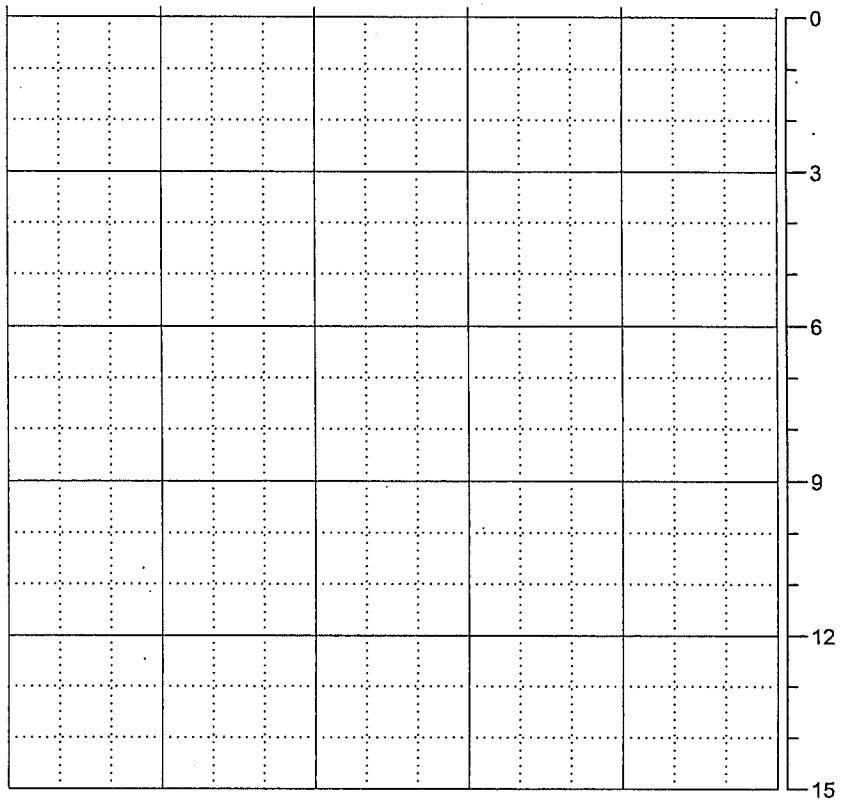
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 491 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		SM	Loose to medium dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. Plastic and wood debris noted. [TILL FILL]					
3		SM	Medium dense, dark reddish brown, very silty, fine to medium SAND, moist. Roots and rootlets noted. [RECESSIONAL OUTWASH]	○	S-1	24	GS	
6		SM	Medium dense to dense, olive brown, fine to coarse gravelly, silty, fine to medium SAND, moist. [WEATHERED GLACIAL TILL]					
		SM	Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. [GLAICIAL TILL]	○	S-2	14		
9								
12								
15								

Total depth = 7.5 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls noted.

SKETCH OF West SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 7

PROJECT NO.: 2006-077 FIGURE: A-8

TP15 2006-077.GPJ 6/26/06

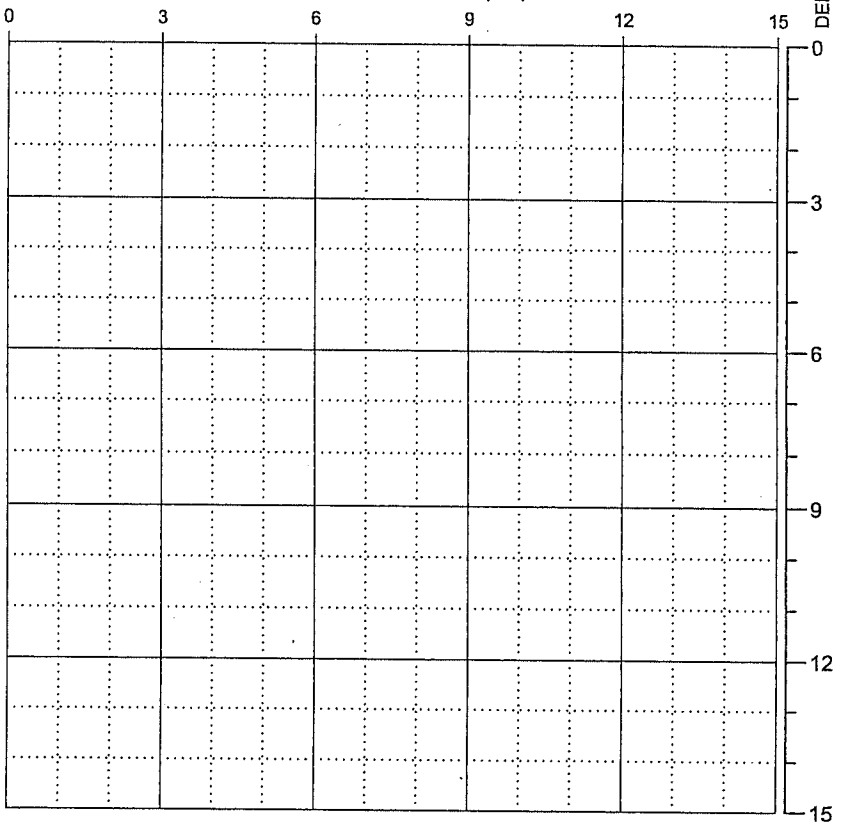
EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 485 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		OL	Loose, dark brown, organic SILT, moist. Roots/rootlets/organics noted.					
			[TOPSOIL/ORGANIC LAYER]					
		SM	Loose to medium dense, dark reddish brown, very silty, fine to medium SAND, moist. Occasional cobbles. Roots and rootlets noted.		S-1	33		
3		CL ML	[RECESSIONAL OUTWASH] Medium stiff to stiff, dark red brown grading to light brown, sandy SILT with clay. Plastic. Charcoal and black organics noted.					
		SM	Medium dense to dense, brown and gray with oxidation stains, fine to coarse gravelly, silty, fine to medium SAND, moist.		S-2	46		
			[WEATHERED GLACIAL TILL]					
6		GM	Very dense, olive gray, fine to coarse sandy, silty, fine to coarse GRAVEL, moist. Cemented.		S-3	10	GS	
			[GLACIAL TILL]					
9								
12								
15								

Total depth = 6.5 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls observed.

SKETCH OF South SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 8

PROJECT NO.: 2006-077 FIGURE: A-9

TP15 2006-077.GPJ 6/26/06

EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 489 ± Feet

LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (%)	OTHER TESTS	GROUNDWATER
0		SM	Loose, dark red brown, silty, fine to medium SAND, moist. Abundant roots and rootlets. [TOPSOIL/RECESSIONAL OUTWASH]					
3		SM	Medium dense, mottled brown and gray with oxidation stains, fine to coarse gravelly, very silty, fine to medium SAND, moist. Roots and rootlets noted. [WEATHERED GLACIAL TILL]		S-1	11		
6		SM	Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. [GLACIAL TILL]					
9			Total depth = 5 feet. No ground water seepage observed during excavation. No caving of test pit sidewalls noted.					
12								
15								

SKETCH OF West SIDE OF PIT

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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP- 9

PROJECT NO.: 2006-077 FIGURE: A-10

TP15 2006-077.GPJ 6/26/06

EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 492 ± Feet

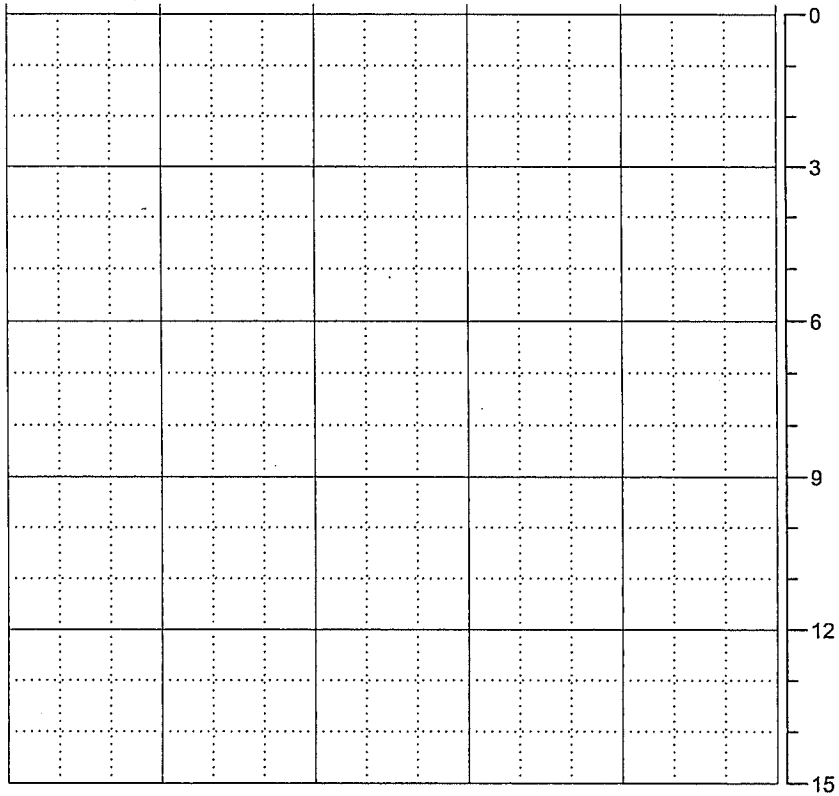
LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION
0		SM	Loose, dark brown, very silty, fine to medium SAND, moist. Abundant organics, roots and rootlets. Abundant trash, including rope, wire, glass, etc, on the ground surface.
		SM	[TOPSOIL/ORGANIC LAYER]
		SM	Loose to medium dense, dark reddish brown, very silty, fine to medium SAND, moist. Abundant roots and rootlets noted.
3			[RECESSIONAL OUTWASH]
		SM	Medium dense to dense, mottled brown and gray with oxidation stains, fine to coarse gravelly, silty, fine to medium SAND, moist. Cobbles noted.
6			[WEATHERED GLACIAL TILL]
			Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. Cobbles noted.
9			[GLACIAL TILL]
12			
15			

SAMPLE TYPE | SAMPLE NUMBER | MOISTURE CONTENT (%) | OTHER TESTS | GROUNDWATER

Total depth = 4 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls observed.

SKETCH OF North SIDE OF PIT



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HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP-10

PROJECT NO.: 2006-077 FIGURE: A-11

EXCAVATION COMPANY: Salinas Construction
EXCAVATING EQUIPMENT: Cat 312BL Excavator
SURFACE ELEVATION: 505 ± Feet

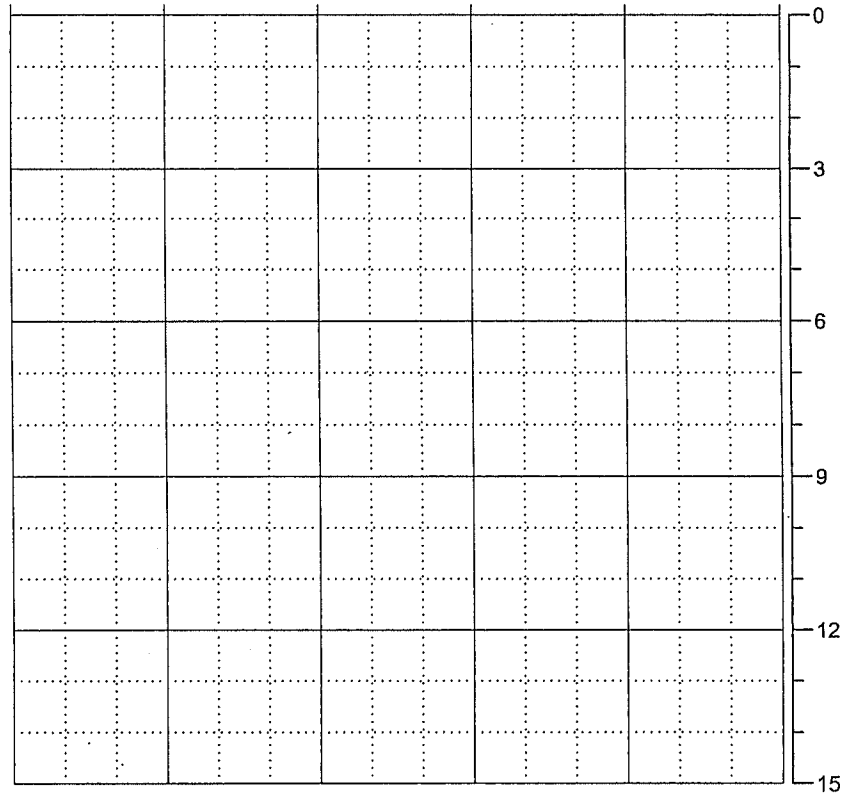
LOCATION: See Figure 2
DATE COMPLETED: 5/26/06
LOGGED BY: B. Hawkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS.	DESCRIPTION
0		OL	Loose, black, ORGANIC SILT with sand, moist. Abundant roots and rootlets noted.
			[TOPSOIL]
		SM	Medium dense, dark reddish brown, silty, fine to medium SAND, moist. Some gravel and cobbles noted.
			[RECESSIONAL OUTWASH]
3		SM	Medium dense, olive gray with reddish brown oxidation stains, fine to coarse gravelly, silty, fine to medium SAND, moist.
		SM	[WEATHERED GLACIAL TILL]
			Large root (approximately 4" diameter) on south wall of test pit at 3 feet depth.
6			Dense to very dense, olive gray, fine to coarse gravelly, silty, fine to medium SAND, moist. Cemented.
			[GLACIAL TILL]
9			
12			
15			

SAMPLE TYPE | SAMPLE NUMBER | MOISTURE CONTENT (%) | OTHER TESTS | GROUNDWATER

Total depth = 4 feet.
No ground water seepage observed during excavation.
No caving of test pit sidewalls noted.

SKETCH OF North SIDE OF PIT



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HWA GEOSCIENCES INC.

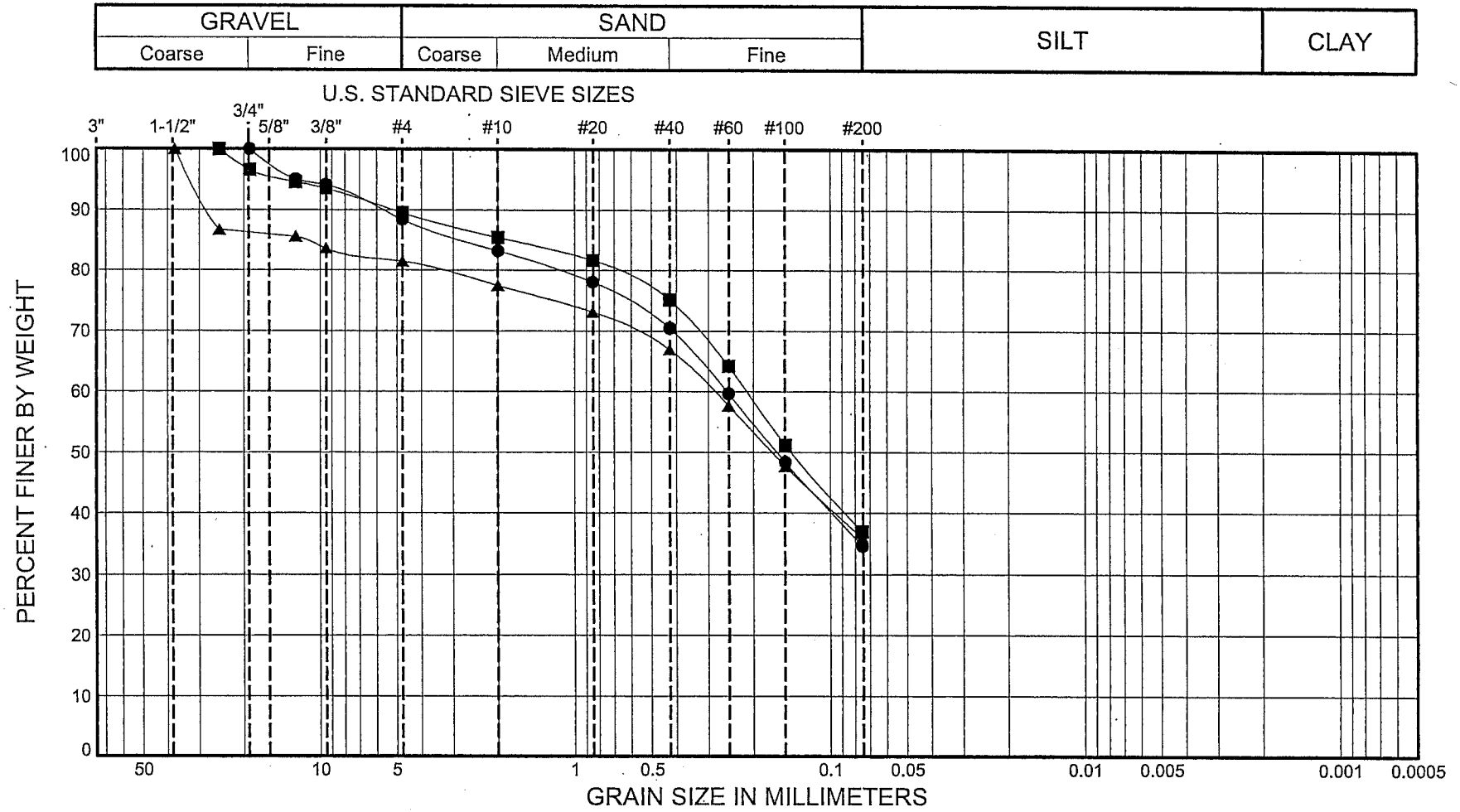
Salinas Construction Development
Mukilteo, Washington

LOG OF TEST PIT
TP-11

PROJECT NO.: 2006-077 FIGURE: A-12

APPENDIX B

LABORATORY TEST RESULTS



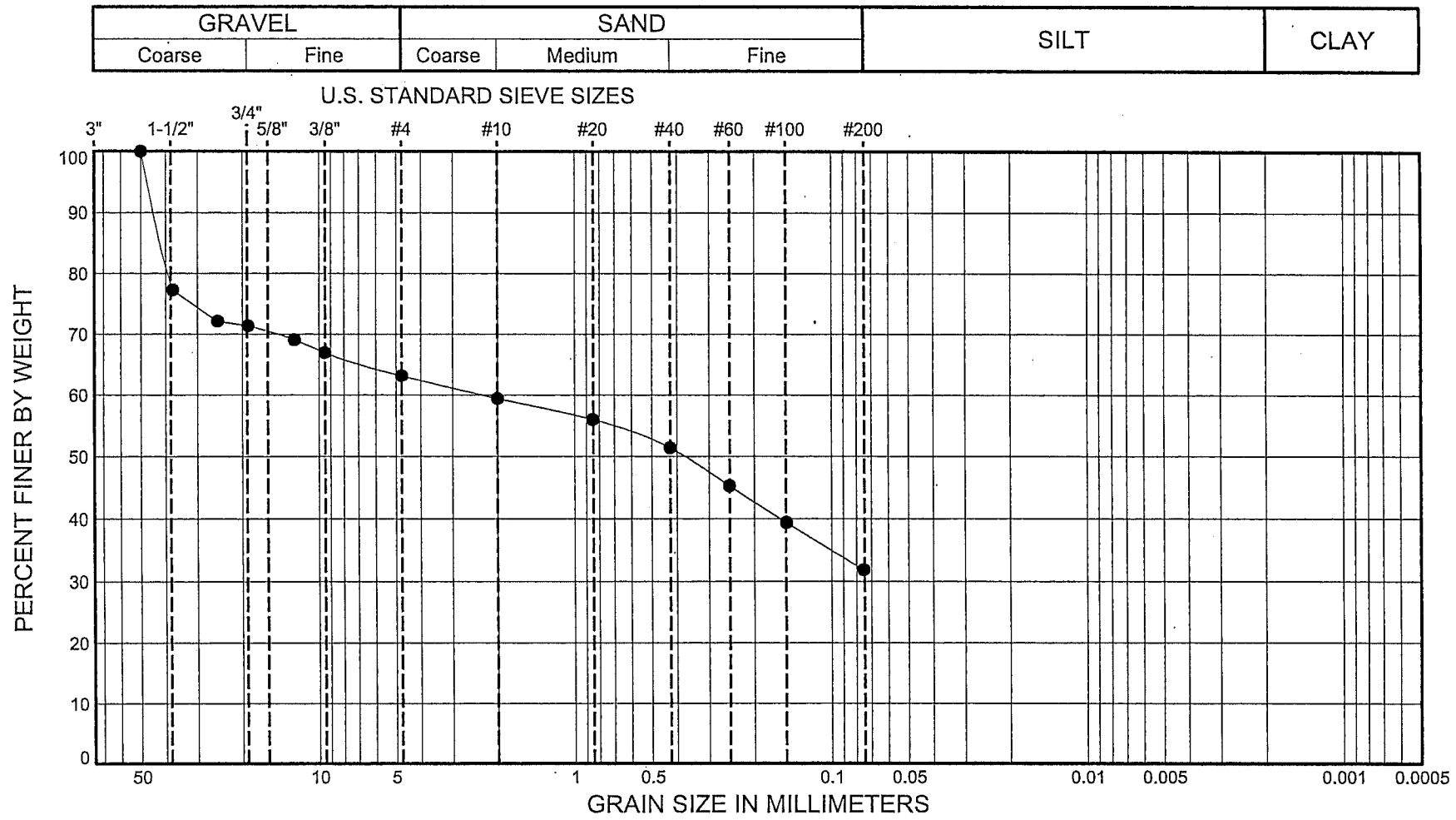
SYMBOL	SAMPLE		DEPTH (ft)	CLASSIFICATION OF SOIL- ASTM D2487 Group Symbol and Name	% MC	LL	PL	PI	Gravel %	Sand %	Fines %
●	TP- 2	S-1	1.0 - 2.0	(SM) Dark reddish brown, silty SAND	34				11.6	53.8	34.6
■	TP- 3	S-3	7.0 - 8.0	(SM) Dark olive gray, silty SAND	15				10.5	52.6	37.0
▲	TP- 7	S-1	3.0 - 4.0	(SM) Dark reddish brown, silty SAND with gravel	24				18.5	45.6	35.9

HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

PARTICLE-SIZE ANALYSIS
OF SOILS
METHOD ASTM D422

PROJECT NO.: 2006-077 FIGURE: B-1



SYMBOL	SAMPLE		DEPTH (ft)	CLASSIFICATION OF SOIL- ASTM D2487 Group Symbol and Name	% MC	LL	PL	PI	Gravel %	Sand %	Fines %
●	TP- 8	S-3	6.0 - 6.5	(GM) Light brown, silty GRAVEL with sand	10				36.8	31.3	31.9

HWA GEOSCIENCES INC.

Salinas Construction Development
Mukilteo, Washington

PARTICLE-SIZE ANALYSIS
OF SOILS
METHOD ASTM D422

PROJECT NO.: 2006-077 FIGURE: B-2

RECEIVED
By Sarah Kress at 3:55 pm, Apr 07, 2020

Mukilteo Yard

Drainage Report

March 16, 2020

Prepared for
Salinas Construction
7504 40th Ave W
Mukilteo, WA 98275

Submitted by

ESM Consulting Engineers, LLC
33400 8th Avenue S, Suite 205
Federal Way, WA 98003

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253.838.7104 fax

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Table of Contents

List of Figures

Appendix

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Section 1 – Project Overview

The property is located within the Northwest quarter of the Southwest quarter of Section 10, Township 28 North, Range 4 East, W.M. on the north side of the intersection of 78th Street Southwest and 40th Avenue West, parcel 00611600009400 (See Figure 1.2, Vicinity Map). The property contains approximately 4.5 acres acres with an existing concrete access road that accesses an Olympus Terrace Sewer District pump station. The proposal is to construct a paved construction yard to facilitate the operations of a concrete paving company.

The proposed development area consists of 3.04 acres (everything west of the sewer access road) and will be referred to as the 'project site'. The area east of the property site will remain undeveloped. This eastern area consists of steeper slopes and a portion of the Japanese Gulch which runs south north primarily through the City of Everett.

The proposed development of the site will be done using traditional development standards in accordance with the City of Mukilteo's Municipal Code, and the Washington State Department of Ecology's 2012 Stormwater Management Manual for Western Washington, as amended in 2014 (2014 Manual). This report accompanies the drainage and grading plan prepared as a part of this submittal package.

The project property is bounded by 78th St SW to the south, 79th St SW to the north (unopened ROW, beyond which is the City of Everett), an undeveloped industrial zoned property to the west, and the City of Everett to the east. The site is accessed from 40th Ave W and 78th St SW. A new access approach is proposed at the southwest corner of the property off of 78th St SW.

The site is moderately sloped with an average grade across the site of approximately 5 to 15 percent, sloping down to a central channel on the site. The channel slopes down north and conveyed to the existing gulch in the northwest corner of the site. There is also an existing public storm pipe running under this channel that collects upstream runoff from 78th St SW and tightlines water the gulch. A 15-foot storm easement to be granted to the City of Mukilteo will be provided over this pipe.

The project proposes to mitigate new impervious surfaces implementing applicable minimum requirements #1-9 per 2014 Manual, Figure I-2.4.1, Flow Chart for Determining Requirements for Development. A copy of this figure can be found in Appendix D of this report. Stormwater management for the project site is proposed to consist flow control and treatment facilities. This includes an open detention pond followed by filter to provide the necessary stormwater treatment standards. Additionally, preceding the detention pond a pretreatment catch basin is proposed to help filter out larger sized suspended solids.

See Table 1 below for proposed project areas and the following pages for a discussion of each of the applicable minimum requirements.

TABLE 1 – Minimum Requirements

Threshold Discharge Area (Basin)	Site Area (sf)	Existing Site Impervious (sf)	New Site Impervious Surface (sf)	Converted Areas to Lawn or Landscape (ac)	Minimum Requirements
1	129,809	Approx 0%	86,684	>.75	#1-9
Threshold		>35%	>5,000	>0.75	
Exceeds Threshold?		No	Yes	Yes	

Section 2 – Discussion of Minimum Requirements

Minimum Requirements (MMC 13.12.160.D & Volume I, 1-2.5 of 2014 Manual)

Minimum Requirement #1: Preparation of a Stormwater Site Plan
Requirement met with this drainage report and plan

Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP)
A Stormwater Pollution Prevention Plan has been included as a part of the Site Development Plans. A separate report addressing the 13 required elements from the Washington State Department of Ecology has been included in Appendix D of this report to accompany the Erosion and Sediment Control Plan including with the construction drawings.

Minimum Requirement #3: Source Control of Pollution
Source controls will be utilized on site to prevent stormwater from coming in contact with pollutants where able.

Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls
The existing grades across the property direct water down to the northwest and into the Japanese Gulch on the property. Similarly, collected stormwater as a part of the proposed development will tightline water to an existing pipe network on site which then discharges water at the gulch.

Minimum Requirement #5: On-Site Stormwater Management
Figure I-2.5.1 of the DOE Manual was followed to determine to what extent and what onsite BMPs are necessary. The project triggers Minimum Requirements #1 - 9. Projects triggering requirements #1 – 9 shall either use on-site stormwater management BMPs from List #2 for all surfaces within each type of surface in List #2 or demonstrate compliance with the LID Performance Standards.

The proposed project has chosen to follow List #2 to the fullest extent feasible.

Lawn and Landscape areas:

1. Post-Construction Soil Quality and Depth in accordance with BMP T5.13: Post Construction Soil Quality and Depth.

   The project proposes to amend all soils per BMP T5.13 where applicable.

Roofs:

Rooftops/downspouts are not proposed as a part of this project.

Other Hard Surfaces:

1. Full dispersion in accordance with BMP T5.30: Full Dispersion

   Full Dispersion is not feasible for the project site due to the insufficient vegetation to dispersion water over for the required flow path length.

2. Permeable pavement in accordance with BMP T5.15: Permeable Pavements, or Rain Gardens in accordance with BMP T5.14A: Rain Gardens, or Bioretention in accordance with BMP T7.30: Bioretention Cells, Swale, and Planter Boxes.

Due to the poor infiltration characteristics of the soil on site, as documented in the Geotechnical report, infiltration, retention and dispersion are not feasible for this development.

3. Permeable Bioretention BMP in accordance with BMP T7.30.

   Due to the poor infiltration characteristics of the soil on site, as documented in the Geotechnical report, infiltration, retention and dispersion are not feasible for this development.

4. Sheet Flow Dispersion in accordance with BMP T5.11 or BMP T5.12

   Sheet flow dispersion was evaluated as an option to manage runoff from the site's impervious areas. It was determined that the tributary area that would be tributary vegetation dispersal area around the perimeter of the site is too large given the limited amount of vegetative area. In addition, the vegetated area to be used for stormwater dispersion is better suited on slopes up to 15%. Most all the vegetative areas onsite are greater than 15%. Sheet flow dispersion has not been provided at this time.

Minimum Requirement #6: Runoff Treatment

Projects in which the total of, pollution-generating hard surfaces (PGHS) is 5,000 square feet or more in a threshold discharge area of the project shall be assessed for treatment requirements. As a result of this project exceeded 5,000 sf of PGHS and treatment facility has been proposed downstream of the detention facility.

Additionally, preceding the detention pond a pretreatment catch basin is proposed to help filter out larger sized suspended solids.

Further information and analysis of this facility is included in Section4 of this report.

Minimum Requirement #7: Flow Control

The proposed project is not exempt from flow control per the 2014 Manual therefore, the developed release rate of stormwater needs to be considered. The control standard for stormwater discharge is to match developed discharge durations to predeveloped durations for the range of predeveloped discharge rates from 50 percent of the 2-year recurrence interval peak flow up to the full 50-year flow. The predeveloped condition is assumed to be forested land cover.

To achieve this standard, an above ground detention pond is a proposed with a control riser to restrict the release rate of detained stormwater to the required standard. See Section 4 of the report for further design details.

Minimum Requirement #8: Wetlands Protection

This requirement applies only to projects whose stormwater discharges into a wetland, either directly or indirectly though a conveyance system. This project discharges directly to Japanese Gulch which conveys water directly to the Puget sound.

Minimum Requirement #9: Operation and Maintenance

A draft stormwater covenant documents been prepared for the proposed stormwater facilities and BMPs. These documents can be found as a part of the submittal documents for this project under a separate cover.

Section 3 – Site and Basin Existing Conditions Summary

The site is located in an over-grown/wooded area near the south end of Japanese Gulch, west of where the Boeing Railroad enters the Boeing property in Mukilteo, Washington. Most of the project site is undeveloped and covered by second and third generation forest consisting of fir cedar, and deciduous trees. The undergrowth is relatively open and consists of ferns, nettles, and small bushes and trees. The site slopes gradually downward to the north and east. A minor drainage channel runs south to north across the middle of the site. To the east of the site, a steep ravine drops steeply into Japanese Gulch. A Portland Cement Concrete Pavement (PCCP) roadway exists along the top of this steep ravine providing access to a sewer lift station at the northeast corner of the property.

The site is additionally subject to upstream stormwater. Under the minor drainage channel on site an existing 12" storm pipe conveys collected water from the 78th St SW Right-of-Way to Japanese Gulch. This storm line will remain as a part of the project.

A geotechnical study was conducted by HWA GeoSciences and documented in their report, *Geotechnical Investigation Report, Salinas Construction Development,* dated August 4, 2006. In summary, 11 test pies were dug ranging from 4 feet to 9 feet below ground surface. Generally, the site is underlain by 12 to 18 inches of organic topsoil, with abundant roots and rootlets, over a thin layer of recessional outwash, over weathered glacial till grading to unweathered till at depth. Based on the results of the subsurface investigation, it is of the option of GeoSciences that the site is suitable for the proposed developed. However, the native weathered and unweathered till soils have low to very low permeability and will not be suitable for infiltration of stormwater. As a result, infiltration BMPs have been deemed infeasible for this site.

Offsite Analysis

Upstream Basin

Stormwater flow enter the property from the south frontage along the 78th Street SW right-of-way. These flows travel in a 12' pipe and through a flow splitter and then conveyed to Japanese Gulch via two flow paths east of the onsite concrete driveway.

Downstream Basin

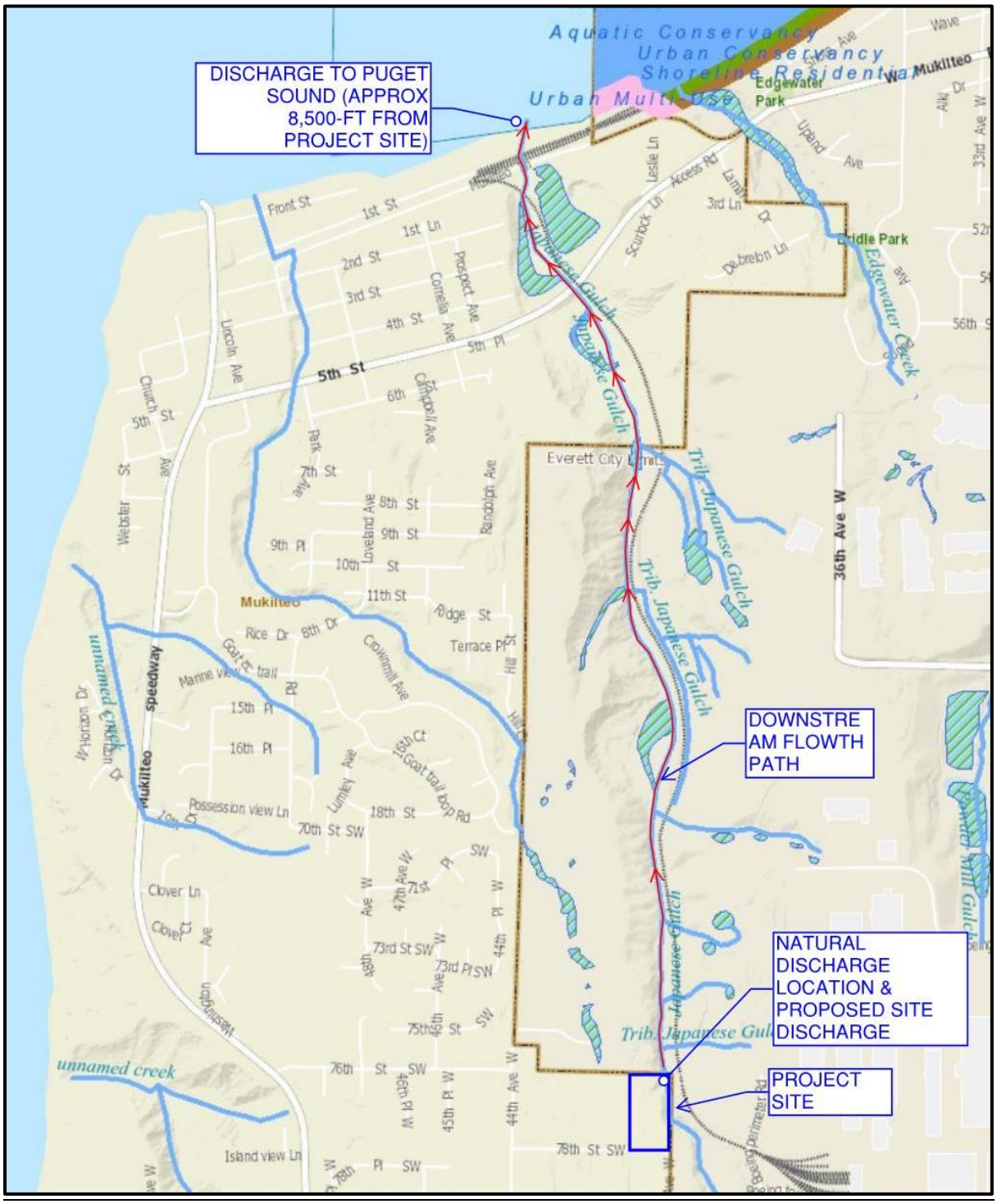
Stormwater from the site along with other surrounding tributaries enter the Japanese Gulch and remain within the gulch until reaching the Puget sound approximately 8,500 feet downstream. See the downstream flow path map on the follow page.

Water Quality Assessment

The Department of Ecology Water Quality Assessment 303(d)/305(b) lists were reviewed to see if there are any known downstream water quality concerns. Waters whose beneficial uses are impaired by pollutants that require a water improvement project are placed in the polluted water category (category 5) and put on the 303(d) list. The 305(b) list all waters and all categories. Pollutants of concerns could be bacteria, dissolved oxygen, temperature, metals, phosphorus, turbidity, or high pH.

From the site, water is conveyed to Japanese Gulch. This area and stream have not been classified with any categories by the Department of Ecology and not on the 303(d) or 305(b) list.

Figure 3.1 – Downstream Flow Path



Section 4 – Permanent Stormwater Control Plan

Predeveloped Site Hydrology

Under existing conditions, the entire site drains toward the center of the site and is conveyed northeastward out the eastern side of the site into Japanese Gulch. A minor drainage channel runs south to north across the middle of the site. To the east of the site, a steep ravine drops steeply into Japanese Gulch. The slopes across the site are moderate (between 5 and 15 percent) which has been reflected in the stormwater modeling analysis.

The site is additionally subject to upstream stormwater. Under the minor drainage channel on site an existing 12" storm pipe conveys collected water from the 78th St SW Right-of-Way to Japanese Gulch. This storm line will remain as a part of the project and remain independent from the proposed on-site work and conveyance network.

Within the 78th St SW right-of-way, runoff from the north half of right-of-way is collected by an existing catch located just off the existing flow line of the road.

The following table, Table 4.1, provides predeveloped basin conditions for the 'project site'. The site has been broken up in to two separate sub-basins within one Point of Compliance. This includes the equivalent area tributary to the detention pond and a second sub-basin are equivalent to the proposed bypass basin.

Table 4.1 – Historic Conditions (POC #1)

Sub-basin	C, Forest, Mod sf (ac)	C, Lawn, flat sf (ac)	Impervious, flat sf (ac)	Total ac
Pond	114,127 (2.62)	0	0	114,127 (2.62)
Bypass	15,682 (0.36)	0	0	15,682 (0.36)
Total	129,809 (2.98)	0	0	129,809 (2.98)

Developed Site Hydrology

The proposed development will clear the existing site and rework the grade to better suit the propose land use. A majority of the site will be paved with asphalt. Catch basins will be installed along the northern perimeter to collect and convey intercepted runoff to the detention pond.

The proposed stormwater pond is a combined water quality and detention pond. The first 5 feet of the pond will provide a settling area for suspended solids which includes 1 foot of sediment storage. This water quality volume will provide stormwater treatment to Basic treatment standards. Above this wet pond/settling area, 4.5 feet of live storage is proposed to provide the necessary detention storage volume while flow the release rate of stormwater is attenuated by the control structure.

Prior to the detention pond, a hydrodynamic separator is proposed to provide stormwater pretreatment by capturing and retaining 100% of floatables and buoyant debris 4.7mm or larger.

MUKILTEO YARD

FIGURE 4.1 - EXISTING BASIN MAP

JAPANESE GULCH

SITE DISCHARGE TO JAPANESE GULCH

SITE DISCHARGE TO JAPANESE GULCH

SEASONAL STREAM

EXISTING STORM PIPE

PARCEL NO. 00611600009400

10.0%

11.3%

12.7%

5.7%

76TH ST SW

78TH ST SW

CONCRETE

GATE

ASPHALT

WIRE FENCE

18" DI

SCALE: 1" = 50'

0 25 50

LEGEND

FOREST, MOD

BYPASS

FIGURE 4-1

DRAWING:

CONSULTING ENGINEERS LLC
33400 8th Ave S, Suite 205
Federal Way, WA 98003
FEDERAL WAY (253) 838-6113
EVERETT (425) 297-9900
www.esmcivil.com
Civil Engineering | Land Surveying | Land Planning
Public Works | Project Management | Landscape Architecture

JOB NO. 2118-001-20 | DATE: 03-13-2020
DRAWN: BML | SHEET 1 OF 1

File: \\esm8\ENGR\ESM-JOBS\2118\001\020\exhibits\EN-01.dwg
Plotted: 3/16/2020 11:43 AM
Plotted By: Brandon Loucks

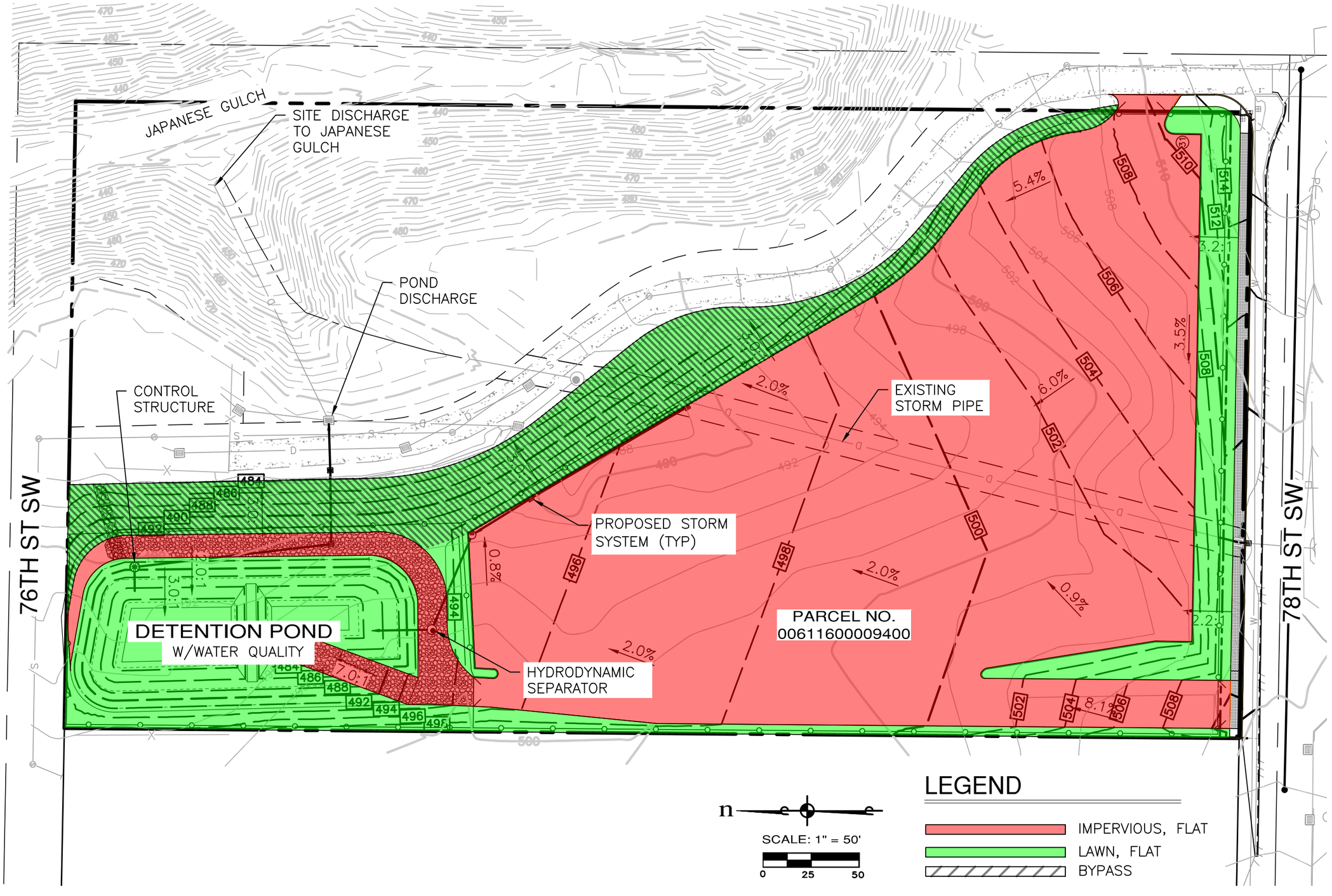


FIGURE 4.2 - DEVELOPED BASIN MAP

MUKILTEO YARD

FIGURE 4-2

CONSULTING ENGINEERS LLC
33400 8th Ave S, Suite 205
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EVERETT (425) 297-9900
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DRAWN: BML | SHEET 1 OF 1

DRAWING:

File: \\esm8\ENGR\ESM-JOBS\2118\001\020\exhibits\EN-02_recover.dwg
Plotted: 3/16/2020 11:43 AM
Plotted By: Brandon Loucks

Newly cleared area that will not be covered by an impervious surface will be seeded and stabilized. The soils will be amended as a part of Minimum Requirement #5 to reintroduce organics and soil moisture holding capacity of the worked soils.

Additional to the onsite work, frontage improvements are proposed within the 78th St SW right-of-way. This includes widening the travelled way to 18.5 feet, vertical curb and gutter, and a 6-foot sidewalk. To accommodate these improvements, an additional 10 feet of right-of-way will be dedicated to the City upon completion of this project. The existing catch basin within the 78th St SW right-of-way that collects runoff will need to be removed and replaced with a new catch basin located within the realigned flow line. Runoff from 78th St SW will then continue to be collected and conveyed by the existing 12" main running through the project site.

Table 4.2 provides a summary of the developed site conditions and any associated credit taken as a part of proposed onsite stormwater BMPs.

Table 4.2 – Developed Conditions (POC #1)

Land Use Surface	Stormwater BMP			Total Sf (ac)	100-year developed flow rate (cfs)
	Detention sf (ac)	Amended Soil & Detention Pond sf (ac)	Amended Soil Bypass sf (ac)		
Pond Basin					
Impervious Surface	86,684 (1.99)	0	0	86,684 (1.99)	-
Landscaping/lawn (Pasture)	0	27,443 (0.63)	0	27,443 (0.63)	-
Undisturbed (Forest)	0	0	0	0	-
Total	86,684 (1.99)	27,443 (0.63)		114,127 (2.62)	1.68
Bypass					
Landscaping/lawn (Pasture)	0	0	15,682 (0.36)	15,682 (0.36)	
Credits					
Applied Credit	None	Pasture (BMP T5.13)	Pasture (BMP T5.13)		

Performance Goals and Standards

Hydrology Model

The approved hydrology model used for this project is the 2012 Western Washington Hydrology Model (WWHM) software, which incorporates all the methods required for determining compliance with the flow control and water quality standards specified below.

Flow Control (Sec I.2.5.7, 2014 Manual)

The project site is required to release stormwater to the performance standards provided in the 2014 Manual. To meet the prescriptive performance standards, stormwater discharges shall match developed discharges to pre-developed durations for the range of predeveloped

discharges rates from 50% of the 2-year peak flow up to the full 50-year peak flow. The predeveloped condition to be matched shall be a forested land cover without a duration increase greater than 10%.

Onsite Bypass

On some sites, topography can make it difficult or costly to collect all target surface runoff for conveyance to the onsite flow control facility.

A small portion of the developed site will bypass the detention facility unmitigated. As seen on the developed basin map, Figure 4.2, this includes the sloped landscape area along the east side of the new paved construction yard.

Compensatory mitigation by a flow control facility must be provided so that the net effect at the point of convergence downstream is the same with or without the bypass.

Runoff Treatment (Sec V-2 & V-3.5 2014 Manual)

Stormwater treatment is required for this project as a result of exceeding the 5,000 sf PGIS site area threshold. The treatment standard is to provide a water quality benefit to polluted water prior to discharging from the project site. The treatment performance goal and type of treatment facility is based on the use of the site and the downstream receiving water.

The treatment facility was selected in accordance with the process identified in Chapter V-2 of the 2014 Manual. The following outlines the process for determination for selection of the treatment facility:

Step 1) Pollutions of concern in the downstream receiving water.

According to the information collected as a part of the downstream analysis, there are no known water cleanout plans in place downstream of the project site nor is the downstream receiving water listed in Sections 305(b), 304, or 319(a) of the Clean Water Act.

Step 2) Oil Control Facility Required

The project does not have a “high-use site” characteristic and is not a development of a high-use site. Oil control facilities have not been proposed at this time.

A “high-use site” are those that typically generate high concentrations of soil due to high traffic turnover or the frequent transfer of oil. This includes a commercial or industrial site with expected daily vehicle counts to be greater than 100, transfer of petroleum in excess of 1,500 gallons per year, or storage of 25 or more vehicles over 10 tons gross weight.

Step 3) Infiltration for pollutant removal is practical

The soils were tested to determine the potential of using site soils for pollutant removal. Testing results showed that infiltration is not a feasible means of stormwater management due to the shallow restrictive till layer located across the site.

Step 4) Phosphorous Control

At this time, there are no known established phosphorus control requirements downstream of this site.

Step 5) Enhanced Treatment

According to the information collected as a part of the downstream analysis, the project will not discharge or be conveyed to freshwater designed for aquatic use or that have existing aquatic life.

Step 7) Select a Basic Treatment Facility

The goal of basic treatment is 80 percent removal of total suspended solids for an influent. The performance goal can apply to and specified water quality design storm volume or flow rate. To accomplish the performance standard, a volume-based facility is proposed as selected from the Basic Treatment menu in Section V-3.5 of the 2014 manual. A Basic Wetpond in accordance with Chapter V-10 is proposed to meet this Basic Treatment performance standard. See the Water Quality section below for analysis and design of this treatment facility.

Conveyance

While the 2014 Manual does not provide specific guidance on conveyance analysis, new conveyance systems have been designed with sufficient capacity to convey and contain) the developed site conditions 100-year peak flow utilizing the peak flows calculated by WWHM and comparing these design flows to the conveyance capacity of the proposed conveyance pipes.

Flow Control

The onsite flow control facility consists of a detention pond, two-orifice riser control structure w/notch, and a tightline to the existing storm network onsite. Stormwater released from the flow control facility (shown on Figure 4.2) will discharge to an existing conveyance system and then to Japanese Gulch. The riser and detention volume have been sized to release detained stormwater at rates compliant with the performance standards discussed previously and the pre-developed and developed land use basins with associated credit applied as provided in Table 4.1 and 4.2. Table 4.3 provides a stage-storage summary along with modeled and proposed facility volumes.

Table 4.3
Pond Stage-Storage Summary

Vault Stages	Stage Depth (feet)	Stage Interval (feet)	Modeled Volume cf (ac-ft)	Provided Volume cf (ac-ft)
Sediment Storage	1.0	482.5 -483.5	-	-
Wetpond (Water Quality)	4.0	483.5 – 487.5	7,174 (0.1674)	20,103 (0.4615)
Live Storage (Detention)	4.5	487.5 – 492.0	40,293 (0.925)	47,328 (1.087)
Freeboard	1.00	492.0 – 493.0	-	-

Detention Pond Design Criteria

The pond was designed as a flow through system. Developed flows enter through a conveyance system separate from the control structure and outflow conveyance system. This maximizes the distance between the inlet and outlet to promote sedimentation.

The interior side slopes are proposed as 2H:1V. To allow for these steeper side slopes, pond fencing is proposed around the perimeter of the pond. Exterior pond side slopes are proposed at approximately 3H:1V.

Access is provided around portions of the pond perimeter as well as down to the first cell of the pond. The access road width varies between 12 and 15 feet, and 15 feet around corners with a minimum outside turning radius of 40 feet. The access ramp down to bottom of the pond is a maximum of 15%.

Control Structure (primary discharge control)

The control structure for the pond includes a restrictor device for controlling outflow from the pond to meet the required performance standard. The restrictor device proposed is a riser with multiple orifices and a rectangular weir/notch.

Flow through these orifices may be determined at any given elevation through the following equations as listed in Chapter III-3.2.4 of the 2014 Manual:

$Q = CA\sqrt{2gh}$, (Orifice)

$d = \sqrt{\frac{36.88Q}{\sqrt{h}}}$ (Orifice, solved for diameter, d)

Where C = 0.62, A = Area of orifice in feet, g = 32.2 (gravity constant), h = headwater elevation in feet, and d = orifice diameter in feet.

Flow through the rectangular notch (sharp crested weir) can be calculated as follows:

$Q = C(L - 0.2H)H^{3/2}$

Where C = 0.62, h = headwater elevation in feet, L = length in feet of weir, D = inside riser diameter in feet

Note: These questions are provided for reference and are calculated by WWHM as a part of the detention pond analysis.

Primary Overflow

The primary overflow is the overflow weir on the 18-inch diameter control riser. The weir is intended as a safety measure if any of the orifices are plugged. The bottom of the weir (top of riser) is set at the peak detention volume storage depth. The riser must be designed to provide for primary overflow of the developed 100-year peak flow discharge (WWHM POC #2) from the detention facility according to Chapter III-2.3.1 of the 2014 Manual. The flow is provided in Table

The freeboard necessary above the top of the riser to allow for primary overflow without reaching the emergency spillway is determined from the Weir equation as shown above.

$Q100 = 9.739DH^{\frac{3}{2}}$ (Riser Crest) (Figure III-3.2.16, 2014 Manual)

Where D = the diameter of the riser (1.5 feet)

$Q100 = 1.68\ cfs = 9.739(1.5)H^{\frac{3}{2}}$

$\mathrm{H} = 0.24\ \mathrm{ft} = 2.88\ \mathrm{inches}$

A total of 3.6 inches (0.3 ft) has been provided between the top of riser and emergency spillway elevation, greater than the calculated head above the primary riser.

Secondary Overflow

The secondary inlet is the open top on the 54-inch (4.5 feet) diameter Type II catch basin with a bird cage. The secondary inlet is intended to provide a safety factor if the outlet pipe from the detention pond is plugged. The overflow elevation (rim of structure) is set at the peak detention storage depth.

The rim of the control structure at elevation 492.0

The freeboard necessary above the top of the rim of the catch basin to allow for secondary overflow without reaching the emergency spillway is determined from the Weir equation as shown above.

Developed Pond Basin $Q_{100} = 1.68 \text{ cfs} = 9.739(4.5 \text{ ft})(H^{3/2})$,

$$H = 0.11 \text{ ft} = 1.36 \text{ inches}$$

A total of 3.6 inches (0.3 ft) has been provided between the rim of the structure and emergency spillway elevation, greater than the calculated head over secondary overflow elevation.

Emergency Overflow Spillway

The emergency overflow spillway is set at 0.7' below the top of pond berm. This allows for a maximum spillway overflow depth of 0.2' while maintaining a least 0.5' of freeboard over the overflow water surface elevation. For the given depth of 0.2, the required length of the spillway is calculated below.

The emergency overflow spillway is at elevation 492.3

Based on the 100-year developed flow provided by WWHM the spillway width (L) is given by;

$$Q_{100} = C(2g)^{1/2}[{}^{2}/_{3}\, LH^{\frac{3}{2}} + {}^{8}/_{15}\,(\tan\theta)H^{5/2}] \qquad \text{(Chapter III-3, p484)}$$

Where,
- Q_{100} = peak flow for the 100-year runoff event, (1.68cfs)
- C = discharge coefficient (0.6)
- g = gravity (32.2 ft/sec^2)
- L = Length of weir (ft)
- H = Height of water over weir (ft), (0.2)
- θ = angle of side slopes, ($\tan\theta = 3$)

Thus,

$$Q_{100} = 3.21LH^{\frac{3}{2}} + 2.4\,H^{5/2}]$$

For, $Q = 1.68$ cfs (100-yr peak, using WWHM, see appendix A, POC #2) and $H = 0.2$ ft,
$L = 5.37$ ft. use 6 ft.

The emergency overflow spillway will be placed at the north eastern side of the facility in order to direct emergency overflow storm water towards the natural discharge location of the site incase the spillway becomes active.

Downstream Pipe Conveyance

The capacity of the outlet pipe from the control structure has also been checked as a safety measure if the primary overflow becomes active. The capacity of the downstream pipe should be greater than the developed 100-year design flow. The 100-year design flow can be found in the primary overflow discussion above.

To calculate the capacity of the downstream pipe(s), Manning's equation was used to directly solve for the capacity of the pipe, assuming a full flowing pipe at a 0.5% slope minimum (proposed pipe(s) is steeper).

Manning Equation

$Q = (1.49/n)AR^{2/3}S^{1/2}$

Where, Q = Pipe capacity (cfs)
A = Wetted area (sf), $\frac{\pi d^2}{4}$
n = Manning roughness coefficient, 0.012
R = Hydraulic radius, $d/4$ for full flowing pipe
d = Pipe Diameter
S = Slope of the pipe

Pipe Capacity of a 12" diameter pipe @ 0.5% min Slope

$d = 1.0$ ft
$A = 3.14*1.0^2/4 = 0.7854$ sf
$R = 1.0/4 = 0.25$ ft
$S = 0.005$
$Q = (1.49/0.012)(0.7854)(0.25^{2/3})(0.005^{1/2}) = 2.72$ cfs > 1.68 cfs, OKAY

A 12" diameter discharge pipe with a 0.5 percent slope has sufficient capacity to convey the 100-year developed flow from the detention facility (POC #2).

Water Quality

Wetpond

As discussed under the Performance Standards and Goals of this Section, a basic wetpool facility is proposed to provide a water quality benefit to site stormwater. This wetpool facility was sized and designed per Chapter V-10 of the 2014 Manual.

A Basic Wet pond is a stormwater pond that retains a permanent pool of water ("wetpool") at least during the wet season. This wetpond is combined with the detention facility and located under the live storage part of the pond.

The primary design factor that determines a wetpond's treatment efficiency is the volume of the wetpool. For a basic wetpond, the wetpool volume is equal to the simulated daily volume that represents the upper limits of the range of daily volumes that accounts for 91% of the entire runoff volume over the period of record. This is provided by WWHM.

The developed inflow timeseries from WWHM was for the volume analysis. Table 4.3 provides a summary of the modeled water quality volume versus the proposed volume. The proposed volume is significantly larger than the modeled. This output can be found in Appendix A, as a part of the POC #2 analysis.

The wetpond geometry is such that its overall length is approximately 3 times the width. The inlets and outlets are placed to maximize the flow path through the facility.

The wetpool is divided into two cells separated by a berm. The first cell contains approximately 35% of the total wetpool volume. The berm extends across the full width of the wetpool and ties into the wetpond side slopes. The berm is 4 feet tall and submerged 1 foot below the top of the wetpool with 2H:1V side slopes.

One foot of sediment storage has been assumed in both cells of the wetpond. At least 1 foot of sediment storage is required in the first cell.

Hydrodynamic Separator

A hydrodynamic separator is proposed upstream of the detention pond to assist with removing floatables and larger sized suspended solids. A DOE approved pretreatment facility, the CDS Stormwater Treatment System is the final storm structure prior to discharge into the pond.

While this pretreatment is not required, typically these CDS units are sized according the treatment flow rate. For treatment installed upstream of detention, the water quality design flow rate is the peak 15-minute flow rate as calculated using WWHM. This rate is provided as a part of the POC#2 analysis.

$$Q_{WQ} = 0.244\ cfs\ (online)$$

The proposed CDS units is the Precast CDS 2015-5, capable of handing water quality flows up to 0.7 cfs.

Conveyance System Analysis and Design

Runoff from the developed project site will be collected from the proposed paved areas. The proposed stormwater drainage system is composed of catch basin structures with 12-inch diameter pipes for the proposed public storm network.

Conveyance Capacity

The new conveyance network has been analyzed and designed with sufficient capacity to convey and contain the 100-year flow.

The pipe (critical pipe), with the largest tributary areas for this project is the proposed 12" pipes downstream of detention in case the control structure becomes. The pipe capacity for this pipe is calculated on the previous page assuming a full flowing pipe at a minimum slope of 0.5%.

Section 6 – Operations and Maintenance Manual

A draft stormwater covenant documents been prepared for the proposed stormwater facilities and BMPs. These documents can be found as a part of the submittal documents for this project under a separate cover.

APPENDIX A – WWHM Report

WWHM2012

PROJECT REPORT

Detention Pond Analysis,
Water Quality Flow/Volume
& Developed flow rate

General Model Information

Project Name:	Mukilteo Yard
Site Name:	Mukilteo Yard
Site Address:	int. of 78th St SW and 40th Ave W
City:	City of Mukilteo
Report Date:	3/13/2020
Gage:	Everett
Data Start:	1948/10/01
Data End:	2009/09/30
Timestep:	15 Minute
Precip Scale:	0.800
Version Date:	2019/09/13
Version:	4.2.17

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year
Low Flow Threshold for POC2:	50 Percent of the 2 Year
High Flow Threshold for POC2:	50 Year

Landuse Basin Data
Predeveloped Land Use

Predeveloped

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Forest, Mod	2.62
Pervious Total	2.62
Impervious Land Use	acre
Impervious Total	0
Basin Total	2.62

Element Flows To:

Surface	Interflow	Groundwater

Pre Bypass Basin

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C, Forest, Mod	0.36
Pervious Total	0.36

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.36

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Pond Basin

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C, Pasture, Flat	0.63
Pervious Total	0.63

Impervious Land Use	acre
ROADS FLAT	1.99
Impervious Total	1.99
Basin Total	2.62

Element Flows To:

Surface	Interflow	Groundwater
Pond 1	Pond 1	

Bypass Basin

Bypass:	Yes
GroundWater:	No
Pervious Land Use	acre
C, Pasture, Flat	0.36
Pervious Total	0.36
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.36

Element Flows To:

Surface	Interflow	Groundwater

Routing Elements
Predeveloped Routing

Mitigated Routing

Pond 1

Bottom Length: 80.50 ft.
Bottom Width: 80.50 ft.
Depth: 5.5 ft.
Volume at riser head: 0.9250 acre-feet.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 4.5 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.021 ft.
Notch Height: 0.250 ft.
Orifice 1 Diameter: 0.5625 in Elevation:0 ft.
Orifice 2 Diameter: 0.625 in. Elevation:3.6 ft.
Element Flows To:
Outlet 1 Outlet 2

Pond Hydraulic Table

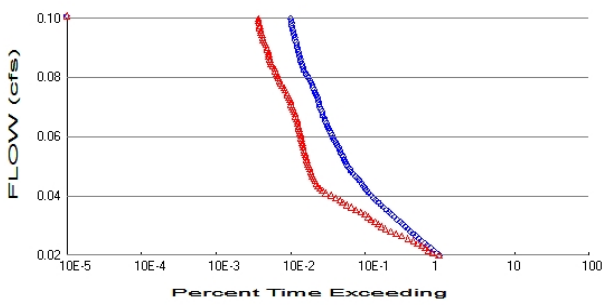
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.148	0.000	0.000	0.000
0.0611	0.150	0.009	0.002	0.000
0.1222	0.151	0.018	0.003	0.000
0.1833	0.152	0.027	0.003	0.000
0.2444	0.154	0.037	0.004	0.000
0.3056	0.155	0.046	0.004	0.000
0.3667	0.157	0.056	0.005	0.000
0.4278	0.158	0.065	0.005	0.000
0.4889	0.159	0.075	0.006	0.000
0.5500	0.161	0.085	0.006	0.000
0.6111	0.162	0.095	0.006	0.000
0.6722	0.164	0.105	0.007	0.000
0.7333	0.165	0.115	0.007	0.000
0.7944	0.166	0.125	0.007	0.000
0.8556	0.168	0.135	0.007	0.000
0.9167	0.169	0.145	0.008	0.000
0.9778	0.171	0.156	0.008	0.000
1.0389	0.172	0.166	0.008	0.000
1.1000	0.174	0.177	0.009	0.000
1.1611	0.175	0.188	0.009	0.000
1.2222	0.177	0.198	0.009	0.000
1.2833	0.178	0.209	0.009	0.000
1.3444	0.180	0.220	0.010	0.000
1.4056	0.181	0.231	0.010	0.000
1.4667	0.183	0.242	0.010	0.000
1.5278	0.184	0.254	0.010	0.000
1.5889	0.186	0.265	0.010	0.000
1.6500	0.187	0.276	0.011	0.000
1.7111	0.189	0.288	0.011	0.000
1.7722	0.190	0.300	0.011	0.000
1.8333	0.192	0.311	0.011	0.000

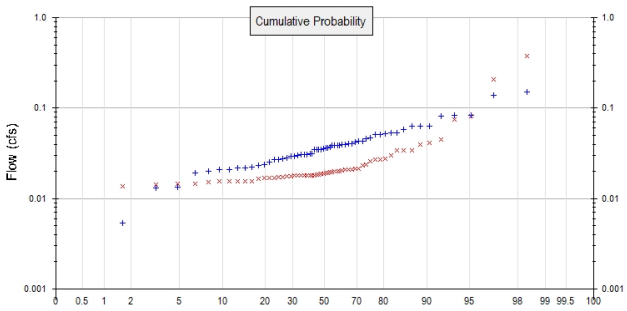
1.8944	0.193	0.323	0.011	0.000
1.9556	0.195	0.335	0.012	0.000
2.0167	0.196	0.347	0.012	0.000
2.0778	0.198	0.359	0.012	0.000
2.1389	0.200	0.371	0.012	0.000
2.2000	0.201	0.383	0.012	0.000
2.2611	0.203	0.396	0.012	0.000
2.3222	0.204	0.408	0.013	0.000
2.3833	0.206	0.421	0.013	0.000
2.4444	0.207	0.433	0.013	0.000
2.5056	0.209	0.446	0.013	0.000
2.5667	0.211	0.459	0.013	0.000
2.6278	0.212	0.472	0.013	0.000
2.6889	0.214	0.485	0.014	0.000
2.7500	0.216	0.498	0.014	0.000
2.8111	0.217	0.511	0.014	0.000
2.8722	0.219	0.525	0.014	0.000
2.9333	0.220	0.538	0.014	0.000
2.9944	0.222	0.552	0.014	0.000
3.0556	0.224	0.565	0.015	0.000
3.1167	0.225	0.579	0.015	0.000
3.1778	0.227	0.593	0.015	0.000
3.2389	0.229	0.607	0.015	0.000
3.3000	0.230	0.621	0.015	0.000
3.3611	0.232	0.635	0.015	0.000
3.4222	0.234	0.650	0.015	0.000
3.4833	0.236	0.664	0.016	0.000
3.5444	0.237	0.678	0.016	0.000
3.6056	0.239	0.693	0.017	0.000
3.6667	0.241	0.708	0.019	0.000
3.7278	0.242	0.722	0.020	0.000
3.7889	0.244	0.737	0.021	0.000
3.8500	0.246	0.752	0.022	0.000
3.9111	0.248	0.767	0.022	0.000
3.9722	0.249	0.783	0.023	0.000
4.0333	0.251	0.798	0.024	0.000
4.0944	0.253	0.813	0.024	0.000
4.1556	0.255	0.829	0.025	0.000
4.2167	0.257	0.845	0.026	0.000
4.2778	0.258	0.860	0.026	0.000
4.3389	0.260	0.876	0.028	0.000
4.4000	0.262	0.892	0.031	0.000
4.4611	0.264	0.908	0.034	0.000
4.5222	0.266	0.925	0.089	0.000
4.5833	0.267	0.941	0.419	0.000
4.6444	0.269	0.957	0.906	0.000
4.7056	0.271	0.974	1.499	0.000
4.7667	0.273	0.990	2.162	0.000
4.8278	0.275	1.007	2.857	0.000
4.8889	0.276	1.024	3.549	0.000
4.9500	0.278	1.041	4.199	0.000
5.0111	0.280	1.058	4.777	0.000
5.0722	0.282	1.075	5.258	0.000
5.1333	0.284	1.093	5.633	0.000
5.1944	0.286	1.110	5.912	0.000
5.2556	0.288	1.128	6.201	0.000
5.3167	0.290	1.145	6.446	0.000
5.3778	0.291	1.163	6.681	0.000

5.4389	0.293	1.181	6.909	0.000
5.5000	0.295	1.199	7.129	0.000
5.5611	0.297	1.217	7.343	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 2.98
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.99
Total Impervious Area: 1.99

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.036693
5 year	0.057388
10 year	0.07027
25 year	0.085281
50 year	0.095516
100 year	0.104973

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.020976
5 year	0.036331
10 year	0.050803
25 year	0.075457
50 year	0.099543
100 year	0.129602

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	0.005	0.015
1950	0.047	0.021
1951	0.035	0.018
1952	0.026	0.016
1953	0.021	0.015
1954	0.064	0.026
1955	0.063	0.081
1956	0.051	0.207
1957	0.058	0.021
1958	0.040	0.020

1959	0.039	0.020
1960	0.035	0.017
1961	0.040	0.021
1962	0.024	0.015
1963	0.031	0.016
1964	0.035	0.018
1965	0.037	0.020
1966	0.019	0.016
1967	0.052	0.021
1968	0.051	0.021
1969	0.027	0.018
1970	0.028	0.018
1971	0.043	0.075
1972	0.040	0.017
1973	0.022	0.019
1974	0.043	0.023
1975	0.030	0.017
1976	0.029	0.019
1977	0.013	0.015
1978	0.027	0.017
1979	0.054	0.018
1980	0.031	0.017
1981	0.027	0.014
1982	0.041	0.019
1983	0.038	0.020
1984	0.036	0.028
1985	0.054	0.040
1986	0.139	0.041
1987	0.046	0.030
1988	0.031	0.018
1989	0.022	0.015
1990	0.039	0.020
1991	0.042	0.019
1992	0.031	0.019
1993	0.020	0.014
1994	0.013	0.017
1995	0.037	0.024
1996	0.083	0.027
1997	0.151	0.380
1998	0.021	0.018
1999	0.039	0.027
2000	0.022	0.018
2001	0.005	0.009
2002	0.037	0.034
2003	0.023	0.015
2004	0.035	0.021
2005	0.029	0.018
2006	0.083	0.045
2007	0.063	0.034
2008	0.081	0.034
2009	0.031	0.018

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.1513	0.3798
2	0.1392	0.2075
3	0.0834	0.0813

4	0.0829	0.0749
5	0.0815	0.0452
6	0.0636	0.0410
7	0.0627	0.0398
8	0.0626	0.0343
9	0.0581	0.0342
10	0.0538	0.0339
11	0.0535	0.0300
12	0.0520	0.0276
13	0.0508	0.0269
14	0.0507	0.0268
15	0.0466	0.0257
16	0.0462	0.0239
17	0.0434	0.0231
18	0.0428	0.0212
19	0.0418	0.0212
20	0.0405	0.0209
21	0.0401	0.0208
22	0.0398	0.0207
23	0.0398	0.0205
24	0.0389	0.0202
25	0.0389	0.0202
26	0.0386	0.0201
27	0.0384	0.0196
28	0.0373	0.0195
29	0.0367	0.0191
30	0.0365	0.0191
31	0.0358	0.0188
32	0.0351	0.0187
33	0.0350	0.0185
34	0.0346	0.0182
35	0.0345	0.0182
36	0.0313	0.0181
37	0.0311	0.0180
38	0.0309	0.0180
39	0.0309	0.0179
40	0.0307	0.0179
41	0.0303	0.0179
42	0.0295	0.0178
43	0.0291	0.0175
44	0.0284	0.0175
45	0.0274	0.0173
46	0.0269	0.0173
47	0.0267	0.0170
48	0.0255	0.0169
49	0.0238	0.0168
50	0.0234	0.0164
51	0.0222	0.0156
52	0.0218	0.0156
53	0.0217	0.0155
54	0.0210	0.0155
55	0.0209	0.0154
56	0.0198	0.0153
57	0.0193	0.0146
58	0.0135	0.0146
59	0.0132	0.0142
60	0.0053	0.0137
61	0.0047	0.0089

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0183	21083	20649	97	Pass
0.0191	19231	17023	88	Pass
0.0199	17528	14844	84	Pass
0.0207	15956	13458	84	Pass
0.0215	14502	12142	83	Pass
0.0222	13267	10716	80	Pass
0.0230	12147	9398	77	Pass
0.0238	11103	7952	71	Pass
0.0246	10173	6504	63	Pass
0.0254	9334	5495	58	Pass
0.0261	8607	4658	54	Pass
0.0269	7931	3987	50	Pass
0.0277	7328	3527	48	Pass
0.0285	6731	3172	47	Pass
0.0293	6218	2875	46	Pass
0.0300	5707	2547	44	Pass
0.0308	5232	2336	44	Pass
0.0316	4793	2113	44	Pass
0.0324	4393	1865	42	Pass
0.0332	4060	1592	39	Pass
0.0339	3754	1398	37	Pass
0.0347	3474	1202	34	Pass
0.0355	3206	1064	33	Pass
0.0363	2945	977	33	Pass
0.0371	2723	853	31	Pass
0.0378	2541	741	29	Pass
0.0386	2383	634	26	Pass
0.0394	2248	569	25	Pass
0.0402	2120	524	24	Pass
0.0410	2002	490	24	Pass
0.0417	1902	469	24	Pass
0.0425	1788	450	25	Pass
0.0433	1684	438	26	Pass
0.0441	1590	418	26	Pass
0.0448	1486	407	27	Pass
0.0456	1384	396	28	Pass
0.0464	1321	383	28	Pass
0.0472	1251	374	29	Pass
0.0480	1201	362	30	Pass
0.0487	1158	356	30	Pass
0.0495	1120	351	31	Pass
0.0503	1077	342	31	Pass
0.0511	1032	334	32	Pass
0.0519	993	326	32	Pass
0.0526	964	319	33	Pass
0.0534	929	314	33	Pass
0.0542	895	308	34	Pass
0.0550	857	305	35	Pass
0.0558	822	297	36	Pass
0.0565	791	295	37	Pass
0.0573	756	291	38	Pass
0.0581	732	286	39	Pass
0.0589	707	278	39	Pass

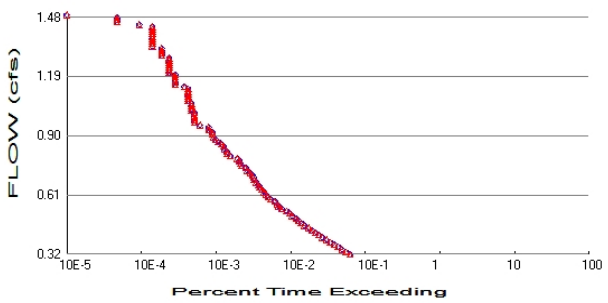
0.0597	683	275	40	Pass
0.0604	664	271	40	Pass
0.0612	645	264	40	Pass
0.0620	626	262	41	Pass
0.0628	607	257	42	Pass
0.0636	584	249	42	Pass
0.0643	567	245	43	Pass
0.0651	556	237	42	Pass
0.0659	541	229	42	Pass
0.0667	526	225	42	Pass
0.0675	515	217	42	Pass
0.0682	505	213	42	Pass
0.0690	495	209	42	Pass
0.0698	483	201	41	Pass
0.0706	471	192	40	Pass
0.0714	459	191	41	Pass
0.0721	443	181	40	Pass
0.0729	428	174	40	Pass
0.0737	417	162	38	Pass
0.0745	405	157	38	Pass
0.0752	388	149	38	Pass
0.0760	371	144	38	Pass
0.0768	355	141	39	Pass
0.0776	339	138	40	Pass
0.0784	325	134	41	Pass
0.0791	318	130	40	Pass
0.0799	307	121	39	Pass
0.0807	301	116	38	Pass
0.0815	292	113	38	Pass
0.0823	287	112	39	Pass
0.0830	279	109	39	Pass
0.0838	274	108	39	Pass
0.0846	268	107	39	Pass
0.0854	265	105	39	Pass
0.0862	262	102	38	Pass
0.0869	257	99	38	Pass
0.0877	253	96	37	Pass
0.0885	245	91	37	Pass
0.0893	242	90	37	Pass
0.0901	236	88	37	Pass
0.0908	231	85	36	Pass
0.0916	226	84	37	Pass
0.0924	224	82	36	Pass
0.0932	222	82	36	Pass
0.0940	220	80	36	Pass
0.0947	217	79	36	Pass
0.0955	211	79	37	Pass

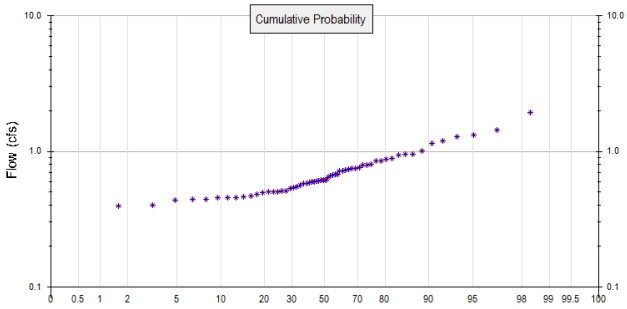
Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.1674 acre-feet
On-line facility target flow:	0.2444 cfs.
Adjusted for 15 min:	0.2444 cfs.
Off-line facility target flow:	0.1387 cfs.
Adjusted for 15 min:	0.1387 cfs.

POC 2





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 0.63
Total Impervious Area: 1.99

Mitigated Landuse Totals for POC #2
Total Pervious Area: 0.63
Total Impervious Area: 1.99

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	0.641026
5 year	0.874242
10 year	1.045836
25 year	1.283013
50 year	1.475027
100 year	1.680651

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	0.641026
5 year	0.874242
10 year	1.045836
25 year	1.283013
50 year	1.475027
100 year	1.680651

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	**Predeveloped**	**Mitigated**
1949	0.593	0.593
1950	0.808	0.808
1951	0.680	0.680
1952	0.583	0.583
1953	0.796	0.796
1954	1.010	1.010
1955	0.750	0.750
1956	0.354	0.354
1957	0.611	0.611
1958	1.441	1.441
1959	0.614	0.614

Water Quality

Water Quality BMP Flow and Volume for POC #2

On-line facility volume:	0.1674 acre-feet
On-line facility target flow:	0.2444 cfs.
Adjusted for 15 min:	0.2444 cfs.
Off-line facility target flow:	0.1387 cfs.
Adjusted for 15 min:	0.1387 cfs.

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

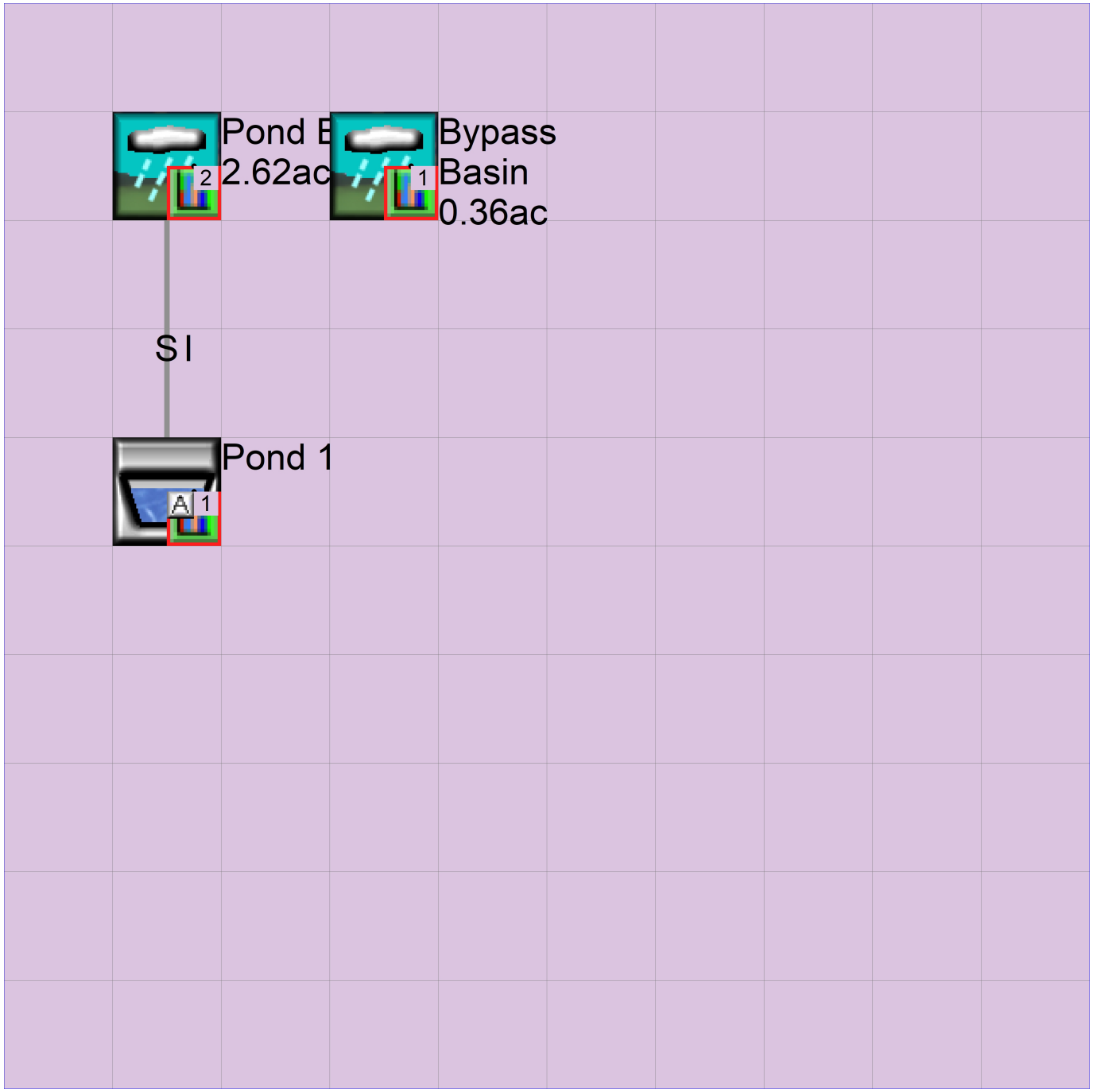
IMPLND Changes

No IMPLND changes have been made.

Appendix

Predeveloped Schematic

Mitigated Schematic



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APPENDIX B – Hydraulic Analysis

Not Used

APPENDIX C – Operations and Maintenance Manual

A draft stormwater covenant documents been prepared for the proposed stormwater facilities and BMPs. These documents can be found as a part of the submittal documents for this project under a separate cover.

APPENDIX D – Geotechnical Report

Separate Cover