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Joint Base Lewis-McChord Municipal Separate Storm Sewer System (MS4): Stormwater Management Plan NPDES Permit WAS-026638

Prepared for

Directorate of Public Works
Joint Base Lewis-McChord, WA 98433

Prepared By:

Environmental Division-Public Works
2012 Liggett Ave
Joint Base Lewis-McChord, WA 98433

13 July 2016

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PHASE II STORMWATER MANAGEMENT PLAN CERTIFICATION

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. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the 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 knowing violations.

//Original Signed//

Paul Steucke Date
Chief, Environmental Division
Directorate of Public Works
Joint Base Lewis-McChord, Washington 98433

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LIST OF ACRONYMS

CWA	Clean Water Act
EAB	Environmental Appeals Board
Ecology	Washington State Department of Ecology
EMS	Environmental Management System
EOP	Environmental Operation Permit
EPA	United States Environmental Protection Agency
I-5	Interstate 5
JBLM	Joint Base Lewis-McChord
MSGP	Multi-Sector General Permit
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
Permit	NPDES Permit number WAS-026638
SWMM	Stormwater Management Manual for Western Washington, (2014 ed).
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Protection Plan
WWHM	Western Washington Hydrology Model (2012 ed)

1 INTRODUCTION

This Stormwater Management Plan (SWMP) describes the procedures that Joint Base Lewis-McChord (JBLM) will implement to comply with the requirements with United States Environmental Protection Agency (EPA) National Pollutant Discharge and Elimination System (NPDES) permit number WAS-026638 (Appendix A). This permit provides authorization to discharge stormwater from JBLM's Municipal Separate Storm Sewer System (MS4). In addition, pursuant to Ecology's certification and CWA Section 401(d), 33 U.S.C. 1341 (d), the MS4 Permit also authorizes discharges from the MS4 to groundwater of the State of Washington.

As the permit requires in Section II.A.3 this SWMP includes the following information:

a) A summary of the legal authorities which enable JBLM to control discharges to and from JBLM's MS4,
b) A description of each minimum control measure used to satisfy the requirements of Parts II.B and II.C of the Permit,
c) Any additional actions implemented by JBLM in meeting Permit requirements of Parts II.B and II.C, and
d) A description of the monitoring activities required by Part IV of the Permit.

Format of this SWMP is:

Section 1.0 - Introduction, regulatory and site information
Section 2.0 - Six minimum control measures
Section 3.0 - Stormwater retrofit
Section 4.0 - Monitoring, Recordkeeping and Reports
Section 5.0 - Stormwater coordination, implementation team and schedule.

1.1 REGULATORY INFORMATION

MS4 NPDES WAS-026638 was issued to the JBLM on 22 August 2013, with a scheduled effective date of 1 October 2013. On 19 September 2013, and 22 October 2013, the Army filed two Motions for Extension of Time to File Petition for Review. The Environmental Appeals Board ("EAB") granted both extension requests. On 5 November 2013, the Army filed a Petition for Review of the Permit by the EAB. The Army sought review of the stormwater management program requirements in Parts II.B.5 and II.C of the Permit, as well as various compliance deadlines elsewhere in Permit Parts II and IV. On 22 November 2013, EPA notified JBLM that the contested conditions in Parts II.B.5, II.C and specified deadlines were stayed until final agency action under 40 CFR § 124.19(f); the remaining conditions of the Permit are severable from the contested provisions and therefore became fully effective and enforceable on 25 December 2013. The stayed conditions became effective on 1 February 2015.

1.2 OTHER PERMITS

JBLM is authorized to discharge stormwater associated with industrial and construction activities through the MS4, only when such discharges are otherwise authorized under an appropriate NPDES permit. These other permits are described below.

1.2.1 Multi-Sector General Permit (MSGP)

JBLM is currently authorized to discharge stormwater under the Multi-Sector General Permit #WAR05000F. As this permit requires, a Stormwater Pollution Prevention Plan (SWPPP) for the covered facilities has been developed and is managed by the Stormwater Program. Facilities covered under the permit and the MS4 outfalls they discharge to are contained in the SWPPP.

1.2.2 Construction General Permit (CGP)

JBLM is currently authorized to discharge stormwater from construction sites under Construction General Permit #WAR10-000F. JBLM currently implements a base-wide construction stormwater management program. Additionally, all projects that have a land disturbance of an acre or more and a potential to discharge stormwater to waters of the United States will obtain site specific permit coverage by submitting a separate Notice intent (NOI) to the EPA. Coverage for these specific projects is obtained by the operator/contractor with day-to-day operational control of the construction project.

1.3 SITE INFORMATION

1.3.1 Background

JBLM was established in 2010, and is cooperatively operated by the Army and the Air Force. The joint base is located in Pierce and Thurston Counties and comprises approximately 86,176 acres of the former Fort Lewis Army Base, and 4,639 acres of the former McChord Air Force Base (Figure 1). Total land area of JBLM is approximately 90,815 acres or 142 square miles.

The Joint Base operates JBLM on behalf of warfighting units, families, and extended military community who rely on JBLM for support. With an Army joint base commander and Air Force deputy joint base commander, the installation is supported through directorates and agencies that provide a full range of city services and quality-of-life functions, including facility maintenance, recreation, family programs, training support and emergency services.

The population of JBLM in Pierce and Thurston Counties in 2014 was estimated to be 95,000, which includes military personnel, military dependents residing on base, civilian employees, contractors, and visitors. Most development is located in what is referred to as the “cantonment” areas. Those portions of the installation designated

as training areas have limited development, and are reserved exclusively for military training operations. See Figure 1 for a map of JBLM with areas delineated.

Yakima Training Center, and several other geographically separate facilities are under the jurisdiction of JBLM. However, the MS4 permit addresses only the discharges from the MS4 owned or operated by JBLM in Pierce and Thurston Counties as shown in Figure 1 and Appendices B and C. It does not include Yakima Training Center or other geographically remote sites operated by JBLM.

1.3.2 Climate

The climate of the JBLM region is characterized by mild, wet winters and warm, dry summers. The average annual precipitation at JBLM is 40.2 inches, with about 70 percent of the annual rainfall occurring between mid-October and February. The driest months are July and August, with an average of only 1 inch of precipitation per month. Average snowfall at the installation rarely exceeds a few inches. Temperatures range from a monthly mean of 36.5 °F in winter to 65 °F in summer. The frost-free season averages 176 days (U.S. Army Corps of Engineers 1994).

Climatic conditions at JBLM are determined, in large part, by three factors: the Pacific Ocean, the Olympic Mountains, and semi-permanent high- and low-pressure weather cells which hover over the North Pacific Ocean (Kruckeberg 1991). JBLM lies in the rain shadow of the Olympic Mountains, and annual precipitation is quite low compared to many forested areas in western Washington. Average precipitation in the Puget Sound basin ranges from 33 inches in Bellingham to 52 inches in Olympia (Franklin and Dyrness 1988).

1.3.3 Geology

The geology of JBLM is dominated by continental glacier deposits from the Fraser Glaciation (Walters and Kimmel 1968, Thorson 1980). The geologic units underlying the base were deposited by the Vashon Stade of the Fraser glaciation about 14,000 years ago. The Puget Lobe of the glacier reached its terminus just a few miles south of the southern boundary near the current site of Tenino, WA (Kruckeberg 1991). During subsequent deglaciation, glacial sediments were deposited to form a variety of distinct glacial landforms. The low hills in the western half of the Pierce County portion of the base are made of lodgement till (deposited underneath the glacier) mantled with ablation till (surface debris let down onto the landscape as the ice melted away). On some of the hills, the Vashon till may overlie drumlins formed during pre-Vashon glaciation.

The majority of the Pierce County portion of the base consists of outwash deposited by meltwater from the receding terminus of the glacier (Walters and Kimmel 1968, Thorson 1980). The resulting topographic surface is called the Steilacoom Plains, underlain by Steilacoom Gravel. This recent glacial landscape has been modified by

post-glacial geomorphic processes of erosion and alluvial deposition, most notably near the Nisqually River and Muck Creek. Lake deposits also formed during and after glaciation in upland depressions in the till and moraine.

1.3.4 Topography

Topographic characteristics are largely determined by the recent glaciation described above. Due to the predominance of outwash deposits, the topography at JBLM is generally quite gentle, characterized by flat plains and gently rolling terrain with occasional hilly areas of moderate slope. Elevation ranges from 0 to 600 feet, with most of the area between 200 and 400 feet. Short (< 200 feet), steep slopes occur between different levels of outwash terraces and on the banks of old outwash channels. Relatively gentle hills in and around the developed area of JBLM derive from till deposits. Topographic features due to surface drainage and erosion are poorly defined because of the highly permeable nature of the coarse-textured soils and glacial parent materials. Exceptions are the steep slopes occurring along escarpments bordering the Nisqually River and the shoreline of Puget Sound. The Nisqually River valley was carved by large volumes of water from the Nisqually Basin, draining around the southern end of the receding Vashon glacier.

1.3.5 Soils

The soils of JBLM are placed into two major groups for general characterization based on maps and descriptions of soil series prepared by the Soil Conservation Service (Anderson et al. 1955, Pringle 1990). Groups I and II comprise 90 percent of the total area and are similar in many physical characteristics (derived from loose glacial sands and gravels, somewhat excessively drained, low water-holding-capacity, coarse textured, and shallow). However, Group I soils developed on outwash plains under prairie vegetation while Group II is strongly associated with the hills or breaks in topography historically occupied by forest.

Group I soils are somewhat excessively drained soils derived from loose glacial outwash. They are mostly gravelly sandy loam, with some sandy loam, or sand and are shallow to moderately shallow. Soil series include: Spanaway, Fitch, and Nisqually.

Group II soils are also somewhat excessively drained soils derived from loose, gravelly or sandy glacial drift, often overlying till or moraine. They are mostly gravelly sandy loam, some very gravelly or stony and are very shallow to moderately shallow. Soil series include: Everett, Indianola, Lynden, and Skykomish (U.S. Soil Conservation Service, 1990).

1.3.6 MS4 Description

The MS4 throughout the installation is comprised of curbs and gutters, ditches and storm drains, lift stations, treatment systems, and associated outfalls. It is located in

the cantonment areas of Lewis-Main, Lewis-North, and McChord Field. Operational ranges including training and impact areas are outside of the cantonment areas and are not served by the cantonment area MS4 infrastructure, but are included in the permit.

- **Lewis-Main and Lewis-North.** The cantonment areas of Lewis-Main and Lewis-North are comprised of approximately 10,603 acres, almost half of which (4,972 acres) drain to the MS4 infrastructure. Appendix B describes the outfalls of Lewis-Main and Lewis North. The MS4 in Lewis-Main and Lewis-North discharges to both surface water and groundwater as shown in Figures 2 and 3 and Exhibit 1.

  Lewis-Main. The MS4 within the northern portion of Lewis-Main, which includes Madigan Army Medical Center and the Logistics Center east of Exit 122 on Interstate 5 (I-5), drains to Murray Creek. MS4 in the southern portion of Lewis-Main (area includes the Main Gate and Gray Army Airfield east of the Main Gate at I-5 Exit 120) drains to two stormwater treatment and infiltration facilities, both of which overflow to marshes west of I-5. Overflows from two of these marshes, Bell Marsh and Hamer Marsh, are conveyed to the JBLM Stormwater Canal. The Stormwater Canal flows west along the south side of Lewis-North, then northwest to discharge to Puget Sound just north of the JBLM Solo Point Wastewater Treatment Plant.

  Lewis-North is located northwest of the JBLM Main Gate at I-5 Exit 120. The MS4 system in Lewis-North predominately drains to two treatment facilities, one of which has significant infiltration capacity. Overflows from these outfalls are conveyed to the JBLM Stormwater Canal. Residential housing areas in Lewis-North include MS4 infrastructure which drains to American Lake, American Lake Marsh, and Elliot Marsh.

- **McChord Field.** Two areas, the airfield and the west housing area, comprise the MS4 on McChord Field. Appendix C describes the outfalls on McChord Field. Stormwater discharges to both surface water and groundwater as shown on Figure 3 and Exhibit 1. The airfield area drains approximately 415 acres through a central MS4 discharging to Clover Creek. Clover Creek enters McChord Field at its eastern boundary, flows west under the runway, continuing west and north through the remainder of McChord, off base, and discharges to Lake Steilacoom. The airfield area includes the airfield, supporting infrastructure, and barracks areas. The MS4 serving the western residential area drains approximately 320 acres, and discharges to Carter Lake, Emerson and other unnamed wetlands.

- **Operational Ranges.** Operational ranges consist of training areas, firing ranges and impact areas. Operational ranges on JBLM, are located outside of the cantonment areas. Operational ranges include approximately 75,573 total acres (Figure 1).

Drainage areas and MS4 infrastructure in the operational ranges will be fully delineated prior to the end of the permit. In general, however, most stormwater in the ranges on Lewis-Main infiltrates directly into the ground. Stormwater that does drain from the ranges south of the Lewis-Main cantonment area typically flows to Muck Creek or the Nisqually River. Flows from the ranges east of the cantonment area drain to the ground or wetlands upstream of Spanaway Lake. A small MS4 system services the Leschi Town training facility southeast of the cantonment area but it also discharges to groundwater. Flows from the ranges on Lewis-North drain to wetlands, the ground or to Puget Sound. New development in the training areas is both limited and very restricted.

Two operational ranges used as training areas are located on McChord Field. One is the small 20 acre Fire Training Area on the eastern boundary of the base, and the other is a 685 acre area about ½ mile south of the main McChord Field runway. Stormwater from both drainages infiltrates into the ground.

1.3.7 Co-Permittees, if applicable.

This section is not applicable at this time.

2 MINIMUM CONTROL MEASURES (MCMS) AND BEST MANGEMENT PRACTICES (SEC II.B)

The following six minimum control measures will be implemented under this plan and are described in the following sections:

1. Public Outreach and Education on Stormwater Impacts
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination (IDDE)
4. Construction Site Stormwater Runoff Control
5. Stormwater Management for Areas of New Development and Redevelopment
6. Pollution Prevention and Good Housekeeper for Municipal Operations and Maintenance.

A list of BMPs, goals of the BMPs, and metrics to measure the progress on each goal are included in Tables 1-6.

2.1 PUBLIC OUTREACH AND EDUCATION ON STORMWATER IMPACTS (SEC II.B.1)

The primary goal of the education and outreach program is to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts. Under this program and other Division programs, public outreach and education is conducted through various training classes, briefings, special events, and newsletters/newspaper articles. These on-going efforts will be summarized and evaluated in each Annual Report.

JBLM targets the following audiences as appropriate:

- project managers;
- contractors;
- tenants;
- environmental staff;
- Public Works Operations and Maintenance shops, and
- business owners and operators.

For this permit iteration, JBLM plans to target Public Works Operations and Maintenance shops. BMPs to be implemented for public outreach are described in Table 1.

2.2 PUBLIC PARTICIPATION AND INVOLVEMENT (SEC II.B.2)

JBLM has implemented a public involvement/participation program which includes the programs listed in Table 2. In addition, this Management Plan is available to the public via the JLBM website. Each year public participation and involvement efforts will be summarized in the corresponding Annual Report.

2.3 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) (SEC II.B.3)

JBLM includes an ongoing program to detect and remove illicit connections and discharges into the MS4. The JBLM IDDE program currently addresses each of the components in the Permit. BMPs used to implement the IDDE program are shown in Table 3.

2.3.1 JBLM Regulation

JBLM is implementing a JBLM Stormwater Regulation which, among other things, prohibits all illicit discharges into the MS4 to the maximum extent practicable. The draft regulation was sent for publication on 15 April 2016 and is awaiting finalization and signature from the installation commander. Elements of the Regulation include descriptions of allowable and conditionally allowable discharges as required by the Permit.

2.3.2 Detection and Elimination

This program will be developed in the coming years in accordance with permit requirements. The Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, (Center for Watershed Protection, 2004) will be used to ensure the program is compliant and meets the necessary measures of the program.

The BMPs address the following topics or activities.

- *Update cantonment and operational area maps*
- *Procedures for locating priority areas likely to have illicit discharges*
- *Field Assessments*
- *Characterizing the nature of, and potential threat posed by any illicit discharges found or reported*
- *Tracing the source of the illicit discharge*
- *Eliminating the discharge.*

2.3.3 Tracking

JBLM will track the number and type of illicit discharges identified, dry weather screening efforts, and the location and any remediation efforts to address identified illicit discharges. The effectiveness of the program will be measured by the reduction of illicit discharges discovered or reported to the Stormwater Program beginning in 2015. This information will be summarized in the corresponding Annual Report.

2.3.4 Education

During training courses JBLM personnel are briefed that all spills are required to be reported. The Environmental Operations Section of Public Works responds to spills and ensures they are properly cleaned-up and reported. Additionally, JBLM employs a full-time illegal dump investigator. Both spills and illegal dumping is required to be reported by dialing 911.

Currently illicit discharges are reported through the 911 emergency system. Calls from the 911 system are reported to the System Manager and the Environmental Division. Records of calls to the System Manager and/or the Environmental Division will be maintained and identified in the Annual Report.

As part of its the Education and Outreach Program in section 2.1 above, JBLM entities employees, businesses, and the general public within the permit area are informed about the hazards associated with illegal discharges and improper disposal of waste and the means to report them.

2.3.5 Training

All staff responsible for the identification, investigation, termination, clean up and reporting of illicit discharges, including spills and illicit connections, will be trained to conduct these activities. Orientation and training concerning the JBLM stormwater management program will be accomplished within the first six months of employment for new staff who work directly on stormwater management issues. Follow-up training will be provided as necessary to address changes in procedures, techniques or requirements. Records of relevant training provided or obtained, and the staff members trained will be maintained. A summary of each year's training will tracked and included in the corresponding Annual Report.

2.4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL (SEC II.B.4)

JBLM's MS4 permit requires that pollutants be controlled in stormwater runoff from all construction sites that disturb 5,000 square feet of land surface or more. BMPs to implement the Construction Stormwater Program are listed in Table 4.

Generally, projects are required to comply with one of two conditions to address stormwater runoff from construction activities:

1. For projects that disturb areas between 5,000 square feet and one acre, a Stormwater Water Pollution Protection Plan (SWPPP) that addresses applicable stormwater pollution prevention concerns is prepared and submitted to stormwater program staff for review.

2. For projects disturbing one acre or greater a SWPPP shall be prepared in compliance with the EPA NPDES Construction General Permit (CGP). Coverage under the CGP is obtained the contractor by submitting a Notice of Intent to EPA prior to conducting land disturbing activities.

BMPs utilized in construction shall comply with Volume II of the SWMM.

Construction projects have contract language that includes applicable compliance requirements depending on project land disturbance size. Example contract language is in Appendix D.

Stormwater control on construction projects on JBLM are monitored and inspected by the Stormwater Program staff. SWPPPs for projects described above are submitted and reviewed by the Stormwater Program prior to construction. Inspections during construction are also performed.

2.5 STORMWATER MANAGEMENT FOR AREAS OF NEW DEVELOPMENT AND REDEVELOPMENT (SEC II.B.5)

For all new development and redevelopment project sites disturbing 5,000 square feet or more, JBLM has implemented a project planning program that addresses runoff from developed properties and includes design criteria. Administrative BMPs to implement the development and redevelopment program are in Table 5.

A procedures pamphlet (JBLM Stormwater Procedures for New Development and Redevelopment) has been developed to assist designers in meeting the requirements of the Permit. The pamphlet and its associated check list may be acquired by contacting the JBLM Stormwater Program Office. This procedures pamphlet addresses the below program components:

- Site Planning and preparation of a Stormwater Site Plan;
- Source control of pollution;

- Site design to minimize impervious areas, preserve vegetation and natural drainage systems;
- Hydrologic performance for on-site stormwater management;
- Hydrologic performance requirement for flow control;
- Runoff treatment;
- Wetlands protection;

The Regulation and the JBLM Design Standards require compliance with the MS4 Permit and all development/redevelopment requirements. One task is to review proposed development/redevelop projects to ensure they meet the MS4 requirements. A summary of these projects for the corresponding year will be included in the Annual Report.

2.6 POLLUTION PREVENTION, GOOD HOUSEKEEPING AND MAINTENANCE (SEC II.B.6)

JBLM has an active and extensive pollution prevention program. The JBLM Environmental Management System (EMS) is an ISO 14001 certified program which JBLM DPW adheres to. Table 6 lists BMPs that are or will be implemented to meet the permit requirements.

2.6.1 Maintenance Standards for Permanent Stormwater Facilities

Maintenance standards for JBLM facilities will follow the guidance provided by Volume 5, Section 4.6 of the SWMM. The details of the implementation of the pollution prevention and O&M plan are described in JBLM's Operation, Maintenance and Inspection Plan. This plan can be acquired by contacting the JBLM Stormwater Program office.

2.6.2 Stormwater Pollution Prevention Plans for Equipment Maintenance/Material Storage Yards.

The JBLM environmental program requires maintenance and storage yards to prepare and maintain an Environmental Operating Permit (EOP) that contains, among other things, the comparable requirements of a SWPPP. JBLM intends to utilize the EOPs as an equivalent document to the SWPPP. SWPPPs will be developed for maintenance and material storage yards not covered by the MSGP. Facilities requiring this action are included in Table 7. An EOP example is included in Appendix G.

2.6.3 Documentation

Records of all permanent stormwater facility inspections, catch basin inspections, maintenance, or repair activities conducted will be maintained in accordance with the permit Part IV.C. A summary of these items will be included in each corresponding Annual Report.

3 STORMWATER RETROFIT (SEC II.C.2, C.3)

JBLM will implement a stormwater retrofit program. In support of the program, the Stormwater Program will conduct stormwater discharge, water quality, and biological assessment monitoring. Using this data and in coordination with Pierce County a retrofit report identifying potential retrofit projects will be prepared. At least one retrofit project will be initiated prior to the expiration of the permit.

A McChord Field Stormwater Management Study was conducted on JBLM in April 2016 to study the drainage sub-basins that discharge into Clover Creek with the intent of providing DPW with identification for potential stormwater management retrofit projects. Prior to the expiration of the Permit, JBLM will schedule a meeting with EPA to discuss the results of the retrofit report and determine whether any specific permit terms should be included in the permit reissuance.

4 MONITORING, RECORDKEEPING AND REPORTING

4.1 MONITORING

JBLM will monitor stormwater discharges, surface water quality and stream biology to assess the effectiveness of the SWMP in minimizing the impacts from MS4 discharges. Per the requirements of the permit, JBLM will conduct the following monitoring tasks:

1. Measure phosphorus loading from its MS4 discharges into American Lake;
2. Characterize water quality discharging through the JBLM Canal;
3. Characterize water quality in Clover Creek and Murray Creek;
4. Assess baseline biological conditions in Clover Creek and Murray Creek; and
5. Conduct monitoring to determine pollutant loading into Clover Creek from the MS4.

JBLM will update the monitoring plan to address the objectives of Part IV.A.5 and IV.A.8 of the Permit and submit the updated plan with the 2015 Annual Report.

Detailed monitoring tasks are described in the Monitoring and Quality Assurance Plan (QAP). This plan presents the management, organization, objectives, monitoring requirements, protocols and schedule for stormwater sampling. The QAP also documents the type, quantity, and quality of data needed for developing pollutant load estimates and making decisions regarding the effectiveness and adequacy of control measures implemented under the Permit.

The QAP follows USEPA guidelines contained in USEPA Guidance for Quality Assurance Project Plans (USEPA, 2002), and USEPA Requirements for Quality Assurance Project Plans (USEPA, 2001). The development, review, approval, and implementation of the Plan is part of USEPA's mandatory Quality System, which requires all organizations to develop and operate management structures and processes to ensure that data used in decisions are of the type and quality needed for their intended use.

4.2 RECORDKEEPING

Records (such as proof of training, inspections, and maintenance) required by the Permit will be retained for at least five years and will be accessible to the public when specifically requested. Records will be kept both electronically and in paper copy by the Stormwater Program Manager. Results of the records will be summarized in the Annual Report, but will not be submitted unless requested by EPA.

4.3 SCHEDULE

The schedule for implementing the stormwater program is mandated by the Permit (Appendix A). Timeframe for implementing BMPs meeting the Permit requirements are shown in Tables 1-6 and Table 8.

4.4 PROGRAM UPDATES

The SWMP will be updated at least annually. Changes to delete or replace an action or activity identified in the permit will include:

- An analysis of why the original actions or activity is ineffective, infeasible, or cost prohibitive;
- Expectations on the effectiveness of the replacement action or activity; and
- An analysis of why the replacement action or activity is expected to better achieve permit requirements.

Change requests will be made in writing and submitted to EPA as described below.

4.5 REPORTING

An Annual Report will be prepared that will include the following information collected during the previous reporting period:

JBLM will submit one hard and one electronic copy (CD ROM or transmission by E-Mail) of the Annual Report to EPA at the following address:

United States Environmental Protection Agency
Region 10
Attention: Municipal Stormwater Program Contact
NPDES Compliance Unit
1200 6th Avenue, Suite 900 (OCE-133)
Seattle, WA 98101
Vakoc.Misha@epa.gov

Point of contact for the installation for regulatory agencies is:

Joint Base Lewis-McChord
Environmental Division - Public Works
Box 339500 MS 17
Joint Base Lewis-McChord, Washington 98433-9500
usarmy.jblm.imcom.list.dpw-stormwater@mail.mil

The reporting period is 1 October through 30 September of the previous year. The first Annual Report was submitted to EPA on January 30, 2015. Future Annual Reports will be submitted by January 30 following each year.

5 STORMWATER COORDINATION AND IMPLEMENTATION TEAM

Coordination between the Stormwater Program Manager and Directorate of Public Works (DPW) support is essential to ensure program goals are met. Table 9 lists the members of the stormwater coordination and implementation team and their respective responsibilities.

6 REFERENCES

Anderson, W.W., A..O. Ness., and A.C. Anderson. 1955. Soil survey of Pierce County, Washington. U.S. Department of Agriculture, Soil Conservation Service, Washington, DC.

Center for Watershed Protection, 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Prepared by Center for Watershed Protection,

Ecology, 2012. Stormwater Management Manual for Western Washington. Prepared by the Washington Department of Ecology. Olympia, WA. August.

Franklin, J.F. and C.T. Dyrness. 1988. Natural Vegetation of Oregon and Washington. Oregon State University Press, Corvallis, OR.

Herrera, and Washington Stormwater Center, 2013. Western Washington Low Impact Development (LID) Operation and Maintenance (O&M). Prepared for the Washington Department of Ecology by Herrera Environmental Consultants, Inc and the Washington Stormwater Center. July 8.

Joint Base Lewis-McChord, 2015. Stormwater Pollution Prevention Plan for JBLM industrial facilities. JLBM Directorate of Public Works, Joint Base Lewis-McChord, WA 98433.

Kruckeberg, A.R. 1991. The Natural History of Puget Sound University of Washington Press, Seattle, WA.

National Oceanic and Atmospheric Administration, 2015. Climatological records for McChord Air Force Base.

Pringle, RF. 1990. Soil survey of Thurston County, Washington . U.S. Department of Agriculture, Soil Conservation Service, Washington, DC.

Thorson, RM. 1980. Ice-sheet glaciation of the Puget Lowland, Washington, during the Vashon Stade (late Pleistocene). Quaternary Research 13:303-321.

USEPA, 2002. Guidance for Quality Assurance Project Plans (EPA QA/G-5). U. S. Environmental Protection Agency. Document EPA/240/R-02/009. December.

USEPA, 2001. Requirements for Quality Assurance Project Plans). Prepared by U.S. Environmental Protection Agency. Document EPA/240/b-01/003. March

USEPA, 2008. Multi-Sector General Permit No. WAR05B82F Issued by U.S. Environmental Protection Agency for general coverage for stormwater from industrial sites on Fort Lewis, Washington. U.S Environmental Protection Agency, Region 10, Seattle, WA.

USEPA, 2008. Multi-Sector General Permit No. WAR05B83F Issued by U.S. Environmental Protection Agency for general coverage for stormwater from industrial sites on McChord Air Force Base, Washington. U.S Environmental Protection Agency, Region 10, Seattle, WA.

Walters, K.L. and G. E. Kimmel 1968, Groundwater occurrence and stratigraphy of unconsolidated deposits, central Pierce County, Washington. Washington State Department of Water Resources, Olympia, WA.

US Corps of Engineers, 1994, Mobile District. 1994. Final Environmental Impact Statement for stationing of mechanized or armored combat forces at Fort Lewis, Washington. U.S. Army, U.S. Forces Command. Mobile AL.

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Figures

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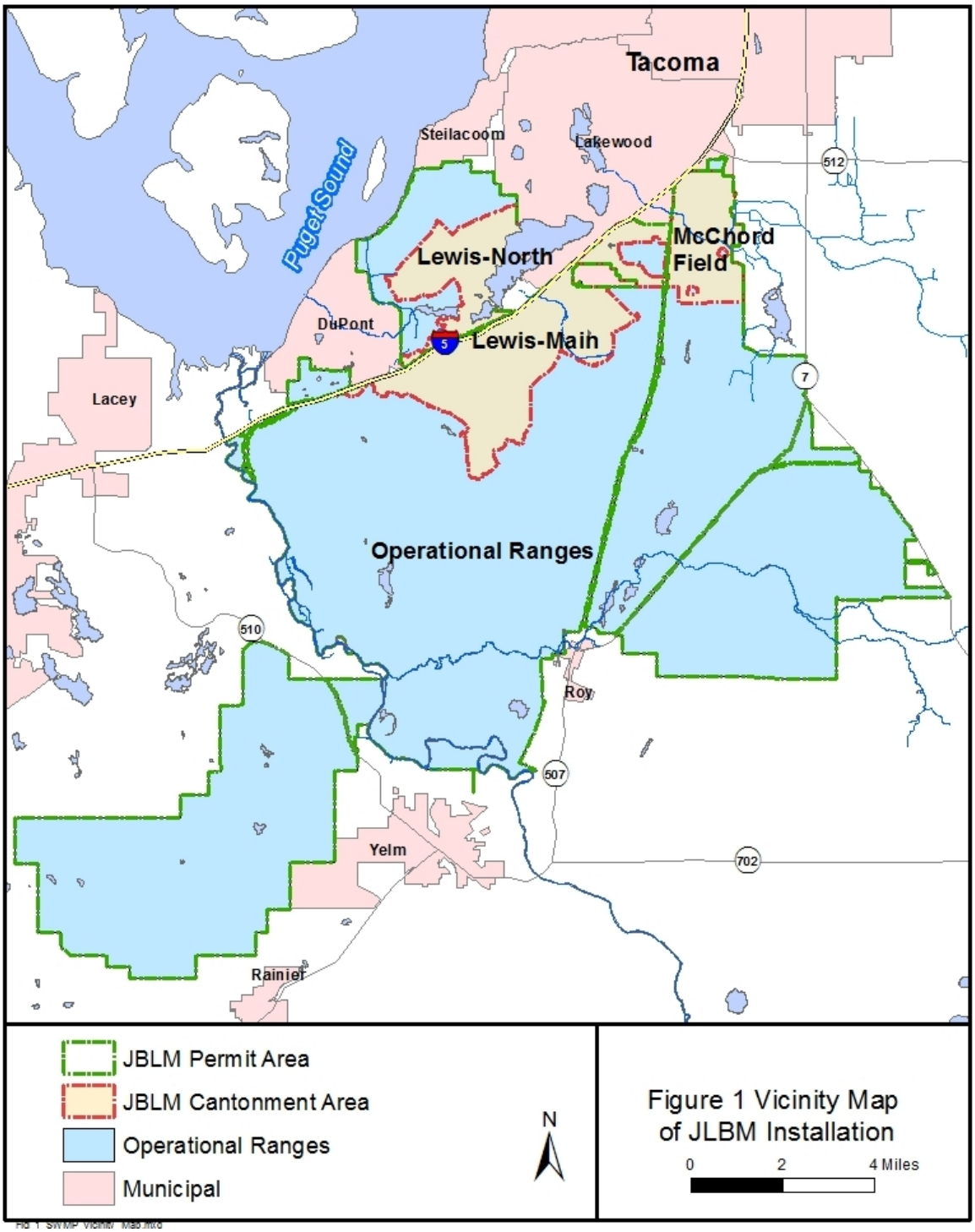

Figure 1 Vicinity Map of JLBM Installation

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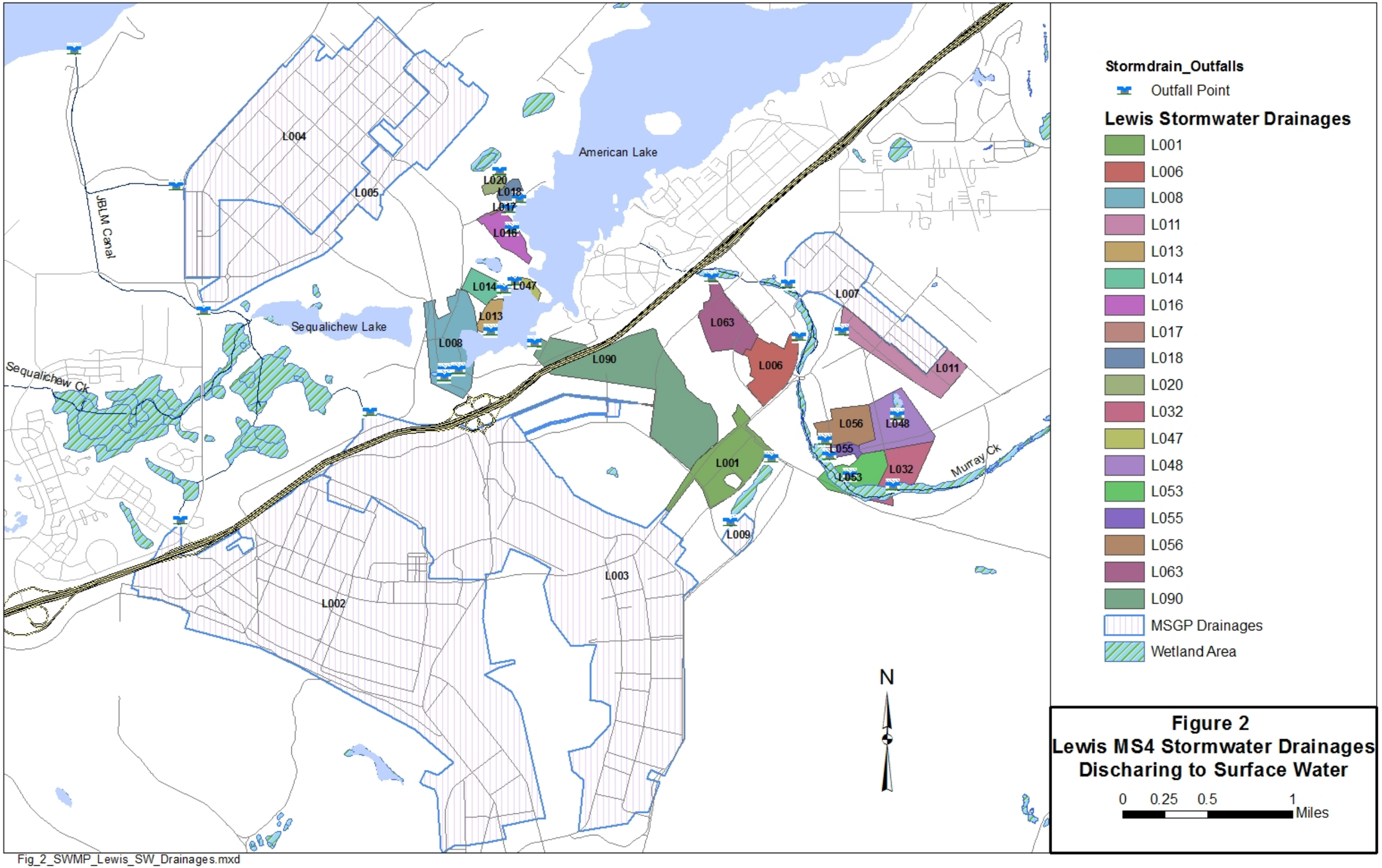

Figure 2 Lewis MS4 Drainages Discharging to Surface Water

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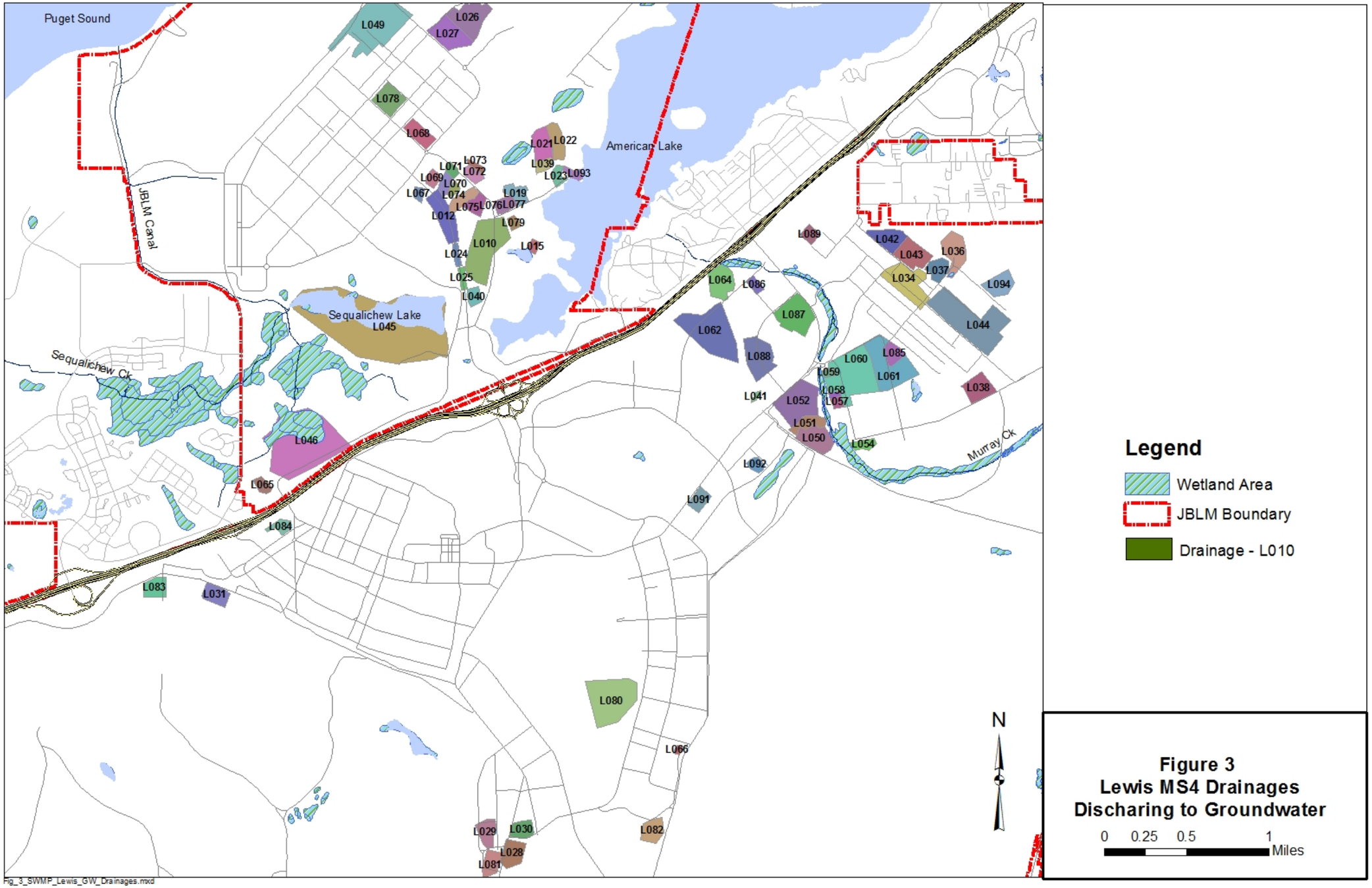

Figure 3 Lewis MS4 Outfalls Discharging to Groundwater

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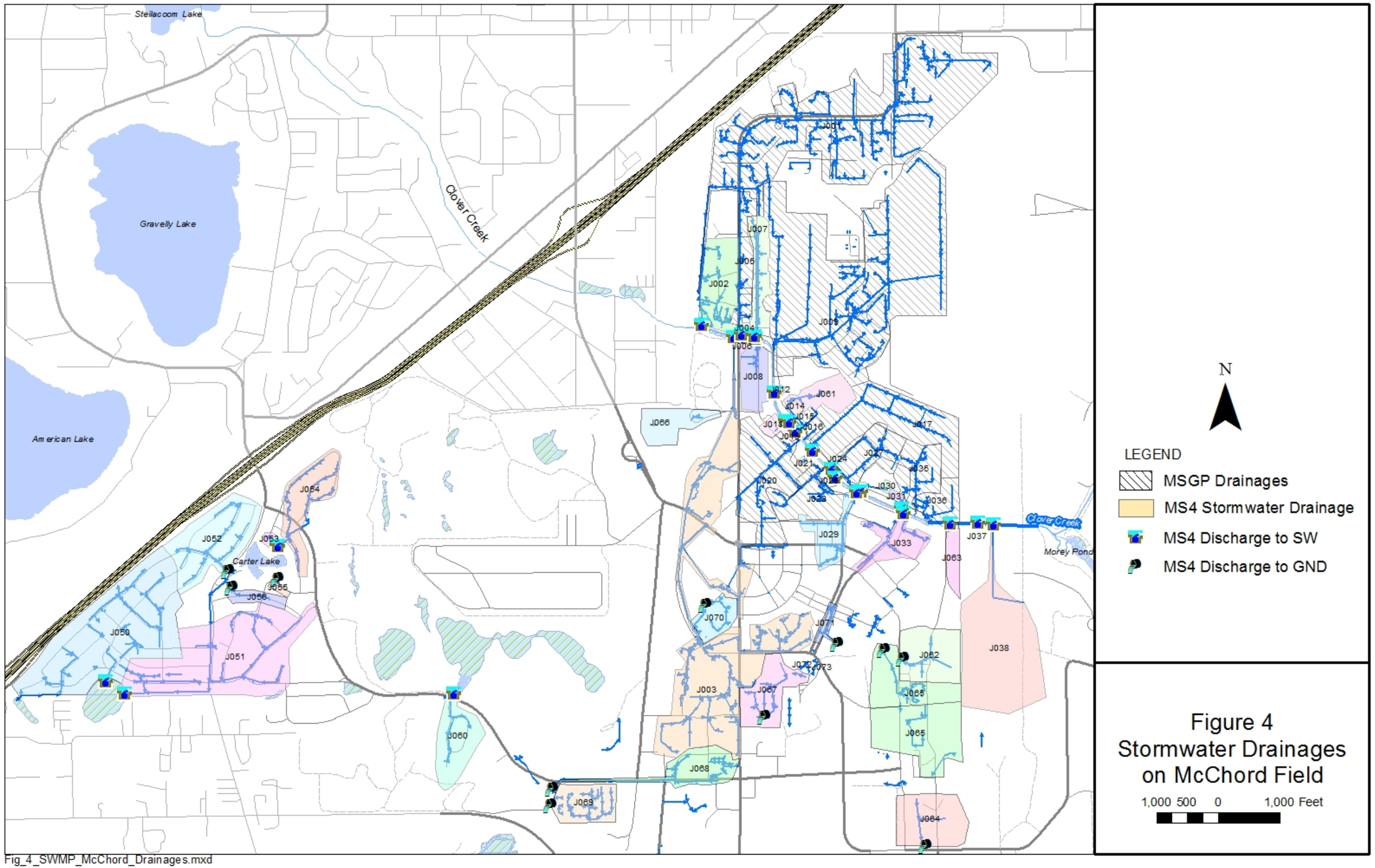

Figure 4 McChord Field MS4 Drainages

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TABLES

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Table 1 Public Outreach and Education on Stormwater Impacts

BMPs	Measurable Goal	Metric	Permit Section Reference*	When	Status/Notes	Responsible Party
Provide training for individuals/activities that are likely to have an impact on stormwater quality.	Provide Environmental Operations training to contractors, tenants, business operators and service members that work with hazardous materials and waste, i.e. hazardous material and waste technicians and environmental compliance officers.	Total number of trainings held and individual attendance	Sec II.B.1.a.b.c	Year 3-5	Weekly EOM courses provided by ED	ED
	Educate PW O&M personnel on stormwater program requirements. Target proper management of street, parking lot, sidewalk, and building wash water; proper methods for using water for dust control; and impacts of illicit discharges and how to report them.	Conduct assessments before and after training to evaluate actual practices and focus training in areas where behavior change is needed	Sec II.B.1.d	Year 3-5	Initial training event held for DPW O&M personnel on 13APR16.	ED/OMD
	Provide site visits to all units and contractors when requested.	Total number of sites visits and type of activity	Sec II.B.1.a.b.c	Year 3-5	Ongoing as visits are requested.	ED

* Some Permit subsections not addressed by BMPs. See text for description of these areas

Table 2 Public Participation and Involvement

BMPs	Measurable Goal	Metric	Permit Section Citation *	When	Status/Notes	Responsible Party
Provide an avenue to discuss and coordinate SWMP implementation with all JBLM organizations	Convene Water Council Meetings at least annually	Track number of issues and decisions made by the group	Sec II.B.2b	Year 3-5	Refocus Water Council scope to serve as a base wide decision making body. In the past the Water Council was an informative body with no decision making authority. The vision is to develop a program in which water issues including stormwater can be brought before the council which will make binding decisions. It will be chaired/attended by the PW director.	ED
Provide Public availability of the SWMP	Annually post the current SWMP to the JBLM Website	SWMP is posted annually	Sec II.B.2c	Year 3-5	The most current SWMP document will be posted to the JBLM public website located at: http://www.lewis-mcchord.army.mil/publicworks/	ED
Provide opportunities for residents and personnel at JBLM to Volunteer in activities that provide understanding of water resources and how their activities can affect water quality	Participate in the Army's Volunteer Program, which allows continued volunteer activities	Advertise the availability of this program and strive to have at least one volunteer a year.	Sec II.B.2d	Year 1-5	Volunteer activities are ongoing and events and sign up details are posted on the Sustainability website.	ED

* Some Permit subsections not addressed by BMPs. See text for description in these subsections

Table 3 Illicit Discharge Detection and Elimination (IDDE –Sec II.B5)

BMPs	Measurable Goal	Metric	Permit Section Reference	When	Status/Notes/Updates	Responsible Party
Update Map of Cantonment Areas	Complete annual GIS updates	Updated maps	Sec II.B.3a	Year 1-5	Stormwater maps showing stormwater features are updated routinely. However, an inventory of all stormwater features needs to be completed.	ED/GIS
	Develop field verification plan	Completed plan		Year 3	UFR submitted to IMCOM for contract to verify and inventory stormwater facilities and update GIS maps	ED/GIS
	Field verify features section	Number of completed sections		Year 3-4		ED
	Update Cantonment Maps	Completed inventory		Year 4-5		GIS
Develop Map of Operational Ranges Areas	Develop field verification plan	Completed plan	Sec II.B.3b	Year 4	In development	ED/GIS
	Field verify features by training area	Number of completed training areas		Year 4	In development	ED
	Update Range Maps	Completed Range Maps		Year 4-5	In development	GIS
Develop and implement regulation covering IDDE	Prepare coordinate, and publish regulation	Published Document	Sec II.B.3c	Year 3	JBLM Stormwater Regulation awaiting signature from JBLM CDR	ED
	Implement regulation	Number of enforcement actions		Year 3-5	In development	ED/SJA/JBD
Detection and Elimination Program	Develop D&E Plan	Coordinate among PW directorates	Sec II.B.3d	Year 3	Meetings scheduled for O&M will start to incorporate IDDE program development.	ED/ESD/BOID/ OMD
		Complete Plan		Year 3-4	In development	ED
	Implement Plan	Number of inspections conducted & number of repairs/reconstruction projects planned/completed		Year 3-5	In development	ED/ESD/OMD
Track Illicit Discharges	Track illicit discharges	Document number of illicit discharges discovered/repaired/new construction	Sec II.B.3e	Year 3-5	Provide information in annual report	ED

BMPs	Measurable Goal	Metric	Permit Section Reference	When	Status/Notes/Updates	Responsible Party
Illicit Discharge Education	Developed & implemented Programs	Successful establishment of program	Sec II.B.3f	Year 1-5	Programs currently include household hazardous waste collection, trash investigator, environmental training for new employees, troops, and contractors	ED
	New employee environmental class	Reported incidents of employee / troop/ contractor compliance with stated goals		Year 1-5	EOM classes held multiple times each month.	ED
	IDDE training videos	Upload training videos on public website and track usage/visits		Year 4-5	Videos acquired; working on licensing and posting on site	ED/IT/PAO
Responsible staff training	Develop training plan for new hires	Completed training plan	Sec II.B.3g	Year 3	In development	ED
	Training identified in plan	Received within 6 months of hire date		Year 4-5	In development	ED
	Annual IDDE refresher training	After initial training all staff to attend at least two stormwater related education events		Year 4-5	In development	ED

Table 4 Construction Site Stormwater Control

BMPs	Measurable Goal	Metric	Permit Section Reference	When	Status/Notes/Updates	Responsible Party
Develop and implement regulation covering ordinance and enforcement of construction site stormwater runoff control	Coordinate and publish regulation	Published Document	Sec II.B.4b	Year 3	JBLM Stormwater Regulation awaiting signature of JBLM CDR	ED/SJA/JBC
	Implement regulation	Number of enforcement actions	Sec II.B.4c	Year 3-5	Ongoing as of Apr 2015	ED/SJA/JBD
Construction Site BMP's	Adherence to SWMM	Number of findings of non-standard site BMP's.	Sec II.B.4d	Year 3	Ongoing inspections of construction sites	ED
Appropriate stormwater language in all contracts and requests for proposals	Applicable language in contracts, proposals	Agreement from U.S.Corp of Engr, PW Planning, JBLM Directorate of Contracting	Sec II.B.4e	Year 3	Language included in design standards, working with parties to establish specific language for proposals, contracts, etc.	ED/ESD/ Planning
Pre-construction plan reviews	Plan reviews conducted	Number of completed plan reviews	Sec II.B.4f	Year 3-5	Ongoing as of Feb 2015	ED
Construction inspections	Prepare Construction Site Inspection Plan	Completed plan	Sec II.B.4g	Year 3	Completed Feb 2015	ED
	Inspections conducted at least quarterly	Number of completed inspections annually		Year 3-5	Ongoing as of Apr 2015	ED
	Construction inspection progress	Reduced number of findings from inspections		Year 3-5	Ongoing as of Apr 2015	ED
Train responsible staff to conduct construction inspections and plan reviews	New staff Certified Erosion and Sediment Control Lead (CESCL) training, On the job training	Completed training within 6 months of hire	Sect II.B.4h	Year 3-5	CESCL training obtained by inspection staff – 2014	ED

Table 5. Stormwater Management for Areas of Development and Redevelopment

BMPs	Measurable Goal	Metric	Permit Section Reference	When	Status/Notes/Updates	Responsible Party
Implement site planning process	Development/Redevelopment Plan	Completed Plan	Sec II.B.5a - 5h	Year 3	Plan completed Dec 2015	ED
	Plan reviews	Number of plan reviews annually		Year 3-5	Ongoing reviews as of Sep 2014	ED
Site inspection program	Develop Facilities Inspection Plan	Completed Plan	Sect II.B.5i	Year 3-5	See Table 6 Site Inspection Plan	ED
	Develop PWS to complete a field inventory of permanent SW facilities	Contract award of PWS/Completed inventory		Year 3	UFR submitted to IMCOM for contract to inventory permanent SW facilities	ED/BOID/ESD/ OMD/
	Conduct field inspections of SW facilities	Number of inspections completed annually		Year 3-5	Contract in development	ED/BOID/ESD/ OMD
Ensure long-term operation and maintenance of SW facilities	Implement SWMM O&M standards for all new facilities, SW features checklist	Completed standards	Sec II.B.5j	Year 3-5	Standards identified in SWMM.	ED/BOID/OMD
	Maintain facilities	Reduced number of inspection findings and/ or IJO's issued for repair of SW facilities		Year 3-5	UFR submitted to IMCOM for contract to maintain facilities	OMD
Train responsible staff to conduct SW facility inspections and plan reviews	New staff training, on the job training. Follow up training annually	Completed training within 6 months of hire. Up to date training records.	Sec II.B.5k	Year 3-5	ED staff trained and continually seek professional development courses.	ED

Table 6 Pollution Prevention and Good Housekeeping for Operations and Maintenance

BMPs	Measurable Goal	Metric	Permit Section Reference	When	Status/Notes/Updates	Responsible Party
Written O&M Program	Develop an O&M Plan for SW facilities	Completed Plan	Sec II.B.6a	Year 3	UFR submitted to IMCOM for contract to develop O&M Plan	ED/BOID/ OMD/ESD
Maintenance standards	Develop maintenance standards for stormwater facilities	Established maintenance standards	Sec II.B.6a	Year 3	Adopted maintenance standards from SWMM	ED/BOID/ OMD/ESD
Site inspection program	Develop a Site Inspection Plan for SW features including forms and criteria for inspection frequency	Completed Plan	Sec II.B.6a	Year 3-5	UFR submitted to IMCOM for contract to develop plan	ED
	Develop PWS to complete a field inventory of permanent SW facilities	Contract award of PWS/Completed inventory	Sec II.B.6b	Year 3	UFR submitted to IMCOM for contract to inventory stormwater facilities	ED/BOID/ OMD/ESD
	Inspect flow control/treatment facilities annually	Completed Inspections	Sec II.B.6b	Year 3-5	Bi-monthly MS4 O&M meetings held to develop contract for inspections	OMD
	Conduct spot checks at permanent SW facilities after major storm events	Number of inspections completed annually	Sec II.B.6c	Year 3-5	ED tracking major storm events; none to date	ED/OMD
	Conduct field inspections for 95% of SW facilities and catch basins.	Number of inspections completed annually	Sec II.B.6d-e	Year 3-5	Bi-monthly MS4 O&M meetings held to develop contract for inspections.	ED/OMD
Ensure long-term operation and maintenance of SW facilities	Assemble existing and develop O&M standards for all facilities, make a SW features checklist	Completed standards, and checklist	Sec II.B.5j	Year 3-5	UFR submitted to IMCOM for contract to develop checklists and establish standards for all inventoried SW facilities.	ED/OMD
	Maintain facilities	Number of facilities maintained annually compared to total requiring maintenance	Sec II.B.6a	Year 3-5	Bi-monthly MS4 O&M meetings held to develop contract for stormwater facility maintenance	OMD/ESD Contracting
	Develop SWPPPs for equipment and facilities not in MSGP (See Site Inspection Program above)	Number of SWPPPs prepared annually	Sec II.B.6h	Year 3-5	Some information in EOPs, developing additional SWPPPs to cover all facilities	ED
Train responsible staff to conduct SW facility inspections and plan reviews	New staff training, on the job training. Follow up training annually	Completed training within 6 months of hire. Up to date training records.	Sect II.B.5k	Year 3-5	In progress	ED

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Table 7 Non-MSGP Sites Covered by the MS4

Building	Maintenance Area
02060	27
03273	None
03331	2B
03400	12A
03465	13
03901	16A
03916	21
03943	17B
03960	23
03985	22
06156	29
09145	26
09511	None
09517	None
09540	9540
09608	9608
09678	NA
09683	NA(2)
09705	None
09721	None
09940	40
11329	E6
11413	E7
11621	A1
11980	C8
12124	D3
12981	C6
13911	C5
13921	C4
16187	B2
C0112	C1
D0211	D2
D0211	D4
E1301	E5
R0231	D1
R0235	D5
R1332	D4
R9655	None
Scrapyard	None

Table 8. Stormwater Coordination and Implementation Team

MEMBER	TASK
DPW – Environmental Division - Chief	• Provides oversight and senior management for the MS4 Program. • Ensures that Program Manager has adequate government staff, support personnel, and equipment • Coordinates with DPW and Installation leadership on status of program
DPW – Environmental Division - MS4 Program Manager	• Implements BMPs and the Phase II MS4 stormwater program • Administers and oversees team member activities • Coordinates inspections • Maintains all records • Submits annual reports to EPA Region 10
DPW – Systems Manager	• Coordinates all stages of BMP implementation relating to installation infrastructure • Conducts maintenance of stormwater lines, inlets and structural BMPs • Informs MS4 Program Manager of noncompliance
DPW – Business Operations and Integration Manager	• Procures necessary equipment/supplies to implement/maintain BMPs • Provides training to shop level workers • Coordinates DPW training
DPW – Engineering Services Division	• Ensures contractors comply with requirements and properly implement BMPs as necessary. • Ensures contractors follow installation policies.
DPW – Information Technology	• Maintains up to date GIS layers • Provides technical support for GFEBS O&M data and record management
DPW – Master Planning	• Coordinates with MS4 Program Manager and new project proponents
DPW Environmental Division - Environmental Specialists	• Maintain records and submits copies to the MS4 Program Manger • Notify MS4 Program Manager of non-compliance • Ensure BMPs are implemented and maintained • Conduct inspections • Provide training and guidance to personnel • Review MS4 Stormwater Plans and Construction SWPPPs
DPW On-site Inspectors	• Conduct inspections of construction and post-construction sites • Review construction sediment and erosion control plans • Report on status of BMPs and suggest necessary improvements
Public Affairs Office	• Develops/reviews any material that is posted in public view, on the internet or is disseminated outside installation

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APPENDIX A

Municipal Separate Storm Sewer System Permit No. WAS-026638

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United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems

Authorization to Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 *et seq.*, as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act," the

Joint Base Lewis-McChord
(hereinafter "Permittee")

is authorized to discharge from all municipal separate storm sewer system (MS4) outfalls existing as of the effective date of this permit to waters of the United States, including Murray Creek, Clover Creek, Puget Sound and other associated waters of the United States, in accordance with the conditions and requirements set forth herein. In addition, pursuant to Ecology's certification and CWA Section 401(d), 33 U.S.C. § 1341(d), this permit also authorizes discharges from the MS4 to groundwater of the State of Washington.

This permit shall become effective on October 1, 2013.[1]
This permit and the authorization to discharge shall expire at midnight, September 30, 2018.

The Permittee must reapply for permit reissuance on or before April 3, 2018, 180 days before the expiration of this permit if the Permittee intends to continue operations and discharges from the MS4 beyond the term of this permit.
Signed this 22nd day of August, 2013

//SIGNED//
Paula VanHaagen, Acting Director
Office of Water and Watersheds

This permit modification shall become effective on February 1, 2015.
This permit and the authorization to discharge shall expire at midnight, September 30, 2018.

Signed this 4th day of December, 2014

Daniel D. Opalski, Director
Office of Water and Watersheds

[1] This permit was issued to the Joint Base Lewis-McChord (JBLM) on August 22, 2013, with a scheduled effective date of October 1, 2013. On September 19, 2013, and October 22, 2013, the United States Department of the Army ("Army") filed two Motions for Extension of Time to File Petition for Review. The Environmental Appeals Board ("EAB") granted both extension requests. On November 5, 2013, the Army filed a Petition for Review of the Permit by the EAB. The Army sought review of the stormwater management program requirements in Parts II.B.5 and II.C of the Permit, as well as various compliance deadlines elsewhere in Permit Parts II and IV. On November 22, 2013, EPA notified JBLM that the contested conditions in Parts II.B.5, II.C and specified deadlines were stayed until final agency action under 40 CFR§ 124.19(f); the remaining conditions of the Permit are severable from the contested provisions and therefore became fully effective and enforceable on December 25, 2013.

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I. Applicability

A. Permit Area. This permit covers all geographic areas of the military installation located within Pierce and Thurston Counties, Washington, which are owned or operated by the Joint Base Lewis-McChord (JBLM), hereafter also referred to as "Permittee." The Permit Area includes but is not limited to the cantonment areas (comprised of and referred to as JBLM-Main, JBLM-North, and/or JBLM-McChord Field) and all military training areas. See Appendix D.

B. Discharges Authorized Under This Permit. During the effective dates of this permit, the Permittee is authorized to discharge stormwater to waters of the United States and to groundwater of the State of Washington from all portions its municipal separate storm sewer system (MS4) located within the boundaries the Permit Area described in Part I.A, subject to the conditions set forth herein. This permit also authorizes the discharge of flows categorized as allowable non-stormwater discharges in Part I.C.1.d of this permit.

C. Limitations on Permit Coverage

1. Non-Stormwater Discharges. The Permittee is authorized to discharge non-stormwater from the MS4, only where such discharges satisfy one of the following conditions:

a) The non-stormwater discharges are in compliance with a separate NPDES permit;

b) The discharges originate from emergency firefighting activities;

c) The non-stormwater discharges result from a spill and:

- are the result of an unusual and severe weather event where reasonable and prudent measures have been taken to minimize the impact of such discharge; or
- consist of emergency discharges required to prevent imminent threat to human health or severe property damage, provided that reasonable and prudent measures have been taken to minimize the impact of such discharges;

or

d) The non-stormwater discharges consist of one or more flows listed below, and such flows are managed by the Permittee in accordance with Parts II.B.3.c and II.B.6 of this permit.

- potable water sources, including but not limited to, water line flushing, hyperchlorinated water line flushing, fire hydrant flushing, and pipeline hydrostatic test water;
- Landscape watering and other irrigation runoff;

- Dechlorinated swimming pool, spa, and hot tub discharges;
- Street and sidewalk wash water, water used to control dust, and routine external building wash down that does not use detergents;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
- Uncontaminated pumped ground water;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water from agricultural sources that is commingled with urban stormwater;
- Springs;
- Uncontaminated water from crawl space pumps;
- Footing drains; and/or
- Flows from riparian habitats and wetlands.

2. **Discharges Threatening Water Quality**. The Permittee is not authorized to discharge stormwater that will cause, or have the reasonable potential to cause or contribute to an exceedance above the State of Washington water quality standards [including, but not limited to, those standards contained in Chapters 173-201A (surface water quality), 173-204 (sediment management) and 173-200 (groundwater) of the Washington Administrative Code]. The required response to such exceedances of these standards is defined in Part II.D.

3. **Snow Disposal to Receiving Waters.** The Permittee is not authorized to dispose of snow directly to waters of the United States or directly to the MS4(s). Discharges from Permittee-owned or operated snow disposal sites, and the Permittee's snow management practices, are authorized under this permit when such sites/practices are operated using Best Management Practices (BMPs) as required in Part II.B.6. Such BMPs must be designed to prevent pollutants in the runoff and prevent violations of the applicable water quality standards.

4. **Stormwater Discharges Associated with Industrial and Construction Activity.** The Permittee is authorized to discharge stormwater associated with industrial and construction activity through the MS4, only when such discharges are otherwise authorized under an appropriate NPDES permit.

II. Stormwater Management Program (SWMP) Requirements

A. General Requirements

1. **Implement a SWMP**. The Permittee must develop, implement and enforce a Stormwater Management Program (SWMP) designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, and protect water quality in receiving waters. The SWMP must be implemented throughout the permit area described in Part I.A.

2. **Control Discharges of Pollutants from the MS4 to the Maximum Extent Practicable**. The Permittee must comply with the SWMP actions and activities outlined in Parts II.B and II.C, the required response provisions of Part II.D, and the assessment/monitoring requirements described in Part IV. The SWMP actions and activities require the Permittee to use BMPs, control measures, system design, engineering methods, and other provisions appropriate to control discharges of pollutants from the MS4 to the maximum extent practicable.

3. **SWMP Document.** The Permittee must prepare written documentation of its SWMP no later than July 25, 2016. The SWMP documentation must be organized according to the program components in Parts II.B and II.C, and the assessment/monitoring requirements of Part IV. The SWMP document must be submitted with the subsequent Annual Report, and updated at least annually thereafter. The SWMP document must include:
   a) A summary of the legal authorities which enable the Permittee to control discharges to and from the Permittee's MS4 as required by this Permit;
   b) A description of each minimum program control measure in Parts II.B and II.C;
   c) Any additional actions implemented by the Permittee pursuant to Parts II.B and II.C; and
   d) A description of the monitoring activity pursuant to Part IV.

4. **SWMP Information.** The Permittee's SWMP must include an on-going means for gathering, tracking, maintaining, and using information in order to evaluate SWMP development and implementation, permit compliance, and to set priorities.
   a) No later than one year from permit effective date, the Permittee must track the cost, or estimated cost, to develop and implement each program component of the SWMP. A summary of costs and funding sources, by program component, must be included in each Annual Report.
   b) The Permittee must track the number of inspections, official enforcement actions, types of public education activities, etc., as stipulated by the respective program component. Information summarizing these activities during the previous reporting period must be included in the Annual Report(s).

5. **SWMP Modification.** Modifications to the SWMP requirements must be made in accordance with Part II.E of this permit.

6. **Shared Implementation**. Implementation of one or more of the minimum control measures may be shared with, or delegated to, another entity other than the Permittee. The Permittee may rely on another entity only if:
   a) The other entity, in fact, implements the control measure;
   b) The control measure, or component of that control measure, is at least as stringent as the corresponding permit requirement; and

c) The other entity agrees to implement the control measure on the Permittee's behalf. A binding written acceptance of this obligation is required. The Permittee must maintain this written obligation as part of the SWMP. If the other entity agrees to report on the minimum control measure, the Permittee must supply the other entity with the reporting requirements in Part IV.C of this permit. The Permittee remains responsible for compliance with the permit obligations if the other entity fails to implement the control measure

7. Equivalent Documents, Plans or Programs.

The Permittee may submit to EPA any documents, plans, or programs that the Permittee believes is equivalent to a required SWMP minimum control measure or component specified in this Permit. Such documents, plans or programs must be individually submitted to EPA pursuant to Parts II.E and IV.D for review at least six months prior to the compliance date of the required SWMP minimum control measure or component. If the EPA determines that the Permittee's document, plan or program is equivalent to the required SWMP minimum control measure or component, EPA will commence a permit modification procedure pursuant to 40 CFR §§122.62 and 124.5 if necessary. In determining whether a permit modification is needed, EPA will look at whether the equivalent document, plan or program needs to be cited in the Permit. As specified in Part VI.A, the filing of a request by the Permittee for a permit modification does not stay any permit condition. The Permittee must submit to EPA as specified in Parts II.E and IV.D the following documentation with each individual request for review:

a) A complete copy of the relevant document, plan or program, (or applicable section of such documentation, provided the Permittee provides the full citation of the source material); and

b) A detailed written overview identifying the required SWMP program component addressed by the submittal, and the reasons, citations and references sufficient to demonstrate that the submitted material meets or exceeds the required SWMP program component.

B. Minimum Control Measures. The following minimum control measures must be accomplished through the Permittee's Stormwater Management Program:

1. Education and Outreach on Stormwater Impacts.

a) Within two years of the effective date of this permit, the Permittee must develop, implement, and evaluate an on-going program to educate targeted audiences about the adverse impacts of stormwater discharges on local water bodies and the steps that they can take to reduce pollutants in stormwater runoff. The Permittee must target its education and outreach program activities to reach the following audiences as appropriate:

- project managers;
- contractors;
- tenants;
- environmental staff; and
- business owners and operators.

b) The primary goal of the education and outreach program is to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts. Using the topics listed in Part II. B.1.c, the Permittee may develop a prioritized schedule and plan to reach the target audiences through the on-going education effort.

c) The Permittee must select from the following topics to affect behavior change through its education and outreach program:

- Proper use, storage and disposal of household hazardous waste;
- Proper recycling;
- Appropriate stormwater management practices for commercial, food service, and automotive activities, including carpet cleaners, home-based or mobile businesses;
- Appropriate yard care techniques for protecting water quality, including proper timing and use of fertilizers;
- Proper pet waste management;
- Appropriate spill prevention practices;
- Proper management of street, parking lot, sidewalk, and building wash water;
- Proper methods for using water for dust control;
- Proper design and use of Low Impact Development (LID) techniques at new development and redevelopment sites; and
- Impacts of illicit discharges and how to report them.

d) Beginning two years from the effective date of this permit, the Permittee must measure and document the understanding and adoption of the targeted behavior[s] for at least one audience in at least one subject area listed above. The resulting measurements must be used to direct education and outreach resources most effectively through the remainder of the Permit term, The Permittee must evaluate and summarize resulting changes in adoption of the targeted behavior(s). The Permittee may meet this requirement individually or through cooperation with other entities.

e) The Permittee must document the specific education program goals, and track and maintain records of public education and outreach activities in the SWMP document.

2. Public Involvement/Participation.

a) The Permittee must comply with applicable federal, state and local public notice requirements when implementing a public involvement/participation program.

b) Within six months of the effective date of this permit, and at a regular schedule at least annually thereafter, the Permittee must conduct at least one of the following activities within the permit area throughout the permit term:

- Convene meeting(s) with the Environmental Division Chief & Environmental Compliance Program Manager, and/or other JBLM organizations as appropriate, to discuss and coordinate effective SWMP implementation, or
- Convene a JBLM Water Council or organize other means to provide opportunity for the military community to participate in development and implementation of SWMP activities.

c) No later than July 25, 2016, and annually thereafter, the Permittee must make the updated SWMP document required by Part II.A.3 available to the public on the Permittee's website.

d) At least once per year, the Permittee must provide one or more on-going volunteer activities as practicable to help actively engage residents and personnel at JBLM in understanding water resources and how their activities can affect water quality. In the SWMP document, the Permittee must maintain a log of public participation activities performed.

- Volunteer activities may include, but are not limited to, storm drain stenciling or marking program; establishing a website, email address and/or hotline for citizens to report pollution concerns; establishing a pet waste management program at American Lake or other resource areas.

3. Illicit Discharge Detection and Elimination (IDDE).

An illicit discharge is any discharge to a MS4 that is not composed entirely of stormwater as defined in 40 CFR § 122.26(b)(2). The Permittee's SWMP must include an on-going program to detect and remove illicit connections and discharges into the MS4. The Permittee must include a written description of the program in the SWMP document. No later than 180 days prior to the expiration date of this permit, the Permittee must implement an IDDE program which fully addresses each of the following components:

a) **Map of Cantonment Areas.** Within two years from the effective date of this permit, the Permittee must update and maintain a map of the MS4 located within the JBLM cantonment area. At a minimum, the cantonment area map must be periodically updated and include the following information:

- jurisdictional boundaries;
- known MS4 outfalls,
- receiving waters, other than groundwater;
- Tributary conveyances for all known MS4 outfalls. The following attributes must be mapped for all known outfalls:

  (i) tributary conveyances (type, material and size where known);

  (ii) associated drainage areas; and

  (iii) land use;
- Stormwater treatment and flow control BMPs/facilities owned, or operated, by the Permittee, including information about type, and design capacity.
- Geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface waters;
- Points at which the Permittee's MS4 is interconnected with other MS4s or other storm/surface water conveyances; and
- Locations of all Permittee owned or operated industrial facilities, maintenance/storage facilities and snow disposal sites that discharge directly to the Permittee's MS4, and/or waters of the State.

The Permittee must maintain updated cantonment area MS4 maps. As necessary the Permittee must add data regarding any new connections to the MS4 which are allowed by the Permittee after the effective date of this permit. A copy of the completed MS4 map, as both a report and as an electronic file via Arc GIS compatible format, must be submitted to EPA upon request and as part of the Permit renewal application required in Part IV.B.

Consistent with national security laws and directives, the Permittee must provide mapping information to operators of adjacent regulated MS4s upon request.

b) **Map of Training Areas.** No later than 180 days prior to the expiration date of this permit, the Permittee must develop and submit to EPA a preliminary map identifying the presence of MS4 infrastructure located outside the cantonment area. The Permittee must prioritize the development of a training area MS4 map within the Muck Creek watershed/basin. The map must include the information items listed in Part II.B.3.a. A copy of the preliminary map, as both a report and as an electronic file via Arc GIS compatible format, must be submitted to EPA as part of the permit renewal application required in Part IV.B.

c) **Ordinance**. The Permittee must effectively prohibit, through ordinance or other regulatory mechanism, all illicit discharges into the MS4 to the maximum extent allowable under the legal authorities of JBLM. The ordinance or regulatory mechanism must be adopted, or existing mechanism amended, to comply with this Permit no later than thirty months from the effective date of this Permit.

The Permittee must implement appropriate enforcement procedures and actions associated with the ordinance or regulatory mechanism, including a written policy of enforcement escalation procedures for recalcitrant or repeat offenders.

Allowable Discharges: The regulatory mechanism does <u>not</u> need to prohibit the following categories of non-stormwater discharges, consistent with Part I.C.1.d:

- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
- Uncontaminated pumped ground water;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water from agricultural sources that is commingled with urban stormwater;
- Springs;
- Uncontaminated water from crawl space pumps
- Footing drains;
- Flows from riparian habitats and wetlands;
- Non-stormwater discharges covered by another NPDES permit; and/or
- Discharges from emergency firefighting activities in accordance with Part 1.C.b.

Conditionally Allowable Discharges: The regulatory mechanism may allow the following categories of non-stormwater discharges, only if the stated conditions are met:

- *Discharges from potable water sources, including but not limited to water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water:* Planned discharges must be dechlorinated to a total residual chlorine concentration of 0.1 parts per million (ppm) or less, pH-adjusted, if

necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the MS4.

- *Discharges from lawn watering and other irrigation runoff:* These discharges must be minimized through, at a minimum, public education activities (see Part II.B.2.a) and water conservation efforts.
- *Dechlorinated swimming pool, spa, and hot tub discharges:* The discharges must be dechlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted and reoxygenized if necessary, and volumetrically and velocity controlled to prevent re-suspension of sediments in the MS4. Discharges must be thermally controlled to prevent an increase in temperature of the receiving waters. Swimming pool cleaning wastewater and filter backwash must not be discharged to the MS4.
- *Street and sidewalk wash water, water used to control dust, and routine external building wash down that does not use detergents*: The Permittee must reduce these discharges through, at a minimum, public education activities (see Part II.B.2.a) and/or water conservation efforts. To avoid washing pollutants into the MS4, the Permittee must minimize the amount of street wash and dust control water used. At active construction sites, street sweeping must be performed prior to washing the street.
- *Other non-stormwater discharges.* The discharges must be in compliance with the requirements of a pollution prevention plan reviewed by the Permittee which addresses control of such discharges.

d) **Detection and Elimination.** No later than thirty months from the effective date of this permit, the Permittee must develop and implement an on-going program to detect and address non-stormwater discharges, spills, and illicit connections into their MS4. This program must be described within the SWMP document and include:

- *Procedures for locating priority areas likely to have illicit discharges,* including areas where complaints have been recorded in the past, and areas with storage of large quantities of materials that could result in spills;
- *Field assessment activities*, including visual inspection of outfalls draining priority areas during dry weather and for the purposes of verifying outfall locations, identifying previously unknown outfalls, and detecting illicit discharges. The dry weather screening activities may include field tests of parameters selected by the Permitee as being indicators of discharge sources. The Permittee may utilize less expensive “field test kits,” and test methods not approved by EPA under 40 CFR Part 136, provided the manufacturer’s published

detection ranges are adequate for the illicit discharge detection purposes;

i) No later than thirty months from the effective date of this permit, the Permittee must begin dry weather field screening for non-stormwater flows from stormwater outfalls.

ii) No later than 180 days prior to the permit expiration date, the Permittee must complete field screening of at least 75% of all MS4 outfalls located within the cantonment area;

iii) Screening for illicit connections may be conducted in accordance with *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection, October 2004, or another methodology of comparable effectiveness;

- *Procedures for characterizing the nature of, and potential public or environmental threat posed by, any illicit discharges which are found by or reported to the Permittee*. Procedures must address the evaluation of whether the discharge must be immediately contained and steps to be taken for containment of the discharge;

  i) Compliance with this provision will be achieved by immediately responding to all illicit discharges including spills which are determined to be constitute a threat to human health or the environment; investigating (or referring to the appropriate agency), within seven (7) days, any complaints, reports or monitoring information that indicates a potential illicit discharge, including spills; and immediately investigating (or referring) problems and violations determined to be emergencies or otherwise judged to be urgent or severe;

- *Procedures for tracing the source of an illicit discharge;* including visual inspections, and when necessary, opening manholes, using mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures; and

- *Procedures for eliminating the discharge*; including notification of appropriate authorities; notification of the responsible operator or organization; technical assistance; follow-up inspections; and escalating enforcement and legal actions if the discharge is not eliminated.

  i) Compliance with this provision will be achieved by initiating an investigation within twenty one (21) days of a report or discovery of a suspected illicit connection to determine the source of the connection, the nature and volume of discharge through the connection, and the party responsible for the connection. Upon confirmation of the illicit nature of a storm drain connection, the

Permittee must take action in a documented effort to eliminate the illicit connection within forty five (45) days.

e) **Tracking.** The Permittee must implement a means of program evaluation and assessment which tracks the number and type of illicit discharges identified, dry weather screening efforts, and the location and any remediation efforts to address identified illicit discharges.

f) **Education**. Within two years from the effective date of this permit, the Permittee must inform employees, businesses, and the general public within the permit area of hazards associated with illegal discharges and improper disposal of waste. This program must be conducted in concert with the public education requirements outlined in Part II.B.1.

- No later than one year from the effective date of this permit, the Permittee must list and publicize a hotline or other local means for the public and JBLM personnel to report spills and other illicit discharges. The Permittee must maintain a record of calls received and follow-up actions taken in accordance with II.B.3.d above and include a summary in the Annual Report.

g) **Training.** The Permittee must ensure that all staff responsible for the identification, investigation, termination, clean up and reporting of illicit discharges, including spills and illicit connections, are trained to conduct these activities. Orientation and training concerning the JBLM stormwater management program must be accomplished within the first six months of employment for new staff who work directly on stormwater management issues. Follow-up training must be provided as necessary to address changes in procedures, techniques or requirements. The Permittee must maintain records of relevant training provided or obtained, and the staff members trained. A summary of this training must be included in each Annual Report.

4. **Construction Site Stormwater Runoff Control.** Throughout the permit area, the Permittee must implement and enforce a program to reduce pollutants in stormwater runoff to the MS4 from construction activities resulting in land disturbance of greater than or equal to 5,000 square feet or more. The Permittee must include a written description of the construction site runoff control program in the SWMP document. At a minimum the program must include the following components:

a) **Oversight**. The Permittee must provide adequate direction and oversight to ensure that entities responsible for regulated construction activities within the permit area obtain authorization to discharge as necessary under the NPDES General Permit for Stormwater Discharges for Construction Activity for Federal Facilities in Washington, Permit #WAR12000F (Construction General Permit or CGP).

b) **Ordinance**. The Permittee must use an ordinance or other regulatory mechanism available under the legal authorities of JBLM to require erosion and sediment

controls, onsite materials management and sanctions to ensure compliance with the terms of the SWMP and the CGP.

c) **Enforcement.** The Permittee must maintain a list of policies and procedures which can be used to enforce construction site compliance within JBLM independent of EPA staff directly enforcing the CGP. No later than two years from the effective date of this permit, the Permittee must include this list of policies and procedures in the SWMP document, and must update the list as necessary at least annually. The Permittee must summarize in each Annual Report any enforcement actions taken at construction sites during the previous reporting period.

d) **Construction Site BMPs.** The Permittee must maintain (or incorporate by reference) a list of appropriate construction site BMPs in the SWMP document; such a list must include associated criteria for maintenance and installation of each specific practice.

e) **Contractual Language.** The Permittee must work with other responsible organizations to ensure that all Requests For Proposal (RFPs) and construction contracts for new construction projects which will disturb 5,000 square feet or more within the permit area include specifications requiring compliance with the SWMP and, when applicable, the CGP. An example of such contract language must be included within the SWMP document.

f) **Pre-construction Site Plan Review**. The Permittee must implement procedures for reviewing all pre-construction site plans for potential water quality impacts, appropriate erosion and sediment controls, and appropriate control of other construction site materials. These procedures must include provisions for receipt and consideration of information submitted by the public. Information summarizing the number of site plans reviewed during the previous reporting period must be submitted as part of the corresponding Annual Report.

g) **Construction Site Inspection Plan**. No later than January 25, 2016, the Permittee must develop and implement a construction site inspection plan. The construction site inspection plan must describe the criteria which triggers a site inspection, and must include a mandatory timeframe within which construction sites meeting the criteria will be inspected by the Permittee's staff or its representatives.

- The Permittee must develop methods for its staff or representatives to stop work on construction sites deemed to be in non-compliance with the construction site runoff control program.
- The Permittee must develop and utilize a construction site inspection form to document all construction site inspections.
- The written construction site inspection plan, and associated inspection form, must be included in the SWMP document.
- Information summarizing the site inspections conducted by the Permittee during the previous reporting period, including the location

and total number of such inspections, must be submitted as part of the corresponding Annual Report.

- At a minimum, all sites addressed by plan must be inspected by the Permittee or their representatives at least quarterly.

h) **Training**. The Permittee must ensure that all staff responsible for preconstruction site plan review, construction site inspections (or are otherwise implementing the construction site runoff control program) are adequately trained to conduct such activities. Orientation and training concerning the JBLM stormwater management program must be accomplished within the first six months of employment for new staff who work directly on stormwater management issues. Follow-up training must be provided as necessary to address changes in procedures, techniques or requirements. The Permittee must maintain records of relevant training provided or obtained, and the staff members trained. A summary of this training occurring within the reporting period must be included in each Annual Report.

5. **Stormwater Management for Areas of New Development and Redevelopment.** The Permittee must use an ordinance (or other regulatory mechanism available under the legal authorities available to JBLM) to implement and enforce a program to control stormwater runoff from all public and private new development or redevelopment project sites that will disturb 5,000 square feet or more of land area.

   The Permittee must include a written description of the program within the SWMP document. In each Annual Report, the Permittee must summarize the implementation status of these requirements for all new development and redevelopment project sites occurring during the relevant reporting period.

   Certain projects may be exempt from specific provisions of this Part, as defined in Appendix C.

   Pursuant to the procedures in Part II.A.7, the Permittee may submit to EPA for approval an alternative document, plan or program that describes functionally equivalent run-off controls to the 2012 *Stormwater Management Manual for Western Washington* and other manual provisions cited below.

   At a minimum, within one year of the permit effective date, the Permittee must implement the following program components:

   a) **Site Planning Procedures.** For all new development and redevelopment project sites disturbing 5,000 square feet or more, the Permittee must adopt and implement a project site planning process, including criteria for BMP selection and design; the site planning procedures must be implemented to protect water quality, and reduce the discharge of pollutants to the maximum extent practicable.

   b) **Preparation of a Stormwater Site Plan.** For all new development and redevelopment project sites disturbing 5,000 square feet or more, the Permittee must require a project-specific stormwater site plan. Stormwater site plans must

be prepared consistent with Chapter 3, Volume 1-*Minimum Technical Requirements and Site Planning* of the 2012 *Stormwater Management Manual for Western Washington;* and with Chapter 3 of the *Low Impact Development Technical Guidance Manual for the Puget Sound (2012);* or an alternative document approved pursuant to Part II.A.7. For new development or redevelopment sites disturbing 5,000 square feet or more within Airport Operations Areas (AOA), stormwater site plans must be prepared consistent with the *Aviation Stormwater Design Manual (2008)* or an alternative document approved pursuant to Part II.A.7.

c) **Source Control of Pollution**. The Permittee must require the use of available and reasonable source control BMPs at all new development and redevelopment project sites disturbing 5,000 square feet or more. Source control BMPs must be selected, designed, and maintained consistent with Volume IV-*Source Control BMP*s of the 2012 *Stormwater Management Manual for Western Washington* or an alternative document approved pursuant to Part II.A.7. For new development or redevelopment sites disturbing 5,000 square feet or more within Airport Operations Areas (AOA), source control BMPs must be selected, designed and maintained consistent with the *Aviation Stormwater Design Manual (2008)* or an alternative document approved pursuant to Part II.A.7.

d) **New Development and Redevelopment Site Design to Minimize Impervious Areas, Preserve Vegetation, and Preserve Natural Drainage Systems**. For all new development and redevelopment project sites disturbing 5,000 square feet or more, the Permittee must ensure such projects are designed to minimize impervious surfaces, retain vegetation, restore native vegetation, preserve natural drainage systems considering the techniques in the 2012 *Stormwater Management Manual for Western Washington* or an alternative document approved pursuant to Part II.A.7, and meet the following requirements to the extent feasible:

- The Permittee must require site design that minimizes the project's roadway surfaces and parking areas, incorporates clustered development, and ensures that vegetated areas are designed to receive stormwater dispersion from all developed project areas;
- The Permittee must ensure that natural drainage patterns of the project site are maintained, and that discharge from the new development or redevelopment project site occurs at the natural location;
- The Permittee must ensure that the manner by which runoff is discharged from the new development project site does not cause a significant adverse impact to downstream receiving waters and/or down gradient properties; and
- The Permittee must ensure that all outfalls utilize dissipation devices.

e) **Hydrologic Performance Requirement for On-site Stormwater Management.** For all new development or redevelopment project sites disturbing 5,000 square feet or more, the Permittee must require the use of on-site stormwater management practices intended to infiltrate, disperse, retain, and/or harvest and reuse stormwater runoff as follows:

i) For lawn and landscape areas on the new development or redevelopment project site, the Permittee must ensure the soil quality meets the specifications within BMP T5.13 (Post-Construction Soil Quality and Depth) in Chapter 5 of Volume V-*Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington (2012)* or an alternative document approved pursuant to Part II.A.7. Lawn and landscape areas associated with project sites occurring within Airport Operations Areas must ensure the soil quality meets specifications in accordance with the *Aviation Stormwater Design Manual (2008)* or an alternative document approved pursuant to Part II.A.7.

ii) For new or redevelopment project sites creating or replacing 2,000 ≥ 4,999 square feet of hard surfaces, To the extent feasible, the Permittee must use stormwater dispersion or infiltration BMPs consistent with: Chapter 5 of Volume V of the 2012 *Stormwater Management Manual for Western Washington;* Chapter 3 of Volume III of the 2012 *Stormwater Management Manual for Western Washington;* the *Low Impact Development Technical Guidance Manual for the Puget Sound (2012);* or an alternative document approved pursuant to Part II.A.7. Such project sites within Airport Operations Areas must ensure that stormwater dispersion or infiltration BMPs are used consistent with those specified in the *Aviation Stormwater Design Manual (2008)* or an alternative document approved pursuant to Part II.A.7.

iii) For new development or redevelopment project sites creating or replacing 5,000 square feet or more of hard surfaces:

(1) The Permittee must ensure the post-development stormwater discharge flows from the project site do not exceed the pre-development discharge flows for the range of 8% of the 2-year peak flow to 50% of the 2-year peak flow, as calculated by using the Western Washington Hydrology Model (or other continuous runoff model). For the purposes of Western Washington Hydrology Model, the pre-development condition for all new development and redevelopment project sites must be "forested land cover" (with applicable soil and soil grade), unless reasonable historic information indicates the site was prairie prior to settlement (and may be modeled as "pasture" when using the Western Washington Hydrology Model);

or

(2) The Permittee must ensure the controls for post-development stormwater discharge flows from the project site meet the requirements for onsite stormwater management BMPs cited in List #2 of Minimum Requirement #5 in Volume 1 of the 2012 *Stormwater Management Manual for Western Washington*.

(a) The Permittee must keep written records for each new development or redevelopment project site summarizing the BMPs selected from List #2 of Minimum Requirement #5 in Volume 1 of the 2012 *Stormwater Management Manual for Western Washington,* and any feasibility determinations for not selecting higher priority BMPs from List #2;

or

(3) The Permittee must ensure the controls for post-development stormwater discharge flows from the project site are designed to retain onsite the volume of stormwater produced from the 95th percentile rainfall event.

(a) The Permittee may exempt a new development or redevelopment project site from retaining the total volume of runoff calculated to meet the 95th percentile rainfall event, provided the Permittee fully documents its determination that compliance with the performance standard is not feasible. Feasibility must be determined by evaluation against design criteria, limitations, and infeasibility criteria identified for each stormwater best management practice in the 2012 *Stormwater Management Manual for Western Washington* starting with the BMP list hierarchy in List #2 and the competing needs criteria listed in Chapter 5 of Volume V of the *2012 Stormwater Management Manual for Western Washington).*

(b) The Permittee must keep written records of all exempt project determinations. The following information regarding each exempt project identified during an annual reporting period must be included in the corresponding Annual Report:

(i) Name, location and identifying project description;

(ii) Reasons why full retention of the total volume of runoff calculated to meet the 95th percentile rainfall event is not feasible, including supporting documentation and all relevant

engineering calculations, geologic reports and/or hydrologic analysis; and

(iii) The estimated annual runoff volume that can/will be successfully managed on site and the remaining annual runoff volume for which it is deemed not feasible to successfully manage onsite.

f) **Hydrologic Performance Requirement for Flow Control.** The Permittee must ensure that new development and redevelopment project sites are designed to control post development discharge flows where such sites: create >10,000 square feet effective impervious surface area; convert ¾ acres or more from native vegetation to lawn/landscaping, and from which there is a surface discharge to a natural or manmade conveyance system; and/or, convert 2.5 acres or more of native vegetation to pasture, and from which there is a surface discharge to a natural or manmade conveyance system. For these new development or redevelopment project sites, post-development stormwater discharge flows must not exceed the pre-development discharge flows for the range of 50% of the 2-year peak flow to 100% of the 50-year peak flow, as calculated by using the Western Washington Hydrology Model (or other continuous runoff model). For the purposes of the Western Washington Hydrology Model, the pre-development condition for all new development and redevelopment project sites must be "forested land cover" (with applicable soil and soil grade), unless reasonable historic information indicates the site was prairie prior to settlement (and may be modeled as "pasture" when using the Western Washington Hydrology Model).

- The Permittee must prioritize the use of small scale dispersion or infiltration practices, or other appropriate Low Impact Development practices to meet this flow control requirement. The Permittee may not design new development or redevelopment sites to meet this hydrologic performance requirement for flow control solely through the use of large scale retention or detention practices.
- New development or redevelopment project sites that will discharge directly to the JBLM Canal, or indirectly through Outfalls #OF-4 or #OF-5, are exempt from this hydrologic performance requirement for flow control.
- Pursuant to the procedures in Appendix C.6, the Permittee may exempt a project site from full compliance with the performance standards cited above if the severe economic cost criteria referenced in Appendix C.6 prevent use of any BMPs to attain the performance standards.

g) **Runoff Treatment.** The Permittee must ensure the proper construction of stormwater treatment facilities for all new development or redevelopment sites in accordance with Appendix B of this permit.

h) **Wetlands Protection.** The Permittee must ensure that discharges to wetlands from new development or redevelopment project sites maintain the hydrologic conditions, hydrophytic vegetation, and substrate characteristics necessary to support existing and designated uses. The hydrologic analysis must use the existing land cover condition to determine the existing hydrologic conditions, unless directed otherwise by a regulatory agency with jurisdiction.

i) **Inspections**. No later than January 25, 2016, the Permittee must develop an inspection program intended to verify that the permanent stormwater facilities used for onsite management, flow control and treatment as required by this Part are properly installed and operational. The inspection plan must describe the criteria which the Permittee will use to trigger a post-construction site inspection, timeframes within which sites meeting the criteria will be inspected, and the anticipated response to address any deficiencies identified.

- The Permittee must develop and utilize a site inspection form to document all post-construction site inspections required by this subpart.
- The written post-construction site inspection plan, and associated inspection form, must be included in the SWMP document no later than two years from the effective date of this permit.
- Beginning with the 2nd Year Annual Report, and annually thereafter, information summarizing all inspections conducted by the Permittee during the previous reporting period, including the locations and total number of such site inspections, and resulting actions to address any deficiencies, must be submitted as part of the corresponding Annual Report.

j) **Operation and Maintenance.** The Permittee must ensure long term operation and maintenance (O&M) of all permanent stormwater facilities used for onsite management, flow control, and treatment. No later than three years from the effective date of this permit, the Permittee must implement O&M standards (in the form of a manual or other specific reference[s]) to address all permanent stormwater facilities used for onsite stormwater management, flow control and treatment and which are installed at new development and redevelopment project sites after the effective date of this permit. The O&M standards for all permanent stormwater facilities must be consistent with Chapter 4, Volume V-*Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington* or an alternative document approved pursuant to Part II.A.7.

- To ensure long term O&M of stormwater facilities, the Permittee must require all entities responsible for such O&M to use the referenced maintenance standards/manual required in this Part.

- The Permittee must maintain an inventory of all permanent stormwater facilities which are used for onsite stormwater management, flow control, and treatment, consistent with Part II.B.3.a of this permit, and must maintain records of all related maintenance activity.
- A summary of anticipated annual maintenance activity, by type and number of facilities, must be included in the SWMP documentation.
- A summary of facility maintenance activity accomplished during the previous reporting period must be included in the corresponding Annual Report

k) **Training**. The Permittee must ensure all staff responsible for plan review, hydrologic modeling, site inspections and enforcement necessary to implement the program outlined in Part II.B.5, are adequately trained to conduct these activities. Orientation and training concerning the JBLM stormwater management program must be accomplished within the first six months of employment for new staff who work directly on stormwater management issues. Follow-up training must be provided as necessary to address changes in procedures, techniques or requirements. The Permittee must maintain records of relevant training provided, or obtained, and the staff members trained. A summary of this training occurring within the reporting period must be included in each Annual Report.

6. **Pollution Prevention and Good Housekeeping for Municipal Operations & Maintenance.** Within two years from the effective date of this permit, the Permittee must update and implement its operations and maintenance (O&M) program to prevent or reduce pollutants in runoff from the Permittee's MS4 and from ongoing municipal operations. The written description of the program must be included in the SWMP document. At a minimum, the O&M program must address each of the following program components:

a) **Maintenance Standards for Permanent Stormwater Facilities**. The Permittee must establish maintenance standards for its permanent stormwater facilities used for onsite management, flow control and treatment that are protective of facility function. The purpose of a maintenance standard is to determine if maintenance of a stormwater facility is required. The maintenance standard is not a measure of the facility's required condition at all times between inspections. Exceeding the maintenance standard between inspections is not a permit violation.

Unless there are circumstances beyond the Permittee's control, if an inspection required in Part II.B.6.b identifies that a facility's maintenance standard has been exceeded, the Permittee must perform appropriate maintenance as follows:

- Within 1 year for most facilities, except catch basins;
- Within 6 months for catch basins; and/or

- Within 2 years for maintenance that requires capital construction of less than $25,000.

Where circumstances beyond the Permittee's control prevent the maintenance activity from occurring, the Permittee must document within the corresponding Annual Report the circumstances and how they were outside the Permittee's control. Circumstances beyond the Permittee's control may include, but are not limited to: denial or delay of access by property owners; denial or delay of necessary permit approvals; and unexpected reallocations of maintenance staff or resources to perform emergency work.

b) **Inspection of Permanent Stormwater Facilities**. No later than two years from the effective date of this permit, the program must include annual inspection of all Permittee owned or operated permanent stormwater facilities used for flow control and treatment, other than catch basins. The Permittee must take appropriate maintenance actions in accordance with its adopted maintenance standards.

- The Permittee may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be included within the SWMP document and certified in accordance with Part VI.E.
- As part of the 2nd Year Annual Report, the Permittee must document the total number of Permittee-owned or operated permanent stormwater facilities used for flow control and treatment to be inspected in compliance with this Part. Subsequent Annual Reports must document summarize the Permittee's inspection and maintenance of those permanent stormwater facilities.

c) **Spot Check Inspection of Permanent Stormwater Facilities**. The Permittee must conduct spot checks of potentially damaged permanent stormwater control facilities (other than catch basins) after major storm events. For the purposes of this permit, a major storm event is rainfall greater than the 24-hour, 10 year recurrence interval. The Permittee must conduct repairs or take appropriate maintenance action in accordance with maintenance standards established above, based on the results of the spot check inspections.

d) **Inspections of Catch Basins**. The Permittee must inspect all catch basins and inlets owned or operated by the Permittee at least once before the end of the permit term. The Permittee must clean catch basins if inspection indicates cleaning is needed. Decant water and solids must be disposed of in accordance with Appendix A of this permit.

- As part of the 2nd Year Annual Report, the Permittee must report the total number of Permittee-owned or operated catchbasins to be

inspected annually in compliance with this Part; subsequent Annual Reports must document the Permittee's progress toward inspecting and maintaining all catchbasins prior to the permit expiration date.

e) **Compliance**. Compliance with the inspection requirements in Parts II.B.6.b, c. and d. above will be determined by evaluating Permittee records of an established stormwater facility inspection program. The Permittee must inspect at least 95% of the total universe of identified permanent stormwater facilities used for flow control and treatment, and 95% of all catchbasins, by the expiration date of the permit

f) **Maintenance Practices.** The Permittee must document and implement maintenance practices to reduce stormwater impacts associated with runoff from streets, parking lots, roads or highways, parks, open space, road right-of- way, maintenance yards, stormwater facilities used for flow control and treatment and from road maintenance activities located or conducted within the permit area by the Permittee or other entities. The Permittee must ensure that the following activities are conducted in a manner that is protective of receiving water quality:

- Pipe cleaning;
- Cleaning of culverts that convey stormwater in ditch systems;
- Ditch maintenance;
- Street cleaning;
- Road repair and resurfacing, including pavement grinding;
- Snow and ice control;
- Utility installation;
- Pavement striping maintenance;
- Maintaining roadside areas, including vegetation management; and
- Dust control.
- Application of fertilizer, pesticides, and herbicides, including the development of nutrient management and integrated pest management plans;
- Sediment and erosion control;
- Landscape maintenance and vegetation disposal;
- Trash management; and
- Building exterior cleaning and maintenance.

g) **Training.** The Permittee must develop and implement an on-going training program for JBLM facility maintenance staff, contracted companies, environmental project officers, or other staff whose construction, operations or maintenance job functions may impact stormwater quality. The training program must address the importance of protecting water quality; the requirements of this permit; operation and maintenance standards, inspection procedures; selection of appropriate BMPs as required in this Part; ways to perform their job activities to prevent or minimize impacts to water quality; and procedures for reporting water quality concerns, including potential illicit discharges. Orientation and training concerning the JBLM stormwater management program must be accomplished

within the first six months of employment for new staff who work directly on stormwater management issues. Follow-up training must be provided as needed to address changes in procedures, techniques, or requirements. The Permittee must maintain records of relevant training provided or obtained, and the staff members trained. A summary of this training must be included in each Annual Report.

h) **Stormwater Pollution Prevention Plans for Equipment Maintenance /Material Storage Yards.** Within two years of the effective date of this permit, the Permittee must develop and implement Stormwater Pollution Prevention Plans (SWPPP) for all heavy equipment maintenance or storage yards, and/or material storage facilities owned or operated by the Permittee within the permit area, which are not already regulated under the NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities, #WAR05-000F or another NPDES permit. Implementation of non-structural BMPs must begin immediately after the SWPPP is developed. A schedule for installation of any necessary structural BMPs must be included in the SWPPP. The Permittee may use generic SWPPPs that can be tailored to multiple similar activity sites to comply with this requirement. The SWPPP(s) must include a summary of BMPs expected to be utilized at the site and periodic visual observation of discharges from the facility by responsible staff to verify the effectiveness of BMPs used to reduce pollutants in runoff.

i) **Documentation.** Records of all permanent stormwater facility inspections, catch basin inspections, maintenance, or repair activities conducted by the Permittee must be maintained in accordance with Part IV.C of this permit, and summarized for the preceding reporting period within the corresponding Annual Report.

C. Stormwater Retrofit Report on Reduction of Pollutant Discharges to Impaired Receiving Waters.

1. The Permittee must conduct stormwater discharge, water quality and biological assessment monitoring as required in Part IV.

2. The Permittee must characterize the MS4 discharges to Clover Creek and must develop a stormwater retrofit report as described below.

a) The retrofit report must evaluate the monitoring data collected under Parts II.C.1 and IV of this Permit, and take into consideration any other relevant monitoring data available from the Washington Department of Ecology, Pierce County, or other neighboring jurisdictions, and the recommendations contained in the August 2005 *Clover Creek Basin Plan* and the 2008 *Chambers-Clover Creek Watershed Action Plan.*

b) To the extent that information evaluated in Part II.C.2.a indicates that the Permittee's MS4 discharges impact water quality, including beneficial uses, in Clover Creek, the Permittee must analyze potential locations to reduce

stormwater pollutant loadings, including sediment loadings and bank scouring caused by MS4 stormwater discharges from cantonment area sub-basins draining to Clover Creek.

c) For each potential location, the retrofit report must evaluate the feasibility of using low impact development techniques, and other controls that infiltrate, evapotranspire, harvest and re-use stormwater runoff, or which otherwise eliminate stormwater pollutant loadings, including sediment loadings and bank scouring caused by MS4 stormwater discharges, from existing surfaces discharging to Clover Creek.

d) The retrofit report will include evaluation of existing building locations where the disconnection of existing flows from rooftop downspouts into the MS4 and/or into Clover Creek could be feasible and will contribute to water quality improvement, including support of beneficial uses. The Permittee may consider using such techniques as full dispersion; downspout full infiltration systems; rain gardens; and/or other appropriate practices, as described in the 2012 *Stormwater Management Manual for Western Washington*.

e) The retrofit report must evaluate potential projects and project locations to mitigate water quality impacts identified therein based on the following considerations:
   - Monitoring data and watershed/basin plans for Clover Creek cited in Part II.C.2.a and Part IV;
   - Effectiveness in improving water quality in the receiving water, including support of beneficial uses;
   - Feasibility;
   - Cost effectiveness;
   - Pollutant removal effectiveness; and
   - Long term maintenance requirements.

f) The Permittee must submit the retrofit report to EPA as part of the 4th Year Annual Report.

g) To the extent practicable the Permittee should coordinate with Pierce County in developing the retrofit report.

h) Consistent with Part II.G and prior to the expiration date of this permit, the Permittee must initiate at least one retrofit project identified in the report and based on the evaluation cited in Part II.C.2.e above. Said retrofit project may be satisfied in connection with a redevelopment project as defined in Part II.B.5 of this permit.

3. Prior to the expiration date of this permit, the Permittee will schedule a meeting with EPA to discuss the results of the report and determine whether any specific permit terms should be included in the reissuance of the permit.

D. Required Response to Violations of Water Quality Standards.

1. The Permittee must notify EPA in writing at the EPA address listed in Part IV.D within 30 days of becoming aware that, based on credible site-specific information, a discharge from the MS4 owned or operated by the Permittee is causing or contributing to a known or likely violation of water quality standards in the receiving water. Written notification provided under this Part must, at a minimum, identify the source of the site-specific information; describe the location, nature and extent of the known or likely water quality standard violation in the receiving water; and explain the reasons why the MS4 discharge is believed to be causing or contributing to the problem. For on-going or continuing violations, a single written notification to EPA will fulfill this requirement.

2. In the event that EPA determines, based on a notification from the Permittee as provided under Part II.D.1 or through any other means, that a discharge from the MS4 owned or operated by the Permittee is causing or contributing to a violation of water quality standards in a receiving water, EPA will notify the Permittee in writing that an adaptive management response outlined in Part II.D.4 below is required.

3. EPA may elect not to require an adaptive management response from the Permittee if:
   a) EPA determines that the violation of water quality standards is already being addressed by a Total Maximum Daily Load (TMDL) implementation plan or other enforceable water quality cleanup plan; or

   b) EPA concludes the MS4 contribution to the violation will be eliminated through implementation of other permit requirements, regulatory requirements, or Permittee actions.

4. Adaptive Management Response:

   a) Within 60 days of receiving a notification under Part II.D.2, or by an alternative date established by EPA, the Permittee must review its Stormwater Management Program and submit a report to EPA. The Adaptive Management Response Report must include:
      - A description of the operational and/or structural BMPs that are currently being implemented at the location to prevent or reduce any pollutants that are causing or contributing to the violation of water quality standards, including a qualitative assessment of the effectiveness of each BMP.
      - A description of potential additional operational and/or structural BMPs that will or may be implemented in order to prevent or reduce to the maximum extent practicable any pollutants that are causing or contributing to the violation of water quality standards.

- A description of the potential monitoring or other assessment and evaluation efforts that will or may be implemented to monitor, assess, or evaluate the effectiveness of the additional BMPs.
- A schedule for implementing the additional BMPs including, as appropriate: funding, training, purchasing, construction, monitoring, and other assessment and evaluation components of implementation.

b) EPA will, in writing, acknowledge receipt of the Adaptive Management Response Report within a reasonable time and notify the Permittee when it expects to complete its review of the report. EPA will either approve the additional BMPs and implementation schedule or require the Permittee to modify the report as needed. If modifications are required, EPA will specify a reasonable time frame in which the Permittee must submit and EPA will review the revised report.

c) The Permittee must implement the additional BMPs, pursuant to the schedule approved by EPA, beginning immediately upon receipt of written notification of approval.

d) The Permittee must include with each subsequent Annual Report a summary of the status of implementation and the results of any monitoring, assessment or evaluation efforts conducted during the reporting period. If, based on the information provided under this Part, EPA determines that modification of the BMPs or a specific implementation schedule is necessary EPA will notify the Permittee in accordance with Parts II.E.4, II.E.5 and/or VI.A.

E. Reviewing and Updating the SWMP

1. The Permittee must annually review their SWMP actions and activities as part of the preparation of the Annual Report required in Part IV.C

2. The Permittee may request changes to any SWMP action or activity specified in this permit in accordance with the following procedures:

a) Changes to delete or replace an action or activity specifically identified in this permit with an alternate action or activity may be requested at any time. Modification requests to EPA must include:

- An analysis of why the original actions or activity is ineffective, infeasible, or cost prohibitive;
- Expectations on the effectiveness of the replacement action or activity; and
- An analysis of why the replacement action or activity is expected to better achieve the permit requirements.

b) Change requests must be made in writing and signed by the Permittee in accordance with Part VI.E.

3. The Permittee may request EPA review and approval of any existing program or document deemed to be equivalent to a specific SWMP program component required by this permit in accordance with Part II.A.7.
4. Documentation of any of the actions or activities required by this permit must be submitted to EPA upon request.
    a) EPA may review and subsequently notify the Permittee that changes to the SWMP are necessary to:
        - Address discharges from the MS4 that are causing or contributing to adverse water quality impacts;
        - Include more stringent requirements necessary to comply with new federal or state statutory or regulatory requirements; or
        - Include other conditions deemed necessary by EPA to comply with water quality standards, and/or other goals and requirements of the CWA.
    b) If EPA notifies the Permittee that changes to the SWMP are necessary pursuant to Part II.E.4.a, the notification will offer the Permittee an opportunity to propose alternative program changes to meet the objectives of the requested modification. Following this opportunity, the Permittee must implement any required changes according to the schedule set by EPA.
5. Any formal modifications to this permit will be accomplished according to Part VI.A of this permit.

F. Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation. The Permittee must implement the actions and activities of the SWMP in all areas which are added or transferred to the Permittee's MS4 (or for which the Permittee becomes responsible for implementation of stormwater quality/quantity controls) as expeditiously as practicable, but not later than one year from the date upon which the new areas were added. A summary of areas added to the Permittee's MS4, and schedules for SWMP implementation, must be documented in the next Annual Report following the transfer.

G. SWMP Resources. The Permittee must provide adequate finances, staff, equipment and other support capabilities to implement the SWMP actions and activities outlined in this permit. Consistent with Part II.A.4.a, the Permittee must provide a summary of estimated SWMP implementation costs in each Annual Report. Provisions herein should not be interpreted to require obligations or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.

III. Schedule for Implementation and Compliance. This table summarizes required compliance dates as contained in this permit. The Permittee must complete SWMP actions, and/or submit documentation to EPA, as summarized below. Annual Reports must document interim and completed status of required activities, and include program summary statistics, copies of interim or final documents, etc. relevant to the reporting period.

Table III. Schedule for Implementation and Compliance as Modified 12/04/2014

Permit Citation	Description of Action	Due Date	Include in the SWMP Document?	Include In Annual Report (AR)?
General Requirements				
II.A.3	SWMP documentation	July 25, 2016; update annually as needed		Yes; Submit with 3rd Year Annual Report; with each AR thereafter
II.A.4	Track SWMP info, costs & statistics	1 year from Permit effective date	Update SWMP annually	Submit w/each AR
II.A.7	Submit equivalent documents for EPA review & approval	6 months prior to required due date	Include EPA approvals in SWMP	
VI.B	Reapply for continued permit coverage	Not later than 180 days prior to permit expiration date		
II.E.1, IV.A.1, IV.C.2	Review SWMP actions for compliance with Permit	Annually		Document compliance in each AR
II.F	Implement SWMP in all newly acquired areas	1 year from date of acquisition		Summarize in subsequent AR
II.G	Summarize SWMP implementation costs	Annually		Summarize costs in each AR
Public Education and Outreach				
II.B.1	Conduct targeted education program; Document audience understanding & behavior adoption	2 years from permit effective date	Document goals, record education activities	Summarize activity in each AR
Public Involvement and Participation				
II.B.2.b	Convene coordination meetings to ensure effective SWMP implementation	6 months from permit effective date	Describe coordination activity	Summarize activity in each AR
II.B.2.c	Make SWMP available to public via website	July 25, 2016; updates posted annually as needed	Document website in SWMP	Document website in AR
II.B.2.d	Coordinate volunteer activities	At least 1x per year	Maintain log of activities	Summarize activity in AR
Illicit Discharge Detection and Elimination (IDDE)				
II.B.3	Implement comprehensive IDDE program	Not later than 180 days prior to permit expiration date	Describe program in SWMP	Summarize activity in each AR
II.B.3.a	Update & maintain MS4 map of cantonment areas	2 years from permit effective date	Include reference in SWMP	Submit upon request and/or w/ permit renewal application
II.B.3.b	Map the presence of any MS4 in the training area, particularly in Muck Creek watershed	180 days prior to permit expiration date		Submit map with renewal application
II.B.3.d	Detect & address illicit discharges into the MS4 through dry weather screening	30 months from permit effective date	Describe in SWMP	Summarize screening efforts in AR

Table III. Schedule for Implementation and Compliance as Modified 12/04/2014

Permit Citation	Description of Action	Due Date	Include in the SWMP Document?	Include In Annual Report (AR)?
Illicit Discharge Detection and Elimination (IDDE) continued				
II.B.3.d	Complete field screening of 75% of all MS4 outfalls	180 days prior to permit expiration date	Describe in SWMP	
II.B.3.d	Procedures to characterize illicit discharges	Respond to spills Immediately;& investigate complaints, reports within 7 days		Summarize efforts in AR
II.B.3.d	Procedures for source tracing, and elimination of illicit discharge	Initiate investigation within 21 days; take action to eliminate illicit connection within 45 days		
II.B.3.f	Educate employees businesses and public; publicize hotline/reporting	1 year from permit effective date		Summarize # of calls, follow-up action taken
II.B.3.g	Train responsible staff	New staff trained within six months		Summarize training in AR
Construction Site Stormwater Runoff Control				
II.B.4	Construction Site Runoff Control Program	Ongoing	Describe in SWMP	
II.B.4.c	Maintain policies/ procedures used to enforce site controls	2 years from permit effective date	List policies and procedures	Summarize actions in AR
II.B.4.d	Maintain list of construction site BMPs to be used		Reference construction BMPs	
II.B.4.e	Include appropriate language in all contracts and requests for proposals		Provide example contract language in SWMP	
II.B.4.f	Conduct preconstruction review	Ongoing	Describe in SWMP	Summarize activity in AR
II.B.4 g	Construction site inspection plan; inspect prioritized sites at least quarterly thereafter	January 25, 2016	Include site inspection plan in SWMP	Summarize inspections & actions annually beginning in 2nd Yr AR
II.B.4.h	Train responsible staff	New staff trained within six months		Summarize in each AR
Stormwater Management for Areas of New Development and Redevelopment				
II.B.5	Manage SW from developed areas& new/redevelopment sites disturbing 5,00 sq feet or more	1 year from permit effective date	Describe in SWMP	Summarize status of required program
II.B.5.i	Develop site inspection program to verify proper installation of permanent SW facilities	January 25, 2016	Summarize inspection program in updated SWMP	Summarize inspections & actions beginning in 2nd Year AR
II.B.5.j	Ensure long term operation and maintenance of new permanent SW facilities	3 years from permit effective date	Summarize anticipated annual maintenance activity in SWMP	Summarize activity in AR
II.B.5.k	Train responsible staff	New staff trained within six months		Summarize training in AR
II.B.5.e,	Notify EPA of sites exempted from hydrologic performance requirement for onsite SW management	Annually		Document any exempted projects in Annual Report
II.B.5.f, Appendix C	Notify EPA of sites exempted from the hydrologic flow control requirement, per Appendix C	Within 15 days of decision to exempt site		Summarize any exempted projects in Annual Report

Table III. Schedule for Implementation and Compliance as Modified 12/04/2014

Permit Citation	Description of Action	Due Date	Include in the SWMP Document?	Include In Annual Report (AR)?
Pollution Prevention and Good Housekeeping for Municipal Operations & Maintenance				
II.B.6	Update and Implement O&M program	2 years from permit effective date	Describe O&M program in SWMP	Yes
II.B.6.a	Maintain SW facilities according to schedule established in permit	2 years from permit effective date	Document standards in SWMP	Yes; document circumstances preventing maintenance
II.B.6.b & c & d	Inspect 95% of permanent SW facilities/conduct spot checks after major storms; Inspect 95% all catch basins	No later than permit expiration date	Document schedules in SWMP document	Document # of facilities/catch basins in 2nd year AR; Summarize activity
II.B.6.g	Train responsible staff	New staff: within six months	Describe training in SWMP	Summarize training in AR
II.B.6.h	Develop SWPPPs for equipment maintenance/material storage areas not addressed by other permits	2 years year from permit effective date	Document areas by type/locations in SWMP	Summarize activities in AR
Stormwater Retrofit Report on Reduction of Pollutant Discharges to Impaired Receiving Waters				
II.C.2.f	Submit retrofit report	January 30, 2018	Summarize actions in SWMP	Submit retrofit report w/ 4th Year AR
II.C.2.h	Consistent with Part II.G, initiate at least one retrofit project identified in report	No later than permit expiration date		Summarize actions in 5th Year Annual Report
II.C.3	Meet with EPA to discuss results of retrofit report	No later than permit expiration date		Summarize meeting in 5th Year Annual Report
Required Response to Violations of Water Quality Standards				
II.D	Notify EPA when a discharge is causing or contributing to a violation of water quality standards	Within 30 days of Permittee knowledge		Summarize in each AR
Monitoring, Recordkeeping, and Reporting Requirements				
IV.A.2, IV.A.8	Develop monitoring and quality assurance plan to address WQ Monitoring and Biological Monitoring; update plan to include MS4 Discharge Monitoring	1 year from permit effective date; update no later than July 25, 2015	Describe monitoring plan in in SWMP	Submit WQ & Biological Monitoring/QA plan with 1st Year AR; submit updated plan with 2nd Year AR
IV.A.5, IV.C.1	Begin sampling MS4 discharges into American Lake and Clover Creek; summarize collected data in a MS4 Discharge Characterization Report	July 25, 2015		Submit MS4 Discharge Characterization Report beginning in 4th Year AR, annually thereafter
IV.A.6.a, IV.C.1	Begin water quality sampling in JBLM Canal	July 25, 2015		Submit WQ data report in 4th Year AR, annually thereafter
IV.A.6.b, IV.C.1	Begin water quality sampling in Clover Creek and Murray Creek	July 25, 2015		Submit WQ data report in 4th Year AR, annually thereafter
IV.A.7, IV.C.1	Collect two (2) benthic macroinvertebrate samples in Clover Creek /two (2) samples in Murray Creek	180 days prior to permit expiration date		Submit Biological data report in 5th Year Annual Report
IV.A.9	Notify EPA regarding Permittee decision to monitor per the RSMP	120 days from permit effective date		
IV.C.1, IV.C.2, IV.C.3	Submit Monitoring Reports and Annual Reports	Annually, on January 30th of each year, beginning in 2015		

IV. Monitoring, Recordkeeping, and Reporting Requirements

A. Monitoring

1. **Compliance Evaluation**. At least once per year, the Permittee must evaluate its compliance with these permit conditions and progress toward achieving the minimum control measures. This evaluation of permit compliance must be documented in each Annual Report required as described in Part IV.C.2.

2. **Monitoring Objectives.** The Permittee must monitor stormwater discharges, surface water quality and stream biology to assess the effectiveness of the SWMP to minimize the impacts from MS4 discharges. The Permittee must conduct monitoring to estimate phosphorus loading from its MS4 discharges into American Lake; characterize water quality discharging through the JBLM Canal; characterize water quality in Clover Creek and Murray Creek; assess baseline biological conditions in Clover Creek and Murray Creek; and conduct monitoring to determine pollutant loading into Clover Creek from the MS4. Within one year from the effective date of this permit, the Permittee must develop a monitoring plan to address the objectives of Parts IV.A.6, IV.A.7 and IV.A.8. The initial monitoring plan must be submitted as part of the 1st year Annual Report. No later than July 25, 2015, the Permittee must update the monitoring plan to address the objectives of Part IV.A.5 and IV.A.8, and submit the updated plan with the 2nd year Annual Report.

3. **Representative Sampling.** Samples and measurements taken for the purpose of monitoring must be representative of the monitored activity.

4. **Monitoring Procedures.** Monitoring must be conducted according to test procedures approved under 40 CFR Part 136. Where an approved 40 CFR Part 136 method does not exist, and other test procedures have not been specified, any available method may be used after approval from EPA.

5. **Stormwater Discharge Monitoring.**

   a) No later than July 25, 2015, the Permittee must sample at least quarterly from at least one stormwater outfall discharging to American Lake. This monitoring must include stormwater flow measurements collected using automated or manual sampling methods. Samples must be analyzed for total phosphorus as summarized in Table IV.A.i.

   b) At a minimum, over a period of 24 consecutive months the Permittee must collect monthly samples of MS4 discharges into Clover Creek, as specified in Table IV.A.ii below.

   c) The Permittee must collect automated flow weighted composite samples to fully characterize two individual storm events each year for two years during the beginning of the wet weather season (~October 15- Nov 15) discharging to Clover Creek. As indicated in Part IV.A.2, the Permittee must update or create a Quality

Assurance Plan (QAP) which clearly identifies all methods and protocols used in the composite sampling. All data collected must be summarized and reported to EPA annually as part of the corresponding Annual Report.

d) Beginning with the 4th Year Annual Report, any data collected from the selected stormwater outfall(s) discharging to American Lake and Clover Creek must be summarized into a MS4 Discharge Characterization Report and submitted to EPA annually as part of the corresponding Annual Report.

Table IV.A: MS4 Discharge Monitoring For American Lake and Clover Creek

Table IV.A.i: American Lake MS4 Outfall Monitoring

Parameter	Monitoring requirements		
	Sample location[1]	Sample frequency[2]	Sample Type
Flow (cfs)	See below	Quarterly	Composite
Total Phosphorus (mg/L)	See below	Quarterly	Composite

[1]At least one (1) MS4 outfall discharging into American Lake, location(s) to be selected by Permittee.
[2] Samples must be collected at least quarterly during a storm event sufficient to produce a discharge.

Table IV.A.ii: Clover Creek MS4 Outfall Monitoring

Parameter	Monitoring requirements		
	Sample location[1]	Sample frequency[2]	Sample Type
Flow (cfs)[3]	See below	See below	Composite
Oil and Grease	See below	See below	Grab
Dissolved Oxygen (mg/L)	See below	See below	Composite, via *in situ* probe
pH (s.u)	See below	See below	Composite, via *in situ* probe
Fecal coliform bacteria (cfu/100mL)	See below	See below	Grab
Total Nitrogen (mg/L)	See below	See below	Composite
Total Phosphorus (mg/L)	See below	See below	Composite
Total Suspended Solids (mg/L)	See below	See below	Composite
Turbidity (NTU)	See below	See below	Composite, via *in situ* probe
Total and Dissolved Copper (µ/L)	See below	See below	Composite
Total and Dissolved Zinc (µ/L)	See below	See below	Composite
Hardness (mg/L)	See below	See below	Composite

[1] Samples must be collected from at least two (2) outfall locations discharging to Clover Creek.
[2] Over a period of twenty four (24) consecutive months, the Permittee must collect samples monthly at both outfall locations.
[3] Stormwater flow measurements must be collected using automated or manual sampling methods.

6. Water Quality Monitoring.

a) **Water Quality in the JBLM Canal**. No later than July 25, 2015, the Permittee must begin a water quality monitoring program within the JBLM Canal. Over a period of 24 consecutive months, the Permittee must collect water quality samples at least quarterly, for a total of eight (8) quarterly samples. In addition, the Permittee must also collect at least five (5) individual samples during "high flow" storm events, at a frequency to be determined by the Permittee. This monitoring must include flow measurement(s) using automated or manual sampling methods. All samples collected must be analyzed for the parameters listed in Table IV.B. All monitoring of water quality within the JBLM Canal, comprised of the minimum thirteen (13) sampling events described above, must be completed no later than 180 days prior to the expiration date of the permit. Beginning with the 4th Year Annual Report, any monitoring data representing water quality discharging through the JBLM Canal must be summarized and reported to EPA annually as part of the corresponding Annual Report.

b) **Water Quality in Clover Creek and Murray Creek**. No later than July 25, 2015, the Permittee must begin a water quality monitoring program in both Murray Creek and Clover Creek. This monitoring must include flow measurement(s) using automated or manual sampling methods. All samples must be analyzed for the parameters identified in Tables IV.C and IV.D, respectively. Beginning with the 4th Year Annual Report, any monitoring data representing water quality in Clover Creek and Murray Creeks must be summarized and reported to EPA annually as part of the corresponding Annual Report

Table IV.B: Water Quality Monitoring Requirements for JBLM Canal

Parameter	Monitoring requirements	
	Sample location[1]	Sample frequency[2]
Flow (cfs)	See below	See below
Temperature (C°)	See below	See below
Dissolved Oxygen (mg/L)	See below	See below
pH (s.u.)	See below	See below
Fecal coliform bacteria (cfu/100mL)	See below	See below
Total Nitrogen (mg/L)	See below	See below
Total Phosphorus (mg/L)	See below	See below
Total Suspended Solids (mg/L)	See below	See below
Turbidity (NTU)	See below	See below
Total and Dissolved Copper(µ/L)	See below	See below
Total and Dissolved Zinc(µ/L)	See below	See below
Hardness (mg/L)	See below	See below

[1] Samples must be collected from at least one (1) location within the JBLM Canal, downstream of all MS4 discharges/other flows entering the Canal, and prior to discharge into Puget Sound.
[2] Over a period of twenty four (24) consecutive months, the Permittee must collect samples quarterly, for a minimum of four samples per year, resulting in a minimum total of eight quarterly samples. An additional five (5) individual samples must be collected during "high flow" storm events, at a frequency to be determined by the Permittee.

Table IV.C: Water Quality Monitoring Requirements for Murray Creek

Parameter	Monitoring requirements	
	Sample location[1]	Sample frequency[2]
Flow (cfs)	See below	Quarterly
Temperature (C°)	See below	Quarterly
Dissolved Oxygen (mg/L)	See below	Quarterly
pH (s.u.)	See below	Quarterly
Fecal coliform bacteria (cfu/100mL)	See below	Quarterly
Total Nitrogen (mg/L)	See below	Quarterly
Total Phosphorus (mg/L)	See below	Quarterly
Total Suspended Solids (mg/L)	See below	Quarterly
Turbidity (NTU)	See below	Quarterly
Total and Dissolved Copper(µ/L)	See below	Quarterly
Total and Dissolved Zinc(µ/L)	See below	Quarterly
Hardness (mg/L)	See below	Quarterly

[1] A minimum of one location in Murray Creek, to be selected by the Permittee.
[2] A minimum of four (4) samples must be collected in each calendar year.

Table IV.D: Water Quality Monitoring Requirements for Clover Creek

Parameter	Monitoring requirements	
	Sample location[1]	Sample frequency[2]
Flow (cfs)	See below	Quarterly
Temperature (C°)	See below	Quarterly
Dissolved Oxygen (mg/L)	See below	Quarterly
pH (s.u.)	See below	Quarterly
Fecal coliform bacteria (cfu/100mL)	See below	Quarterly
Total Nitrogen (mg/L)	See below	Quarterly
Total Phosphorus (mg/L)	See below	Quarterly
Total Suspended Solids (mg/L)	See below	Quarterly
Turbidity (NTU)	See below	Quarterly
Total and Dissolved Copper(µ/L)	See below	Quarterly
Total and Dissolved Zinc(µ/L)	See below	Quarterly
Hardness (mg/L)	See below	Quarterly

[1] A minimum of one location in Clover Creek as it exits Permit Area, to be selected by the Permittee.
[2] A minimum of four (4) samples must be collected in each calendar year.

7. **Biological Monitoring.** No later than 180 days prior to the expiration date of this permit, the Permittee must collect at least two (2) benthic macroinvertabrate samples in Murray Creek and at least two (2) benthic macroinvertabrate samples in Clover Creek. One sampling event per waterbody must be conducted between the months August-October within any calendar year of the permit term. Sample locations should be in close proximity to the water quality monitoring locations identified by the Permittee to comply with Part IV.A.6.b. The Permittee must use benthic macroinvertebrate monitoring protocols which are consistent with the Pierce County Watershed Health Monitoring Project, Thurston County's Water Resources Monitoring Program, and/or

other contemporaryWestern Washington benthic macroinvertebrate monitoring programs. Each sample must be analyzed and scored using the Puget Sound Lowlands benthic index of biological integrity (B-IBI), as described at http://pugetsoundstreambenthos.org/SiteMap.aspx. The Permittee may elect to opt out of this monitoring requirement, as described below in Part IV.A.9.

8. Quality Assurance Requirements. The Permittee must develop a quality assurance plan (QAP) for all monitoring required in this Part. The QAP must be developed concurrent with the monitoring plan as described in Part IV.A.2**.** Any existing QAPs may be modified to meet the requirements of this section. Upon completion of the monitoring plan and QAP, the Permittee must submit the combined document to EPA with the 1st year Annual Report. Any update to the QAP must be submitted to EPA as part of the subsequent Annual Report.

a) The QAP must be designed to assist in planning for the collection and analysis of stormwater discharge, water quality and biological/benthic macroinvertebrate samples in support of the permit, and in explaining data anomalies when they occur.

b) Throughout all sample collection and analysis activities, the Permittee must use the EPA-approved QA/QC and chain-of-custody procedures described in the following documents:

- *EPA Requirements for Quality Assurance Project Plans EPA-QA/R-5* (EPA/240/B-01/003, March 2001). A copy of this document can be found electronically at: http://www.epa.gov/quality/qs-docs/r5-final.pdf
- *Guidance for Quality Assurance Project Plans EPA-QA/G-5*, (EPA/600/R-98/018, February, 1998). A copy of this document can be found electronically at: http://www.epa.gov/r10earth/offices/oea/epaqag5.pdf

c) At a minimum, the QAP must reflect the content specified in the EPA documents listed in Part IV.A.8.b, and include the following information:

- Details on the number of samples, type of sample containers, preservation of samples, holding times, analytical methods, analytical detection and quantitation limits for each target compound, type and number of quality assurance field samples, precision and accuracy requirements, sample preparation requirements, sample shipping methods, and laboratory data delivery requirements;
- Map(s) indicating the location of each sampling point;
- Qualification and training of personnel; and
- Name(s), address(es) and telephone number(s) of the laboratories, used by or proposed to be used by the Permittee.

d) The Permittee must amend the QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP.

e) Copies of the QAP must be maintained by the Permittee and made available to EPA upon request.

9. Optional Participation in the Puget Sound Regional Stormwater Management Program (RSMP) Status and Trends Monitoring.

a) The purpose of this part is to allow the Permittee the option to contribute to the Regional Stormwater Management Program (RSMP) Status and Trends Monitoring of small streams and marine nearshore in Puget Sound. The RSMP Status and Trends monitoring is described in Part S.8.b of the Washington Department of Ecology-issued *Western Washington Phase II Municipal Stormwater Permit* (effective August 1, 2013) through other sources.[2] The Permittee may elect to participate in the RSMP Status and Trends Monitoring program in lieu of the monitoring requirements specified in IV.A.7 of this permit. The Permittee's decision to participate in the RSMP will be considered binding through the duration of the permit term. The Permittee is solely responsible for discussing and arranging its potential in the RSMP with the program organizers prior to the EPA notification deadline in Part IV.A.9.c.

b) This optional "participation in the RSMP" requires the Permittee to make a monetary payment, or series of annual payments, based on a per capita calculation to be assessed by the RSMP organizers in a manner similar to the calculated contributions from other municipal RSMP participants.

c) Not later than 120 days from the effective date of this permit, the Permittee must inform EPA in writing of its decision to either conduct the monitoring described in Part IV.A.7, or to participate in the Puget Sound RSMP. The notification letter must be submitted to the EPA address indicated in Part IV.D.

B. Recordkeeping

1. Retention of Records. The Permittee must retain records and copies of all information (including all monitoring, calibration and maintenance records and all original strip chart recordings for any continuous monitoring instrumentation, copies of all reports required by this permit, a copy of the NPDES permit, and records of all data used to complete the application for this permit) for a period of at least five years from the date of the sample, measurement, report or application, or for the term of this permit, whichever is longer. This period may be extended at the request of the EPA at any time. Records include all information used in the development of the SWMP, all monitoring data, copies of all reports, and all data used in the development of the permit application.

2. Availability of Records. The Permittee must submit the records referred to in Part IV.B.1 to EPA only when such information is requested. The Permittee must retain all records comprising the SWMP required by this permit (including a copy of the permit

[2] See *Western Washington Phase II Municipal Stormwater Permit* available online at http://www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIIww/wwphiipermit.html; and the RSMP website at http://www.ecy.wa.gov/programs/wq/stormwater/municipal/rsmp.html

language and all Annual Reports) at a location accessible to the EPA. The Permittee must make records (including the permit application, Annual Reports and the SWMP document) available to the public if requested to do so in writing pursuant to the Freedom of Information Act. The public must be able to request and view the records during normal business hours, and the Permittee must make all reasonable efforts to comply with such requests. As allowed by the Freedom of Information Act, the Permittee may charge fees for copies of documents provided in response to written requests from the public.

C. Reporting Requirements

1. **Stormwater Discharge, Water Quality and Biological Monitoring Reports**. All available stormwater discharge and water quality monitoring data collected during the prior reporting period(s) must be submitted as part of the 4th and 5th Year Annual Reports. If the Permittee conducts more frequent monitoring than is required by this Permit, the results of such monitoring must also be submitted. All biological monitoring data and corresponding Puget Sound Lowlands I-IBI scores must be submitted as part of the subsequent Annual Report following the sample collection. At a minimum, this Report must include:
   a) Dates of sample collection and analyses;
   b) Results of analytical samples collected;
   c) Location of sample collection;
   d) Summary analysis of data collected.
2. **Annual Report.** No later than January 30, 2015, and annually thereafter, the Permittee must submit an Annual Report to EPA. The reporting periods and associated due dates for each Annual Report are specified in Table IV.E. Copies of all Annual Reports must be made available to the public, at a minimum, upon written request to the Permittee pursuant to the Freedom of Information Act.

Table IV.E - Annual Report Deadlines

Annual Report	Reporting Period	Due Date
1st Year Annual Report	October 1, 2013–September 30, 2014	January 30, 2015
2nd Year Annual Report	October 1, 2014-September 30, 2015	January 30, 2016
3rd Year Annual Report	October 1, 2015-September 30, 2016	January 30, 2017
4th Year Annual Report	October 1, 2016-September 30, 2017	January 30, 2018
5th Year Annual Report	October 1, 2017-September 30, 2018	September 30, 2018

3. **Contents of the Annual Report.** The following information occurring during the relevant reporting period must be summarized or included within each Annual Report:

   a) An updated SWMP document, as required in Part II.A.3;

   b) A report or assessment of compliance with this permit and progress towards achieving the identified actions and activities for each minimum control measure in Parts II.B and II.C. Status of each program area must be addressed, even if activity has previously been completed or has not yet been implemented;

   c) Results of any information collected and analyzed during the previous 12 month reporting period, including summaries of program costs and descriptions of funding sources, information used to assess the success of the program at improving water quality to the maximum extent practicable, or other relevant information;

   d) Stormwater Discharge, Water Quality and Biological Monitoring Reporting, as required in Part IV.C.1;

   e) A summary of the number and nature of all inspections, formal enforcement actions, and/or other similar activities performed by the Permittee;

   f) A summary of all public and private new development or redevelopment project sites that disturb 5,000 square feet or more of land area commencing during the reporting period, including project name, project location, total acreage of new development or redevelopment, and all documentation related to any project sites exempted by JBLM or its counterparts from the provisions of Part II.B.5 pursuant to Permit Appendix C;

   g) A summary list of any water quality compliance-related enforcement actions received from regulatory agencies other than EPA. Such actions include, but are not limited to, formal warning letters, notices of violation, field citations, or similar actions. This summary should include dates, project synopsis, and actions taken to address the compliance issue(s);

   h) Copies of completed or revised Monitoring & Quality Assurance Plan(s), retrofit plans, education materials, ordinances (or other regulatory mechanisms), equivalent documents or program materials, inventories, guidance materials, maps, or other products produced as required by this permit;

   i) A general summary of the activities the Permittee plans to undertake during the next reporting cycle (including an implementation schedule) for each minimum control measure;

   j) A description and schedule for implementation of additional BMPs that may be necessary, based on monitoring results, to ensure compliance with applicable water quality standards;

   k) Notice if the Permittee is relying on another entity to satisfy any of the permit obligations, if applicable; and

l) A description of the location, size, receiving water, and drainage area of any new MS4 outfall(s) owned or operated by the Permittee added to the system since the previous annual reporting period.

D. Addresses. Reports and other documents to be submitted as required by this permit must be signed and certified in accordance with Part VI.E.

a) If EPA provides the Permittee of an alternative means of submitting reports during the permit term other than the manner described herein, the Permittee may use that alternative reporting mechanism in lieu of this provision.

b) One hard copy and one electronic copy (on CD ROM, or through prearranged transmission by Email as indicated below) of any submittal must be provided the following address:

EPA Region 10: United States Environmental Protection Agency
Region 10
Attention: Municipal Stormwater Program Contact
NPDES Compliance Unit
1200 6th Avenue, Suite 900 (OCE-133)
Seattle, WA 98101

c) Prior to the electronic submittal of any required documents to EPA, the Permittee must contact the EPA Region 10 NPDES MS4 Permit Program Coordinator at (206) 553-6650 or (800) 424-4372, and obtain appropriate Email contact information.

V. Compliance Responsibilities

A. Duty to Comply. The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions

1. **Civil and Administrative Penalties**. Pursuant to 40 CFR Part 19 and the Act, any person who violates Section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701) (currently $37,500 per day for each violation).

2. **Administrative Penalties**. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of this Act. Pursuant to 40 CFR Part 19 and the Act, administrative penalties for Class I violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701) (currently $16,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $37,500). Pursuant to 40 CFR Part 19 and the Act, penalties for Class II violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701) (currently $16,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $177,500).

3. **Criminal Penalties.**

   a) **Negligent Violations**. The Act provides that any person who negligently violates Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under Section 402 of the Act, or any requirement imposed in a pretreatment program approved under Section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two years, or both.

   b) **Knowing Violations**. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six years, or both.

   c) **Knowing Endangerment**. Any person who knowingly violates Section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

d) **False Statements**. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this permit.

D. Duty to Mitigate. The Permittee must take all reasonable steps to minimize or prevent any discharge or disposal in violation of this Permit that has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The Permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Bypass of Treatment Facilities.

1. **Bypass not exceeding limitations**. The Permittee may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this Part.
2. **Notice**.
   a) Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it must submit prior written notice, if possible at least 10 days before the date of the bypass.
   b) Unanticipated bypass. The Permittee must submit notice of an unanticipated bypass as required under Part V.K of this Permit.
3. **Prohibition of bypass.** The intentional bypass of stormwater from all or any portion of a stormwater treatment BMP whenever the design capacity of the treatment BMP is not

exceeded is prohibited, and the Director of the Office of Compliance and Enforcement may take enforcement action against the Permittee for such bypass, unless:

a) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated stormwater, or maintenance during normal dry weather. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of dry weather or preventive maintenance; and

c) The Permittee submitted notices as required under paragraph 2 of this Part.

4. EPA's Director of the Office of Compliance and Enforcement may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 3.a. of this Part.

G. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the Permittee meets the requirements of G.2 of this Part. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. To establish the affirmative defense of upset, the Permittee must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

a) An upset occurred and that the Permittee can identify the cause(s) of the upset;

b) The permitted facility was at the time being properly operated;

c) The Permittee submitted notice of the upset as required under Part V.K; and

d) The Permittee complied with any remedial measures required under Part V.D.

3. Burden of proof. In any enforcement proceeding, the Permittee seeking to establish the occurrence of an upset has the burden of proof.

H. Toxic Pollutants. The Permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

I. Planned Changes. The Permittee must give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility whenever:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR §122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in the permit.

J. Anticipated Noncompliance. The Permittee must give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with this permit.

K. Twenty-Four Hour Reporting.

1. The Permittee must report the following occurrences of noncompliance by telephone within 24 hours from the time the Permittee becomes aware of the circumstances:

a) any discharge to or from the MS4 which could result in noncompliance that endangers health or the environment;

b) any unanticipated bypass that exceeds any effluent limitation in the permit (See Part V.F);

c) any upset that exceeds any effluent limitation in the permit (See Part V.G);

2. A written submission must also be provided within five days of the time you become aware of the circumstances. The written submission must contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The following shall be included as information which must be reported within 24 hours under this paragraph.

a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)

b) Any upset which exceeds any effluent limitation in the permit (See 40 CFR 122.41(n)(1).)

4. The Director of the Office of Compliance and Enforcement may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the NPDES Compliance Hotline in Seattle, Washington, by telephone, (206) 553-1846.

5. Reports must be submitted to the addresses in Part IV.D.

L. Other Noncompliance. The Permittee must report all instances of noncompliance, not required to be reported within 24 hours, as part of each Annual Report as required in Part IV.C.2. Noncompliance reports must contain the information listed in Part V.K. of this permit

VI. General Provisions

A. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§ 122.62, 122.64, or 124.5. The filing of a request by the Permittee for a permit modification, revocation and reissuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

B. Duty to Reapply. If the Permittee intends to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. In accordance with 40 CFR §122.21(d), and unless permission for the application to be submitted at a later date has been granted by the Director, the Permittee must submit a new application at least 180 days before the expiration date of the permit, or in conjunction with the fourth Annual Report. The reapplication package must contain the information required by 40 CFR §122.21(f) which includes: name and mailing address(es) of the Permittee(s) that operate the MS4(s), and names and titles of the primary administrative and technical contacts for the municipal Permittee(s). In addition, the Permittee must identify the identification number of the existing NPDES MS4 permit; any previously unidentified water bodies that receive discharges from the MS4; a summary of any known water quality impacts on the newly identified receiving waters; a description of any changes to the number of applicants; and any changes or modifications to the Stormwater Management Program. The re-application package may incorporate by reference the fourth Annual Report when the reapplication requirements have been addressed within that report.

C. Duty to Provide Information. The Permittee must furnish to the Director, within the time specified in the request, any information that the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee must also furnish to the Director, upon request, copies of records required to be kept by this permit.

D. Other Information. When the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or that it submitted incorrect information in a permit application or any report to the Director, the Permittee must promptly submit the omitted facts or corrected information.

E. Signatory Requirements. All applications, reports or information submitted to the Director must be signed and certified as follows.

1. All permit applications must be signed as follows:

a) For a corporation: by a responsible corporate officer.

b) or a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a) The authorization is made in writing by a person described above;

b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the organization; and

c) The written authorization is submitted to the Director.

3. Changes to authorization. If an authorization under Part VI.E.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part VI.E.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this Part must make the following certification:

> "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. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the 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 knowing violations."

F. Availability of Reports. In accordance with 40 CFR Part 2, information submitted to EPA pursuant to this permit may be claimed as confidential by the Permittee. In accordance with the Act, permit applications, permits and effluent data are not considered confidential. Any confidentiality claim must be asserted at the time of submission by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice to the Permittee. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2, Subpart B (Public Information) and 41 Fed. Reg. 36902 through 36924 (September 1, 1976), as amended.

G. Inspection and Entry. The Permittee must allow the Director or an authorized representative (including an authorized contractor acting as a representative of the Director), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

H. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, nor any infringement of state or local laws or regulations.

I. Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Act. (See 40 CFR §122.61; in some cases, modification or revocation and reissuance is mandatory.)

J. State/Tribal Environmental Laws

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State/Tribal law or regulation under authority preserved by Section 510 of the Act.

2. No condition of this permit releases the Permittee from any responsibility or requirements under other environmental statutes or regulations.

K. Oil and Hazardous Substance Liability. Nothing in this permit shall be constructed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under Section 311 of the CWA or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to the circumstances, and the remainder of this permit shall not be affected thereby.

VII. Definitions and Acronyms

All definitions contained in Section 502 of the Act and 40 CFR Part 122 apply to this permit and are incorporated herein by reference. For convenience, simplified explanations of some regulatory/statutory definitions have been provided but, in the event of a conflict, the definition found in the statute or regulation takes precedence.

"Administrator" means the Administrator of the EPA, or an authorized representative.

"Air Operations Areas" or AOAs, is defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008). For the purposes of this Permit, the term AOA means any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. This includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to associated runways, taxiways, or aprons. For the purposes of this permit, the term AOA also includes the following unique subareas as defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008) and described in this Part: Clearway, Object-Free Area, Runway Protection Zone, Runway Safety Area, and Taxiway Safety Areas. See: http://www.wsdot.wa.gov/aviation/AirportStormwaterGuidanceManual.htm

"AKART" means all known, available and reasonable methods of prevention, control and treatment, and refers to the State of Washington Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW.

"Best Management Practices (BMPs)" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States and waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. See "stormwater control measure (SCM)."

"Bioretention" is the water quality and water quantity stormwater management practice using the chemical, biological and physical properties of plants, microbes and soils for the removal of pollution from stormwater runoff. Biorentention, for the purpose of this permit, means engineered facilities that store and treat stormwater by passing it through a specified soil profile, and either retain or detain the treated stormwater for flow attenuation. Refer to the 2012 *Stormwater Management Manual for Western Washington,* Chapter 7 of *Volume V – Runoff Treatment BMPs* for Bioretention BMP types and design specifications.

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. See 40 CFR §122.41(m)(1)(i).

"Canopy Interception**"** is the interception of precipitation, by leaves and branches of trees and vegetation that does not reach the soil.

"Clearway," as defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008), means a defined rectangular area beyond the end of a runway

cleared or suitable for use in lieu of runway to satisfy takeoff distance requirements. This is the region of space above an inclined plane that leaves the ground at the end of the runway. See: http://www.wsdot.wa.gov/aviation/AirportStormwaterGuidanceManual.htm

"Construction General Permit or CGP" means the current version of the U.S. Environmental Protection Agency's *NPDES General Permit for Stormwater Discharges from Construction Activities in Washington, Permit No.WAR12-000F*. The permit is posted on EPA's website at *www.epa.gov/npdes/stormwater/cgp*.

"Common Plan of Development**"** is a contiguous construction project where multiple separate and distinct construction activities may be taking place at different times on different schedules but under one plan. The "plan" is broadly defined as any announcement or piece of documentation or physical demarcation indicating construction activities may occur on a specific plot; included in this definition are most subdivisions and industrial parks.

"Construction Activity" includes, but is not limited to, clearing, grading, excavation, and other site preparation work related to construction of residential buildings and non-residential buildings, and heavy construction (e.g., highways, streets, bridges, tunnels, pipelines, transmission lines and industrial non-building structures). See "Stormwater Discharge Associated with Construction Activity."

"Control Measure" as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the United States and waters of the State.

"Converted vegetation" or converted vegetation areas, means the surfaces on a project site where native vegetation, pasture, scrub/shrub, or unmaintained non-native vegetation (e.g., himalayan blackberry, scotch broom) are converted to lawn or landscaped areas, or where native vegetation is converted to pasture.

"CWA" or "The Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.

"Director" means the Environmental Protection Agency Region 10 Regional Administrator, the Director of the Office of Water and Watersheds, the Director of the Office of Compliance and Enforcement, or an authorized representative.

"Discharge" when used without a qualifier, refers to "discharge of a pollutant" as defined at 40 CFR §122.2.

"Discharge of a pollutant" means (a) any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or (b) any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This

definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

"Discharge-related Activities" include: activities which cause, contribute to, or result in stormwater point source pollutant discharges, and measures to control such stormwater discharges, including the siting, construction, and operation of best management practices to control, reduce or prevent stormwater pollution.

"Discharge Monitoring Report or DMR" means the EPA uniform national form, including any subsequent additions, revisions or modification for the reporting of self monitoring results by the Permittee. See 40 CFR §122.2.

"Disconnect" for the purposes of this permit, means the change from a direct discharge into receiving waters to one in which the discharged water flows across a vegetated surface, through a constructed water or wetlands feature, through a vegetated swale, or other attenuation or infiltration device before reaching the receiving water.

"Effective impervious surfaces" are those impervious surfaces that are connected via sheet flow or discrete conveyance to a drainage system. (Impervious surfaces are considered ineffective if: 1) the runoff is dispersed through at least one hundred feet of native vegetation in accordance with BMT T55.30 – "Full Dispersion" as described in Chapter 5 of Volume V of the 2012 *Stormwater Management Manual for Western Washington*; or 2) residential roof runoff is infiltrated in accordance with Downspout Full Infiltration Systems in BMP T5.10A in Volume III –*Hydrologic Analysis and Flow Control BMPs* of the 2012 *Stormwater Management Manual for Western Washington;* or 3) approved continuous runoff modeling methods indicate that the entire runoff file is infiltrated.

"Engineered Infiltration" is an underground device or system designed to accept stormwater and slowly exfiltrates it into the underlying soil. This device or system is designed based on soil tests that define the infiltration rate.

"Erodible or leachable materials" means wastes, chemicals, or other substances that measurably alter the physical or chemical characteristics of runoff when exposed to rainfall. Examples include erodible soils that are stockpiled, uncovered process wastes, manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage.

"Erosion" means the process of carrying away soil particles by the action of water.

"Evaporation" means rainfall that is changed or converted into a vapor.

"Evapotranspiration" means the sum of evaporation and transpiration of water from the earth's surface to the atmosphere. It includes evaporation of liquid or solid water plus the transpiration from plants.

"Extended Filtration" is a structural stormwater device which filters stormwater runoff through a soil media and collects it an under drain which slowly releases it after the storm is over.

"EPA" means the Environmental Protection Agency Regional Administrator, the Director of the Office of Water and Watersheds, or an authorized representative.

"Facility or Activity" means any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

"Green infrastructure" means runoff management approaches and technologies that utilize, enhance and/or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration and reuse.

"Hard surface" means an impervious surface, a permeable pavement, or a vegetated roof.

"Hydromodification" means changes to the stormwater runoff characteristics of a watershed caused by changes in land use.

"Hyperchlorinated" means water that contains more than 10 mg/Liter chlorine.

"Illicit Connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

"Illicit Discharge" is defined at 40 CFR §122.26(b)(2) and means any discharge to a municipal separate storm sewer that is not entirely composed of stormwater, except discharges authorized under an NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire fighting activities.

"Impaired Water" (or "Water Quality Impaired Water") for purposes of this permit means any water body identified by the State of Washington or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting applicable State water quality standards. Impaired waters include both waters with approved or established Total Maximum Daily Loads (TMDLs), and those for which a TMDL has not yet been approved or established.

"Impervious surface" means a non-vegetated surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. "Impervious surface" also means a non-vegetated surface area which causes water to run off the surface in greater quantities (or at an increased rate of flow) than the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to: roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities must be considered impervious surfaces for purposes of runoff modeling.

"Industrial Activity" as used in this permit refers to the eleven categories of industrial activities included in the definition of discharges of stormwater associated with industrial activity at 40 CFR §122.26(b)(14).

"Industrial Stormwater" as used in this permit refers to stormwater runoff from industrial activities, such as those defined in 40 CFR 122.26(b)(14)(i-xi).

"Infiltration" is the process by which stormwater penetrates into soil.

"Low Impact Development" or "LID" means a stormwater and land use management strategy that strives to mimic pre-development hydrologic processes of infiltration, filtration, storage, evaporation,and transpiration by emphasizing conservation, use of onsite natural features, site planning, and distributed stormwater management practices that integrated into a project design.

"LID Best Management Practices" or "LID practices," means the distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, minimal excavation foundations, vegetated roofs, and water re-use.

"LID Principles" means the land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and stormwater runoff.

"Major storm event" as used in this permit, refers to rainfall greater than the 24 hour- 10 year-recurrence interval.

"Maintenance" means the repair and maintenance includes activities conducted on currently serviceable structures, facilities, and equipment that involves no expansion or use beyond that previously existing and results in no significant adverse hydrologic impact. It includes those usual activities taken to prevent a decline, lapse, or cessation in the use of structures and systems. Those usual activities may include replacement of dysfunctional facilities, including cases where environmental permits require replacing an existing structure with a different type structure, as long as the functioning characteristics of the original structure are not changed. One example is the replacement of a collapsed, fish blocking, round culvert with a new box culvert under the same span, or width, of roadway. In regard to stormwater facilities, maintenance includes assessment to ensure ongoing proper operation, removal of built up pollutants (i.e. sediments), replacement of failed or failing treatment media, and other actions taken to correct defects as identified in the maintenance standards of Chapter 4, Volume V- *Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington.* See also Road Pavement Maintenance exemptions in Appendix C of this Permit.

"MEP" or "maximum extent practicable," means the technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in stormwater discharges that was

established by CWA Section 402(p). EPA's discussion of MEP as it applies to regulated small MS4s is found at 40 CFR §122.34.

"Measurable Goal" means a quantitative measure of progress in implementing a component of a stormwater management program.

"Minimize" means to reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

"MS4" means "municipal separate storm sewer system" and is used to refer to a Large, Medium, or Small Municipal Separate Storm Sewer System regulated under the federal NPDES permit program. The term, as used within the context of this permit, refers to separate storm sewer system owned or operated within the permit area by JBLM. See "municipal separate storm sewer" below and definitions at 40 CFR 122.26(b)(18), (19)

"Municipality" means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA.

"Municipal Separate Storm Sewer" is defined at 40 CFR 122.26(b)(8) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

"Seattle Urbanized Area" means the greater Seattle, Washington, area delineated by the Year 2000 Census by the U.S. Bureau of the Census according to the criteria defined by the Bureau on March 15, 2002 (67 FR 11663) namely, the area consisting of contiguous, densely settled census block groups and census blocks that meet minimum population density requirements, along with adjacent densely settled census blocks that together encompass a population of at least 50,000 people.

"National Pollutant Discharge Elimination System" or "NPDES" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the CWA. The term includes an "approved program" delegated to a State agency.

"Native vegetation" means vegetation comprised of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been

expected to naturally occur on the site. Examples include trees such as Douglas Fir, western hemlock, western red cedar, alder, big-leaf maple, and vine maple; shrubs such as willow, elderberry, salmonberry, and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

"Object-Free Area," as defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008), means an area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of aboveground objects protruding above the Runway Safety Area (RSA, defined below) edge elevation, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. See:
http://www.wsdot.wa.gov/aviation/AirportStormwaterGuidanceManual.htm

"On-site Stormwater Management BMPs" as used in this Permit, means Low Impact Development BMPs or practices.

"Outfall" means a point source (defined below) at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

"Owner or operator" means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.

"Permitting Authority" means U.S. Environmental Protection Agency, or EPA.

"Permeable pavement" means pervious concrete, porous asphalt, permeable pavers or other forms of pervious or porous paving material intended to allow passage of water through the pavement section. It often includes an aggregate base that provides structural support and acts as a stormwater reservoir.

"Pervious Surface" means any surface material that allows stormwater to infiltrate into the ground. Examples include lawn, landscape, pasture, native vegetation areas, and permeable pavements.

"Permeable pavement" or "permeable paving" means surfaces which are designed to accommodate pedestrian, bicycle, and vehicle traffic while allowing infiltration, treatment, and storage of stormwater. General categories of permeable paving systems include: open-graded concrete or hot-mix asphalt pavement; aggregate or plastic pavers; and plastic grid systems, as discussed in the *Low Impact Development Technical Guidance Manual for Puget Sound* (December 2012).

"Permanent stormwater management controls" see "post-construction stormwater management controls."

"Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock,

concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

"Pollutant" is defined at 40 CFR §122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

"Pollutant(s) of concern" includes any pollutant identified as a cause of impairment of any water body that will receive a discharge from a MS4 authorized under this permit.

"Pollution-generating hard surface (PGHS)" means those hard surfaces considered to be a significant source of pollutants in stormwater runoff. See the listing of surfaces under "pollution-generating impervious surface."

"Pollution-generating impervious surface (PGIS)" means those hard surfaces or impervious surfaces considered to be a significant source of pollutants in stormwater runoff. Such surfaces include those which are subject to: vehicular use; industrial activities; or storage of erodible or leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or blow-in of rainfall. Metal roofs unless they are coated with an inert, non-leachable material (e.g., baked-on enamel coating); or .roofs that are subject to venting significant amounts of dusts, mists, or fumes from of manufacturing, commercial, or other indoor activities.

"Pollution-generating pervious surface (PGPS)" means any non-impervious surface subject to use vehicle use, industrial activities; or storage of erodible or leachable materials, wastes, or chemicals, and that receive direct rainfall or run-on or blow-in of rainfall, of pesticides and fertilizers or loss of soil. Typical PGPS include permeable pavement subject to vehicular use, lawns and landscaped areas, including golf courses, parks, cemeteries, and sports fields (natural and artificial turf). .

"Post-construction stormwater management controls" or "permanent stormwater management controls" means those controls designed to treat or control runoff on a permanent basis once construction is complete, including stormwater treatment and flow control BMPs /facilities, including detention facilities, bioretention, vegetated roofs, permeable pavements, etc.

"QA/QC" means quality assurance/quality control.

"QAP" means Quality Assurance Plan, or Quality Assurance Project Plan.

"Rainfall and Rainwater Harvesting**"** is the collection, conveyance, and storage of rainwater. The scope, method, technologies, system complexity, purpose, and end uses vary from rain barrels for garden irrigation in urban areas, to large-scale collection of rainwater for all domestic uses.

"Rain Garden" means a non-engineered shallow landscaped depression, with compost-amended native soils and adapted plants. The depression is designed to pond and temporarily store stormwater runoff from adjacent areas, and to allow stormwater to pass through the amended soil

profile. Refer to the Rain Garden Handbook for Western Washington Homeowners (WSU 2007 or as revised) for rain garden specifications and construction guidance.

"Receiving waters" means bodies of water or surface water systems to which surface runoff is discharged via a point source of stormwater or via sheet flow. Ground water to which surface runoff is directed by infiltration. See also "waters of the state" and "waters of the United States."

"Redevelopment" for the purposes of this permit, means the alteration, renewal or restoration of any developed land or property that results in the land disturbance of 5,000 square feet or more, and that has one of the following characteristics: land that currently has an existing structure, such as buildings or houses; or land that is currently covered with an impervious surface, such as a parking lot or roof; or land that is currently degraded and is covered with sand, gravel, stones, or other non-vegetative covering.

"Regional Administrator" means the Regional Administrator of Region 10 of the EPA, or the authorized representative of the Regional Administrator.

"Regulated Construction Activities" include clearing, grading or excavation that results in a land disturbance of greater than or equal to one acre, or that disturbs less than one acre if part of a larger common plan of development or sale that would disturb one acre or more. See "Stormwater Discharge Associated with Construction Activity."

"Road maintenance" and/or "Repair of Public Streets, Roads and Parking Lots" means repair work on Permittee-owned or Permittee managed streets and parking lots that involves land disturbance including asphalt removal or re- grading of 5,000 square feet or more. This definition excludes the following activities: pot hole and square cut patching; overlaying existing asphalt or concrete pacing with asphalt or concrete without expanding the area of coverage; shoulder grading; reshaping or regrading drainage ditches; crack or chip sealing; resurfacing with in-kind material without expanding the road prism, and vegetative maintenance.

"Runoff" see "stormwater."

"Runoff Reduction Techniques" means the collective assortment of stormwater practices that reduce the volume of stormwater from discharging off site.

"Runway Protection Zone," as defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008), means an area off the runway end to enhance the protection of people and property on the ground. See:
http://www.wsdot.wa.gov/aviation/AirportStormwaterGuidanceManual.htm

"Runway Safety Area," as defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008), means a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. See:
http://www.wsdot.wa.gov/aviation/AirportStormwaterGuidanceManual.htm

"Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. See 40 CFR §122.41(m)(1)(ii).

"Sewershed" means, for the purposes of this permit, all the land area that is drained by a network of municipal storm sewer system conveyances to a single point of discharge to a water of the United States

"Significant contributor of pollutants" means any discharge that causes or could cause or contribute to an excursion above any Washington water quality standard.

"Small Municipal Separate Storm Sewer System" is defined at 40 CFR §122.26(b)(16) and refers to all separate storm sewers that are owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to waters of the United States, but is not defined as "large"' or "medium" municipal separate storm sewer system. This term includes systems similar to separate storm sewer systems in municipalities such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas such as individual buildings.

"Snow management" means the plowing, relocation and collection of snow and ice.

"Soil amendments" are components added *in situ* or native soils to increase the spacing between soil particles so that the soil can absorb and hold more moisture. The amendment of soils changes various other physical, chemical and biological characteristics so that the soils become more effective in maintaining water quality.

"Source control" means stormwater management practices that control stormwater *before* pollutants have been introduced into stormwater; a structure or operation that is intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. The 2012 *Stormwater Management Manual for Western Washington* separates source control BMPs into two types. *Structural Source Control BMPs* are physical, structural, or mechanical devices, or facilities that are intended to prevent pollutants from entering stormwater. *Operational BMPs* are non-structural practices that prevent or reduce pollutants from entering stormwater. See Volume IV-*Source Control BMPs* of the 2012 *Stormwater Management Manual for Western Washington* for details.

"Storm event" or "measurable storm event" for the purposes of this permit means a precipitation event that results in an actual discharge from the outfall and which follows the preceding measurable storm event by at least 48 hours (2 days).

"Storm water," "stormwater" and "stormwater runoff" as used in this permit means runoff during and following precipitation and snow melt events, including surface runoff and drainage, as defined at 40 CFR §122.26(b)(13). Stormwater means that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels, or pipes into a defined surface water channel or a constructed infiltration facility.

"Stormwater Control Measure" means physical, structural, and/or managerial measures that, when used singly or in combination, reduce the downstream quality and quantity impacts of stormwater. Also, SCM means a permit condition used in place of or in conjunction with effluent limitations to prevent or control the discharge of pollutants. This may include a schedule of activities, prohibition of practices, maintenance procedures, or other management practices. SCMs may include, but are not limited to, treatment requirements; operating procedures; practices to control plant site runoff, spillage, leaks, sludge, or waste disposal; or drainage from raw material storage. See "best management practices (BMPs)."

"Stormwater Discharge Associated with Construction Activity" as used in this permit, refers to a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (*e.g.*, clearing, grading, or excavation), construction materials or equipment storage or maintenance (*e.g.*, fill piles, borrow areas, concrete truck washout, fueling) or other industrial stormwater directly related to the construction process are located. (See 40 CFR §122.26(b)(14)(x) and 40 CFR §122.26(b)(15) for the two regulatory definitions of stormwater associated with construction sites.)

"Stormwater Discharge Associated with Industrial Activity" as used in this permit, refers to the discharge from any conveyance that is used for collecting and conveying stormwater and that is directly related to manufacturing, processing or raw materials storage areas at an industrial activity included in the regulatory definition at 40 CFR §122.26(b)(14).

"Stormwater Facility" means a constructed component of a stormwater drainage system, designed or constructed to perform a particular function or multiple functions. Stormwater facilities include, but are not limited to, pipes, swales, ditches, culverts, street gutters, detention basins, retention basins, constructed wetlands, infiltration devices, catch basins, oil/water separators, sediment basins, and modular pavement. See also "permananent stormwater management controls" and/or "post-construction stormwaer management controls."

"Stormwater Management Practice" or "Storm Water Management Control" means practices that manage stormwater, including structural and vegetative components of a stormwater system.

"Stormwater Management Program (SWMP)" refers to a comprehensive program to manage the quality of stormwater discharged from the municipal separate storm sewer system.

"Stormwater Pollution Prevention Plan (SWPPP)" means a site specific plan designed to describe the control of soil or other materials to prevent pollutants in stormwater runoff, generally developed for a construction site, or an industrial facility. For the purposes of this permit, a SWPPP means a written document that identifies potential sources of pollution, describes practices to reduce

pollutants in stormwater discharges from the site, and identifies procedures that the operator will implement to comply with applicable permit requirements.

"Taxiway Safety Area," as defined in the *Aviation Stormwater Design Manual - Managing Wildlife Hazards Near Airports* (December 2008), means a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft unintentionally departing the taxiway. See: http://www.wsdot.wa.gov/aviation/AirportStormwaterGuidanceManual.htm

"TMDL" means Total Maximum Daily Load, an analysis of pollutant loading to a body of water detailing the sum of the individual waste load allocations for point sources and load allocations for non-point sources and natural background. See 40 CFR §130.2.

"Treatment" means storm water management practices that 'treat' storm water after pollutants have been incorporated into the stormwater.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR §122.42(n)(1)

"Waters of the State" includes those waters as defined as "waters of the United States" in 40 CFR § 122.2 within the geographic boundaries of Washington State and "waters of the state" as defined in Chapter 90.48 RCW which includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and water courses within the jurisdiction of the State of Washington. See also "receiving waters."

"Waters of the United States" means:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters, including interstate "wetlands";

3. All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

   a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;
   b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   c. Which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under this definition;

5. Tributaries of waters identified in paragraphs 1 through 4 of this definition;

6. The territorial sea; and

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1 through 6 of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds for steam electric generation stations per 40 CFR Part 423) which also meet the criteria of this definition are not waters of the United States. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

“Watershed” is defined as all the land area that is drained by a water body and its tributaries.

“Wetlands” means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Appendix A – Street Waste Disposal (Part II.B.6.d)

Street Waste Solids

Soils generated from maintenance of the MS4 may be reclaimed, recycled or reused when allowed by local codes and ordinances. Soils that are identified as contaminated pursuant to Washington Administrative Code (WAC) Chapter 173-350 shall be disposed at a qualified solid waste disposal facility.

Street Waste Liquids

General Procedures:

Street waste collection should emphasize retention of solids in preference to liquids. Street waste solids are the principal objective in street waste collection and are substantially easier to store and treat than liquids.

Street waste liquids require treatment before their discharge. Street waste liquids usually contain high amounts of suspended and total solids and adsorbed metals. Treatment requirements depend on the discharge location.

Discharges to sanitary sewer and storm sewer systems must be approved by the entity responsible for operation and maintenance of the system. Neither Washington Department of Ecology nor EPA will generally require waste discharge permits for discharge of stormwater decant to sanitary sewers or to stormwater treatment BMPs that are constructed and maintained in accordance with Department of Ecology's 2012 *Stormwater Management Manual for Western Washington*.

For disposal of catch basin decant liquid and water removed from stormwater treatment facilities, EPA recommends the following, in order of preference:

1. **Discharge of catch basin decant liquids to a municipal sanitary sewer connected to a Public Owned Treatment Works (POTW) is the preferred disposal option.** Discharge to a municipal sanitary sewer requires the approval of the sewer authority. Approvals for discharge to a POTW will likely contain pretreatment, quantity and location conditions to protect the POTW.

2. **Discharge of catch basin decant liquids may be allowed into a Basic or Enhanced Stormwater Treatment BMP, if option 1 is not available.** Decant liquid collected from cleaning catch basins and stormwater treatment wet vaults may be discharged back into the storm sewer system under the following conditions:
   - The preferred disposal option of discharge to sanitary sewer is not reasonably available; and

- The discharge is to a Basic or Enhanced Stormwater Treatment Facility as described by Department of Ecology's 2012 *Stormwater Management Manual For Western Washington*. If pretreatment does not remove visible sheen from oils, the treatment facility must be able to prevent the discharge of oils causing a sheen; and

- The discharge is as near to the treatment facility as is practical, to minimize contamination or recontamination of the collection system; and

- The storm sewer system owner/operator has granted approval and has determined that the stormwater treatment facility will accommodate the increased loading. Pretreatment conditions to protect the stormwater treatment BMP may be issued as part of the approval process. Following local pretreatment conditions is a requirement of this permit.

- Flocculants for the pretreatment of catch basin decant liquids must be non-toxic under the circumstances of use and must be approved in advance by EPA Region 10.

The reasonable availability of sanitary sewer discharge will be determined by the Permittee, by evaluating such factors as distance, time of travel, load restrictions, and capacity of the stormwater treatment facility.

3. **Water removed from stormwater ponds, vaults and oversized catch basins may be returned to the storm sewer system.** Stormwater ponds, vaults and oversized catch basins contain substantial amounts of liquid, which hampers the collection of solids and pose problems if the removed waste must be hauled away from the site. Water removed from these facilities may be discharged back into the pond, vault or catch basin provided:

   - Clear water removed from a stormwater treatment structure may be discharged directly to a down gradient cell of a treatment pond or into the storm sewer system.

   - Turbid water may be discharged back into the structure it was removed from if

     - the removed water has been stored in a clean container (eductor truck, Baker tank or other appropriate container used specifically for handling stormwater or clean water); and

     - There will be no discharge from the treatment structure for at least 24 hours. If discharging to a pond, vault or catch basin that is not owned or operated by the Permittee,

   - The discharge must be approved by the storm sewer system owner/operator.

Appendix B - Runoff Treatment Requirements for New Development and Redevelopment Project Sites (Part II.B.5.g)

Project Thresholds

The following projects require the construction of stormwater treatment facilities:

- Projects in which the total area of pollution-generating hard surface (PGHS) is 5,000 square feet or more, or
- Projects in which the total area of pollution-generating pervious surfaces (PGPS) - not including permeable pavements - is three-quarters (3/4) of an acre or more; and from which there will be a surface discharge in a natural or man-made conveyance system from the site.

Treatment-Type Thresholds

1. Oil Control:

Treatment to achieve Oil Control applies to projects that have "high-use sites." High-use sites are those that typically generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil. High-use sites include:

a. An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area;

b. An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil;

c. An area of a commercial or industrial site subject to parking, storage or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.);

d. A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

2. Phosphorus Treatment:

The requirement to provide phosphorous control is determined by the Department of Ecology (for example, through a waste load allocation as part of an EPA approved Total Maximum Daily Load [TMDL] analysis). There is currently no EPA approved TMDL for American Lake, although it is a water body reported under section 305(b) of the Clean Water Act, and is designated by the State of Washington as not supporting beneficial uses due to phosphorous. The Permittee should consider phosphorus treatment for any

discharges from new development or redevelopment projects that will discharge to American Lake.

3. Enhanced Treatment:

Except where specified under Appendix B4, *Basic Treatment*, enhanced treatment for reduction in dissolved metals is required for the following project sites that 1) discharge directly to freshwaters or conveyance systems tributary to freshwaters designated for aquatic life use or that have an existing aquatic life use; or 2) use infiltration strictly for flow control – not treatment- and the discharge is within ¼ mile of a freshwater designated for aquatic life use or that has an existing aquatic life use:

Industrial project sites,
Commercial project sites,
Multi-family project sites, and
High AADT roads as follows:

- Roads with an AADT of 15,000 or greater unless discharging to a 4th Strahler order stream or larger;

- Roads with an AADT of 30,000 or greater if discharging to a 4th Strahler order stream or larger (as determined using 1:24,000 scale maps to delineate stream order).

Any areas of the above-listed project sites that are identified as being subject to Basic Treatment requirements (below) are not also subject to Enhanced Treatment requirements. For developments with a mix of land use types, the Enhanced Treatment requirement shall apply when the runoff from the areas subject to the Enhanced Treatment requirement comprise 50% or more of the total runoff.

4. Basic Treatment:

Basic Treatment is required for each of the following circumstances:

- Project sites that discharge to the ground, UNLESS:

  1) The soil suitability criteria for infiltration treatment are met; (see Chapter 3 of Volume III-*Hydrologic Analysis and Flow Control BMPs* of the 2012 *Stormwater Management Manual for Western Washingto*n) and alternative pretreatment is provided (see Chapter 6, Volume V-*Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washingto*n) or

  2) The project site uses infiltration strictly for flow control – not treatment - and the discharge is within ¼-mile of a phosphorus sensitive lake (use a Phosphorus Treatment facility), or

3) The project site is industrial, commercial, multi-family residential, or a high AADT road (consistent with the Enhanced Treatment-type thresholds listed above) and is within ¼ mile of a fresh water designated for aquatic life use or that has an existing aquatic life use.(use an Enhanced Treatment facility).

- Residential projects not otherwise needing phosphorus control as designated by USEPA, the Department of Ecology, or by the Permittee;

- Project sites discharging directly (or indirectly through a MS4) to Basic Treatment Receiving Waters (Appendix I-C of the 2012 *Western Washington Stormwater Management Manual*)

- Project sites that drain to freshwater that is not designated for aquatic life use, and does not have an existing aquatic life use; and project sites that drain to waters not tributary to waters designated for aquatic use or that have an existing aquatic life use;

- Landscaped areas of industrial, commercial, and multi-family project sites, and parking lots of industrial and commercial project sites that do not involve pollution-generating sources (e.g., industrial activities, customer parking, storage of erodible or leachable material, wastes or chemicals) other than parking of employees' private vehicles. For developments with a mix of land use types, the Basic Treatment requirement shall apply when the runoff from the areas subject to the Basic Treatment requirement comprise 50% or more of the total runoff.

Treatment Facility Sizing

Size all stormwater treatment facilities for the entire area that drains to them, even if some of those areas are not pollution-generating.

Water Quality Design Storm Volume: The volume of runoff predicted from a 24-hour storm with a 6-month return frequency (a.k.a., 6-month, 24-hour storm). Wetpool facilities are sized based upon the volume of runoff predicted through use of the Natural Resource Conservation Service curve number equations in Chapter 2 of Volume III-*Hydrologic Analysis and Flow Control BMPs* of the 2012 *Stormwater Management Manual for Western Washington,* for the 6-month, 24-hour storm. Alternatively, when using an -approved continuous runoff model, the water quality design storm volume shall be equal to the simulated daily volume that represents the upper limit of the range of daily volumes that accounts for 91% of the entire runoff volume over a multi-decade period of record.

Water Quality Design Flow Rate

1. Preceding Detention Facilities or when Detention Facilities are not required:

   The flow rate at or below which 91% of the runoff volume, (as estimated by an approved continuous runoff model) will be treated. Design criteria for treatment facilities are assigned to achieve the applicable performance goal (e.g., 80% TSS removal) at the water quality design flow rate. At a minimum, 91% of the total runoff volume, as estimated by an approved continuous runoff model, must pass through the treatment facility(ies) at or below the approved hydraulic loading rate for the facility(ies).

2. Downstream of Detention Facilities:

   The water quality design flow rate must be the full 2-year release rate from the detention facility.

Treatment Facility Selection, Design, and Maintenance

Stormwater treatment facilities must be:

- Selected in accordance with the process identified in Chapter 4 of Volume I, and Chapter 2 of Volume V-*Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington* ,
- Designed in accordance with the design criteria in Volume V- *Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington*, and
- Maintained in accordance with the maintenance schedule in Volume V- *Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington.*

Additional Requirements

The discharge of untreated stormwater from pollution-generating hard surfaces to ground water must not be authorized by the Permittee, except for the discharge achieved by infiltration or dispersion of runoff through use of On-site Stormwater Management BMPs in accordance with Chapter 5, and Chapter 7, Volume V-*Runoff Treatment BMPs* of the 2012 *Stormwater Management Manual for Western Washington*; or by infiltration through soils meeting the soil suitability criteria in Chapter 3 of Volume III-*Hydrologic Analysis and Flow Control BMPs* of the 2012 *Stormwater Management Manual for Western Washington*.

Appendix C - Exemptions from the New Development and Redevelopment Requirements of Part II.B.5

Unless otherwise indicated in this Appendix the practices described in this Appendix are exempt from the New Development and Redevelopment Requirements of Part II.B.5, even if such practices meet the definition of new development or redevelopment site disturbance thresholds.

1. Forest practices:

Forest practices regulated under Title 222 WAC, except for Class IV General forest practices that are conversions from timber land to other uses, are exempt from the provisions of Part II.B.5.

2. Commercial agriculture:

Commercial agriculture practices involving working the land for production are generally exempt. However, the conversion from timberland to agriculture, and the construction of impervious surfaces are not exempt. *Commercial Agriculture* means those activities conducted on lands defined in Revised Code of Washington (RCW) 84.34.020(2) and activities involved in the production of crops or livestock for commercial trade. An activity ceases to be considered commercial agriculture when the area on which it is conducted is proposed for conversion to a nonagricultural use or has lain idle for more than five years, unless the idle land is registered in a federal or state soils conservation program, or unless the activity is maintenance of irrigation ditches, laterals, canals, or drainage ditches related to an existing and ongoing agricultural activity.

3. Oil and Gas Field Activities or Operations:

Construction of drilling sites, waste management pits, and access roads, as well as construction of transportation and treatment infrastructure such as pipelines natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations are exempt.

4. Pavement Maintenance:

The following pavement maintenance practices are exempt: pothole and square cut patching, overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage, shoulder grading, reshaping/regrading drainage systems, crack sealing, resurfacing with in-kind material without expanding the road prism, pavement preservation activities that do not expand the road prism, and vegetation maintenance.

The following pavement maintenance practices are not categorically exempt – they are considered redevelopment. The extent to which Part II.B.5 applies is explained for each circumstance.

- *Removing and replacing a paved surface to base course or lower, or repairing the pavement base:* If impervious areas are not expanded, the requirements of Part II.B.5.a through B.5.e apply.

- *Extending the pavement edge without increasing the size of the road prism, or paving graveled shoulders:* These are considered new impervious surfaces and are subject to the requirements of Part II.B.5.

- *Resurfacing by upgrading from dirt to gravel, asphalt, or concrete; upgrading from gravel to asphalt, or concrete; or upgrading from a bituminous surface treatment ("chip seal") to asphalt or concrete*: These are considered new impervious surfaces and are subject to the requirements of Part II.B.5.

5. Underground utility projects:

Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics are not subject to the requirements of Part II.B.5.

6. Exemptions from the Hydrologic Performance Requirement for Flow Control (Part II.B.5.f):

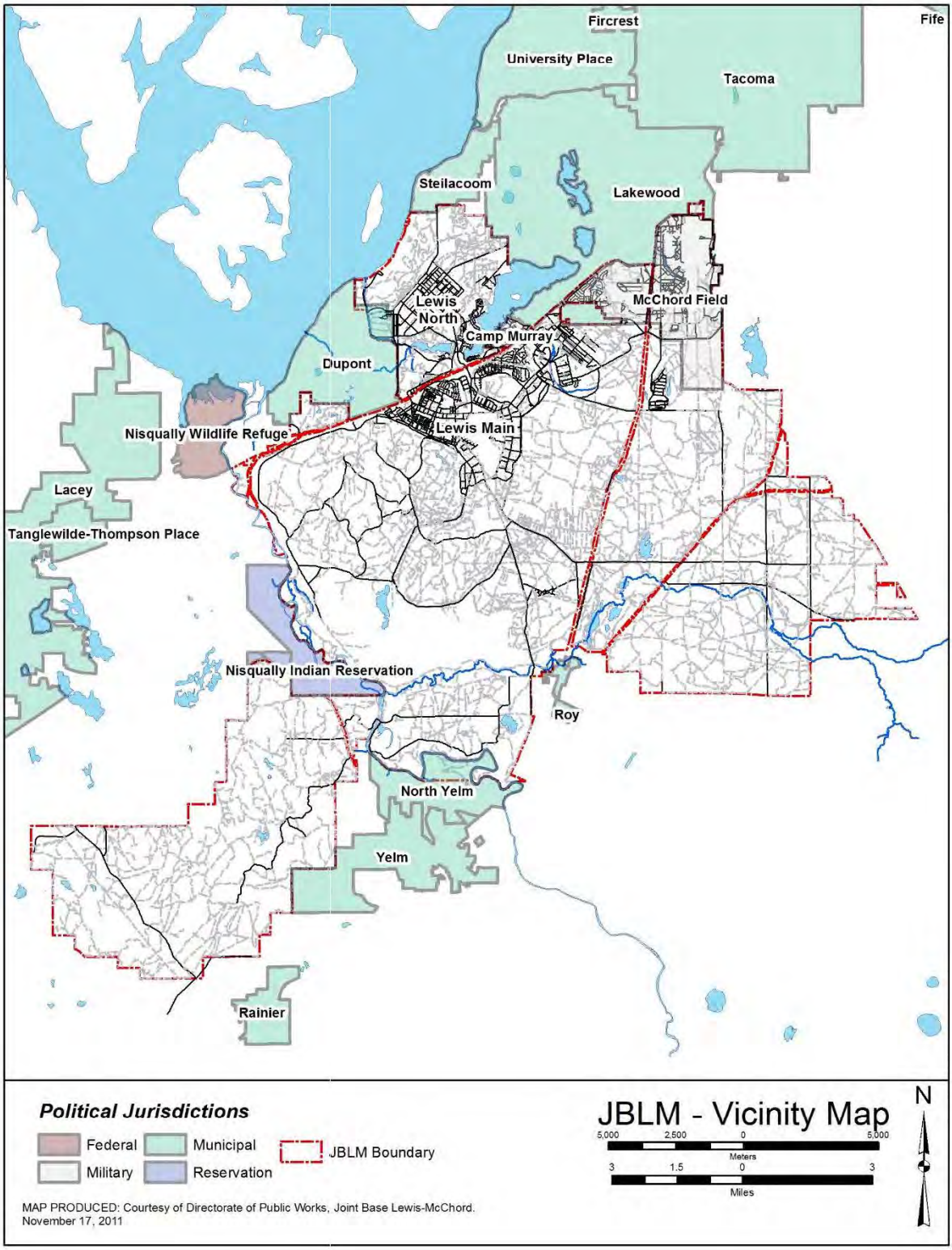
The Permittee may exempt a new development or redevelopment project from managing the total runoff flow volume calculated to meet the hydrologic performance standard in Part II.B.5.f, provided the Permittee fully documents its determination that compliance with the hydrologic performance requirement for flow control cannot be attained due to severe economic project costs.

The Permittee must manage as much of the calculated flow volume as possible, and must keep written records of all such project determinations.

No later than 15 days from the date the Permittee makes a determination that a project should be exempt from the hydrologic performance requirement for flow control due to severe economic costs, the Permittee must provide a written summary of the following information describing each new development and/or redevelopment project site exempted from the flow control requirement and submit such information to EPA via certified mail and via electronic mail to the EPA Region 10 address listed in Part IV.D of this permit:

- Name, location and identifying project description, including a brief synopsis of the project purpose, and a detailed description of the underlying facts supporting the Permittee's determination.
- For projects where managing the total runoff flow volume calculated to meet the hydrologic performance requirement for flow control in Part II.B.5. f. is deemed by the Permittee to be unattainable due to severe economic costs, the Permittee must document, and quantify that appropriate stormwater control strategies will be deployed to manage as much of the calculated flow volume as possible; the marginal cost of full attainment must be documented along with a justification on why full attainment of the flow control requirement at the site would result in severe economic cost.

Appendix D - Vicinity Map of JBLM Installation



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APPENDIX B

Description of Lewis Outfalls

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American Lake

Encompassing approximately 1,025 acres, American Lake is the largest natural lake in Pierce County. The water source for this lake is primarily ground water and Murray Creek. The mean depth of the lake is 53 feet with the deepest portion at the northern end reaching a maximum depth of 90 feet. American Lake is classified as a mesotrophic (moderately productive) lake with symptoms of accelerated eutrophication due to increased amounts of nutrient loading; usually occurring in the spring. The lake is used extensively for recreational fishing. It supports populations of kokanee, cutthroat trout, rock bass, pumpkinseed, rainbow trout, and yellow perch. The lake also provides critical habitat for migrating waterfowl as well as supporting a significant nesting population. Both nesting and wintering bald eagle populations forage on the lake for fish and waterfowl.

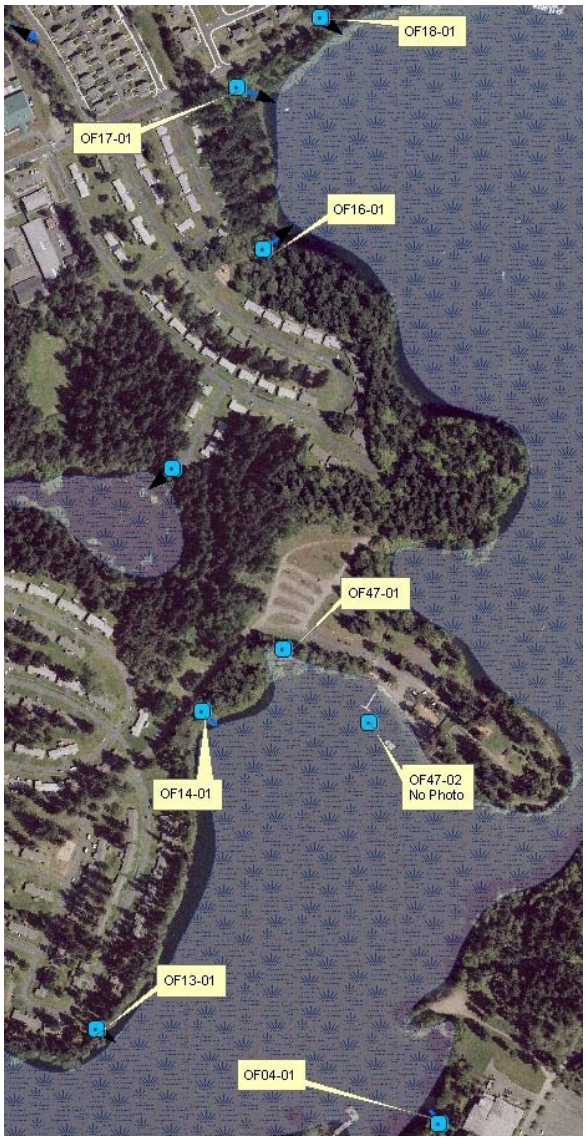

Figure B-1. American Lake Outfall Map.

There are eight MS4 outfalls that discharge to American Lake. Of these eight, two were not visually inspected or geographically sited; both of these are located at Shoreline Beach Park. One outfall pipe is hidden by shoreline scrub and the other pipe discharges underwater. Of the remaining six outfall pipes, five are located in the Beachwood Housing Area and one is located at the American Lake Community Center. Outfall map and photos are at Figures B-2 to B-8.

Outfall L090, located at American Lake Community Center, is a 48 inch culvert; its drainage area consists of the Community Center Parking lot, Old Hillside neighborhood, New Hillside Neighborhoods, and Evergreen Housing area. The outfall is the largest and drains approximately 216 catch basins in addition to some roof drains.

Figure B-2. L090. American Lake Community Center.

Figure B-3. L013. Atlanta Ave.

Figure B-4. L014. Shoreline Rd/Atlanta Ave

Figure B-5. L047. Shoreline Rd.

Figure B-6. L016. Boston Ave.

Figure B-7. L017. Santé Fe Ave. .

Figure B-8. L018. Saint Paul Ave

American Lake Marsh

American Lake Marsh is located at the south end of American Lake (USGS, 2005). Although it is listed with the USGS as a pond, it is an ephemeral marsh and it receives the majority of its flow from American Lake and stormwater runoff only during the rainy season. It is 1.5 acres in size with little open water and is vegetated by mostly wetland grasses.

American Lake Pond has three stormwater outfalls and a high water weir from American Lake. Two outfalls drain 41st Division and the third outfall drains San Francisco Ave. and NCO Beach Drive. All three outfalls are diverted (blue lines) by berms before entering the marsh. Outfall map and photos are on Figures B-9 to B-12.

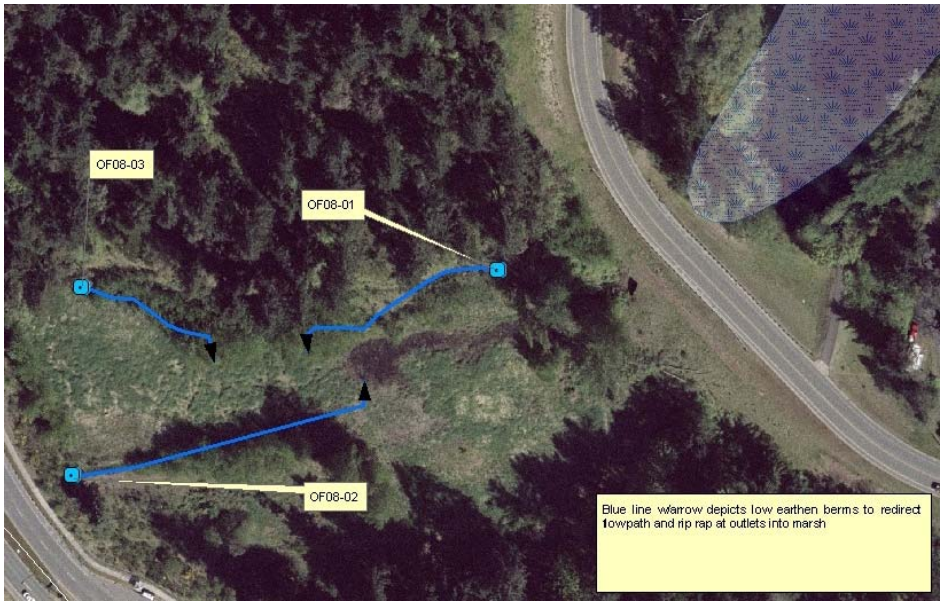

Figure B-9. Map of American Lake Marsh Outfalls.

Figure B-10. L008. San Francisco Ave.

Figure B-11. LC08. 41st Division.

Figure B-12. LD08. 41st Division.

Bell Marsh

Bell Marsh is located in DuPont, just outside of JBLM-North. It is approximately 13 acres in size with very little open water. The wetland is classified as forested/scrub shrub wetland (USGS, 2005). There are no records of any fish species inhabiting this body of water. This wetland receives the majority of its water supply from groundwater.

Bell Marsh has only one potential MS4 outfall, which is located at the Pet Brigade Boarding and Grooming Center. No picture is available of this potential outfall (L065). Outfall map is at Figure B-15.

Figure B-13. Map of Bell Marsh potential outfall. L065 Pet Brigade.

Elliot Marsh

Elliot Marsh is located in the JBLM- North. It is approximately 5.5 acres in size. The wetland is classified as forested/scrub-shrub wetland with only minor amounts of open water (USGS, 2005). There are no records of fish inhabiting this body of water, but it is used by various species associated with wetlands, including species of waterfowl, amphibians, and mammals. The primary source of water for this wetland is groundwater.

Elliot Marsh has only one potential MS4 outfall located within the Beachwood Neighborhood- L020. This outfall is expected to be located off of SMA Van Autreve St. Outfall map is at Figure B-14.

Figure B-14. Map of Elliot Marsh outfall. L020 SMA Van Autreve Ave.

Hamer Marsh

Hamer Marsh is located on JBLM-North and is approximately 63 acres in size. The majority of the wetland is classified as scrub shrub with only minor amounts of open water. There are no records of fish inhabiting this body of water, but it is used by various species associated with wetlands, including species of waterfowl, amphibians, and mammals. The primary source of water for this wetland is groundwater.

No MS4 outfalls drain or have the potential to drain into Hamer Marsh.

Kennedy Marsh

Kennedy Marsh is located in a transitional area on JBLM between developed and non-developed areas. The marsh is approximately 12 acres in size and is classified as forested/scrub shrub wetland (USGS, 2005). The wetland is completely covered with various shrub species typically associated with wetland habitat. There are no records of fish residing in this wetland and waterfowl use is limited due to the dense shrubby

vegetation. The primary source of water for this wetland is stormwater and groundwater. This is a closed system with no surface outlet.

Kennedy Marsh has only one MS4 outfall, L001, located near the 1st Special Forces Group. This outfall discharges approximately two miles of roadway including 0.6 miles of Jackson Ave. Outfall map and photo is at Figures B-16 and B-17.

Figure B-15. Map of Kennedy Marsh Outfall**.**

Figure B-16. L001. Evergreen Rd

Lynn Lake

Lynn Lake is located between the Defense Reutilization and Marketing Offices (DRMO) yard and the old Madigan Hospital area. It is approximately three acres in size. The lake contains very little open water during the growing season with the majority of the lake classified as aquatic bed and a minor portion as scrub shrub. The lake does support brown bullheads, but has not been surveyed for fish populations for several years. It receives some use by waterfowl during the nesting season, including Canadian geese, hooded mergansers, and wood ducks. The primary source of water for this wetland is groundwater.

Lynn Lake has only one MS4 outfall, L048, located in the Old Madigan area.

Outfall map and photo are Figures B-17 and B-18.

Figure B-17. Map of Lynn Lake Outfall.

Figure B-18. L048. Lynn Lake

McKay Marsh

McKay Marsh is located in JBLM-North and is approximately 9.2 acres in size. The majority of the marsh is classified as forested/scrub shrub wetland with only minor amounts of open water (USGS, 2005). There are no records of fish inhabiting this body of water, but it is used by various species associated with wetlands, including species of waterfowl, amphibians, and mammals. The primary source of water for this wetland is groundwater.

There are five MS4 outfalls that have the potential to drain into McKay Marsh. Three are near the RV storage area off of Main St. and on Plant Rd. Two are located off of the McKay Marsh Trailhead. Outfall map and photos are shown in Figures B-19 to B-21.

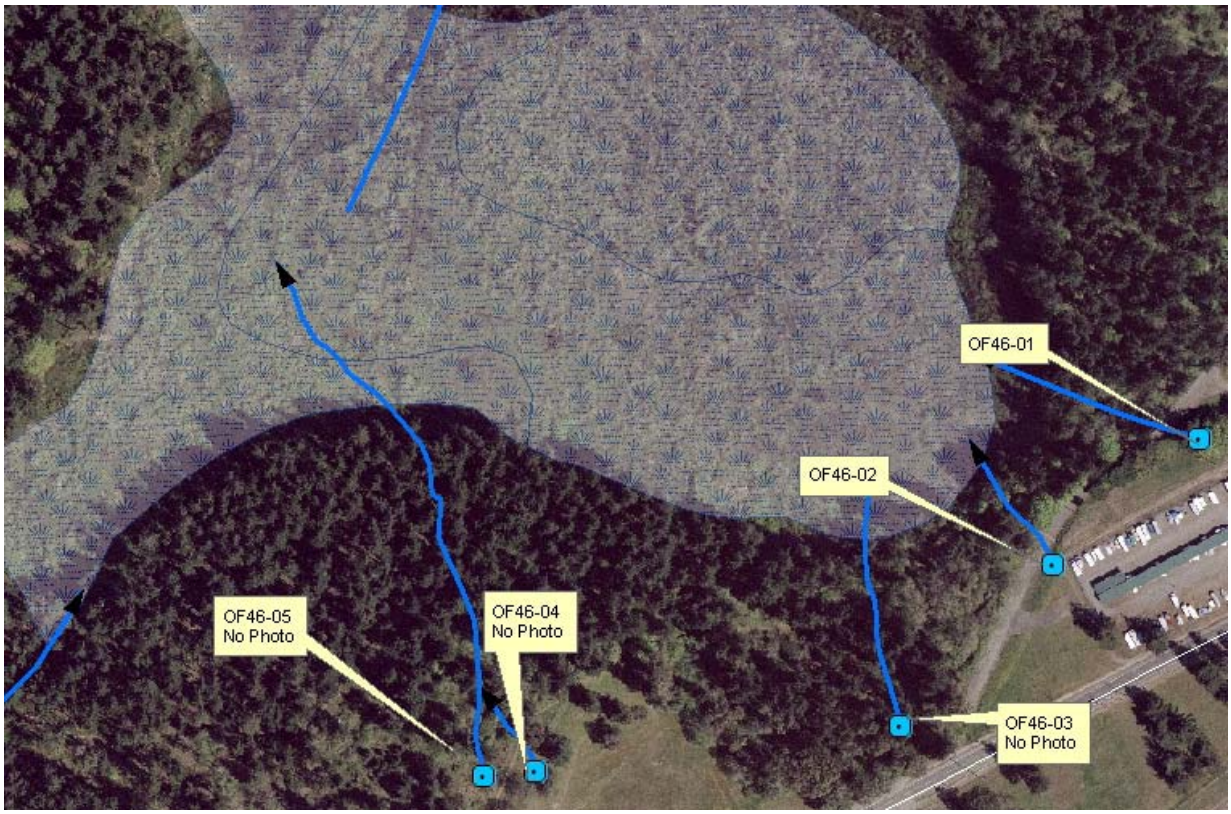

Figure B-19. Map of McKay Marsh Outfalls.

Figure B-20. L046. Plant Rd RV storage

Figure B-21. L046B. Plant Rd/Stables

Murray Creek

Water for this stream almost exclusively originates from groundwater springs. The headwaters for Murray Creek are located in the northeast section of JBLM and flows for approximately four miles before entering American Lake. It flows through a developed area of JBLM that includes the Logistics Center, old and new Madigan Hospital complexes, and Camp Murray. Murray Creek supports a resident population of cutthroat trout, and the lower portion of the stream is occasionally used as spawning habitat by kokanee salmon.

There are seventeen MS4 outfalls located on JBLM that drain or have potential to drain into Murray Creek. Five are located in the Madigan Housing Area. Six are located in the Old Madigan Complex. Four are located behind 1st Special Forces Group. One receives overflow from the Madigan Army Medical Center Moat, and one is located in the New Hillside Housing area. Outfall map and photos are shown in Figures B-22 through B-35.

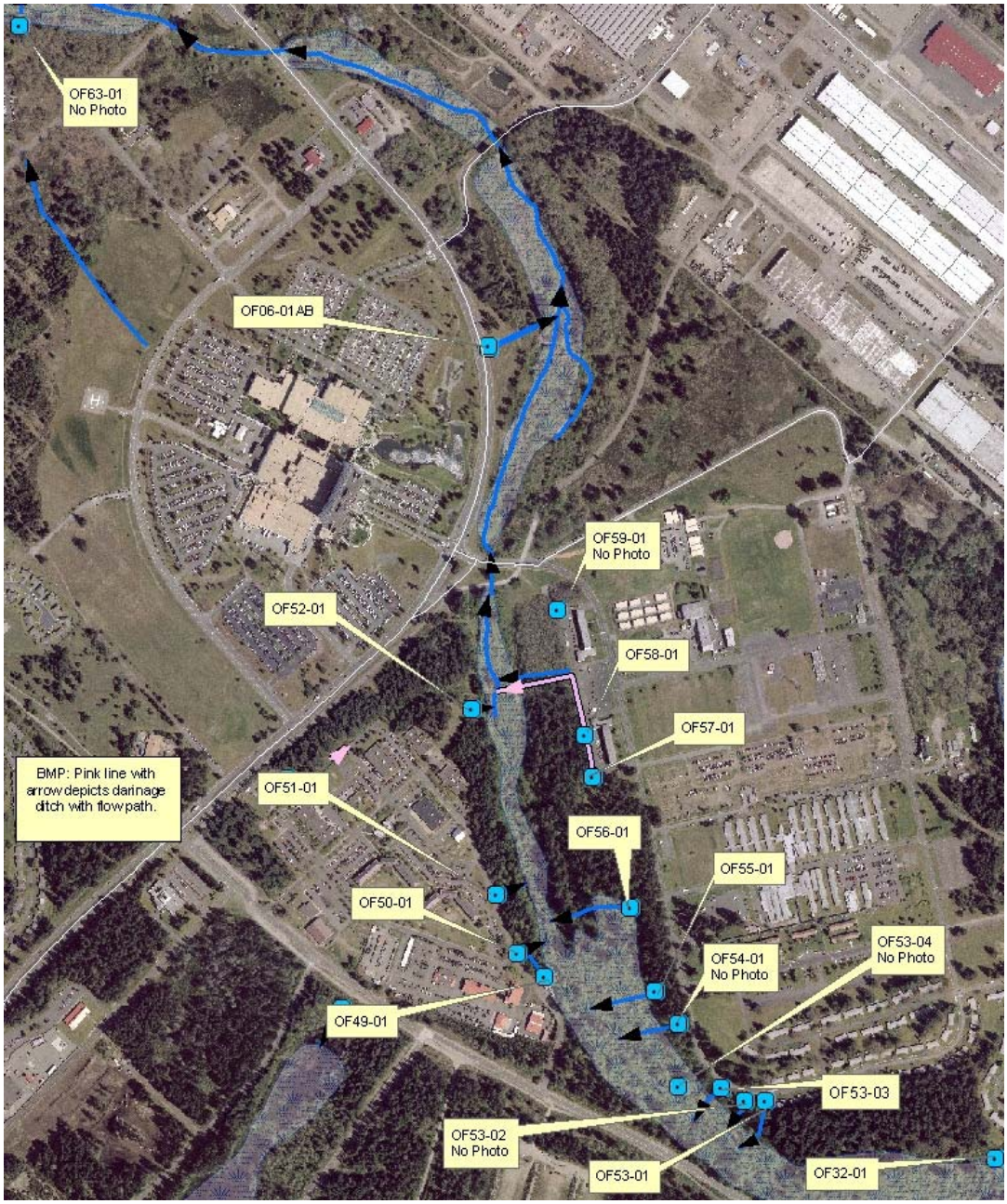

Figure B-22. Map of Murray Creek Outfalls.

Madigan Housing area outfall photos are shown in Figures B-23 to B-27.

Figure B-23. L032. Coolidge Ave.

Figure B-24. L053. Washington St.

Figure B-25. LC53. Washington St.

Figure B-26. L055. Washington/Lincoln St

Figure B-27. L056. Wilson/Johnson Rds

Old Madigan Complex and Madigan Hospital outfall photos are shown in Figures B-28 to B-30

Figure B-28. L057. Wilson Ave Drain to Ditch

Figure B-29. L058. Wilson Ave Drain to Ditch

Figure B-30. Wilson Ave Ditch-to-Creek

Figure B-31 shows the overflow from the Madigan Hospital pond.

Figure B-31. L006. Madigan Moat

1st Special Forces area photos are shown in Figures B-32 to B-35.

Figure B-32. L049. Ruddy St.

Figure B-33. L050. Ruddy St.

Figure B-34. L051. Ruddy St.

Figure B-35. L053. Ruddy St.

Puget Sound

Puget Sound is an inland expression of the Pacific Ocean to which it is hydrologically connected via the Strait of Juan de Fuca. Portions of JBLM lie adjacent to Puget Sound and riverine systems on JBLM flow either directly into Puget Sound, or indirectly by providing water to other riverine systems that eventually flow into Puget Sound. Near shore habitat provides critical habitat to salmonid fry and various marine mammals. In addition to supporting several species of salmon, Puget Sound also supports numerous shellfish and bottom fish.

Sequalitchew Creek and Murray Creek drain into Puget Sound. In addition, there exists a drainage canal that drains into Puget Sound east of Solo Point. This discharge canal is a storm drainage conveyance canal that was constructed on JBLM in the early 1950s.

The main canal begins at Hamer Marsh and runs along the western boundary of JBLM-North. In addition, there is a secondary canal spur that connects to the main canal. This canal spur is located on the north side of the Sequalitchew Training Center for Environmental Education and Earthworks (STACEEE) and functions as overflow for industrial outfall #4.

There are two MS4 outfalls that drain or have the potential to drain into Puget Sound. The first is the Wastewater Treatment Plant parking lot. The second, located approximately 0.3 miles southwest of the Solo Point boat launch. The canal map and photos are at Figure B-36 and B-37.

Figure B-36. Map of WWTP parking lot and JBLM Canal outfall

Figure B-37. L030. JBLM Canal outfall; SW of Solo Point boat launch.

Sears Lake

Sears Lake is located on JBLM-North and is surrounded by residential areas. The lake is classified as a pond and is approximately 4.8 acres in size with a maximum depth of approximately 8 feet (USGS, 2005). The lake has not been surveyed for fish populations. The lake receives some use by amphibians, small mammals, and waterfowl during the nesting season. The primary source of water for this wetland is groundwater.

Sears Lake has one outfall located at the end of Richmond Dr. This outfall was constructed in 1956 of rip-rap. There is very little rip-rap left today, though water still flows. Outfall map and photo are at Figures B-38 and B-39.

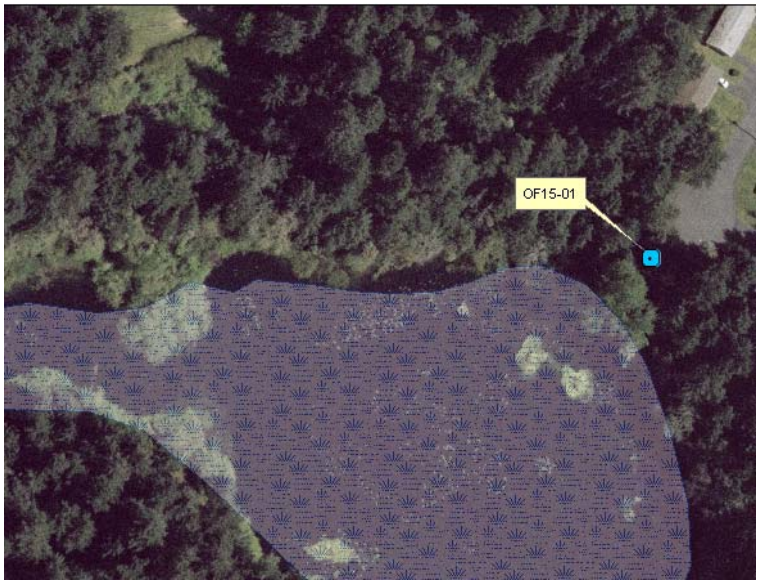

Figure B-38. Map of Sears Lake Outfall.

Figure B-39. L015. Richmond Place.

Sequalitchew Creek

Sequalitchew Creek receives the majority of its flow from Sequalitchew Lake, and is approximately 3.5 miles long, flowing through two marshes before draining directly into Puget Sound. Sections of the stream become intermittent during the summer months. The lower three miles of Sequalitchew Creek flow through the City of DuPont and privately held properties including Weyerhaeuser, Intel, and residential lands. The total drainage basin of Sequalitchew Creek is 38.4 square miles. Chum and Coho salmon utilize the lower reach for spawning, but have not been observed upstream of Sequalitchew Canyon.

No MS4 outfalls drain or have the potential to drain into Sequalitchew Creek.

Sequalitchew Lake

Sequalitchew Lake is approximately 80 acres in size and is located within JBLM-North. The primary source of water for this lake is groundwater. The lake tends to be rather shallow averaging approximately six feet in depth. During the warmer months of the year the water column is typically full of vegetation, composed of both floating and submergent vegetation. Emergent vegetation is restricted to near shore areas and is dominated by cattails. Sequalitchew Lake supports several species of warm water spiny ray fish that includes largemouth bass, blue gill, pumpkinseed, yellow perch, and rock bass. It also is used quite extensively by waterfowl and occasionally as a foraging site for nesting and wintering bald eagles. This lake is not only used for recreational purposes such as fishing, but is also an important training site, representing one of two sites used for swimming military equipment approved for water use.

There are three MS4 outfall pipes that have the potential to discharge into Sequalitchew Lake. The Plant Rd/Main St outfall is located below well houses for 12a and 12b. It is a 36 inch steel pipe and it drains into a drainage canal which, in turn, drains into Sequalitchew Lake. The remaining two MS4 outfall pipes are located below Water & Sewer Rd. Outfall map and photos are at Figures B-40 to B-42.

Figure B-40. Map of Sequalitchew Lake outfalls.

Figure B-41. L045. Plant Rd/ Vancouver Rd.

Figure B-42. LB45. Water & Sewer Rd

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APPENDIX C

Description of McChord Outfalls

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J001

Geographic Coordinates: 47.1445 N, 122.49644 E
Bank Location: North
Areas Drained: acres
Diameter: 3 feet
Composition: Concrete
Additional Notes:

- MSGP Outfall
- Receives discharge from Skimmer 1
- Located about 15 feet east of the western boundary fence and 200 feet from Clover Creek

J002

Geographic Coordinates: 47 .14288 N, 122.49629 E
Bank Location: North
Area Drained: 19 acres
Diameter: 1foot
Composition: Concrete with Steel Grate
Additional Notes:

- About 6 inches above water level
- Approximately 10 feet away from the water west of a mid-size tree

J003

Geographic Coordinates: 47.14232 N, 122.49491 E
Bank Location: South
Area Drained: 101 acres
Diameter: 3.5 feet
Composition: Concrete with Steel Grate
Additional Notes: About 25 feet west of the bridge on Levitow Boulevard

J004

Geographic Coordinates:
47.14243 N, 122.49370 E
Bank Location: North
Area Drained: 0.6 acres
Diameter: 1 foot
Composition: PVC
Additional Notes:

- Approximately 10 feet east of the Barnes Boulevard bridge
- About 5 feet below the top of the bank

J005

Geographic Coordinates: 47.14242 N, 122.49373 E
Bank Location: North
Area Drained: 12.4 acres
Diameter: 0.5 feet
Composition: Concrete
Additional Notes:

- MSGP Outfall
- East of the Levitow Boulevard bridge
- About 4 feet below the top of the bank

J006

Geographic Coordinates: 47.14230 N, 122.49372 E
Bank Location: South
Area Drained: 0.9 acre
Diameter: 1 foot
Composition: Concrete
Additional Notes:

- Across the creek from J005 and slightly further west
- Approximately 5 feet above water level

J007

Geographic Coordinates: 47.14237 N, 122.49279 E
Bank Location: North
Area Drained: 12 acres
Diameter: 1.5 feet
Composition: Metal Flap Gate
Additional Notes:

- West of the bridge on B street
- About 5 feet below the top of the bank

J008

Geographic Coordinates: 47.14224 N, 122.49278 E
Bank Location: South
Area Drained: 10 acres
Diameter: 1.5 feet
Composition: Concrete
Additional Notes:

- Between Hangar 5 and Building 1119
- Approximately 5 feet above water level

J009

Geographic Coordinates: 47.14237 N, 122.49279 E
Bank Location: North
Area Drained: 160 acres
Diameter: 1.5 feet
Composition: Concrete
Additional Notes:

- Receives discharge from Skimmer 2
- Several feet north of the Levitow Boulevard Bridge

JB09

Geographic Coordinates: 47.14173 N, 122.49164 E
Bank Location: North
Acres Drained: Overflow from J009
Diameter: 4 feet
Composition: Rubber Bladder Type
Additional Notes:

- Skimmer 2 bypass
- 2 rubber duckbill valves

J010

Geographic Coordinates: 47.14214 N, 122.49196 E
Bank Location: North
Acres Drained: Inactive
Diameter: 3 feet
Composition: Concrete
Additional Notes:

- Below pipes running across the creek
- Hidden behind surrounding vegetation

J011

Geographic Coordinates: 47.14211N, 122.49186 E
Bank Location: North
Acres Drained: Inactive
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- About 16 feet east from the pipes that cross over the creek north of Levitow Boulevard
- Located slightly west of a white circular tank

J012

Geographic Coordinates: 47.13985 N, 122.49160 E
Bank Location: North
Area Drained: 0.3 acres
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- Located near a large pine tree across from Building 758
- Poured concrete surrounding outfall

J013

Geographic Coordinates: 47.13865 N, 122.49076 E
Bank Location: North
Area Drained: Inactive
Diameter: 0.75 feet
Composition: Terra Cotta
Additional Notes:

- About 3 feet west of a parking lot curb north of the creek
- Approximately 10 feet below the top of the bank

J014

Geographic Coordinates: 47.13984 N, 122.49066 E
Bank Location: North
Area Drained: 0.8
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- Outside of Building 745
- Located slightly west of the stairs to the creek

J015

Geographic Coordinates: 47.13819 N, 122.49019 E
Bank Location: North
Area Drained: 1.4 acres
Diameter: 0.75 feet
Composition: Terra Cotta
Additional Notes:

- MSGP Outfall
- About 15 feet west of the fence between the fabrication shop and Hangar 1
- Approximately 10 feet below the top of the bank

J016

Geographic Coordinates: 47.13798 N, 122.48988 E
Bank Location: North
Area Drained: 1.6 acres
Diameter: 1.33 feet
Composition: Concrete
Additional Notes:

- MSGP Outfall
- About 20 feet east of J0 20
- Midway up the bank

J017

Geographic Coordinates: 47.13759 N, 122.48941 E
Bank Location: North
Area Drained: 37 acres
Diameter: 1.5 feet
Composition: Concrete
Additional Notes:

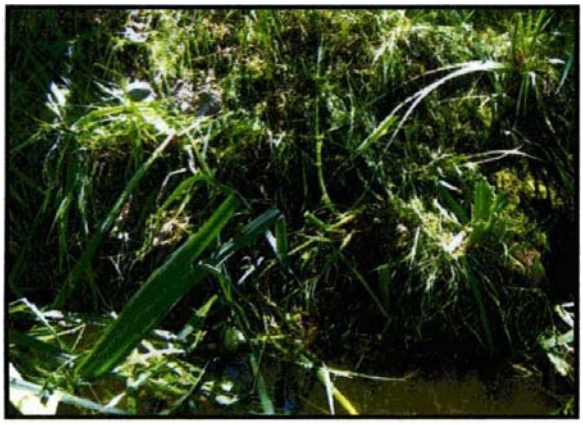
- MSGP Outfall
- Receives discharge from Skimmer 4
- Chipped concrete pipe, with no surrounding structure
- Above a rock drain bed near the top of the bank

JB17

Geographic Coordinates: 47.13748 N, 122.48926 E
Bank Location: North
Acres Drained: receives overflow from J017
Diameter: 2 feet
Composition: Metal Flap Gate
Additional Notes:

- MSGP Outfall
- Skimmer 4 bypass
- Covered by vegetation at time of finding

J018



Geographic Coordinates: 47.13859 N, 122.49085 E
Bank Location: South
Area Drained: 2.5 acres
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- Outfall was not located
- Believed to be located slightly west of the staircase outside of Building 738 at or below waterline

J019

Geographic Coordinates: 47.13812 N, 122.49026 E
Bank Location: South
Area Drained: 0.3 acres
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- Slightly west of the staircase in front of Building 738
- Approximately 5 feet above water level

J020

Geographic Coordinates: 47.13782 N, 122.48990 E
Bank Location: South
Area Drained: 32 acres
Diameter: 1.5 feet
Composition: Concrete
Additional Notes:

- MSGP Outfall
- West of a tree with exposed roots
- Located in controlled area between fabrication shop and Hangar 1

J021

Geographic Coordinates: 47.13728 N, 122.48915 E
Bank Location: South
Area Drained: 1.2 acres
Diameter: 1.0 foot
Composition: Concrete
Additional Notes:

- Moss-covered stairs lead up to the outfall
- Near the top of the bank in controlled area between fabrication shop and Hangar 1

J022

Geographic Coordinates: 47.136682 N, 122.48883 E
Bank Location: South
Area Drained: Inactive
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- Roughly 5 feet west of the bridge on C street
- Metal pipe running down to the outfall is visible from the south bank of the creek

J023

Geographic Coordinates: 47.13655 N, 122.48820 E
Bank Location: South
Area Drained: 16 acres
Diameter: 2.0 feet
Composition: Concrete
Additional Notes:

- MSGP Outfall
- About 15 feet east of a bridge and 10 feet below the top of the bank

J024

Geographic Coordinates: 47.13646 N, 122.48791 E
Bank Location: North
Area Drained: 0.3
Diameter: 0.5 feet
Composition: Concrete
Additional Notes:

- Close to the west corner of Hangar 1
- East of the security fence between the fabrication shop and Hangar 1

J025

Geographic Coordinates: 47.13608 N, 122.48767 E
Bank Location: South
Area Drained: 0.7 acres
Diameter: 1.0 feet
Composition: Concrete
Additional Notes:

- Across the center of Hangar 1 on the north bank
- Near a "Global Reach for America" tower on the south bank

J026

Geographic Coordinates: 47.13593 N, 122.48716 E
Bank Location: North
Area Drained: Inactive
Diameter: 3.0 feet
Composition: Metal Flap Gate
Additional Notes:

- Slightly east of Hangars 1and 2
- Gate is attached to a long metal pole

J027

Geographic Coordinates: 47.13562 N, 122.48654 E
Bank Location: North
Area Drained: 9.0 acres
Diameter: 1.0 foot
Composition: Concrete
Additional Notes:

- East of a set of stairs and Hangar 2 at water level and easily spotted
- MSGP Outfall

J028

Geographic Coordinates: 47.13549 N, 122.48618 E
Bank Location: North
Area Drained: Inactive
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- East of the bridge on F street
- Just above water level, difficult to identify

J029

Geographic Coordinates: 47.13541 N, 122.48625 E
Bank Location: South
Area Drained: 10.8 acres
Diameter: 0.75 feet
Composition: Concrete
Additional Notes:

- East of the bridge on F street and across from Hanger 3
- Directly above water level

J030

Geographic Coordinates: 47.13545 N, 122.48601 E
Bank Location: North
Area Drained: 1.0 acres
Diameter: 0.5 feet
Composition: Concrete
Additional Notes:

- Outfall could not be located
- Should line up with catch basins between fabrication shop and Hangar 1

J031

Geographic Coordinates: 47.13466 N, 122.48336 E
Bank Location: North
Area Drained: 0.8
Diameter: 0.75 feet
Composition: Concrete
Additional Notes: West of the bridge on McCarthy Boulevard near water near water level

J032

Geographic Coordinates: 47.13454 N, 122.48346 E
Bank Location: South
Acres Drained: Inactive
Diameter: 1.0 foot
Composition: Concrete
Additional Notes:

- About 10 feet west of the bridge on McCarthy Boulevard
- Outfall opening was filled with concrete blocks and grout

J033

Geographic Coordinates: 47.13448 N, 122.48317 E
Bank Location: South
Area Drained: 12 acres
Diameter: 2.5 feet
Composition: Concrete
Additional Notes:

- East of the bridge on McCarthy Boulevard
- West of the staircase on the south bank

J034

Geographic Coordinates: 47.13442 N, 122.48292 E
Bank Location: South
Acres Drained: Inactive
Diameter: 1.0 foot
Composition: Concrete
Additional Notes:

- Approximately 8 feet above water level
- outfall opening covered with grout

J035

Geographic Coordinates: 47.13441N,122.48250 E
Bank Location: North
Area Drained: 13.4 acres
Diameter: 1.0 foot
Composition: Concrete
Additional Notes:

- MSGP Outfall
- Large concrete structure with wing walls; easily spotted from both banks of the creek

J036

Geographic Coordinates: 47.13421N, 122.48186 E
Bank Location: North Acres Drained: 7.0
Diameter: 1.0 foot
Composition: Concrete
Additional Notes:

- MSGP Outfall
- Receives discharge from Skimmer 6
- About 2 feet below the top of the bank behind a tree; not easily spotted

JB36

Geographic Coordinates: 47.13420 N, 122.48185 E
Bank Location: North
Area Drained: J036 Overflow
Diameter: 2.0 feet
Composition: Metal Flap Gate
Additional Notes:

- Skimmer 6 bypass
- Protruding handle easily seen from shore

J037

Geographic Coordinates: 47.13442 N, 122.48146 E
Bank Location: North
Area Drained: Inactive
Diameter: 3.0 feet
Composition: Concrete with steel plate
Additional Notes:

- Approximately 10 feet west of the Clover Creek culverts

J050

Sample - not actual outfall

Geographic Coordinates: 47.12660 N 122.53367 W
Bank Location: Emerson Wetland
Area Drained: 75.4 acres
Diameter: 3.5 ft
Composition: Concrete
Additional Notes: Also receives Carter Lake overflow from drainages 52-56

J051

Sample - not actual outfall

Geographic Coordinates: 47.12731 N 122.53530 E
Bank Location: Emerson Wetland
Area Drained: 67.4 acres
Diameter: 3.0 feet
Composition: Concrete
Additional Notes

J052

Sample - not actual outfall

Geographic Coordinates: 47.13172 N 122.52669 E
Bank Location: near Carter Lake
Area Drained: 304 acres
Diameter: 1.75 feet
Composition: Concrete
Additional Notes

J053

Geographic Coordinates: 47.13320 N 122.52408 E
Bank Location: near Carter Lake
Area Drained: 1.1 acres
Diameter: 0.75 feet
Composition: Concrete
Additional Notes

J054

Geographic Coordinates: 47.13321 N 122.52363 E
Bank Location: Carter Lake
Area Drained: 19.7 acres
Diameter: 3.5 feet
Composition: Concrete
Additional Notes

J055

Geographic Coordinates: 47.13170 N 122.52394 E
Bank Location: near Carter Lake
Area Drained: 1/0 acres
Diameter: 0.75 feet
Composition: Concrete
Additional Notes

J056

Geographic Coordinates: 47.13154 N 122.52718 E
Bank Location: near Carter Lake
Area Drained: 4.3 acres
Diameter: 1.25 feet
Composition: Concrete
Additional Notes

J060

Sample - not actual outfall

Geographic Coordinates: 47.12660 N 122.51259 E
Bank Location: Wescott Hills
Area Drained: 17.5 acres
Diameter:
Composition: Concrete
Additional Notes:

J061

Sample – not actual outfall

Geographic Coordinates: 47. N 122. E
Bank Location: Infield near Bldg
Area Drained: 9.5 acres
Diameter:
Composition:
Additional Notes: Drains to sanitary sewer

J062

Sample - not actual outfall

Geographic Coordinates: 47. N 122. E
Bank Location: Bulk Tanks
Area Drained: 11.7 acres
Diameter:
Composition:
Additional Notes:

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APPENDIX D

Sample JBLM MS4 Contract Language

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SECTION 01 11 00

STATEMENT OF WORK

Version 1.28
Issued February 23, 2015

CONSTRUCTION

Pre-RFP Draft
Date: February 26, 2016

1. GENERAL DISCUSSION

1.1. Project Identification

1.1.1. Project Title: Construct Replacement Well #31 Water Well Drilling and Pumping Tests

1.1.2. IJO Number(s): MDH001044J

1.1.3. Project Package Number(s): PB1613

1.2. Description of Work

1.2.1. The Contractor shall supply all supervision, labor, equipment, and materials to perform all work in strict accordance with the umbrella contract specifications, this statement of work, and identified drawings to provide water well drilling and pumping tests. Well construction shall meet the Minimum Standards for Construction and Maintenance of Wells. (Chapter 173-160 Washington Administrative Code [WAC]).

1.2.2. The total depth for the well is dependent upon the depths and characteristics of the water-bearing zones. The goal is to drill, sample, case, screen and test a 24-inch-diameter well to a depth of 600 feet. The aquifer characteristics will be evaluated for the capability of producing high quality water at a production rate of approximately 1,000 gpm. If the desired capacity and water quality is not encountered, the test well will be advanced as a 16-inch-diameter well to a total depth of up to 1,000 feet and an additional aquifer test could be conducted on a deeper aquifer, if encountered.

The drilling method to be used is cable-tool techniques. Reverse-circulation flood-rotary and mud-rotary methods will not be allowed.

For bidding purposes, assume a 24-inch-diameter temporary casing and surface seal (Chapter 173-160-231 WAC) placed to a depth of 150 feet, 20-inch-diameter casing placed to approximately 600 feet, and 16-inch-diameter casing placed to 1,000 feet. The desired pump chamber diameter is either 20-inch or 16-inch, depending on the total depth drilled and casing advancement. The preferred well completion is to install a well screen inside the 20-inch casing installed from ground surface to 600 feet or within the 16-inch diameter casing installed from ground surface to up to 1,000 feet.

3.1.2. Dimensions and utility locations are approximate and must be verified in the field.

4. SPECIFICATIONS AND CODES

4.1. Codes

4.1.1. The Contractor shall comply with the most recent edition, at time of solicitation, of all pertinent Local, State, and Federal building and life/health/safety codes, to include the following:

a. Applicable Unified Facilities Criteria (UFC)
b. UFC 1-200-01: General Building Requirements
c. ASA IE&E SDD policy http://www.asaie.army.mil/Public/IE/doc/ASA(IEE)-SDD-policy-update-(16-Dec-2013).pdf.
d. EM 385-1-1 (http://www.publications.usace.army.mil/USACEPublications/EngineerManuals.aspx)
e. National Electric Code
f. National Fire Protection Association (NFPA) Codes
g. Army Installation Information Infrastructure Architecture Policy (I3A)
h. USACE Energy and Water Conservation Design Guide (http://www.wbdg.org/references/pa_dod_energy.php)
i. JBLM Design Standard specifications (http://www.lewis-mcchord.army.mil/designstandards/)
j. PWE-707, Standard Operating Procedure for Construction and Demolition (C&D) Waste Planning and Reporting (Available through government Project Manager)

k. Washington Administrative Code (WAC)

4.2. Specifications

4.2.1. The Contractor shall comply with all relevant specification sections as set forth in the base contract.

5. SUBMITTALS

5.1. Project Submittal Requirements

5.1.1. All submittals shall be submitted in accordance with the specification section titled SUBMITTAL PROCEDURES. Required submittals are identified in their applicable specification sections.

5.1.2. In addition to the requirements as outlined in the specification section titled SUBMITTAL PROCEDURES, an electronic copy of each submittal shall be provided to the Government. Delivery method shall be decided during the CQC coordination meeting.

5.1.3. See attached form 4288 (Submittal register).

5.2. Close-out Submittal Requirements

5.2.1. The Contractor shall provide close-out submittals as required by the contract specifications.

5.2.2. The Contractor shall provide a Letter of non retention for all contract documents, plans, drawings, and specifications after the destruction of all copies that are not required by the Contractor to meet legal requirements.

SECTION: 33 40 00 STORM DRAINAGE UTILITIES

Criteria

a. UFGS SECTION 33 40 00 STORM DRAINAGE UTILITIES
b. Underground Injection Control Program WAC 173-218
c. WA State Department of Ecology Guidance for UIC Wells that Manage Stormwater Publication 05-10-067
d. WA State Department of Ecology Stormwater Management Manual for Western Washington Publication 12-10-030
e. Permit No. WAS-026638, Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4), individual permit to JBLM
f. Permit No. WAR05000F, Nationwide Multi-Sector General Permit (MSGP), Discharges from Industrial Facilities.
g. Permit No. WAR12000F, Nationwide Construction General Permit (CGP), Discharges from Construction Activities

Changes or Criteria Notes to Unified Facilities Guide Specifications (UFGS)

Paragraph # and Title (if any)	Note to Designer	Change Text
1.3 SUBMITTALS SD-01 Preconstruction Submittals	Add this paragraph:	Pre-construction Registration Form for Underground Injection Control Well
1.5 Underground Injection Control Wells	Add this paragraph:	**Underground Injection Control Wells** Most Class V Underground Injection Control (UIC) wells must be registered with the Washington State Department of Ecology. UIC wells that do not require registration are wells that are exempt from the UIC well status as stated in WAC 173-218-050. UIC wells at single-family homes that only receive residential roof runoff or are used to control basement flooding are exempt from registration. Registration information required by the Department of Ecology must be provided to Public Works Water Program, BLDG 2012 Room 323 for registration with Ecology. Registration forms are available for single and multiple sites and can be obtained from Public Works Water Program or the Department of Ecology UIC program website. Wells must be registered prior to construction. Once registration forms are submitted a 60-day wait period starts. After the 60-day wait period the well is considered registered and authorized for installation.

Design Requirements

1. Registration forms can be obtained at UIC Registration Forms . The WA Department of Ecology has 60 days to determine if the UIC well is rule authorized and to approve the registration of the UIC well.

2. Stormwater Management (SWM) Systems.
   a. The Government's Consultant or Contractor designers are responsible for design, development, and installation of all stormwater facilities at their respective sites.
   b. Joint Base Lewis-McChord (JBLM) has been issued a Small Municipal Separate Storm Sewer System (MS4) permit (WAS-026638) for stormwater discharges. The permit requires any new development or redevelopment disturbing more than 5,000 square feet to develop a Stormwater Site Plan consistent with the requirements of the Washington Department of Ecology Stormwater Management for Western Washington (Stormwater Manual). The Site Plan shall be submitted to the JBLM Systems Manager for review. A checklist is available from the PW Environmental Division Stormwater Program that assists the designer in meeting the permit requirements.
   c. Management of stormwater must be integrated into other project aspects to meet the sustainability goals of the installation as a whole. Design stormwater systems to maintain the hydrologic functions of the site. Consider reusing stormwater on site for irrigation and landscaping. This contributes to the installation's water savings and reuse goals.
   d. Design and size stormwater facilities to accommodate stormwater runoff from all site development surfaces and all runoff from buildings in conformance with the latest adopted edition of the Ecology stormwater manual. Design goals should be to reduce or eliminate offsite stormwater flows and restore the pre-development hydrology of the project area. Designs must meet all of the requirements below.
      - The designs must comply with Section 438 of the Energy Independence and Security Act (EISA) and NPDES MS4 Permit No. WAS-026638.
      - Fence all standing water facilities with side slopes exceeding 3h:1v for safety. Complete all standing water facilities with a minimum of 6 inches of topsoil and plantings appropriate for the pond function.
      - Within housing, commercial, and organizational areas, ponds cannot be constructed with side slope exceeding 3h:1v or deeper than 2.5 feet.
      - All ponds, swales, or other like stormwater features must be vegetated and/or have amended soils added to provide appropriate function.
      - All ponds, swales, or other like stormwater features shall blend with project landscaping to the maximum extent practicable.
      - Storm drain lines and branches within the site shall be polyvinyl chloride (PVC) plastic, ductile-iron, CPEP, or HDPE pipe.
      - Infiltration rates (including topsoil and vegetation), amended or on-site soils mixes, and seed mixtures should all be addressed in the design.
      - Whenever possible, shrub beds, street plants, and similar features shall be used through rain garden type features for stormwater runoff management.
   e. Onsite treatment and infiltration: Use the Stormwater Manual and the Low-Impact Development Technical Manual for Puget Sound. Request any exceptions for approval by JBLM PW. However, consider the portions of Section 3.3 of Volume III of the Stormwater Manual pertaining to the methods for determining infiltration rates as a recommended guideline. Conduct on-site soil tests in conformance with standard engineering practices and to the satisfaction of JBLM PW. Use the soil tests to determine a short-term infiltration rate. Once determined, apply appropriate factors of safety in conformance with standard engineering practices to the short-term infiltration rate to arrive at a long-term design infiltration rate based on site conditions, in conformance with the designer's professional opinion and discretion, and the approval of JBLM PW, prior to full design. Include detailed information in the design regarding amended soil mixtures, soil depths, vegetation requirements and seed mixtures for all stormwater management features.

- JBLM prefers stormwater infiltration methods that are small, distributed throughout the project site, and as visually unobtrusive as possible. Preferred methods include elements such as car parks, rain gardens, porous pavement, cisterns, or other low-impact development elements.
- Use pervious pavements to infiltrate stormwater for parking areas in housing, commercial, and organizational areas that are not subject to industrial activities or high traffic. If there is runoff that the pervious pavement cannot infiltrate, use car parks or rain gardens to infiltrate this runoff. Car parks shall meet the car park standard for landscape and shading.
- Use sheet flow runoff to infiltration features to the maximum extent practicable. Consider safety when sheet flowing large amounts of runoff.

f. The use of underground injection control for stormwater management must meet the requirements of Chapter 173-218 of the Washington Administrative Code (WAC) Underground Injection Control (UIC) Program. Submit completed registration forms to the JBLM Stormwater Office for registration with Ecology 65 days prior to any construction of UIC facilities. Obtain registration forms and any further information from the JBLM Environmental Division.

g. Low-impact development techniques shall comply with the Low Impact Development Technical Guidance Manual for Puget SoundErosion and Sediment Control. Provide appropriate erosion and sediment controls on all construction sites that will have ground disturbance. Proper implementation and maintenance of appropriate best management practices (BMPs) is critical to control any adverse water quality impacts from construction activities adequately. Discharges must not violate the state's surface water quality standards (WAC Chapter 173-201A) and groundwater quality standards (WAC Chapter 173-200).

a. Volume II, Chapter 4 of the Stormwater Manual provides standards and specifications for BMPs during construction that are approved for use on JBLM. Consider other BMPs with proper review and approval by JBLM PW.

b. Erosion and sediment control measures at construction sites less than 7,000 square feet may be documented in the Environmental Protection Plan.

c. Submittal of a site-specific Storm Water Pollution Prevention Plan (SWPPP) is required for construction activities that will have a land disturbance of 7,000 square feet or more. For sites that disturb between 7,000 square feet and one acre, the Construction SWPPP shall to be submitted to the JBLM PW Stormwater Manager for approval.

d. Construction sites that will have a land disturbance of one or more acres (or are part of a common plan of development that will disturb an acre or greater) or projects that have multiple construction sites under one contract if the total land disturbance for all sites is greater than one acre, must be covered under the EPA's NPDES Construction General Permit (CGP). A Notice of Intent must be submitted to EPA a minimum of 14 days before starting work. A completed Permit Application shall be submitted to the Stormwater Program Manager prior to submittal to EPA. Anticipate up to 2 weeks for review for each submittal or re-submittal.

Notes to Designers on Drawing Content

Standard Details

Applicable Points of Contact

Design Standards

APPENDIX E

Example JBLM Environmental Operating Permit (EOP)

This is an UNCONTROLLED DOCUMENT printed for reference only.
The controlled document is maintained by the Stormwater Program Manager in BLDG 2012 Rm 309.

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Environmental Operating Permit

(UNIT)
JOINT BASE LEWIS-MCCHORD, WASHINGTON 98433-9500

16 2015

1. PURPOSE:

a. This Environmental Operating Permit (EOP) is a joint statement by the (UNIT) and Joint Base Lewis-McChord (JBLM) Public Works, Environmental Division (PW-ED) for meeting JBLM environmental compliance requirements. This EOP does not change or increase the legal obligations of the (UNIT).

b. This EOP signifies integration of the (UNIT) with the JBLM Environmental Management System (EMS), which provides a framework to attain a sustainable JBLM. The JBLM EMS conforms to the international standard, ISO 14001:2004. To help meet JBLM sustainability goals, PW-ED provides a selection of standardized objectives to initiate organizations with establishing their own objectives and targets (Enclosure 4). The (UNIT) has chosen to establish a recycling program. For general information on the JBLM EMS visit the intranet web page at: https://sustainablefortlewis.army.mil/EMS/.

c. The EOP and its enclosures are a comprehensive working document for managing environmental compliance. In particular, the EOP identifies recurring mission operations and the approved environmental management of those operations (Enclosure 7). The operational controls in Enclosure 7 are sectioned by functional areas that are to be copied and distributed to each appropriate functional area.

d. This Permit will be formally reviewed annually or within 60 days after the (UNIT) undergoes a change of command to update the operational procedures and information of the (UNIT).

2. ENVIRONMENTAL COMPLIANCE AND GENERAL REQUIREMENTS:

a. FL Regulation 200-1, *Environmental Protection and Enhancement*, implements the compliance requirements of federal, state, local, Department of Defense, and Army environmental regulations as applicable to JBLM. Applicable FL Regulations associated with the (UNIT) processes and requiring compliance are listed in Enclosure 3. Pertinent environmental compliance checklists are listed in Enclosure 6.

b. The (UNIT) conducts mission operations within the garrison and on the installation training areas that have the potential to affect the environment and must comply with environmental laws and regulations. The (UNIT) will inform PW-ED whenever any changes occur to mission operations that would alter the resulting environmental impacts. Contact the

EOP Coordinator (253-966-6470) in the event of a change. Soldiers who violate these requirements can be held financially liable and disciplined for their actions.

3. COMPLIANCE ASSISTANCE: PW-ED offers technical assistance on environmental compliance issues and provides environmental support equipment to aid the (UNIT).

a. The following PW-ED staff have been designated as the primary contacts to provide technical assistance on environmental issues to the (UNIT).

EOP/Pollution Prevention/Hazardous Material: ??????????, Phone
Hazardous Material and Waste technical assistance: ??????????, Phone
Environmental Compliance Inspection Team: ??????????, Phone

b. PW-ED will issue and maintain environmental support equipment, as available, to reduce potential environmental impacts and facilitate environmental compliance of organizational processes. Equipment issued with security locks and keys must remain with the specific equipment item for ready access by PW-ED personnel. See Enclosure 5 for a list of environmental support equipment assigned to the (UNIT).

4. The provisions of this EOP are effective immediately, as dated. PW-ED will formally review, and if necessary revise this EOP not later than 60 days following a change of command at the (UNIT) or each year after the effective date, whichever is sooner.

PAUL T. STEUCKE
Chief, Environmental Division
Public Works

Commander's Name
Rank and Branch
Commanding

Date:

Enclosures:
1. Environmental Policy
2. Environmental Impacts
3. Legal and Other Requirements
4. Objectives and Targets
5. Resources, Roles, and Responsibilities
6. Documentation and Training Requirements
7. Operational Controls
8. Evaluation of Compliance
9. Environmental Links and Information

DEPARTMENT OF THE ARMY
HEADQUARTERS, JOINT BASE LEWIS-MCCHORD
1010 LIGGETT AVENUE, BOX 339500, MAIL STOP 1AA
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

REPLY TO
ATTENTION OF

*JBLM PS #1

IMLM-PWE POLICY STATEMENT #1 8 January 2013

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Joint Base Lewis-McChord Environmental Policy

1. References.

a. AFI 32-7001, Environmental Management, 4 November 2011.

b. AR 200-1, Environmental Protection and Enhancement, 13 December 2007.

c. EO 13423, Strengthening Federal Environmental, Energy and Transportation Management, 24 January 2007.

d. Memorandum, Assistant Chief of Staff for Installation Management, Department of the Army, Subject: Re-Issuance and Clarification of Army Environmental Management System (EMS) Policy, 23 September 2005.

e. FL Reg 200-1, Environmental Protection and Enhancement, 1 November 2004

f. The Army Strategy for the Environment, Acting Secretary of the Army, Sustain the Mission, Secure the Future, 1 October 2004.

g. Charter, Washington Military Sustainability Partnership, Joint Regional Flag Officer Council, July 2004.

2. Intent. Incorporate elements of the International Organization for Standardization 14001 Environmental Management System (EMS) into the existing installation management structure to facilitate the establishment of environmental programs that lead to a sustainable training environment on Joint Base Lewis-McChord. The EMS approach to environmental protection requires collective responsibility of all who work on or for the installation. The goal is to instill an environmental ethic throughout the workforce similar to the manner in which responsibility for safety has become a part of everyday life.

3. Scope. This policy applies to all reserve and active component units, agencies, activities and contractors working either permanently or temporarily on Joint Base Lewis-McChord and its sub-installations.

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*This policy statement supersedes JBLM PS #1, dtd 4 June 2012

4. General. The mission of Joint Base Lewis-McChord is to support troop unit readiness and Airlift capability. Joint Base Lewis-McChord will perform this mission in concert with our stewardship responsibility to protect and conserve the environment by striving to attain an environmentally sustainable Joint Base Lewis-McChord. A sustainable Joint Base Lewis-McChord preserves for tomorrow the same opportunity to conduct training as exists today. In accomplishing our mission, we commit to:

a. Comply with all applicable environmental laws, regulations and policies.

b. Systematically identify, evaluate, and manage environmental impacts through actively pursuing improvement of an organizational EMS as prescribed by the Joint Base Lewis-McChord EMS Procedures or by acquiring an Environmental Operating Permit as approved by the Joint Base Lewis-McChord EMS coordinator.

c. Continual improvement by assessing and monitoring activities, products and services to determine their effect on the environment. Identify the significant environmental impacts and ensure they are considered when establishing objectives and targets in our environmental management programs.

d. Establish pollution prevention as our preferred method for minimizing the use of hazardous material and the generation of hazardous waste/emissions from our installation processes and activities in order to meet or exceed Army goals for prevention of pollution.

e. Strive to fully integrate relevant environmental requirements into our standard work practices and procedures so environmental awareness and compliance are a routine part of the way we conduct business.

5. This policy will be given widest dissemination. Copies of the policy will be posted on all official bulletin boards and web sites. This policy will also be available to the public through the Public Web site or upon request, through each Public Affairs Office on Joint Base Lewis-McChord.

6. For more information contact the Joint Base Lewis-McChord EMS coordinator at (253) 966-6470.

H. CHARLES HODGES, JR.
Colonel, IN
Commanding

DISTRIBUTION:
A, B, C, D, E, F, G

Enclosure 2: Environmental Impacts

The (UNIT) INSERT UNIT DESCRIPTION and MISSION PROVIDED BY THE UNIT

Table 2-1.

ENVIRONMENTAL IMPACTS ASSOCIATED WITH OPERATING ACTIVITIES

Military and Civilian operations conducted on JBLM collectively have an impact on the environment. Awareness of your impact, no matter the size, contributes to understanding the need to assist in minimizing or eliminating incidents due to ignorance or neglect of requirements. The following table identifies activities occurring on Joint Base Lewis-McChord and how they interact with the environment. These activities have the potential for causing a significant change, whether adverse or beneficial, to the environment, or to the health and safety of people.

Significant Environmental Impact	Contributing Processes/Activities
Air Emissions	• Aircraft, Vehicle and Equipment Use and Maintenance • Hazardous Material Use • Fuel Transfer/Leaking/Burning • Excavation/Grading/Clearing/Construction • Energy Use
Spills/Releases to Air/Water/Land	• Aircraft, Vehicle and Equipment Use and Maintenance • Hazardous Material Use • Fuel Transfer/Leaking/Burning • Excavation/Grading/Clearing/Construction • Energy Use • Disposal of Material/Waste
Noise	• Aircraft, Vehicle and Equipment Use and Maintenance • Excavation/Grading/Clearing/Construction
Loss of Habitat/Flora	• Excavation/Grading/Clearing/Construction
Depletion of Natural Resources	• Water Use

Enclosure 3: Legal and Other Requirements

The JBLM commitment to comply with all applicable Federal, State, and local environmental requirements is contained in the Corps and Garrison Environmental Policies (Enclosure 1) and the FL Regulations (FL Regs), specifically in FL Reg 200-1 with overlap in other installation regulations as outlined below in Table 3-1. Table 3-2 provides the titles of the FL Regulations applicable to this EOP. PW-ED is responsible for keeping the installation current on legal and other requirements associated with environmental compliance.

Table 3-1. Environmental and associated legal requirements for processes conducted by the (UNIT)

	JBLM/FL Regulation							
Operations	11-5	55-2	200-1[a]	350-30	385-1	420-1	420-10	420-5
Company and Battalion Headquarters			E, F, K, U					
Repair and Utilities[b]	●					●	●	
Field Training			L, R, S	●				●
Maintenance Activities and Motor Pool Operations			M, N					
Deployment and Redeployment			E, F, J					
Hazardous material and hazardous waste[c]		●	E, F, K, U		●			
Solid waste disposal[d]			G					
Oil-water separators			I					

[a] Letters in the 200-1 column refer to appendices in FL Reg 200-1.
[b] Additional guidance may be found in Enclosure 9, *R&U Task List*.
[c] Additional guidance may be found in Enclosure 9, *Hazardous Material and HMCC*.
[d] Additional guidance may be found in Enclosure 9, *HAZMAT, Solid Waste, and Recycling Quick Reference Guide*.

Table 3-2. FL Regulations applicable to the EOP

JBLM/FL Reg	Title	Areas covered
11-5	Water Conservation	Water Management
55-2	I Corps and JBLM Transportation Service	Transportation of HM
200-1	Environmental Protection and Enhancement	Environmental Regulations
350-30	FL Range Regulations	Field training
385-1	Installation Safety and Occupational Health Program	Hazard communication
420-1	Facility Energy Management Program	Energy Management
420-10	Minor Construction, Maintenance, or Repair of Real Property	Repair and Utility
420-5	Procedures for the Protection of State and Federally Listed Threatened, Endangered, Candidate Species, Species of Concern, and Designated Critical Habitat	Training restrictions

Enclosure 4: Objectives and Targets

Listed below is a set of suggested objectives from which the unit is to select and implement one or two objectives they will emphasize during the year. These objectives support the JBLM Sustainability Goals and EMS Objectives either directly or indirectly.

The JBLM EMS has required that annual organizational objectives be established to support the JBLM Sustainability Program's strategic 25 year goals and FL EMS objectives and targets.

ISO 14001-2004 provides guidance for the establishment of objectives and targets at relevant functions and levels within the organization. It goes on to say **"The objectives and targets shall be measurable, where practicable, and consistent with the environmental policy, including the commitments to prevention of pollution, to compliance with applicable legal requirements and with other requirements to which the organization subscribes, and to continual improvement."**

The objectives and targets chosen by the (UNIT) to support the JBLM Sustainability Program and EMS Objectives are listed below.

LIST the OBJECTIVES THE UNIT HAS SELECTED TO WORK ON DURING THE YEAR.

OBJECTIVES THE UNIT HAS SELECTED TO WORK ON DURING THE YEAR.

- (first objective)

- (second objective)

DO NOT cut and paste the targets from below. Only identify the objective identified by the "bullet" (e.g. Develop a Commute Trip Reduc.

Listed below are the objectives for the (UNIT) to consider implementing in the future as resources allow. These objectives support the JBLM Sustainability Goals and EMS Objectives either directly or indirectly.

Air Quality:

- Develop a Commute Trip Reduction Program that promotes alternative commute methods instead of driving a single occupied vehicle (SOV). This is in accordance with the Commute Trip Reduction Law of Washington State. This will reduce traffic congestion, tailpipe emissions, and fuel usage.

  1. Appoint an Employee Transportation Coordinator to provide information on commute alternatives and to coordinate with the installation Rideshare POC 253-966-1776.

  2. Identify number of personnel currently using some form of alternative transportation (i.e., biking, bus, train, vanpool, carpool).

3. Identify personnel wanting to explore commute options.

- Anti-Idle vehicle campaign

  1. Identify if the practice of allowing vehicles to idle over three minutes upon first starting up for the day, or idling over one minute while waiting exists in the organization. (This does not include pauses to observe traffic signals or signs.)

  2. Develop a communication plan or organizational policy to eliminate this practice which causes the unnecessary emission of air pollutants and the waste of fuel.

- Request alternate fuel vehicles from GSA

  1. Establish base line

  2. Request submitted

  3. Use E85, CNG and Bio diesel in vehicles equipped for those fuels

- Consolidate administrative trips across the installation

  1. Use established distribution systems

  2. Car pool to on post classes and meetings.

- Refuel vehicles in the cool part of the day.

Energy:

- Establish an energy monitoring program.

  1. Appoint an Energy conservation officer

  2. Consolidate appliances used for personal use, e.g. coffee pots, refrigerators and microwaves.

  3. Turn off monitors and speakers at the end of the day

  4. Lights, radios, paper shredders and other electric appliances/equipment turned off when not in use

  5. Close windows when heat or air conditioning is running

  6. Adjust thermostats, when possible, to accommodate all

  7. Conduct and record periodic checks.

Products and Materials:

- Establish a Recycle Program

  1. Appoint a recycle team

  2. Establish a recycling collection area for installation recycling containers (includes office paper, mixed paper, newspaper, cardboard, aluminum cans, ~~glass,~~ and plastic).

  3. Establish additional recycling collection for batteries, ink cartridges, eye glasses, running shoes, old stamps etc.

  4. Check and record recycling progress

- Use and requisition "Green" products – those products that are manufactured with recycled materials. These products are generally designated with either a recycling or tree symbol next to the item description in catalogs.

- Requisition all your supplies through approved sources – all hazardous materials must be purchased through the Hazardous Material Control Center.

Sustainable Training Lands:

- Establish an education program

  1. Report dumping

  2. Don't litter

  3. Dispose of unused products and empty product containers in an approved manner

Water Resources:

- Establish a water conservation program

  1. Comply with FL Regulation 11-5, minimize water use

  2. Report water leaks

  3. Increase employee awareness of water conservation measures through management memos, verbal reminders, or newsletter messages.

  4. Install signs that encourage water conservation in restrooms or work areas where water is used.

  5. Seek employee suggestions of water conservation ideas

- Prevent contamination to groundwater

- No dumping into the storm-water drain.

- Use Best Management Practices – clean up trash, use car wash facilities.

- Report spills immediately.

- Maintain personal and official vehicle to eliminate oil and gas leaks to prevent them from entering the storm or sewer drain

Enclosure 5: Resources, Roles, and Responsibilities

Although the PW-ED is the primary organization to manage environmental programs at JBLM, commitment from all organizations ensures effective implementation and supports the environmental programs. Table 5-1 provides a list of required appointments by each unit's command for proper implementation of environmental programs.

In addition, the PW-ED provides pollution prevention (P2) equipment to the Unit to avoid and minimize pollutant discharges and emissions. PW-ED tracks, monitors, and maintains this equipment as it is included in the installation property book. See Table 5-4 for a list of P2 equipment assigned to the Unit. Table 5-5 includes a list of building numbers and brief descriptions of those buildings assigned to the (UNIT).

Table 5-1. Personnel positions required for environmental programs at each (UNIT)

Appointments	Appointee	Document Location	Frequency	Submit to	Annual Review	JBLM/FL REG
Energy Conservation Officer Energy Non Commissioned Officer Building Energy Monitor	Enter the ECO and for each unit in table 5-3	Provide POC to PW-ED Energy Office	Upon appointment	PW-ED	No	JBLM Reg 420-1
Environmental Officer (EO) Hazardous Material Technician (HMT) Hazardous Waste Technician (HWT)	Enter the EO, HM and HW Techs for each unit in table 5-3	Copy at PW Environmental Services and Unit	Upon appointment Annual refresher training required	PW-ED	Yes	FL Reg 200-1 Para 2-12
Recycling Coordinator	Enter POC in table 5-3	Provide POC to PW Recycling				JBLM PS# 20 Recycling

Energy Coordinator: In accordance with JBLM Reg 420-1, the Unit will identify energy coordinators to implement an Energy Program for each Unit. The energy coordinators include Energy Conservation Officers (ECO), Energy Non-Commissioned Officers (ENCO), and Building Energy Monitors (BEM) to insure effective energy management at each assigned building and living area. Energy coordinators are to attend Energy Awareness training classes

made available by PW-ED. Refer to JBLM Reg 420-1for the responsibilities of the energy coordinators.

Environmental Officer: In accordance with FL Reg 200-1, the Unit is to appoint in writing an Environmental Officer (EO) at the Brigade/Battalion level and at the Company/Battery/Troop level. Table 5-2 describes EO appointments by position and rank. A list of authorized EOs to the Unit is provided in Table 5-3. The EO will serve as the single point of contact in the Unit for environmental matters. The EO will coordinate (UNIT)/agency compliance with applicable environmental regulations.

Table 5-2. (UNIT) EOs will be appointed by position or rank as follows:

Brigade/Battalion	S-4 Officer, Support Operations Officer (SPO), as applicable to the organization, or equivalent Officer as designated by the Commander
Company/Battery/Troop	Staff Sergeant or above

The EO must be certified by completing the Environmental Operations Management Course and Environmental Compliance Inspection Course (see Enclosure 6 for training certification information). For further details on the responsibilities of the EO refer to FL Reg 200-1 paragraph 2-12, d.

Hazardous Material Technician and Hazardous Waste Technician: The Hazardous Material Technician will be appointed based on the related hazardous material risks associated with the tasks performed. The Hazardous Waste Technician will be a Specialist or above. The technicians must be appointed by orders and certified by completing the Environmental Operations Management Course and Environmental Compliance Inspection Course (see Enclosure 6 for training certification information). A list of the (UNIT) appointed technicians is provided in Table 4-3. Responsibilities of the technicians are outlined in FL Reg 200-1 paragraph 2-12, d.

Table 5-3. UNIT appointed EOs and hazardous material/waste technicians[e]

Unit	Building	Position	Rank	Last Name	First Name	E-mail address	Official Phone #
		EO					
		HM Tech					
		HW Tech					
		Energy					
		Recycle					
		EO					
		HM Tech					
		HW Tech					
		Energy					
		Recycle					
		EO					
		HM Tech					
		HW Tech					
		Energy					
		Recycle					
		EO					
		HM Tech					
		HW Tech					
		Energy					
		Recycle					
		EO					
		HM Tech					
		HW Tech					
		Energy					
		Recycle					

[e] *Source:* This list of appointees was provided by UNIT on DATE.

Table 5-4. P2 Equipment List for the (UNIT) This table will be completed by PW using the building list and updated hand receipt. Prior to accomplishing this verify with the equipment manager (Tim Weldin) that the unit has updated its hand receipt. Expand listing as appropriate.

Building Number						
(UNIT)	**P2ID**	**Serial #**	**Description**	**Make**	**Model**	**NSN**
Building						
Building						
Building						

Table 5-5. Water System Pretreatment Equipment List for (UNIT). This table will be completed by PW. Using the listing of buildings provided by the unit and recorded information in PW Online Maps. This table is to make the unit aware of other equipment in their area for which they may provide some overwatch.

Building Number	Equipment Description
	Oil Water Separator

Table 5-6. Buildings associated with the (UNIT) Identify ALL buildings, including storage buildings, controlled by the unit. Expand the table as appropriate.
As of Date of Survey
Parent Headquarters (example: Directorate, Battalion or Brigade)

Unit (Official Unit Name, UIC and all DODAACs)										
Building	**Wing**	**Floor**	**Room**	**Description**	**Recycle Container**	**Trash Dumpster**	**HM**	**HW**	**IU**	**Notes**
Unit (Name, UIC and all DODAACs)										
Building	**Wing**	**Floor**	**Room**	**Description**	**Recycle Container**	**Trash Dumpster**	**HM**	**HW**	**IU**	**Notes**
Unit (Name, UIC and all DODAACs)										
Building	**Wing**	**Floor**	**Room**	**Description**	**Recycle Container**	**Trash Dumpster**	**HM**	**HW**	**IU**	**Notes**

For these columns answer Yes (Y) or No (N)
Recycle Container= Is recycling container outside the building?
Trash Dumpster = Is a dumpster outside the building?
HM = Is Hazardous Material Stored here?
HW = Is Hazardous Waste Stored here?
IU = In Use + Is HM used here? (This does not include everyday household cleaning supplies)

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Enclosure 6: Documentation and Training Requirements

Requirement	Document Location	Frequency	Retention time	Submit to	FL REG 200-1 unless otherwise stated
Checklists					
Battalion Program Management Checklist (HJB Form 948)	Unit Environmental Compliance Binder	Quarterly	N/A	N/A	N/A
Program management Checklist (HJB Form 949)	Unit Environmental Compliance Binder	Quarterly	N/A	N/A	N/A
Hazardous waste (HW) accumulation facility inspection (As authorized, use checklist, HJB Form 950, 950-1 or 950A) (Available on the JBLM publications web site.)	At Unit for: 950 - 5 years 950-1 - 5 years 950A - 3 years	Weekly	5 years	N/A	Appendix F, Para 8
HM storage facility inspection (Use checklist, HJB Form 951) (Available on the JBLM publications web site.)	At Unit for one year in Environmental Compliance Binder	Quarterly inspection of each storage facility	1 year	N/A	Appendix E, Tab 3
Operational Area Checklist (HJB Form 952)	Unit Environmental Compliance Binder	Weekly	N/A	N/A	Appendix M, Para 2 Appendix N, Para 2

Requirement	Document Location	Frequency	Retention time	Submit to	FL REG 200-1 unless otherwise stated
Inventories					
Current HM inventory (HJB Form 953)	Unit hazard communication station	Continuing; keep current	Maintain a current list of each HM in stock	N/A	FL Reg 385-1
HM inventory and MSDS of items procured outside of the HMCC[f] (HJB Form 953)	Unit hazard communication station	Quarterly	Maintain a current list of each HM in stock	HM quarterly inventory coordinator, 967-4786	Appendix D, Para 5
Material safety data sheet (MSDS) for each HM	Unit hazard communication station	Continuing; keep current	Keep an MSDS for each item on the current HM inventory.	N/A	FL Reg 385-1
Labels on HM with the following information: (i) Identity of hazardous chemical (ii) Appropriate hazard warning (iii) Name and address of chemical manufacturer HM labels must match information on inventory and MSDS file.	Affixed to each HM container.	All times	From procurement to disposal	N/A	29 CFR 1910.1200 (f) (1)
Reports					

[f] Purchase HM through the HMCC, unless otherwise authorized by the Pollution Prevention Program Manager in writing. Authorization must be available for on-site inspections.

Requirement	Document Location	Frequency	Retention time	Submit to	FL REG 200-1 unless otherwise stated
Report of HM procured outside of HMCC[f]	Copy at (UNIT)	Annual	N/A	HM quarterly inventory coordinator, PW-ED. 253-967-4786	Appendix D, Para 5
Compliance Inspection Verification Documents	Copy at (UNIT)	Semi-annual inspections conducted by PW-ED	5 years	PW-ED, 253-966-1600	Appendix E tab 3 b(1) Appendix F, Para 8 d
Plans					
(UNIT) spill contingency plan	(UNIT) hazard communication station & Program book	Update when changes occur	Maintain current document	N/A	Appendix E, Para 17; Appendix F, Para 9; Appendix K
Written hazard communication program	(UNIT), available upon request	Update when changes occur	Maintain current document	N/A	FL Reg 385-1 and 29 CFR 1910.1200
Hazard communication program monitoring and auditing	N/A	Recommended annually	N/A	N/A	FL Reg 385-1
Training and Certification					
EO, HMT, and HWT Environmental Operations Management (EOM)Course	Copy of certificate at (UNIT) in the Program book	Within 60 days after appointment	EOM training certification is valid for one year.	PW-ED, 967-4786	Para 2-12; Appendix J

Requirement	Document Location	Frequency	Retention time	Submit to	FL REG 200-1 unless otherwise stated
EO, HMT, and HWT Environmental Operations Annual Refresher	Copy of certificate at (UNIT) in the Program book	Annual	Refresher training certification renewed each year.	PW-ED, 253-967-4786.	Para 2-12; Appendix J
(UNIT) spill contingency plan familiarization training	(UNIT) training records	Annually	One year	N/A	Appendix E, Para 17; Appendix E, Para 9; Appendix J
ODC Certified Technician training	Copy of certificate at (UNIT) and forward copy to Pollution Prevention Program Manager	N/A	N/A	Copies of certification are to be submitted to the HMCC, building 9669 and the Pollution Prevention program manager in building 1210.	Appendix H, Para 12.
Asbestos Training	PW-ED	Annual	N/A	PW-ED, 253-966-1775.	Appendix J, Para 3c
Energy Awareness Training for Energy Coordinators	N/A	Quarterly	N/A	PW-ED, 253-966-1801.	JBLM Reg 420-1
Hazard communication training (Program initiation training and substance specific training)	N/A	One time for new personnel and each time for new hazardous material products	N/A	N/A	FL Reg 385-1 and 29 CFR 1910.1200

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Enclosure 7: Operational Controls

Operational controls provide direction on how to control situations to avoid or reduce the adverse environmental impacts of various processes.

Below is a list of operations conducted by the (UNIT) and associated operational controls derived from legal requirements and/or best management practices.

Insert ALL Operational Controls from Unit OLD EOP (submission document).

Enclosure 8: Evaluation of Compliance

Evaluation of compliance with legal and other requirements is a continual process. This is accomplished in a variety of ways including inspections and management checklists. The Environmental Officers and Hazardous Material Technicians of the (UNIT) shall keep records of the completed checklists and the results of inspections.

Inspections
The Public Works Environmental Compliance Inspection Team (ECAT) generally gives notice prior to inspections, but may on occasion conduct no-notice inspections, particularly for sites that have had deficiencies in the past or repeat deficiencies on subsequent inspections. The ECAT responds to complaints with a visit to determine if a full compliance inspection is warranted. When an external agency inspects JBLM there is NO prior notification given. Therefore it is necessary that each EO be aware where all the paperwork is located and have access to all hazardous material and hazardous waste accumulation areas.

If the ECAT inspection finds deficiencies of a serious nature or that are repeat deficiencies from past inspections the deficiency findings can be forwarded up the chain of command to the Chief of Staff, I Corps. The inspected (UNIT)/activity shall provide a written documentation of all corrective actions taken as a result of the findings. This document shall list the deficiencies, corrective action taken, and a plan to prevent a re-occurrence of the same finding in the future.

Checklists:
The EO maintains an Environmental Compliance Program Book with checklists provided by PW-ED. The checklists focus on hazardous material and hazardous waste accumulation areas. The following checklists are included in the Environmental Program Book maintained by the EO. For more information on these checklists, refer to Enclosure 6.

Environmental Compliance Program Area Checklists

Checklist Name	Form Number	Frequency of inspection
Battalion Program Management Checklist	HJB 948	Quarterly
Program Management Checklist	HJB 949	Quarterly
Hazardous Waste Management Checklist	HJB 950	Weekly
Hazardous Materials Management Checklist	HJB 951	Quarterly
Operational Area Checklist	HJB 952	Weekly

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Enclosure 9: Operating manuals, hyper links and other information

This section is intended to provide general information that is or may be useful to the unit. If some items are clearly not related to the unit, they can be removed (e.g. water purification systems).

Contents

Customer Reference JBLM Environmental Services

Hazardous Material and HMCC

High Pressure Hot Water Washer Operations

Lightweight Water Purifier (LWP) System Field Training

Reverse Osmosis Water Purification Unit

Tactical Water Purification Unit

Green Procurement / Sustainable Acquisition

Environmental Guidance for Chlorinated Water Management

Wash Rack SOP

The following are links to other documents referenced in this EOP.

JBLM Environmental Information Share Point: https://home.army.mil/sites/cnt/jblm/dpw/SitePages/JBLM_Environmental_Information1.aspx

JBLM Publications: https://intra.lewis-mcchord.army.mil/dhr/asd/publications.htm

Requests for various services available through Public Works: http://www.lewis-mcchord.army.mil/publicworks/

JBLM Recycling and Refuse Services: http://www.lewis-mcchord.army.mil/publicworks/sites/services/dumpsters.aspx

HMCC External SOP: https://home.army.mil/sites/cnt/jblm/dol/bms/BMS%20approved%20SOP/Supply%20Division%20SOPs/DOL_ISD_SOP_1200C_HMCC_1_Hazardous_Material_Control_Center_(HMCC)_External_SOP.pdf

Energy Regulation with Checklists: https://intra.lewis-mcchord.army.mil/dhr/forms/hfl/Publications/FLReg/420-1/JBLM%20Regulation%20420-1%20Facility%20Energy%20Management%20Program.pdf

R&U Task List https://intra.lewis-mcchord.army.mil/dhr/forms/hfl/Publications/FLReg/420-10/JBLMReg420-10_(2014).pdf

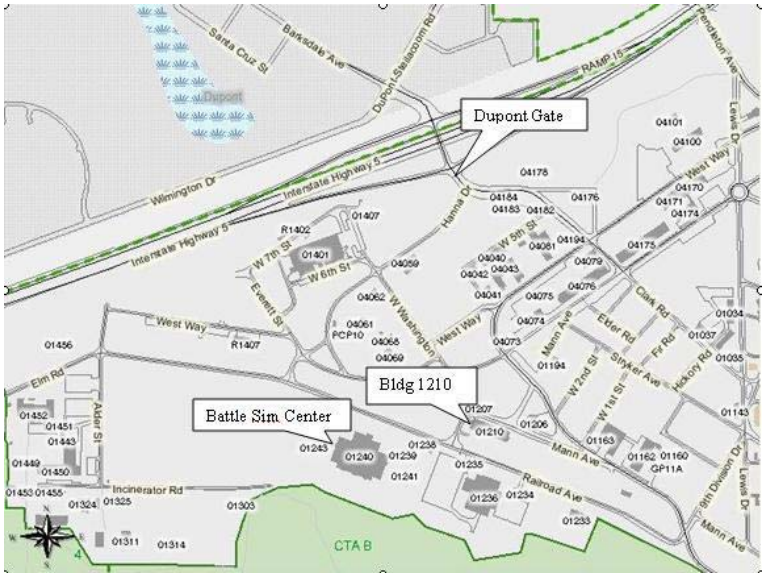
Preventive/Corrective Action Request Form: http://www.lewis-mcchord.army.mil/publicworks/sustainability/EMS/pcar.aspx.

Yakima Training Center Public Web site for contact information and services: http://www.lewis-mcchord.army.mil/yakima/

Yakima Training Center Share Point: https://home.army.mil/sites/cnt/ytc/SitePages/Home.aspx

Customer Reference
JBLM Environmental Operations Office
(Building 1210)

1. Background: The JBLM Environmental Operations (EO) consolidates the resources of the pollution prevention and hazardous waste programs, and provides assistance to units and activities in the proper management, storage, and disposal of Hazardous Materials (HM) and Hazardous Waste (HW). This includes the issuance of HW containers and supplies, the maintenance of certain environmental equipment, training in environmental practices and policies, and environmental response to hazardous spills. EO is located in Building 1210 and can be reached at (253) 967-4786.



2. Establishing your account with Environmental Operations: In order to receive equipment, training, and service, units and activities must first apply for an Environmental Operating Permit (EOP) and establish an account with EO. Both of these can be accomplished in Bldg 1210. First, coordinate with the Installation EOP Coordinator for an EOP packet and a briefing on your other requirements for establishing an EOP then; turn in the following completed documents to the EO service counter.

Military units must submit:

- Customer Service Agreement (CSA) Form identifies personnel filling the positions below. It is to be signed by the Unit Commander and is valid for one year from the date of signature for the current Commander. It must be resubmitted upon Change of Command.

  1. Primary Environmental Officer
     - Brigade/Battalion: E-7 or above
     - Company/Battery/Troop: E-6 or above
  2. Primary Waste Technicians may be E-5 or below.

- Attendance at the Environmental Operations and Maintenance class requires attendees be on a current CSA.

Civilian activities and service contractors must submit:

- Customer Service Agreement (CSA) Form identifies personnel filling the positions below. It is to be signed by the Project Manager/Supervisor and is valid for one year from the date of signature for the current Manager/Supervisor. It must be resubmitted upon change of Manager/Supervisor`.

  3. Primary Environmental Officer
     - Supervisor
  4. Primary Waste Technicians may be designated employee.

- Attendance at the Environmental Operations and Maintenance class requires attendees be on a current CSA.

To complete these documents you will need to know your unit activity's DODAAC and UIC. If your units or activity does not have a DODAAC, you must know your MIPR, IJO, or contract number. This information must be valid and current. You must also identify locations within your assigned area(s) used for the storage of HM and the generation and storage of HW. For military units, this can include:

- Motor Pool(s), by building number

- Company/Troop/Battery Offices, by building numbers/room numbers, including
  1. Supply rooms
  2. Arms Room
  3. R&U
  4. Mower sheds
  5. NBC Room
  6. Any other location where HW is generated or HM is stored

- Hazardous Material Sheds (by ED number)

- Hazardous Waste Sheds (by ED number)

For civilian activities and service contractors, this can include

- Motor Pool(s), by building number

- Workshops and Offices, by building numbers/room numbers
- Lay down yard(s), by location

- Hazardous Material Sheds (by ED number)

- Hazardous Waste Sheds (by ED number)

Completed documents must be turned in as soon as possible and must be kept up to date to accurately reflect current command/supervisor and environmental personnel. It must be renewed yearly Sample documents can be found at the end of this SOP. In order to ensure a smooth transition, Battalion and Brigade Level

Environmental Officers from newly arriving units should meet directly with the Hazardous Waste Program Manager in Bldg. 1210, or by calling 253-966-6458.

3. Environmental Training: Per FL Regulation 200-1, all Environmental Officers, Hazardous Waste Technicians, and Hazardous Material Technicians are required to complete the Environmental Operations Management Course within 60 days of appointment. This one-day course addresses HM and HW management practices, applicable environmental regulations, pollution prevention opportunities and recycling programs. Registration requires submission of the Request for HM/HW and Compliance Training noted in Section 2. All assigned environmental personnel must also complete an annual refresher course. This refresher course reviews and updates hazardous material and hazardous waste regulations and procedures. The training course schedule can be found on the JBLM intranet at https://publicworks.lewis.army.mil/sites/services/default.asp#enrdtraining or at the EO office, Bldg 1210 (253-967-4786). When attending the course, personnel must have a copy of their Appointment Orders and Request for HM/HW and Compliance Training.

4. HM Procurement, Use, and Storage: On JBLM, the Hazardous Materials Control Center (HMCC), Bldg 9669, serves as the central procurement and supply point for HM. Purchase of HM with a Government Purchase Credit Card is generally not authorized, unless exempted through the Pollution Prevention Office, 253-966-6469. Through the Environmental Operations Management Course, Environmental Operations instructs personnel in the proper procurement, use, and storage of HM. This includes the use of storage sheds and polypacks, which can be obtained through the EO office. Primary HM storage should be in the C-Shed assigned to your unit or activity. If you do not have an assigned C-Shed or need more storage space, you must contact EO to obtain additional storage sheds.

5. Servicing Environmental Equipment: Environmental Equipment includes Pollution Prevention Equipment and HW Sheds. Pollution Prevention equipment reduces the amount of hazardous materials consumed and hazardous waste generated. Such equipment can be found in vehicle maintenance facilities and outside of arms rooms, and include, but are not limited to the following: solvent tanks for cleaning weapons or parts, oil can crushers, dry sweep caddies, used fuel and antifreeze tanks, and vehicle fluid transfer caddies. To be issued environmental equipment, units, activities, and contractors must have an active account with the Installation Property Book Office and an EOP. Environmental equipment will be issued through Building 1210 and added to your Installation Property Book Hand Receipt or Durable Property listing. To request and receive this equipment, contact the Pollution Prevention Program at 253-966-6449, for servicing of this equipment, contact 253-967-4786.

6. HW Storage and Disposal: The Environmental Operations Management Course also instructs personnel in the proper storage and disposal of HW. Personnel must contact EO to obtain HW containers and labels. HW must be properly labeled and containerized prior to pick up. Each unit or activity is assigned an Environmental Operations Technician who will pick up accumulated HW on a regular basis.

7. Spill Response: Any spill of petroleum products or hazardous substances must be reported by calling JBLM Emergency Services (911). Emergency Services will contact PW Environmental Operations, who will follow up and respond as needed. Units and activities must also have a spill contingency plan. Further guidance regarding spills and spill contingency planning can be found in FL Regulation 200-1

CUSTOMER SERVICE AGREEMENT
PW Environmental Operations Hazardous Waste Management

In order to provide the customer with excellent service the information below is required. Please complete the form and have the Commander or Supervisor sign for requested services at each location. Submit the completed form to Public Works Environmental Operations Branch building 1210.

Parent Organization (MSC/Directorate):		UIC:
Requesting Organization or Activity:		DODDAC:
Commander / Supervisor Name: (Last):		(First):
Grade/Rank/Title:	**Email:**	**Phone:**
Budget Authority's Name: (Last):		(First):
Grade/Rank/Title:	**Email:**	**Phone:**

Quarterly invoices for waste management services will be submitted to the supported unit or activity for reimbursement through the JBLM Resource Management Office based upon annual IMCOM funding guidance. Mismanaged or down-graded hazardous materials will result in increased waste disposal charges required to process this waste for offsite disposal. These charges include but are not limited to; laboratory analysis, characterization, profile documentation preparation, container, labeling and special waste charges imposed by DLA-DS, as needed to transport and dispose of the waste IAW federal, state and local regulations. I also understand that this delegation will supersede any currently on file for my unit or activity.

I understand that the Persons listed below are the sole individuals authorized to request supplies, containers, bulk pick up services, sign for Pollution Prevention Equipment and adjust services for my unit or activity. This agreement will expire one year from date signed and must be updated annually.

Commander/Supervisor Signature: **Date:**

Person(s) Authorized to Request Services and Containers

Please contact PW Environmental Operations Branch concerning services available at 253-967-4786.

Primary Environmental Compliance Officer:

Name: (Last): (First): Grade/Rank: Phone:

Primary Hazardous Waste Technician:

Name: (Last): (First): Grade/Rank: Phone:

Additional Authorized Personnel:

Name: (Last): (First): Grade/Rank: Phone:

Name: (Last): (First): Grade/Rank: Phone:

Name: (Last): (First): Grade/Rank: Phone:

Name: (Last): (First): Grade/Rank: Phone:

Name: (Last): (First): Grade/Rank: Phone:

Name: (Last): (First): Grade/Rank: Phone:

Name: (Last): (First): Grade/Rank: Phone:

HJB Form 223, Feb 2015 **First Edition** **IMLM-PWE**

Hazardous Waste Containers are located in or in the vicinity of the following building(s): (also indicate the primary activity at the site)

Building Number: Activity:

Container Site Type	***Shed / Tank Number***	***Shed / Tank Number***	***Shed / Tank Number***
Hazardous Material Shed			
Hazardous Waste Shed			
Dry Sweep Box			
Solvent Tank			
Used Antifreeze Tank			
Used Oil Tank			

Building Number: Activity:

Container Site Type	***Shed / Tank Number***	***Shed / Tank Number***	***Shed / Tank Number***
Hazardous Material Shed			
Hazardous Waste Shed			
Dry Sweep Box			
Solvent Tank			
Used Antifreeze Tank			
Used Oil Tank			

Building Number: Activity:

Container Site Type	***Shed / Tank Number***	***Shed / Tank Number***	***Shed / Tank Number***
Hazardous Material Shed			
Hazardous Waste Shed			
Dry Sweep Box			
Solvent Tank			
Used Antifreeze Tank			
Used Oil Tank			

Building Number: Activity:

Container Site Type	***Shed / Tank Number***	***Shed / Tank Number***	***Shed / Tank Number***
Hazardous Material Shed			
Hazardous Waste Shed			
Dry Sweep Box			
Solvent Tank			
Used Antifreeze Tank			
Used Oil Tank			

Building Number: Activity:

Container Site Type	***Shed / Tank Number***	***Shed / Tank Number***	***Shed / Tank Number***
Hazardous Material Shed			
Hazardous Waste Shed			
Dry Sweep Box			
Solvent Tank			
Used Antifreeze Tank			
Used Oil Tank			

Hazardous Material and HMCC

1. HAZARDOUS MATERIAL.

a. Hazardous Material (HM). HM is a useful product that requires special management because in a particular form or quantity it may pose an unreasonable risk to human health or the environment. Manufacturers of HM must provide a label that identifies the contents, hazards and precautions.

b. Identification of HM. Not all products are easily identifiable as a HM because we use them daily without a second thought. For example, many window cleaners are classified as HM. When there is a question about whether a product is a HM call 253-966-0465.

c. Storage of HM. The contents of hazardous materials can make them even more dangerous if they are inadvertently combined. Vapors and leaks from incompatible materials can create an explosive and deadly mixture. Proper storage requirements are generally identified in the Material Safety Data Sheet (MSDS). Questions concerning proper storage should be directed to 253-966-0465.

d. General Storage Considerations:

(1) Compatibility. Some products cannot be stored together. Attached is a compatibility chart showing incompatible chemicals.

(2) Ventilation. Some products require exhaust ventilation, particularly if the product is dispensed in the storage Facility. See the MSDS, call your Environmental Advisor, or call 253-966-6470.

(3) Fire protection. Storage Facilities must meet fire codes for the type of products stored. Questions concerning fire protection compliance should be directed to the JBLM Fire Department, Fire Prevention Branch 253-966-7154.

2. HAZARDOUS MATERIAL CONTROL CENTER (HMCC). The mission of the HMCC is to provide all JBLM supported units/activities with a "single stop" Facility for hazardous material products. This Facility is the only authorized procurement source for HM on JBLM. The HMCC stocks the majority of approved HM products used on JBLM which allows unit s to reduce their individual stock inventories. The External SOP for the HMCC can be accessed at the following link: https://home.army.mil/sites/cnt/jblm/dol/bms/BMS%20approved%20SOP/Supply%20Division%20SOPs/DOL_ISD_SOP_1200C_HMCC_1_Hazardous_Material_Control_Center_(HMCC)_External_SOP.pdf

High Pressure Hot Water Washer
Operating Instructions
Randtech Model 4000

Pre-Operation Checklist

- Check fuel in fuel tank to insure the tank is full. Refuel with diesel fuel only! Warning: Do not use mogas. It may cause an explosion!!

- Hook-up hose and wand assembly by means of twist connect fitting (if not already installed).

Start-up

- Turn pump switch on at the pressure washer module. Water must be flowing thru trigger gun and nozzle before continuing.

- Turn on hot water generator at panel on top. If the hot water burner does not ignite within 20 seconds, turn switch off. Check fuel level. If unit still does not ignite call work order desk. Do not leave the unit on.

- Check for leaks.

- Begin cleaning.

Shut-down:

- Turn hot water generator off. Allow pump to continue to run until water is cool to touch. This should take approximately approx 30 seconds.

- Turn pump off (water should shut-off automatically).

- Remove hose assembly for storage if desirable or place trigger gun in wand holder if available.

- Refuel machine for next user.

- Freeze control operation:

- Unit will weep water when temperatures drop below freezing or if electrical power to unit is interrupted. Do not attempt to stop water flow if the unit is weeping water at any time. Call the PW Work Order desk for service.

WARNING

Water Temperature in pump cannot exceed 140°F. Failure to open gun while pump is running, or for a 2 minute period, will cause a temperature rise, damage pump, and void warranty.

8 February 2011

MEMORANDUM FOR RECORD

SUBJECT: Lightweight Water Purifier (LWP) System Field Training

1. Environmental controls are necessary to protect our natural resources and to comply with environmental laws and regulations. This memo provides guidance for field training exercises utilizing the LWP systems at Joint Base Lewis-McChord.

2. The primary designated freshwater LWP training location is the storm water detention pond system at Eco-Park and the only designated salt water training location is Solo Point. Access coordination for either of these sites must be made with Public Works-Environmental Division (ED) (253-967-2837) and Range Control (253-967-6277/5060). Solo Point access may require coordination with Military Police.

3. Unit s conducting the field training exercises should use the minimum amount of chemicals and produce the minimum amount of drinking water and associated wastewater required to achieve their training requirements. Disposal of excess or unused chemical concentrate or undiluted chemicals in the field is strictly prohibited. Contact Public Works-EOD (253-967-4786) for assistance with authorized disposal of these materials.

4. During the field training exercises, potable water generated by the LWP unit s may be discharged back into the storm water ponds (or Puget Sound for saltwater training) provided the chlorine concentration of the water is less than 1.0 mg/L. Water with a higher chlorine concentration must be de-chlorinated before discharge to these water bodies.

5. Wastewater generated during all field training exercises must be containerized and characterized by DPW to determine discharge options. If the wastewater meets discharge standard for the sanitary sewer system, a Wastewater Discharge Permit must be obtained. Applications for the permit can be obtained from the Public Works Customer Service Section (Building 2044). Questions regarding discharge procedures should be directed to the Solo Point Wastewater Treatment Plant, 253-967-7453.

6. Secondary freshwater training locations are Sequalitchew Lake, Lewis Lake, Chambers Lake, Wright Marsh and Johnson Marsh. Use of these sites for LWP training must include prior coordination with Range Control, ED Wastewater Program (253-967-2837) and Natural Resources (253-966-1764).

7. Potable water may not be discharged back into any of the water bodies at the secondary training locations, regardless of the chlorine concentration. The water may be discharged to the ground at least 50 meters from the water bodies provided the chlorine concentration is less than 1.0 mg/L. Water is to be discharged at a low enough rate that soil erosion does not occur.

8. Questions concerning LWP training environmental controls should be directed to the Public Works ED Wastewater Program Manager, 253-967-2837.

//SIGNED//
JOSEHPH GIBBENS, P.E.
Wastewater Program Manager

IMWE-LEW-PWE 8 February 2011

MEMORANDUM FOR RECORD

SUBJECT: Reverse Osmosis Water Purification Unit (ROWPU) Field Training

1. Environmental controls are necessary to protect our natural and cultural resources and to comply with environmental laws and regulations. This memo provides guidance for field training exercises utilizing ROWPU systems at Joint Base Lewis-McChord (JBLM).

2. The primary designated freshwater ROWPU training location is the storm water detention system at Eco-Park and the only designated salt water training location is Solo Point. Access coordination for either of these sites must be made with Public Works-Environmental Division (ED) (253-967-2837) and Range Control (253-967-6277/5060). Solo Point access may require coordination with Military Police.

3. Units conducting the field training exercises should use the minimum amount of chemicals and produce the minimum amount of drinking water and associated wastewater required to achieve their training requirements. Disposal of excess or unused chemical concentrate or undiluted chemicals in the field is strictly prohibited. Contact Public Works-EOD (253-967-4786) for assistance with authorized disposal of these materials.

4. During the field training exercises, potable water generated by the ROWPU unit s may be discharged back into the storm water ponds (or Puget Sound for saltwater training) provided the chlorine concentration of the water is less than 1.0 mg/L. Water with a higher chlorine concentration must be de-chlorinated before discharge to these water bodies.

5. Wastewater generated during all field training exercises must be containerized and characterized by ED to determine discharge options. If the wastewater meets discharge standard for the sanitary sewer system, a Wastewater Discharge Permit must be obtained. Applications for the permit can be obtained from the Public Works Customer Service Section (Building 2044). Questions regarding discharge procedures should be directed to the Solo Point Wastewater Treatment Plant, 253-967-7453.

6. Secondary freshwater training locations are Sequalitchew Lake, Lewis Lake, Chambers Lake, Wright Marsh and Johnson Marsh. Use of these sites for ROWPU training must include prior coordination with Range Control, ED Wastewater Program (253-967-2837) and Natural Resources (253-966-1764).

7. Potable water may not be discharged back into any of the water bodies at the secondary training locations, regardless of the chlorine concentration. The water may be discharged to the ground at least 50 meters from the water bodies provided the chlorine concentration is less than 1.0 mg/L. Water is to be discharged at a low enough rate that soil erosion does not occur.

8. Questions concerning ROWPU training environmental controls should be directed to the Public Works ED Wastewater Program Manager, 253-67-2837.

//SIGNED//
JOSEPH GIBBENS, P.E.
Wastewater Program Manager

IMWE-LEW-PWE 8 February 2011

MEMORANDUM FOR RECORD

SUBJECT: Tactical Water Purification Systems (TWPS) Field Training

1. Environmental controls are necessary to protect our natural resources and comply with environmental laws and regulations. This memo provides guidance for field training exercises utilizing TWPS at Joint Base Lewis-McChord (JBLM).

2. The following locations are authorized for TWPS training:

LOCATION	TIME of YEAR
Eco-Park Stormwater Ponds	unrestricted
Sequalitchew Lake	unrestricted

Access coordination for either of these sites must be made with Public Works-Environmental Division (ED) (253-967-2837) and Range Control (253-967-6277/5060).

3. Units conducting field training exercises should use the minimum amount of chemicals and produce the minimum amount of drinking water and associated wastewater required to achieve their training requirements.

4. If the training is conducted at the Eco-Park stormwater ponds, potable water generated by the unit s may be discharged back into the ponds provided the chlorine concentration of the water is less than 1.0 mg/L. Water with a higher chlorine concentration must be de-chlorinated before discharge to the ponds.

5. No TWPS-generated water of any kind may be discharged into Sequalitchew Lake. Potable water generated by the units may be discharged to the ground at least 50 meters from the water's edge provided the chlorine concentration is less than 1.0 mg/L. Water is to be discharged at a low enough rate that soil erosion does not occur.

6. Wastewater generated during all field training exercises at either location must be containerized and characterized by ED to determine discharge options. If the wastewater meets discharge standards for the sanitary sewer system, a Wastewater Discharge Permit must be submitted and approved. Applications for the permit can be obtained from the Public Works Customer Service Section (Building 2044). Questions regarding discharge procedures should be directed to the Solo Point Wastewater Treatment Plant, 253- 967-7453.

7. Questions concerning TWPS field training environmental controls should be directed to the Public Works ED Wastewater Program Manager, 253-967-2837.

//SIGNED//
JOSEPH GIBBENS, P.E.
Wastewater Program Manager

Green Procurement / Sustainable Acquisition

Sustainable acquisition enhances and sustains mission readiness through the cost effective acquisition of environmentally preferable products and services. Such items benefit the mission by

- achieving compliance
- reducing resource consumption and waste generation
- improving worker health and safety
- reducing liability
- providing life cycle cost savings

In the development of purchase requests and contract actions, DoD components must comply with the following sustainable acquisition requirements. Other than for tactical equipment, which will continue to follow standard documentation (e.g., Technical Manuals and Technical Orders), these requirements apply to all purchases and contract actions regardless of funding source or dollar value. Compliance with these requirements helps JBLM meet its goals as a Net Zero and sustainable installation.

- Executive Order 13693, Planning for Federal Sustainability in the Next Decade
  Link: http://www.gpo.gov/fdsys/pkg/FR-2015-03-25/pdf/2015-07016.pdf
- Section 6002 of the Resource Conservation and Recovery Act.
  Link: http://www.ornl.gov/adm/ornlp2/sec6002.htm
- Section 9002 of the Farm Security and Rural Investment Act of 2003.
  Link: http://www.gpo.gov/fdsys/pkg/PLAW-107publ171/pdf/PLAW-107publ171.pdf
- Section 104 of the Energy Policy Act of 2005

  Link: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h6enr.txt.pdf

  Link: http://www.ecfr.gov/cgi-bin/text-idx?SID=4842e103863d756c37f53c789d658e29&mc=true&node=pt10.3.436&rgn=div5#sp10.3.436.c
- Sections 141 and 523-526 of the Energy Independence and Security Act
  Link: http://www.gpo.gov/fdsys/pkg/PLAW-110publ140/html/PLAW-110publ140.htm
- 10 USC 2378
  Link: http://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section2378&num=0&edition=prelim
- Various subparts in the FAR (e.g., Part 23)
  Link: https://www.acquisition.gov/far/

A compilation of federally designated products is available at https://sftool.gov/greenProcurement

Mandatory sources of supplies and services such as UNICOR, AbilityOne, and all types of small businesses are able to effectively meet a wide range of needs for environmentally preferable products and services. However, in the event that a mandatory source cannot meet a sustainable acquisition requirement, you are authorized to seek other suitable sources of compliant products and services. Always notify the mandatory source(s) of your

requirement so they can meet it in the future. See question 3 at http://www.whitehouse.gov/omb/procurement_index_green/ for more information.

Related Websites:

- Alternative fuel vehicles/alternative fuels – http://www.eere.energy.gov/afdc/
- Biobased products – http://www.biopreferred.gov/
- Energy efficient products – http://energy.gov/eere/femp/find-product-categories-covered-efficiency-programs
- Energy Star® products – http://www.energystar.gov
- Environmental management systems – http://www.epa.gov/ems/
- Environmentally preferable products and services – http://www2.epa.gov/greenerproducts
- EPEAT-registered products – http://www.epeat.net
- High performance buildings – http://www.wbdg.org/references/fhpsb.php
- Non-ozone depleting substances – http://www2.epa.gov/snap
- Recycled content products – http://www3.epa.gov/epawaste/conserve/tools/cpg/products/index.htm
- Sustainable Facilities Tool – https://www.sftool.org/
- Water efficient products – http://www.epa.gov/watersense
- Denix (DoD) Sustainable Procurement Program – http://www.denix.osd.mil/spp/