MEMO

Facilities Management

Bellingham, Washington 98225-9114
Phone: (360) 650-3727
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To: Department Of Ecology

From: David Sherwood, Facilities & Utilities Maintenance Manager; Stormwater Management Program, Program Manager

Date: Monday March 25, 2013

Subject: Western Washington University Annual Stormwater Management Report for 2012

Please find attached the 2 hard copies required to be submitted to the Department of Ecology for Western Washington University's, Western Washington Phase II Municipal Stormwater Permit # WAR 04-5701, annual report.

There are additional attachments this year because of new milestone completions within the Permit to be completed each calendar year. Included are the prints for two campus restoration projects that greatly enhance our capabilities for stormwater improvements.

Additional training and campus awareness continues. In conjunction with the campus Environmental Health and Safety office (EHS), Facilities Management (FM) and the Parking Services (PS) Department within the University Police Department (UPD), are the departments with the most exposure for Stormwater Management control. This working group has gone back to re-evaluate the Stormwater Management Program (SWMP). These departments meet quarterly to discuss stormwater concerns and plan work improving stormwater management across campus. This committee routinely requests stormwater improvement projects through the campus capital budget office. Increased catch basin and other maintenance efforts have reduced turbidity outflow.

We continue with our intent to resolve any shortcomings and improve our program to the best of our abilities. With local assistance from the Department of Ecology Bellingham office and the City of Bellingham (CoB) Public works Department, WWU has focused more to become better stewards of our local campus and community with stormwater concerns. The City of Bellingham (CoB) Public works Department has provided assistance and guidance with inspections and general advice for stormwater improvements. Additionally we intend to collaborate more with the Environmental Colleges on campus to share information and management practices.

We look forward to working with the Department of Ecology on improving our management of this very important resource.

Respectfully Yours,

David Sherwood

2012 Stormwater Management Report

Western Washington University

March 2013

WESTERN
WASHINGTON UNIVERSITY

An equal opportunity university

2012 Report Sections

Western Washington University Stormwater Permit # WAR04-5701

Small MS4 Secondary Permittee Annual Report, Excel report tabs:

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Tab IV. Certification

Tab VI. Status Report Covering Calendar Year: 2012

Attachments:

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2. Att-2 2007 SWMP Timeline
3. Att-3 2012 SWMP Program Activities
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5. Att-5 2011 Western seeks feedback
6. Att-5A 2011 Western Today
7. Att-6 2011 Stormwater Spill Response Plan
8. Att-7 2012 Stormwater Employee Training
9. Att-8 2012 Stormwater Management Program – Facilities Management
10. Att-9 2013 SWMP Maps Catch Basin Locations
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21. Att-20 LCTC PR0001765 Record Set Drawings

I. Permittee Information

Permittee Name Western Washington University	**Permittee Coverage Number** WAR04-5701
Contact Name David Sherwood	**Date of Permit Coverage**
Mailing Address 526 High Street	**Phone number** 360-650-3727
City Bellingham	**State** WA / **Zip + 4** 98225-9121
Email Adddress david.sherwood@wwu.edu	

II. Regulated Small MS4 Location

Municipal Entity Western Washington	***Entity Type: Mark X in the box that applies*** **County** / **City/Town** / **Other**: X
Major Receiving Water(s) Bellingham Bay (via CoB), Taylor Creek, and Connelly Creek	

III. Relying on another Governmental Entity

If you are relying on another governmental entity to satisfy one or more of the permit obligations, list the entity and briefly describe the permit obligation(s) they are implementing on your behalf below. ***Attach a copy of your agreement with the other entity to provide additional detail (unless previously submitted).***

Name of Entity:	**Permit Obligation(s):**

IV. Certification

All annual reports must be signed and certified by the responsible official(s) of permittee or co-permittees. Please print and sign this page of the reporting form and mail it (with an original signature) to Ecology at the address noted below. An electronic signature will not suffice.

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that Qualified Personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

Name	David Sherwood	Title	Facilities and Utilities Maintenance Manager/ Stormwater Manager	Date	3/22/2013
Name	John Furman	Title	Director of Facilities Management	Date	3/24/2013
Name	Rich Van Den Hul	Title	Vice President for Business & Financial Affairs	Date	3/25/2013
Name		Title		Date	
Name		Title		Date	

VI. Status Report Covering Calendar Year: 2012 **Name of permitted entity:** Western Washington University

PLEASE label reporting year and your entity name, above.
PLEASE refer to the INSTRUCTIONS tab for assistance filling out this table.
NOTE: For clarification on how to answer questions, place cursor over cell with red flag in corner.
NOTE: Items that have future compliance dates must still be answered to indicate status.
PLEASE label information in any attachments with corresponding question numbers.
PLEASE review your work for completeness and accuracy. Save this worksheet as you go!

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
	S6.D Stormwater Management Program				
1	**Attached** a copy of the Permittee's Stormwater Management Program document (SWMP) as per S6.A.5. (*Required* annually)	Y		See attachments provided	**Att-1:** 2007 SWMP Overview **Att-2:** 2007 SWMP Timeline
2	**Attached** a notification of any jurisdictional boundary changes resulting in an increase or decrease in the Permittee's geographic area of coverage during the reporting period, and implications for the SWMP. (*Required* annually, S9.F.2)	NA			
	S.6.D.1 Public Education and Outreach				
3	Labeled at least 50% of all storm drain inlets owned or operated by the Permittee that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points. (*Required by* 3 years from date of permit coverage or date established by Ecology, S6.D.1.a)	Y		WWU Outdoor Maintenance personnel in 2009 labeled 100 of the university's approximately 175 storm drain inlets with the same placard that is in use by the City of Bellingham. (COB)The remaining inlets were labeled during 2010. See 5 below for 2010 completion.	
3a	Number of inlets labeled:		100	As reported in 2010 report	
4	(Public ports, colleges and universities only) Distributed educational information to tenants and residents about the impact of stormwater discharges on receiving waters and steps that can be taken to reduce pollutants in stormwater runoff. (*Required by* 3 years from date of permit coverage, S6.D.1.b)	Y		The Facilities Management Director uses his campus "Desk Notes" as a medium to add Stormwater educational information to the campus. The Director's Notes are available in hard copy print and listed on the campus "Western Today" webpage.	**Att-3:** 2012 Program Activities
5	Labeled all storm drain inlets owned or operated by the Permittee that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points. (Required by August 15, 2011 or date established by Ecology, S6.D.1.a.ii)	Y			
5a	Number of inlets labeled:		Approximately 150 labels	As reported in 2010 report	
6	Re-labeled all storm drain inlets with labels when no longer clearly visible and/or easily readable within 90 days. (*Required* after all inlets labeled, S6.D.1.a.iii)			Approximately 150 labels were either damaged, stolen or were otherwise missing. WWU's labels are modeled after City of Bellingham (COB). Total campus labels number 358.	

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
6a	Number of inlets labeled:		45	Replacement of labels is ongoing throughout the year. Re-label as they are found damaged or missing. Catch basin inspection & cleaning find most of these problems. Replacing/reattachment must be done in drier weather conditions. Adhesive sent with labels was suspect as we lost many labels. Changed to different adhesive in 2012. Replaced approximately 45 labels in 2012.	
	S6.D.2 Public Involvement and Participation				
7	Published a public notice and solicited public review of the SWMP. (*Required* by August 15, 2011 or date established by Ecology, S6.D.2.a)	Y		WWU used the option to advertise on the campus website prior to the Aug 15, 2011 deadline	**Att-4** 2011 NOI mailed **Att-5** 2011 Western Today website **Att-5A** 2011 Western Today for Aug 18, 2011
8	Made the latest version of the SWMP available to the public. If posted on website, list address in *Comments.* (*Required by* August 15, 2011 or date established by Ecology, S6.D.2.b)	Y		Information about WWU's SWMP posted on Facilities Management's website. Included on the SWMP website are annual reports to DOE and an opportunity for public feedback. Campus Environmental Health & Safety office "EHS Links" also connects to the Facilities Management Stormwater webpage.	See Facilities Management SWMP website, 2008 & 2009 reports for these documents. **Att-8:** EHS link http://www.wwu.edu/ehs/links.shtml
	S6.D.3 Illicit Discharge Detection and Elimination				
9	Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern non-stormwater discharges. (*Required* from date of permit coverage, S6.D.3.a)	Y			
10	Developed and adopted policies to prohibit illicit discharges and identified enforcement mechanisms. (*Required by* 1 year from date of permit coverage, S6.D.3.b.)	Y		WWU's Stormwater Policy was adopted in 2008, is available via a link on Facilities Management SWMP website, and was included in WWU's 2009 Annual Report. Campus Environmental Health & Safety office "EHS Links" also connects to the Facilities Management Stormwater webpage.	See Facilities Management SWMP website, 2008 & 2009 reports for these documents. **Att-8:** EHS link http://www.wwu.edu/ehs/links.shtml
11	Implemented policies to prohibit illicit discharges, including an enforcement plan. (*Required* 1 year from date of permit coverage, S6.D.3.b)	Y		Procedures were adopted in 2008, are available via a link on SWMP website, and were included in 2008's Annual Report	
12	Developed a map of the storm sewer system showing all known storm drain outfalls, receiving waters, and areas contributing runoff to each outfall. Made map available on request to Ecology or others, if requested. (*Required by* August 15, 2011 or date established by Ecology, S6.D.3.c)	Y		A description and future plans of WWU's stormwater system were included as part of the University's Utilities Master Plan Study prepared in 2007. Maps of the storm sewer system are available via a link on SWMP website and were included in WWU's 2008 Annual Report. Secondarily Facilities Management produced an overall stormwater map for catch basin identification. All catch basins have been identified on this map. This map is a work in progress to add additional zone labeling information.	**Att-9:** 2012 Wilson Maps with catch basin locations.

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
13	Conducted annual field inspections and visually inspected for illicit discharges at approximately one third of all known outfalls. (*Required to begin* by 2 years from date of permit coverage, S6.D.3.d)	Y		**This requires additional explanation for 2012 *if* we include non contiguous properties owned by the University.** In 2011 we reported WWU had **six, not three,** *total outfalls* as previously reported to natural waterways from MS4. **Three** are visually inspected at least once per month for illicit discharges. The remaining MS4 outfalls are underground pipe connections to City of Bellingham's stormwater system. Including non contiguous properties owned by the University the total would be *nine total outfalls.*	**Att-9:** 2012 Wilson Maps with catch basin locations. For the 2012 report we have included on this map a remote property non contiguous with the main campus property. Birnam Woods apartment complex has stormwater catch basins that drain directly into the City of Bellingham stormwater system on Bill McDonald Parkway. This would change the number of outfalls reported in the past. Additionally Lincoln Creek Transportation Center also flows into the COB stormwater system and Hannegan Road Environmental Center Lab
13a	Number of outfalls inspected:		3	Only 3 are accessible	
14	Developed and implemented procedures to identify and remove illicit discharges. *Required by* 2 years from date of permit coverage, S6.D.3.d)	Y		See question 11	
15	**Attached a** summary of illicit discharges discovered and actions taken to eliminate the discharges. (*Required annually after* 2 years from date of permit coverage, S9)	NA			
16	Developed and implementing a spill response plan that includes coordination with a qualified spill responder. (*Required by* August 15, 2011 or date established by Ecology, S6.D.3.e)	Y		The Spill Response Plan utilizes part of draft policy for oil spills. This document **Emergency Support Function 10, Appendix 1, Oil Spill Prevention Control and Countermeasure Plan, For, Western Washington University** is being updated and is under review. The Spill Response Plan may have minor changes following the approval of that document.	**Att-6:** 2011 Spill Response Plan
17	Provided staff training or coordinated with existing training to educate relevant staff on proper BMPs for preventing illicit discharges, including spills. (*Required by* 2 years from date of permit coverage, S6.D.3.f)	Y		Additional training was added across campus in 2011. Stormwater discharge BMPs reviewed with Outdoor Maint. periodically for inspection requirements and corrective actions. Stormwater training is now an annual requirement for all Facilities Management personnel from the maintenance and construction shops. WWU continues to strengthen training & procedures to properly meet requirements for the MS4 permit.	**Att-7:** 2012 Stormwater Employee Training record **Att-10:** 2011 Stormwater Training for ALL **Att-11:** 2011 Stormwater Training for Aramark Employees (Food service provider) **Att-12:** 2011 Stormwater for Public Outreach, EcoReps **Att-13:** 2011 Stormwater Training for EHS **Att-14:** 2011 Stormwater Training for Grounds (Outdoor Maintenance) **Att-15:** 2011 Stormwater Training for Parking Office **Att-16:** 2011 Excavation Permit **Att-17**: Add additional training for University Police Officers, Student Security, **Att-18:** 2011 Auto Shop.
	S6.D.4 Construction Site Stormwater Control				

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
18	Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern construction phase stormwater pollution prevention measures. (*Required* from date of permit coverage, S6.D.4.a)	Y			
19	Obtained NPDES permit coverage for all applicable construction projects under the control of the Permittee. (*Required* from date of permit coverage, S6.D.4.b)	Y		All construction projects permits held by contractors.	
20	Coordinated with local jurisdictions on construction projects owned or operated by other entities that discharge into Permittee's MS4. (*Required* after date of permit coverage, S6.D.4.c)	NA		All construction projects permits held by contractors.	
21	Provided training for relevant staff in erosion and sediment control BMPs and requirements, or hired trained contractors to perform the work for all construction projects owned and operated by the Permittee. (*Required* after date of permit coverage, S6.D.4.d)	Y		Appropriate staff training is a requirement of all contractors hired for major public work projects. Contractors follow City of Bellingham stormwater requirements.	
22	Provided access, as requested, for inspection of construction sites under the control of the Permittee during the active grading and/or construction period. (*Required* after date of permit coverage, S6.D.4.e)	Y			
	S6.D.5 Post-Construction Stormwater Management for New Development and Redevelopment				
23	Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern post-construction stormwater pollution prevention measures, including proper operation and maintenance of the MS4. (*Required* after date of permit coverage, S6.D.5.a)	Y			
24	Coordinated with local jurisdictions on projects owned or operated by other entities that discharge into Permittee's MS4. (*Required* after date of permit coverage, S6.D.5.b)	NA		There are no other discharges into WWU's MS4	
	S6.D.6 Pollution Prevention and Good Housekeeping for Municipal Operations				

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
25	Developed and implemented an Operation and Maintenance program. (*Required by* 3 years from date of permit coverage, S6.D.6.a)	Y		Routine inspection of stormwater intakes and outflows have been incorporated into WWU Outdoor Maintenance Shop preventive maintenance schedules. After "event" inspections are routine to look for any changes to stormwater systems on campus.	
26	Conducted spot checks of stormwater facilities after major storms. (*Required to begin by* 3 years from date of permit coverage, S6.D.6.a.i)	Y		WWU Outdoor Maintenance personnel inspect stormwater intakes and outflows following major storms and corrective action is taken as necessary	**Att-3:** 2012 Program Activities.
27	Developed and implemented a Stormwater Pollution Prevention Plan (SWPP) for material storage areas, heavy equipment storage areas, and maintenance areas not covered by another NPDES permit that covers stormwater discharges associated with the activity. (*Required* by 3 years from date of permit coverage or date established by Ecology, S6.D.6.a.vi)	Y		A secondary containment program was initiated in 2011 for the Outdoor Maintenance Shop(Grounds). ALL portable gasoline containers MUST be secondary containment type cans. **Example from 2010:** FM Outdoor Maintenance and Shop Maintenance personnel assigned the responsibility to properly maintain facility/area as designed. Powered air sweeper is routinely used to sweep sidewalks, roadways, and maintenance areas of excess sand, dirt and debris to prevent from entering stormwater intakes.	**Att-3:** 2012 Program Activities
28	Have NPDES permit for Stormwater Discharges Associated with Industrial Activities coverage for all applicable industrial facilities operated by the Permittee. (*Required after date of* permit coverage, S6.D.6.b)	NA		O&M water quality training ongoing 2011 on correct procedures for properly controlling pressure washer runoff, pipe flushing, and other non-stormwater discharges. WWU continues strengthening training & procedures to properly meet requirements for the MS4 permit in progress.	**Att-3:** 2012 Program Activities
29	Provided adequate training for staff to carry out the Operations and Maintenance plan to minimize impacts to water quality. (*Required to begin by* 3 years from date of permit coverage, S6.D.6.d)	Y		O&M water quality training ongoing 2012 on correct procedures for properly controlling pressure washer runoff, pipe flushing, and other non-stormwater discharges. WWU continues strengthening training & procedures to properly meet requirements for the MS4 permit in progress.	**Att-3:** 2012 Program Activities
	S7 Compliance with Total Maximum Daily Load Requirements				
30	Is there an approved Total Maximum Daily Load (TMDL) applicable to stormwater discharges from a MS4s owned or operated by the Permittee? (S7)	NA		No TMDL requirements	
31	Complied with the specific TMDL requirements identified in Appendix 2. (S7.A)	NA		No TMDL requirements	
32	Attached status report of TMDL implementation. (S7.A)	NA		No TMDL requirements	

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
33	Where monitoring was required in Appendix 2, conducted the monitoring according to an approved Quality Assurance Project Plan. (S7.A)				
	General Conditions				
34	Notified Ecology of the failure to comply with the permit terms and conditions within 30 days of becoming aware of the non-compliance. (G20)	NA			
35	Notified Ecology immediately in cases where the Permittee becomes aware of a discharge into or from the Permittees MS4 which could constitute a threat to human health, welfare, or the environment? (G3)	Y		Better awareness training is being provided through WWU Environmental Health and Safety office. Stormwater power point training is part of the annual safety and awareness training. Training is tailored to the specific audience.	See question 17 above
36	Took appropriate action to correct or minimize discharges into or from the MS4 which could constitute a threat to human health, welfare, or the environment. (G3.A)	Y		Better awareness training is being provided through WWU Environmental Health and Safety office. Stormwater power point training is part of the annual safety and awareness training. Training is tailored to the specific audience. Two construction projects were completed that were specifically designed for improvement to stormwater systems for campus owned properties.	See question 17 above. **Att-19:** 2012 PW656 Stormwater Detention Facility Restoration. South campus vault and filtration system was rebuilt to control sedimentation levels, improved filtration, water quality and maintenance activities. **Att-20:** 2012 PR0001765 Catch Basin Piping. Lincoln Creek Transportation Center (LCTC) had construction that replaced an existing catch basin with additional catch basin inlets to a new dual filter catch basin assembly. Both projects added significant improvements to the stormwater leaving campus properties.
	S4 Compliance with Standards				
37	If applicable, attached a summary of the status of implementation of any actions taken pursuant to S4.F and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period. (S4.F.3.d)	NA		Received no S4.F notification	

REMINDER: Save your work as you go. Did you answer each question, provide necessary background information in the *Comments* field, and attach and/or note the filename and page number of all required documentation in the *Attachment* field? Proceed to the **Info Collection (Monitoring)** tab next.

Information Collection, S8.B.1 Description of Monitoring Studies

If applicable, you are required to provide information to fulfill permit requirement S8.B.1 in each annual report. You must describe any stormwater monitoring or studies conducted by you during the reporting period. If stormwater monitoring was conducted on your behalf, or if studies or investigations conducted by other entities were reported to you, you must briefly describe the type of information gathered or received during the reporting period.

Please note in #1 if you have no information to report.

Information Collection

	Briefly describe any stormwater monitoring, studies, or type of information collected and analyzed during the reporting period. (S8.B.1)	Who/how to contact for additional information?
1.	N/A	
2.		
3.		
4.		
5.		
6.		

PROGRAM OVERVIEW

Western Washington University's, in concert with the Washington State Department of Ecology, will implement a Storm Water Management Program (SWMP) with the expressed purpose of reducing the discharge of pollutants from Western's storm water system to the maximum extent practicable and to protect the water quality of out-flowing waterways. Western's SWMP will consist of the following components:

Coordination

The SWMP will include mechanisms to encourage coordinated storm water related policies, programs and projects on Western owned properties with the City of Bellingham, other local jurisdictions, and university departments.

Public Education and Outreach

- Storm drain inlets will be labeled with the message "Dump no waste" and indicate the point of discharge as a river, lake, bay, or groundwater. 50% of drains will be labeled within 3 years of permit coverage and all drains will be labeled no later than 180 days prior to expiration date of the storm water permit.
- Annually, starting no later than 3 years from beginning of permit coverage, the university will distribute educational information to students and staff on the impact of storm water discharges on receiving water and the steps than can be taken to reduce pollutants in storm water runoff.

Public Involvement and Participation

- Western's SWMP will be posted and updated on the university website, with opportunity provided for public comment.
- No later than 180 days prior to expiration date of the storm water permit, the university will publish a public notice in the Bellingham Herald and solicit public review of the SWMP.

Illicit Discharge Detection and Elimination

- From the date of coverage of the storm water permit, Western will comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions.

- Within 1 year from the date of permit coverage, Western will develop and adopt appropriate policies prohibiting illicit discharges and illegal dumping and identify enforcement mechanisms. The enforcement mechanisms will be implemented no later than 18 months from the date of permit coverage.
- No later than 180 days prior to the expiration date of the permit, Western will develop a storm sewer system map showing the locations of all known storm drain outfalls, labeling the receiving waters, and delineating the areas contributing runoff to each outfall. The map will be posted on the university website along with the SWMP.
- Within 2 years of the date of permit coverage, the university will conduct field inspections and visually inspect for illicit discharges at 1/3 of known outfalls and continue with 1/3 of outfalls each year thereafter. Procedures will be developed and implemented to identify and remove any illicit discharges and records will be kept of inspections and follow-up activities.
- No later than 180 days prior to expiration date of the permit, Western will develop and implement a spill response plan that includes coordination with a qualified spill responder.
- Western will train all relevant staff on proper best management practices (BMP) for preventing spills and illicit discharges.

Construction Site Storm Water Runoff Control

- From the date of coverage of the storm water permit, Western will comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern construction phase storm water pollution prevention measures.
- Western will obtain, as required, National Pollutant Discharge Elimination System (NPDES) permits that cover the storm water discharges associated with the construction activity, prior to discharging.
- Western will provide training, or coordinate with existing training programs, to educate relevant staff in erosion and sediment control BMPs and requirements, or hire trained contractors to perform the work.
- Western will coordinate with the Department of Ecology, or local jurisdiction, to provide access for inspection of construction sites or other land disturbances greater than or equal to one acre.

Post-construction Storm Water Management for New Development and Redevelopment

- From the date of coverage of the storm water permit, Western will comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern post-construction storm water pollution prevention measures.
- No later than 1 year from the date of permit coverage, Western will comply with the Minimum Technical Requirements for post construction storm water controls for new development and redevelopment of construction sites or other land disturbances greater than or equal to one acre.

Pollution Prevention and Good Housekeeping Maintenance and Operation

- Within 3 years from the date of permit coverage, Western will develop and implement a maintenance and operation (M&O) plan to minimize storm water pollution from activities conducted by the university.
- The M&O plan will include record keeping procedures to track 1) performance of operational source control activities, 2) performance of scheduled inspections and maintenance activities, 3) responses to spills and other potential pollution incidents.
- The M&O plan will include relevant training of all employees whose construction, operations, or maintenance job functions may impact storm water quality.

Reporting Requirements

- The university will maintain and make readily available a SWMP document that identifies the program plans and activities for the ensuing year(s).
- The university will submit no later than March 31 each year, beginning in the year 2008, an Annual Report to the Department of Ecology, using the forms provided.

General Conditions

- The university will comply with the general conditions of the storm water permit as identified by the Department of Ecology in accordance with the following:
  Discharges and activities consistent with terms and conditions of permit
  Proper operation and maintenance
  Spill notification

Prohibition of intentional storm water bypass
Right of entry allowed
Duty to mitigate
No conveyance of property rights
Compliance with other laws and statutes
Monitoring
No re-entry of removed substances
Severability
Revocation of coverage
Transfer of coverage
General permit modification and revocation
Reporting a cause for modification or revocation
Appeals
Penalties
Duty to reapply
Certification and signature
Non-compliance notification

WWU Storm Water Management Program

	2007				2008				2009				2010				2011				2012			
	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F
Submit NOI - Receive Permit Coverage	2/16																							
Permit Actions & Requirements																								
Comply with all relevant ordinances, rules, and regulations of the local jurisdiction (CoB) that govern non-stormwater discharges; construction phase stormwater pollution prevention measures; and post-construction stormwater pollution prevention measures, including proper operation and maintenance of MS4																								
Develop and Implement a stormwater management program																			8/19					
Prepare written documentation of the SWMP and submit report annually						3/31				3/31				3/31				3/31				3/31		
SWMP Components																								
Public Education and Outreach																								
Label all storm drain inlets owned or operated by WWU that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points - 50% within 3 years - relabel as needed									2/15															
Each year, distribute educational information to students and staff about the impact of stormwater discharges on receiving waters and steps that can be taken to reduce pollutants in stormwater runoff																								
Public Involvement and Participation																								
Make the latest updated version of the SWMP available on website																								
Publish public notice and solicit public review of SWMP																			8/19					
Illicit Discharge Detection and Elimination																								
Develop and adopt appropriate policies prohibiting illicit discharges and illegal dumping; identify possible enforcement mechanisms					2/15																			
Develop and implement an enforcement plan using these enforcement mechanisms to ensure compliance with illicit discharge policies							8/15																	
Develop storm sewer system map and delineate areas of runoff and make available in electronic form																			8/19					

Att-2

WWU Storm Water Management Program

	2007				2008				2009				2010				2011				2012			
	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F
Each year, conduct field inspections and visually inspect for illicit discharges at all known outfalls that discharge to surface waters - 1/3 each year beginning no later than within 2 yrs									2/15															
Develop/implement procedures to identify/remove illicit discharges. Keep records of inspections and follow-up activities									2/15															
Develop/implement spill response plan																			8/19					
Provide relevant staff training on BMP to prevent spills and illicit discharges																								
Construction Site Stormwater Runoff Control																								
Prior to discharging, obtain NPDES permit coverage, where required, for all construction projects owned and operated by WWU																								
Coordinate with CoB to assist with achieving compliance with all relevant ordinances, rules, and regulations																								
Provide training or coordinate with existing training efforts to educate relevant staff in erosion and sediment control BMPs and requirments, or hire trained contractors to perform the work (for construction projects)																								
Coordinate, as requested, with DoE or CoB to provide access for inspection of construction sites or other land disturbances under the control of WWU during the active grading and/or construction period																								
Comply with the Minimum Technical Requirements for new development and redevlopment on all new projects owned or operated by WWU if larger than one acre (see Appendix I)																								
Post-Construction Stormwater Management for New Development and Redevelopment																								
Comply with all relevant ordinances, rules and regulations that govern post-construction stormwater pollution prevention measures. Coordinate with CoB to assist with achieving compliance with ofinances, rules, and regulations																								
Pollution Prevention and Good Housekeeping																								
Develop and implement an operation and maintenance plan, including pollution prevention and good housekeeping procedures, to minimize stormwater pollution from activities conducted by WWU													2/15											

WWU Storm Water Management Program

	2007				2008				2009				2010				2011				2012			
	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F
Provide adequate training for WWU staff to carry out the Stormwater Management Program													2/15											
Monitoring																								
Secondary permittees are not required to conduct water sampling or other testing. However, permittees shall include in annual report description of any monitoring or studies conducted and appropriateness of BMP implemented.																								
Reporting																								
Submit annual report to DoE covering the activities included in the previous calendar year						3/31				3/31				3/31				3/31				3/31		
Keep all records related to the permit and the SWMP for at least five years and make available to DoE and public upon request.																								

PROGRAM ACTIVITIES FOR 2012

Following are the activities that will occur during 2012 to reduce the discharge of pollutants from Western Washington University's storm water system to the maximum extent practicable and to protect the water quality of out-flowing waterways.

Coordination

- The University, through the department of Facilities Management (FM) and the University's Environmental Health and Safety office (EHS) will actively maintain open communication with the City of Bellingham's department for storm water management, operators of other local MS4's, and the Department of Ecology to exchange best practices and address issues and concerns.

Public Education and Outreach

- Prepare and distribute educational information to students and staff on the impact of storm water discharges on receiving water and the steps than can be taken to reduce pollutants in storm water runoff.
- The Environmental Health and Safety office (EHS) will assist in providing Stormwater training and training materials to the campus student Residence Halls EcoReps. The EcoReps are elected sustainability representatives for leadership in energy and material conservation in campus residence halls.
- FM will provide additional Stormwater Management information through the University's Communication online publication "Western Today" @ (http://www.onlinefast.org/wwutoday/) and through the FM Director's "Desk Notes" @ (http://www.onlinefast.org/wwutoday/search/node/desk%20notes)

Public Involvement and Participation

- Maintain Western's SWMP website (http://www.wwu.edu/depts/fm/index.shtml) and promote use for public information and comment. FM or EHS will periodically list applicable Stormwater Management topics on the university's main webpage @ http://www.onlinefast.org/wwutoday/

Illicit Discharge Detection and Elimination

- Comply with all relevant ordinances, rules, and regulations of the local jurisdiction (CoB) that govern non-storm water discharges; construction phase

storm water pollution prevention measures; and post-construction storm water pollution prevention measures, including proper operation and maintenance of MS4.

- Maintain SWMP policies and procedures – adopt additional policies and procedures as necessary.
- Conduct field inspections and visually inspect for illicit discharges at all known outfalls of MS4. Inspection activities to include identification and removal of any illicit discharges and recording of inspections and follow-up activities.
- Continue to provide training for all relevant staff on proper Best Management Practices (BMP) to prevent spills and illicit discharges.
- Establish a BMP database with specific controls, examples and photos for WWU personnel to follow.
- The University's Environmental Health and Safety office (EHS) will provide initial training that will closely follow WWU' SWMP to new employees whose construction, operations, or maintenance job functions may impact storm water quality. SWMP training along with BMP's will be an annual requirement for those employees. Refresher training nominally will be semi-annual or more frequent for employees whose job functions more readily may impact storm water quality.
- All WWU employees in the Outdoor Maintenance Shop will use secondary containment for any transport of pesticides across campus. Additionally ALL portable fuel tanks are to be approved secondary containment type containers.
- All Facilities Management personnel that transport hazardous materials will be provided training and necessary secondary containment Personal Protective Equipment (PPE) as required doing their assigned work. A review of hazardous materials will determine which FM shops are provided with this additional training.
- EHS will provide additional training for secondary containment across campus to any other departments that may at sometime transport hazardous materials. A review of hazardous materials will determine which campus personnel are provided with this additional training.

<u>Gravel Parking Lots Storm Water Runoff Control</u>

- The south campus Stormwater Detention Vault and Bio-swale Filtration System will be upgraded summer 2012. The public works project, PW656

Stormwater Detention Facility Restoration, will include modifications to the stormwater detention vault that is beneath the south campus tennis courts. Flow control and sediment trapping features will be added to the existing vault including improved engineered maintenance components to enhance the water quality flowing into the filtration elements south of Bill MacDonald Way.

- Additionally included in PW656 is the renovation of the Bio-swale Filtration System south of Bill MacDonald Way. A new primary catch basin will be installed for better sediment control and improved maintenance. The entire Bio-swale Filtration System will have the existing vegetation and base materials removed. New filtration vegetation and base materials will be installed to improve water quality that flows into Taylor Creek.

- Stormwater runoff control measure features will be reworked at the Lincoln Creek Transportation Center (LCTC). Improved filtration, additional catch basins and flow direction will be installed at the main access/egress point into this parking facility.

- Provide training, or coordinate with existing training programs, to educate relevant staff in erosion and sediment control BMPs and requirements, or hire trained contractors to perform the work. Parking Services, under the Department of Public Safety, provides maintenance and repair work for all campus parking lots including the Lincoln Creek Transportation Center (LCTC).

- Improve response to any turbid water discharge from the gravel parking lots. FM and EHS will work in association with the Parking Services maintenance personnel in addressing turbid water issues.

- Involve the University's EHS office more into the mainstream provisions of the MS4 permit to assist with training and compliance issues especially with the transportation of hazardous chemicals. See attachments to the 2011 report.

- Facilities Management has requested funding through the campus Capital Budget Office for FY13-15 to the Washington State Legislature to replace the gravels lots on campus and provide a maintainable surface where WWU can meet the requirements of its secondary MS4 permit with the CoB. Facilities Management will monitor this funding request for approval.

- Continue to explore temporary solutions for FY2012 and future funding to the Lincoln Creek Transportation Center (LCTC) stormwater issues. The future completion of phased work would have resolved the stormwater issues at this site. Economic downturn has left this as an unfunded project from the state.

Construction Site Storm Water Runoff Control

- Comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern construction phase storm water pollution prevention measures.
- The Office of Facilities Development & Capital Budget (FDCB) has the responsibility to monitor and manage public works contractors on campus. Stormwater management is part of their requirements for construction sites and must comply with Bellingham city construction requirements as well as those through Bellingham Public Works.
- Obtain, as required, National Pollutant Discharge Elimination System (NPDES) permits that cover the storm water discharges associated with the construction activity, prior to discharging.
- Provide training, or coordinate with existing training programs, to educate relevant staff in erosion and sediment control BMPs and requirements, or hire trained contractors to perform the work. The EHS department will provide refresher training to FM project managers on a specified time frame throughout the project as determined by EHS. Nominally this will be an annual requirement.
- Coordinate with the Department of Ecology, or local jurisdiction, to provide access for inspection of construction sites or other land disturbances greater than or equal to one acre.

Post-construction Storm Water Management for New Development and Redevelopment

- Comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern post-construction storm water pollution prevention measures.
- Comply with the Minimum Technical Requirements for post construction storm water controls for new development and redevelopment of construction sites or other land disturbances greater than or equal to one acre.

Pollution Prevention and Good Housekeeping Maintenance and Operation (M&O)

- A permit system has been initiated by EHS and FM that requires signed approval by EHS prior to any soil disturbance. This is a pre-work inspection where all of the PPE and preventive storm water BMP's must be in place and signed off by EHS. It is similar in nature to a "hot work permit" in major

construction. These pre-work inspected work conditions ensure that precautionary materials and equipment is in place should there be a spill to prevent storm water pollution.

- All Facilities Management powered equipment will have an onboard spill kit. These will vary in size but will have basic spill response materials such as booms, absorbent pads, safety gloves, a safety suit and a plastic waste material storage bag. Said vehicles will have visible labels for “spill kit inside”. FM employees are expected to respond if they see any type of leak to minimize storm water pollution and to immediately notify their supervisors and the FM Work Control Center and EHS.
- The Facilities Managements main complex will have storm water catch basin covers available near each catch basin. Correctly sized catch basin covers are stored in clearly marked PVC storage tubes.
- Three large spill response kits with wheels are available on WWU’s campus. These response kits can be rolled or lifted into the back of a pickup truck.
- Two sizeable spill response kits on wheels are located on the main Bellingham campus, one at Facilities Management Maintenance Warehouse (MW), south campus and one in our SMATE (Science, Math and Technology Education) facility main mechanical room, central campus.
- The other is at the Shannon Point Marine Center @ Shannon Point, Anacortes, Washington. It is located under the overhang of the main 3 story research building.
- Maintain a maintenance and operation plan, including pollution prevention and good housekeeping procedures, to minimize storm water pollution from activities conducted by WWU. The M&O plan includes relevant training of all employees whose construction, operations, or maintenance job functions may impact storm water quality.
- FM will move to improve the internal tracking measures for M & O through the campus Facilities Administration Management Information System (FAMIS). Annual maintenance for Stormwater Management is recorded here.

Reporting Requirements

- No later than December 31, 2012 prepare program activities for 2013 and update the relevant SWMP documents.

- No later than March 31, 2012, submit an Annual Report to the Department of Ecology, using the forms provided.

General Conditions

- Comply with the general conditions of the storm water permit as identified by the Department of Ecology in accordance with the following:
  - Discharges and activities consistent with terms and conditions of permit
  - Proper operation and maintenance
  - Spill notification
  - Prohibition of intentional storm water bypass
  - Right of entry allowed
  - Duty to mitigate
  - No conveyance of property rights
  - Compliance with other laws and statutes
  - Monitoring
  - No re-entry of removed substances
  - Severability
  - Revocation of coverage
  - Transfer of coverage
  - General permit modification and revocation
  - Reporting a cause for modification or revocation
  - Appeals
  - Penalties
  - Duty to reapply
  - Certification and signature
  - Non-compliance notification

DEPARTMENT OF ECOLOGY State of Washington

DUTY TO REAPPLY – Notice of Intent (NOI) for coverage under a National Pollutant Discharge Elimination System Municipal Stormwater General Permit

Introduction

This form must be used by all operators of municipal separate storm sewer systems (permittees) currently under coverage of one or more of the following municipal separate storm sewer systems (MS4) permits:

- **Phase I Permit** – National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Discharges from Large and Medium Municipal Separate Storm Sewer Systems.
- **Phase II Permit for Western Washington** – NPDES and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewers in Western Washington.
- **Phase II Permit for Eastern Washington** – NPDES and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewers in Eastern Washington.

The Department of Ecology (Ecology) will use the information provided to ensure permittees have continuing coverage under:

- The appropriate existing (2007) permit to be in effect from August 2012 to August 2013:
  - **Phase I** (with possible minor changes).
  - **Eastern Washington Phase II** (unchanged).
  - **Western Washington Phase II** (unchanged).
- And, the appropriate updated (2012) permit to be in effect from August 2013 to August 2018:
  - **Phase I** (updated).
  - **Eastern Washington Phase II** (updated).
  - **Western Washington Phase II** (updated).

Please answer all questions accurately and completely. If a question does not apply, answer NA to that question. See instructions at the back of the form for more information.

Operators of MS4s currently under an existing permit must complete this application, obtain an authorized signature, and return it to Ecology postmarked no later than **August 19, 2011** in order to be in compliance with General Condition G18 of their existing permit. Permittees may complete this form by hand, or download the form from Ecology's web site and fill it out electronically.

An authorized signature on a hard copy is needed to complete the application. Please reference supporting documents in the text and attach as necessary.

Mail completed NOI to:

Department of Ecology
Water Quality Program
Municipal Stormwater Permits
PO Box 47696
Olympia, WA 98504-7696

Ecology will send each applicant an acknowledgment of receipt. If you have questions about this application, please contact the appropriate Ecology employee listed in the instructions at the end of this form, or call Ecology's Water Quality Program at 360-407-6600.

Part 1 - Owner/Operator Information

A. Applicant information			B. Responsible official or representative		
Name of city, county, or special district: Western Washington University			Name Tim Wynn		
			Title Director of Facilities		
			Phone 360-650-3496		
			Email tim.wynn@wwu.edu		
Mailing Address 516 High Street			Mailing Address 915 26th Street		
PO Box (Optional)			PO Box (Optional)		
City Bellingham	State WA	Zip 98225-9121	City Bellingham	State WA	Zip 98225-9121

C. Billing address, if different			D. Contact person	
Name			Name David Sherwood	
Mailing Address			Title Facilities &Utilities Maintenance Manager	
PO Box (Optional)			Phone No. Business 360-650-3727	Ext.
City	State	Zip	Email david.sherwood@wwu.edu	
			Fax No. (Optional) 360-650-3226	

E. Ownership status
(check appropriate box)

- ☐ City or Town
- ☐ County
- ☐ Federal
- ☐ Tribal

Special Purpose District:(secondary permittee)

- ☐ Diking/drainage district
- ☐ Flood control district
- ☐ Public school district
- ☐ State agency (give name) _____
- ☐ Other (please describe) _____
- ☐ Port
- ☒ University
- ☐ Park district

Part 2 – Permit(s) under which the applicant is requesting coverage

- ☐ Phase I Municipal Stormwater Permit
- ☒ Phase II Municipal Stormwater Permit for Western Washington
- ☐ Phase II Municipal Stormwater Permit for Eastern Washington

If you operate municipal separate storm sewer systems located in areas covered by more than one permit, please list the locations of all of the municipal separate storm sewer systems for which you are requesting permit coverage.

Part 3 – Co-permittee information

Complete this part of the NOI only if you are co-applying with another entity to meet the requirements of the permit. Permittees that co-apply are responsible for meeting permit conditions related to their discharge(s).

- ☒ Not applicable
- ☐ Applicable, list all co-permittees:
  - Co-applicant's Name:
  - Co-applicant's Name:
  - Co-applicant's Name:
  - Co-applicant's Name:

Part 4 - Certification

An authorized person, such as a principal executive officer or ranking elected official, must sign the certification statement.

OR

A duly authorized representative of the executive officer (or ranking elected official) may sign the certification (see instructions).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

David E. Sherwood	Manager, Facilities
Print or type name of responsible official or representative	**Title**
David E Sherwood	7 / 6 / 2011
Signature of responsible official or representative	**Date**

INSTRUCTIONS

When to apply:

Mail the NOI no later than **August 19, 2011**. Upon receipt of a complete NOI, Ecology will notify the applicant by mail of confirmation of coverage under the reissued permits.

Questions:

If you have questions, please contact the Municipal Stormwater Permit specialist who manages the permit in the county or counties in which your facility or district is located:

Island, Skagit and Whatcom Counties	**Christina Maginnis**	360-715-5212
Phase I Permittees (City of Seattle, King and Snohomish Counties, Port of Seattle) and Phase II permittees in Snohomish County.	**Rachel McCrea**	425-649-7223
Phase II Cities within King County and within Kitsap County.	**Anne Dettelbach**	425-649-7093
Clallam and Pierce Counties and the Port of Tacoma (Phase I and Phase II)	**Vince McGowan**	360-407-7320
Clark, Cowlitz, Grays Harbor, Lewis, and Thurston Counties	**Lisa Cox**	360-690-7120
Benton, Chelan, Douglas, Kittitas, and Yakima Counties	**Terry Wittmeier**	509-574-3991
Asotin, Franklin, Grant, Spokane, Walla Walla, and Whitman Counties	**Dave Duncan**	509-329-3554

Or, call Ecology's Water Quality Program office at 360-407-6600, and the receptionist will direct you to another staff member who can assist you.

Where to mail this re-application form:

Mail the signed NOI to: Washington Department of Ecology
Water Quality Program
Municipal Stormwater Permits
PO Box 47696
Olympia, WA 98504-7696

LINE-BY-LINE INSTRUCTIONS

Part 1 - Owner/Operator Information

A. Applicant information - Fill out the name and mailing address of the city, county, or public entity that will have continuing coverage under the permits.

B. Responsible official or representative – Fill out the name, address and contact information for the person responsible for signing the application and all reports. See Part 4 for more information.

C. Billing address, if different - If a separate department or office handles billing, enter the appropriate contact information. There is an annual permit fee associated with this permit.

D. Contact person - Enter the name, title, phone number, and email for the lead person who will be in charge of developing the stormwater management program and meeting the stormwater permit requirements.

E. Ownership status - Check the appropriate box indicating the ownership status (e.g., city, county, or special district type).

Part 2 – Permit(s) under which the applicant is requesting coverage

Check the box that corresponds to the permit(s) under which you are applying for coverage. The geographic locations covered by each permit break down as follows:

- **Phase I** – regulates entities within, or partially within the unincorporated areas of Clark, King, Pierce, or Snohomish counties; or the cities of Seattle or Tacoma.
- **Phase II Western Washington** – regulates entities in the census-defined urban areas of western Washington and some cities with populations over 10,000.
- **Phase II Eastern Washington** – regulates entities in the census-defined urban areas of eastern Washington and some cities with populations over 10,000.

Note: Applicants may submit a single NOI to request coverage of all of the regulated MS4s which they operate. For example, a single NOI may be submitted to cover the main campus and any satellite campuses of a university which may require permit coverage. Applicants requesting coverage for multiple sites/locations must list the locations for each site/location for which coverage is being requested. When more than one permit is checked, Ecology will assign the permit that will provide coverage.

Part 3 – Co-permittee information

If you are not co-applying with another entity check "Not applicable" and continue to Part 6 of the NOI. Complete the rest of Part 5 of the NOI only if you are co-applying with another entity to meet the requirements of this permit.

If you are co-applying with another entity or entities, please check "Applicable, list all co-permittees" and list the names of the co-permittees, not including yourself. Permittees that co-apply are responsible for meeting permit conditions related to their discharge(s).

Part 4 - Certification

An authorized person, such as a principal executive officer or ranking elected official, must sign the certification statement;

OR

A duly authorized representative of the executive officer (or ranking elected official) may sign the certification as long as:

1. The signator receives written authorization from the executive officer or ranking elected official. This document must be submitted to Ecology.
2. The authorization specifies an individual or position that has responsibility for the overall development and implementation of the stormwater management program.

If you need this document in a format for the visually impaired, call the Water Quality Program at 360-407-6600. Persons with hearing loss, call 711 for Washington Relay Service. Persons with a speech disability, call 877-833-6341.

Att-5

Western seeks feedback on stormwater management program

Published: Mon, 08/15/2011 - 15:53

environment | Facilities Management

WESTERN TODAY STAFF

Western Washington University is seeking feedback on its stormwater management program, which is up for renewal by the state Department of Ecology in February. More information: **Public Notice** Western Washington University, located at 516 High Street in Bellingham, Washington, is seeking renewal of: **Phase II Permit # WAR04-5701 for Western Washington** – "National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewers in Western Washington" The permit renewal will regulate stormwater discharges from the municipal separate storm sewer system located in Bellingham Washington. The permit requires Western Washington University to develop and implement a stormwater management program that:

- Protects the discharge of pollutants to the maximum extent practicable.
- Protects water quality.
- Satisfies appropriate requirements of the Clean Water Act.

Any person desiring to present views to the Department of Ecology concerning this renewal application may notify Ecology in writing within 30 days from the last date of publication of this notice. Submit comments to: Washington Department of Ecology Water Quality Program Municipal Stormwater Permits P.O. Box 47696 Olympia, WA 98504-7696 Fax: (360) 407-6426

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Campus news

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UPDATED: 10:08 amOff-campus visitors with disabilities are welcome at Western

Woodring projects given funding to pursue innovation

Registration open for spring employee wellness programs

Lopresti to speak March 21 at senior center

Monday water shutoff canceled

Policy on receiving honoraria under review, deadline is March 23

In the media

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WWU business college and NW Innovation Resource Center connect students, entrepreneurs
Bellingham Business Journal

UW Student Home Invasion 911 Calls Show Terror
ABC News

Award-winning journalist, author to speak at WWU winter commencement
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KGMI 790-AM

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The Gainesville (Fla.) Sun

Twitter updates

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Western Washington U
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Blee19 Winter volume of @theplanetmag is now available @WWU. Check out this one of a kind undergrad publication.
18 hours ago · reply · retweet · favorite

WWU We're proud of Andy, too. Thanks for posting! RT @bungalowbling St Patty's Day at WWU, aka Andrew's College Graduation! nblo.gs/vhMrX
yesterday · reply · retweet · favorite

ezynski A lot of friends are #graduating from college today. @WWU has a lot to be proud of; as do we all.
yesterday · reply · retweet · favorite

petersm0 Hell yeah! Congraduations! RT @JaminAgosti: Officially a graduate and #WWU alum! #TweetingWhileGraduating

yesterday · reply · retweet · favorite

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Att-5A

From: news@wwu.edu
To: David Sherwood
Subject: Western Today for Thursday, Aug. 18, 2011
Date: Thursday, August 18, 2011 10:36:53 AM

Western Today for Thursday, Aug. 18, 2011

On campus

The Academic Instructional Center on the south end of campus, the newest building at Western Washington University to achieve LEED certification, is one reason Western is ranked 14th in the country on the latest 'Cool Schools' list from Sierra Magazine. In the background is the Environmental Studies Building, home to Huxley College of the Environment. File photo by Matthew Anderson | WWU

Western is 14th on Sierra Club's annual list of 'Coolest Schools'

Western Washington University has been ranked 14th in the nation in the Sierra Club's fifth annual "Coolest Schools" ranking of colleges around the country helping to solve climate issues and operate sustainably.

In the spotlight

University, PSE of WWU reach tentative labor agreement

The Public School Employees Chapter of Western Washington University and the University have concluded negotiations for a collective bargaining agreement covering a number of the University's classified employees.

In the media

Alaska on the page: New and notable titles
Juneau Empire

3 WA universities make Sierra Magazine green list
The News Tribune

Mobile voicemail: Why 'saved' isn't really saved, and your messages aren't really yours
GeekWire

Gay-rights activists, faith-based nonprofits waging online culture war
The Denver Post

Calming those freshman fears
The (Everett) Weekly Herald

Campus news

East College Way to close Aug. 21 for repaving

Aug. 18, 19 Board of Trustees meetings to be audiocast live online

Shepard to speak Aug. 24 at Bellingham City Club

Western seeks feeback on stormwater management program

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SPILL RESPONSE PLAN

What is the Issue?

Accidental spills of petroleum products, common household cleaning products, hazardous materials or hazardous waste, can have negative impacts on the environment and public health. Other materials might include admixtures, cleaning solutions, paint, acid or alkaline solutions, antifreeze, and other liquid materials that have potential environmental concern. Spill prevention and good housekeeping practices are key steps to prevent spills from happening and when they do having the knowledge and response materials to know what to do when a spill does occur.

Regulatory Requirements

In Washington State, The Department of Ecology (DoE) is the agency that regulates the requirements for water quality standards and Stormwater Management. The water quality standards include: Chapter 173-200 WAC, Water Quality Standards for Ground Waters of the State of Washington; Chapter 173-201A, Water Quality Standards for Surface Waters of the State of Washington; and Chapter 173-204, Sediment Management Standards.

As a Secondary MS4 Stormwater permittee to the City of Bellingham, Western Washington University is required to ensure that hazardous or flammable waste is not allowed to go into the storm drain systems. General use products, hazardous waste, petroleum products, and other hazardous materials must be kept in proper labeled containers and stored in such a manner and location that if the container is ruptured or develops a leak, that the contents will not discharge, flow, be washed, or fall into a stormwater system that drains into surface water or ground water.

Spill Response Plans are specifically required under the permit requirements. The plan must identify the process to contact key personnel and agencies, the materials of concern, spill prevention measures, and spill response procedures. Spill Response Plans should clearly state how to stop the source of the spill, how to contain and clean up the spill, how to dispose of contaminated materials, and how to train personnel to prevent and control future spills.

This plan will prove valuable in minimizing the costs and efforts of cleaning up an uncontrolled release of hazardous materials to the environment.

General Information

Refer to the complete text of Western Washington University oil spill plan **(draft)**: **Emergency Support Function 10, Appendix 1, Oil Spill Prevention Control and Countermeasure Plan, For, Western Washington University**. This *Prevention, Control*, *and Countermeasure Plan* is as regulated under 40 CFR 112.7

The following types of oil containers are included in this regulation:

- Emergency Generators
- Virgin and Waste Oil Containers 55 gallons or greater
- Electric Transformers
- Animal Fats and Vegetable Oils (as in 40 CFR 112.12)
- 55 gallon drum(s) of gasoline

Flammable Liquids

Of specific concerns are any flammable liquids that may get into the storm drainage systems.

In any situation where flammable liquids get into the stormwater system, calls ***must be immediately*** made to the following agencies.

Contact List

All spills of oil or petroleum products into navigable waters (storm drains fall into this category) must be **immediately reported** by the spiller to the National Response Center (NRC). The NRC will contact appropriate local United States Coast Guard or Environmental Protection Agency (EPA) offices. Notifying state offices does not relieve the spiller from federal requirements to notify the NRC.

ALL OF THE FOLLOWING AGENCIES <u>MUST BE CALLED</u> WHEN ANY HAZARDOUS MATERIAL FLOWS INTO A STORMWATER SYSTEM REGARDLESS OF HOW SMALL THE QUANTITY

National Response Center (NRC)

1-800-424-8802 Toll Free
1-202-267-2675 Toll Call

Or online @ http://www.nrc.uscg.mil/nrchp.html

Be prepared to answer the following:

- Where is the spill?
- What spilled?
- Is it a flammable or hazardous substance?
- How much spilled?
- How concentrated is the spilled material?
- Who spilled the material?
- Is anyone cleaning up the spill?
- Are there resource damages (e.g. dead fish or oiled birds)?
- Who is reporting the spill?
- How can we get back to you?

The Washington Emergency Management Division (EMD) 24-hour Emergency Spill Response

1-800-258-5990 or 1-800-OILS-911

The Washington State Department of Ecology 24-hour Emergency Spill Response Northwest Office, Bellevue:
1-425-649-7000

Bellingham Fire Department
911

City of Bellingham Stormwater Hotline @
360-778-7979 to report any type of pollution.

If the nature of the spill is such that additional containment effort is needed, the following contacts are provided:

Company	Location	Phone Number	Contact Names
BAI ENVIRONMENTAL SERVICES	Lynden	(360)354-1134	info@bai-environmental.com
Clean Harbors		800.645.8265 (800.OIL.TANK)	http://www.cleanharbors.com/
NRC Environmental Services	Kent	800-337-7455 (1-800-33-SPILL (77455) 253-872-8988 Fax: 253-872-8989	www.nrces.com Keith Gehring kgehring@nrces.com
Western States Environmental, Inc.	Auburn	(253) 520-3995 (206)391-2825	***contact@spillcleanup.com***

Equipment available to address a spill: See attached list below for spill response materials across campus.

- All Facilities Management vehicles are labeled and equipped with a portable spill cleanup kit
- Outdoor Maintenance mowers, lifts, backhoe, dump truck and other equipment that have onboard hydraulic system also have spill kits onboard.
- Two sizeable spill response kits on wheels are located on the main campus, one at Facilities Management Maintenance Warehouse (MW) and one in our Science, Math and Technology Education (SMATE) facility main mechanical room (Room 101 @ south end of the facility).
- One large spill response kit on wheels is located at the Shannon Point Marine Center in Anacortes, Washington. It is located under the overhang of the main 3 story research building.

- “Kitty litter” dry sweep absorbent is stored in bulk 50 lb bags @ Facilities Managements Fleet Maintenance Garage on the loft.
- All storm drains within the Facilities Management maintenance compound have storm drain covers available specifically sized for use in isolating and preventing spilled materials from entering the storm drain. The covers are clearly marked and are stored in PVC pipe with end caps.

Spill Response Measures contact list:

- Contact your supervisor immediately
- Contact WWU Work Control Center @ 360-650-3420 to mobilize employees to assist in containing and cleanup of spill.
- Contact WWU Environmental Health & Safety Office @ 360-650-3064. EHS will implement their spill response protocol.
- Follow WWU protocol for notification if any hazardous waste or flammable substance has gone into a storm system
- National Response Center @ 1-800-424-8802
- Washington Emergency Management Division @ 1-800-258-5990
- City Of Bellingham Stormwater Hotline @ 360-778-7979
- Bellingham Fire Department call 911 if spill is flammable or hazardous
- Notify Department Of Ecology (DOE) @ 360-715-5200, DOE Spill Response Team

Basic BMP’s

Western Washington University has a published list of Best Management Practices for both Operation and Source Control BMP’s. Ongoing efforts are to take this list and reduce them to very specific practices most likely to happen on campus and to produce small laminated “flashcards” that Facilities Management and other personnel on campus can have for quick reference for spill response.

Training: Western Washington University’s Environmental Health and Safety Office (EHS) will train campus employees for stormwater response including where spill response kits are located on campus and at the Shannon Point Marine Center in Anacortes, Washington.

Employees will learn that even if they aren’t the person that made the spill, that as employees of the university, they are compelled to act, notify their supervisors who in kind will begin the campus notification process that will marshal the necessary materials and personnel to respond to a spill. Stormwater Management now is an annual training requirement for all Facilities Management craft and shop personnel. We expect that our trained employees will take appropriate and immediate action when they observe a spill to do the right thing.

Vehicles receive scheduled maintenance inspections to reduce spills. Preventative maintenance reduces the quantity and frequency of leaking vehicles and equipment. Hydraulic oil, transmission oil, and engine oil leaks from vehicles and equipment are repaired as soon as the discrepancy is noted. Drip pans are required while working on hydraulic fluid systems or when a leak is being repaired.

Training records and the types of training are maintained by WWU Environmental Health and Safety office.

Covered Containment: Barrels and other containers are stored in covered areas with impervious floor and secondary berm where required. Materials are shipped off campus to the appropriate waste site depending on the makeup of the recovered waste. EHS is responsible for the storing and shipping of any hazardous substance form campus.

Covered Temporary Storage: The Outdoor Maintenance Department has covered areas where collected materials from spill cleanup can be stored until there are shipped away from campus. Secondary containment is set up in covered equipment storage bays. Typically small spills require less cleanup therefore the material generated does not warrant immediate transport to a permanent disposal site.

BMP Instructions: Information on proper handling procedures and storage requirements are listed in the BMP's.

BASIC SPILL RESPONSE PLAN ACTIONS

It is important that all employees be trained to carry out the spill response actions set forth below, and that each employee be familiar with the site drawing that shows where hazardous materials/substances, spill kit(s), and all potentially susceptible and vulnerable storm drains/catch basins are located.

Response Actions in Case of a Spill:

1) If possible, shut off or isolate the source of the spill immediately.

2) Notify spill contact individual & other emergency contact(s): supervisor, manager, Work Control Center, EHS, etc.

3) Use appropriate personal protective equipment depending on the spill material.

4) Cover/block any drains/catch basins in the spill area to prevent material from entering into the stormwater system.

5) Use absorbent materials, such as absorbent pads, floor sweeping compound or kitty litter to contain spills that are relatively small in nature and where the spilled chemical and its hazardous properties have been properly identified and assessed.

6) If possible, clean up the spill using absorbent materials. Collect these absorbent materials and treat as hazardous waste.

7) If the spill is large or otherwise uncontrollable, or poses a potential immediate hazard to human health and safety, call Emergency
Response Agencies.

Contact list and phone numbers

Name	Phone Number

WWU (Facility) Oil Spill Response Coordinator	**(360)650-6512**
National Response Center	**(800)424-8802**
Washington Emergency Management Division:	**(800)258-5990 OR** **(800)OILS-911**
Department of Ecology, Northwest Region	**(425)649-7000**
Bellingham Fire Department	**911**
WWU Environmental Health & Safety	**(360)650-3064**
WWU Viking Union Lakewood (Lake Whatcom) Manager	**360-650-2900**
WWU Facilities Management Dispatch	**(360)650-3420**
WWU University Residences and Aramark	**(360)650-7322**
WWU University Police	**(360)650-3555**

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Table 1
Emergency Generators at WWU

PM ITEM	BUILDING	LOCATION	DESCRIPTION	FUEL CAP (gal)	RATED KW	CONNECTED LOADS	* DIRECTION OF FLOW	INDOORS / OUTDOORS	Secondary containment (If so, what type?)	Security
ACSGEN	Administrative Services Building A	NW corner of buildings parking lot	Standby Gen Set	474	275		SW to SE	INDOORS	No	Fenced, locked
BISGEN	Biology	Cooling Tower on Steam Plant Roof	Emergency Gen Set	185	150	Emergency Lights, Fire Alarms	UNIFORM	OUTDOORS	Not really, Curbing	Yes
BHSGEN	Bond Hall	Off loading dock, Room 101	Standby Generator	240	200		UNIFORM	OUTDOORS	Yes - Double walled tank	Yes
CBSGEN	Chemistry Building	Cooling Tower on Steam Plant Roof		150	175		UNIFORM	INDOORS	Not really, Curbing	Yes
CFSGEN	Communications Facility	Room 52A	Standby Generator, 125kw	275	125		UNIFORM	INDOORS	Yes - Double walled tank	Yes
SVSGEN	Campus Recreation	Gated courtyard on the SW end of all weather sports field outside room SV 159	Campus Rec Center	300	200		W	OUTDOORS	Yes - Double walled tank	Yes - Gate available to lock area, but hardly used.
CSSGEN	Campus Services Facility	North end of the secured parking lot behind secured gate	Standby Generator Set	540	300	Emergency Lights, Fire Alarms	S to SW	OUTDOORS	No. Leak detector on tank. Housing unit is not sealed to prevent leaks	Yes
ESSGEN	Environmental Studies Building	Mechanical Room 7, Room 700A		175	60			INDOORS	No	Yes
FASGEN	Fairhaven Administration	Room 114 (MR1) of Fairhaven Academic	Emergency Generator	60	45	Emergency Lights, Fire Alarms	UNIFORM	INDOORS	No	Yes
HHSGEN	Haggard Hall	Room 103	Standby Generator Set	90	30	Emergency Lights, Fire Alarms, Passenger Elevator	UNIFORM	INDOORS	No	Yes
PPMGEN	Mobile – Stored at Physical Plant		Mobile Generator	480	300		UNIFORM	OUTDOORS	No	Yes

PPSGEN	Physical Plant	South side by Paint Shop	Gen Set At Physical Plant	195	150	Entire Building	S	OUTDOORS	No	Yes
SLSGEN	SMATE	Room 105A	Generator Set	55	30		UNIFORM	INDOORS	No	Yes
SPSGEN	Steam Plant	Cooling tower on Steam Plant roof	Steam Plant Gen Set	225	150	Boiler #5 & Controls	UNIFORM	OUTDOORS	Not really, Curbing	Yes
VUCSGEN	Viking Union	Northern most end of PA near ramped service road to VU and South of Book Store	Viking Complex Standby Generator	110	100	Emergency Lights, Fire Alarms, Plaza Cash Security, KUGS	UNIFORM	INDOORS	Yes - Double walled tank	Yes
			[VA,VU,BK]			radio station		INDOORS		
13510E	Whacker (mobile generator stored at Physical Plant	Do not include? Specs say that Whacker has 50 gal capacity	Mobile (Small Trailered) Generator	50	75			OUTDOORS		Yes
	Shannon Point Marine Center	N/A	Emergency Generator			N/A	N/A	N/A	N/A	
Main			**TOTAL VOLUME**	**3437**						

Table 2

Oil Spill Procedural Checklist

In the event of a spill or accidental release of fuel oil or other combustible material on premises, WWU personnel follow the procedural checklist outlined below. An oil spill may occur during fueling of emergency generators or from the emergency generator itself.

For an Incidental Oil Spill:

An incidental spill is a minor spill that can be contained with materials and personnel on hand, with very low risk of drainage to a storm drain system or soil. Procedures to follow in response to an incidental spill are as follows:

Checklist for First Responding Department (Department who owns material/oil)

- ☐ Stop the spill source.
- ☐ Shut off any ignition sources.
- ☐ Contact WWU EHS at 360-650-3064 during office hours or at x3911 after hours (via Campus Police)
- ☐ Initiate containment and cleanup, concentrating on avoiding any storm drains nearby.
- ☐ Package the waste in a 5 gallon bucket or other secure packaging. Label the waste generated from the cleanup with a waste label.
- ☐ Fax or mail in a Hazardous Waste/ Surplus Chemical Collection Request Form to Environmental Health & Safety (EHS) so that EHS can collect your materials.
- ☐ If you have any questions, or need more cleanup materials, call WWU EHS at 360-650-3064.

For a Minor Oil Spill:

A minor spill is a spill large enough that it will likely flow to local curbed areas (without storm drain inlets) or soil. An outside contractor will typically be needed to clean up the large spill and contaminated areas. Therefore EH&S must be contacted as an intermediary and to help with spill assessment and response. However, no oil will reach nearby waterways, so the spill does not require notification of the National Response Center and other water quality authorities. Procedures to follow in response to a minor spill are as follows:

Checklist for First Responding Department (Department who owns material/oil)

- ☐ Contact WWU EHS at 360-650-3064 during office hours or at x3911 after hours (via Campus Police)
- ☐ Stop the spill source as possible with plug and patch or place absorbent directly under leak. Locations of absorbent material are listed below.
- ☐ Shut off any ignition sources.

- ☐ Use oil containment equipment (e.g. socks, booms, plywood, sandbags, drain plugs, and tape) to prevent spill from running into storm and sewer drains. Keep oil confined if it runs over soil.
- ☐ Use oil absorbing equipment to absorb the spill on the surface as much as possible.
- ☐ Utilize non-sparking tools and an empty drum for disposal, clean up and pick up all spill fuel oil and oil-soaked absorbent material and place it in the drum for later disposal. Secure lid and ring over the drum to contain any fuel vapors.
- ☐ If the nature of the spill is such that additional containment effort is needed, the following contacts are provided:
- ☐ Stand by to help with spill assessment and cleanup.
- ☐ Arrange for further clean up, packing and disposal of all the wastes generated by the spill.

For a Major Oil Spill:

A major spill has some risk of reaching navigable waters via storm drains or overland flow. It requires fast response from an outside contractor for containment and cleanup, as well as notification of the National Response Center and other water quality authorities.

Note that a spill small in volume can qualify as a "major" spill. For example, a spill of two gallons of oil at Viking Union Lakewood might drain directly to Lake Whatcom; if there is any real risk of it doing so, it qualifies as a "major" spill. The National Response Center must be notified (by EH&S) if there is any visible oil sheen on any local natural body of water, i.e. stream, river or lake. Procedures to follow in response to a major spill are as follows:

Checklist for First Responding Department (Department who owns material/oil)

- ☐ Contact WWU EHS at 360-650-3064 during office hours or at x3911 after hours (via Campus Police.)
- ☐ Stop the spill source. Locations of absorbent material are listed below.
- ☐ Shut off any ignition sources.
- ☐ Use oil containment equipment (e.g. plywood, sandbags, drain plugs, and tape) to prevent spill from running into storm and sewer drains or into soil.
- ☐ Use oil absorbing equipment to absorb the spill on the surface as much as possible.
- ☐ Utilize non-sparking tools and an empty drum for disposal, clean up and pick up all spill fuel oil and oil-soaked absorbent material and place it in the drum for later disposal. Secure lid and ring over the drum to contain any fuel vapors.
- ☐ If the nature of the spill is such that additional containment effort is needed, the following contacts are provided:
- ☐ Stand by to help with spill assessment, cleanup and notification of authorities (or if it is a spill that is small in volume, refer to your incidental spill response protocol.)

Company	Location	Phone Number	Contact Names
BAI ENVIRONMENTAL SERVICES	Lynden	(360)354-1134	info@bai-environmental.com
Clean Harbors		800.645.8265 (800.OIL.TANK)	http://www.cleanharbors.com/
NRC Environmental Services	Kent	800-337-7455 (1-800-33-SPILL (77455) 253-872-8988 Fax: 253-872-8989	www.nrces.com Keith Gehring kgehring@nrces.com
Western States Environmental, Inc.	Auburn	(253) 520-3995 (206)391-2825	*contact@spillcleanup.com*

WWU Spill Response Material Storage Locations

Locations of Oil Absorbent Material and Spill Equipment	
Location	**Type of Absorbent**
FM Fueling Station	Drain cover, spill pads, spill booms
FM inner fenced compound yard catch basins	Drain covers @ every storm drain catch basin
FM Maintenance Warehouse (MW) Look for “SPILL KIT INSIDE” building placard.	Large mobile spill kit on wheels. (1) XL Tote Combo with 8" Wheel Set, (200) Pads, (18) Large Socks, (60) Medium Socks, (1) 1.5 Cubic Ft Bag ENSORB(R), (1) Pack Wipers, (20) Disposal Bags, (20) Ties, (1) Emergency Response Guide, (4) Nitrile Gloves, (2) Goggles, (1) Instructions, (1) MSDS"
FM Maintenance Garage	Spill booms, main kitty litter (approx 35 bags) storage in loft

Weight Room along service road behind Wade King Student Recreation Center	Spill pads, spill booms
SMATE (Science, Math and Technology Education) Look for “SPILL KIT INSIDE” building placard.	Large mobile spill kit on wheels. (1) XL Tote Combo with 8" Wheel Set, (200) Pads, (18) Large Socks, (60) Medium Socks, (1) 1.5 Cubic Ft Bag ENSORB(R), (1) Pack Wipers, (20) Disposal Bags, (20) Ties, (1) Emergency Response Guide, (4) Nitrile Gloves, (2) Goggles, (1) Instructions, (1) MSDS"
FM Tank Truck with 100 gallon fuel tank	Spill kit
FM vehicles, any hydraulic actuated or propelled Grounds Equipment	Spill kit is in every FM vehicle and Grounds vehicle where fluids may be present. Gallons Sorbed per Package 7, Includes(15) 15 x 19" Pads, (3) 3" x 4 ft. SOCs, (1) Pair Nitrile Gloves, (1) Disposal Bag, (1) Goggles, (1) Instruction Sheet
Shannon Point Marine Center – Mechanical Room 1 of ME Building and in shed behind Maintenance Mechanic onsite quarters	Spill booms, absorbent materials and pads, 20 gallons and 60 gallons waste drums
Shannon Point Marine Center	Large mobile spill kit on wheels. (1) XL Tote Combo with 8" Wheel Set, (200) Pads, (18) Large Socks, (60) Medium Socks, (1) 1.5 Cubic Ft Bag ENSORB(R), (1) Pack Wipers, (20) Disposal Bags, (20) Ties, (1) Emergency Response Guide, (4) Nitrile Gloves, (2) Goggles, (1) Instructions, (1) MSDS"
EHS Department - Env. Studies Bldg. Rm 72	Spill pads, spill booms, spill pillows, Plug N Patch Kit in Cabinet 4, chemical sorbent, oil sorbent, neutralizing sorbent, hazmat bags
EHS Department – ET Haz Mat Storage Shed:	85 gallon salvage drum, spill pads, spill booms,
EHS Department – Chemistry Building Waste Room	
EHS Department – Biology Building Waste Room	Spill pad, spill booms, hazmat bags & ties
EHS Department – Physical Plant Connex	30 gallon poly overpack drums, 55 gallon metal drums
Locations of Manual and Mechanical Transfer Pumps	
FM Outdoor Maintenance – Facilities Management	
FM Plumbing Services – Facilities Management	
EHS – Chemistry Building Waste Room, Biology Building Waste Room, Connex – Facilities Management	

Checklist for Facilities Management: Reporting and Follow Up

- ☐ Assist in cording off area.
- ☐ Provide personal protective equipment (PPE), containment, and materials.
- ☐ Work with Environmental Health & Safety (EHS) on containment and cleanup.

Checklist for University Police: Reporting and Follow Up

- ☐ Regulate traffic.
- ☐ Assist in cordoning off area.
- ☐ Arrange medical assistance.
- ☐ Assist in evacuation if necessary.
- ☐ Investigate.

EHS or Supervisory Reporting and Follow-up

- ☐ Arrange for further clean up, packing and disposal of all the wastes generated by the spill.
- ☐ Assess personal protective equipment (PPE).
- ☐ Ensure use of personal protective equipment (PPE).
- ☐ Complete the WWU Oil Spill/ Leak Report in Table 3 of ESF 10 Appendix 1 Oil Spill of the Emergency Management Plan.
- ☐ For flammable material, monitor vapor concentrations.
- ☐ From Hazardous Materials Response Guidebook, determine size of area to cordon off and possible evacuation.
- ☐ Evaluate affected personnel for possible medical response.
- ☐ Investigate the source and causes of the incident and determine the best permanent corrective actions to avoid reoccurrence of the incident.
- ☐ Critique the spill response efforts and revise associated procedures.
- ☐ Replenish or replace any spill kit(s), tools or emergency response items spent or lost during the spill response incident.

Table 3

Western Washington University
Oil Spill/Leak Report

Report received from:_____

Name _____ Date reported _____
Address _____ Time reported _____
Telephone _____ Received by _____
Location of Oil Spill/Leak _____

Address _____
Phone of the facility:_____
Description of Problem:_____
_____
_____

1. Date and Time of discharge____/____/_____ _____AM/PM
2. Type of material discharged _____ unknown ☐
3. Estimates of total quantity discharged_____
4. Source of discharge_____
5. Description of all affected media_____
6. Cause of the discharge_____
7. Damages or injuries caused by the discharge _____
   _____
8. Actions being used to stop, remove, and mitigate the effects of the discharge
   _____
   _____
9. Is an evacuation needed? ☐ Yes ☐No
10. Names of individuals and/ or organizations who have also been contacted
    _____
    _____
    _____

Action Required	Phone	Date	Time
1. Dispatch Facilities Management staff	650-3420	_____	_____
2. Dispatch Environmental Health & Safety	650-3064	_____	_____
3. Call Bellingham Fire Department	911	_____	_____
4. Call Department of Ecology (as applicable for Reportable Quantity)	(425) 649-7000	_____	_____

Completed by:

Table 5

WWU Transformers

PM #	BUILDING	LOCATION	FUEL CAP (gal)	FLUID TYPE	DIRECTION OF FLOW *	INSIDE/ OUTSIDE	NOTES	SECONDARY CONTAINMENT	SECURITY
AHTRAN1	Arntzen Hall	C13A	195	rtemp oil	LEVEL	Inside	Located on concrete floor	Yes	Yes
BWTRAN1	Birnam Woods	West side of rec room	68	transformer oil	S	Outside	On gravel	No	Yes
BWTRAN2	Birnam Woods	East side of Building 5	68	transformer oil	SE	Outside	On concrete slab	No	Yes
BWTRAN3	Birnam Woods	West side of Building 7	68	transformer oil	S	Outside	On concrete slab with drain	No	Yes
BWTRAN4	Birnam Woods	West side of Building 1	68	transformer oil	SE	Outside	On concrete slab	No	Yes
CVTRAN	Carver Gym	Courtyard near Dance Rm	294	transformer oil	S	Outside	On concrete slab	No	Yes
EHTRAN	Edens Hall	Southwest side of building	196	transformer oil	LEVEL	Outside	On concrete	No	Yes
UTHVSW87	Edens Hall switch	Southwest side of building	172	transformer oil	LEVEL	Outside	Next to transformer on pad	No	Yes
ETTRAN	Engineering Tech	Room 163	260	transformer oil	LEVEL	Inside	On concrete	Yes	Yes
ESTRAN1	Environmental studies	Room 03	285	silicone	LEVEL	Inside	On concrete	Yes	Yes
FATRAN1	Fairhaven Acad	Room ER-1	110	silicone	LEVEL	Inside	On concrete	Yes	Yes
FCTRAN1	Fairhaven #1	Between Stack 1 and 2	68	transformer oil	SW	Outside	On concrete with drain	No	Yes
FCTRAN2	Fairhaven #2	Between Stack 3 and 4	68	transformer oil	W	Outside	On concrete with drain	No	Yes
FCTRAN3	Fairhaven #3	Between Stack 5 and 6	68	transformer oil	W	Outside	On concrete with drain	No	Yes
FCTRAN4	Fairhaven #4	Next to Stack 9	68	transformer oil	LEVEL	Outside	On concrete with drain	No	Yes
FCTRAN5	Fairhaven #5	Next to Stack 11	68	transformer oil	SE	Outside	On concrete with drain	No	Yes
HITRAN	Highland Lounge	Located on North side	133	transformer oil	N	Outside	On concrete slab	No	Yes
MCTRAN1	Marine center lab	South west side of building	190	transformer oil	N	Outside	On grass	No	Yes
MCTRAN2	Marine center Housing	North side of housing	107	transformer oil	N	Outside	On grass	No	Yes
MCTRAN3	Marine center Utility	West side of main road b/w housing and lab	180	transformer oil	W	Outside	On grass	No	Yes
SF-MC-H-2	Marine center Switch	At the entrance of the housing driveway	363	transformer oil	W	Outside	On grass	No	Yes
NATRAN	Nash Hall	Rm 9 - Electrical Vault	75	transformer oil	LEVEL	Inside	On concrete floor	Yes	Yes
NATRAN	Nash Hall	Rm 9 - Electrical Vault	75	transformer oil	LEVEL	Inside	On concrete floor	Yes	Yes
NATRAN	Nash Hall	Rm 9 - Electrical Vault	75	transformer oil	LEVEL	Inside	On concrete floor	Yes	Yes
OMTRAN1	Old Main South	Rm 104B - Electrical Vault	330	transformer oil	E	Inside	On concrete slab	Yes	Yes
OMTRAN2	Old Main North	Rm 104B - Electrical	210	transformer oil	NW	Inside	On concrete slab	Yes	Yes

		Vault							
PHTRAN	Parks Hall	Under stairs b/w Pks and Hux	200	transformer oil	NW	Outside	On concrete slab	No	Yes
SPTRAN1	Steam Plant #1	NW side of Steam Plant	190	transformer oil	N	Outside	On concrete slab	No	Yes
SPTRAN2	Steam Plant #2	NW side of Steam Plant	1650	transformer oil	SE	Outside	On concrete slab	No	Yes
RXTRAN1	Ridgeway Transformer 1	Next to Beta and Gamma	200app	transformer oil	NE	Outside	On concrete slab	No	Yes
RXTRAN2	Ridgeway Transformer 2	Next to Kappa's Tennis Courts	200app	transformer oil	N	Outside	On concrete slab	No	Yes
RXTRAN3	Ridgeway Transformer 3	South side of Delta	200app	transformer oil	E	Outside	On concrete slab	No	Yes
RXTRAN4	Ridgeway Transformer 4	South side of Sigma	200app	transformer oil	E	Outside	On concrete slab	No	Yes
RXTRAN5	Ridgeway Transformer 5	Next to commons	200app	transformer oil	W	Outside	On concrete slab	No	Yes
RXTRAN6	Ridgeway Transformer 6	Next to Highland Lounge	200app	transformer oil	LEVEL	Outside	On concrete slab	No	Yes
TCTRAN	Tennis Courts	East of Tennis Courts by Softball Field		Mineral oil	S	Outside	On concrete slab	No	Yes

Table 6

Animal Fats and Vegetable Oils at WWU Dining Services

Building	Location	Description	Capacity (gal)	Direction of Flow	Secondary Containment
Viking Union	Loading Dock	Waste liquid fryer oil	100	NW	No
Ridgeway Commons	Loading Dock	Waste liquid fryer oil	100	NW	No
Fairhaven	Loading Dock	Waste liquid fryer oil	100	NE	No

Attachment A

PowerPoint of Emergency Generators

- Administrative Services
- Biology
- Bond Hall
- Chemistry
- Communications
- Campus Services
- Environmental Studies
- Fairhaven Academic
- Haggard Hall
- Physical Plant – Mobile Unit
- Physical Plant
- Science Math and Technology Education
- Steam Plant
- Wade King Student Recreation Center
- Viking Union / Performing Arts Center
- Shannon Point Marine Center

SELECT LOCATION

OR

TEXT TO NAVIGATE

WESTERN
WASHINGTON UNIVERSITY

An equal opportunity university

STORMWATER MANAGEMENT

From 1/1/2012 to 12/31/2012

Department	Name	Course Date	Expiration	Hours	Trainer	Notes
Associated Students						
	Ghuman, Jatinder	02-22-12		0.15	John K-S	
Campus Recreation						
	Lopez, Christina	04-18-12		0.25	John Kingsford-Smith	
Environmental Health & Safety						
	Sullivan, Susanna	02-15-12		0.15	John K-S	
Facilities Management - ALL						
	Ferrario, Joe	02-15-12		0.15	John K-S	
Facilities Management-Carpenter Shop						
	Beltman, Duane	02-15-12		0.15	John K-S	
	Bouma, Dennis	02-15-12		0.15	John K-S	
	Eastman, Kevin	02-15-12		0.15	John K-S	
	Evans, Craig	02-15-12		0.15	John K-S	
	McCaulley, Brian	02-15-12		0.15	John K-S	
	Parker, Paul	02-15-12		0.15	John K-S	
	Pike, Jack	02-15-12		0.15	John K-S	
	Schuette, Pat	02-22-12		0.15	John K-S	
Facilities Management-Electric Shop						
	Bisconer, Michael	02-15-12		0.15	John K-S	
	Crawford, Seth	02-15-12		0.15	John K-S	
	Ebinger, Shirley	02-15-12		0.15	John K-S	
	Escher, Fred	02-15-12		0.15	John K-S	
	Pelfrey, Eric	02-15-12		0.15	John K-S	
	Salkeld, Douglas	02-22-12		0.15	John K-S	
	Stilts, Scott	02-15-12		0.15	John K-S	
	Vermeulen, Gerald	02-15-12		0.15	John K-S	
Facilities Management-Maintenance - Academic						
	Bocek, Gary	02-15-12		0.15	John K-S	
	Carter, Markland	02-15-12		0.15	John K-S	
	Cunningham, Lawrence	02-15-12		0.15	John K-S	
	George, Charles	02-22-12		0.15	John K-S	
	Hungate, Lloyd	02-15-12		0.15	John K-S	
	MacCoy, Peter	02-15-12		0.15	John K-S	
	Miller, Dan	02-15-12		0.15	John K-S	
	Morris, Merrill	02-15-12		0.15	John K-S	
	Sutterman, Stephen	02-22-12		0.15	John K-S	
Facilites Management-Maintenance - Auxiliary						
	Andrews, David	02-15-12		0.15	John K-S	
	Clark, John W.	02-15-12		0.15	John K-S	
	Koenig, Rod	02-15-12		0.15	John K-S	

Department	Name	Course Date	Expiration	Hours	Trainer	Notes
	Leuenberger, Jeremy	02-22-12		0.15	John K-S	
	Porter, A., Richard	02-22-12		0.15	John K-S	
	Swenson, Mark	02-22-12		0.15	John K-S	
Facilities Management-Outdoor Maintenance						
	Bossert, Evan	02-22-12		0.15	John K-S	
	Castro, Enrique	02-22-12		0.15	John K-S	
	Cleveland, Paul	02-22-12		0.15	John K-S	
	Dedourek, Frank	02-22-12		0.15	John K-S	
	Elich, Peter	02-22-12		0.15	John K-S	
	Hendon, Tracy	02-22-12		0.15	John K-S	
	Hodge, Gary	02-22-12		0.15	John K-S	
	Holladay, Tyler	02-22-12		0.15	John K-S	
	Mason, Luke	02-22-12		0.15	John K-S	
	Preuss, Dawn	02-22-12		0.15	John K-S	
	Vallejo, William Scott	02-22-12		0.15	John K-S	
	Weeks, Dan	02-22-12		0.15	John K-S	
	Zeretzke, Heidi	02-22-12		0.15	John K-S	
Facilities Management-Paint Shop						
	Bailey, Jason	02-15-12		0.15	John K-S	
	Burdette, Deming	02-15-12		0.15	John K-S	
	Gray, Solon Glenn	02-15-12		0.15	John K-S	
	Loveday, Mel	02-15-12		0.15	John K-S	
	Miller, White	02-15-12		0.15	John K-S	
	Norsby, V., Danny	02-15-12		0.15	John K-S	
	Vanko, Steven	02-15-12		0.15	John K-S	
Facilities Management-Plumbing/Sheetmetal						
	Attolini, Joseph	02-15-12		0.15	John K-S	
	Carbone, Gennaro	02-15-12		0.15	John K-S	
	Harrison, William	02-15-12		0.15	John K-S	
	Morrow, Steve	02-15-12		0.15	John K-S	
	Springstead, Tim	02-15-12		0.15	John K-S	
	Sprinkle, Jason	02-15-12		0.15	John K-S	
	Streubel, Paul	02-15-12		0.15	John K-S	
	Waugh, Dennis	02-15-12		0.15	John K-S	
	Wilkinson, Wes	02-15-12		0.15	John K-S	
Facilities Management-Steam Plant						
	McGarrity, David	02-15-12		0.15	John K-S	
	Peacock, Kelly	02-15-12		0.15	John K-S	
Facilities Management-Technical Maintenance						
	Bruggeman, Larry	02-15-12		0.15	John K-S	
	Chervenock, Roger	02-22-12		0.15	John K-S	
	Hadley, Chris	02-15-12		0.15	John K-S	
	Huschka, Glenn	02-22-12		0.15	John K-S	
	Ivarra, Travis	02-15-12		0.15	John K-S	
	Smith, Kelly	02-15-12		0.15	John K-S	

Department	Name	Course Date	Expiration	Hours	Trainer	Notes
	Weaver, Lane A	02-15-12		0.15	John K-S	
	Wolf, Stan	02-15-12		0.15	John K-S	
Facilities Management-Work Control Center						
	Garfield, Sasha	02-22-12		0.15	John K-S	
Parking & Transportation Services						
	Duppenthaler, Steve	02-07-12		0.75	John Kingsford-Smith	
Student						
	English, Thomas	07-23-12		0.25	John Kingsford-Smith	
	Gilchrist, Morgan	04-18-12		0.25	John Kingsford-Smith	
	Gilchrist, Morgan	07-23-12		0.25	John Kingsford-Smith	
	Johnson, Jordan	07-18-12		0.2	Sue Sullivan	
	Phillips, Levi	07-23-12		0.25	John Kingsford-Smith	
	Smith, Kelly	07-23-12		0.25	John Kingsford-Smith	
	Upton, Aubree	07-23-12		0.25	John Kingsford-Smith	
University Residences						
	Anderson, Katharine	07-23-12		0.25	John Kingsford-Smith	
	Bailey, Greg	04-18-12		0.25	John Kingsford-Smith	
	Brooks, Jay	04-18-12		0.25	John Kingsford-Smith	
	Burden, David	04-18-12		0.25	John Kingsford-Smith	
	Fawbush, Cameron	07-23-12		0.25	John Kingsford-Smith	
	Floress, Daniel	04-18-12		0.25	John Kingsford-Smith	
	Hoang, Dean	04-18-12		0.25	John Kingsford-Smith	
	Holand, Jeff	07-23-12		0.25	John Kingsford-Smith	
	Jamalzada, Mohammad	04-18-12		0.25	John Kingsford-Smith	
	Julia, Teresita L	04-18-12		0.25	John Kingsford-Smith	
	Kalita, Krystyna	04-18-12		0.25	John Kingsford-Smith	
	Kneeshaw, Gorman	07-23-12		0.25	John Kingsford-Smith	
	Le, Huan	04-18-12		0.25	John Kingsford-Smith	

Department	Name	Course Date	Expiration	Hours	Trainer	Notes
	Lim, Nelia	04-18-12		0.25	John Kingsford-Smith	
	Magana, Dawn	04-18-12		0.25	John Kingsford-Smith	
	Mazza, Ron	04-18-12		0.25	John Kingsford-Smith	
	McDonald, Rhianna	07-23-12		0.25	John Kingsford-Smith	
	Mittelstaedt, Sarah	07-23-12		0.25	John Kingsford-Smith	
	Ngo, Nguyet	04-18-12		0.25	John Kingsford-Smith	
	Nguyen, Thuy	04-18-12		0.25	John Kingsford-Smith	
	Ona, Jose D	04-18-12		0.25	John Kingsford-Smith	
	Pardue, Phillip	07-23-12		0.25	John Kingsford-Smith	
	Pham, Hoa	04-18-12		0.25	John Kingsford-Smith	
	Pham, Hong	04-18-12		0.25	John Kingsford-Smith	
	Portillo, Shawni	04-18-12		0.25	John Kingsford-Smith	
	Postlewait, Michael	04-18-12		0.25	John Kingsford-Smith	
	Prewett, Creager	04-18-12		0.25	John Kingsford-Smith	
	Sliwa, Jennifer	07-23-12		0.25	John Kingsford-Smith	
	Weeks, Liza	04-18-12		0.25	John Kingsford-Smith	
	Whitacre, Emily	07-23-12		0.25	John Kingsford-Smith	
Vice President for Busines & Financial Affairs						
	Abbott, Sally	04-18-12		0.25	John Kingsford-Smith	

WESTERN
WASHINGTON UNIVERSITY

An equal opportunity university

STORMWATER MANAGEMENT/CHEMICAL SECURITY AWARENESS

From 1/1/2012 to 12/31/2012

Department	Name	Course Date	Expiration	Hours	Trainer	Notes
Environmental Health & Safety						
	Albin, Tyler	06-04-12		0.4	online online	
Facilities Management-Paint Shop						
	Cline, Jim	06-11-12		0.4	J-K Smith	
	Estrada, Demian	06-11-12		0.4	J-K Smith	
	Garcia, Dominick	06-11-12		0.4	J-K Smith	
	McLellan, Michaël	06-11-12		0.4	J-K Smith	
	Roe, Philip	06-11-12		0.4	J-K Smith	

Att-8

Storm Water Management Program

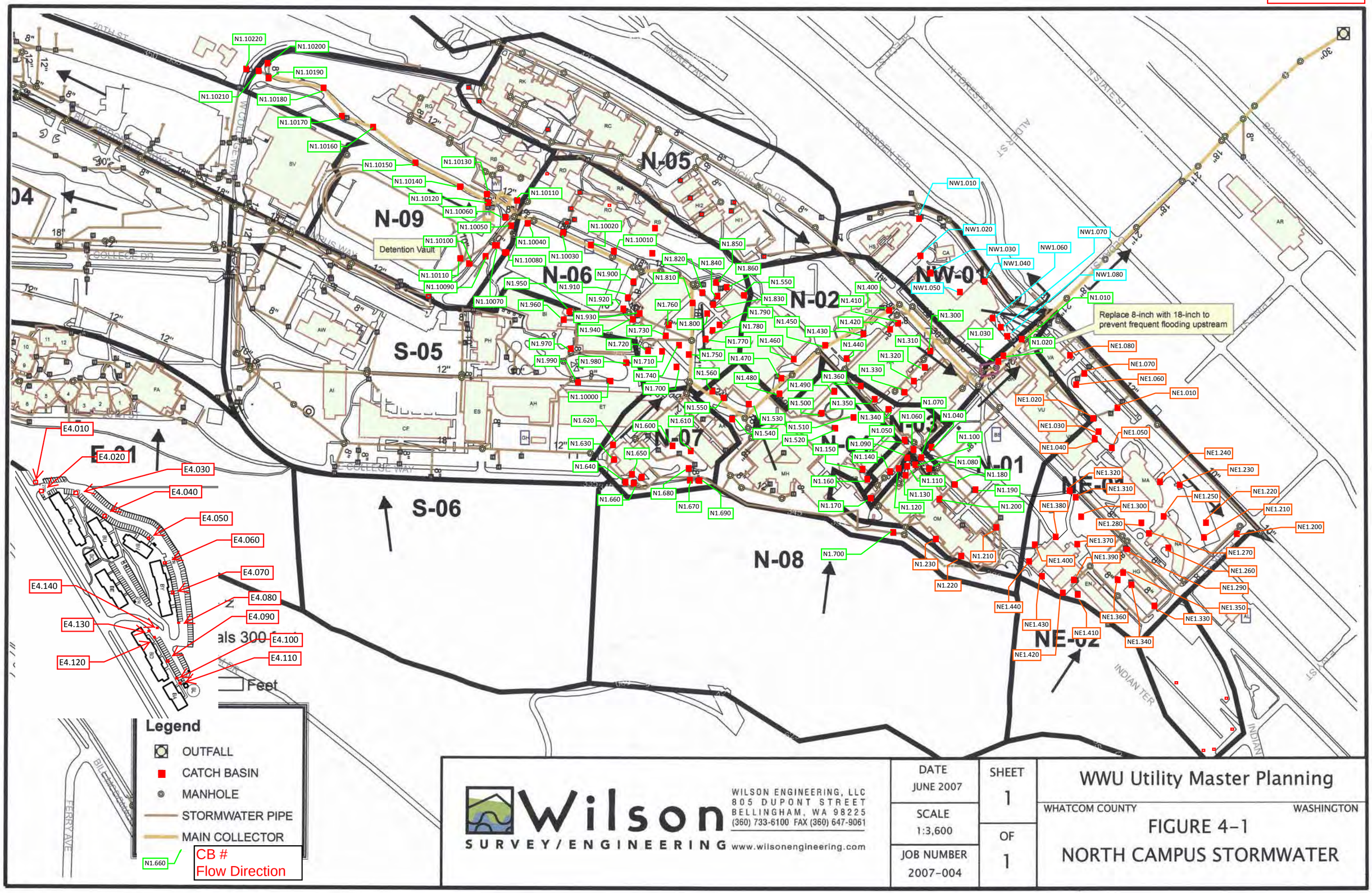
Beginning in 2007, Western Washington University, in concert with the Washington State Department of Ecology, implemented a Storm Water Management Program (SWMP) with the expressed purpose of reducing the discharge of pollutants from Western's storm water system to the maximum extent practicable and to protect the water quality of out-flowing waterways. Western's SWMP consists of the following components:

- Program Overview
- Implementation Schedule
- Program Documents
  - Program Policy - POL-5700.13
  - Program Procedure - PRO-5700.13A
  - Map of WWU Storm Water System
  - WWU Best Management Practices March 2011
- Annual Reports to the Department of Ecology
  - 2007 Annual Report
  - 2008 Planned Program Activities
  - 2008 Annual Report
  - 2009 Planned Program Activities
  - 2009 Annual Report
  - 2010 Planned Program Activities
  - 2010 Annual Report
  - 2011 Planned Program Activities
  - 2011 Annual Report
  - 2012 Planned Program Activities

Program contact information

- Western Washington University is interested in your comments and questions regarding its Storm Water Management Program. For program feedback, please contact Dave Sherwood, WWU Facilities Management, at 360-650-3727.

ATT-9



Wilson SURVEY/ENGINEERING

WILSON ENGINEERING, LLC
805 DUPONT STREET
BELLINGHAM, WA 98225
(360) 733-6100 FAX (360) 647-9061
www.wilsonengineering.com

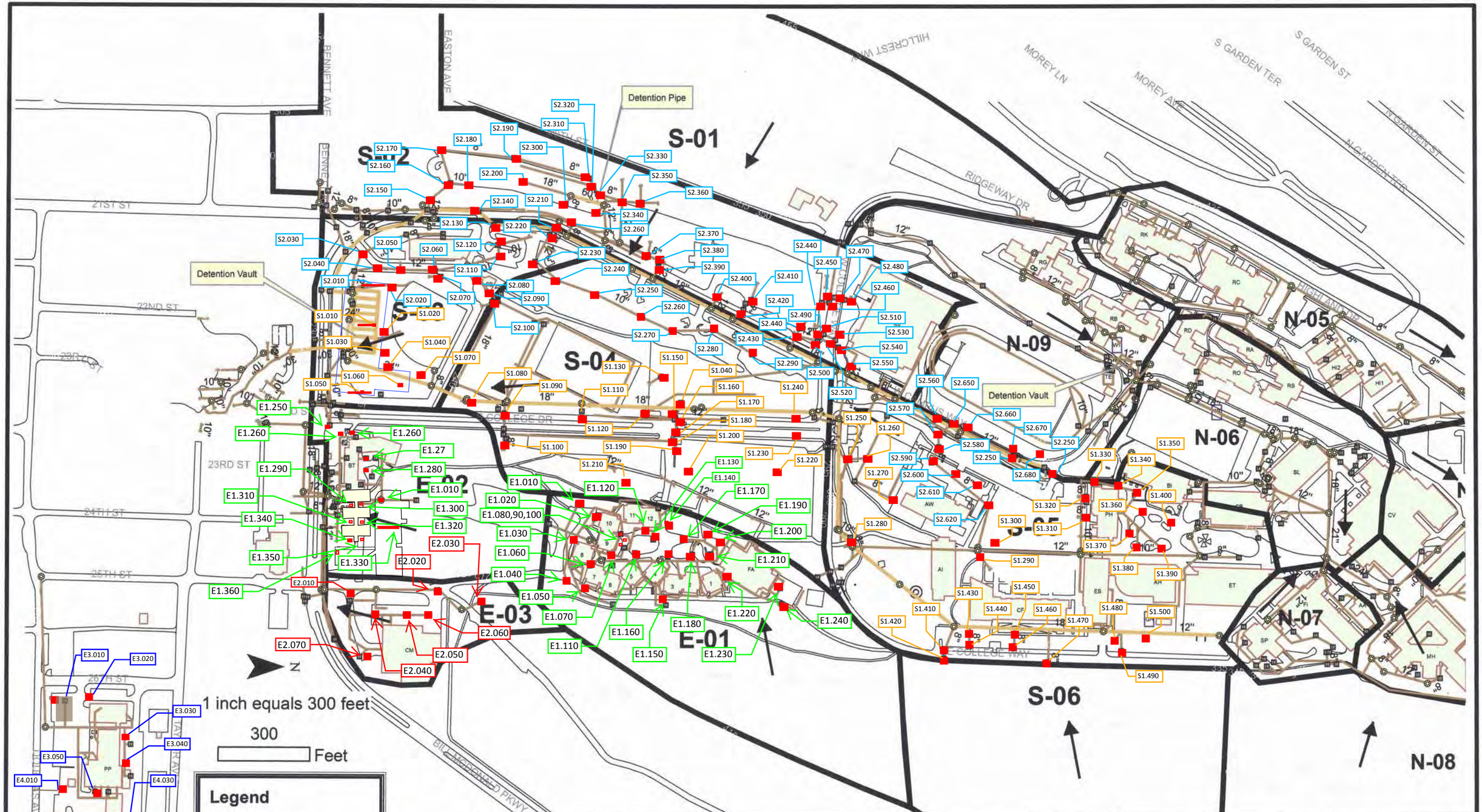
DATE	SHEET
JUNE 2007	1
SCALE 1:3,600	OF
JOB NUMBER 2007-004	1

WWU Utility Master Planning

WHATCOM COUNTY WASHINGTON

FIGURE 4-1

NORTH CAMPUS STORMWATER



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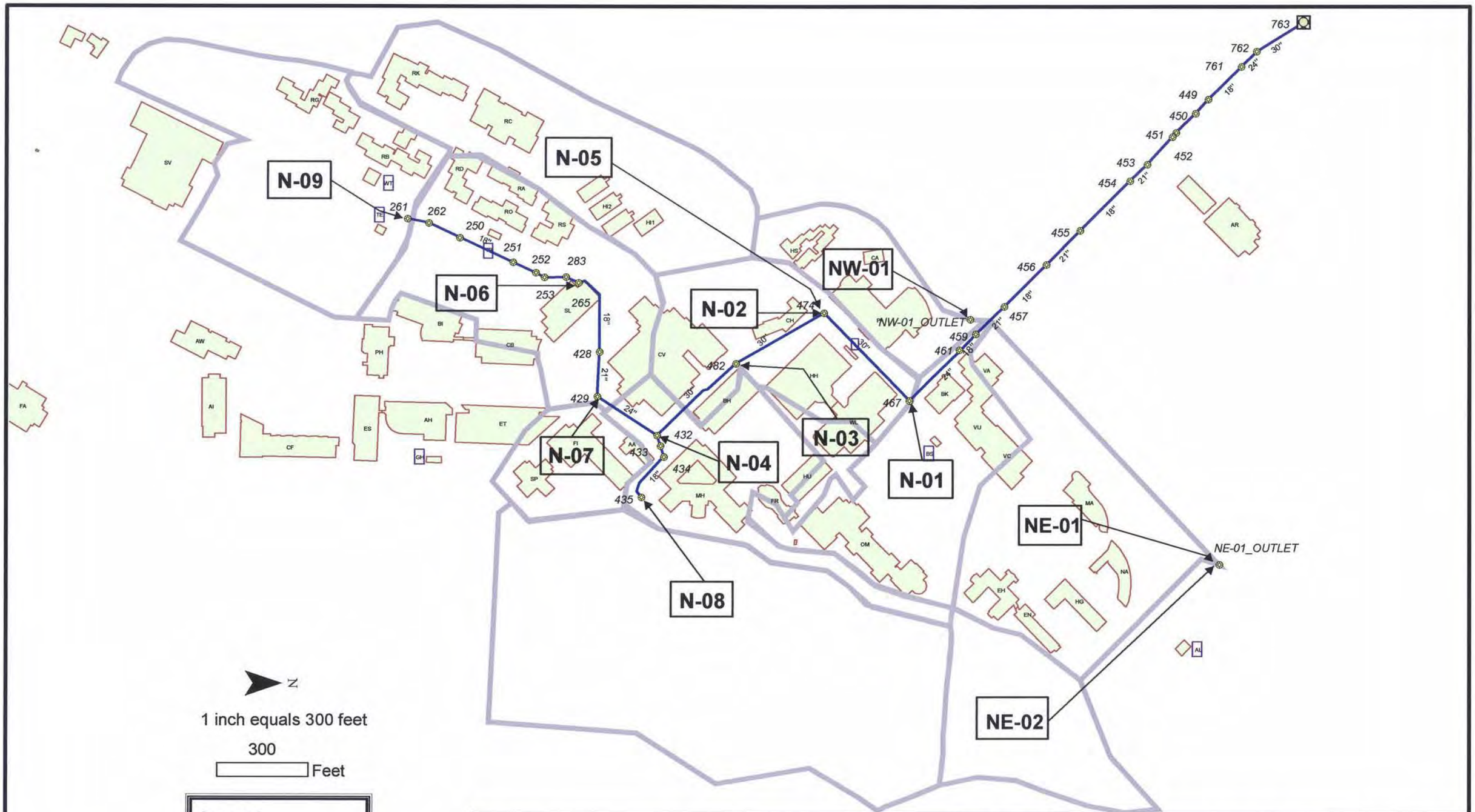
DATE	SHEET
JUNE 2007	1
SCALE 1:3,600	OF
JOB NUMBER 2007-004	1

WWU Utility Master Planning

WHATCOM COUNTY WASHINGTON

FIGURE 4-2

SOUTH CAMPUS STORMWATER



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DATE	SHEET
JUNE 2007	1
SCALE 1:3,600	OF
JOB NUMBER 2007-004	1

WWU Utility Master Planning

WHATCOM COUNTY WASHINGTON

FIGURE 4-3

SWMM MODEL SCHEMATIC

Stormwater Management

Environmental Health & Safety
January 2011

Storm Water Management

Recent issues with the WA Department of Ecology necessitate implementation of storm water management to prevent contamination of local drainage and water bodies.

Storm Water Management

All employees transporting chemicals must ensure that:
- the containers are closed and secured (tied, strapped in, or other means)
- in secondary containment (inside an extra container or vessel) so that leaks don't enter local water systems.
- A spill kit is present in vehicle

Storm Water Management

In the event of a spill or incident where chemicals or hazardous materials could enter a storm water system:
- **Immediately** notify EHS by calling 650-3064 or use FM radios if phones are not available.
- Cover or block access to storm drains if it can be done safely (use plastic present in spill kit)

Storm Water Management

- Every employee is required to prevent chemicals, particles, and even tap water from directly entering the city's storm water system
  - Tap water and sediments can be discharged onto lawns and other planted areas
- If you observe any potential issues, contact EHS or Work Control Center immediately

Storm Water Management

Excavation and other land disturbance requires special procedures to ensure that sediments do not enter the storm water systems.

Storm Water Management

Protecting the ecology of Whatcom County is part of EVERY WWU employee's responsibility!

Storm Water Management for Aramark Employees

Fall 2011

Storm Water Management

The WA Department of Ecology alerted Western of the need to implement required storm water management to prevent contamination of local drainage and water bodies.

Why do we care?

"Water is the most critical resource issue of our lifetime & our children's lifetime. The health of our waters is the principal measure of how we live on the land."

Luna Leopold
Chief Hydrologist USGS

Sanitary vs. Storm Water

- Almost all major cities including Bellingham treat sanitary wastewater before discharging it.
- In contrast, most storm water is discharged without treatment.
- At Western, storm water on part of the south campus receives detention and bio-filtration treatment but the north campus flows directly to Bellingham Bay.

Surface Runoff Before and After Development

Before *development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground.* **After** *conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease.*

Ground as a Filter

- Ground acts as a filter for sediments and many other potential contaminants, trapping them before they can reach our natural waters.
- This filtration protects aquatic organisms, fish and our drinking water.
- Tap water and sediments can be discharged onto lawns and other planted areas.

Impacts to Aquatic Environment

- Decrease Food-Chain Organisms
- Impair Feeding
- Clog Gills
- Reduce Photosynthesis
- Diminished Spawning
- Smothered Eggs and Fry

Sediments Stress Fish!
Chlorine in Potable Water Stresses Fish!

7

Western's Pollutant Sources

- Runoff from parking lots – heavy metals, petroleum products and fine particles
- Potable water discharges
- Sediments from poor erosion control
- Sanitary sewer breaks
- Other illicit discharges, i.e. cooking oil in storm water drain

8

Who Manages the Storm Water Program?

- Collective effort of three departments within the Business and Financial Affairs Division
  - Facilities Management
  - Parking
  - Environmental Health & Safety

9

Western Protects Storm Water

- Education Outreach
- Cleaning Storm Water Catch Basins
- Immediate Spill Response
- Providing Equipment in Vehicles for Spills
- Putting Only Rain Down the Drain

We need your help to protect our waters.
Everyone needs to think before they send even drinking water to the storm water system.

10

Storm Drain Labels

Located adjacent to storm drains. Please report to x3420 is a label is missing.

11

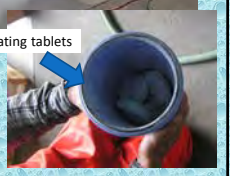
Pollutant Control Measures

- Follow procedure for disposal of waste cooking oil and grease – Aramark to fill in. What is the procedure?
- Waste cooking oil and grease must not be dumped down a storm drain.
- If you are unsure of where to dispose of waste oil, contact your supervisor.

12

Pollutant Control Measures

- Pressure Washing – Does Aramark pressure wash outside areas mainly in Aramark employee control? Specifically at dining hall locations, but café's and markets also apply? Aramark to answer.
- Pressure washer water must be dechlorinated before discharging to the storm drain.



13

Pollutant Control Measures

- Managing mop water with cleaning solution and other cleaning agents – How does this get discharged? Aramark to comment
- Water with cleaners need to be discharged to the sanitary sewer.

14

Pollutant Control Measures

What can you do to at home to control pollutants entering our waterway?

- Scoop the Poop! – Pick up your dog waste, place it in the garbage and wash your hands.
- Use less hazardous cleaning solutions – Whenever possible use natural cleaning products.

15

Pollutant Control Measures

- Drip-free cars – Contain oil leaks that you know about until you can get your vehicle fixed.
- Clean cars – If you must wash your car at home, wash it on the grass, gravel or other permeable surface and use biodegradable soaps.

16

Pollutant Control Measures

- Disposal of Toxics in Bellingham: For household waste such as motor oil, cleaners, and pesticides (NOT FOR WWU WASTE!)
- Recycling & Disposal Services (RDS) in Ferndale: Recyclables and non-hazardous waste such as household trash and wood/ concrete debris
- Others:
  - ReStore
  - ReElectronics
  - Z Recyclers

17

Storm Water Management

Protecting the ecology of Whatcom County is part of EVERY ONE at Western's responsibility!

Only rain down the drain!

18

Storm Water Management Public Outreach for Western Residents

WESTERN WASHINGTON UNIVERSITY

Fall 2011

Storm Water Management

The WA Department of Ecology alerted Western of the need to implement required storm water management to prevent contamination of local drainage and water bodies.

DEPARTMENT OF ECOLOGY State of Washington

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

2

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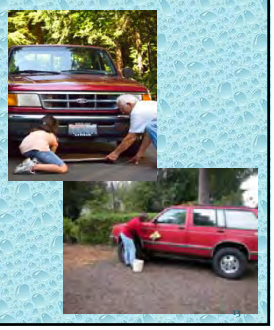

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- Others:
  - ReStore
  - ReElectronics
  - Z Recyclers

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Storm Water Management

Protecting the ecology of Whatcom County is part of EVERY ONE at Western's responsibility!

Only rain down the drain!

15

How Can Eco-Reps Help Protect Storm Water?

- Thoughts?
- Projects?
- Assessing Effectiveness of Projects

16

Storm Water Management For EHS

Fall 2011

Sanitary vs. Storm Water

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- In contrast, most storm water is discharged without treatment.
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Storm Water Management

The WA Department of Ecology alerted Western of the need to implement required storm water management to prevent contamination of local drainage and water bodies.

Darwin Award – Honorable Mention

(January 2007, Australia) A 25-year-old Brisbane man came frightfully close to literally sucking himself down the drain of the gene pool! When flash floods turned Brisbane streets into raging rivers, this one thought it would be fun to catch a wave on his surfboard. Fun was fun, until his foot wedged in a storm drain and he was sucked down. After a bumpy and winding three kilometer ride through the storm sewer, he popped out in a creek, relatively unscathed. The young man who found the lucky survivor had this advice for those thinking to emulate the surfer's adventure: "Never surf on a flooded street."

Why do we care?

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Luna Leopold
Chief Hydrologist USGS

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Sediments Stress Fish!
Chlorine in Potable Water Stresses Fish!

Pollutant Sources – Specific to WWU

- Sediments from poor erosion/ sediment control.
- Sanitary sewer breaks.
- Other illicit discharges.

Pollutant Sources – Specific to WWU

Runoff from Parking Lots

- Heavy metals and petroleum products from cars.
- Fine particles from gravel lots.

Ground as a Filter

- Ground acts as a filter for sediments and many other potential contaminants, trapping them before they can reach our natural waters.
- This filtration protects aquatic organisms, fish and our drinking water.
- Tap water and sediments can be discharged onto lawns and other planted areas.

Pollutant Sources – Specific to WWU

Potable Water Discharges

- If a water main breaks, the potable water discharge must be reported.
- Pressure washing releases potable water to the environment. If washing on hard surfaces,
  - Always direct the pressure washer runoff to landscape or a sanitary drain.
  - If this is not possible, water must be collected for proper disposal
  - In some cases, pumps or shop vacs may even be necessary
  - Use dechlorinating tablets

Transporting Hazardous Materials

All employees transporting chemicals must ensure that:

- The containers are closed and secured (tied, strapped in, or other means).
- Chemicals are in secondary containment (inside an extra container or vessel) so that leaks don't enter local water systems.
- A spill kit is present.

Every employee is required to prevent chemicals, particles, and even tap water from directly entering the city's storm water system.

Transporting Gas Cans

- With the most recent purchase of new and robust gas cans, Western is choosing to forgo secondary containment for transporting gasoline.
- Inspection of gas cans will occur on an annual basis to ensure that this choice continues to be in the best interest of storm water management.
- Secondary containment requirements still pertain to other chemicals, pesticides and gasoline in older gas cans.

Best Management Practices (BMP's) for Soil Erosion and Sediment Control

Excavation can be a source of sediments that can contaminate storm water runoff.

Ways to mitigate soil erosion

- Cover practice options
- Silt fence

Ways to mitigate turbid runoff from running into storm drain

- Use of sandbags to divert to grass
- Filters in storm drain

Secure Your Load

- Ensure that your load is secured so that materials and chemicals do not fall out of your vehicle during transit.
- Use bungee cords, straps, cargo bar and/or anchoring against a side.

Excavation Procedures

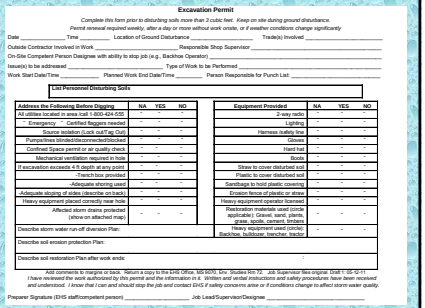
The Outdoor Maintenance folks have been trained in contacting EHS or other competent person in acquiring an excavation permit of disturbing more than 5 cubic feet of soil.

Sediment Control

Excavation and other land disturbance requires special procedures to ensure that sediments do not enter the storm water systems.

Excavation Permit

- Before disturbing more than 5 cubic ft, call EHS for an Excavation Permit, much like confined space entry procedures



Excavation Permit

Complete this form prior to disturbing soils more than 3 cubic feet. Keep on site during ground disturbance.
Permit renewal required weekly, after a day or more without work onsite, or if weather conditions change significantly

Date _____ Time _____ Location of Ground Disturbance _____ Trade(s) Involved _____

Outside Contractor Involved in Work _____ Responsible Shop Supervisor _____

On-Site Competent Person Designee with ability to stop job (e.g., Backhoe Operator) _____

Issue(s) to be addressed _____ Type of Work to be Performed _____

Work Start Date/Time _____ Planned Work End Date/Time _____ Person Responsible for Punch List _____

List Personnel Disturbing Soils

Address the Following Before Digging	NA	YES	NO
All utilities located in area (call 1-800-424-555)			
Emergency " Certified flaggers needed	-	-	-
Source isolation (Lock out/Tag Out)	-	-	-
Pumps/lines blinded/disconnected/blocked	-	-	-
Confined Space permit or air quality check	-	-	-
Mechanical ventilation required in hole	-	-	-
If excavation exceeds 4 ft depth at any point	-	-	-
-Trench box provided	-	-	-
-Adequate shoring used	-	-	-
-Adequate sloping of sides (describe on back)	-	-	-
Heavy equipment placed correctly near hole	-	-	-
Affected storm drains protected (show on attached map)	-	-	-

Equipment Provided	NA	YES	NO
2-way radio	-	-	-
Lighting	-	-	-
Harness /safety line	-	-	-
Gloves	-	-	-
Hard hat	-	-	-
Boots	-	-	-
Straw to cover disturbed soil	-	-	-
Plastic to cover disturbed soil	-	-	-
Sandbags to hold plastic covering	-	-	-
Erosion fence of plastic or straw	-	-	-
Heavy equipment operator licensed	-	-	-
Restoration materials used (circle applicable) Gravel, sand, plants, grass, epods, cement, timbers	-	-	-
Heavy equipment used (circle) Backhoe, bulldozer, trencher, tractor	-	-	-

Describe storm water run-off diversion Plan:

Describe soil erosion protection Plan:

Describe soil restoration Plan after work ends:

Add comments to margins or back. Return a copy to the EHS Office, MS 6070, Env. Studies Rm 72. Job Supervisor files original. Draft 1, 05-12-11

I have reviewed the work authorized by this permit and the information in it. Written and verbal instructions and safety procedures have been received and understood. I know that I can and should stop the job and contact EHS if safety concerns arise or if conditions change to affect storm water quality.

Preparer Signature (EHS staff/competent person) _____ Job Lead/Supervisor/Designee _____

Best Management Practices

The Department of Ecology has developed a number of best management practices (BMP's) to protect the waters of Washington State.

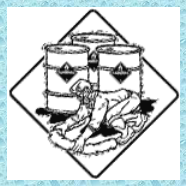
Western is required to use these as we implement the Storm Water Management Program.

Parking Lots

BMP OS-1 Good Housekeeping (cont.)

- Promptly repair or replace all substantially cracked or otherwise damaged paved secondary containment, high-intensity parking and any other drainage areas which are subjected to pollutant material.
- Western is working to obtain funding to improve parking areas. In the meantime, sand bags are present to divert runoff and filters are used on storm drain grates to catch fine particles.
  - If you see broken sandbags or clogged filters, notify your supervisor.

Storm Water Management BMP's



BMP OS-1 Good Housekeeping

- Promptly contain spills or leaks on soil, vegetation or paved area
- Do not hose down pollutants from any area to the ground or storm drain, conveyance ditch or receiving water

Storm Drain Maintenance

- Replace filters as necessary.
- Report missing labels to supervisor.

Storm Water Management BMP's

BMP OS-1 Good Housekeeping (cont.)

- Clean oil, debris, sludge from all systems like catch basins, settling detention basins, oil/ water separators to prevent contamination of the storm water.
  - Collect material for proper disposal.
  - Sludge from catch basins in parking areas may contain elevated levels of toxic metals.
- Promptly repair or replace all leaking connections, pipes, hoses, valves, etc. which can contaminate storm water.

Storm Water Management BMP's

BMP OS-2 Preventative Maintenance

- Conduct all oily parts cleaning, steam cleaning, or pressure washing of equipment or containers inside a building or on an impervious contained area.
- Direct contaminated storm water from such an area to a sanitary sewer.
- Do not rinse pesticide or chemical containers here.

Storm Water Management BMP's

BMP OS-3 Spill Prevention and Cleanup

- If a spill has reached a sanitary or storm sewer, calls must be made ASAP in the following order:
  - Notify Supervisor who will call EHS and Work Control to mobilize a clean up crew as necessary
- Have spill containment and cleanup kits readily accessible.
- Do not flush absorbent materials or other spill cleanup materials to storm drain. Collect contaminated absorbent material and contact EHS for proper disposal.

Spill Kit Usage

- Use booms/ socks to contain spill and/or divert away from storm drain
- Use spill pads to absorb material
- Use bags and/or 5 gallon pail to contain spill debris and contact EHS for proper disposal

Spill Kits at FM

- Two kits are located in the Outdoor Maintenance Shop balcony.
- Spill kits have been placed in all FM vehicles.
- Storm drain covers mounted on FM buildings on sides closest to storm drain

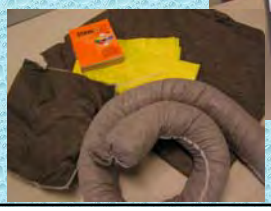
Truck Spill Kits

Spill Kits for trucks and vehicles contain:

- Spill pads
- Two socks
- 1 pair gloves
- Plastic bag

Spill Kit Contents

- Spill booms or socks
- Spill pads
- Plastic bags and zip ties
- Emergency Response Guide



Large Spill Kits Locations

Several Large spill kits are available to handle spills at locations:

- Facilities Maintenance Warehouse
- Shannon Point Marine Center
- Weight Training Room

- Replacement items are stored in the Maintenance Warehouse

Spill kits for mowers, backhoe, & other outdoor maintenance equipment

All large equipment items powered by gas or diesel must have a spill kit available on hand when operating

Take pics of some of these when they are assembled

Pollutant Control Measures

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- Scoop the Poop! – Pick up your dog waste, place it in the garbage and wash your hands.
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- Covers for catch basins will be available near the catch basins at Facilities Management
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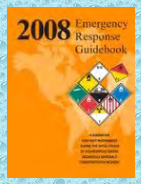

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- Recycling & Disposal Services (RDS) in Ferndale: Recyclables and non-hazardous waste such as household trash and wood/ concrete debris
- Others:
  - ReStore
  - ReElectronics
  - Z Recyclers

Summary – Excavation

- An excavation permit should be issued if disturbing over 5 cubic feet.
- Appropriate soil and erosion control techniques should be used to minimize if not eliminate sediments (especially fine particles) from entering our water system. Sediments kill fish!
- Appropriate personal protective equipment should be donned.
- Area should be secure.

Storm Water Management

Protecting the ecology of Whatcom County is part of EVERY WWU employee's responsibility!

Only rain down the drain!

Summary - Transportation

- Always use secondary containment when transporting chemicals.
- Secure your load! This includes chemicals and materials such as empty drums.
- Have a spill kit in your vehicle for immediate response capability.

Summary – Spill Response and Potable Water Discharge

- In the event of a chemical spill or illicit discharge
  - Call your supervisor who will call EHS and Work Control
- Know where the FM spill kits are located and how to use them.
- Use dechlorinating tablets for potable water discharge to the storm drain.
- If potable water is being used for outdoor cleaning, it must be diverted into vegetation or collected.

Storm Water Management For FM Outdoor Maintenance

Summer 2011

Storm Water Management

The WA Department of Ecology alerted Western of the need to implement required storm water management to prevent contamination of local drainage and water bodies.

Why do we care?

"Water is the most critical resource issue of our lifetime & our children's lifetime. The health of our waters is the principal measure of how we live on the land."

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Sanitary vs. Storm Water

- Almost all major cities including Bellingham treat sanitary wastewater before discharging it.
- In contrast, most storm water is discharged without treatment.
- At Western, storm water on part of the south campus receives detention and bio-filtration treatment but the north campus flows directly to Bellingham Bay.

Impacts to Aquatic Environment

- Decrease Food-Chain Organisms
- Impair Feeding
- Clog Gills
- Reduce Photosynthesis
- Diminished Spawning
- Smothered Eggs and Fry

Sediments Stress Fish!
Chlorine in Potable Water Stresses Fish!

Pollutant Sources – Specific to WWU

Runoff from Parking Lots

- Heavy metals and petroleum products from cars.
- Fine particles from gravel lots.

Pollutant Sources – Specific to WWU

Potable Water Discharges

- If a water main breaks, the potable water discharge must be reported.
- Pressure washing releases potable water to the environment. If washing on hard surfaces,
  - Always direct the pressure washer runoff to landscape or a sanitary drain.
  - If this is not possible, water must be collected for proper disposal
  - In some cases, pumps or shop vacs may even be necessary

Pollutant Sources – Specific to WWU

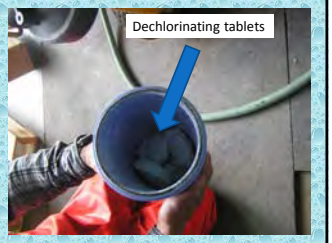
- Sediments from poor erosion/ sediment control.
- Sanitary sewer breaks.
- Other illicit discharges.

Ground as a Filter

- Ground acts as a filter for sediments and many other potential contaminants, trapping them before they can reach our natural waters.
- This filtration protects aquatic organisms, fish and our drinking water.
- Tap water and sediments can be discharged onto lawns and other planted areas.

Dechlorinating Water

- In lieu of discharging potable water on the ground or grass, use dechlorinating tablets to dechlorinate the water and discharge to either the sanitary or storm water drains. Discharging to sanitary is preferred.



Transporting Hazardous Materials

All employees transporting chemicals must ensure that:

- The containers are closed and secured (tied, strapped in, or other means).
- Chemicals are in secondary containment (inside an extra container or vessel) so that leaks don't enter local water systems.

Transporting Hazardous Materials (cont)

All employees transporting chemicals must ensure that a spill kit is present.

Every employee is required to prevent chemicals, particles, and even tap water from directly entering the city's storm water system.

Secure Your Load

- Ensure that your load is secured so that materials and chemicals do not fall out of your vehicle during transit.
- Use bungee cords, straps, cargo bar and/or anchoring against a side.

Darwin Award – Honorable Mention

(January 2007, Australia) A 25-year-old Brisbane man came frightfully close to literally sucking himself down the drain of the gene pool! When flash floods turned Brisbane streets into raging rivers, this one thought it would be fun to catch a wave on his surfboard. Fun was fun, until his foot wedged in a storm drain and he was sucked down. After a bumpy and winding three kilometer ride through the storm sewer, he popped out in a creek, relatively unscathed. The young man who found the lucky survivor had this advice for those thinking to emulate the surfer's adventure: "Never surf on a flooded street."

Sediment Control

Excavation and other land disturbance requires special procedures to ensure that sediments do not enter the storm water systems.

Best Management Practices (BMP's) for Soil Erosion and Sediment Control

- Excavation can be a source of sediments that can contaminate storm water runoff.
- Cover practice options:
  - Vegetative cover such as grass, trees, shrubs on erodible soil areas; or
  - Covering with mats such as clear plastic, jute, synthetic fiber; and/or
  - Preservation of natural vegetation including grass, trees, shrubs and vines

Soil Erosion and Sediment Control

- Every disturbed soil area must be covered no matter how small if it may rain or create dust in the air.
- If the dirt removed will go back into the hole, use a tarp and sand bags to keep the dirt clean.
- If the dirt removed is debris, straw may be used (minimum 2 inch thickness).
- Use a silt fence on all excavation areas.
- If water is flowing, use sandbags to direct water.

Installing a Silt Fence

- Silt fences must be buried four inches below grade to prevent runoff from going under fence.
- Fences need to be inspected and maintained DAILY to ensure they are working properly.
- Silt fencing is available in the outdoor maintenance shop.

Using Sandbags to Direct Water Flow to Landscape

- Overlap sandbags to form a barrier to:
  - Direct water away from storm catch basins.
  - Direct water away from exposed soil.
  - Slow the flow of water so that heavier materials will settle.

Excavation Procedures

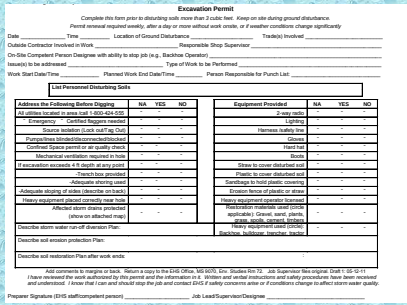
1. Locate utilities
2. Wear appropriate PPE (gloves, hardhat, etc.)
3. Secure the area – use tape, cones, and/or barricades
4. Protect storm drains; use sediment filter bags and/or covers for drains

Excavation Procedures – cont.

5. Install sediment control measures
6. Slope & shore as necessary
7. Confined space – air monitoring
8. Notify about discharges to storm water system, including potable water

Excavation Permit

- Before disturbing more than 5 cubic ft, call EHS for an Excavation Permit, much like confined space entry procedures



Excavation Permit

Complete this form prior to disturbing soils more than 3 cubic feet. Keep on site during ground disturbance.
Permit renewal required weekly, after a day or more without work onsite, or if weather conditions change significantly

Date _____ Time _____ Location of Ground Disturbance _____ Trade(s) Involved _____

Outside Contractor Involved in Work _____ Responsible Shop Supervisor _____

On-Site Competent Person Designee with ability to stop job (e.g., Backhoe Operator) _____

Issue(s) to be addressed _____ Type of Work to be Performed _____

Work Start Date/Time _____ Planned Work End Date/Time _____ Person Responsible for Punch List _____

List Personnel Disturbing Soils

Address the Following Before Digging	NA	YES	NO
All utilities located in area (call 1-800-424-555	-	-	-
Emergency: Certified flaggers needed	-	-	-
Source isolation (Lock out/Tag Out)	-	-	-
Pumps/lines blinded/disconnected/blocked	-	-	-
Confined Space permit or air quality check	-	-	-
Mechanical ventilation required in hole	-	-	-
If excavation exceeds 4 ft depth at any point	-	-	-
-Trench box provided	-	-	-
-Adequate shoring used	-	-	-
-Adequate sloping of sides (describe on back)	-	-	-
Heavy equipment placed correctly near hole	-	-	-
Affected storm drains protected (show on attached map)	-	-	-

Equipment Provided	NA	YES	NO
2-way radio	-	-	-
Lighting	-	-	-
Harness /safety line	-	-	-
Gloves	-	-	-
Hard hat	-	-	-
Boots	-	-	-
Straw to cover disturbed soil	-	-	-
Plastic to cover disturbed soil	-	-	-
Sandbags to hold plastic covering	-	-	-
Erosion fence of plastic or straw	-	-	-
Heavy equipment operator licensed	-	-	-
Restoration materials used (circle applicable:) Gravel, sand, plants, seed, mulch, sod, other _____	-	-	-
Heavy equipment used (circle): Backhoe, bulldozer, trencher, tractor	-	-	-

Describe storm water run-off diversion Plan:

Describe soil erosion protection Plan:

Describe soil restoration Plan after work ends:

Add comments to margins or back. Return a copy to the EHS Office, MS 9070. Env. Studies Rm 72. Job Supervisor files original. Draft 1: 05-12-11

I have reviewed the work authorized by this permit and the information in it. Written and verbal instructions and safety procedures have been received and understood. I know that I can and should stop the job and contact EHS if safety concerns arise or if conditions change to affect storm water quality.

Preparer Signature (EHS staff/competent person) _____ Job Lead/Supervisor/Designee _____

Excavation Exercise

In the event of a pending rain storm, what would you use to cover the dirt piles and where would you cover?

What could be used to divert turbid water from the storm drain?

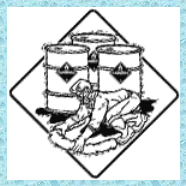
Fine Arts Sewer & Storm Line Repair Work

Best Management Practices

The Department of Ecology has developed a number of best management practices (BMP's) to protect the waters of Washington State.

Western is required to use these as we implement the Storm Water Management Program.

Storm Water Management BMP's



BMP OS-1 Good Housekeeping

- Promptly contain spills or leaks on soil, vegetation or paved area
- Do not hose down pollutants from any area to the ground or storm drain, conveyance ditch or receiving water

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BMP OS-1 Good Housekeeping (cont.)

- Clean oil, debris, sludge from all systems like catch basins, settling detention basins, oil/ water separators to prevent contamination of the storm water.
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Parking Lots

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- Western is working to obtain funding to improve parking areas. In the meantime, sand bags are present to divert runoff and filters are used on storm drain grates to catch fine particles.
  - If you see broken sandbags or clogged filters, notify your supervisor.

Storm Drain Maintenance

- Replace filters as necessary.
- Report missing labels to supervisor.

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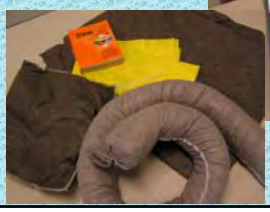
- Have spill containment and cleanup kits readily accessible.
- Do not flush absorbent materials or other spill cleanup materials to storm drain. Collect contaminated absorbent material and contact EHS for proper disposal.

Spill Kits at Outdoor Maintenance

- Two kits are located in the Outdoor Maintenance Shop balcony.
- Put them in your vehicle when transporting hazardous materials such as gasoline, pesticides, etc.

Spill Kit Contents

- Spill booms or socks
- Spill pads
- Plastic bags and zip ties
- Emergency Response Guide



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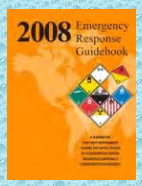

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Fall 2011

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- At Western, storm water on part of the south campus receives detention and bio-filtration treatment but the north campus flows directly to Bellingham Bay.

Surface Runoff Before and After Development

Before *development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground.* **After** *conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease.*

Impacts to Aquatic Environment

- Decrease Food-Chain Organisms
- Impair Feeding
- Clog Gills
- Reduce Photosynthesis
- Diminished Spawning
- Smothered Eggs and Fry

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- Have a spill kit is present.

Every employee is required to prevent chemicals, particles, and even tap water from directly entering the city's storm water system.

Transporting Gas Cans

- With the most recent purchase of new and robust gas cans, Western is choosing to forgo secondary containment for transporting gasoline.
- Inspection of gas cans will occur on an annual basis to ensure that this choice continues to be in the best interest of storm water management.
- Secondary containment requirements still pertain to other chemicals, pesticides and gasoline in older gas cans.

Secure Your Load

- Ensure that your load is secured so that materials and chemicals do not fall out of your vehicle during transit.
- Use bungee cords, straps, cargo bar and/or anchoring against a side.

Pollutant Sources – Specific to WWU

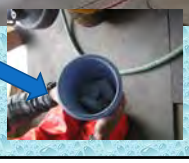
Runoff from Parking Lots

- Heavy metals and petroleum products from cars.
- Fine particles from gravel lots.

Pollutant Sources – Specific to WWU

Potable Water Discharges

- If a water main breaks, the potable water discharge must be reported.
- Pressure washing releases potable water to the environment.
  - FM Outdoor Maintenance uses dechlorinating tablets when pressure washing in lieu of discharging potable water on grass or gravel.



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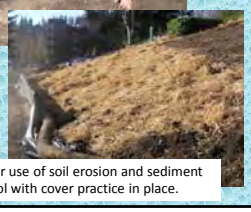

Proper use of soil erosion and sediment control with cover practice in place.

- Sediments from poor erosion/ sediment control.
- Sanitary sewer breaks.

Pollutant Sources – Specific to WWU

- Mop water with cleaners need to be discharged to the sanitary sewer.
- Waste cooking oil and grease must not be dumped down a storm drain. Aramark employees are instructed to dump waste cooking oils in proper receptacles for disposal.

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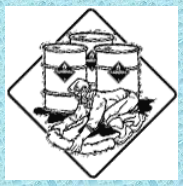

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Storm Drain Labels

Located adjacent to storm drains. Please report to x3420 is a label is missing.

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  - Call your supervisor who will call EHS and Work Control
- Know where your spill kit is located and how to use it. Call EHS for disposal of contaminated spill absorbent.
- If potable water is being used for outdoor cleaning, it must be diverted into vegetation or collected.

Storm Water Management

Protecting the ecology of Whatcom County is part of EVERY ONE at Western's responsibility!

Only rain down the drain!

28

Western Washington University

ATT-16

Excavation Permit

Complete this form prior to disturbing soils more than 5 cubic feet. Keep on site during ground disturbance.
Permit renewal required weekly, after a day or more without work onsite, or if weather conditions change significantly

Date _____ Time _____ Location of Ground Disturbance _____ Trade(s) Involved _____

Outside Contractor Involved in Work _____ Responsible Shop Supervisor _____

On-Site Competent Person Designee with ability to stop job (e.g., Backhoe Operator) _____

Issue(s) to be addressed _____ Type of Work to be Performed _____

Work Start Date/Time _____ Planned Work End Date/Time _____ Person Responsible for Punch List: _____

List Personnel Disturbing Soils

Address the Following Before Digging	NA	YES	NO
All utilities located in area /call 1-800-424-555	☐	☐	☐
☐Emergency ☐Certified flaggers needed	☐	☐	☐
Source isolation (Lock out/Tag Out)	☐	☐	☐
Pumps/lines blinded/disconnected/blocked	☐	☐	☐
Confined Space permit or air quality check	☐	☐	☐
Mechanical ventilation required in hole	☐	☐	☐
If excavation exceeds 4 ft depth at any point	☐	☐	☐
-Trench box provided	☐	☐	☐
-Adequate shoring used	☐	☐	☐
-Adequate sloping of sides (describe on back)	☐	☐	☐
Heavy equipment placed correctly near hole	☐	☐	☐
Affected storm drains protected (show on attached map)	☐	☐	☐

Equipment Provided	NA	YES	NO
2-way radio	☐	☐	☐
Lighting	☐	☐	☐
Harness /safety line	☐	☐	☐
Gloves	☐	☐	☐
Hard hat	☐	☐	☐
Boots	☐	☐	☐
Straw to cover disturbed soil	☐	☐	☐
Plastic to cover disturbed soil	☐	☐	☐
Sandbags to hold plastic covering	☐	☐	☐
Erosion fence of plastic or straw	☐	☐	☐
Heavy equipment operator licensed	☐	☐	☐
Restoration materials used (circle applicable): Gravel, sand, plants, grass, spoils, cement, timbers	☐	☐	☐
Heavy equipment used (circle): Backhoe, bulldozer, trencher, tractor	☐	☐	☐

Describe storm water run-off diversion Plan:

Describe soil erosion protection Plan:

Describe soil restoration Plan after work ends: :

Add comments to margins or back. Return a copy to the EHS Office, MS 9070, Env. Studies Rm 72. Job Supervisor files original. Draft 1: 05-12-11

I have reviewed the work authorized by this permit and the information in it. Written and verbal instructions and safety procedures have been received and understood. I know that I can and should stop the job and contact EHS if safety concerns arise or if conditions change to affect storm water quality.

Preparer Signature (EHS staff/competent person) _____ Job Lead/Supervisor/Designee _____

Back of Permit Form

Att-17

Storm Water Management for University Police Officers, Student Security

WESTERN WASHINGTON UNIVERSITY

Fall 2011

Storm Water Management

The WA Department of Ecology alerted Western of the need to implement required storm water management to prevent contamination of local drainage and water bodies.

Why do we care?

"Water is the most critical resource issue of our lifetime & our children's lifetime. The health of our waters is the principal measure of how we live on the land."

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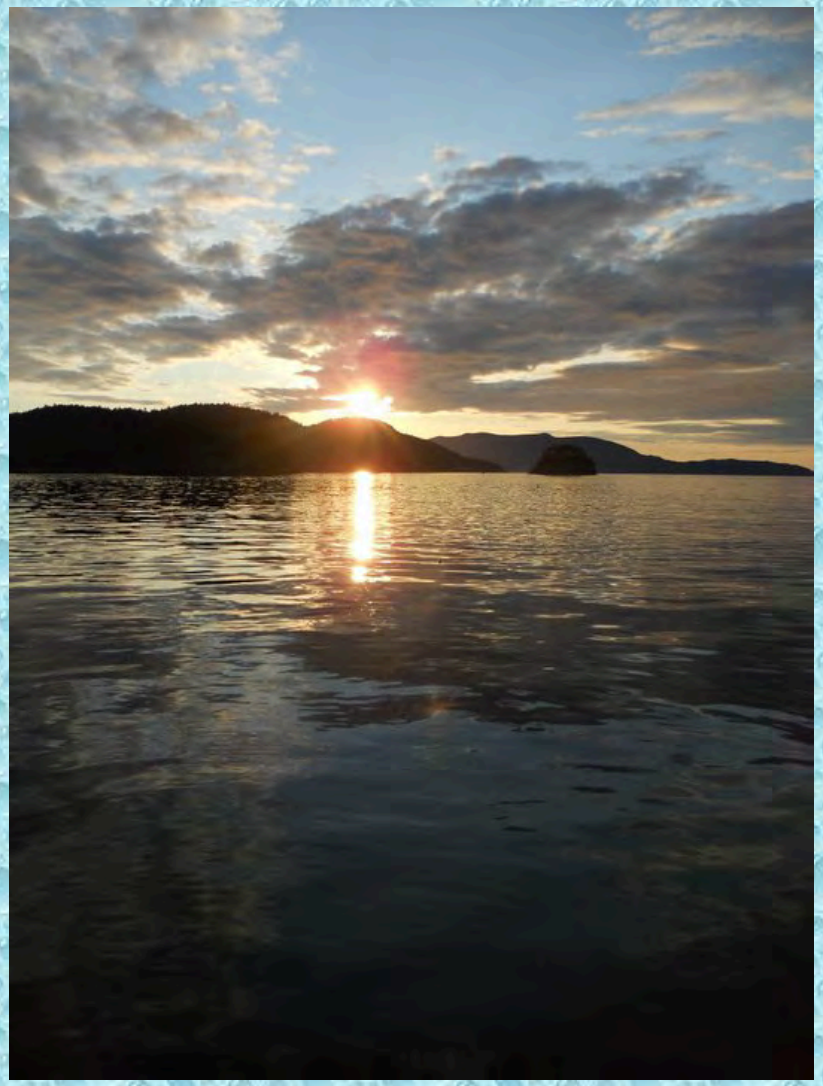
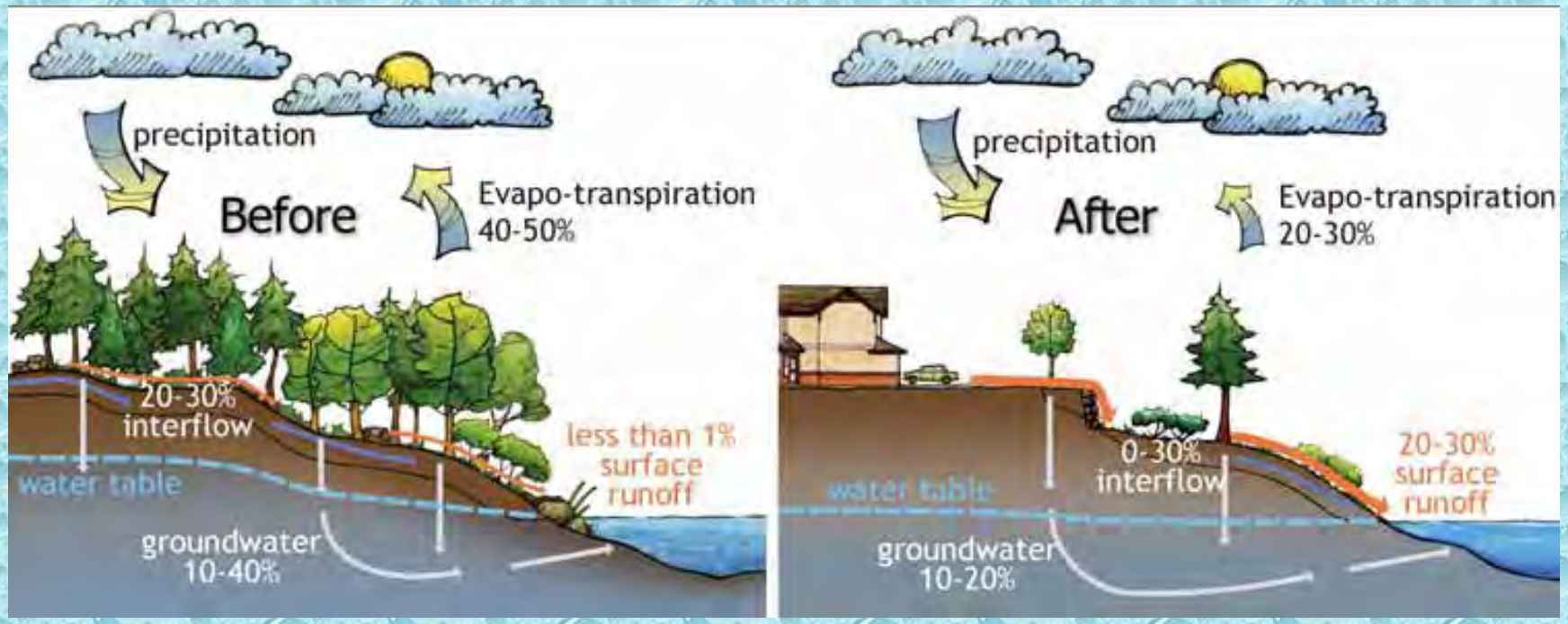


Sanitary vs. Storm Water

- Almost all major cities including Bellingham treat sanitary wastewater before discharging it.
- In contrast, most storm water is discharged without treatment.
- At Western, storm water on part of the south campus receives detention and bio-filtration treatment but the north campus flows directly to Bellingham Bay.

Surface Runoff Before and After Development



Before *development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground.* **After** *conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease.*

Impacts to Aquatic Environment

- Decrease Food-Chain Organisms
- Impair Feeding
- Clog Gills
- Reduce Photosynthesis
- Diminished Spawning
- Smothered Eggs and Fry

Sediments Stress Fish!
Chlorine in Potable Water Stresses Fish!

Ground as a Filter

- Ground acts as a filter for sediments and many other potential contaminants, trapping them before they can reach our natural waters.
- This filtration protects aquatic organisms, fish and our drinking water.
- Tap water and sediments can be discharged onto lawns and other planted areas.

Secure Your Load

- Ensure that your load is secured so that materials or chemicals do not fall out of your vehicle during transit.
- Use bungee cords, straps, cargo bar and/or anchoring against a side.

Pollutant Sources – Specific to WWU

Runoff from Parking Lots

- Heavy metals and petroleum products from cars.
- Fine particles from gravel lots.

Pollutant Sources – Specific to WWU

Potable Water Discharges

- If a water main breaks and the potable water reaches the storm water system, the discharge must be reported.

Pollutant Sources – Specific to WWU

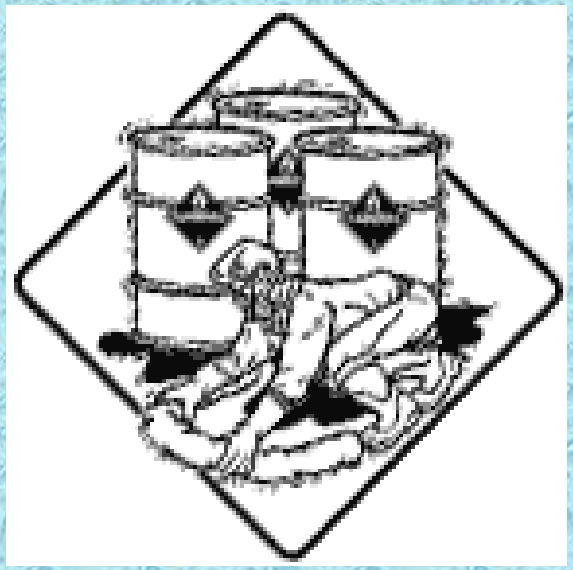
- Mop water with cleaners need to be discharged to the sanitary sewer.
- Waste cooking oil and grease must not be dumped down a storm drain. Aramark employees are instructed to dump waste cooking oils in proper receptacles for disposal.

Best Management Practices

The Department of Ecology has developed a number of best management practices (BMP's) to protect the waters of Washington State.

Western is required to use these as we implement the Storm Water Management Program.

Storm Water Management BMP's



BMP OS-1 Good Housekeeping

- Promptly contain spills or leaks on soil, vegetation or paved area
- Do not hose down pollutants from any area to the ground or storm drain, conveyance ditch or receiving water

Parking Lots

BMP OS-1 Good Housekeeping (cont.)

- Promptly repair or replace all substantially cracked or otherwise damaged paved secondary containment, high-intensity parking and any other drainage areas which are subjected to pollutant material.
- Western is working to obtain funding to improve parking areas. In the meantime, sand bags are present to divert runoff and filters are used on storm drain grates to catch fine particles.
  - If you see broken sandbags or clogged filters, notify your supervisor.

Storm Drain Labels

Located adjacent to storm drains. Please report to x3420 is a label is missing.

Truck Spill Kits

Spill Kits for trucks and vehicles contain:

- Spill pads
- Two socks
- 1 pair gloves
- Plastic bag

Spill Kit Usage

- Use booms/ socks to contain spill and/or divert away from storm drain
- Use spill pads to absorb material
- Use bags and/or 5 gallon pail to contain spill debris and contact EHS for proper disposal

Pollutant Control Measures

What can you do to at home to control pollutants entering our waterways?

- Scoop the Poop! – Pick up your dog waste, place it in the garbage and wash your hands.
- Use less hazardous cleaning solutions – Whenever possible use natural cleaning products.

Pollutant Control Measures

- Drip-free cars – Contain oil leaks that you know about until you can get your vehicle fixed.
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Pollutant Control Measures

- Disposal of Toxics in Bellingham: For household waste such as motor oil, cleaners, and pesticides (NOT FOR WWU WASTE!)
- Recycling & Disposal Services (RDS) in Ferndale: Recyclables and non-hazardous waste such as household trash and wood/ concrete debris
- Others:
  - ReStore
  - ReElectronics
  - Z Recyclers

Summary – Spill Response, Potable Water Discharge, Transportation

- In the event of a chemical spill or illicit discharge
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Storm Water Management For Auto Shop

WESTERN
WASHINGTON UNIVERSITY

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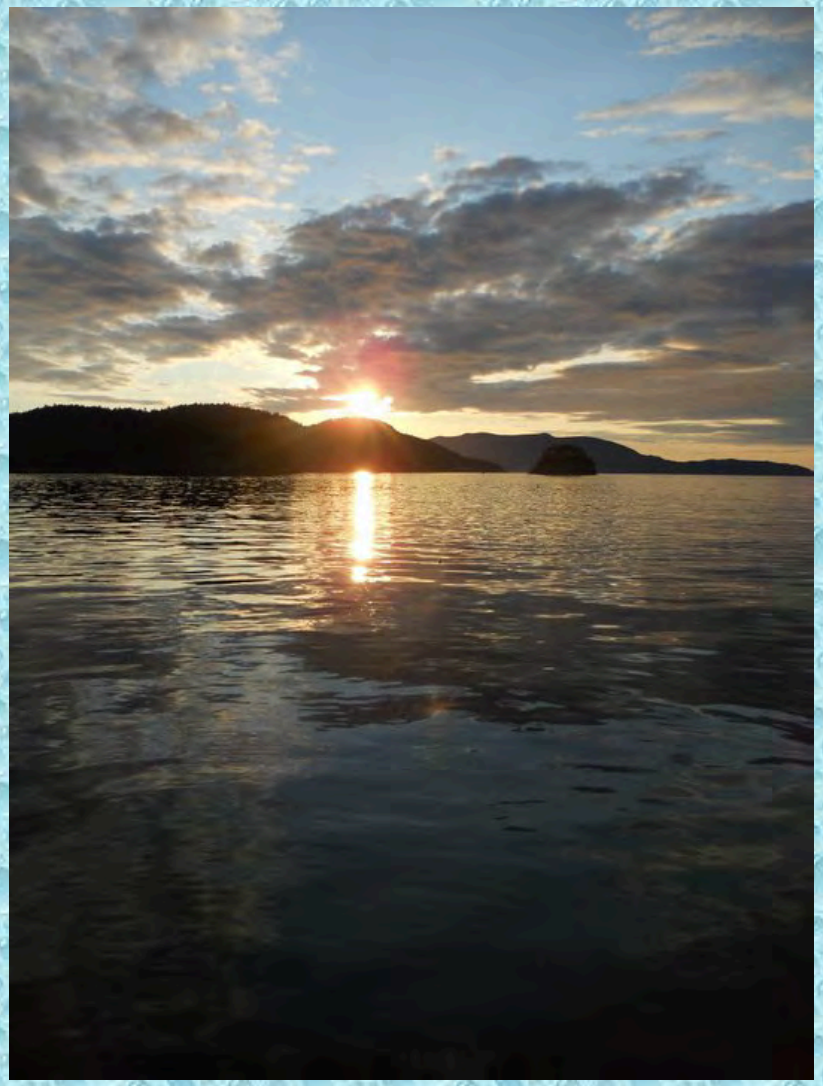

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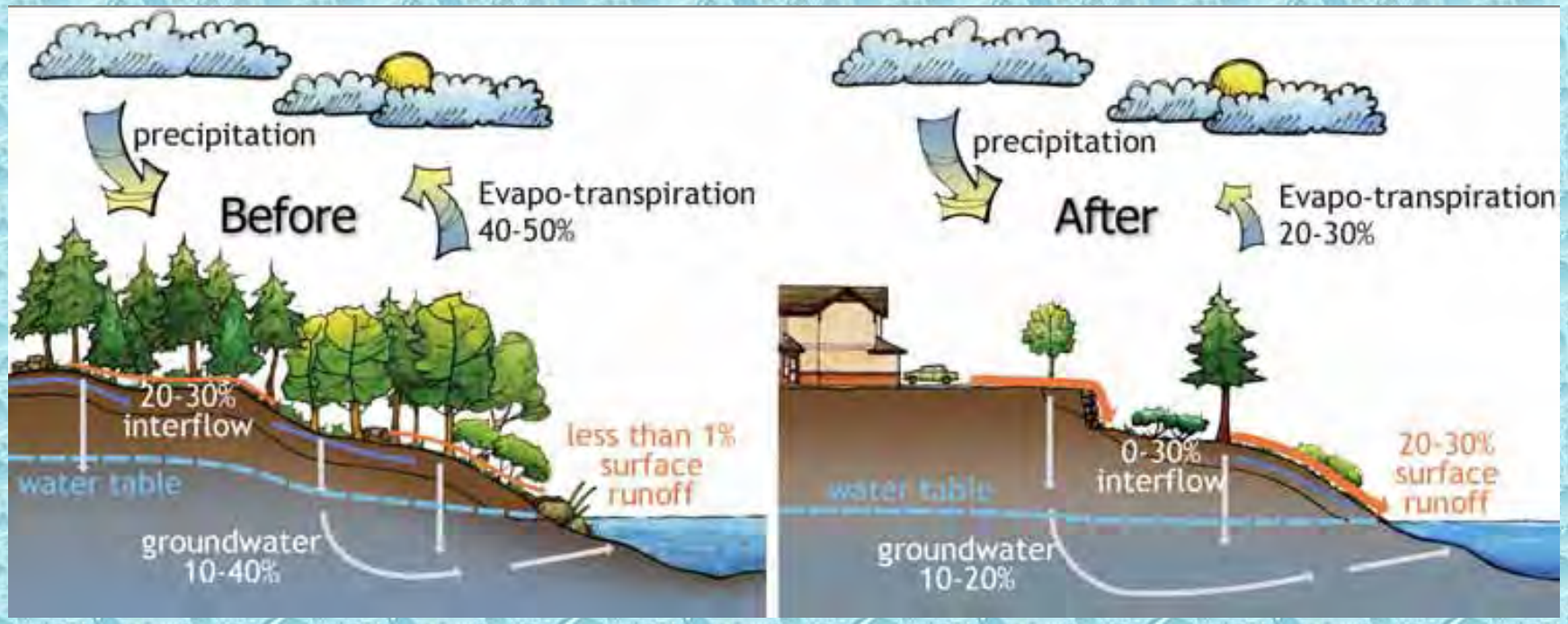

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Darwin Award – Honorable Mention

(January 2007, Australia) A 25-year-old Brisbane man came frightfully close to literally sucking himself down the drain of the gene pool! When flash floods turned Brisbane streets into raging rivers, this one thought it would be fun to catch a wave on his surfboard. Fun was fun, until his foot wedged in a storm drain and he was sucked down. After a bumpy and winding three kilometer ride through the storm sewer, he popped out in a creek, relatively unscathed. The young man who found the lucky survivor had this advice for those thinking to emulate the surfer's adventure: "Never surf on a flooded street."

Pollutant Sources – Specific to WWU

Runoff from Parking Lots

- Heavy metals and petroleum products from cars.
- Fine particles from gravel lots.

Potable Water Discharges

- Pressure washing releases potable water to the environment.
- If washing on hard surfaces, always direct the pressure washer runoff to landscape or a sanitary drain.
- If this is not possible, water must be collected for proper disposal

What is Western Doing?

- Education Outreach
- Cleaning Storm Water Catch Basins
- Immediate Spill Response
- Providing Equipment for Spills on Vehicles
- Request funding to improve parking lot conditions
- Putting only rain down the drain

We need your help to protect our waters.

Everyone needs to think before they send even drinking water to the storm water system.

Transporting Hazardous Materials

All employees transporting chemicals must ensure that:

- The containers are closed and secured (tied, strapped in, or other means).
- Chemicals are in secondary containment (inside an extra container or vessel) so that leaks don't enter local water systems.
- A spill kit is present.

Every employee is required to prevent chemicals, particles, and even tap water from directly entering the city's storm water system.

Transporting Gas Cans

- With the most recent purchase of new and robust gas cans, Western is choosing to forgo secondary containment for transporting gasoline.
- Inspection of gas cans will occur on an annual basis to ensure that this choice continues to be in the best interest of storm water management.
- Secondary containment requirements still pertain to other chemicals, pesticides and gasoline in older gas cans.

Secure Your Load

- Ensure that your load is secured so that materials and chemicals do not fall out of your vehicle during transit.
- Use bungee cords, straps, cargo bar and/or anchoring against a side.

Soil & Sediment Controls

- Due to excavation and other land disturbance, Outdoor Maintenance is controlling unnecessary sediment from traveling towards the storm drain by using:
  - Cover practice options
  - Silt fencing
  - Sandbagging
  - Excavation permit process

Best Management Practices

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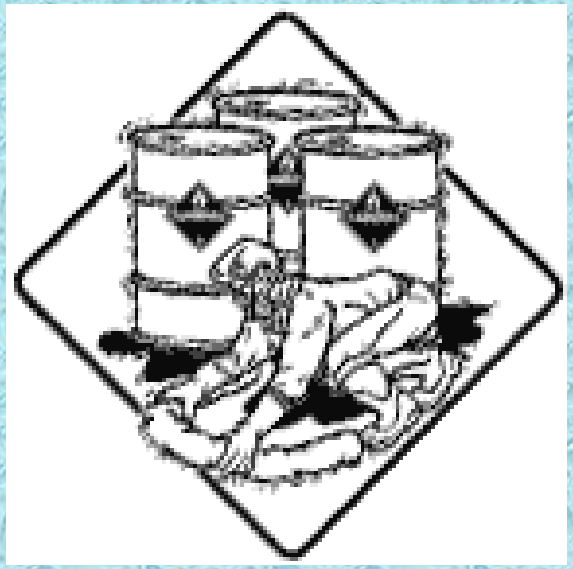
Storm Water Management BMP's



BMP OS-1 Good Housekeeping

- Promptly contain spills or leaks on soil, vegetation or paved area
- Do not hose down pollutants from any area to the ground or storm drain, conveyance ditch or receiving water
- Promptly repair or replace all leaking connections, pipes, hoses, valves, etc. which can contaminate storm water.

Storm Water Management BMP's

BMP OS-1 Good Housekeeping (cont.)

- Clean oil, debris, sludge from all systems like catch basins, settling detention basins, oil/ water separators to prevent contamination of the storm water.
  - Collect material for proper disposal.
  - Sludge from catch basins in parking areas may contain elevated levels of toxic metals.
  - Catch basin waste cannot be re-used on campus.

Storm Drain Maintenance

- Replace filters as necessary.
- Report missing labels to supervisor.

Storm Water Management BMP's

BMP OS-2 Preventative Maintenance

- Conduct all oily parts cleaning, steam cleaning, or pressure washing of equipment or containers inside a building or on an impervious contained area.
- Direct contaminated storm water from such an area to a sanitary sewer.
- Do not rinse pesticide or chemical containers here.
- Drain has its own sediment tank system separate from Auto shop oily water separator.

Storm Water Management BMP's

Oily Water Separator

- The runoff from the drain in the alley goes through this drain and into oily water separator.
- No need to dechlorinate car wash water as runoff flows in drain that leads to sanitary sewer.
- Water runoff can carry with it sediment, contaminants from cars including heavy metals and other toxins. (include?)

Storm Water Management BMP's

Oily Water Separator

- Two tank system
- Runoff from shop drain flows into tank 1 first, then into tank 2.
- Sediment cleaned out of these tanks need to be bagged and placed in the solid waste dumpster.

Storm Water Management BMP's

BMP OS-3 Spill Prevention and Cleanup

- If a spill has reached a sanitary or storm sewer, calls must be made ASAP in the following order:
  - Notify Supervisor who will call EHS and Work Control to mobilize a clean up crew as necessary
- Have spill containment and cleanup kits readily accessible.
- Do not flush absorbent materials or other spill cleanup materials to storm drain. Collect contaminated absorbent material and contact EHS for proper disposal.

Spill Kits at Auto Shop

Storm Drain Dam

A cover for storm drain is located in a blue cylinder with white caps on the east side of the Garage. If and a spill occurs and it poses a threat to the storm drain,

- Remove cover and place over storm drain
- Contact your supervisor and
- Call EHS at 650-3064.

Kitty Litter

If kitty litter is used for spill cleanup and it needs to be disposed of, collect it in a 55 gallon drum. Contact EHS for disposal if drum is near full or full.

Spill Kits at Outdoor Maintenance

- Two kits are located in the Outdoor Maintenance Shop balcony. Contains spill booms, socks, plastic bags, emergency response guide.
- Placed in vehicles when transporting hazardous materials.

Spill Kit Usage

- Use booms/ socks to contain spill and/or divert away from storm drain
- Use spill pads to absorb material
- Use bags and/or 5 gallon pail to contain spill debris and contact EHS for proper disposal

Truck Spill Kits

Spill Kits for trucks and vehicles contain:

- Spill pads
- Two socks
- 1 pair gloves
- Plastic bag

Large Spill Kits Locations

Several Large spill kits are available to handle spills at locations:

- Facilities Maintenance Warehouse
- Shannon Point Marine Center
- Weight Training Room

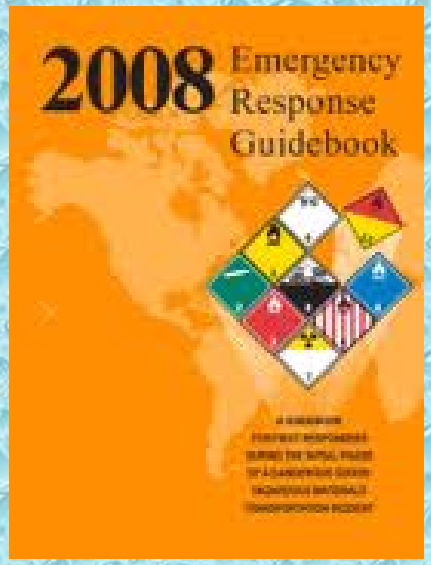
- Replacement items are stored in the Maintenance Warehouse

Spill kits for mowers, backhoe, & other outdoor maintenance equipment

All large equipment items powered by gas or diesel must have a spill kit available on hand when operating

Take pics of some of these when they are assembled

Emergency Response Guidebook (ERG)



- ERG contains information on potential hazard and emergency response information.
- Provides guidance on:
  - Spills or Leaks
  - First Aid
  - Fire
  - Health

Pollutant Control Measures

What can you do to at home and at work to control pollutants entering our waterway?

- Scoop the Poop! – Pick up your dog waste, place it in the garbage and wash your hands.
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- Drip-free cars – Contain oil leaks that you know about until you can get your vehicle fixed.
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- Recycling & Disposal Services (RDS) in Ferndale: Recyclables and non-hazardous waste such as household trash and wood/ concrete debris
- Others:
  - ReStore
  - ReElectronics
  - Z Recyclers

Summary - Transportation

- Always use secondary containment when transporting chemicals.
- Secure your load! This includes chemicals and materials such as empty drums.
- Have a spill kit in your vehicle for immediate response capability.

Summary – Spill Response and Potable Water Discharge

- In the event of a chemical spill or illicit discharge
  - Call your supervisor who will call EHS and Work Control
- Know where the FM spill kits are located and how to use them.
- Use dechlorinating tablets for potable water discharge to the storm drain.
- If potable water is being used for outdoor cleaning, it must be diverted into vegetation or collected.

Storm Water Management

Protecting the ecology of Whatcom County is part of EVERY WWU employee's responsibility!

Only rain down the drain!

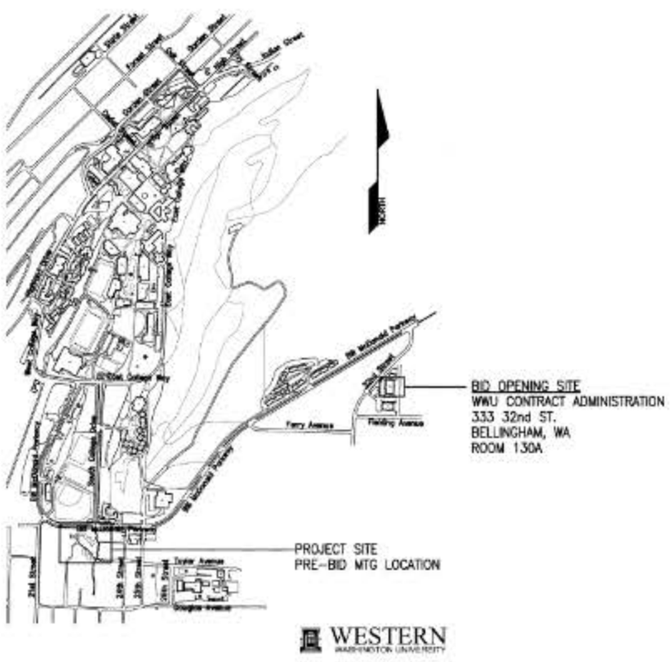
ASSOCIATED PROJECT CONSULTANTS, INC., P.S.
A·P·C INCORPORATED
CIVIL ENGINEERS, PROJECT AND LAND USE MANAGEMENT, BUILDING, STRUCTURAL, AND ENVIRONMENTAL SERVICES
1401 ASTOR STREET, BELLINGHAM, WA. 98225
PHONE (360) 671-1146 FAX (360) 671-1169

Att-19A

Western Washington University

Stormwater Detention Facility Restoration

PW656



PROJECT VICINITY MAP

NOT TO SCALE

BELLINGHAM, WASHINGTON

GENERAL NOTES

1. GENERAL PROJECT REQUIREMENTS AND STANDARDS

A. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.

B. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS, THE CONTRACT DOCUMENTS, AND THE CURRENT WSDOT STANDARD SPECIFICATIONS. IN THE EVENT OF A CONFLICT THE MOST STRINGENT REQUIREMENTS SHALL APPLY.

C. THE CONTRACTOR SHALL CHECK AND VERIFY ALL EXISTING CONDITIONS BEFORE PROCEEDING WITH WORK. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE LOCATION OF UNDERGROUND PIPING AND STRUCTURES, UTILITIES, AND OTHER ABOVE AND BELOW GROUND SITE FEATURES TO ENSURE COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. ANY CONFLICTS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.

D. ALL WORK AND MATERIALS SHALL BE SUBJECT TO APPROVAL BY WESTERN WASHINGTON UNIVERSITY AND THE ENGINEER. REPRESENTATIVES FROM THE ENGINEER MUST INSPECT ALL WORK. THE CONTRACTOR SHALL CALL AT LEAST 24 HOURS IN ADVANCE TO SCHEDULE INSPECTIONS AS REQUIRED IN THE CONTRACT DOCUMENTS.

E. THE WESTERN WASHINGTON UNIVERSITY CAMPUS IS OCCUPIED. THERE ARE EXISTING UTILITIES ON THE PROPERTY THAT SHALL BE MAINTAINED WITHOUT DISRUPTION. THE CONTRACTOR SHALL PAY ALL COSTS OF REPAIRS IF DAMAGED. THE CONTRACTOR SHALL RESTORE ALL PRIVATE AND PUBLIC PROPERTY DISRUPTED BY THE PROJECT IMMEDIATELY AFTER CONSTRUCTION.

F. CONTRACTOR SHALL INFORM THE ENGINEER AND OBTAIN APPROVAL FROM WESTERN WASHINGTON UNIVERSITY OF ANY PROPOSED CHANGES IN PLAN PRIOR TO CONSTRUCTION OF THAT CHANGE. CONTRACTOR SHALL KEEP RECORD OF DEVIATIONS AND FORWARD TO THE ENGINEER.

G. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND AS-BUILT RECORD DRAWINGS. IT SHALL BE THE CONTRACTORS FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES AND OWNERS TO LOCATE THEIR FACILITIES PRIOR TO STARTING CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE. CALL 1-800-424-5555.

H. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.

I. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE AT LEAST ONE FLAGGER FOR EACH LANE OF TRAFFIC AFFECTED. ALL SECTIONS OF THE WSDOT STANDARD SPECIFICATIONS 1-07.23(1) - TRAFFIC CONTROL SHALL APPLY.

J. AN APPROVED COPY OF THESE PLANS AND ALL REQUIRED PERMITS MUST BE ON-SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

2. GENERAL DRAWING NOTES

A. DRAWING INTENT:
THE INTENT OF THE DRAWINGS IS TO PROVIDE NECESSARY INFORMATION WITH MINIMAL REPETITION OR DUPLICATION. THE CONTRACTOR IS TO UTILIZE ALL DRAWINGS IN FORMULATING THE BID AND DETERMINING THE SCOPE OF WORK.

B. DRAWING OMISSIONS OR CONFLICTS:
OMISSIONS OR CONFLICTS, BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS AND/ OR SPECIFICATIONS, SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER BY THE CONTRACTOR. THE OMISSION OR CONFLICT SHALL BE RESOLVED BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK OR RELATED WORK.

C. TYPICAL DETAILS:
TYPICAL DETAILS SHOWN ON THE DRAWINGS SHALL BE INCORPORATED AT ALL APPROPRIATE LOCATIONS WHETHER SPECIFICALLY REFERENCED AT EACH LOCATION OR NOT.

D. DRAWING SCALE:
DO NOT SCALE DRAWINGS. IF DRAWINGS ARE LESS THAN 24" X 36" THEN THE PRINT HAS BEEN REDUCED.

PROJECT DIRECTORY

PROJECT MANAGER:
SANDY FUGAMI, P.E., LEED:AP
MECHANICAL ENGINEER
WESTERN WASHINGTON UNIVERSITY
FACILITIES DEVELOPMENT

CIVIL ENGINEER, PRIME CONSULTANT:
DOUGLAS N. CAMPBELL, P.E.
ASSOCIATED PROJECT CONSULTANTS, INC., P.S.
1401 ASTOR STREET
BELLINGHAM, WA 98225
PHONE: 360-671-1146

SHEET INDEX

C1.0 COVER SHEET AND GENERAL NOTES
C2.0 OVERALL DRAINAGE FACILITY SITE PLAN
C2.1 EXISTING CONDITIONS SITE PLAN
C3.0 TEMPORARY EROSION AND SEDIMENT CONTROL PLAN
C3.1 SWPPP AND EROSION CONTROL DETAILS
C4.0 WATER QUALITY FACILITY RESTORATION PLAN
C4.1 ALTERNATES 1 AND 2
C5.0 WATER QUALITY FACILITY DETAILS
C6.0 ALTERNATE 3: DETENTION VAULT ACCESS PLAN
C6.1 ALTERNATE 3: DETENTION VAULT SEDIMENT REMOVAL
C6.2 ALTERNATE 3: DETENTION VAULT EAST INLET
C6.3 ALTERNATE 3: DETENTION VAULT WEST INLET
C6.4 ALTERNATE 3: DETENTION VAULT DETAILS

Client

Quality Assurance Coordinator

Project Manager
Facilities Development

Assistant Director
Facilities Development

Project Engineer
Douglas N. Campbell, P.E.

AS-BUILT - RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

A·P·C INCORPORATED

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER
DETENTION FACILITY RESTORATION
COVER SHEET AND GENERAL NOTES

Client Review | Mechanical Review | Reviewed By | Approved By
Designed By | Drawn By | Project Manager | Date

Building Code: UT
Sheet # 1 of 13: C1.0
Job Number: PW656
Microfilm Number: N4809

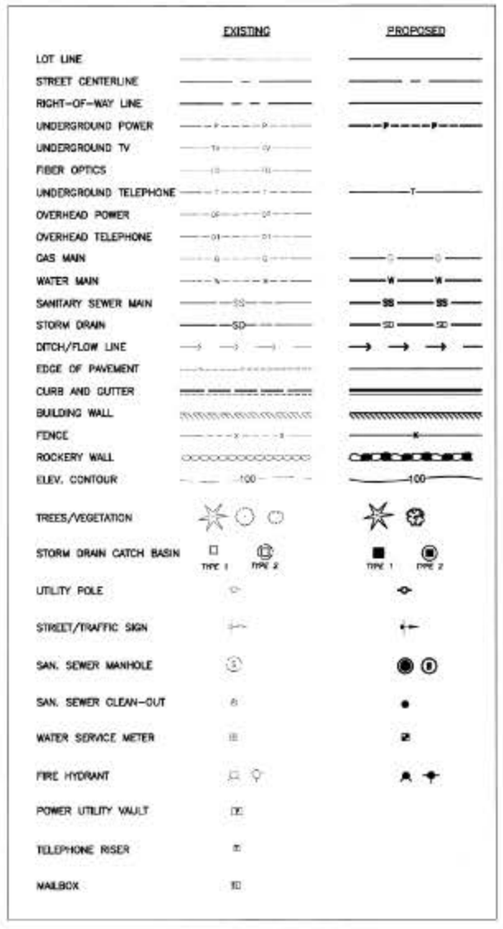
ABBREVIATIONS

C.L.	CENTERLINE
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
F.L.	FLOW LINE
F.F.	FINISHED FLOOR
EL./ELEV.	ELEVATION
P.L.	PROPERTY LINE
CONC.	CONCRETE
GALV.	GALVANIZED
D.I.	DUCTILE IRON
C.U.	COPPER
PVC	POLY VINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE
P.E.	POLYETHYLENE
I.E.	INVERT ELEVATION
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
SDCB	STORM DRAIN CATCH BASIN
SDMH	STORM DRAIN MANHOLE
RT.	RIGHT
LT.	LEFT
R	RADIUS
L	ARC LENGTH
LF	LINEAR FEET
CONC. S/W	CONCRETE SIDEWALK
N	NORTH
E	EAST
S	SOUTH
W	WEST
NE	NORTHEAST
SE	SOUTHEAST
SW	SOUTHWEST
NW	NORTHWEST
OWS	OIL/WATER SEPARATOR
EX./EXIST.	EXISTING
R.O.W.	RIGHT OF WAY
E.O.P.	EDGE OF PAVEMENT
B.S.W.	BACK OF SIDEWALK
F.C.	FACE OF CURB
T.C.	TOP OF CURB
T.B.C.	TOP BACK OF CURB
N.I.C.	NOT IN CONTRACT

NOTES:
1. NOT ALL ABBREVIATIONS HAVE BEEN USED IN THE PROJECT DRAWINGS.

2. THERE MAY BE ABBREVIATIONS USED THAT ARE NOT LISTED IN THE ABBREVIATION SCHEDULE. ADVISE ENGINEER IF THERE ARE ABBREVIATIONS USED, WHICH ARE NOT LISTED, THAT REQUIRE CONFIRMATION OF MEANING.

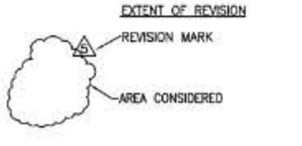
LINETYPE AND SYMBOL LEGEND



NOTES:
1. NOT ALL SYMBOLS, LINETYPES, AND ABBREVIATIONS HAVE BEEN USED IN THE PROJECT DRAWINGS.

2. THERE MAY BE SYMBOLS, LINETYPES, AND ABBREVIATIONS USED THAT ARE NOT SHOWN IN THE LEGEND. ADVISE ENGINEER IF THERE ARE SYMBOLS OR LINETYPES USED THAT REQUIRE CONFIRMATION OF MEANING.

REVISIONS NOTATION



STAGING AREA AND PARKING NOTES

1. CONTRACTOR PARKING, STORAGE, STOCKPILING, ETC. SHALL BE ALLOWED ONLY WITHIN THE DESIGNATED STAGING AREAS AS SHOWN ON THE PLANS, SEE SPECIFICATIONS SECTION 015000.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY AND SECURITY FENCING OR OTHER MEASURES AS REQUIRED TO SECURE AND PROVIDE FOR SAFETY WITHIN THE AREAS WHERE WORK IS IN PROGRESS, AND WITHIN STAGING AREAS.

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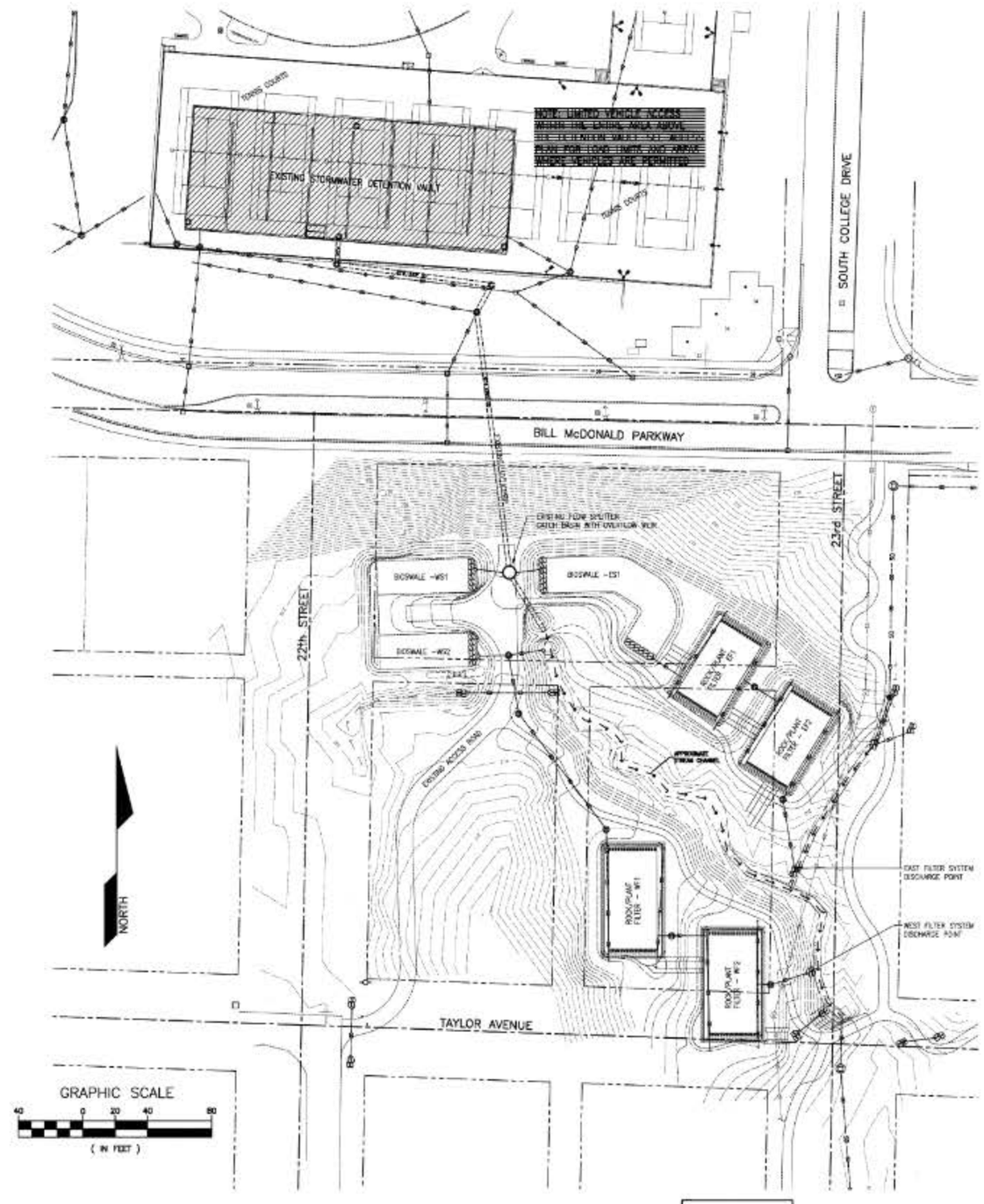
Att-19B



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AS-BUILT - RECORD DRAWINGS OCTOBER 2012

A·P·C INCORPORATED

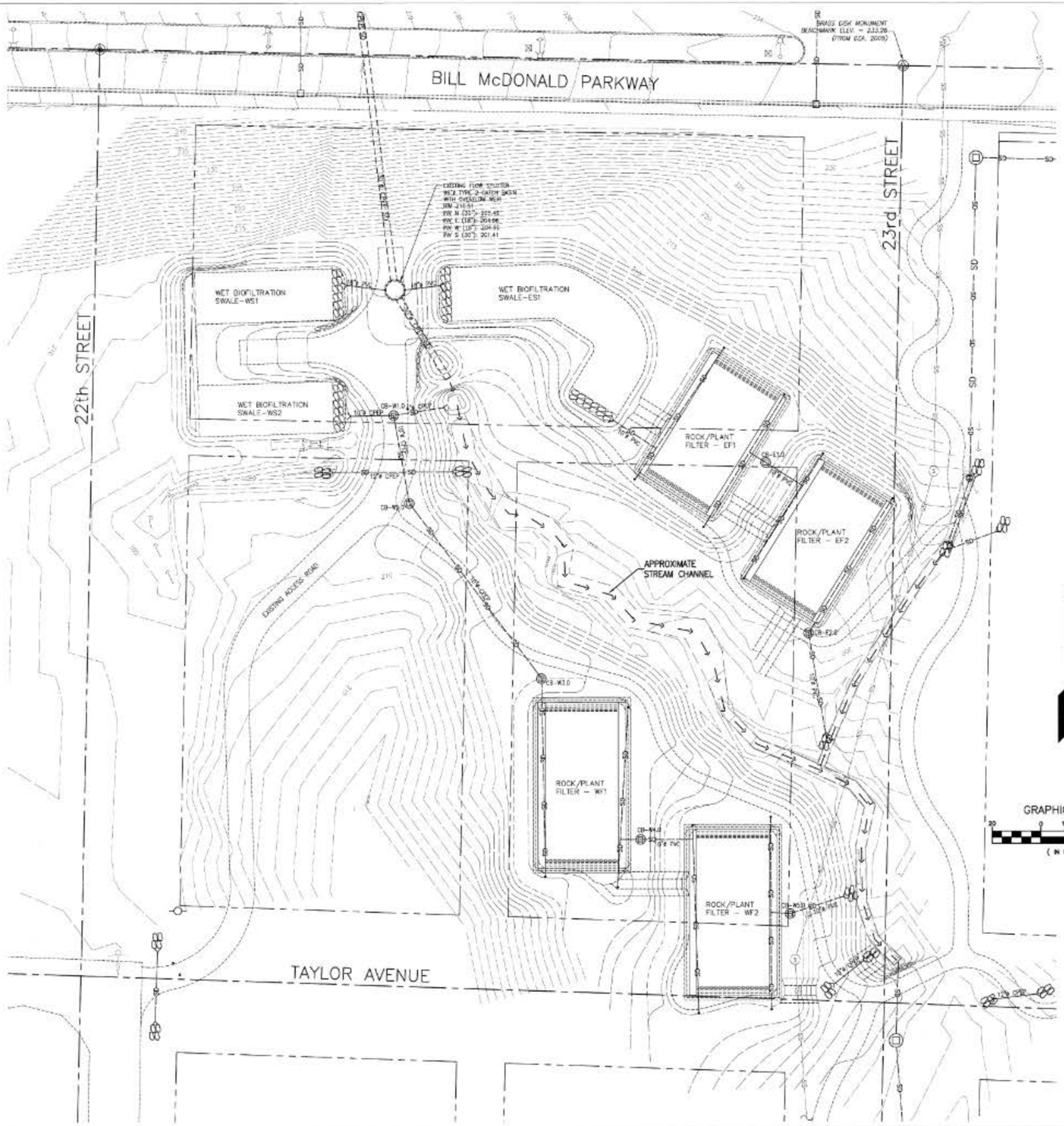
REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
OVERALL DRAINAGE FACILITY SITE PLAN

Client Review | Maintenance Review | Recommend for Review | Approved by
Designed by | Drawn by | Project Manager | Date

Building/Zone: UT
Sheet 8 of 13: C2.0
Job Number: PW656
Microfilm Number: N4810



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Att-19C

EXISTING SITE PLAN NOTES

1. EXISTING SITE CONDITIONS MAP INCLUDING ALL PROPERTY LINES, EASEMENTS, EXISTING SITE FEATURES, TOPOGRAPHY, BUILDINGS, UTILITIES, AND OTHER FEATURES, IS BASED ON AS-BUILT RECORD DRAWINGS FROM WWU PROJECTS PW-275, PW-388, PW-393, AND PW-497, AND ON THE AS-BUILT SURVEY DRAWING PREPARED BY DAVID EVANS AND ASSOCIATES DATED 12/19/2005. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS

2. THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR, SEE GENERAL NOTES IN PLAN SET.

3. EXISTING UTILITIES ARE SHOWN BASED ON THE REFERENCED TOPOGRAPHIC SURVEY AND WWU RECORD DRAWINGS, AND MAY NOT REPRESENT ALL UNDERGROUND OR ABOVE-GROUND UTILITIES OR SITE FEATURES. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.

PROJECT INTENT

1. This project will maintain and rehabilitate the WWU South Campus Water Quality Facility, including removal of sediment, replacement of gravel and plant materials, and other restoration work as shown on these plans.

2. The design of the South Campus Water Quality Facility, including the choice of system type, design criteria, standards, flow capacities, treatment levels, and all aspects of the facility design are the responsibility of the Engineer of Record for the original design and construction, and are not within the scope or intent of the current project.

3. As shown on these plans, the maintenance and rehabilitation work includes improvements to the facility, such as improved sediment catchment structures. These improvements do not change the basic operation of the system and are consistent with the original design intent.

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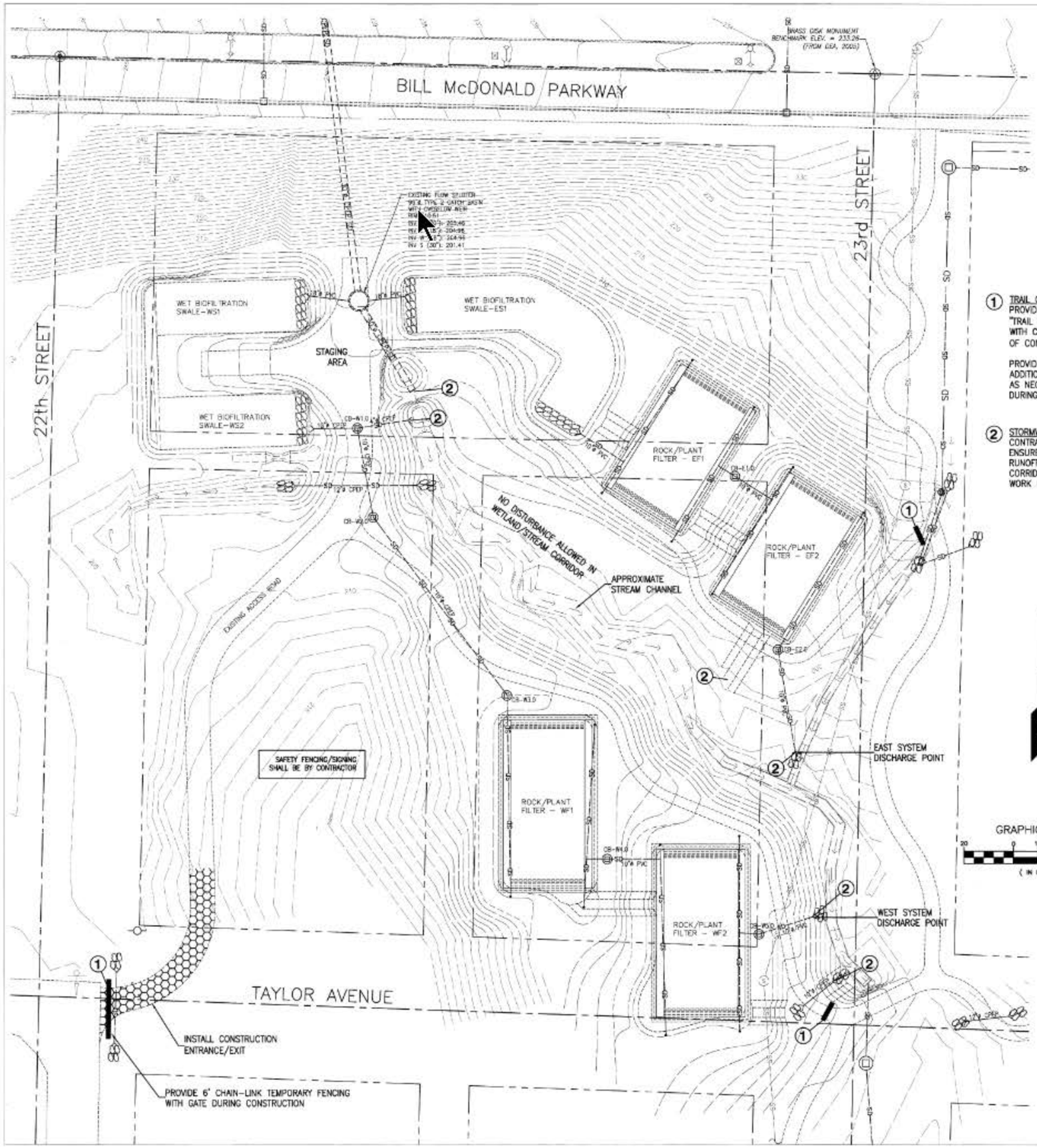
AS-BUILT - RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
EXISTING CONDITIONS SITE PLAN

Building/Zone: UT
Sheet # 3 of 13
C2.1
Job Number: PW656
Microfilm Number: N4811



① TRAIL CLOSURE POINT
PROVIDE SIGN READING
"TRAIL CLOSED FOR CONSTRUCTION"
WITH CONTACT NAME AND PHONE NUMBER OF CONTRACTOR'S PROJECT MANAGER.

PROVIDE TEMPORARY FENCING, BARRICADES, ADDITIONAL SIGNING, OR OTHER MEASURES AS NECESSARY TO RESTRICT ACCESS DURING CONSTRUCTION.

② STORMWATER DISCHARGE POINT
CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT NO POLLUTED STORMWATER RUNOFF IS DISCHARGED TO THE STREAM CORRIDOR AS A RESULT OF CONSTRUCTION WORK UNDER THIS PROJECT.

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Att-19D

EROSION CONTROL NOTES

1. THE IMPLEMENTATION OF THE EROSION CONTROL PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF EROSION CONTROL FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION IS ESTABLISHED.

2. THE EROSION CONTROL FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL LAND DISTURBING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS. THE EROSION CONTROL FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS, DURING THE CONSTRUCTION PERIOD, THESE EROSION CONTROL FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.

3. THE EROSION CONTROL FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING. THE EROSION CONTROL FACILITIES ON INACTIVE PORTIONS OF THE SITE SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE PER MONTH OR WITHIN 48 HOURS FOLLOWING A MAJOR STORM EVENT. IF AT ANY TIME IT IS DETERMINED THAT THE OBJECTIVES OF THE TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN ARE NOT BEING MET, ADDITIONAL DEPARTMENT OF ECOLOGY BEST MANAGEMENT PRACTICES MAY BE REQUIRED.

4. ALL EROSION CONTROL MEASURES AND FACILITIES ARE TO BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

5. ALL DISTURBED AREAS OR EXPOSED SOILS SHALL BE COVERED WITH MULCH OR WOOD CHIPS IF SOILS ARE TO REMAIN UNWORKED FOR MORE THAN 2 DAYS, OCTOBER 1 THROUGH APRIL 30, OR 7 DAYS, MAY 1 THROUGH SEPTEMBER 30. UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS AND CUT/FILL SLOPES ARE TO BE SEEDED WITH THE FOLLOWING EROSION CONTROL SEED MIXTURE:

75-80% TALL FESCUE
10-15% SEASIDE/COLONIAL BENTGRASS
5-10% REDTOP

CONTRACTOR SHALL BE RESPONSIBLE FOR VEGETATION UNTIL IT IS FULLY ESTABLISHED, AS APPROVED BY THE ENGINEER.

6. ANY TEMPORARY DITCHES OR DIVERSIONS OF WATER SHALL BE ROUTED THROUGH STILLING POOLS AND PROVIDED WITH PEA GRAVEL CHECK DAMS AT A MAXIMUM SPACING OF 50' O.C.

7. EXISTING CATCH BASINS ACCEPTING RUNOFF FROM THE SITE AND DRAINAGE INLETS PLACED INTO SERVICE PRIOR TO FULL SITE STABILIZATION SHALL BE PROTECTED WITH CATCH BASIN INSERTS PER CITY OF BELLINGHAM STANDARD PLAN EC-620.

8. ALL SAWCUTTING AND SURFACING SHALL BE PERFORMED IN ACCORDANCE WITH DEPARTMENT OF ECOLOGY BMP C152. SLURRY AND CUTTINGS SHALL BE VACUUMED DURING SAWCUTTING OPERATIONS, SHALL NOT REMAIN ON PERMANENT PAVEMENT OVERNIGHT, SHALL NOT DRAIN TO ANY NATURAL OR CONSTRUCTED DRAINAGE CONVEYANCE, AND SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT VIOLATE GROUNDWATER OR SURFACE WATER QUALITY STANDARDS.

TRAIL CLOSURE AND MAINTENANCE NOTES

1. THE PROJECT SITE CONTAINS SEVERAL SECTIONS OF PUBLIC ACCESS TRAILS, AS SHOWN ON THE SITE PLAN. A PORTION OF THE TRAILS WERE CONSTRUCTED TO PROVIDE MAINTENANCE ACCESS TO THE WATER QUALITY FACILITY. CLOSURE OF THE TRAILS AS SHOWN IS ANTICIPATED THROUGHOUT THE DURATION OF WORK UNDER THIS PROJECT.

2. THE CONTRACTOR SHALL CLOSE THE TRAILS THROUGH THE CONSTRUCTION AREA DURING THE WORK, AND SHALL BE RESPONSIBLE TO PROVIDE ALL SIGNING, SAFETY FENCING AND OTHER MEASURES TO LIMIT ACCESS. SEE SPECIFICATIONS SECTION 015800 FOR ADDITIONAL REQUIREMENTS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT IS REQUIRED DURING CONSTRUCTION AS SHOWN ON THE TEMPORARY EROSION CONTROL PLAN AND DETAILS. FOLLOWING COMPLETION OF THE RESTORATION WORK, THE CONTRACTOR SHALL RESTORE THE TRAIL TO ITS ORIGINAL CONDITION PRIOR TO THIS PROJECT.

4. ALL WEAR AND DAMAGE TO THE TRAILS CAUSED BY THIS PROJECT, OR AS A RESULT OF THE CONTRACTOR'S MEANS AND METHODS SHALL BE RESTORED TO THE TRAILS ORIGINAL CONDITION PRIOR TO THIS PROJECT.

STAGING AREA NOTES

1. PREPARATION AND STABILIZATION OF STAGING AREA AS REQUIRED SHALL BE THE CONTRACTORS RESPONSIBILITY. THE STAGING AREA IS PROVIDED AS AN OPTION FOR THE CONTRACTOR'S CONVENIENCE AND ALL COSTS TO PREPARE, STABILIZE, MANAGE, AND RESTORE THE AREA SHALL BE AT THE CONTRACTOR'S EXPENSE. STAGING SHALL BE LIMITED TO THE EXISTING TRAIL/ACCESS AREA AND SHOULDERS. NO TREE REMOVAL WILL BE PERMITTED.

2. FOLLOWING CONSTRUCTION, THE STAGING AREA SHALL BE FULLY RESTORED TO ITS PRE-PROJECT CONDITION, INCLUDING AT A MINIMUM MULCHING, SEEDING, AND REPLACEMENT OF DAMAGED VEGETATION AS REQUIRED BY THE OWNER.

CALL 2 DAYS BEFORE YOU DIG 1-800-424-5555

AS-BUILT - RECORD DRAWINGS OCTOBER 2012

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

Client Review | Maintenance Review | Supervisor Review | Approved by
Designed by | Drawn by | Project Manager | Date

Building/Zone: UT
Sheet # 4 of 12
C3.0
Job Number: PW656
Microfilm Number: N4812

Att-19E

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

Element 1: Mark Clearing Limits

– Prior to beginning land disturbing activities, including clearing and grading, all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area should be clearly marked, both in the field and on the plans, to prevent damage and offsite impacts.

– Plastic, metal, or stake wire fence may be used to mark the clearing limits.

Prior to beginning construction, the limits of disturbance shall be staked on the site by the project surveyor. Flagging and Silt Fence will be installed around the perimeter of the site along the limits of disturbance as shown on the approved clearing plan, and shall be maintained throughout construction.

Element 2: Establish Construction Access

– Construction vehicle access and exit shall be limited to one route if possible.

– Access points shall be stabilized with quarry spalls or crushed rock to minimize the tracking of sediment onto public roads.

– Wheel wash or tire baths should be located on-site, if applicable.

– Roads shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by shoveling or pickup sweeping and shall be transported to a controlled sediment disposal area. Street washing will be allowed only after sediment is removed in this manner.

– Street wash wastewater shall be controlled by pumping back onsite, or otherwise be prevented from discharging into systems tributary to state surface waters.

– Construction access restoration shall be equal to or greater than the pre-construction condition.

Element 3: Control Flow Rates

– Properties and waterways downstream from development sites shall be protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater runoff from the project site.

Element 4: Install Sediment Controls

– The duff layer, native topsoil, and natural vegetation shall be retained in an undisturbed state to the maximum extent practicable.

– Prior to leaving the construction site, stormwater runoff from disturbed areas shall pass through a sediment pond or other appropriate sediment removal BMP. Runoff from fully stabilized areas may be discharged without a sediment removal BMP. Full stabilization means concrete or asphalt paving; quarry spalls used as ditch lining; or the use of rolled erosion products, a bonded fiber matrix product, or vegetative cover in a manner that will fully prevent soil erosion. The local permitting authority shall inspect and approve areas stabilized by means other than pavement or quarry spalls.

– Sediment ponds, vegetated buffer strips, sediment barriers or filters, dikes, and other BMPs intended to trap sediment on-site shall be constructed as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.

– Earthen structures such as dams, dikes, and diversions shall be seeded and mulched according to the timing indicated in element #5.

During grading activities, all runoff from disturbed areas shall be routed through the stormwater ponds, or through drop-inlet plunge pools prior to dispersed outfall into a vegetated area. Ditches and swales shall have erosion control check dams per City of Bellingham standard detail EC-645 at a maximum spacing of 100-feet on center. Storm drain inlets shall be protected with catch basin inserts per City of Bellingham standard detail EC-620.

The Erosion Control Specialist shall monitor the condition and performance of all sediment control BMPs regularly. If at any time during construction it is determined that the water quality requirements are not being achieved, additional BMPs may be required to prevent sedimentation downstream.

Element 5: Stabilize Soils

– All exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water, and wind erosion.

– From October 1 through April 30, no soils shall remain exposed and unworked for more than 2 days. From May 1 to September 30, no soils shall remain exposed and unworked for more than 7 days. This condition applies to all soils on site, whether at final grade or not. These time limits may be adjusted by the local permitting authority if it can be shown that the average time between storm events justifies a different standard.

– Soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

– Applicable practices include, but are not limited to, temporary and permanent seeding, sodding, mulching, plastic covering, soil application of polyacrylamide (PAM), early application of gravel base on areas to be paved, and dust control.

– Soil stabilization measures selected should be appropriate for the time of year, site conditions, estimated duration of use, and potential water quality impacts that stabilization agents may have on downstream waters or ground water.

– Soil stockpiles must be stabilized and protected with sediment trapping measures.

– Work on linear construction sites and activities, including right-of-way and easement clearing, roadway development, pipelines, and trenching for utilities, shall not exceed the capability of the individual contractor for his portion of the project to install the bedding materials, roadbeds, structures, pipelines, and/or utilities, and to re-stabilize the disturbed soils, meeting the timing conditions listed above.

Soil stabilization BMPs to be used on this site include BMP C120 Temporary and Permanent Seeding, BMP C121 Mulching, and BMP C140 Dust Control. Roadway areas shall be stabilized by installing gravel subgrade when grading is complete. Areas that will be vegetated shall be covered with mulch or hydroseeded in accordance with the approved TESCP.

Element 6: Protect Slopes

– Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion.
– Consider soil type and its potential for erosion.
– Reduce slope runoff velocities by reducing the continuous length of slope with terracing and diversions, reduce slope steepness, and roughen slope surface.
– Divert upslope drainage and run-on waters from off-site with interceptors at top of slope. Off-site stormwater should be handled separately from stormwater generated on the site. Diversion of off-site stormwater around the site may be a viable option. Diverted flows shall be redirected to the natural drainage location at or before the property boundary.
– Contain downslope collected flows in pipes, slope drains, or protected channels.
– Provide drainage to remove ground water intersecting the slope surface of exposed soil areas.
– Excavated material shall be placed on the uphill side of trenches, consistent with safety and space considerations.
– Check dams shall be placed at regular intervals within trenches that are cut down a slope.
– Stabilize soils on slopes, as specified in element #5.

Element 7: Protect Drain Inlets

– All storm drain inlets made operable during construction shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or treated to remove sediment.

– All approach roads shall be kept clean, and all sediment and street wash water shall not be allowed to enter storm drains without prior and adequate treatment unless treatment is provided before the storm drain discharges to waters of the state.

Sedimentation in the downstream conveyance system will be prevented by implementing the sediment trapping BMPs described above, and shown on the TESCP.

Element 8: Stabilize Channels and Outlets

– All temporary on-site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected velocity of flow from a 2 year, 24-hour frequency storm for the developed condition.

– Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes and downstream reaches shall be provided at the outlets of all conveyance systems.

Element 9: Control Pollutants

– All pollutants, including waste materials and demolition debris, that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of stormwater.

– Cover, containment, and protection from vandalism shall be provided for all chemicals, liquid products, petroleum products, and non-inert wastes present on the site (see Chapter 173-304 WAC for the definition of inert waste).

– Maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and de-greasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed on-site using temporary plastic placed beneath and, if raining, over the vehicle.

– Wheel wash, or tire bath wastewater, shall be discharged to a to separate on-site treatment system or to the sanitary sewer.

– Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations shall be followed for application rates and procedures.

– BMPs shall be used to prevent or treat contamination of stormwater runoff by pH modifying sources. These sources include bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer outwash waters.

Stormwater discharges shall not cause a violation of the water quality standard for pH in the receiving water.

Element 10: Control De-watering

– All foundation, vault, and trench de-watering water, which has similar characteristics to stormwater runoff at the site, shall be discharged into a controlled conveyance system, prior to discharge to a sediment trap or sediment pond. Channels must be stabilized, as specified in element #8.

– Clean, non-turbid de-watering water, such as well-point ground water, can be discharged to systems tributary to state surface waters, as specified in element #8, provided the de-watering flow does not cause erosion or flooding of the receiving waters. These clean waters should not be routed through sediment ponds with stormwater.

– Highly turbid or otherwise contaminated dewatering water, such as from construction equipment operation, clamshell digging, concrete tremie pour, or work inside a cofferdam, shall be handled separately from stormwater at the site.

– Other disposal options, depending on site constraints, may include: 1) infiltration, 2) transport off-site in vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters, 3) on-site treatment using chemical treatment or other suitable treatment technologies, or 4) sanitary sewer discharge with local sewer district approval if there is no other option.

Element 11: Maintain BMPs

– All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repair shall be conducted in accordance with BMPs.

– Sediment control BMPs shall be inspected weekly or after a runoff-producing storm event during the dry season and daily during the wet season.

– All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on site. Disturbed soil areas resulting from removal of BMPs or vegetation shall be permanently stabilized.

Element 12: Manage the Project

– Phasing of construction: Construction shall be phased and sequenced where feasible in order to prevent, to the maximum extent practicable, the transport of sediment from the development site during construction. Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the activities for any phase.

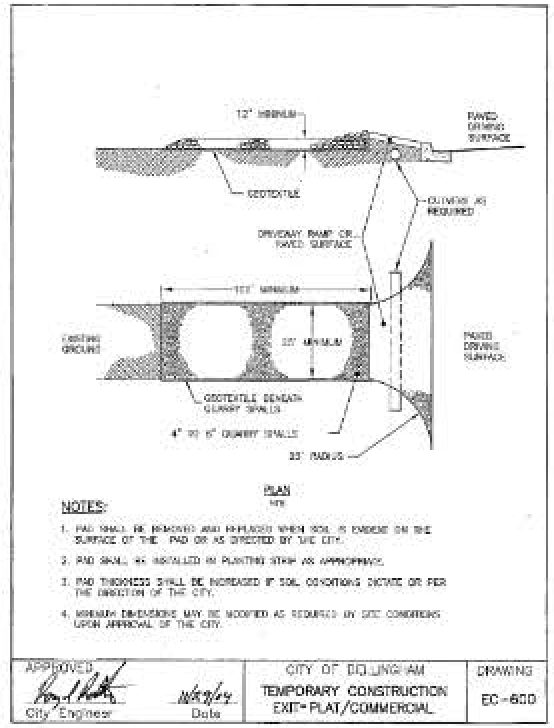
– Seasonal work limitations – from October 1 through April 30, clearing, grading, and other soil disturbing activities shall only be permitted if shown to the satisfaction of the local permitting authority that silt-laden runoff will be prevented from leaving the construction site through a combination of the following:
1. Site conditions including existing vegetative coverage, slope, soil type and proximity to receiving waters; and
2. Limitations on activities and the extent of disturbed areas; and
3. Proposed erosion and sediment control measures.

The following activities are exempt from the seasonal clearing and grading limitations:
1. Routine maintenance and necessary repair of erosion and sediment control BMPs;
2. Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil; and
3. Activities where there is one hundred percent infiltration of surface water runoff within the site in approved and installed erosion and sediment control facilities.

– Inspection and monitoring – all BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function.

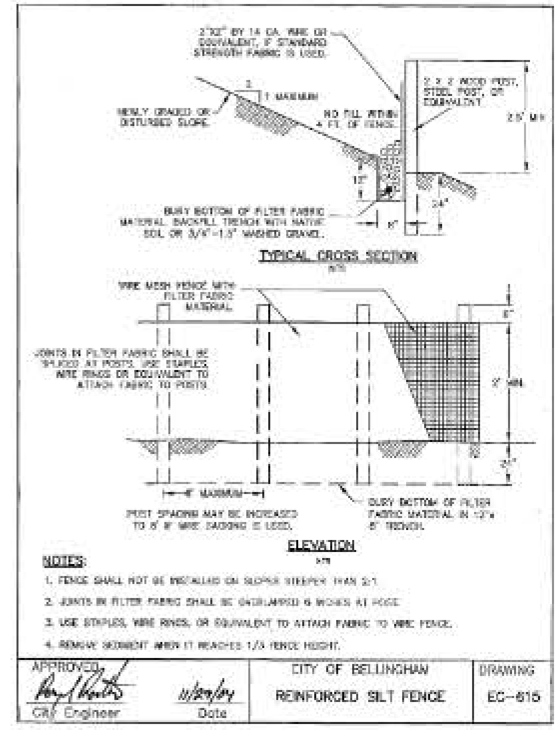
– Whenever inspection and/or monitoring reveals that the BMPs identified in the construction SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, the SWPPP shall be modified, as appropriate, in a timely manner.

– Maintenance of the construction SWPPP – the construction SWPPP shall be retained on-site or within reasonable access to the site. The construction SWPPP shall be modified whenever there is a significant change in the design, construction, operation, or maintenance of any BMP.



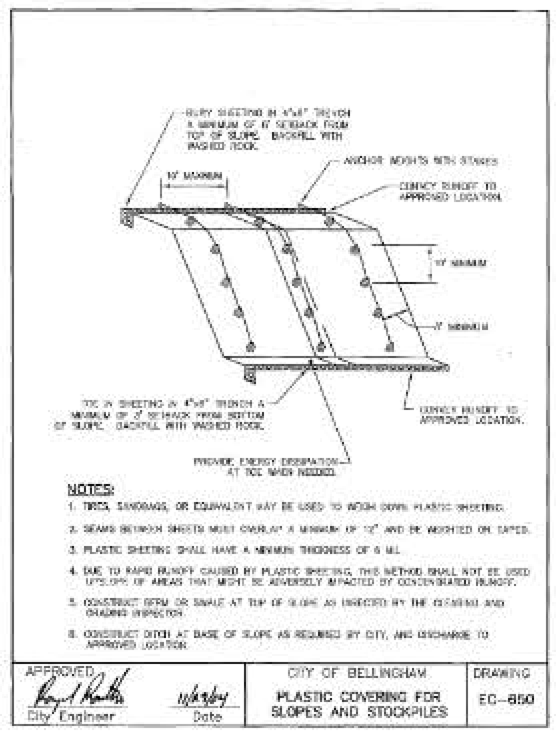
CONSTRUCTION EXIT

NOT TO SCALE



SILT FENCE

NOT TO SCALE



PLASTIC COVERING

NOT TO SCALE

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REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
SWPPP AND EROSION CONTROL DETAILS

Building/Zone: UT

Sheet: C3.1

Job Number: PW656

N4813

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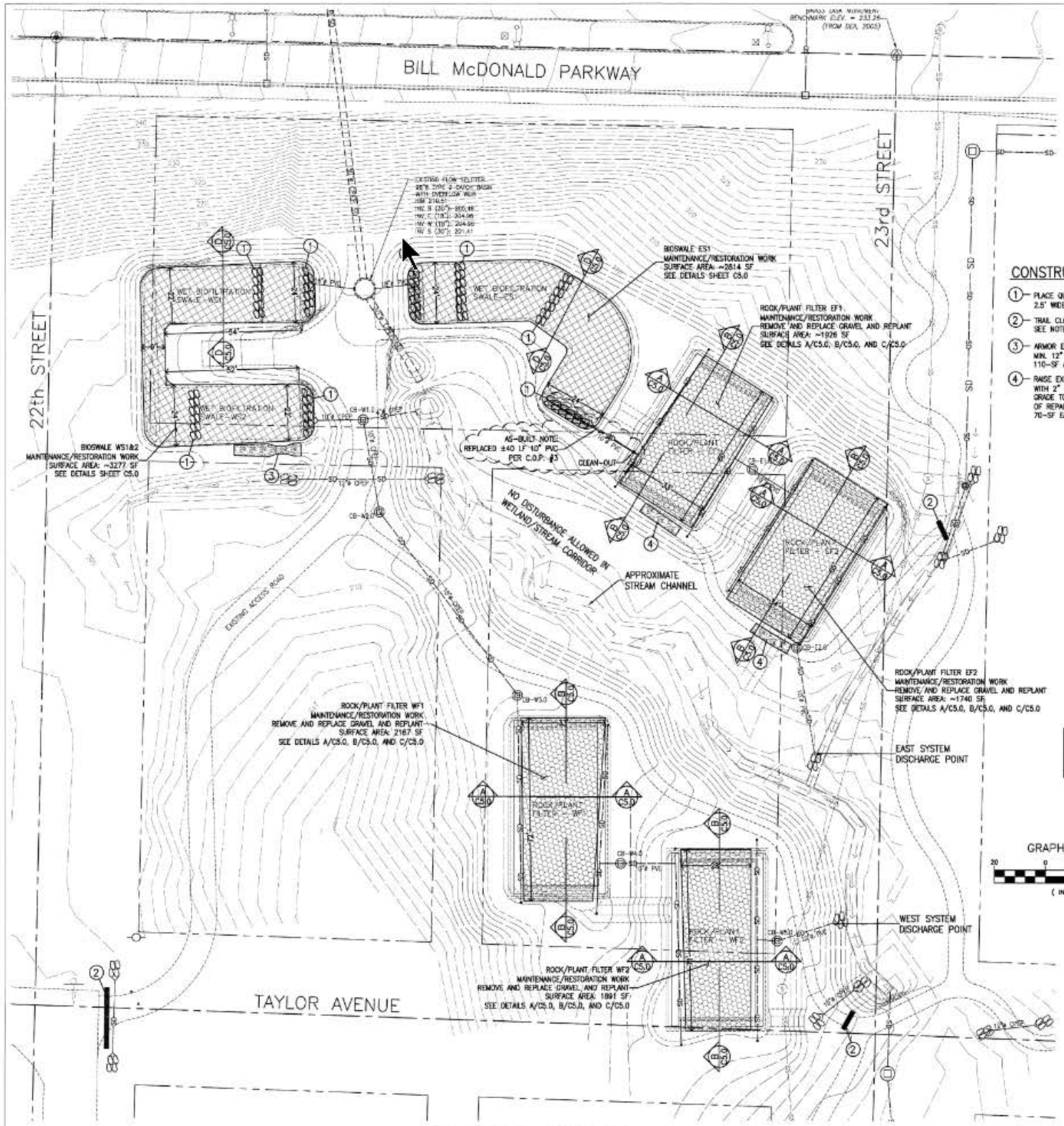

SITE PLAN – BASE BID
1" = 20'

CONSTRUCTION NOTE KEY:

1. PLACE QUARRY SPALLS MIN. 8" DEEP AND 2.5' WIDE ACROSS FULL WIDTH OF BIOSWALE
2. TRAIL CLOSURE POINT SEE NOTES ON SHEET C3.0
3. ARMOR EXISTING OVERFLOW SPILLWAY WITH MIN. 12" DEPTH OF QUARRY SPALLS, 110-SF AREA AS SHOWN
4. RAISE EXISTING TRAIL GRADE 12-INCHES WITH 2" CRUSHED ROCK OVER GRAVEL BASE, GRADE TO MATCH EXISTING TRAIL AT ENDS OF REPAIR AREA. (2) LOCATIONS, APPROX. 70-SF EACH.

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Att-19F

WATER QUALITY FACILITY MAINTENANCE NOTES

1. THE STORMWATER FACILITY IS ACTIVE AND CONTINUOUSLY RECIEVES RUNOFF FROM THE WWU SOUTH CAMPUS BASIN. THE ESTIMATED MINIMUM DRY SEASON BASE FLOW ENTERING THE SITE THROUGH THE EXISTING CONVEYANCE PIPES IS 25-GPM.

2. THE PROJECT WORK AREA IS ADJACENT TO REGULATED WETLAND AND STREAM AREAS THAT MUST BE PROTECTED AT ALL TIMES FROM DISTURBANCE AND FROM ANY DISCHARGE OF POLLUTANTS OR POLLUTED RUNOFF.

3. THE DOWNSTREAM STORMWATER CONVEYANCE IS PART OF THE CITY OF BELLINGHAM STORMWATER UTILITY, AND DISCHARGES TO PADDEN CREEK.

4. THE CONTRACTOR SHALL MANAGE THE PROJECT TO COMPLETE THE CONTRACT WORK, AND PROVIDE FOR SEQUENCING AND SCHEDULING TO MANAGE STORMWATER RUNOFF FROM THE SITE, AND STORMWATER ENTERING THE SITE FROM THE UPSTREAM DRAINAGE BASIN. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT NO TURBID OR OTHERWISE POLLUTED STORMWATER IS DISCHARGED FROM THE STORMWATER FACILITY TO THE ON-SITE WETLAND/STREAM AREAS OR THE DOWNSTREAM CONVEYANCE SYSTEM AS A RESULT OF THE WORK UNDER THIS CONTRACT.

5. THE CONTRACTOR'S WORK PLAN SHALL KEEP ONE SIDE (EAST OR WEST) OF THE STORMWATER TREATMENT FACILITY OPERATIONAL AT ALL TIMES. STORMWATER ENTERING THE SITE FROM UPSTREAM SHALL BE BYPASSED THROUGH THE OPERATIONAL AND STABILIZED PORTIONS OF THE WATER QUALITY FACILITY PRIOR TO DISCHARGE AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE ENGINEER BASED ON A WORK PLAN THAT PROVIDES EQUAL OR BETTER TREATMENT AND PROTECTION OF WATER QUALITY. WITH APPROVAL FROM THE ENGINEER, THE CONTRACTOR MAY ROUTE STORMWATER TO BYPASS THE WET BIOSWALE CELLS AND FLOW DIRECTLY TO THE ROCK PLANT FILTERS, TO ALLOW PLANT ESTABLISHMENT IN THE BIOWSWALES.

6. THE CONTRACTOR SHALL FLUSH AND CLEAN OUT ALL STORMWATER PIPES AND CATCH BASIN STRUCTURES WITHIN THE WATER QUALITY FACILITY, EXCEPT FOR PIPES DISCHARGING DIRECTLY TO THE WETLAND OR STREAM AREAS.

7. SEE THE PROJECT SPECIFICATIONS SECTION 310600 FOR DISPOSAL REQUIREMENTS FOR MATERIALS EXCAVATED OR OTHERWISE REMOVED FROM THE STORMWATER FACILITIES.

8. ALL DISTURBED AREAS SHALL BE RESTORED AND SEEDED FOR EROSION CONTROL. SEE THE TEMPORARY EROSION AND SEDIMENT CONTROL PLAN FOR SEED MIX FOR AREAS OUTSIDE THE WET BIOSWALES AND ROCK/PLANT FILTERS.

9. THE CONTRACTOR SHALL PROTECT IN PLACE ALL EXISTING PIPES, ROCK GABIONS, CATCH BASINS, STRUCTURES, WALLS, SLOPES, TRAILS, CLAY LINER, VEGETATION AND OTHER EXISTING FEATURES TO REMAIN. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

ROCK/PLANT FILTER PLANTING SCHEDULE

QUANTITY	SPECIES	SIZE	SPACING
328	sawbreak sedge (Carex stipata)	5" root-length	2' O.C.
328	slough sedge (Carex obnupta)	5" root-length	2' O.C.
328	hardstem bulrush (Scirpus acutus)	5" root-length	2' O.C.
328	small-fruited bulrush (Scirpus microcarpus)	5" root-length	2' O.C.

See the Project Specifications Section 329000 for Planting Requirements

WET BIOSWALE SEED MIX

[Seed mix revised by approved Contractor substitution – As-built]

SPECIES	% by Weight
creeping bentgrass, Penncross	10%
redtop	10%
tall fescue, Fawn	10%
ladino clover	10%
creeping foxtail, Garrison	15%
water foxtail	15%
American sloughgrass	15%
spike bentgrass	15%

SEEDING SHALL INCLUDE FERTILIZER APPLICATION AT THE FOLLOWING RATES:
134 lbs/acre of Total Nitrogen
58 lbs/acre of phosphoric acid (P205)
58 lbs/acre of soluble potash (K20)

AS-BUILT – RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
WATER QUALITY FACILITY RESTORATION PLAN

Building/Zone: UT
Sheet # 5 of 13: C4.0
Job Number: PW656
Microfilm Number: N4814

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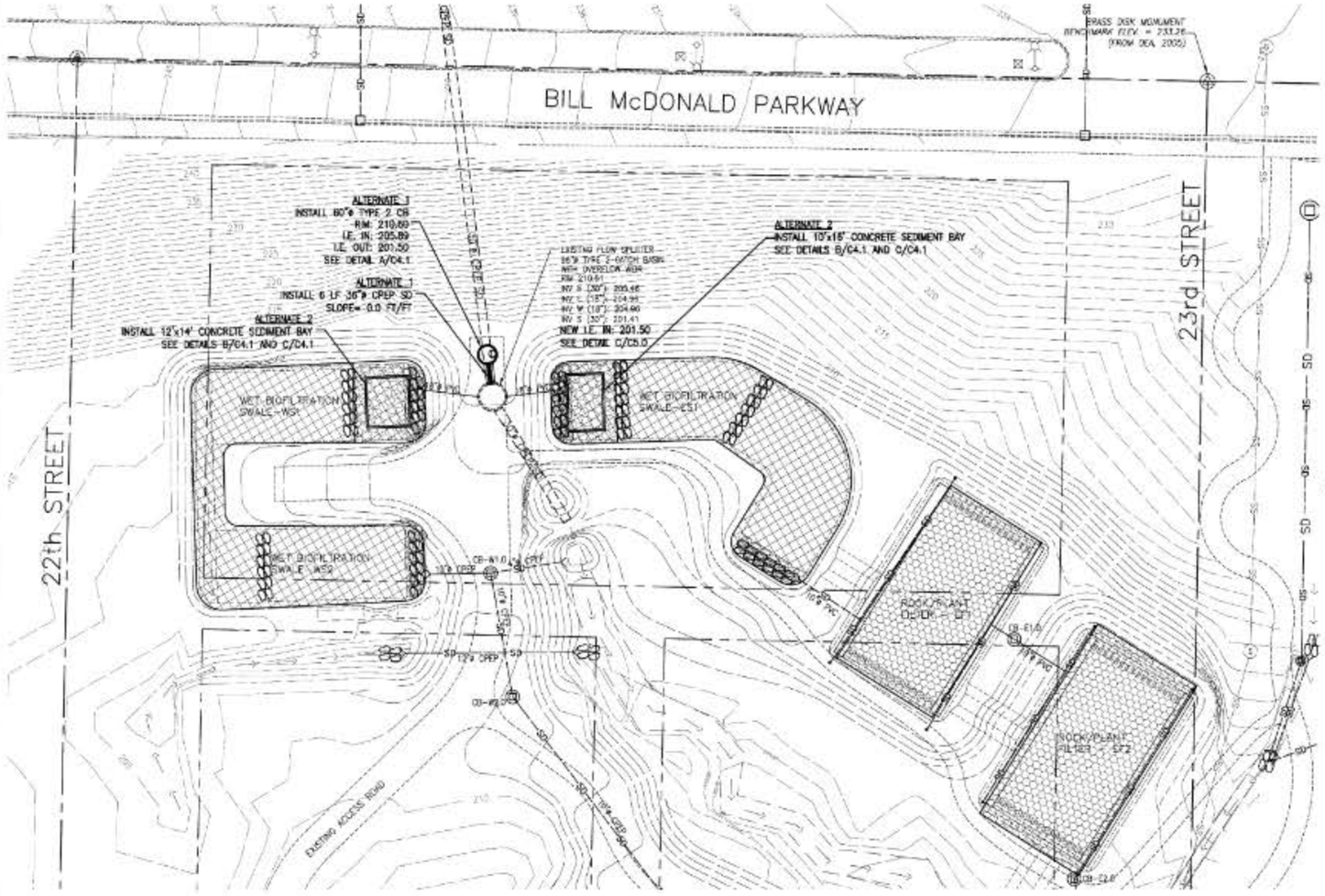
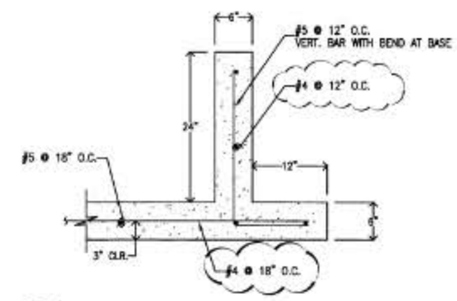
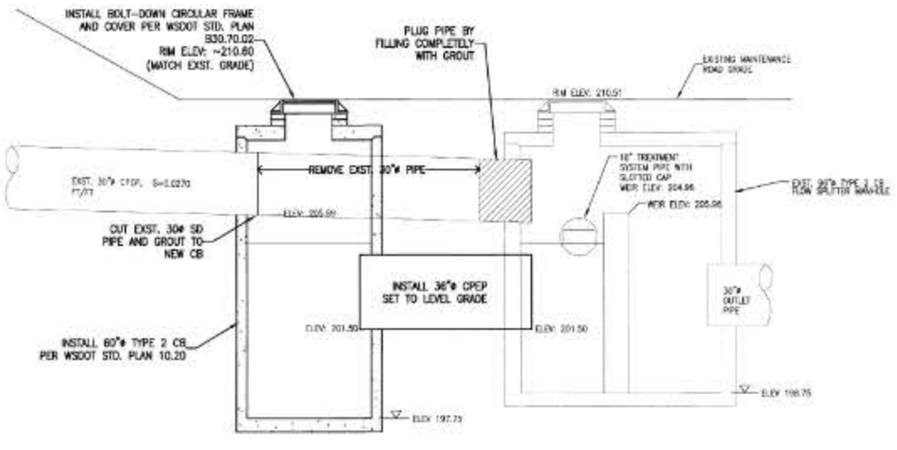


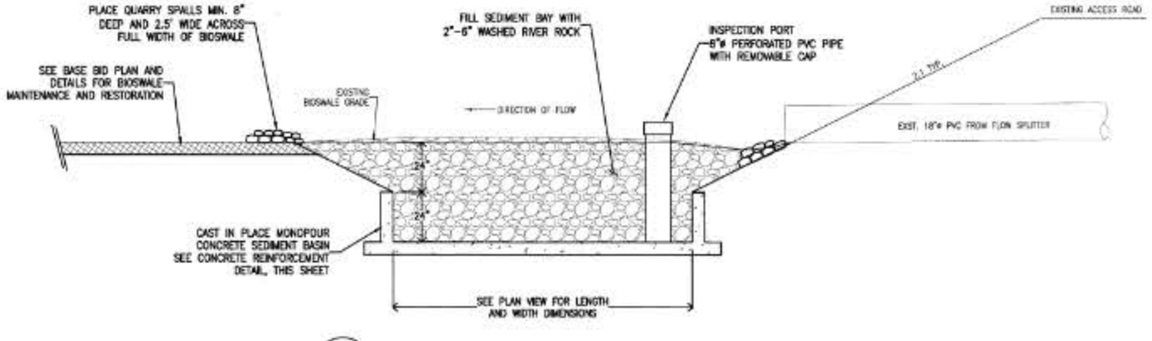
SITE PLAN – ALTERNATES 1 AND 2
1" = 20'



C / C4.1 N.T.S. SEDIMENT BAY CONCRETE DETAIL
Alternate 2



A / C4.1 N.T.S. SEDIMENT TRAP AT FLOW SPLITTER
Alternate 1



B / C4.1 N.T.S. BIOSWALE SEDIMENT BAY PROFILE
Alternate 2

AS-BUILT – RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
ALTERNATES 1 AND 2

Approved by | Date | Resource Review | Project Manager | Maintenance Review | Drawn by | Client Review | Designed by

Building/Zone: UT
Sheet 7 of 13: C4.1
Job Number: PW656
Microfilm Number: N4815

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ROCK/PLANT FILTER MAINTENANCE NOTES

CONTRACTOR SHALL FLUSH ALL DRAINAGE PIPES AND REMOVE ALL SEDIMENT FROM EXISTING CATCH BASINS AND PIPES IN THE STORMWATER FILTER SYSTEM.

ROCK/PLANT FILTER HEADER PIPES AND ROCK GABIONS SHALL BE FLUSHED TO REMOVE ALL SEDIMENT. HEADER PIPES MAY REQUIRE MECHANICAL ROTO-ROOTING EQUIPMENT TO REMOVE COMPACTED SOIL IN PIPES. THE CONTRACTOR SHALL PREVENT ALL DISCHARGE OF TURBID OR OTHERWISE POLLUTED WATER FROM THE SITE. FLUSHING WATER SHALL BE CONTAINED, MANAGED, AND TREATED AS NECESSARY TO MEET PERMIT REQUIREMENTS AND WATER QUALITY STANDARDS.

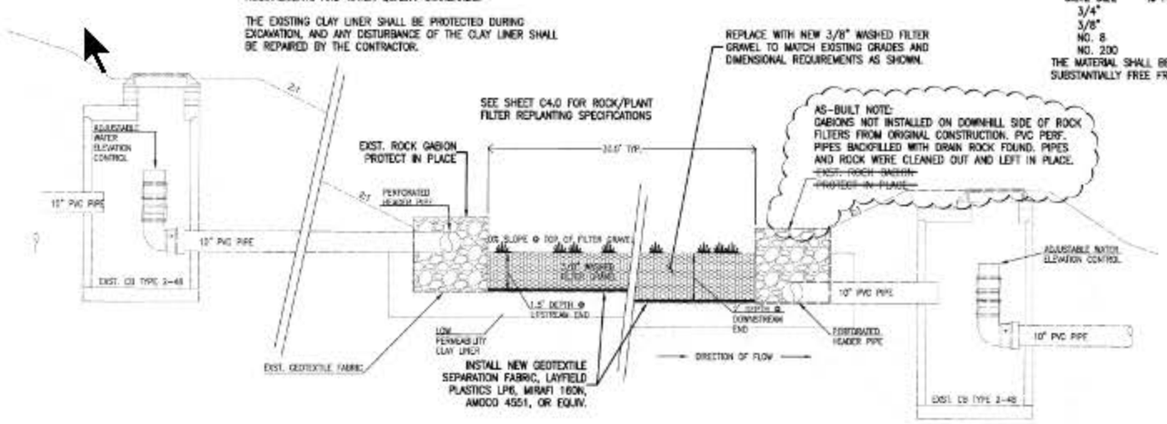
THE EXISTING CLAY LINER SHALL BE PROTECTED DURING EXCAVATION, AND ANY DISTURBANCE OF THE CLAY LINER SHALL BE REPAIRED BY THE CONTRACTOR.

FILTER GRAVEL NOTES:

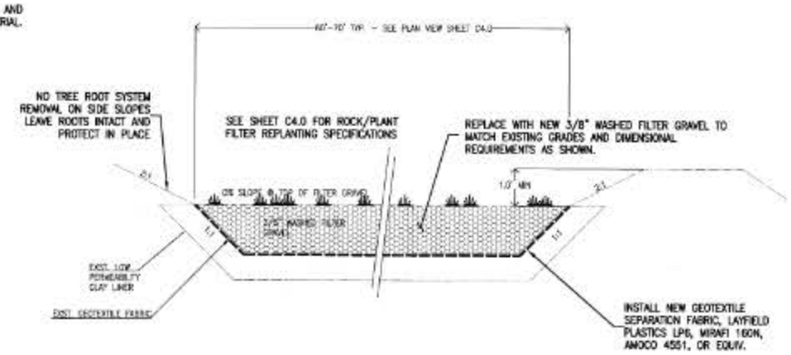
FILTER GRAVEL SHALL CONSIST OF SUPPLYING AND PLACING 3/8" PEA GRAVEL AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THE MATERIAL SHALL MEET THE FOLLOWING GRADING REQUIREMENTS:

SIEVE SIZE	% PASSING (BY WT)
3/4"	100
3/8"	95-100
NO. 8	0-4
NO. 200	0-2

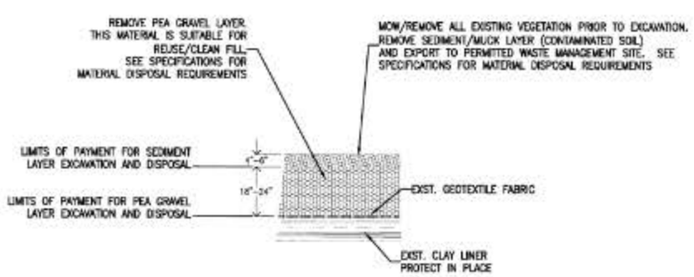
THE MATERIAL SHALL BE UNIFORM IN QUALITY AND SUBSTANTIALLY FREE FROM EXTRANEOUS MATERIAL.



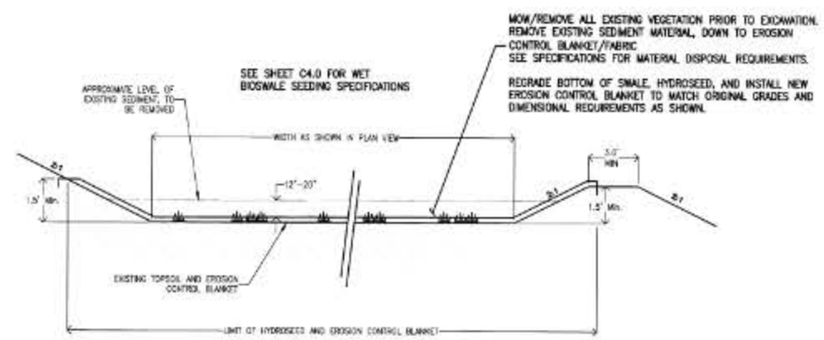
A C5.0 TYPICAL ROCK/PLANT FILTER PROFILE (SHORT DIMENSION) N.T.S.



B C5.0 TYPICAL ROCK/PLANT FILTER SECTION (LONG DIMENSION) N.T.S.



C C5.0 ROCK/PLANT FILTER EXCAVATION DETAIL N.T.S.



D C5.0 TYPICAL WET BIOSWALE CROSS SECTION N.T.S.

AS-BUILT - RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
WATER QUALITY FACILITY FACILITY DETAILS

Building/Zone: UT
Sheet # 5 of 13
C5.0
Job Number: PW656
Microfilm Number: N4816

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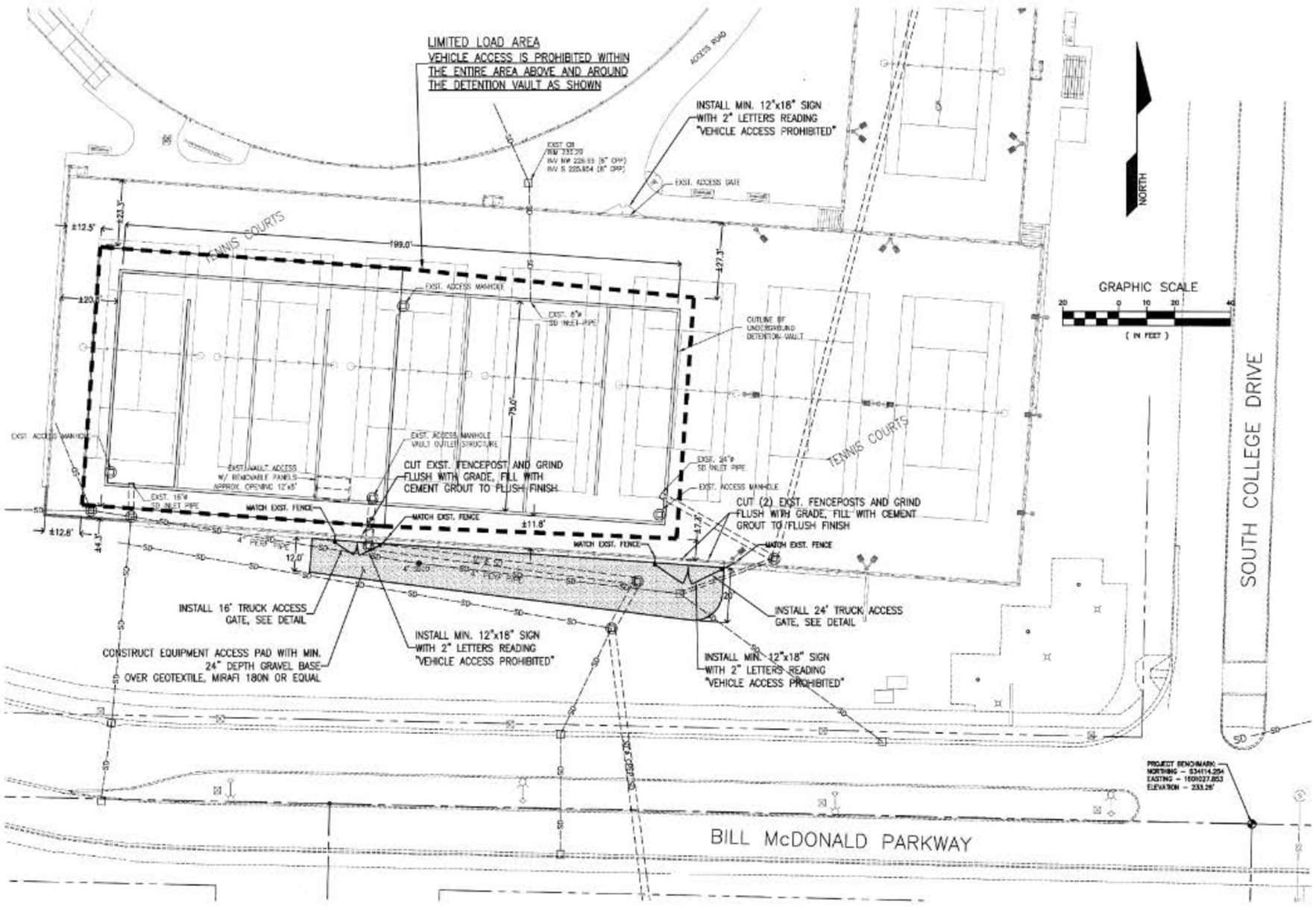

DETENTION VAULT – SITE ACCESS PLAN
Scale: 1 Inch = 20 Feet

DETENTION VAULT ACCESS NOTES

1. The location of the underground detention vault and all underground pipes, structures and utilities are shown based on the as-built drawings from WWU projects PW-208A and OW-393. The location of aboveground features including the tennis court facility and surrounding area are shown based on the as-built drawings for WWU project PW-497. Actual site features and the locations of underground structures may vary, and shall be field verified by the Contractor as needed to complete the work.

2. Vehicle access is PROHIBITED within the entire area above and around the underground stormwater detention vault as shown on the plans. Equipment and vehicle access and any loads from equipment or vehicles shall be limited to the area lying beyond the limited load area at all times. The contractor shall erect safety fencing or other temporary high-visibility measures and signage around the vault perimeter as needed to ensure compliance with this requirement.

3. The existing tennis court facility, including pavement, fencing, tennis nets and all other existing features of the site shall be protected by the Contractor throughout construction to prevent damage to these facilities as a result of equipment access or completion of the work.

4. The Contractor shall provide a system of protection for the tennis court pavement system that is adequate to protect the pavement and surfacing from damage or wear during construction operations.

AS-BUILT – RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

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WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER
DETENTION FACILITY RESTORATION
ALT. 3: DETENTION VAULT ACCESS PLAN

Client Number | Maintenance Review | Construction Review | Approved by
Designed by | Drawn by | Project Manager | Date: XXXXXXXX

Building/Zone: UT
Sheet # 0 of 13
C6.0
Job Number: PW656
Microfilm Number: N4817

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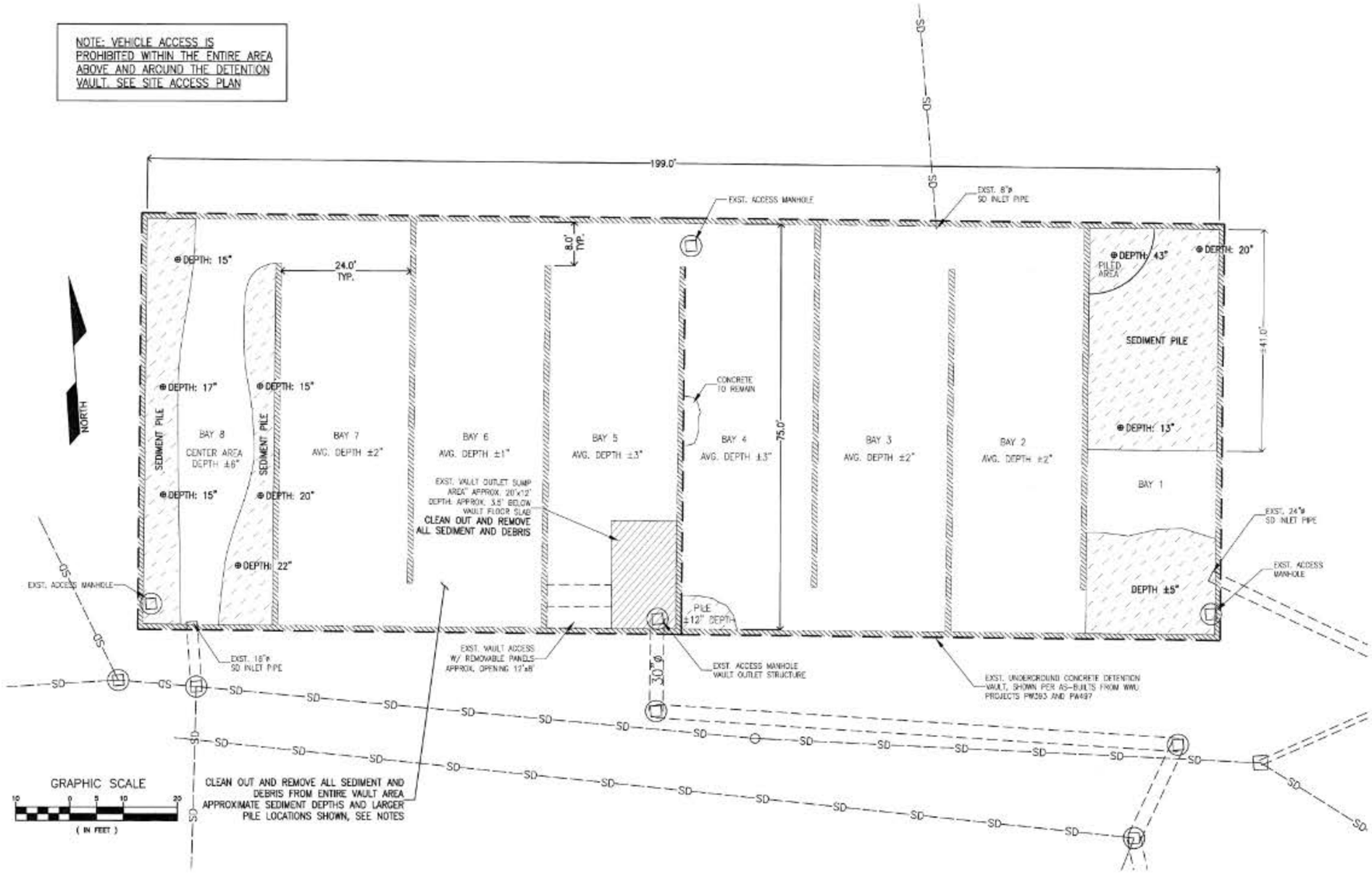
Att-19J

NOTE: VEHICLE ACCESS IS PROHIBITED WITHIN THE ENTIRE AREA ABOVE AND AROUND THE DETENTION VAULT. SEE SITE ACCESS PLAN



DETENTION VAULT MAINTENANCE – SEDIMENT REMOVAL PLAN
Scale: 1 Inch = 10 Feet

DESCRIPTION OF WORK

THE CONTRACTOR SHALL COMPLETE THE FOLLOWING WORK:

1. REMOVE ALL SEDIMENT MATERIAL AND DEBRIS FROM THE DETENTION VAULT, AND DISPOSE OF THE MATERIAL AT A PERMITTED SITE APPROVED TO ACCEPT CONTAMINATED MATERIAL IN ACCORDANCE WITH SECTION 310500.

2. THE SITE PLAN SHOWS THE ESTIMATED AND APPROXIMATE AREAS AND DEPTHS OF SEDIMENT MATERIALS WITHIN THE VAULT, AS MEASURED ON FEBRUARY 7, 2012. QUANTITIES AND LOCATION OF SEDIMENT MAY VARY AT THE TIME OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE TO EVALUATE THE SEDIMENT QUANTITY, LOCATIONS, AND CONDITION AT THE PRE-BID WALKTHROUGH.

3. DRAIN AND DEWATER THE DETENTION VAULT AS NEEDED TO ACCOMPLISH THE WORK, INCLUDING MANAGEMENT OF ALL WATER DRAINED OR REMOVED FROM THE VAULT AND COMPLIANCE WITH WATER QUALITY STANDARDS.

4. THE CONTRACTOR MAY DIRECT SEDIMENT AND SEDIMENT LADEN WATER TO THE WATER QUALITY FACILITY UPPER BIOSWALE CELLS, PROVIDED THAT:
   A. THE BIOSWALE OUTLET IS PLUGGED AND THE WATER IS MANAGED TO CONTAIN WATER AND SEDIMENT WITHIN THE SWALE. THE CONTRACTOR SHALL ENSURE THAT NO DISCHARGE OF TURBID OR OTHERWISE POLLUTED WATER SHALL OCCUR.
   B. ONE OF THE TWO TREATMENT TRAINS (EAST OR WEST) WITHIN THE WATER QUALITY FACILITY MUST BE KEPT OPERATIONAL AT ALL TIMES.
   C. THE CONTRACTOR SHALL REMOVE AND MANAGE THE SEDIMENT MATERIAL DEPOSITED IN THE BIOSWALE IN ACCORDANCE WITH THESE PLANS AND THE PROJECT SPECIFICATIONS.
   D. THE CONTRACTOR SHALL CLEAN OUT ALL PIPES AND STRUCTURES WHERE SEDIMENT FROM THE OPERATION IS DEPOSITED.

DETENTION VAULT MAINTENANCE NOTES

1. The existing underground stormwater detention vault is active and continuously recieves runoff from the WWU South Campus Basin. The estimated minimum dry season base flow entering the vault through the existing conveyance pipes is approximately 25-gpm. This represents the minimum expected flow rate for ideal conditions, and the flow rate may be significantly higher. Any rain event will increase the flow rate substantially. The contractor shall prepare a contingency plan for managing high flow rates and large volumes of storm water.

2. The underground detention vault is a Confined Space, and all safety provisions and measures shall be in compliance with applicable regulations regarding Confined Space Access. For work outside the hours of 8 am - 4:30 pm Monday-Friday the Contractor shall provide a rescue team meeting the requirements of WAC 296-809-50014 at no added cost to the Owner. See Section 013523 of the Specifications for additional requirements.

3. The sediment materials to be removed from the detention vault are considered to be Contaminated Waste, and shall be handled in accordance with Section 310500 of the Specifications.

AS-BUILT – RECORD DRAWINGS
OCTOBER 2012

A·P·C INCORPORATED

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER
DETENTION FACILITY RESTORATION
ALT. 3: DETENTION VAULT SEDIMENT REMOVAL

Chief Reviewer | Maintenance Review | Reasonable Review | Approved by
Designed by | Drawn by | Project Manager | Date XX/XX/XXXX

Building Zone: UT
Sheet # 13 of 13
C6.1
Job Number: PW656
Work Order Number: N4818

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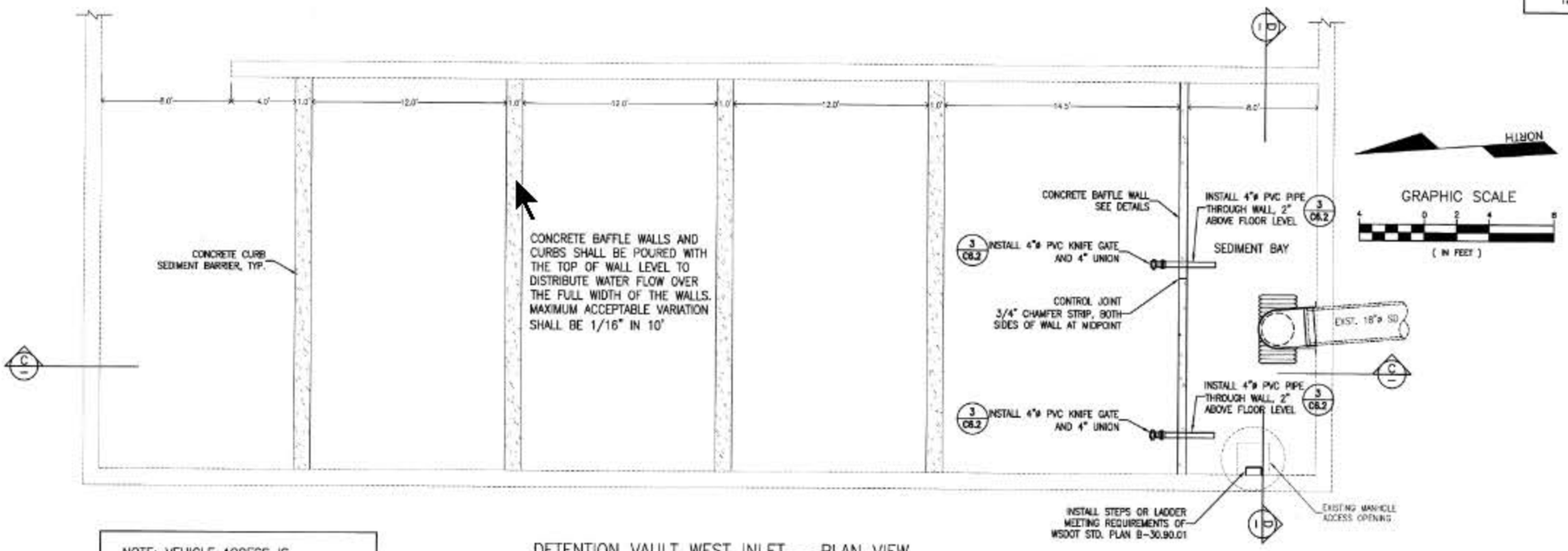
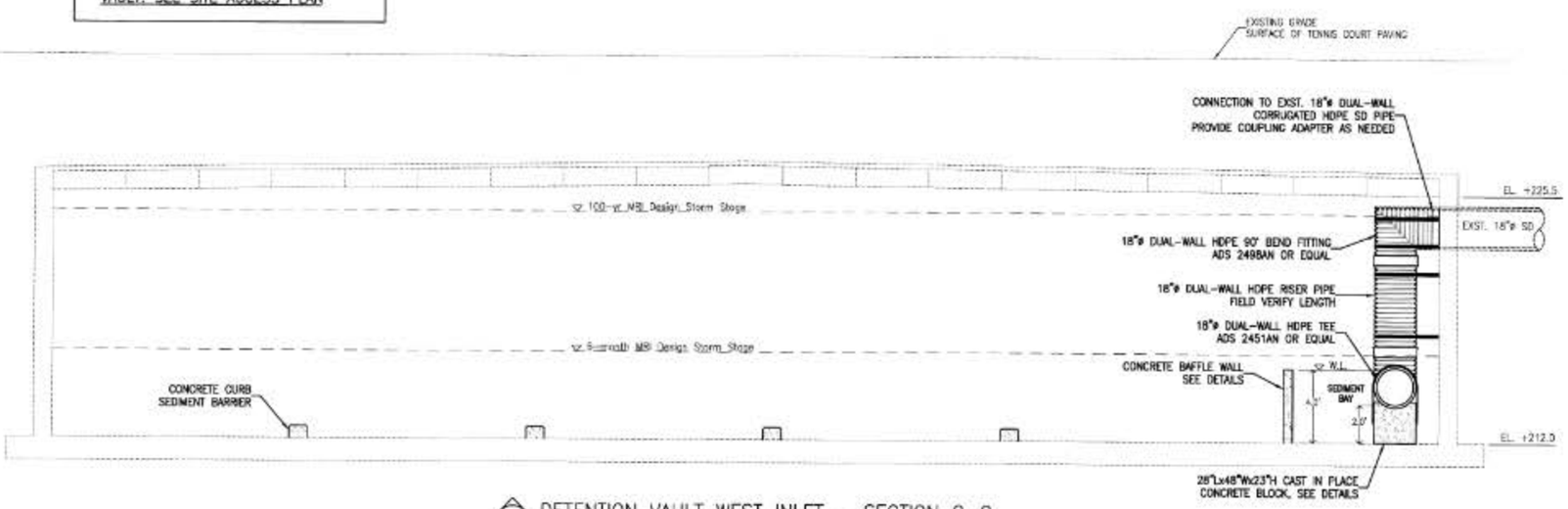
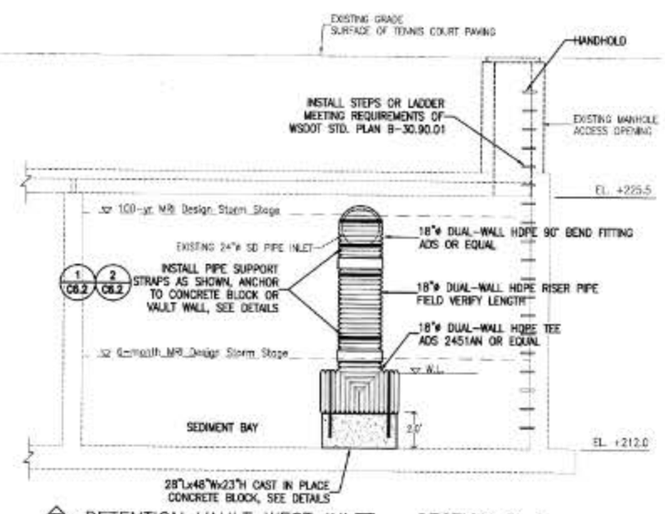


NOTE: VEHICLE ACCESS IS PROHIBITED WITHIN THE ENTIRE AREA ABOVE AND AROUND THE DETENTION VAULT. SEE SITE ACCESS PLAN

DETENTION VAULT WEST INLET – PLAN VIEW
Scale: 1 Inch = 4 Feet



DETENTION VAULT WEST INLET – SECTION C–C
H & V Scale: 1 Inch = 4 Feet



DETENTION VAULT WEST INLET – SECTION D–D
H & V Scale: 1 Inch = 4 Feet

AS-BUILT – RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER
DETENTION FACILITY RESTORATION
ALT. 3: DETENTION VAULT - WEST INLET

Building Zone: UT
Sheet: 12 of 13
C6.3
Job Number: PW656
Microstation File Name: N4820

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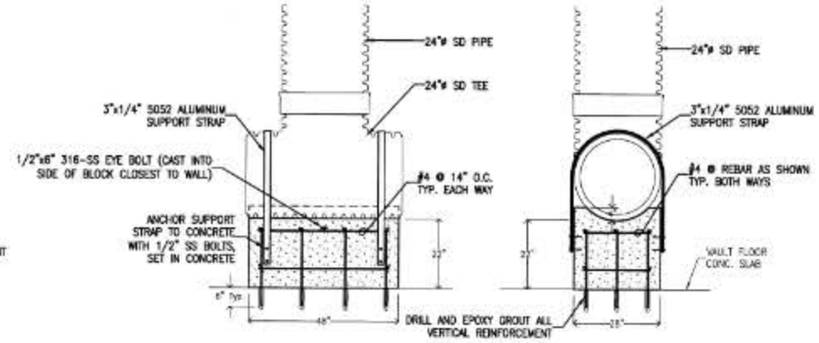
Att-19L

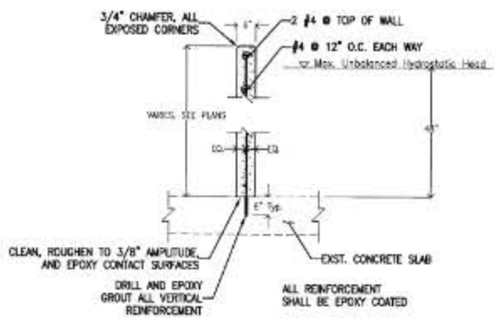
CONCRETE CURB SEDIMENT BARRIER
H & V Scale: 1 Inch = 2 Feet



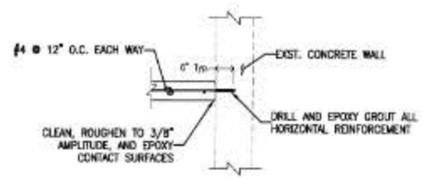
AT EACH PIPE INLET PROVIDE:

- 316-SS EYE BOLT CAST INTO SUPPORT BLOCK ON SIDE CLOSEST TO WALL (SEE DETAIL)
- (2) 8' LENGTHS OF 1/2" 316-SS CHAIN
- (3) 316-SS 3" LOCKING CARABINER
- (1) HDPE PIPE END PLUG, ADS 2433AA OR APPROVED EQUAL
- (1) HDPE PIPE END PLUG, ADS 2433AA OR APPROVED EQUAL, TAPPED WITH 4"ø INSERTA-TEE WITH 4"ø PVC PLAIN END

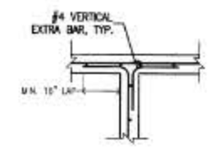
INLET PIPE SUPPORT DETAIL
Scale: 1 Inch = 2 Feet



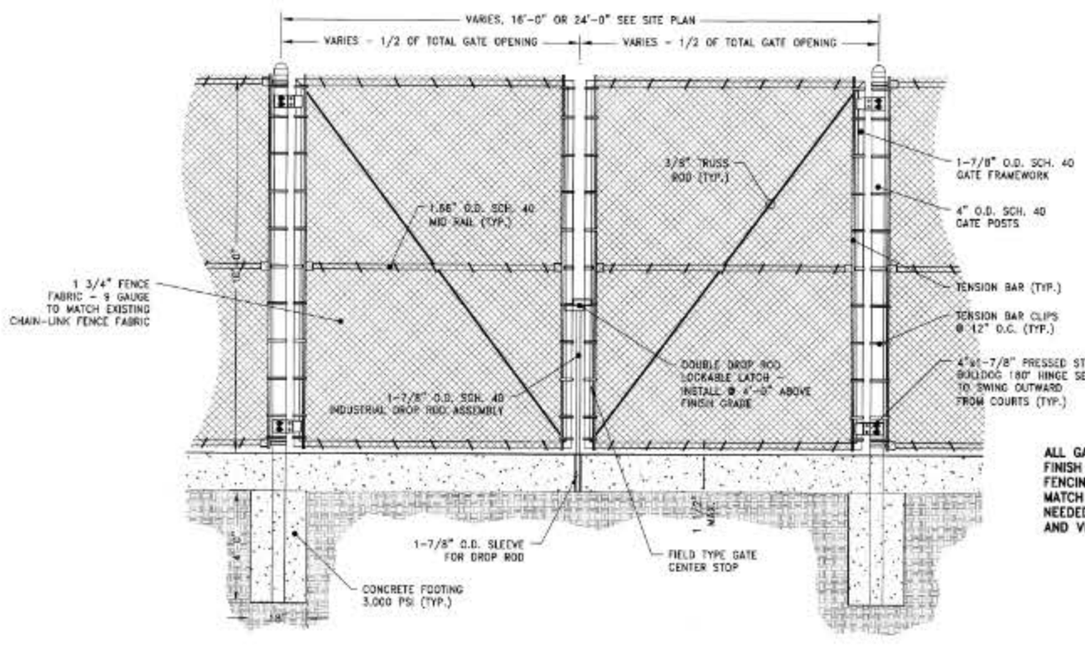
CONCRETE BAFFLE WALL DETAIL
Scale: 1 Inch = 2 Feet



CONCRETE WALL END DETAIL (PLAN VIEW)
Scale: 1 Inch = 2 Feet

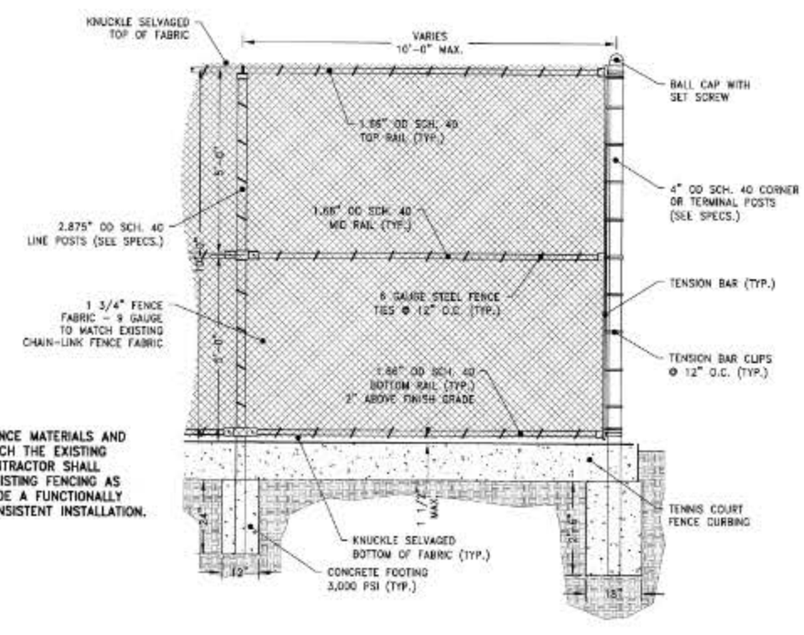


CONCRETE WALL CORNERS
Scale: 1 Inch = 2 Feet



TRUCK ACCESS GATE
N.T.S.

ALL GATE AND FENCE MATERIALS AND FINISH SHALL MATCH THE EXISTING FENCING. THE CONTRACTOR SHALL MATCH TO THE EXISTING FENCING AS NEEDED TO PROVIDE A FUNCTIONALLY AND VISUALLY CONSISTENT INSTALLATION.



10' CHAINLINK FENCE
N.T.S.

AS-BUILT - RECORD DRAWINGS
OCTOBER 2012

REV	DATE	DESCRIPTION	BY

A·P·C INCORPORATED

WESTERN WASHINGTON UNIVERSITY

PW656 - STORMWATER DETENTION FACILITY RESTORATION
ALT. 3: DETENTION VAULT - DETAILS

Building/Zone: UT
Sheet: 53 of 73
C6.4
Job Number: PW656
Microfilm Number: N4821

Att-20A

LINCOLN CREEK TRANSPORTATION CENTER

800 & 820 LINCOLN STREET

STORMWATER MODIFICATIONS

PR0001765

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6/27/12

BEN DAVIS — STATE OF WASHINGTON — 45524 — REGISTERED PROFESSIONAL ENGINEER

SCOPE OF WORK:

IMPROVE EXISTING DRAINAGE SYSTEM AT ENTRANCE TO PARKING LOT BY REPLACING AND REGRADING 4,980 SF OF EXISTING ASPHALT PAVEMENT AND INSTALLING NEW CATCH BASINS AND STORMFILTER.

REV	DATE	DESCRIPTION	BY	APRV

PROJECT TEAM

CLIENT: WESTERN WASHINGTON UNIVERSITY
915 26TH STREET
BELLINGHAM, WA 98225
Tel. 360.650.6813
Fax 360.650.2898

CIVIL ENGINEERS, PLANNERS, LANDSCAPE, AND ENVIRONMENTAL: DAVID EVANS AND ASSOCIATES, INC.
1620 W. MARINE VIEW DRIVE, SUITE 200
EVERETT, WA 98201
Tel. 425.259.4099
Fax 425.259.3230

DRAWING INDEX

SHEET NO.	DRAWING TITLE
C0	COVER SHEET
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C5	GRADING, PAVING & DRAINAGE NOTES & DETAILS
C6	GRADING, PAVING & DRAINAGE NOTES & DETAILS

CITY OF BELLINGHAM GENERAL NOTES

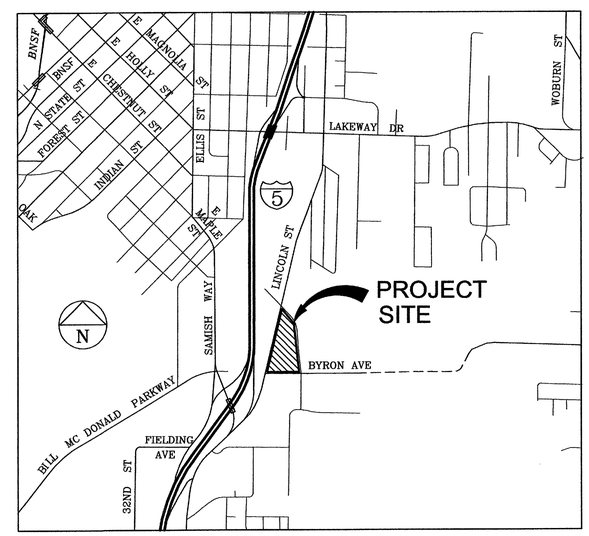
1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION AND THE CITY OF BELLINGHAM DEVELOPMENT GUIDELINES AND IMPROVEMENT STANDARDS.

2. PUBLIC RIGHTS-OF-WAY SHALL BE KEPT IN A CLEAN AND SERVICEABLE CONDITION AT ALL TIMES. IN THE EVENT THAT MATERIALS ARE INADVERTENTLY DEPOSITED IN PUBLIC RIGHTS-OF-WAY, THE MATERIAL SHALL BE PROMPTLY REMOVED. MATERIALS ARE TO BE SWEPT AND REMOVED PRIOR TO ANY STREET WASHING. PUBLIC AND PRIVATE DRAINAGE WAYS SHALL BE PROTECTED FROM POLLUTION AND SEDIMENTATION. FAILURE TO MEET THESE REQUIREMENTS MAY RESULT IN VIOLATION OF STATE OR FEDERAL WATER QUALITY STANDARDS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING AS-BUILT INFORMATION. AS-BUILT DRAWINGS SHALL INCLUDE THE EXACT LOCATION OF ALL UNDERGROUND AND ABOVE-GROUND UTILITIES. UPON COMPLETION OF THE PROJECT, THESE AS-BUILT DRAWINGS SHALL BE GIVEN TO THE PROJECT ENGINEER FOR INCORPORATION INTO THE PROJECT'S RECORD DRAWINGS.

4. UNDERGROUND UTILITIES ARE KNOWN TO EXIST IN THE AREA OF CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN IS APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL UTILITY OWNERS FOR LOCATIONS AND TO FIELD VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION. THE ONE-CALL NUMBER FOR UNDERGROUND UTILITIES IS 811. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EXISTING UTILITIES THROUGHOUT CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROMPTLY NOTIFY THE ENGINEER OF ANY CONFLICT WITH EXISTING UTILITIES. ALL EXISTING FACILITIES, LANDSCAPE IMPROVEMENTS, AND UTILITIES NOT SPECIFICALLY IDENTIFIED FOR REMOVAL SHALL BE PROTECTED THROUGHOUT CONSTRUCTION OR RESTORED AT COMPLETION OF THE WORK.

VICINITY MAP



SCALE: 1" = 1000'

WESTERN WASHINGTON UNIVERSITY

LINCOLN CREEK TRANS CENTER STORMWATER MODIFICATIONS COVER SHEET		
Client Review	Maintenance Review	Renovation Review	Approved by
Designed by BRD	Drawn by CLK	Project Manager JNS	Date 6-27-2012

Building/Zone	LC
Sheet #	1 of 7
	C0
Job Number	PR0001765
Microfile Number	N4940

ASBUILT DRAWING

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Att-20B

DAVID EVANS AND ASSOCIATES INC.
1620 W. Marine View Drive, Suite 200
Everett Washington 98201
Phone: 425.259.4099

6/27/12

BEN DAVIS
STATE OF WASHINGTON
45524
REGISTERED PROFESSIONAL ENGINEER

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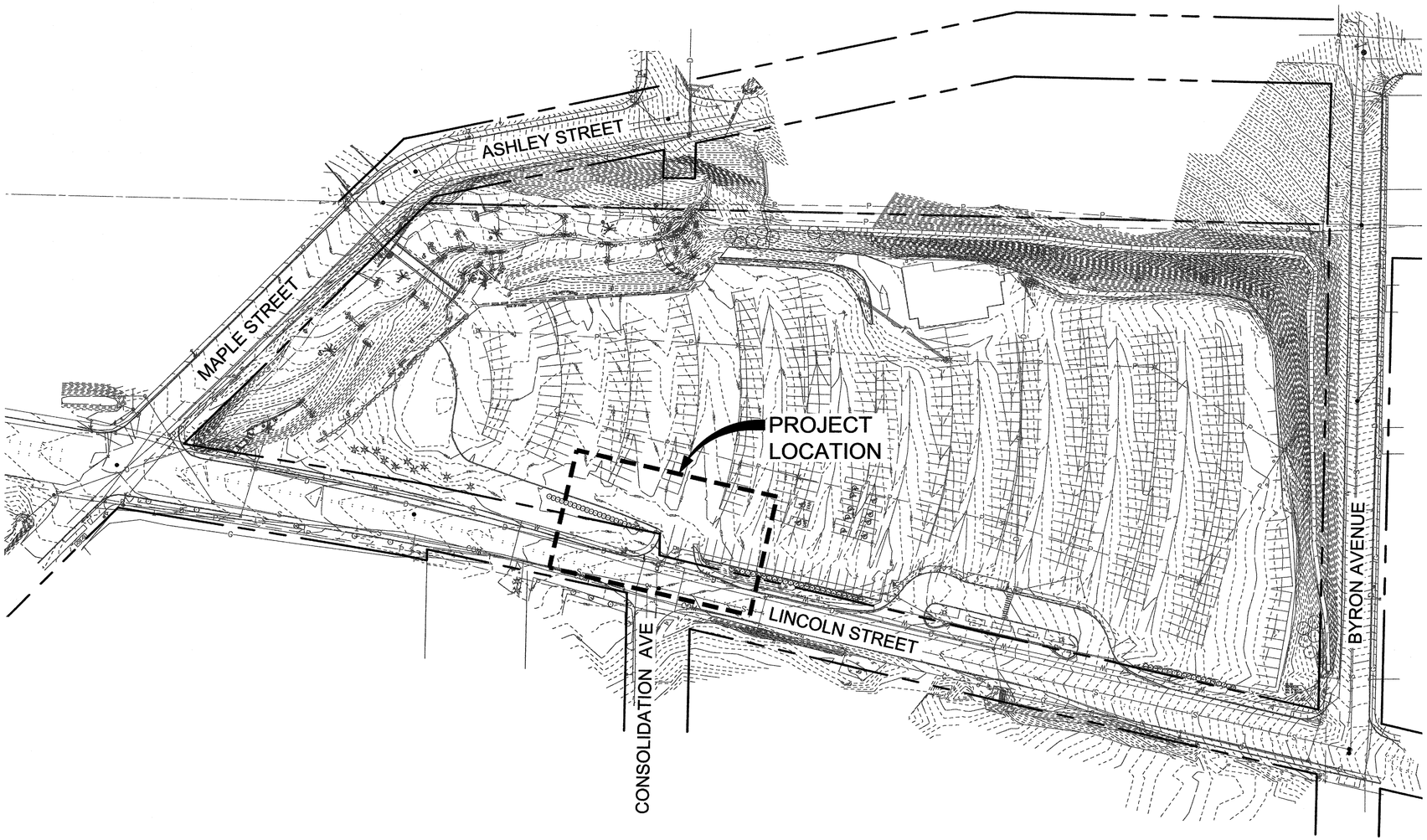
SCALE IN FEET



SITE MAP

REV	DATE	DESCRIPTION	BY	APRV

WESTERN WASHINGTON UNIVERSITY

LINCOLN CREEK TRANS CENTER
STORMWATER MODIFICATIONS
SITE MAP

Client Review	Maintenance Review	Planning Review	Design Review
Designed by BRD	Drawn by CLK	Approved by JNS	Date 6-27-2012

KNOW WHAT'S BELOW
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Building/Zone LC
Sheet # 2 of 7
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Job Number PR0001765
Microfile Number N4941

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DEMOLITION & TESCP NOTES

SHOP	TASK
EF/EA	(1) INSTALL INLET PROTECTION PER WSDOT STD PLAN I-40.20-00 ON ALL CATCH BASINS WITHIN 300' OF PROJECT LIMITS (6 TOTAL).
EF/EA	(2) INSTALL INFLATABLE PLUG ON OUTLET PIPE OF EXISTING CATCH BASIN. ALL CONSTRUCTION STORMWATER GENERATED PRIOR TO REPAVING WILL BE DISPOSED OF OFF-SITE BY VACTOR TRUCK.
EF/EA	(3) SAWCUT, REMOVE (4" DEPTH), HAUL AND DISPOSE OF EXISTING ASPHALT PAVEMENT FROM AREA SHOWN.
EF/EA	(4) REMOVE, HAUL AND DISPOSE OF EXISTING STORM DRAIN CATCH BASIN. PIPES TO REMAIN IN PLACE.
EF/EA	(5) REMOVE, HAUL AND DISPOSE OF 8LF OF EXISTING CONCRETE CURB.

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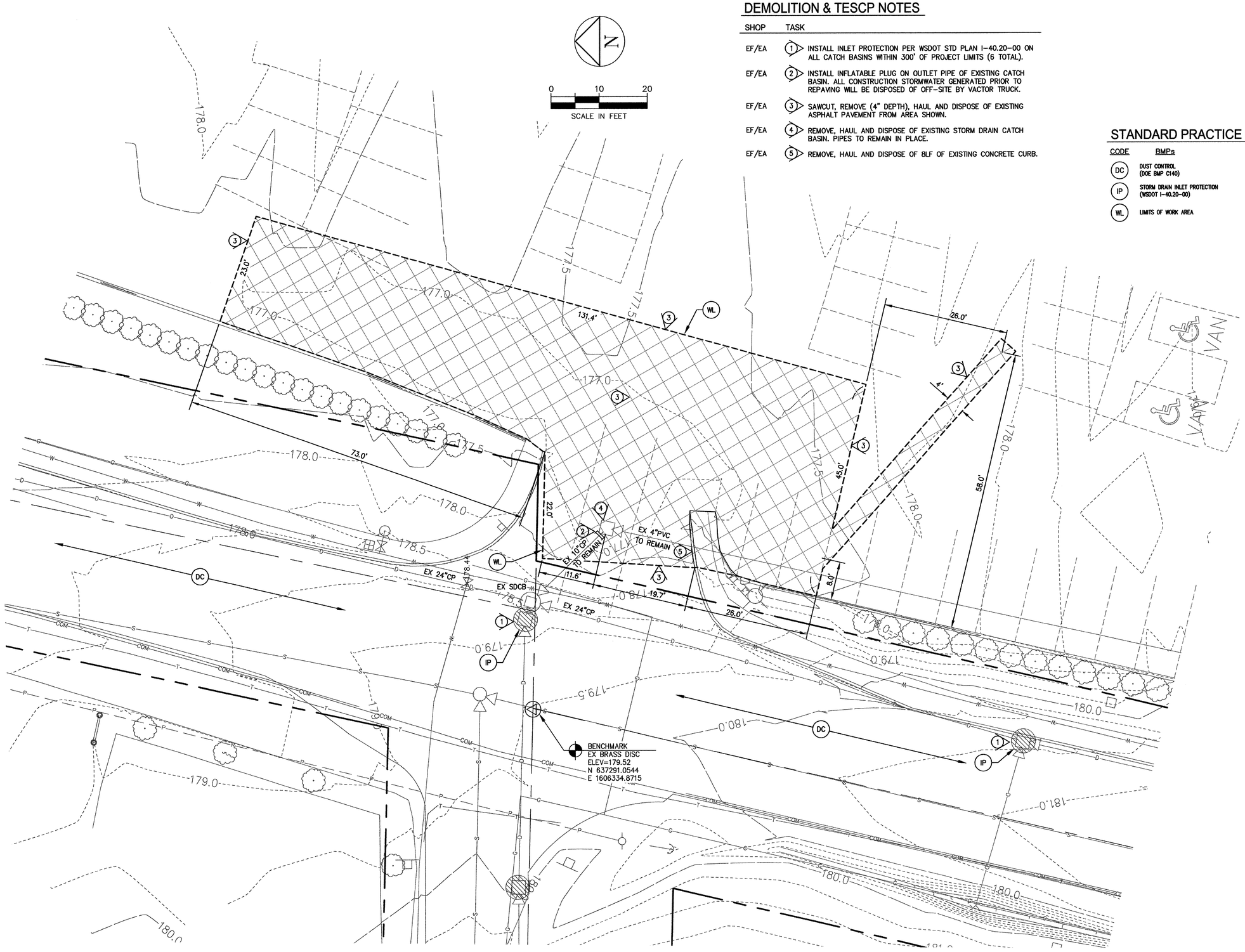
BEN DAVIS STATE OF WASHINGTON 45524 REGISTERED PROFESSIONAL ENGINEER 6/27/12

STANDARD PRACTICE CODING SYSTEM:

CODE	BMPs
DC	DUST CONTROL (DOE BMP C140)
IP	STORM DRAIN INLET PROTECTION (WSDOT I-40.20-00)
WL	LIMITS OF WORK AREA



REV	DATE	DESCRIPTION	BY	APRV

WESTERN WASHINGTON UNIVERSITY

LINCOLN CREEK TRANS CENTER

STORMWATER MODIFICATIONS

DEMOLITION & SWPP PLAN

Client Review	Maintenance Review	Planning Review	Design Review
Designed by BRD	Drawn By CLK	Approved by JNS	Date 6-27-2012

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Building/Zone LC

Sheet # 3 of 7

C2

Job Number PR0001765

Microfilm Number N4942

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

THIS STORMWATER POLLUTION PREVENTION PLAN IS PROVIDED IN ACCORDANCE WITH THE TERMS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR CONSTRUCTION ACTIVITIES FOR THIS PROJECT. THE CONTRACTOR IS ADVISED THAT THE PROJECT AREA DRAINS TO WETLANDS AND/OR STATE WATERS AND THAT THE CONTRACTOR IS RESPONSIBLE TO PROTECT THE RECEIVING WATERS FROM DELETERIOUS EFFECTS OF CONSTRUCTION.

THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE SWPPP ON SITE AT ALL TIMES. THIS PLAN AND ACCOMPANYING SHEETS CONSTITUTE THE SWPPP.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE EROSION CONTROL MEASURES SHOWN OR DESCRIBED IN THE CONTRACT DOCUMENTS AND ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED BY THE CONTRACTORS MEANS AND METHODS OF CONSTRUCTION AS NEEDED TO CONTROL EROSION AND SEDIMENT AT THE CONSTRUCTION SITE AND TO PREVENT VIOLATION OF SURFACE WATER QUALITY, GROUND WATER QUALITY, OR SEDIMENT MANAGEMENT STANDARDS. EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION AND UNTIL ALL DISTURBED EARTH IS STABILIZED IN FINISH GRADES.

THE FOLLOWING DESCRIBES HOW THE CONSTRUCTION SWPPP ADDRESSES EACH OF THE 12 REQUIRED ELEMENTS. REFER TO THESE PLANS FOR DRAWINGS OF THE PROJECT, VICINITY MAP, SITE MAP, CONVEYANCE SYSTEMS, EROSION AND SEDIMENT CONTROL MEASURES, AND EROSION AND SEDIMENT CONTROL DETAILS.

ELEMENT #1: PRESERVE VEGETATION/MARK CLEARING LIMITS
1. PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES (INCLUDING CLEARING AND GRADING) CLEARLY MARK ALL CLEARING LIMITS AND TREES THAT ARE TO BE PRESERVED WITHIN THE CONSTRUCTION AREA AS SHOWN ON THE DRAWINGS.
2. SILT FENCE, GEOTEXTILE ENCASED BARRIERS, CONSTRUCTION FENCE, ORANGE PLASTIC FENCE, OR OTHER APPROVED MEASURES MAY BE USED TO MARK THE CLEARING LIMITS AT THE CONTRACTOR'S OPTION.
3. THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION SHALL BE RETAINED IN AN UNDISTURBED STATE TO THE MAXIMUM DEGREE PRACTICABLE.

SUGGESTED BMPs/BMPs TO BE USED:
WORK AREA DEFINED BY SAWCUT LIMITS

ELEMENT #2: ESTABLISH CONSTRUCTION ACCESS
1. CONSTRUCTION VEHICLE ACCESS AND EXIT SHALL BE LIMITED TO ONE ROUTE. REFER TO SWPP PLAN OF THESE PLANS FOR THE CONSTRUCTION ENTRANCE LOCATION. ALL ACCESS/EXIT POINTS SHALL BE STABILIZED WITH QUARRY SPALLS, CRUSHED ROCK OR OTHER EQUIVALENT BMP, TO MINIMIZE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS.
2. IF THE STABILIZED CONSTRUCTION ENTRANCE IS NOT EFFECTIVE IN PREVENTING SEDIMENT FROM BEING TRACKED ONTO PUBLIC ROADS, WHEEL WASH OR TIRE BATHS SHALL BE LOCATED ON SITE.
3. IF SEDIMENT IS TRACKED OFF SITE, PUBLIC OR PRIVATE ROADS SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY, OR MORE FREQUENTLY DURING WET WEATHER. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
4. STREET WASHING IS ALLOWED ONLY AFTER SEDIMENT IS REMOVED AS DESCRIBED ABOVE. STREET WASH WASTEWATER SHALL BE CONTROLLED BY PUMPING BACK ON SITE OR OTHERWISE BE PREVENTED FROM DISCHARGING INTO SYSTEMS TRIBUTARY TO WATERS OF THE STATE.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C107: CONSTRUCTION ROAD/PARKING AREA STABILIZATION

ELEMENT #3: CONTROL FLOW RATES
1. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM EROSION DUE TO INCREASES IN THE VELOCITY AND PEAK VOLUMETRIC FLOW RATE OF STORMWATER RUNOFF FROM THE PROJECT SITE.

SUGGESTED BMPs/BMPs TO BE USED:
NOT APPLICABLE

ELEMENT #4: INSTALL SEDIMENT CONTROLS
1. THE DUFF LAYER, NATIVE SOIL, AND NATURAL VEGETATION SHALL BE RETAINED IN AN UNDISTURBED STATE TO THE MAXIMUM EXTENT PRACTICABLE.
2. SEDIMENT CONTROL BMPs SHALL BE CONSTRUCTED AS ONE OF THE FIRST STEPS IN GRADING. THESE BMPs SHALL BE FUNCTIONAL BEFORE OTHER LAND DISTURBING ACTIVITIES TAKE PLACE.
3. PRIOR TO LEAVING THE CONSTRUCTION SITE, STORMWATER RUNOFF FROM DISTURBED AREAS SHALL PASS THROUGH AN APPROPRIATE SEDIMENT REMOVAL BMP. RUNOFF FROM FULL STABILIZED AREAS MAY BE DISCHARGED WITHOUT A SEDIMENT REMOVAL BMP, BUT MUST MEET THE FLOW CONTROL PERFORMANCE STANDARD OF ELEMENT #3.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C150: MATERIALS ON HAND
WSDOT STD PLAN I-40.20-00: INLET PROTECTION

ELEMENT #5: STABILIZE SOILS
1. EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FORM EROSIVE FORCES OF RAINDROPS. FLOWING WATER, AND WIND.
2. TO PREVENT EROSION, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN THE TIME PERIODS SET FORTH BELOW:
DURING THE WET SEASON (OCTOBER 1 – APRIL 30): 2 DAYS
DURING THE DRY SEASON (MAY 1 – SEPT. 30): 7 DAYS
THIS STABILIZATION REQUIREMENT APPLIES TO ALL SOILS ON SITE, WHETHER AT FINAL GRADE OR NOT. THESE TIMES MAY BE ADJUSTED BY THE LOCAL PERMITTING AUTHORITY IF IT CAN BE SHOWN THAT SITE CONDITIONS OR THE AVERAGE TIME BETWEEN STORM EVENTS JUSTIFIES A DIFFERENT STANDARD.
3. SOILS SHALL BE STABILIZED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST.
4. SOIL STOCKPILES SHALL BE STABILIZED FROM EROSION, PROTECTED WITH SEDIMENT TRAPPING MEASURES, AND WHERE POSSIBLE, BE LOCATED AWAY FROM STORM DRAIN INLETS, WATERWAYS, AND DRAINAGE CHANNELS.
5. APPLICABLE BMPs INCLUDE, BUT ARE NOT LIMITED TO: TEMPORARY AND PERMANENT SEEDING, SODDING, MULCHING, PLASTIC COVERING, EROSION CONTROL FABRICS AND MATTING, SOIL APPLICATION OF POLYACRYLAMIDE (PAM), THE EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED AND DUST CONTROL. SELECT SOIL STABILIZATION MEASURES SHALL BE APPROPRIATE FOR THE TIME OF YEAR, SITE CONDITIONS, ESTIMATED DURATION OF USE, AND THE POTENTIAL WATER QUALITY IMPACTS.
6. REMOVE ALL TESC MEASURES AS SOON AS PRACTICAL AFTER ESTABLISHMENT OF UNIFORM GRASS GROWTH OR INSTALLATION OF OTHER PERMANENT STABILIZATION MEASURES. REPAIR ANY DAMAGE TO STABILIZED SURFACES AFTER REMOVAL OF TESC MEASURES.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C107: CONSTRUCTION ROAD/PARKING AREA STABILIZATION
BMP C150: MATERIALS ON HAND

ELEMENT #6: PROTECT SLOPES
1. DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. APPLICABLE PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, REDUCING CONTINUOUS LENGTH OF SLOPE WITH TERRACING AND DIVERSIONS, REDUCING SLOPE STEEPNESS, AND ROUGHENING SLOPE SURFACES (e.g., TRACK WALKING).
2. OFF-SITE STORMWATER RUN-ON OR GROUNDWATER SHALL BE DIVERTED AWAY FROM SLOPES AND DISTURBED AREAS WITH INTERCEPTOR DIKES, PIPES, AND/OR SWALES. OFF-SITE STORMWATER SHOULD BE MANAGED SEPARATELY FROM STORMWATER GENERATED ON THE SITE.
3. DO NOT CLEAR AND GRUB SLOPES GREATER THAN 4 (HORIZONTAL):1 (VERTICAL) UNLESS FURTHER WORK RESULTING IN STABILIZATION OF THE SLOPES TO BE CLEARED AND GRUBBED IS SCHEDULED.
4. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES, CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS.
5. CHECK DAMS SHALL BE PLACED AT REGULAR INTERVALS WITHIN CONSTRUCTED CHANNELS THAT ARE CUT DOWN A SLOPE.

SUGGESTED BMPs/BMPs TO BE USED:
NOT APPLICABLE

ELEMENT #7: PROTECT DRAIN INLETS
1. ALL STORM DRAIN INLETS OPERABLE DURING CONSTRUCTION AND ALL INLETS WITHIN 200' DOWNSTREAM OF THE PROJECT SITE SHALL BE PROTECTED WITH CATCH BASIN FILTERS SO THAT STORMWATER RUNOFF DOES NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR TREATED TO REMOVE SEDIMENT. CATCH BASIN FILTERS IN THE ROADWAY WILL BE OIL/SEDIMENT FILTERS AND CATCH BASIN FILTERS OUTSIDE OF THE ROADWAY WILL BE SEDIMENT FILTERS.
2. APPROACH ROADS SHALL BE KEPT CLEAN. SEDIMENT AND STREET WASH WATER SHALL NOT BE ALLOWED TO ENTER STORM DRAINS WITHOUT PRIOR AND ADEQUATE TREATMENT.
3. INLET PROTECTION DEVICES SHOULD BE CLEANED OR REMOVED AND REPLACED WHEN SEDIMENT HAS FILLED ONE-THIRD OF THE AVAILABLE STORAGE (OR WHEN FILLED WITH SIX-INCHES OF SEDIMENT).

BMPs TO BE USED:
WSDOT STD PLAN I-40.20-00: INLET PROTECTION

ELEMENT #8: STABILIZE CHANNELS AND OUTLETS
1. ALL TEMPORARY ON-SITE CONVEYANCE CHANNELS SHALL BE DESIGNED, CONSTRUCTED AND STABILIZED TO PREVENT EROSION FROM THE EXPECTED PEAK 10 MINUTE VELOCITY OF FLOW FROM A TYPE 1A, 10-YR, 24-HR FREQUENCY STORM FOR THE DEVELOPED CONDITION. ALTERNATIVELY, THE 10-YR, 1-HR FLOW RATE INDICATED BY AN APPROVED CONTINUOUS RUNOFF MODEL, INCREASED BY A FACTOR OF 1.6, MAY BE USED.
2. STABILIZATION, INCLUDING ARMORING MATERIAL, ADEQUATE TO PREVENT EROSION OF OUTLETS, ADJACENT STREAM BANKS, SLOPES, AND DOWNSTREAM REACHES SHALL BE PROVIDED AT THE OUTLETS OF ALL CONVEYANCE SYSTEMS.

SUGGESTED BMPs/BMPs TO BE USED:
NOT APPLICABLE

ELEMENT #9: CONTROL POLLUTANTS
1. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ONSITE SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORMWATER.
2. COVER, CONTAINMENT, AND PROTECTION FROM VANDALISM SHALL BE PROVIDED FOR ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCTS, AND OTHER MATERIALS THAT HAVE THE POTENTIAL TO POSE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT. ON-SITE FUELING TANKS SHALL INCLUDE SECONDARY CONTAINMENT.
3. MAINTENANCE, FUELING, AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES SHALL BE CONDUCTED USING SPILL PREVENTION AND CONTROL MEASURES. CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY SPILL INCIDENT.
4. WHEEL WASH OR TIRE BATH WASTEWATER SHALL BE DISCHARGED TO A SEPARATE ON-SITE TREATMENT SYSTEM OR TO THE SANITARY SEWER WITH LOCAL SEWER DISTRICT APPROVAL.
5. APPLICATION OF FERTILIZERS AND PESTICIDES, SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO STORMWATER RUNOFF. MANUFACTURERS' LABEL REQUIREMENTS FOR APPLICATION RATES AND PROCEDURES SHALL BE FOLLOWED.
6. BMPs SHALL BE USED TO PREVENT OR TREAT CONTAMINATION OF STORMWATER RUNOFF BY pH MODIFYING SOURCES. THESE SOURCES INCLUDE, BUT ARE NOT LIMITED TO: BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHING AND CURING WATERS, WASTE STREAMS GENERATED FROM CONCRETE GRINDING AND SAWING, EXPOSED AGGREGATE PROCESSES, AND CONCRETE PUMPING AND MIXER WASHOUT WATERS. PERMITTEES SHALL ADJUST THE pH OF STORMWATER IF NECESSARY TO PREVENT VIOLATIONS OF WATER QUALITY STANDARDS.
7. PERMITTEES SHALL OBTAIN WRITTEN APPROVAL FROM ECOLOGY PRIOR TO USING CHEMICAL TREATMENT, OTHER THAN CARBON DIOXIDE OR DRY ICE TO ADJUST pH.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C152: SAWCUTTING & SURFACE POLLUTION PREVENTION
BMP C153: MATERIAL DELIVERY, STORAGE & CONTAINMENT

ELEMENT #10: CONTROL DEWATERING
1. FOUNDATION, VAULT, AND TRENCH DE-WATERING WATER, WHICH HAVE SIMILAR CHARACTERISTICS TO STORMWATER RUNOFF AT THE SITE, SHALL BE DISCHARGED INTO A CONTROLLED CONVEYANCE SYSTEM PRIOR TO DISCHARGE TO A SEDIMENT TRAP OR SEDIMENT POND.

2. CLEAN, NON-TURBID DE-WATERING WATER, SUCH AS WELL-POINT GROUND WATER, CAN BE DISCHARGED TO SYSTEMS TRIBUTARY TO, OR DIRECTLY INTO SURFACE WATERS OF THE STATE, AS SPECIFIED IN ELEMENT #8, PROVIDED THE DE-WATERING FLOW DOES NOT CAUSE EROSION OR FLOODING OF RECEIVING WATERS. CLEAN DE-WATERING WATER SHOULD NOT BE ROUTED THROUGH STORMWATER SEDIMENT PONDS.

3. OTHER DE-WATERING DISPOSAL OPTIONS MAY INCLUDE:
a) TRANSPORT OFF SITE IN A VEHICLE, SUCH AS A VACUUM FLUSH TRUCK, FOR LEGAL DISPOSAL IN A MANNER THAT DOES NOT POLLUTE STATE WATERS.
b) ECOLOGY APPROVED ON-SITE CHEMICAL TREATMENT OR OTHER SUITABLE TREATMENT TECHNOLOGIES.
c) SANITARY SEWER DISCHARGE WITH LOCAL SEWER DISTRICT APPROVAL, IF THERE IS NO OTHER OPTION.
d) USE OF A SEDIMENTATION BAG (DIRTBAG OR APPROVED EQUAL) WITH OUTFALL TO A DITCH OR SWALE FOR SMALL VOLUMES OF LOCALIZED DE-WATERING.

4. HIGHLY TURBID CONTAMINATED DEWATERING WATER FROM CONSTRUCTION EQUIPMENT OPERATION, CLAMSHELL DIGGING, CONCRETE TREMIE POUR, OR WORK INSIDE A COFFERDAM SHALL BE HANDLED SEPARATELY FROM STORMWATER.

ELEMENT #11: MAINTAIN BMPs
1. INSPECT EROSION CONTROL DEVICES ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. MAKE NECESSARY REPAIRS AND MAINTENANCE TO ENSURE CONTINUED PERFORMANCE OF EROSION AND SEDIMENT CONTROLS.

2. WHEN SEDIMENT ACCUMULATION IN SEDIMENTATION STRUCTURES, OTHER THAN INLET PROTECTION DEVICES, HAS REACHED A POINT ONE-THIRD DEPTH OF SEDIMENT STRUCTURE OR DEVICE, OR IF FLOW THROUGH THE DEVICE IS REDUCED BY MORE THAN ONE-THIRD CAPACITY, THE CONTRACTOR SHALL REMOVE AND REPLACE DISPOSABLE DEVICES OR CLEAN AND DISPOSE OF SEDIMENT.

3. TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BMPs ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON SITE. DISTURBED SOILS SHALL BE PERMANENTLY STABILIZED.

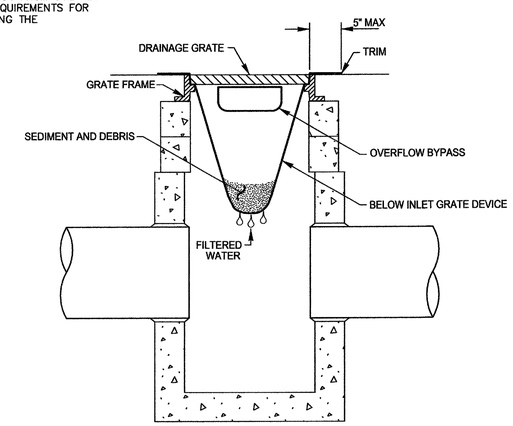
ELEMENT #12: MANAGE THE PROJECT
1. PHASING OF CONSTRUCTION:
a) DEVELOPMENT PROJECTS SHALL BE PHASED WHERE FEASIBLE IN ORDER TO PREVENT, TO THE MAXIMUM EXTENT PRACTICABLE, THE TRANSPORT OF SEDIMENT FROM THE DEVELOPMENT SITE DURING CONSTRUCTION. REVEGETATION OF EXPOSED AREAS AND MAINTENANCE OF THAT VEGETATION SHALL BE AN INTEGRAL PART OF THE CLEARING ACTIVITIES FOR ANY PHASE.
b) CLEARING AND GRADING ACTIVITIES FOR DEVELOPMENTS SHALL BE PERMITTED ONLY IF CONDUCTED PURSUANT TO AN APPROVED SITE DEVELOPMENT PLAN (e.g., SUBDIVISION APPROVAL) THAT ESTABLISHES APPROVED AREAS OF CLEARING, GRADING, CUTTING AND FILLING. WHEN ESTABLISHING THESE PERMITTED CLEARING AND GRADING AREAS, CONSIDERATION SHOULD BE GIVEN TO MINIMIZING REMOVAL OF EXISTING TREES AND MINIMIZING DISTURBANCE AND COMPACTION OF NATIVE SOILS EXCEPT AS NEEDED FOR BUILDING PURPOSES. THESE PERMITTED CLEARING AND GRADING AREAS AND ANY OTHER AREAS REQUIRED TO PRESERVE CRITICAL OR SENSITIVE AREAS, BUFFERS, NATIVE GROWTH PROTECTION EASEMENTS, OR TREE RETENTION AREAS AS MAY BE REQUIRED BY LOCAL JURISDICTIONS, SHALL BE DELINEATED ON THE SITE PLANS AND THE DEVELOPMENT SITE.

2. SEASONAL WORK LIMITATIONS:
FROM OCTOBER 1 THROUGH APRIL 30, CLEARING, GRADING, AND OTHER SOIL DISTURBING ACTIVITIES SHALL ONLY BE PERMITTED IF SHOWN TO THE SATISFACTION OF THE LOCAL PERMITTING AUTHORITY THAT THE TRANSPORT OF SEDIMENT FROM THE CONSTRUCTION SITE TO RECEIVING WATERS WILL BE PREVENTED THROUGH A COMBINATION OF THE FOLLOWING:
a) SITE CONDITIONS INCLUDING EXISTING VEGETATIVE COVERAGE, SLOPE, SOIL TYPE, AND PROXIMITY TO RECEIVING WATERS; AND
b) LIMITATIONS ON ACTIVITIES AND THE EXTEND OF DISTURBED AREAS; AND
c) PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.

BASED ON THE INFORMATION PROVIDED AND LOCAL WEATHER CONDITIONS, THE PROJECT LEAD MAY EXPAND OR RESTRICT THE SEASONAL LIMITATION ON SITE DISTURBANCE. THE PROJECT LEAD SHALL TAKE ENFORCEMENT ACTION – SUCH AS NOTICE OF VIOLATION, ADMINISTRATIVE ORDER, PENALTY, OR STOP-WORK ORDER UNDER THE FOLLOWING CIRCUMSTANCES:
– IF, DURING THE COURSE OF ANY CONSTRUCTION ACTIVITY OR SOIL DISTURBANCE DURING THE SEASONAL LIMITATION PERIOD, SEDIMENT LEAVES THE CONSTRUCTION SITE CAUSING A VIOLATION OF THE SURFACE WATER QUALITY STANDARD; OR
– IF CLEARING AND GRADING LIMITS OR EROSION AND SEDIMENT CONTROLS MEASURES SHOWN IN THE APPROVED PLAN ARE NOT MAINTAINED.

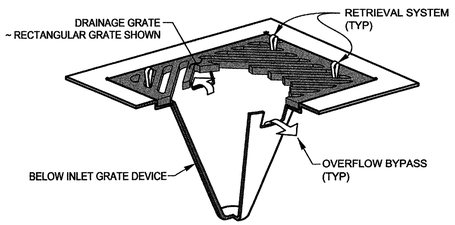
THE FOLLOWING ACTIVITIES ARE EXEMPT FROM THE SEASONAL CLEARING AND GRADING LIMITATIONS:
a) ROUTINE MAINTENANCE AND NECESSARY REPAIR OF EROSION AND SEDIMENT CONTROL BMPs;
b) ROUTINE MAINTENANCE OF PUBLIC FACILITIES OR EXISTING UTILITY STRUCTURES THAT DO NOT EXPOSE THE SOIL OR RESULT IN THE REMOVAL OF THE VEGETATIVE COVER TO SOIL; AND
c) ACTIVITIES WHERE THERE IS ONE HUNDRED PERCENT INFILTRATION OF SURFACE WATER RUNOFF WITHIN THE SITE IN APPROVED AND INSTALLED EROSION AND SEDIMENT CONTROL FACILITIES.

3. COORDINATE WITH UTILITIES AND OTHER CONTRACTORS
THE PRIMARY PROJECT PROPONENT SHALL EVALUATE, WITH INPUT FROM UTILITIES AND OTHER CONTRACTORS, THE STORMWATER MANAGEMENT REQUIREMENTS FOR THE ENTIRE PROJECT, INCLUDING THE UTILITIES, WHEN PREPARING THE CONSTRUCTION SWPPP.



SECTION VIEW

NOTES
1. Size the Below Inlet Grate Device (BIGD) for the storm water structure it will service.
2. The BIGD shall have a built-in high-flow relief system (overflow bypass).
3. The retrieval system must allow removal of the BIGD without spilling the collected material.
4. Perform maintenance in accordance with Standard Specification 8-01.3(15).



ISOMETRIC VIEW

DETAIL - STORM DRAIN INLET PROTECTION

REF: WSDOT STD PLAN I-40.20-00
NOT TO SCALE

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1620 W. Marine View Drive, Suite 200
Everett Washington 98201
Phone: 425.259.4099

6/27/12
BEN DAVIS
STATE OF WASHINGTON
48522
REGISTERED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION	BY	APRV

WESTERN WASHINGTON UNIVERSITY

LINCOLN CREEK TRANS CENTER
STORMWATER MODIFICATIONS
SWPPP NOTES & DETAILS

Client Review	Maintenance Review	Planning Review	Design Review
Designed by BRD	Drawn By CLK	Approved by JNS	Date 6-27-2012

Building/Zone LC
Sheet # 4 of 7
C3
Job Number PR0001765
Microfile Number N4943

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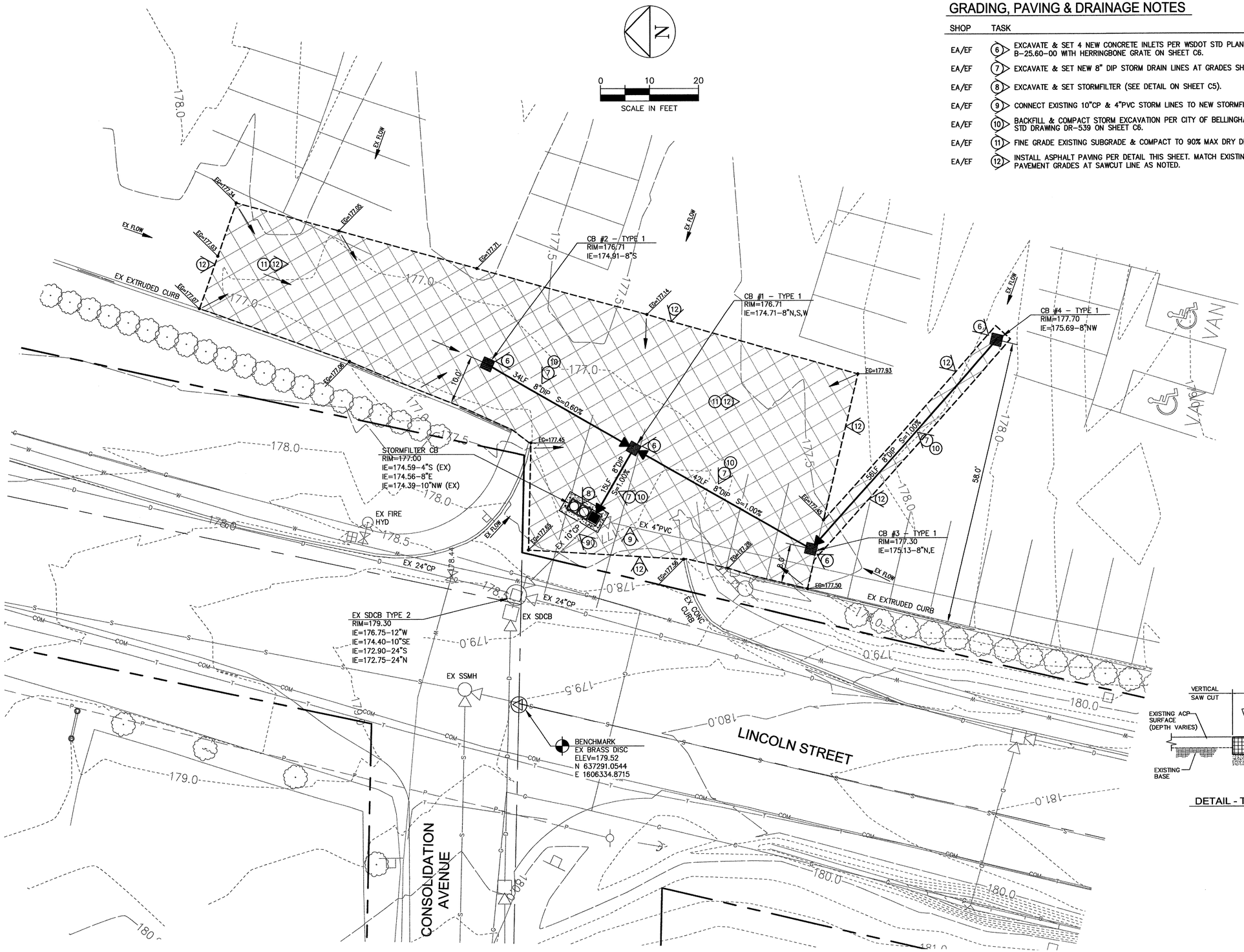
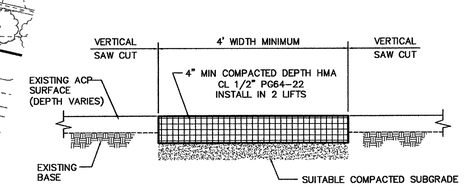


GRADING, PAVING & DRAINAGE NOTES

SHOP	TASK	
EA/EF	6	EXCAVATE & SET 4 NEW CONCRETE INLETS PER WSDOT STD PLAN. B-25.60-00 WITH HERRINGBONE GRATE ON SHEET C6.
EA/EF	7	EXCAVATE & SET NEW 8" DIP STORM DRAIN LINES AT GRADES SHOWN.
EA/EF	8	EXCAVATE & SET STORMFILTER (SEE DETAIL ON SHEET C5).
EA/EF	9	CONNECT EXISTING 10"CP & 4"PVC STORM LINES TO NEW STORMFILTER.
EA/EF	10	BACKFILL & COMPACT STORM EXCAVATION PER CITY OF BELLINGHAM STD DRAWING DR-539 ON SHEET C6.
EA/EF	11	FINE GRADE EXISTING SUBGRADE & COMPACT TO 90% MAX DRY DENSITY.
EA/EF	12	INSTALL ASPHALT PAVING PER DETAIL THIS SHEET. MATCH EXISTING PAVEMENT GRADES AT SAWCUT LINE AS NOTED.



DETAIL - TYPICAL PAVEMENT REPAIR
NO SCALE

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BEN DAVIS STATE OF WASHINGTON 45524 REGISTERED PROFESSIONAL ENGINEER 6/27/12

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LINCOLN CREEK TRANS CENTER
STORMWATER MODIFICATIONS
GRADING, PAVING & DRAINAGE PLAN

Client Review	Maintenance Review	Planning Review	Design Review
Designed by BRD	Drawn By CLK	Approved by JNS	Date 6-27-2012

Building/Zone LC
Sheet # 5 of 7
C4
Job Number PR0001765
Microfile Number N4944

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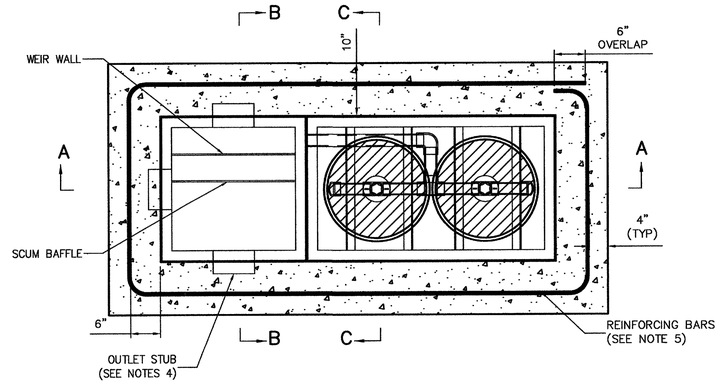
1620 W. Marine View Drive, Suite 200
Everett Washington 98201
Phone: 425.259.4099

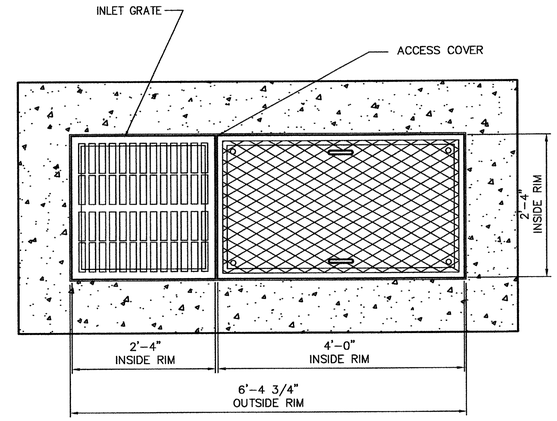
6/27/12

GENERAL NOTES

1. FILTERS TO BE SIPHON–ACTUATED AND SELF–CLEANING.
2. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE.
3. STORMFILTER REQUIRES 2.3 FEET OF DROP FROM RIM TO OUTLET. INLET SHOULD NOT BE LOWER THAN OUTLET. OUTLET PIPING IS NOTED IN THE PLAN AND IS TO BE PROVIDED BY CONTRACTOR.
4. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
5. FOR H–20 LOAD RATING, 3,000 MIN. PSI CONCRETE COLLAR IS REQUIRED. CONCRETE COLLAR WITH QUANTITY (2) #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.

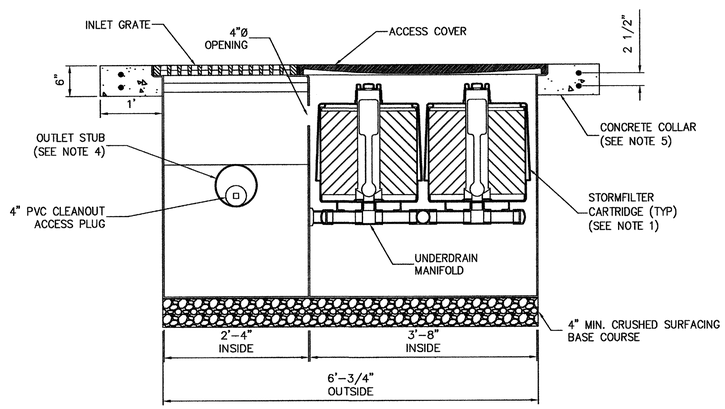


PLAN VIEW

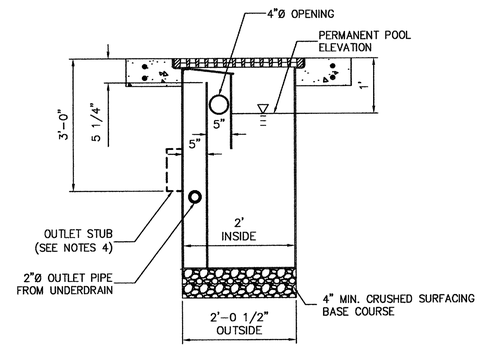


TOP VIEW

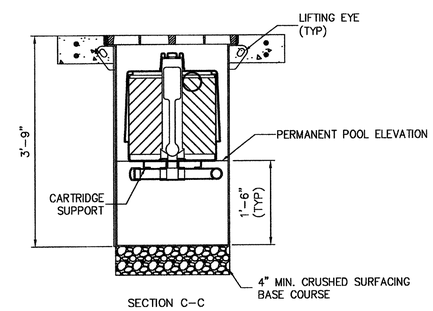
2–CARTRIDGE CATCHBASIN STORMFILTER DATA		
WATER QUALITY FLOW RATE (cfs)		N/A
PEAK FLOW RATE (<1 cfs)		N/A
RETURN PERIOD OF PEAK FLOW (yrs)		100
CARTRIDGE FLOW RATE (15 OR 7.5 gpm)		7.5
MEDIA TYPE (CSF, PERLITE, ZPG)		ZPG
RIM ELEVATION		177.00
PIPE DATA:	I.E.	DIAMETER
OUTLET STUB	174.39	10"
CONFIGURATION		
SLOPED LID		NO
SOLID COVER		NO
NOTES/SPECIAL REQUIREMENTS: FACILITY REQUIRES 18" CARTRIDGE		



SECTION A–A



SECTION B–B



SECTION C–C

CATCHBASIN STORMFILTER DETAIL

(NOT TO SCALE)

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LINCOLN CREEK TRANS CENTER
STORMWATER MODIFICATIONS
GRADING, PAVING & DRAINAGE NOTES & DETAILS

Client Review | Maintenance Review | Planning Review | Design Review
Designed by BRD | Drawn By CLK | Approved by JNS | Date 6–27–2012

Building/Zone LC
Sheet # 6 of 7
C5
Job Number PR0001765
Microfile Number N4945

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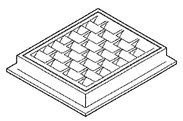
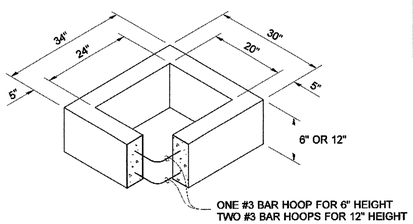


FRAME AND VANED GRATE



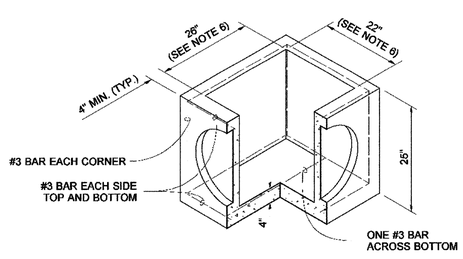
RECTANGULAR ADJUSTMENT SECTION

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
CPSSP * (STD. SPEC. 9-05.20)	12"
SOLID WALL PVC (STD. SPEC. 9-05.12(1))	15"
PROFILE WALL PVC (STD. SPEC. 9-05.12(2))	15"

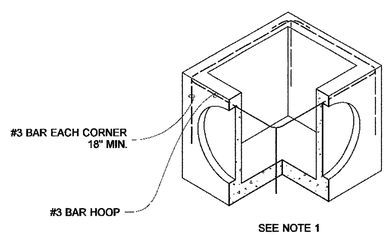
* CORRUGATED POLYETHYLENE STORM SEWER PIPE

NOTES

1. As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the **ALTERNATIVE PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
2. The knockout diameter shall not be greater than 18". Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with Standard Specification 9-04.3.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5'.
4. The frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
5. The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
6. The opening shall be measured at the top of the precast base section.
7. All pickup holes shall be grouted full after the inlet has been placed.



PRECAST BASE SECTION



SEE NOTE 1

ALTERNATIVE PRECAST BASE SECTION

MATTHEW J. WITECKI
STATE OF WASHINGTON
15588
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES JULY 1, 2007

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CONCRETE INLET

STANDARD PLAN B-25.60-00

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Harold J. Peterfeso 06-01-06
STATE EPSIGN ENGINEER DATE
Washington State Department of Transportation

BEDDING SPECIFICATIONS FOR PVC PIPE

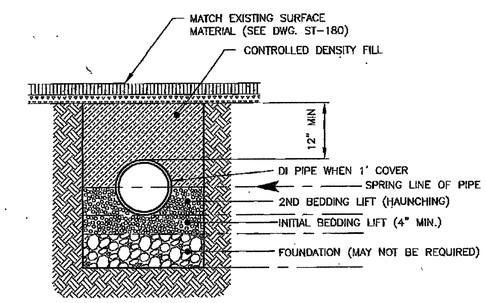
THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS ARE TO BE USED IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, CURRENT EDITION:

BEDDING FOR SEWERS, DRAINS AND CULVERTS FOR PVC PIPE—

BEDDING MATERIAL FOR PVC PIPE SHALL BE PEA GRAVEL CONFORMING TO THE FOLLOWING SPECIFICATIONS.

PEA GRAVEL – PEA GRAVEL BEDDING SHALL BE A CLEAN MIXTURE FREE FROM ORGANIC MATTER AND CONFORMING TO THE FOLLOWING GRADATION WHEN TESTED IN ACCORDANCE WITH ASTM D422:

U.S. STANDARD SIEVE SIZE	PERCENT PASSING, BY WT.
½"	100
⅜"	95–100
#8	0–10
#200	0–3



APPROVED		CITY OF BELLINGHAM	DRAWING
City Engineer	11/5/07 Date	PIPE BEDDING DETAILS FOR 2' OR LESS OF COVER	DR-539

REV	DATE	DESCRIPTION	BY	APRV

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LINCOLN CREEK TRANS CENTER
STORMWATER MODIFICATIONS
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