



Fact Sheet

The U.S. Environmental Protection Agency (EPA) Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit for Municipal Stormwater Discharges to:

Joint Base Lewis-McChord, Washington

Public Comment Start Date: February 13, 2023
Public Comment Expiration Date: March 30, 2023

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EPA Proposes To Reissue NPDES Permit

EPA proposes to reissue the NPDES permit authorizing the discharge of stormwater from all municipal separate storm sewer system (MS4) outfalls owned or operated by Joint Base Lewis-McChord. Permit requirements are based on Section 402(p) of the Clean Water Act (CWA), 33 U.S.C. § 1342(p), and EPA's Phase II regulations for MS4 discharges, published in the Federal Register on December 8, 1999, 64 Fed. Reg. 68722. *See also* 40 CFR Part 122.

The NPDES permit requires the continued implementation of a comprehensive municipal stormwater management program (SWMP) and outlines the management practices to be used by the Permittee to reduce pollutants in their stormwater discharges. The permit establishes conditions, prohibitions, and management practices for discharges of stormwater from the MS4 owned or operated by Joint Base Lewis-McChord. The permit includes the assessment of water quality, through a selected combination of surface water, stormwater discharge, and biological sampling. Annual reporting is required to provide information on the status of SWMP implementation.

This Fact Sheet includes:

- information on public comment, public hearing and appeal procedures;
- a description of the Joint Base Lewis McChord MS4; and
- a description of requirements for the SWMP, a schedule of compliance, and other conditions.

State of Washington Certification

EPA is requesting that the Washington Department of Ecology (Ecology) provide a certification of the permit under Section 401 of the CWA. Comments regarding Ecology's intent to certify the permit should be directed to Angela Zeigenfuse at azei461@ECY.WA.GOV.

CLEAN WATER ACT § 401(A)(2) REVIEW

CWA Section 401(a)(2) requires that, upon receipt of an application and 401 certification, EPA as the permitting authority notify a neighboring State or Tribe with TAS when EPA determines that the discharge may affect the quality of the neighboring State/Tribe's waters. As stated above, Ecology is the certifying authority and is accepting comment regarding the intent to certify this permit. After EPA receives final certification from Ecology, EPA will determine whether the discharge may affect the quality of a neighboring jurisdiction's waters (33 U.S.C. § 1341(a)(2)).

Public Comment

We request that all comments on EPA's draft permit or requests for a public hearing be submitted via email to Bilin Basu (basu.bilin@epa.gov). If you are unable to submit comments via email, please call 206-553-0029.

Persons wanting to comment on, or request a Public Hearing for, the proposed permit may do so in writing no later than the public notice expiration date. A request for a public hearing must state the nature of the issues to be raised, as well as the requester's name, address and telephone number. All comments and requests for Public Hearing must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the public comment period expires and all significant comments are considered, the EPA's regional Director of the Water Division will make a final decision regarding permit issuance. If no substantive comments requesting a change in the proposed permit are received, the tentative conditions in the proposed permit become final, and the permit will become effective upon issuance. If substantive comments are submitted, the EPA will prepare a response to comments, and, if necessary, will make changes to the proposed permit. The permit will become effective no earlier than 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board within 30 days, pursuant to 40 CFR § 124.19.

Documents are Available for Review

The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at <https://www.epa.gov/npdes-permits/washington-npdes-permits> and at <https://www.epa.gov/npdes-permits/stormwater-discharges-municipal-sources-idaho-and-washington>.

The draft administrative record for this action contains any documents listed in the references section. The administrative record or documents from it are available electronically upon request by contacting Bilin Basu.

For technical questions regarding the fact sheet, contact Bilin Basu at (206) 553 0029 or basu.bilin@epa.gov. Services can be made available to persons with disabilities by contacting Audrey Washington at (206) 553-0523.

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I. Introduction

Stormwater is the surface runoff that results from rain and snow melt. Urban development alters the land's natural hydrology, and human activity generates a host of pollutants that can accumulate on paved surfaces. Uncontrolled stormwater discharges from urban areas can negatively impact water quality.

The National Pollutant Discharge Elimination System (NPDES) stormwater regulations contain the regulations used to establish permit requirements for discharges from publicly owned ditches, pipes and other conveyances within urban areas.

The permit defines terms and conditions to authorize the discharge of municipal stormwater to waters of the United States from the municipal separate storm sewer system (MS4) owned or operated by Joint Base Lewis-McChord (JBLM). As used in this permit, JBLM refers to all facilities, operations and installations covered under this permit (see Part II), and the operational entities are referred to collectively as the "Permittee". JBLM is cooperatively operated by the U.S. Army and the U.S. Air Force. When a provision is intended to apply to a particular operation or facility, that facility will be identified by name. The permit also conditionally authorizes the discharge of process wastewater, regulated industrial stormwater, and regulated construction stormwater through the JBLM MS4, provided that such regulated discharges are authorized by the U.S. Environmental Protection Agency (EPA) pursuant to other appropriate (but separate) NPDES permit(s).

JBLM qualifies as a regulated small MS4 because it is operated by the federal government [40 CFR § 122.32(a)] and is located in an Urbanized Area as determined in the Decennial Census by the Bureau of the Census [40 CFR § 122.32(a)(1)]. Military installations, like universities and state road systems, have been referred to as non-traditional MS4s because they are generally operated by a single entity without a complex government structure. The scope of legal authority differs in that military installations do not always have ordinance authority and, instead, rely upon policies, standards or contract language to implement their stormwater management program (SWMP). As appropriate, the Draft Permit reflects this framework.

Regulated industrial stormwater discharges which originate from JBLM operations within the permit area are currently authorized under EPA's NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), Permit WAR05F000. In addition, regulated construction stormwater discharges within areas operated by JBLM are authorized, as necessary, under EPA's NPDES General Permit for Stormwater from Large and Small Construction Activity (the Construction General Permit or CGP), Permit WAR10F000. These activities may discharge directly to waters of the United States, or through the MS4 to waters of the United States. These separate NPDES permits for the control of pollutants in industrial and construction stormwater discharges must be maintained by the Permittee.

This Fact Sheet describes the MS4s owned or operated by JBLM and explains the rationale for the proposed NPDES permit conditions.

Summary of Revised Permit Conditions

EPA proposes the following major change in this Draft Permit.

Table 1: Major Changes in Draft Permit

Revised Permit Conditions	Permit	Fact Sheet
The EPA references Ecology’s revised 2019 Stormwater Management Manual for Western Washington	Part 2.4.2	Section V.(b.)
The EPA renumbered and reformatted the MS4 permit and fact sheet templates to be consistent with the most recently issued MS4 permits.		
The EPA added permit terms and conditions to address PFAS at JBLM.	Several parts – see Table 4 below	Section VI. (a.)
The EPA consolidated the Construction Site Stormwater Runoff Control section and the Post Construction Stormwater Management in New Development and Redevelopment sections.	Part 2.4	Section VI.(c.)
The EPA added new provision that addresses input from the Nisqually Tribe. The permit condition requires specific stormwater onsite management for new development projects that may occur within the training area within the Muck Creek Watershed.	Part 2.4.2.5	Section VI.(d.)
Update to Retrofit Section. Permittee must utilize the 2016 McChord Field Stormwater Study to implement at least one new retrofit project prior to the expiration date of the permit.	Part 2.4.4	Section VI.(d.)
The EPA added a permit condition to address 6PPD-quinone at JBLM.	Part 2.4.4	Section VI.(d.)
The EPA increased the water quality monitoring sampling frequency of total and dissolved copper in the JBLM Canal from quarterly to monthly.	Part 3.3.7.4	Section VI.(e.)

II. Permittee, Permit History, and Permit Area

Federal NPDES regulations require that, at a minimum, JBLM obtain permit coverage for its MS4 discharges which are located within an Urbanized Area as defined by the latest Decennial Census. JBLM is located in Pierce and Thurston Counties within the Seattle Urbanized Area defined by the Year 2020 Census.¹ During the last permit issuance, the EPA exercised its residual designation authority to cover the entire base. The EPA is proposing to reissue the permit described in this document on the same jurisdiction-wide basis to address discharges from the regulated small MS4. The EPA's permit addresses only the discharges from the MS4 owned or operated by JBLM within the Pierce and Thurston County installation and does not include the Yakima Training Center or other geographically remote sites operated by JBLM.

The EPA issued NPDES Permit #WAS026638 in August 2013; in December 2014, the EPA subsequently modified the permit in response to an appeal by the Department of the Army before the U.S. Environmental Protection Agency's Environmental Appeals Board (EAB). The Permit expired in September 2018. An NPDES application for permit issuance was submitted by the permittee on March 29, 2018. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively continued and remains fully effective and enforceable.

The Draft Permit imposes requirements for the management of discharges from the MS4 owned and/or operated by JBLM, serving two (2) distinct operational areas, which are all under the same Command:

- Fort Lewis Army Base (Fort Lewis) -- 86,176 acres.
- McChord Air Force Base (McChord AFB) -- 4,639 acres.

Total land area of JBLM is approximately 142 square miles. The Joint Base Garrison operates the installation 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 garrison supports the installation 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.

III. Description of the MS4 and Discharge Locations

Most development is located within what is referred to as the cantonment areas. Those portions of the cantonment areas designated as training areas have limited development and are reserved exclusively for military training operations. The MS4 throughout the cantonment areas are comprised of curbs and gutters, ditches and storm drains, lift stations, treatment systems, and associated outfalls.

Overview of Discharges from the Cantonment Areas Designated as JBLM-Main and JBLM-North.

JBLM-Main and JBLM-North are comprised of approximately 10,603 acres, almost half of which (estimated 4,972 acres) drain to the MS4 infrastructure. The MS4 within the northern portion of JBLM-Main, which includes Madigan Army Medical Center and the Logistics Center east of Exit 122 on Interstate 5, drains to Murray Creek. The MS4 in the southern portion of JBLM-Main (which includes the

¹ Seattle Urbanized Area Map based on the Year 2020 U.S. Census.
<https://censusreporter.org/profiles/40000US80389-seattle-wa-urbanized-area/>

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 can 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 JBLM Stormwater Canal runs west along the south side of JBLM-North, then northwest to discharge to Puget Sound just north of the Solo Point Wastewater Treatment Plant. The JBLM Stormwater Canal has previously been referred to as the diversion canal. According to the *Murray-Sequalitchew Watershed Management Plan*,² the canal begins at Hamer Marsh, just south of Sequalitchew Lake and East of Sequalitchew Creek. It flows north from Hamer Marsh, crossing below the Creek through three 48" culverts. Water discharging over a diversion weir from the southern end of Sequalitchew Lake flows into the canal downstream of these culverts. The canal continues to flow northwest into Puget Sound near Solo Point. The canal was originally constructed to avoid sending excess stormwater through Sequalitchew Creek when creek capacity is exceeded. Beaver activity within Sequalitchew Creek frequently causes the creek to back up, and occasionally to flow in reverse direction. Sequalitchew Lake is highly influenced by groundwater. The diversion weir at the south end of the lake regulates the lake water level from rising to back up into Sequalitchew Springs, the primary potable water supply for JBLM. See Appendix A for maps of JBLM-Main and JBLM-North.

Overview of Discharges from the Cantonment Areas on McChord Field

The McChord Field cantonment area drains approximately 415 acres through a central MS4 discharging to Clover Creek. Clover Creek flows west and north from McChord Field to Lake Steilacoom. The central areas include the airfield, supporting infrastructure, and smaller residential areas. The MS4 serving the primary residential area within the McChord Field cantonment drains approximately 320 acres, and discharges to Carter Lake, Emerson Wetland, and other wetlands. This acreage does not include McChord drainage areas discharging through Outfalls 9, 17 and 36, as these stormwater discharges are authorized under the MSGP. See Appendix A for maps of McChord Field.

Overview of Discharges from Training Areas on JBLM

Training areas are predominately located outside of the cantonment areas and are typically not served by the JBLM MS4. Training areas include approximately 75,573 total acres within the former Fort Lewis Boundary and training ranges within the former McChord Air Force Base area. Stormwater runoff from the training areas generally infiltrates or follows natural drainages. Aside from MS4 structures in the Leschi Town, there are no MS4 structures within the cantonment area. There are no significant MS4 features in the cantonment area that would drain to Muck Creek, the Nisqually River, or Puget Sound. For a map of JBLM's MS4 features, see figure 3 in Appendix A.

IV. Receiving Water

The JBLM installation within Pierce and Thurston counties is considered part of the Washington Department of Ecology-defined Water Resource Inventory Area (WRIAs) 11 (Chambers/Clover) and 12 (Nisqually). The MS4 discharges covered under this permit discharge to the following receiving waters:

² Sequalitchew Watershed Management Plan (March 2007).
[https://yosemite.epa.gov/oa/eab_web_docket.nsf/Attachments%20By%20ParentFilingId/7F584BD79D5D15C185257C6200537752/\\$FILE/Att%2016a%20%20Murray%20Sequalitchew%20Watershed%20Plan.pdf](https://yosemite.epa.gov/oa/eab_web_docket.nsf/Attachments%20By%20ParentFilingId/7F584BD79D5D15C185257C6200537752/$FILE/Att%2016a%20%20Murray%20Sequalitchew%20Watershed%20Plan.pdf)

- Clover Creek flows west and north from McChord Field to Lake Steilacoom and is part of the Steilacoom Lake Subwatershed within WRIA 11.³
- The Murray/Sequalitchew Watershed includes Murray Creek, American Lake, Sequalitchew Lake and Sequalitchew Creek. All are entirely or partially located within the boundaries of JBLM and part of both WRIAs 11 and 12. The Murray Creek Subbasin is bounded on the west by Puget Sound; the northern boundary runs through JBLM-North and the City of Lakewood and includes Gravelly Lake; the eastern boundary runs through JBLM- McChord, and along the Burlington Northern Santa Fe Railway tracks. The southern boundary includes the southern portion of JBLM encompassing Gray Army Airfield. Murray Creek discharges to American Lake. As previously noted, overflow from Sequalitchew Lake, nearby wetlands, and several infiltration facilities is conveyed through the JBLM Stormwater Canal to Puget Sound. The JBLM MS4 does not discharge directly to Sequalitchew Creek.
- Puget Sound is located on the western edge of the JBLM training area and receives flows from Sequalitchew Creek and the JBLM Stormwater Canal.

a. Designated Uses

States establish water quality standards for receiving waters within their jurisdictions. Water quality standards are composed of designated beneficial water uses to be achieved and protected, as well as water quality criteria necessary to protect designated uses. Under the provisions of 40 CFR § 131.10, the EPA requires states and eligible Indian Tribes to specify appropriate water uses to be achieved and protected.

Designated uses for the water bodies receiving JBLM MS4 discharges, as established in the State of Washington's Water Quality Standards (WQS), are summarized below. Clover and Murray Creeks are considered surface freshwaters, and Puget Sound (through Admiralty Inlet and South Puget Sound) is designated as marine waters, with designated uses specified in WAC 173-201A.⁴

Table 2: Surface Water Quality Standards and Beneficial Uses for JBLM

Designated Uses	Receiving Waters		
	Clover Creek & tributaries	Murray/Sequalitchew Creeks, American Lake	Puget Sound
Salmonid spawning, rearing and migration	X	X	
Core summer salmonid habitat			
Primary contact recreation	X		X
Domestic, industrial, agricultural water supply	X	X	
Stock Watering	X	X	
Aquatic Life Uses (extraordinary)			X
Shellfish Harvest			X
Wildlife Habitat	X	X	X
Harvesting, Commerce and Navigation	X	X	X

³ See the Clover Creek Basin Plan. <https://www.co.pierce.wa.us/ArchiveCenter/ViewFile/Item/381>

⁴ See WAC-173-201A, Tables 602, 610, and 612

Boating	X	X	X
Aesthetic values	X	X	X

b. Impairments

Any water body that does not and/or is not expected to meet the applicable water quality standards is described as “impaired” or as a “water quality-limited segment.” Section 303(d) of the CWA, 33 U.S.C. § 1313(d), requires States to identify impaired water bodies within the State and to develop Total Maximum Daily Load (TMDL) management plans for those impaired water bodies. TMDLs define both waste load allocations (WLAs) and load allocations (LAs) that specify how much of a particular pollutant can be discharged from both regulated point sources and unregulated non-point sources, respectively, such that the water body will again meet State water quality standards. In a water body where the EPA has approved a TMDL, any NPDES permit conditions must be consistent with the assumptions and requirements of the available WLAs. See 40 C.F.R. § 122.44(d)(1)(vii)(B).

Ecology’s 2016 Water Quality Assessment provides the list of impaired water bodies as required by CWA Section 303(d).⁵ The following table reflects the water bodies receiving discharges from the JBLM MS4 which are considered to be water quality impaired. There are no EPA-approved TMDLs for these waters.

Table 3: Impaired Waters near JBLM as Listed in Ecology’s Water Quality Assessment

Waterbody	Pollutant of Concern	Ecology’s Listing Category	TMDL Approved by EPA
Clover Creek	Dissolved Oxygen	Category 5	No
Clover Creek	Fecal Coliform	Category 5	No
American Lake	Dieldrin	Category 5	No
American Lake	Polychlorinated Biphenyls (PCBs)	Category 5	No
American Lake	2,3,7,8-TCDD (Dioxin)	Category 5	No
American Lake	Fecal Coliform	Category 5	No

c. Antidegradation

The EPA is required under Section 301(b)(1)(C) of the CWA, 33 U.S.C. § 1311(b)(1)(C), and implementing regulations (40 CFR §§ 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with State water quality standards, including antidegradation requirements. The State of Washington has established antidegradation regulations (WAC 173-201A-300). For complete antidegradation analysis, see Appendix C.

⁵ <https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearch.aspx>

V. Legal Authority for Permit Conditions

a. Clean Water Act

Permit conditions are based on Section 402(p)(3)(B) of the CWA, 33 U.S.C. § 1342(p)(3)(B), which requires any NPDES permit for MS4 discharges to: 1) effectively prohibit non-precipitation related flows from entering the MS4, and 2) require controls necessary to reduce pollutants in municipal stormwater discharges to the maximum extent practicable (MEP), including management practices, control techniques, and system design and engineering methods, and/or other such provisions determined to be appropriate by the NPDES permitting authority.

NPDES permits for regulated small MS4s must contain conditions that require the operator to develop, implement, and enforce a stormwater management program (SWMP) designed to reduce the discharge of pollutants from the MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements under the CWA [40 CFR §122.32(a)]. The SWMP must address six minimum control measures set forth in the federal regulations and discussed in detail below [40 CFR § 122.34(b)]. In addition, the permit must include more stringent terms and conditions based on an approved TMDL or equivalent analysis, or where needed to protect water quality [40 CFR §122.44(d)(1)(vii)(B) and 40 CFR §122.34(c)(1)].

The NPDES permitting authority must include terms and conditions in each successive MS4 permit that meet all of the requirements of 40 CFR § 122.34(a)(2) “based on its evaluation of the current permit requirements, record of permittee compliance and program implementation progress, current water quality conditions, and other relevant information.” The EPA cannot reissue the same permit conditions for subsequent five-year permit term(s) without considering whether more progress can or should be made in meeting water quality objectives (especially in areas where the receiving waters are not attaining the applicable water quality standards). In this case the EPA has made adjustments in the form of modified permit requirements, where necessary, to reflect current water quality conditions, best management practices (BMP) effectiveness, and other relevant information.

The EPA has considered various sources of current information in order to refine the permit terms and conditions, including but not limited to:

- MS4 Permit renewal application materials, Annual Reports and other information submitted by JBLM;
- Puget Sound Partnership’s Action Agenda and Ecosystem Recovery Targets;
- NPDES Municipal Separate Storm Sewer System General Permit Remand, Proposed Rule (81 FR 415, January 6, 2016.) and Final Rule (81 FR 89320, Dec. 9, 2016.)
- Updated EPA guidance and national summary information available since 2013, including MS4 Permits – Compendium of Clear, Specific and Measurable Permitting Examples Parts 1-5
- Current research and technical developments in related to stormwater impacts on aquatic life and, effective stormwater management techniques; and
- Other MS4 permits issued by the EPA Region 10 in November 2020 for regulated MS4s in Washington.

References used to inform the draft provisions are available in the Administrative Record for the Permit.

b. State of Washington Requirements

The State of Washington’s Water Pollution Control Act is defined in Chapter 90.48 of the Revised Code of Washington (RCW). RCW 90.48.010 establishes that:

“...the public policy of the state of Washington (is) to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington.”

Applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations are provided under 33.U.S.C. §§1311, 1312, 1313, 1316 and 1317 (CWA §§ 301, 302, 303, 306 and 307). Washington’s Water Quality Standards (WQS) are established in the Washington Administrative Code (WAC) as follows: surface water quality standards (WAC Chapter 173-201A), sediment quality standards (WAC Chapter 173-204). All known, available and reasonable methods to prevent and control pollution of state waters (AKART) are contained in RCW 90.48.010 and 90.54.020(3)(b). The prohibition on discharges that cause or tend to cause pollution of waters of the state of Washington are contained in RCW 90.48.080.

Ecology developed the 2019 Stormwater Management Manual for Western Washington (2019 Manual) which provides technical guidance on measures to control the quantity and quality of stormwater runoff from construction, new development and redevelopment projects. These measures are considered necessary to achieve compliance with Washington State water quality standards and to contribute to the protection of the beneficial uses of the receiving waters. Stormwater management techniques applied in accordance with the 2019 Manual are presumed by Ecology to meet AKART, the technology-based treatment requirement.⁶

The EPA’s Phase II stormwater regulations require state NPDES permitting authorities to “make available a menu of BMPs to assist regulated small MS4s in the design and implementation of municipal stormwater management programs to implement the minimum measures specified in 40 CFR §122.34(b) of this chapter.” Ecology’s 2019 Manual meets this federal requirement in regard to construction site stormwater control and post-construction stormwater management for new development and re-development. The 2019 Manual provides guidance on the measures necessary to control the quantity and quality of stormwater produced by construction, new development and re-development activities, to comply with water quality standards, and protect beneficial uses of the receiving waters.

For the purposes of this permit, the EPA maintains that the practices and control measures considered by Ecology to be AKART for protecting water quality in Washington also reflect the federal standard of requiring pollutants in municipal stormwater discharges from regulated small MS4s to be controlled to the MEP. In the JBLM permit, the EPA has included narrative SWMP requirements that are consistent

⁶ See the 2019 Stormwater Management Manual for Western Washington (2019 Manual).
<https://apps.ecology.wa.gov/publications/SummaryPages/1910021.html>

with practices outlined in Ecology’s 2019 Manual. The EPA includes these specific narrative requirements to ensure, to the MEP, the protection of the Washington water quality standards.

VI. Summary of the Basis of Permit Conditions

a. Conditions to Address PFAS at JBLM

Per- and polyfluoroalkyl substances (PFAS) are a group of synthetic chemicals that have been manufactured and used by a variety of industries since 1940. There is evidence that continued exposure above specific levels to certain PFAS may lead to adverse health effects.⁷ PFAS-related criteria for human health and aquatic life, however, have not yet been developed, thus water quality standards have not yet been established. As a result, developing numeric effluent limits at this time is infeasible. Because there is not yet an approved analytical method for PFAS in stormwater, confirming compliance with a numeric limit is likewise not yet possible. Similarly, treatment technologies for PFAS are not yet well proven and established, thus end-of-pipe treatment requirements are by-and-large premature. Recently, EPA issued a guidance document which states that EPA-issued permits should include BMP permit conditions to address PFAS when there is indication that PFAS could be in the discharge.⁸

In August 2020, JBLM finalized a Preliminary Assessment/Site Inspection report⁹ to assess if PFAS have been released to the environment at JBLM. The Assessment identified 52 known/potential PFAS use, storage or disposal sites, including fire-fighting training, firefighting equipment testing/storage areas, emergency responses in hangars with aqueous film-forming foam (AFFF) fire suppression systems, AFFF storage areas, historical waterproofing operations, vehicle wash rack operations, laundry operations, and landfills. Therefore, since there are a large number of sites at JBLM where PFAS was used, the EPA is requiring the Permittee to develop a PFAS management plan, identify any wet weather outfalls where PFAS may be discharging into the receiving water and implement a monitoring program for PFAS. The table below contains the revised permit conditions that address PFAS.

Table 4: Revised PFAS Permit Conditions

Revised Permit Conditions to Address PFAS	Permit	Fact Sheet
The EPA is authorizing discharges from emergency firefighting activities, including activities that involve PFAS-containing AFFFs.	Part 1.3.4.2	Section VI.(a.)

⁷ EPA, *EPA’s Per- and Polyfluoroalkyl Substances (PFAS) Action Plan*, EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

⁹ JBLM, Final Preliminary Assessment/Site Inspection Report, August 2020.

<p>The EPA requires that the Permittee engage those potentially affected by stormwater discharges in establishing stormwater management priorities.</p>	<p>Part 2.2.2</p>	<p>Section VI.(c.) Public Involvement and Participation</p>
<p>The EPA emphasizes that areas of known contamination should be included in maps of the MS4.</p>	<p>Part 2.3.1</p>	<p>Section VI.(c.) Illicit Discharge Detection and Elimination</p>
<p>The EPA limits the authorization of discharges from emergency firefighting activities only to those that do not involve PFAS-containing AFFFs and those that are in compliance with Part 2.5.8.</p>	<p>Part 2.3.2.1</p>	<p>Section VI.(c.) Illicit Discharge Detection and Elimination</p>
<p>The EPA emphasizes the importance of including known areas of contamination in priorities for the IDDE program.</p>	<p>Part 2.3.3.1</p>	<p>Section VI.(c.) Illicit Discharge Detection and Elimination</p>
<p>The EPA consolidated the notification requirement for spills and illicit discharges and emphasized procedures for doing so. The EPA specifically articulates the scope of who must be notified. The Agency emphasizes the importance of including potential effects in those notifications, as appropriate.</p>	<p>Part 2.3.3.4</p>	<p>Section VI.(c.) Illicit Discharge Detection and Elimination</p>
<p>The EPA is requiring JBLM to identify potential PFAS infiltration to receiving waters via the MS4 infrastructure.</p>	<p>Part 2.3.4</p>	<p>Section VI.(c.) Illicit Discharge Detection and Elimination</p>
<p>The EPA added runways and airfields, including clean-ups from firefighting activities to the list of areas/activities for which maintenance practices must be established.</p>	<p>Part 2.5.6</p>	<p>Section VI.(c.) Pollution Prevention & Good Housekeeping for Operations & Maintenance</p>
<p>The EPA requires the Permittee to develop and implement appropriate stormwater management controls to minimize</p>	<p>Part 2.5.8</p>	<p>Section VI.(c.) Pollution</p>

discharges of PFAS via the MS4 during emergency firefighting activities.		Prevention & Good Housekeeping for Operations & Maintenance
The EPA added PFAS-containing AFFF usage and clean-up to the elements required to be included in stormwater pollution prevention plans for equipment maintenance/material storage yards, if relevant.	Part 2.5.9	Section VI.(c.) Pollution Prevention & Good Housekeeping for Operations & Maintenance
The EPA added Per-and polyfluoroalkyl substances (PFAS)	Table 3.3.5	
Beginning within 18 months of the permit issuance, the Permittee must begin quarterly grab sample wet weather water quality monitoring for PFAS.	Part 3.5	Section VI.(d.)

b. Discharges Authorized under this Permit

The permit authorizes all existing discharges to waters of the U.S. from the MS4 owned or operated by JBLM.

In Part I.3, the Draft Permit continues to limit the authorization to discharge from the MS4 in the following manner:

- Compliance with all terms and conditions of the Draft Permit satisfy the presumption that discharges are not causing or contributing to an exceedance above the State of Washington’s water quality standards, including, but not limited to, those standards contained in Chapters 173-201A (surface water quality) and 173-204 (sediment management) of the Washington Administrative Code (WAC). The required response to such discharges is defined in Part 4 (Required Response to Violations of Water Quality Standards). Note that permit text in Part 1.3.1 has been revised to be consistent with other MS4 permits recently issued by EPA Region 10 for other Department of Defense facilities in Western Washington, such as the Naval Base Kitsap MS4 Permit (WAS026646).
- Snow disposal directly into waters of the U.S., or directly to the MS4, is prohibited. Melt water from snow management activities are allowed, provided that appropriate BMPs are used.
- Discharges of stormwater associated with industrial activity, including construction activity, are only authorized when covered under the appropriate general permits, or other permit as appropriate.

- Certain types of runoff that are unrelated to precipitation events (referred to as “non-stormwater”) and which are listed in the permit consistent with 40 CFR § 122.34(b)(3)(iii), may also be discharged through/from the MS4, provided these discharges are not considered to be sources of pollution to the waters of the United States and meet certain permit conditions.

c. Permittee Responsibilities

40 CFR § 122.41(a) requires the Permittee to comply with all terms and conditions of a NPDES permit.

The Permittee must continue to implement a comprehensive SWMP to reduce pollutants to the MEP from discharging through the MS4 as described in Permit Part 2. The Permittee must describe its SWMP components in a written SWMP document (see Draft Permit Part 1.4.3). The Permittee must undertake monitoring and assessment, track progress and maintain records to report on SWMP implementation progress (see Draft Permit Part 3) and respond appropriately to discovered violations of water quality standards (see Draft Permit Part 4).

The SWMP document required in Draft Permit Part 1.4.3 comprises those references and activities that uniquely define the Permittee’s SWMP and is in essence a “looking forward” document that substantiates how the Permittee reduces pollutants in stormwater discharges. The SWMP document must be updated annually as new program components are implemented or added. The updated SWMP document must be submitted with the required Annual Report. In contrast to the SWMP, the Annual Report summarizes activities conducted by the Permittee during the previous reporting period and provides an overall assessment of the Permittee’s compliance with the permit.

Pursuant to 40 CFR § 122.35(a), Draft Permit Part 1.4.1 (*Shared Implementation with Outside Entities*) allows the Permittee to share or delegate the responsibility of implementing some or all of a required minimum control measure to another entity if: 1) the other entity in fact implements the control measure; 2) the particular control measure is at least as stringent as the corresponding permit requirement; and 3) the other entity agrees to implement the control measure on the Permittee’s behalf. The Permittee must enter into binding agreements with such outside parties in order to minimize any uncertainty about compliance with the permit. The Permittee remains responsible for compliance with the permit obligations in the event the other entity fails to implement the control measure (or any component thereof).

The EPA continues to provide a procedure through which the Permittee may request EPA consideration of programs and/or documents to be deemed equivalent to requirements in the Draft Permit (see Part 1.5 of the Draft Permit, *Equivalent Documents, Plans or Programs*). If the equivalent document, plan or program constitutes a major change to the permit, the EPA will undertake a permit modification.

The EPA has included a specific provision to require the Permittee to continue to maintain adequate legal authority to implement the requirements of the Draft Permit (see Part 1.4.2 of the Draft Permit, *Maintain Adequate Legal Authority*). The SWMP document must summarize the relevant regulations, codes and policies that satisfy this requirement.

The Permittee must maintain an updated SWMP document and make it available to the public on its website (Part 1.4.3). The Permittee must maintain robust methods to compile and maintain information on SWMP activities and permit compliance (Part 1.4.4). The Permittee must maintain adequate resources to fully implement the SWMP and the provisions of the Draft Permit (Part 1.4.5).

d. Summary of Stormwater Management Program Control Measures

Part 2 of the Draft Permit describes the requirements of 40 CFR § 122.34(b) to implement six minimum control measures:

- Public Education and Outreach on Stormwater Impacts;
- Public Involvement and Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Stormwater Runoff Control;
- Post Construction Stormwater Management in New Development and Redevelopment; and
- Pollution Prevention/Good Housekeeping for Municipal Operations.

In Part 2 of the Draft Permit, the EPA has defined SWMP minimum control measures for JBLM that are consistent with the federal NPDES regulations as well as with practices established by Ecology to comply with water quality requirements. For ease of implementation the EPA has combined minimum measures four and five, as described later.

Education and Outreach on Stormwater Impacts [40 CFR §122.34(b)(1)]

Part 2.1 of the Draft Permit describes an ongoing public education and outreach program to: 1) reduce or eliminate behaviors and practices that cause or contribute to stormwater pollution; and 2) encourage the public to participate in stewardship activities.

Education leads to greater compliance with the MS4 program, as the public becomes aware of personal responsibilities and individual actions that can protect or improve water quality in their area. For a federal military facility, the EPA has determined that the community or “public” includes the tenants, staff, and contractors within the fence line of the facility. As such, target audiences for these activities include project managers, contractors, tenants, residents, and environmental staff.

Under the previous permit, JBLM implemented a number of education activities to address this minimum control measure, including¹⁰:

- Developing education material and outreach efforts targeting the military community, particularly focused on appropriate use of fertilizers, proper household hazardous waste disposal, recycling, and commercial, food service, and automotive activities;
- Featuring stormwater education programs at on-base events such as the Annual Kids Fest event, the Annual Green Classic Golf Tournament and the Sustainability Summit and Earth Day event; and
- Publishing articles on sustainability and stormwater in Northwest Guardian, the on-base newspaper.

Stormwater education and outreach activities done under the previous permit should be continued throughout the next permit cycle. In addition, JBLM should evaluate the potential for developing new education and outreach activities. The General Stormwater Outreach and Education program (Part 2.1.1) requires the permittee to:

¹⁰ JBLM 2016 Annual Report

- Publicize means for reporting spills and other illicit discharges (Part 2.1.1.1 of the Draft Permit) [40 CFR §122.34(b)(3)(iii)];
- Inform target audiences of the environmental impacts of illegal discharge and improper disposal of waste, consistent with the requirements of Part 2.3 of the Draft Permit (Part 2.1.1.2 of the Draft Permit) [40 CFR §122.34(b)(3)(i)(D)].

In addition, the Permittee must select from the following topics to develop an outreach and education program that specifically targets JBLM operations and water quality priorities (Part 2.1.1.3 of the Draft Permit):

- 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; and
- Proper dust control methods.

The Permittee must assess the effectiveness of outreach and education efforts by selecting and documenting metrics that will measure the understanding and adoption of the targeted behaviors (Part 2.1.3). At a minimum this must be done for at least one audience in at least one of the chosen targets. The resulting measurements must then be used to inform future outreach and education efforts for the remainder of the permit term. The Permittee has the option of undertaking one or more of these efforts in conjunction with other entities.

The Permittee must also summarize outreach and education activities, including the assessment(s) in each Annual Report (Part 2.1.4).

Public Involvement/Participation [40 CFR §122.34(b)(2)]

Part 2.2 of the Draft Permit describes a program by which the Permittee will focus on internal (i.e., installation-wide) organizational coordination to ensure all necessary cooperation and optimize resources to achieve SWMP objectives. Minimally, the Permittee must also engage with the broader community in the Region by following reasonable public notice practices and ensuring that the general public has access to the Permittee's SWMP document(s). There are four elements:

- Compliance with all applicable federal public notice requirements when conducting activities associated with this permit [40 CFR §122.34(b)(2)(i)];
- At least once annually conduct one or more regional meetings to coordinate among appropriate staff and management within installations/organizations to ensure effective implementation of the SWMP control measures required by the Draft Permit;
- Maintain an updated SWMP document available to the public on the Permittee's website; and
- At least twice during the permit term, sponsor one or more volunteer activity designed to actively engage residents and employees at the installation. These activities should complement

the stormwater outreach and education activities selected by the Permittee pursuant to Part 2.1 of the Draft Permit.

The Permittee must summarize public involvement and participation activities in each Annual Report.

In order to comply with the public involvement and participation requirements in the previous permit, JBLM routinely attends multiple external and internal public meetings including:

- Stormwater Working Group
- Clover Chambers Watershed Council Meeting
- Phase II Watershed Meeting (STORM)
- Camp Murray/JBLM Coordination Meeting
- Pierce County Groundwater Monitoring Study (Spanaway Lake)
- JBLM/USGS Coordination Meeting for Installation of Gaging Stations

The Permittee should continue to implement these public involvement and participation activities in the current permit cycle to comply with the draft permit. In addition, the Permittee should evaluate the potential for developing new public involvement and participation activities.

Illicit Discharge Detection and Elimination [40 CFR §122.34(b)(3)]

Part 2.3 of the Draft Permit describes a set of requirements to identify and eliminate illicit discharges. An illicit discharge is any discharge to a MS4 that is not composed entirely of stormwater. JBLM complied with these conditions during the previous permit term. EPA is proposing to retain the same permit conditions in this Draft Permit. Exceptions to this definition include authorized non-stormwater discharges identified in Part 1.3.4 of the Draft Permit.

Illicit discharges can enter a MS4 through either direct connections (*e.g.*, wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (*e.g.*, infiltration into the MS4 from cracked sanitary systems, spills collected by drain inlets, or paint or used oil dumped directly into a drain). Pollutant levels from illicit discharges can significantly degrade receiving water quality and threaten aquatic, wildlife, and human health. 40 CFR §122.34(b)(3) contains four required components to the Illicit Discharge Detection and Elimination (IDDE) control measure. The MS4 operator must:

- Maintain a map of the MS4 showing the location of all outfalls and names of the receiving waters;
- Effectively prohibit discharges of non-stormwater to the MS4 through the use of an ordinance or other regulatory mechanism and provide enforcement procedures and actions. The EPA recognizes that some MS4 operators -such as federal entities- may not have the legal authority to enact an ordinance; in such case, the operator may evaluate and use any policies, standard operating procedures, or other means in developing an adequate regulatory mechanism. The EPA uses the term ordinance in the permit to refer to such a regulatory mechanism;
- Develop and implement a program to detect and address non- stormwater discharges, including procedures to identify the problem areas in the community, determine sources of the problem(s), remove the source if one is identified, and document the actions taken; and
- Inform public employees, businesses, and the general public of the hazards associated with illegal discharges and improper disposal of waste.

Part 2.3.1 of the Draft Permit requires the Permittee to update and maintain maps of the MS4 no later than 180 days prior to the expiration date of the permit. The permit includes a list of features and assets that must be included in these maps.

Part 2.3.2 of the Draft Permit requires the Permittee to effectively prohibit all illicit discharges into the MS4 per the legal authorities of the Permittee. As necessary, relevant policies to comply with this requirement must be in place no later than two years from the effective date of the Final Permit. These policies must include all necessary activities to correct and/or eliminate any identified illicit discharge. Part 2.3.2.2 of the Draft Permit describes certain types of discharges that may be conditionally allowable, such as discharges from flushing potable water lines and runoff from lawn irrigation.

Part 2.3.3 of the Draft Permit outlines the necessary elements and schedules for an IDDE program, including minimum procedures for field assessments during dry weather, procedures for characterizing the nature of discharges and their impacts, procedures for identifying sources of discharges, and procedures for eliminating discharges. The permit provides two manuals from which the Permittee may adopt screening practices: *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*¹¹ and *Illicit Connection and Illicit Discharge Field Screening and Source Tracking Guidance Manual*¹².

Part 2.3.4 of the Draft Permit requires the Permittee to utilize the August 2020 *Final Preliminary Assessment/Site Inspection Report* to identify potential PFAS infiltration into the MS4 infrastructure. Using the report, the Permittee will identify, at least 2, wet weather outfall monitoring outfalls to monitor for PFAS. One of these outfalls must be in Clover Creek. The August 2020 *Final Preliminary Assessment/Site Inspection Report* identified 24 generalized areas of potential interest, containing the use, storage or disposal of any PFAS-containing materials. Within the 24 areas of potential interest, at least 52 known/potential PFAS use, storage or disposal operations were identified. Identifying locations for potential PFAS infiltration through the MS4 stormwater system into receiving waters will inform the wet weather PFAS monitoring locations, as required by Part 3.5 of the Draft Permit. For a map of PFAS containing areas of potential interest and a table summarizing the 52 known/potential PFAS use sites, see Appendix A, Figure 9.

Part 2.3.5 of the Draft Permit continues to require that staff responsible for implementing the IDDE program have proper training for their respective roles and responsibilities, including training within the first six months for all new employees with responsibilities under this program and follow-up training, as relevant, to address refinements to procedures, techniques and requirements.

Part 2.3.6 of the Draft Permit requires the Permittee to evaluate and track the number and type of identified illicit discharges, dry weather screening efforts and corrective actions taken to eliminate illicit discharges. The Permittee must maintain all necessary records and include a summary of actions taken during the reporting period in each Annual Report.

¹¹ Center for Watershed Protection, *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, 2004, https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

¹² Herrera Environmental Consultants, Inc, *Illicit Connection and Illicit Discharge Field Screening and Source Tracking Guidance Manual*, 2020 Revision, https://www.ezview.wa.gov/Portals/_1962/Documents/SAM/2020_ICID_Manual.pdf

New Development, Redevelopment, and Construction Site Runoff [40 CFR §122.34(b)(4) and (5)]

Part 2.4 of the Draft Permit describes a set of requirements for all new development, redevelopment and construction activities undertaken within the JBLM MS4 area. This requirement applies to all public and private development, including roads.

The Phase II stormwater regulations establish separate requirements for:

- construction – focused on preventing and abating pollution, such as soil erosion and sedimentation that occurs during the period of construction, and
- “post-construction” – focused on longer-term pollution prevention and abatement, such as increased runoff from the creation of impervious surfaces.

For ease of implementation, given policies and procedures on JBLM, these two requirements have been combined in the Draft Permit.

Part 2.4.1 of the Draft Permit continues to require the Permittee to provide adequate direction and oversight to regulated construction and industrial activities within the MS4 area. This requires the Permittee to ensure that all regulated construction activities¹³ obtain coverage under the Construction General Permit and that all regulated industrial activities¹⁴ obtain coverage under the Multi-Sector General Permit.

Part 2.4.2 of the Draft Permit requires the Permittee to continue utilizing enforceable mechanisms to control runoff from new development¹⁵, redevelopment¹⁶ and construction site projects. The permit stipulates the elements that must be included in the enforceable mechanism. This permit incorporates by reference the requirements from Appendix 1 of the 2019 Western Washington Phase II Municipal Stormwater Permit¹⁷, and also relies on the Permittee to obtain coverage, as applicable, under the

¹³ *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. Any stormwater discharge from regulated construction activity requires a separate NPDES permit (WAR12000F). (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.)

¹⁴ *Regulated Industrial Activities*, as used in this Permit, include the categories of industrial activity described at 40 CFR §122.26(b)(14)(i)-(ix) and (xi). Any stormwater discharge from regulated construction activity requires a separate NPDES permit (WAR05F000).

¹⁵ *New development* means land disturbing activities, including Class IV General Forest Practices that are conversions from timber land to other uses; structural development, including construction or installation of a building or other structure; creation of hard surfaces; and subdivision, short subdivision and binding site plans, as defined and applied in Chapter 58.17 Revised Code of Washington (RCW). Projects meeting the definition of redevelopment shall not be considered new development.

¹⁶ *Redevelopment*, for the purposes of this Permit, on a site that is already substantially developed (i.e., has 35% or more of existing hard surface coverage), means the creation or addition of hard surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation or expansion of a building or other structure; replacement of hard surface that is not part of a routine maintenance activity; and land disturbing activities.

¹⁷ Washington Department of Ecology, *Western Washington Phase II Municipal Stormwater Permit*, Appendix 1 – Minimum Technical Requirements for New Development and Redevelopment, 2019.

<https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Municipal-stormwater-general-permits/Western-Washington-Phase-II-Municipal-Stormwater>

Construction General Permit. The Draft Permit also requires implementation of control standards from the 2008 *Aviation Stormwater Design Manual*¹⁸, or the 2019 *Highway Runoff Manual*.¹⁹

Part 2.4.2.5 of the Draft permit is a new provision that addresses input from the Nisqually Tribe. The permit condition requires specific stormwater onsite management for new development projects that may occur within the training area within the Muck Creek Watershed.

Part 2.4.3 of the Draft Permit establishes requirements for site plan review, inspections and the necessary accountability measures, e.g., enforcement actions, maintenance plans, recordkeeping. These are critical activities to ensure that standards and criteria are being properly implemented. All projects that are not yet well into the design phase with funding finalized on the effective date of the Permit, are subject to these requirements.

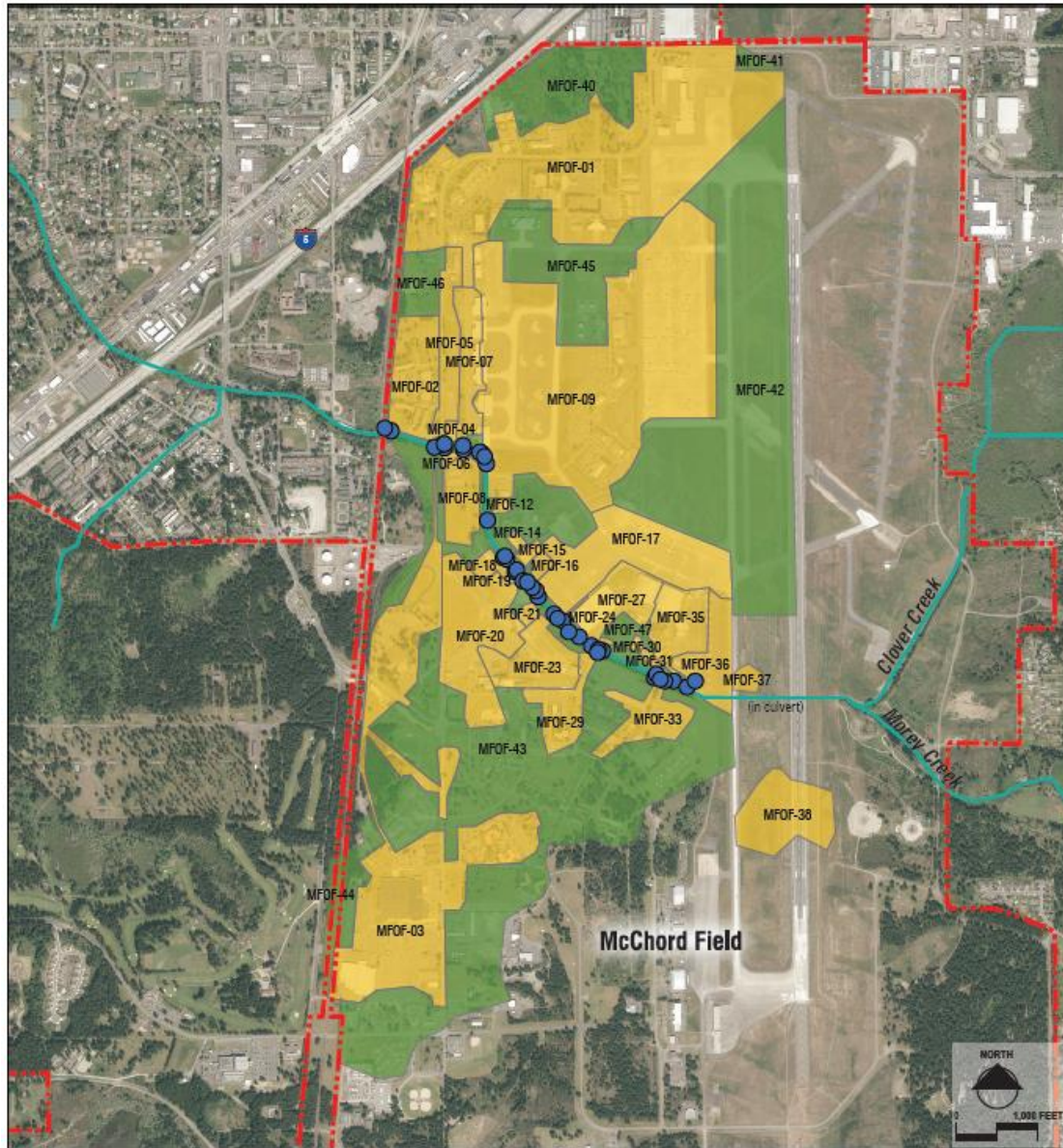
Part 2.4.4 of the Draft Permit requires stormwater retrofit projects to reduce pollutant discharges to impaired receiving waters. The existing 2013 permit required characterization of Clover Creek and stormwater retrofit projects for basins draining to Clover Creek. Clover Creek is a priority watershed, based on its water quality impaired status, and Essential Fish Habitat designation for coho salmon. The draft permit requires that the Permittee continue to characterize the MS4 discharges to Clover Creek and utilize the 2016 McChord Field Stormwater Study to implement at least one retrofit project within the basin discharging to Clover Creek.

In September 2016, JBLM completed the McChord Field Stormwater Management Study to identify and scope potential stormwater management retrofit projects within the McChord East Basin. McChord East Basin, which discharges into Clover Creek, is divided into 37 sub-basins, as shown in the figure below.

¹⁸ Washington Department of Transportation, *Aviation Stormwater Design Manual*, 2008, <http://www.wsdot.wa.gov/NR/rdonlyres/587C0B2B-07B2-4D60-90DD-5E57E93F40E1/0/TableofContentsStormwater.pdf>

¹⁹ Washington Department of Transportation, *Highway Runoff Manual*, 2019, <https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/highway-runoff-manual>

Figure 1: Sub-basins on McChord Field



The McChord East Basin has an area of approximately 1,147 acres, of which 509 acres are sub-basins infiltrating on-site. Approximately 2.1 miles of Clover Creek are within JBLM. Clover Creek flows through 12-foot-deep channels before entering two 12-foot diameter concrete culverts located under the McChord Field's runway. Each culvert is over 2,500 feet long.

The McChord Field Stormwater Management Study resulted in a list of 18 potential stormwater retrofit projects that could be implemented to mitigate potential risks from stormwater pollution to Clover Creek. In developing this list, the study identified pollutants of concern as fecal coliform, total suspended solids, metals and runoff volume. After evaluating all of the BMP options based on space availability, cost, and maintenance requirements, three BMP categories were selected for this study: infiltration, bio-retention, and dispersion. At the time of the study, there was no pollutant baseline data

for JBLM. Therefore, pollutant removal efficiencies for the three BMP categories were classified based on several BMP performance publications including, but not limited to, Washington State Department of Transportation white paper on effectiveness of BMPs in Western Washington. As shown in the table below, BMP categories were ranked based on flow rate control, volume reduction, and pollutant removal. Generally, “high” removal efficiency was defined as 90% and “medium” removal efficiency was defined as close to 50%.

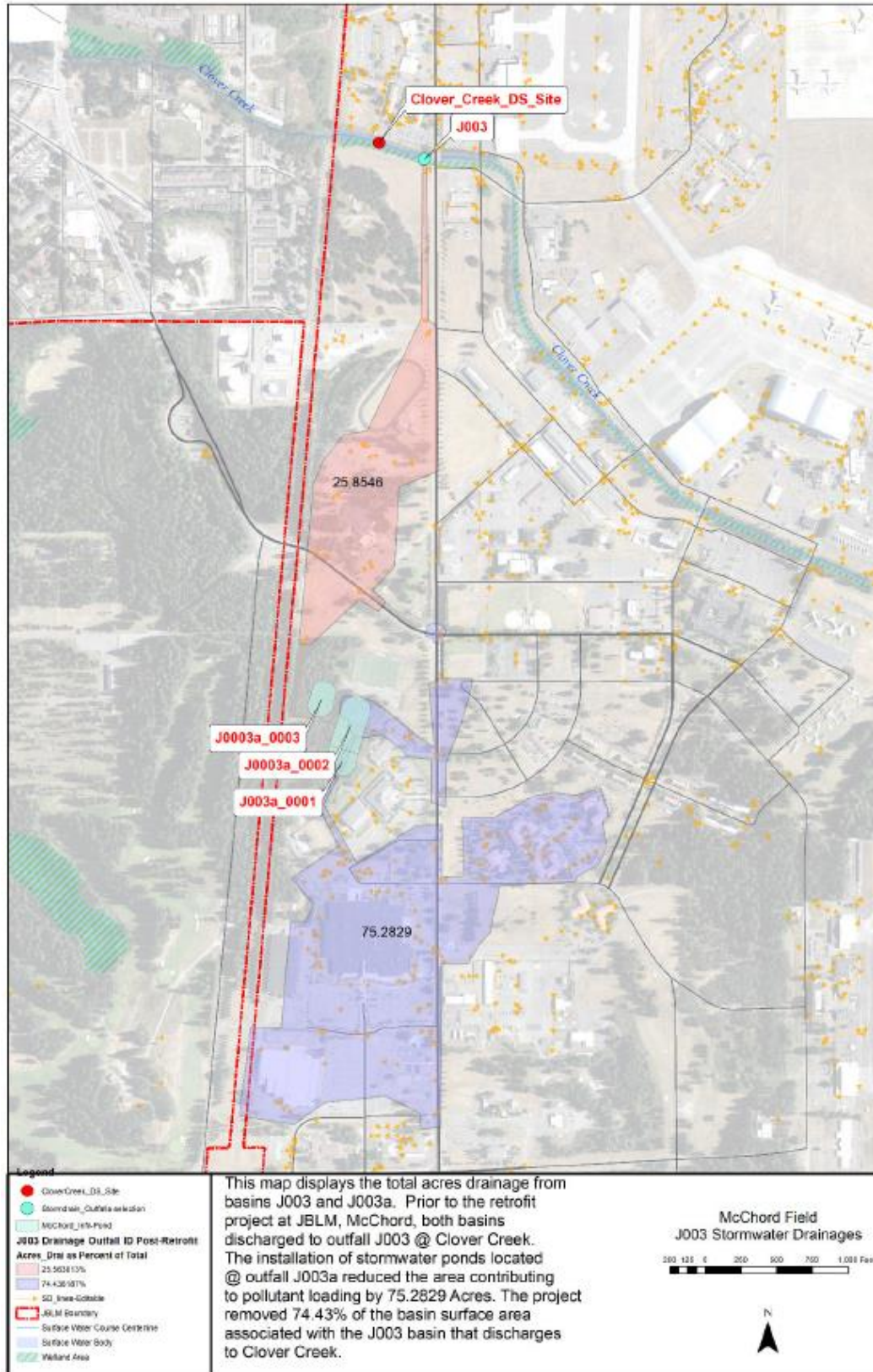
Table 5: Pollutant Removal Efficiencies

BMP Group	Water Quantity Benefit		Water Quality Benefits (% Removed)				
	Rate Control	Volume Reduction	TSS	P	N	Fecal Coliform	Metals
Infiltration	High	High	75-99%	50-75%	45-70%	75-99%	75-99%
Dispersion	High	High	High	High	High	High	High
Bio-Retention	Medium	Medium	75%	50%	50%	N/A	75-80%

Infiltration includes infiltration trenches, infiltration basins, dispersion, downspout dispersion, spreader trenches, splash block dispersion, concentrated flow dispersion, drywells, and any combination of the above.

In 2016, JBLM completed a stormwater retrofit project that reduced potential stormwater pollution from surface water runoff from outfall J003 discharging to Clover Creek. This retrofit was selected from the McChord Field Stormwater Management Study. The project re-routed existing stormwater flows to provide water quality treatment via a wet pond and infiltration into underlying soils. The wet pond will treat 91% of the flows to the site, with flows more than the treatment volume overflowing into the infiltration pond. For flow control, the project employs infiltration through infiltration ponds. The pond is designed to detain and fully infiltrate all design storms, including the 100-year storm event. Even though the facility is designed to handle the 100-year event, there is an 18-inch diameter emergency overflow pipe providing a tie back into the existing 36-inch storm main. The total calculated surface area of the drainage basin footprint associated to outfall J003 was 101.13 acres. The implementation of ponds reduced the basin’s contributing area by 75.28 acres or 74.44%. The remaining surface area still directed to discharge at outfall J003 is 25.85 acres or 25.56% of the historic basin, as is shown in the map below.

Figure 2: McChord Field Stormwater Drainages



In addition to the retrofit project completed in 2016, JBLM has capital improvement projects being implemented on McChord Field, which contributes stormwater flows into Clover Creek. The following were some capital improvement projects in fiscal year 2019 and 2020.

Table 6: Capital Improvement Projects 2019 & 2020

FY19 Funded Projects	
Repair failed storm lines McChord Field	Repair/replace failed storm lines. Pipes failing with exfiltration and blocked flow. Surcharging of system threatens to back up into catch basins
Repair Storm Lines South of Clover Creek to Joe Jackson Ave.	Repair leaking and crushed pipes. Repair manholes and catch basin
FY20 Funded Projects	
Culvert Inspection	Inspect culvert condition under McChord Field for structural integrity.
Repair storm lines and manholes, Clover Creek to West Ave and Correct Drainage	Repair leaking and crushed pipes. Repair manholes and catch basin

Sampling locations in Clover Creek include two in stream sampling locations (Clover Creek upstream and Clover Creek downstream) and three outfalls (J002, J003, and J007) to establish the water quality coming on to JBLM, the pollutant loading, and the water quality exiting JBLM. For a map of sampling locations in Clover Creek, see Appendix A, Figure 8. These samples were collected during quarterly stormwater sampling events from the fourth quarter of 2015 to the first quarter of 2019. Benthic macroinvertebrate sampling also took place at Clover Creek during October 2016 and 2017.

While the upstream and downstream sampling in Clover Creek indicate an improvement in overall water quality, there are significant impacts along the way depending on the associated outfall. The results of the Benthic Index for Biological Integrity (BIBI) and water quality monitoring data from outfalls J002 and J007 show that additional water quality improvements are needed along Clover Creek. For a complete analysis of water quality monitoring and BIBI results, see Appendix B.

An emerging contaminant of concern to consider when developing stormwater BMP retrofits is the tire-derived 6PPD-quinone. 6PPD is a tire preservative that helps prevent the degradation and cracking of rubber. The byproduct 6PPD-quinone comes from tire particles and enters receiving waters through stormwater runoff from roads and parking areas. Studies have shown that 6PPD-quinone is highly toxic to coho salmon.^{20 21}

²⁰ Tian et al., *A Ubiquitous Tire Rubber-Derived Chemical Induces Acute Mortality in Coho Salmon*. 2020. <https://www.science.org/doi/10.1126/science.abd6951>

²¹ U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration Fisheries, & Washington State University. *Coho Urban Runoff Mortality Syndrome in Puget Sound*. <https://fws.maps.arcgis.com/apps/MapSeries/index.html?appid=5dd4a36a2a5148a28376a0b81726a9a4>

More research is underway to develop analytical methods and further understand toxicology of 6PPD-quinone. Currently, there are no water quality criteria or EPA-approved sampling methods for 6PPD-quinone.

Ecology evaluated stormwater management practices to reduce 6PPD-quinone. In June 2022, Ecology published the Stormwater Treatment of Tire Contaminants Best Management Practices (BMP) Effectiveness Report that can be used as a resource by permittees to select stormwater BMPs based on their ability to mitigate 6PPD-quinone.²² By analyzing the physicochemical properties of 6PPD-quinone along with its anticipated fate and transport, Ecology's BMP report ranked BMPs based on their potential ability to provide treatment or prevent 6PPD-quinone from mixing with stormwater. The BMPs providing the highest potential for treatment and prevention of 6PPD-quinone mixing with stormwater are flow and treatment BMPs that provide dispersion, infiltration, or biofiltration.

As noted in Table 5 above, the retrofit projects identified in the McChord Field Stormwater Management Study prioritize BMPs based on infiltration and dispersion. Consistent with BMPs prioritized in Ecology's BMP effectiveness report, the EPA has determined that JBLM's implementation of these retrofit BMP projects would likely remove 6PPD-quinone in addition to the pollutants identified in Table 3.3.5 of the Permit.

Part 2.4.4.1 of the Draft Permit requires JBLM to utilize the 2016 McChord Field Stormwater Management Study to implement at least one retrofit project within the basin discharging to Clover Creek and continue to characterize the MS4 discharges to Clover Creek.

Part 2.4.4.2 of the Draft Permit requires that for any retrofit projects initiated during this permit term, JBLM selects retrofit projects that have been shown to effectively reduce the pollutants listed in Table 3.3.5 of the Draft Permit and 6PPD-quinone in stormwater discharge as detailed in Ecology's June 2022 Stormwater Treatment of Tire Contaminants Best Management Practices (BMP) Effectiveness Report.

Part 2.4.4.3 of the Draft Permit requires JBLM to assess the effectiveness of pollutant removal as a result of a retrofit projects completed during the permit term.

Part 2.4.5 of the Draft Permit requires the Permittee to provide appropriate training for all staff with job duties that include implementation of the new development, redevelopment and construction requirements of the SWMP. New employee training must occur within 6 months, and follow-up training must be provided to all employees, as relevant, to ensure that all employees remain up-to-date with changing procedures, techniques and requirements.

Part 2.4.6 of the Draft Permit requires the Permittee to summarize in each Annual Report the activities undertaken pursuant to this requirement, including number of site plans reviewed, number and type of inspections conducted, any follow-up actions including enforcement actions and training.

Pollution Prevention and Good Housekeeping for Operations & Maintenance [40 CFR §122.34(b)(6)]

This section is proposing the same pollution prevention and housekeeping for operations and maintenance conditions as the previous permit. During the previous permit cycle, the Permittee

²² Washington Department of Ecology, *Stormwater Treatment of Tire Contaminants Best Management Practices Effectiveness*, 2022.
https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/Content/Resources/DocsForDownload/2022_SWTreatmentOfTireContaminants-BMPEffectiveness.pdf?utm_medium=email&utm_source=govdelivery

complied with the conditions of this section. EPA is proposing to retain the same pollution prevention and good housekeeping for operations and maintenance permit conditions.

Part 2.5 of the Draft Permit articulates requirements for the Permittee to control pollutants in stormwater discharges from a variety of activities specific to JBLM. To successfully implement this requirement the Permittee must continue ongoing operation, maintenance, inspection and training procedures for all areas and activities from which pollutants can be discharged to the MS4. The Permittee must include these specific measures in the SWMP document.

Part 2.5.1 requires the Permittee to update, if necessary, and utilize the maintenance standards for all permanent stormwater facilities that the Permittee developed during the last permit term. Maintenance time limits are established for categories of facilities. The EPA is not establishing specific schedules for maintenance activities that requires construction greater than \$25,000. These should be taken on a case-by-case basis and allows the Permittee the discretion to address these larger projects through capital planning, which may have schedules that are difficult to predict. The EPA expects the Permittee to undertake maintenance as expeditiously as possible in all cases.

Part 2.5.2 requires annual inspections of all permanent stormwater facilities used for flow control and treatment, other than catch basins. Maintenance measures are required to ensure that these facilities meet the standards established in Part 2.5.1 of the Draft Permit.

Part 2.5.3 continues to require spot checks of permanent stormwater facilities, other than catch basins, after storms exceeding the 24-hour, 10-year event. A spot check, at a minimum, is a visual inspection, though it may also include things like determining the depth of solids accumulation, ensuring drains are clear, valves are functioning, or other assessments, as appropriate. Where damage is discovered, maintenance measures must be undertaken to ensure that these facilities meet the standards established in Part 2.5.1 of the Draft Permit.

Part 2.5.4 requires inspections of catch basins at least one time during the permit term, and removal of accumulated materials as needed. Decant water and solids must be properly disposed of per the requirements in Part 5.13 (*Removed Substances*) and Appendix D of the Draft Permit.

Part 2.5.5 establishes that compliance with the inspection requirements of Part 2.5.2 and 2.5.4 will be based on Permittee inspection records. The Permittee is required to inspect 95% of all stormwater facilities used for flow control and treatment, and 95% of all catch basins by the permit expiration date.

Part 2.5.6 requires documentation and implementation of management practices for a wide array of assets and activities in the MS4 area. The Permittee is required to ensure that the following activities are undertaken in ways that ensure the protection of water quality in the receiving waters: pipe cleaning; cleaning of culverts; ditch maintenance; street cleaning; road repair and resurfacing; snow and ice control; utility installation; pavement striping; roadside maintenance, including vegetation management; dust control; use of fertilizers, pesticides and herbicides; sediment and erosion control; landscape maintenance and vegetation disposal; trash management; and building exterior cleaning and maintenance.

Part 2.5.7 establishes training requirements for employees or contractors who implement any of the operation and maintenance requirements in this Draft Permit. New employee training must occur within

6 months, and follow-up training must be provided to all employees, as relevant, to ensure that all employees remain up-to-date with changing procedures, techniques and requirements.

Part 2.5.8 requires the Permittee to develop and implement a PFAS management plan.

Parts 2.5.8.1, 2.5.8.2 and 2.5.8.3 specifies the requirement to develop and implement appropriate stormwater management controls related to firefighting activities and subsequent clean-ups where PFAS containing substances have been used in the past. It also establishes a requirement for managing PFAS contamination already in the storm sewer system. Part 2.5.8.3 requires that the Permittee report on these activities in each annual report.

Part 2.5.9 requires the Permittee to develop stormwater pollution prevention plans (SWPPPs) within 2 years of the effective date of this permit for all equipment maintenance or storage yards and/or material storage facilities that are owned or operated by the Permittee, if those operations are not already covered under the MSGP.

Part 2.5.10 stipulates all reporting requirements to include: inspections, maintenance activities, explanations for failure to meet maintenance schedules and requirements, number of permanent stormwater facilities and catch basins subject to inspection requirements, and training undertaken.

e. Monitoring, Recordkeeping and Reporting Requirements

40 CFR § 122.34(d)(1) requires MS4 operators to evaluate program compliance, the appropriateness of BMPs in their SWMPs, and progress towards meeting their SWMP goals. Part 3.1, *Compliance Evaluation*, of the Draft Permit imposes this requirement by requiring the Permittee to evaluate compliance with the terms and condition of the permit at least once per year, and report on this evaluation in each Annual Report.

The federal regulation also states that “the NPDES permitting authority may determine monitoring requirements for the permittee in accordance with State/Tribal monitoring plans appropriate to the watershed. Participation in a group monitoring program is encouraged.” The Permit provides two monitoring strategy options from which the Permittee may choose. The first option requires the continuation of JBLM’s current multi-faceted monitoring and assessment plan. The second option allows the Permittee to participate in the Stormwater Action Monitoring (SAM) program.

Monitoring Option 1

Permitting authorities may prescribe a combination of physical, chemical and/or biological monitoring, or use of other environmental indicators, in order to support documentation of compliance with permit conditions and/or water quality standards [see 40 CFR § 122.34(d) and 40 CFR § 122.44(i) and 40 CFR § 122.48(b)]. If the permittee chooses Option 1, within six months of the effective date of the Final Permit, the Permittee must develop and submit to the EPA an updated monitoring/assessment plan. See Part 3.3, *Monitoring Option 1*, of the Draft Permit. This plan must build upon the monitoring framework of the previous permit and include a combination of wet weather discharge monitoring, water quality monitoring and biological, sediment and habitat benthic monitoring. The plan must also include other program metrics that the Permittee determines are appropriate for the scope of activities at the facility

as well as the relevant water quality issues.^{23, 24, 25, 26} For example, tons of solids and debris collected through street sweeping activities and catch basin clean-outs is one quantitative metric of pollutant removal, reflecting the mitigation of potential risk from tire particles and other pollutants associated with road runoff.

The monitoring and assessment strategy should establish metrics that will: identify causes/sources of water quality impairments; provide robust data to inform program management decisions over the short- and long-term; and establish baselines against which future progress can be assessed. The EPA encourages the Permittee to balance resource expenditures on assessments with establishment of a robust set of long-term metrics that are truly informative. Some short-term monitoring for a wider array of pollutants may be important for purposes of identifying sources and causes of water quality impairments. However, when establishing long-term metrics, the EPA encourages the consideration of a relatively short list of monitoring and sampling analytes that: 1) serve as good water quality indicators, and 2) reflect local water quality impairments.

Draft Permit Part 3.3.2, *Reporting Additional Monitoring and Assessment Activities*, requires that any additional monitoring undertaken by the Permittee be summarized and reported to the EPA. [40 CFR §122.41(l)(4)(ii)]

The Draft Permit includes a list of pollutants (Table 3.3.5, Pollutants of Concern) that the Permittee must continue to consider in developing the monitoring plan. The Permittee must continue to monitor stormwater discharges to American Lake and Clover Creek and monitor surface water in JBLM Canal, Murray and Clover Creeks. The Permittee should also consider other pollutants of concern not included in the Table, if they are of special concern to relevant operations, or the installation's receiving waters. In particular, the Permittee must consider pollutants that pose threats to threatened and endangered species in Puget Sound and its tributaries.

The Draft Permit increases the monitoring frequency of total and dissolved copper in surface water monitoring in the JBLM Canal from quarterly to monthly. In sampling data collected in 2016 and 2017, there were elevated concentrations of dissolved copper detected in the JBLM Canal. There is however analytical uncertainty in the sampling data, namely the elevated dissolved copper concentrations were greater than the total copper concentration samples collected during the same sampling events. The EPA is proposing to increase total and dissolved copper sampling frequency to monthly to collect more accurate data.

The updated monitoring plan must: ensure that samples and measurements taken must be representative of the monitored activity; prescribe standard sample collection, preservation and analytical methods; and develop and follow appropriate quality assurance procedures. The Draft Permit provides the Permittee the flexibility to optimize the monitoring strategy among wet weather discharge

²³ U.S. EPA, *Evaluating the Effectiveness of Municipal Stormwater Programs*, 2008. EPA-833-F-07-010.

https://www.epa.gov/sites/production/files/2015-11/documents/region3_factsheet_swmp.pdf

²⁴ U.S. EPA, *Measurable Goals Guidance for Phase II Small MS4s*.

<https://www.epa.gov/sites/production/files/2015-11/documents/measurablegoals.pdf>

²⁵ California Stormwater Quality Association, *Effectiveness Assessment guidance materials*.

https://www.casqa.org/effectiveness_assessment

²⁶ District Department of the Environment, *Revised Monitoring Program to meet the requirements of the District Department of the Environment's NPDES permit*, 2015. https://dcstormwaterplan.org/wp-content/uploads/DDOE_Revised_Monitoring_Program_DRAFT_FINAL_050815.pdf

monitoring at MS4 outfalls, in-stream water quality monitoring, and biological monitoring. However, the resulting strategy proposed to the EPA must use a combination of approaches that will successfully evaluate the effectiveness of the stormwater management program to minimize impacts from MS4 discharges on receiving waters. Following review of the Permittee's monitoring/assessment plan, the EPA will either: approve the plan as written and notify the Permittee to begin implementation or notify the Permittee that certain modifications are required and the schedule for revisions and implementation. The Permittee must begin implementation of the monitoring and assessment activities no later than 60 days following the EPA's written notice that the monitoring plan has been approved.

Part 3.6, *Recordkeeping*, of the Draft Permit requires the Permittee to retain all records documenting implementation of the SWMP in a location and format that are accessible to the EPA. The Permittee must provide records to the EPA upon request and make them available to public upon request. [40 CFR § 122.34(d)(2) and 40 CFR § 122.48(c)]

Part 3.7, *Reporting Requirements*, of the Draft Permit requires that all reports and other documents be submitted to the EPA. Consistent with the electronic reporting requirements that go into effect on December 21, 2020 (40 CFR §127), any reports submitted after that time must be submitted electronically. On October 22, 2015, the EPA finalized a rulemaking that modernizes Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. The final rule requires regulated entities and state and federal regulators to use existing, available information technology to report data required by the NPDES permit program electronically instead of filing written paper reports. The Permittee must sign and certify all electronic submissions in accordance with the requirements of Part 6.5, *Signatory Requirements*, of the permit.

The first reporting period will cover the period from the effective date of the permit until December 31, 2022. The first Annual Report must be submitted to the EPA no later than February 28, 2023. Subsequent annual reporting periods will align with calendar years, i.e., January 1 through December 31, and are due no later than the February 28th following the end of the reporting period. The EPA notes that these dates are premised on this permit being finalized before or around the end of calendar year 2022. If finalization of the permit occurs much later, the EPA will adjust the reporting schedules in the Final Permit.

The Permittee is required to submit Annual Reports to the EPA summarizing SWMP activities, progress, set-backs and data, as well as any other documents or information required by the permit [40 CFR § 122.34(d)(3)]. The Annual Report must reflect the status of the Permittee's implementation of the stormwater management program per the requirements of the permit during the relevant reporting period. All monitoring data collected during the reporting period must also be submitted to the EPA, per the requirements of Part 3.7.3, *Monitoring Reports*, of the Draft Permit [40 CFR § 122.34(d)(3)(ii)].

The Annual Report must follow the format provided in Appendix B of the Draft Permit, *Annual Report Template*. Pursuant to the implementation of the electronic reporting rule, the EPA will likely provide a modified Annual Report format during the permit term. The EPA anticipates a modification to the format in order to align with the structure of the electronic reporting system, which will not be completed prior to finalization of this permit. There will be no changes to the required reporting elements, thus a formal modification of the permit is not anticipated.

Monitoring Option 2

Part 3.4, *Stormwater Action Monitoring*, provides the Permittee an alternative option for monitoring.

The Stormwater Action Monitoring (SAM)²⁷ is a collaborative, regional stormwater monitoring program in western Washington that is funded by more than 90 cities and counties, the ports of Seattle and Tacoma, and the Washington State Department of Transportation. Additional funds and in-kind are contributed by other Washington state agencies, federal agencies, local businesses, and community volunteers. Participation in SAM would contribute to consistent tracking of pollutants, control efficacies and program effectiveness across the Puget Sound region and amplify the value of the investments in monitoring.

Monitoring of PFAS During Wet Weather Events

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the Permittee conduct quarterly ambient sampling for PFAS chemicals. This will result in at least ten (10) samples being collected over the 5-year permit term. A minimum sample size of at least 10 results is necessary to calculate the standard deviation and mean of the data with sufficient confidence.²⁸ As discussed in Permit Section 2.3.4, ambient monitoring locations will be identified within the first year of the permit and ambient water quality monitoring will begin within 18 months of the permit issuance.

The purpose of these monitoring and reporting requirements is to better understand potential discharges of PFAS from the JBLM MS4 and to inform future permitting decisions, including the potential development of water quality-based effluent limits. The EPA is authorized to require this monitoring and reporting by CWA § 308(a).

The EPA notes that there is currently not an analytical method approved in 40 CFR Part 136 for PFAS. As stated in 40 CFR 122.44(i)(1)(iv)(B), in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR Part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters. Therefore, the Draft Permit specifies that until there is an analytical method approved in 40 CFR Part 136 for PFAS, monitoring shall be conducted using Draft Method 1633.

f. Required Response to Violations of Water Quality Standards

To provide SWMP implementation expectations for JBLM that are consistent with the expectations imposed on other regulated federal MS4 operators the region, the EPA has proposed corrective action provisions in Part 4 of the Draft Permit. Such corrective action, or adaptive management, provisions have also been included in other stormwater discharge permits issued by the EPA, most notably in the MSGP²⁹.

²⁷ Washington Department of Ecology, Stormwater Action Monitoring Program, <https://ecology.wa.gov/Regulations-Permits/Reporting-requirements/Stormwater-monitoring/Stormwater-Action-Monitoring>

²⁸ EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water. EPA/505/2-90-001. <https://www3.epa.gov/npdes/pubs/owm0264.pdf>.

²⁹ U.S. EPA, *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity*, 2015. See Part 4, Corrective Actions. https://www.epa.gov/sites/production/files/2015-10/documents/msgp2015_finalpermit.pdf

The EPA notes the distinction between a violation of water quality standards and a violation of one or more provision of the permit. A water quality standards exceedance may or may not be the result of failure to adequately implement the permit. Once issued, noncompliance with any of the requirements of the Final Permit will constitute a violation of the Clean Water Act. The failure to report to the EPA (Part 4.1), or to evaluate SWMP implementation and identify management response actions upon notification from the EPA (Part 4.4), would constitute a violation of the permit and the Clean Water Act. Any actions and time periods specified by the EPA for remedying noncompliance as discussed in Part 4.4.2 does not absolve the Permittee of the initial underlying noncompliance; in addition, the EPA reserves its enforcement authority to respond to a violation of water quality standards even if the Permittee conducts the adaptive management response activities.

g. Standard Permit Conditions

Part 5, *Compliance Responsibilities*, and Part 6, *General Requirements*, of the Draft Permit contain standard regulatory language that must be included in all NPDES permits, consistent with 40 CFR §122.41. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. This standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements. Part 7, *Definitions*, defines technical and regulatory terms used in the permit. The EPA has updated text in these sections as necessary to reflect changes since the initial permit term.

h. Summary of Appended Information in Draft Permit

Appendix A –Annual Report Template

The EPA has provided the Annual Report Template to assist the Permittee in development of the Annual Report. The Permittee is not obligated to utilize the Template, as long as all of the elements included in the Template as specified in the permit are included in the Annual Report. The Final Permit will provide the Annual Report Template as a fillable pdf for ease of use by the Permittee.

Appendix B – Determining Construction Site Sediment Damage Potential

This Appendix is consistent with comparable requirements in Ecology’s Phase II MS4 Permit for Western Washington and provides a rating system that allows objective evaluation of the potential to discharge sediment from a specific construction or development site. Part 2.4.3.2 of the Draft Permit requires the Permittee to perform evaluations in advance of any construction or development activity, and inspect prior to any clearing activities, those sites with high potential to discharge.

Appendix C – Street Waste Disposal

Part 2.5.4 and Part 5.13 of the Draft Permit continues to require that all decant water and solids removed from catch basins must be disposed of in a manner such as to prevent pollutants from entering waters of the U.S., in accordance with the procedures included in Appendix D. These procedures provide for both street waste solids and street waste liquids.

VII. Other Legal Requirements

Endangered Species Act

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. §§1531-1544), the

EPA is required to consult with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (collectively referred to as the Services) to ensure that issuance of the NPDES permit supports the goal of protection and recovery of threatened and endangered species and habitats. The EPA is required to consult with the Services on ways in which the permit action may support this objective.

During the previous permit cycle, the EPA submitted its *Biological Evaluation for the Issuance of NPDES Permit (WAS026638) for Discharges from the Joint Base Lewis-McChord* MS4 to USFWS on April 24, 2013, and to NMFS on April 25, 2013. The EPA received concurrence from USFWS on June 20, 2013, on its determination that issuance of the JBLM MS4 Permit “may affect but is not likely to adverse effect” bull trout (*Salvelinus confluentus*) and designated bull trout critical habitat. The EPA received concurrence from NOAA Fisheries on July 12, 2013, on its determination that issuance of the JBLM MS4 Permit “may affect but is not likely to adversely affect” Chinook salmon (*Oncorhynchus tshawytscha*) or Steelhead (*O. mykiss*).

The EPA has determined that the proposed Permit reissuance discussed in this Fact Sheet continues to require JBLM to control stormwater discharges in a comprehensive manner, and therefore is not likely to cause any adverse effect to the listed species or critical habitats beyond that which was considered by the EPA, USFWS, and NOAA-Fisheries at the time of the previous issuance of the Permit.

Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with the NOAA-Fisheries when a proposed action has the potential to adversely affect (reduce quality and/or quantity of) EFH.

The EPA prepared an EFH assessment in concert with the Biological Evaluation discussed above and submitted it to NOAA Fisheries on April 25, 2013. On July 12, 2013, NMFS responded with conservation recommendations to avoid, mitigate or offset the impact of the proposed permit on coho salmon EFH. The EPA’s final permit, as modified, incorporated the NMFS recommendations related to water quality.

The EPA has determined that the proposed Permit reissuance discussed in this Fact Sheet continues to require JBLM to control stormwater discharges in a comprehensive manner that is consistent with the NMFS conservation recommendations, and as such will not cause any adverse effect to the coho salmon EFH beyond that which was considered by the EPA and NOAA-Fisheries at the time of the previous issuance of the Permit.

National Historic Preservation Act

With regard to the National Historic Preservation Act, if the Permittee engages in any activity which meets all of the following criteria, the Permittee must consult with and obtain approval from the State Historic Preservation Office prior to initiating the activity:

- the Permittee is conducting the activity in order to facilitate compliance with this permit;
- the activity includes excavation and/or construction; and
- the activity disturbs previously undisturbed land.

Some examples of activities subject to this permit condition and the above criteria include but are not limited to: retention/detention basin construction; storm drain line construction; infiltration basin

construction; dredging; and stabilization projects (e.g., retaining walls, gabions). The requirement to submit information on plans for future earth disturbing activity is not intended for activities such as maintenance and private development construction projects. The EPA finds that the reduction of pollutants in runoff from the MS4 will not result in the disturbance of any site listed or eligible for listing in the National Historic Register. Therefore, the EPA concludes that the actions associated with the reissuance of the JBLM permit comply with the terms and conditions of the National Historic Preservation Act.

CWA § 401 Certification

CWA § 401 requires EPA to seek state certification before issuing a final permit. As a result of the certification, the Department of Ecology may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with WQS, or treatment standards established pursuant to any State law or regulation. EPA sent a pre-filing meeting request to the Department of Ecology on June 21, 2022. EPA is sending a request for CWA § 401 Certification to the Department of Ecology.

Appendix A – Maps of JBLM
Figure 3: JBLM Vicinity Map

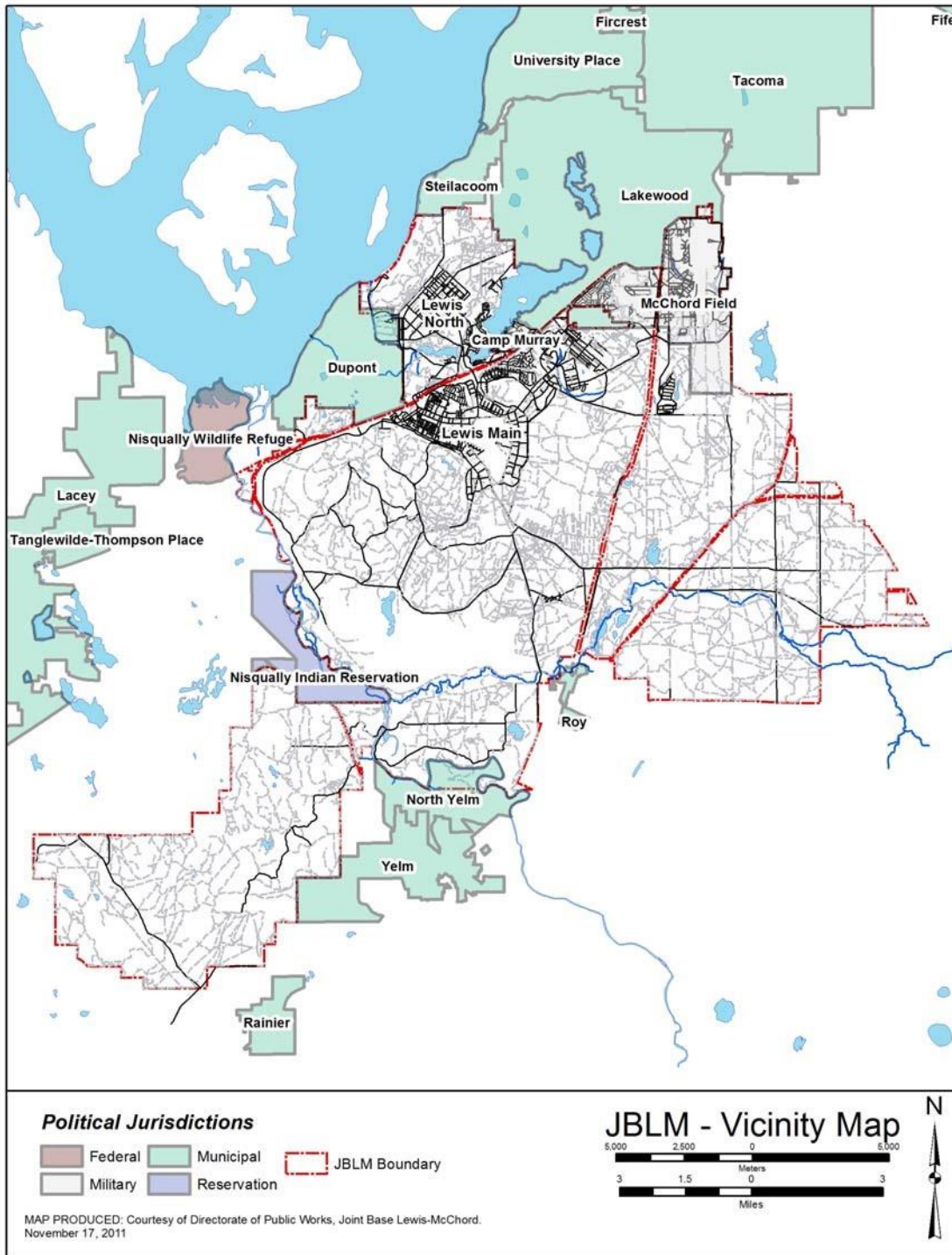
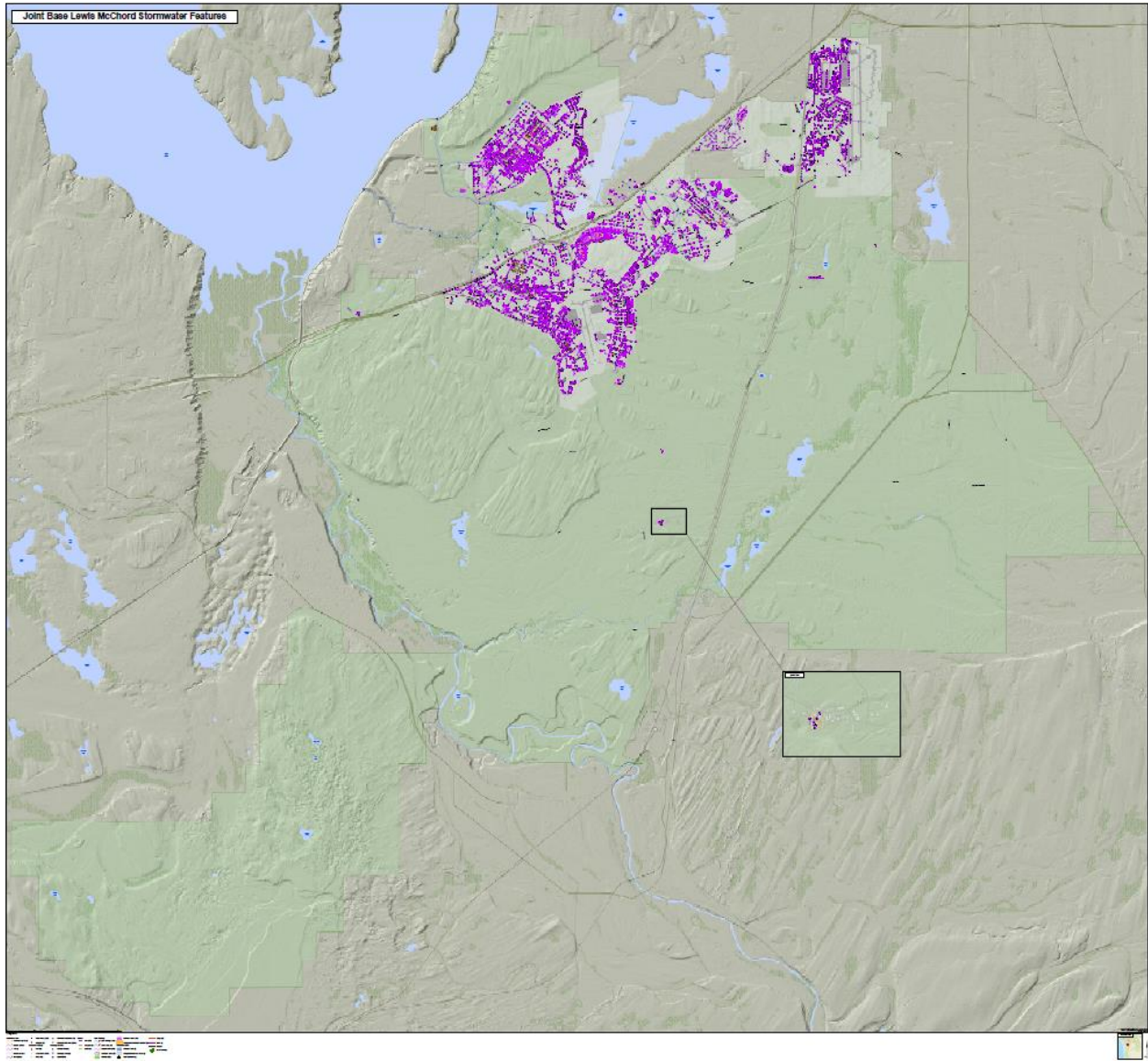


Figure 4: Joint Base Lewis-McChord Stormwater Features Map



Stormwater lines are highlighted in purple.

Figure 5: Map of WRIA 11, Nisqually

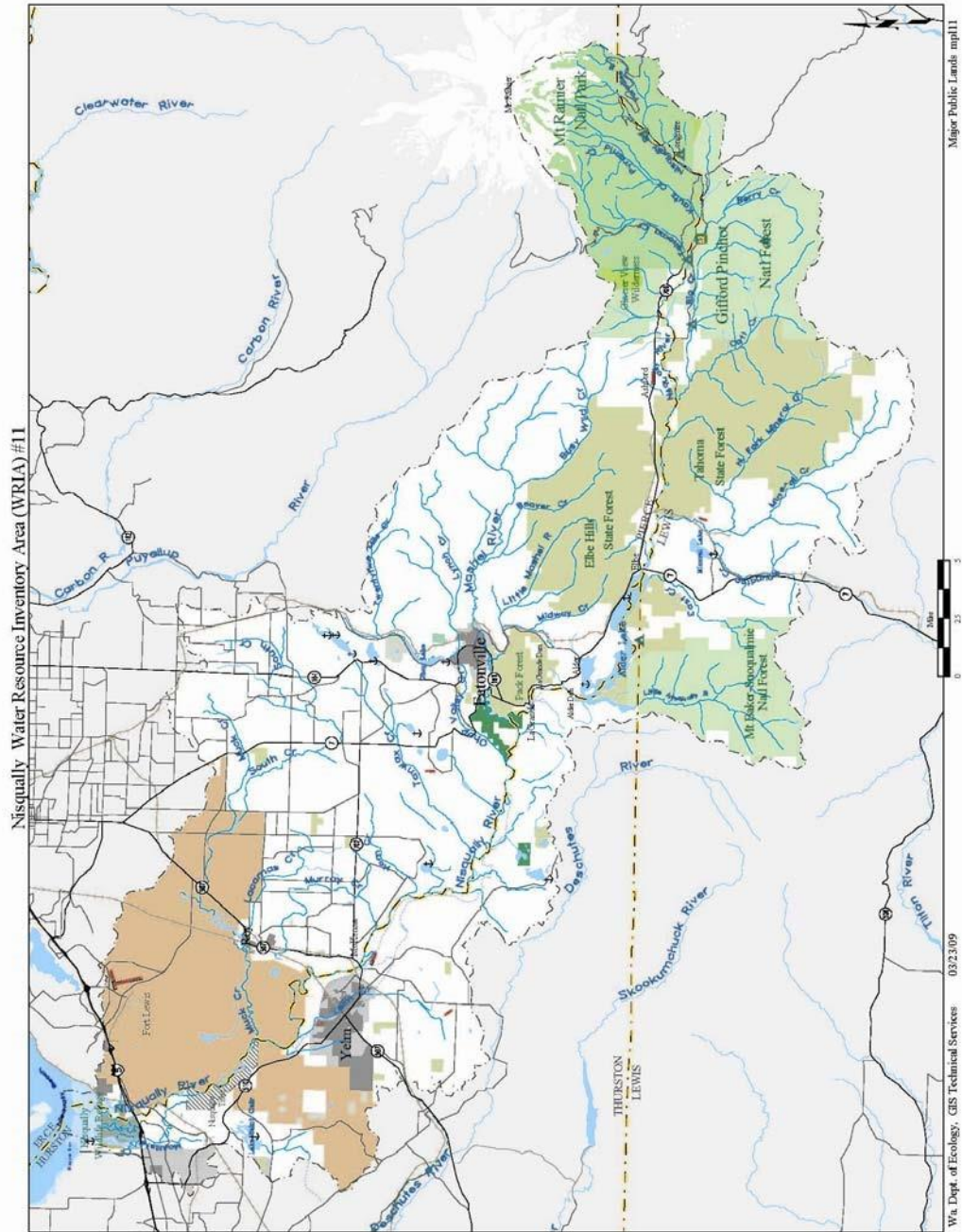


Figure 6: Map of WRIA 12, Chambers/Clover

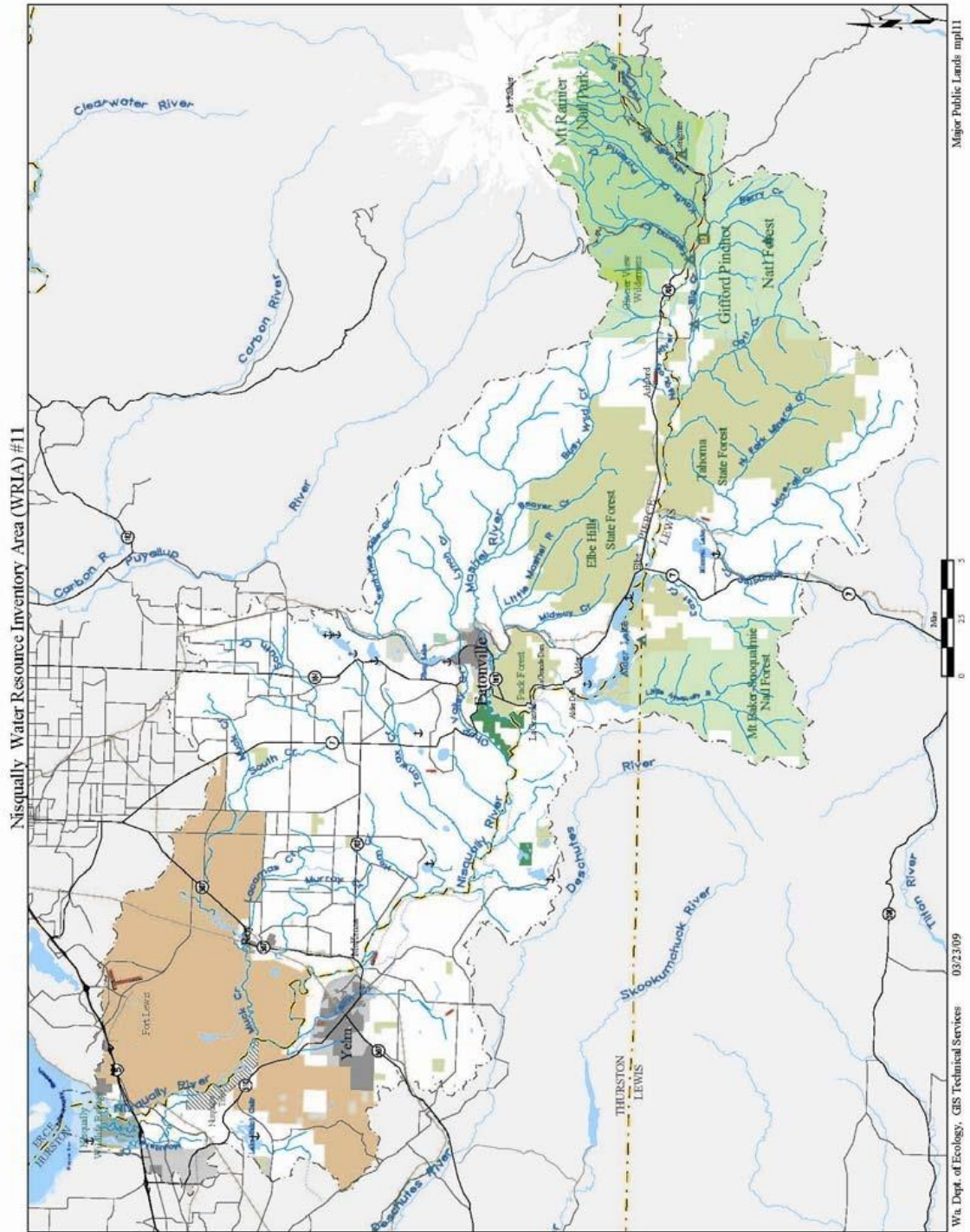


Figure 7: Map of Murray Creek/Sequalitchew Creek Watershed

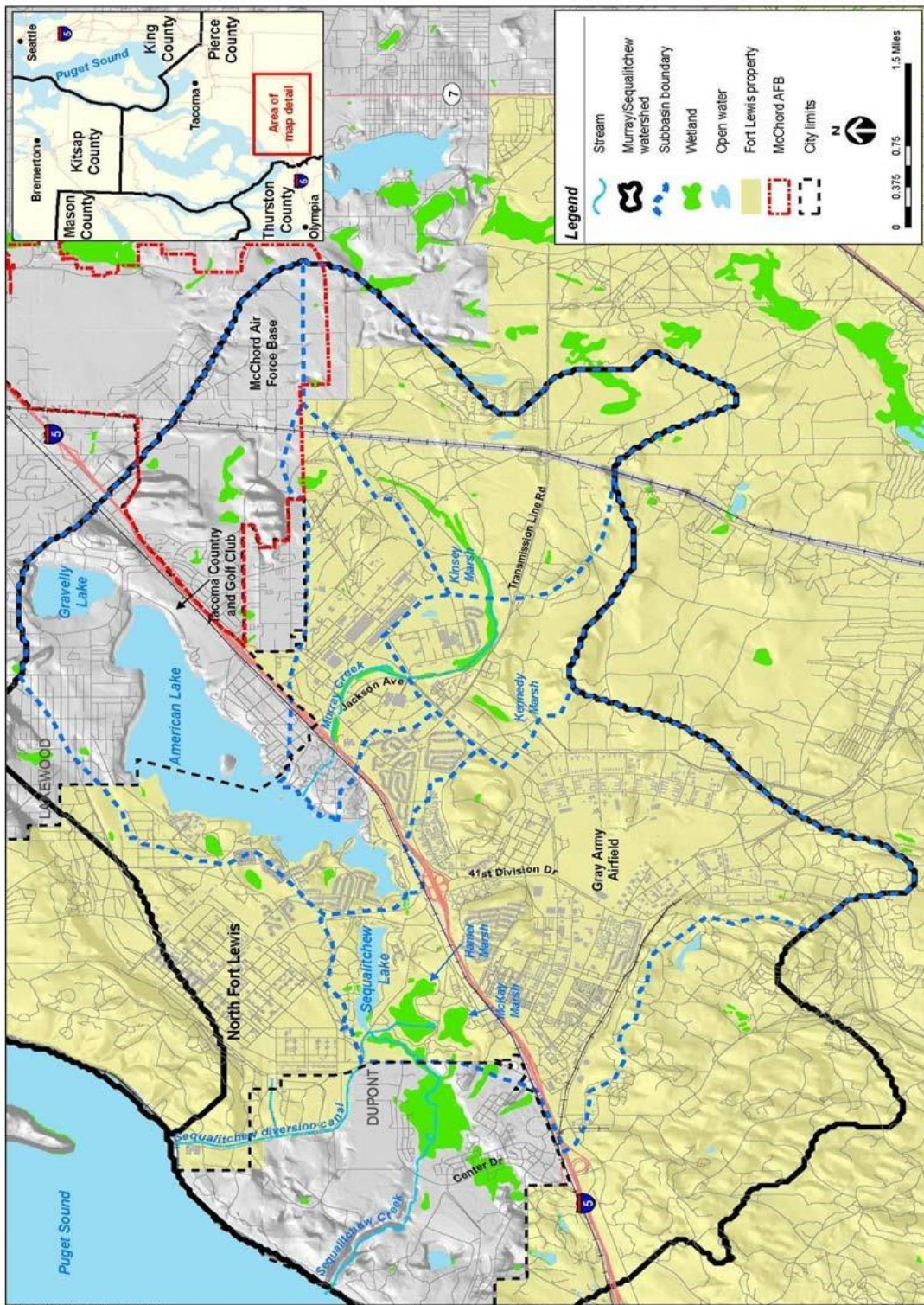


Figure 1-1 Project Vicinity and Location Map Showing Murray/Sequalitchew Watershed and Study Subbasins.

Figure 8: Map of Muck Creek Basin

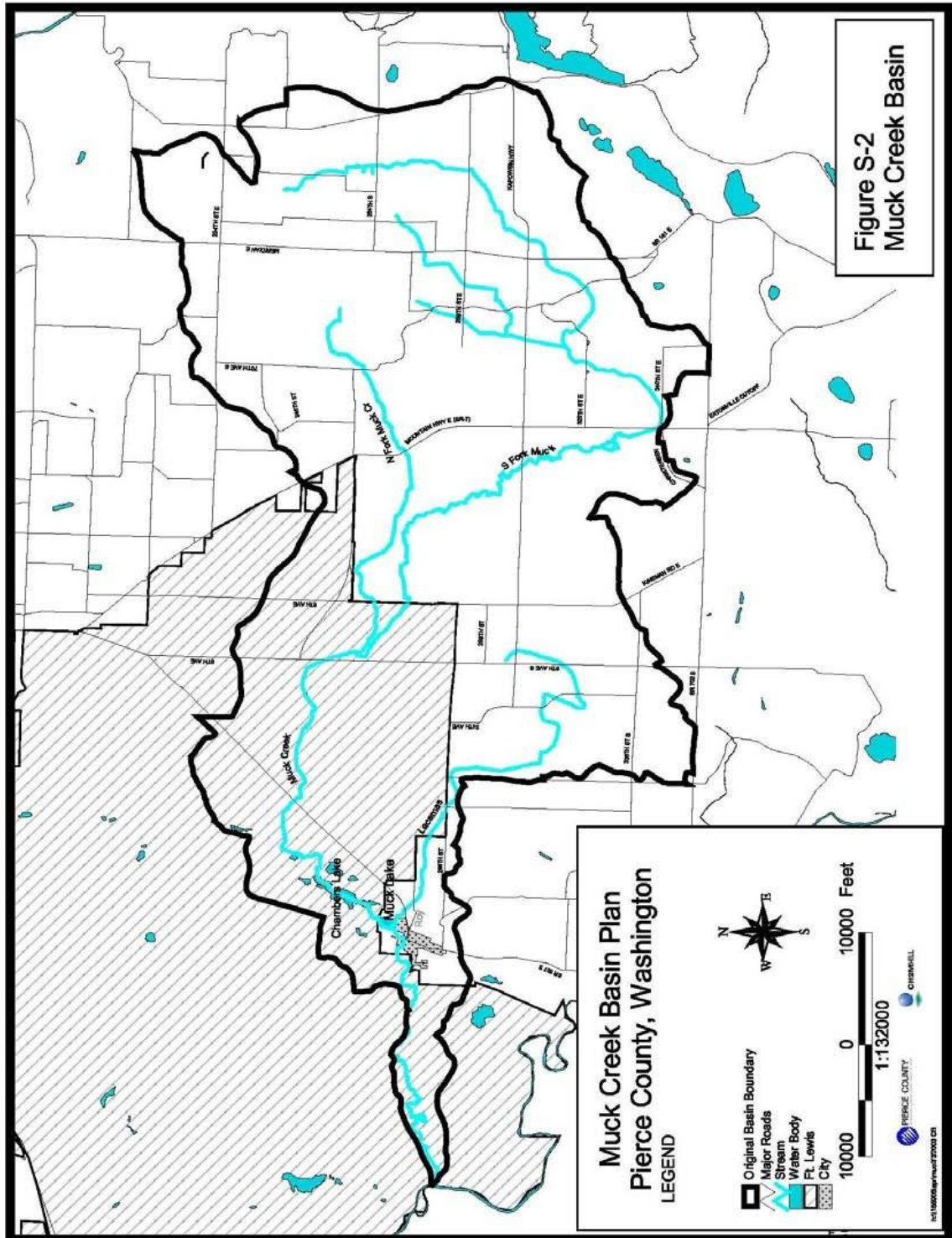


Figure 9: Map of Nisqually River Basin

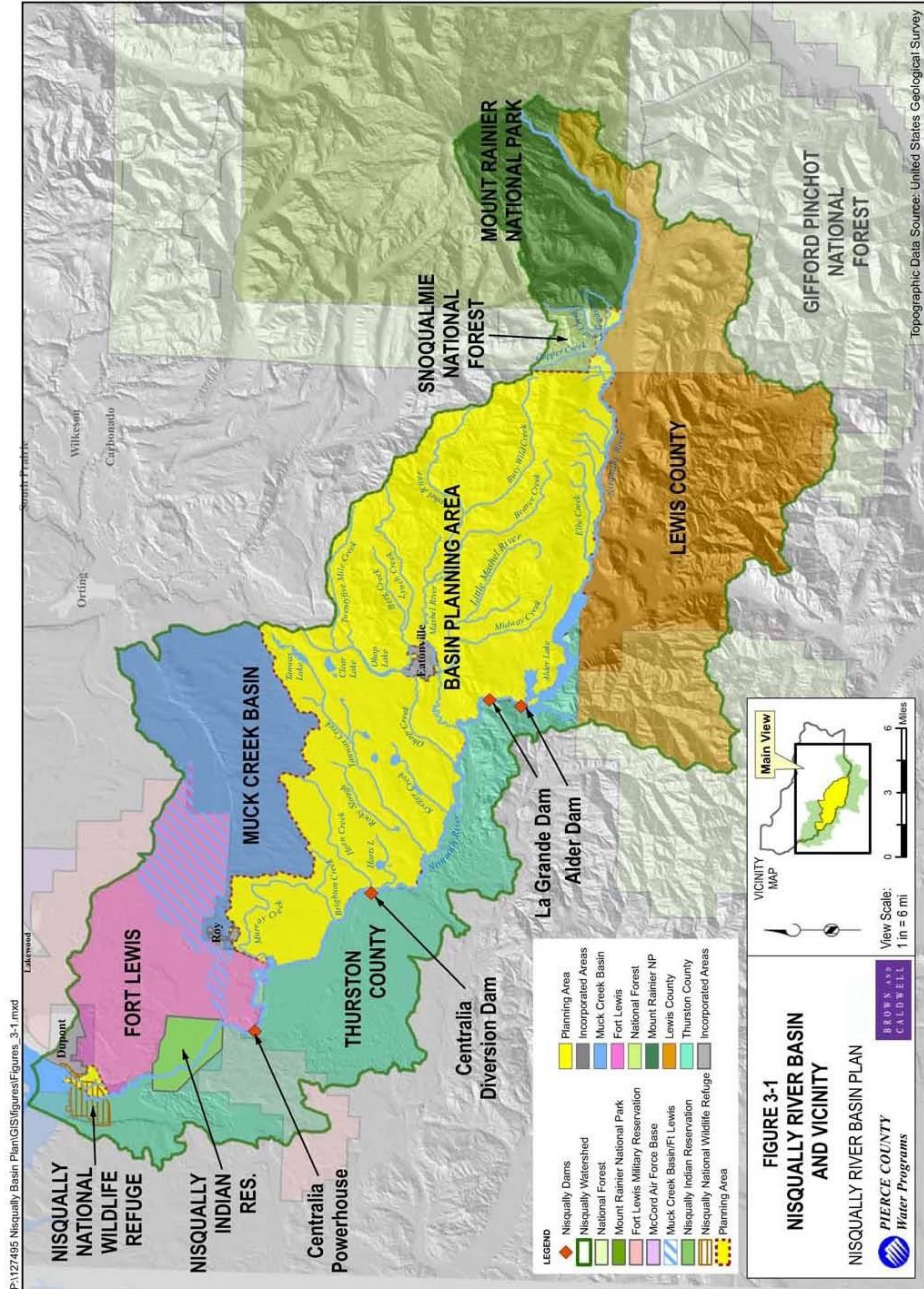


Figure 10: Map of Clover Creek Sampling Locations

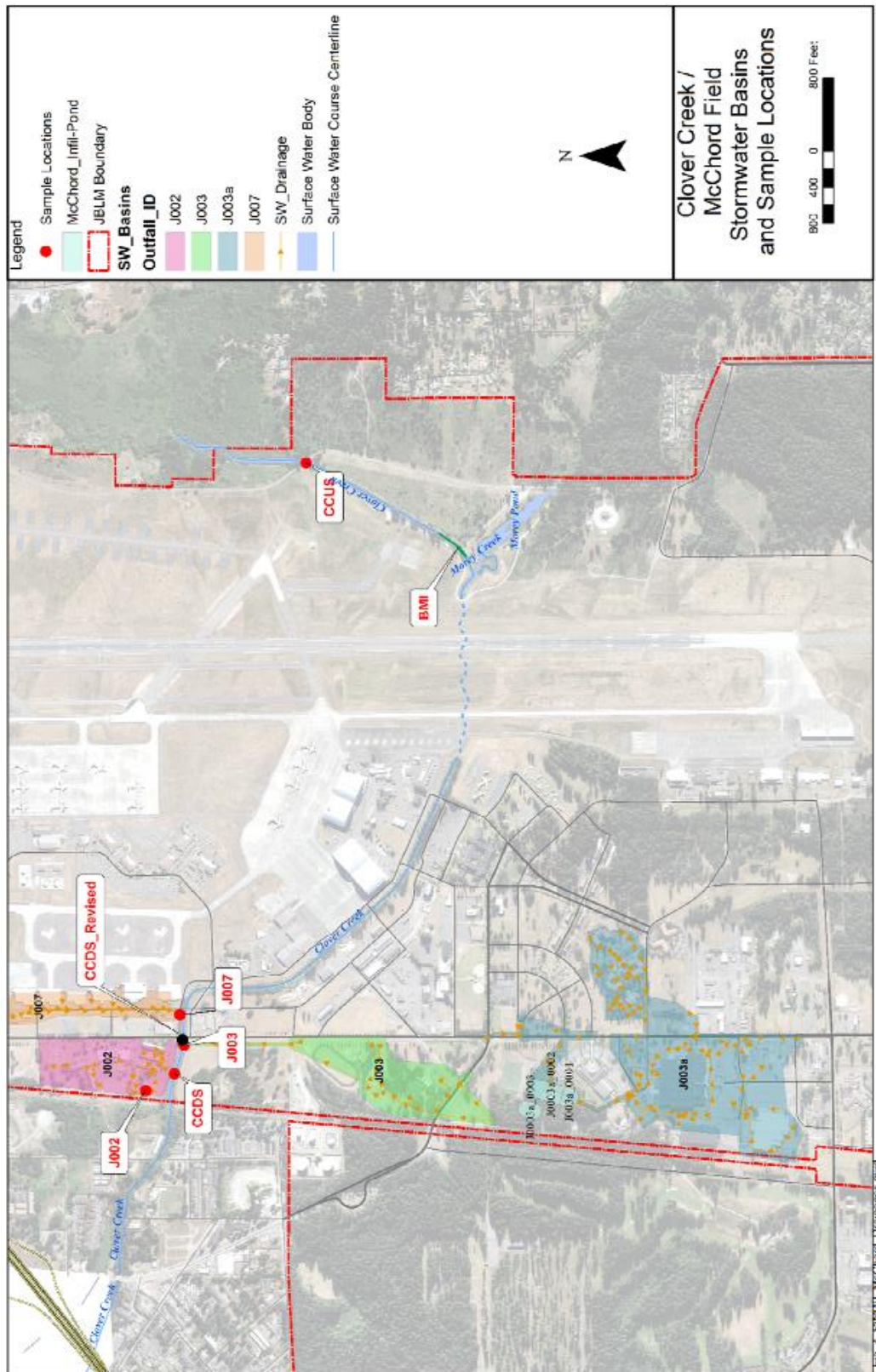


Figure 11: PFAS Areas of Potential Interest at JBLM

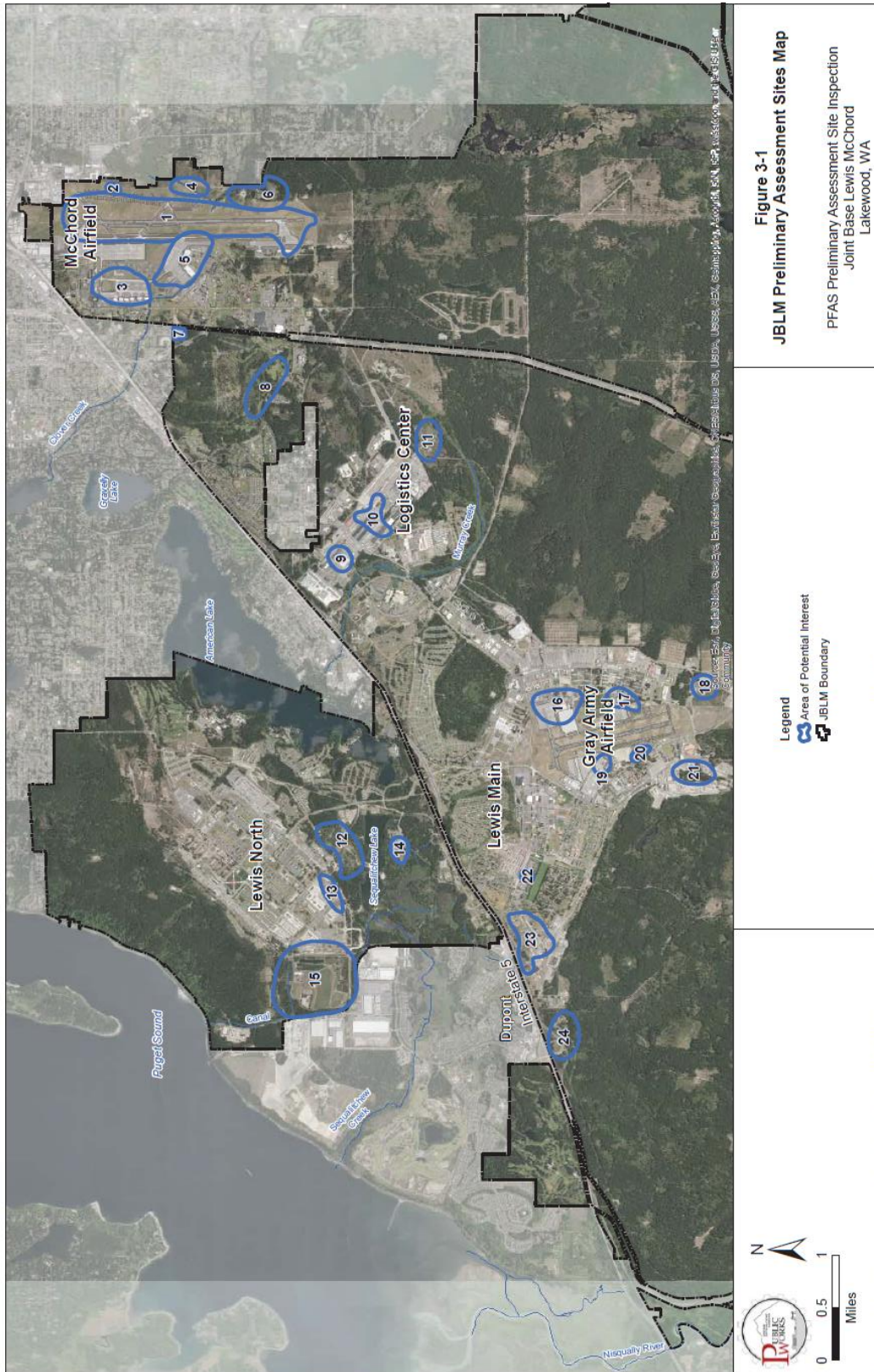


Table 7: JBLM PFAS Summary Table

PFAS Areas of Potential Interest (AOPI)	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 1 – McChord Airfield Runway	McChord – Aircraft Accident Responses	Along the McChord field runway, from north end to south end, and beyond in approach zones	Potential use of AFFF for firefighting, and release to surrounding environment.	1950 through 1991
	Landfill #12	McChord –south portion middle of runway	Landfill used for wastes including domestic solid waste.	1939- 1952
AOPI 2 – McChord Airfield Historical FT Area 027	FT027	McChord - located along the north end of the main runway	Historical use for firefighting practice.	1960 through 1977
AOPI 3 – McChord Airfield, North Hangar Area	Hangar 5 Building 1178	McChord - Northwestern portion	AFFF systems, and releases of AFFF to adjacent surfaces.	1967 through present day
	McChord AFFF Sump between Hangars 5 and 6	McChord – Protrudes from underground between Hangars 5 and 6	Potential release of AFFF from sump.	Unknown date through present day
	Hangar 6 Building 1160	McChord - Northwestern portion	AFFF systems, and releases of AFFF to adjacent surfaces. System activation release in 2009, foam was approximately 3 feet deep in hangar. System activation was reportedly due to freezing temperature conditions. Release from the system of an unknown volume of AFFF in 2011. Dripping to ground surface was observed from AFFF system drainage pipe on exterior wall.	1999 through present day

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AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 3 – McChord Airfield, North Hangar Area (cont'd)	Hangar 7 Building 1164	McChord - Northwestern portion	AFFF systems, and releases of AFFF to adjacent surfaces. AFFF concentrate release in 2010 of approximately 5 to 10 gallons to mechanical room.	1958 through present day
	Hangar 9 Building 1166	McChord - Northwestern portion	AFFF systems, and releases of AFFF to adjacent surfaces.	1958 through present day
	McChord AFFF Sump between Hangars 9 and 10	McChord – Located underground between 9 and 10	Potential release of AFFF from sump.	Unknown date through present day
	Hangar 10 Building 1167	McChord - Northwestern portion	AFFF systems, and releases of AFFF to adjacent surfaces. Dripping to interior floor surface was observed from AFFF AST inside hangar.	1958 through present day
	McChord Flight line Infield – 4 Aviation Fuel Tanks	McChord – Four bulk fuel tanks located within infield east of Hangars 9 & 10	Potential use of AFFF for firefighting, and release to surrounding environment.	Unknown date through present day
	Hangar 13 Building 1174	McChord - Northwestern portion	AFFF systems, and releases of AFFF to adjacent surfaces. AFFF concentrate release in 2017 of approximately 50 gallons to mechanical room. AFFF concentrate release in approximately 2016 of approximately 1,500 gallons to mechanical room.	1999 through present day
	McChord AFFF Sump West of Hangar 13	McChord – Located underground West of Hangar 13	Potential release of AFFF from sump.	Unknown date through present day

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AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 4 - McChord Airfield Historical FT 028, FT029, FT030	FT028	McChord - west of the perimeter road	Historical use for firefighting practice.	One to two years during the early 1960s
	FT029	McChord – Reportedly of the confluence of Clover Creek and Morey Creek	Historical use for firefighting practice.	Unknown
	Historical FT Area 30	McChord – southeast of the hazardous cargo loading area	Historical use for firefighting practice.	1955 to 1960
AOPI 5 - McChord Airfield, South Hangar Area	Historic FT Area 033 Fire Station #105/ Building J00006	McChord – Area of Building J00006	Historical use for firefighting practice. Current storage of bulk AFFF, and refilling of ARFFs. Test application of AFFF spray pattern onto flight line. Dripping to interior floor surface was observed from AFFF AST inside fire station garage.	Used as FT-33 from 1940s through 1950 Fire station in use through present day
	Clover Creek	McChord – Crosses via culvert beneath middle of runway, and then flows on surface towards northwest, extending to west boundary of JBLM, many outfalls to creek that have collected storm water from McChord airfield.	Receiving storm water from hangars equipped with AFFF systems, and other historical AFFF releases.	Present day feature. AFFF systems remain in nearby hangars, therefore a potential source of PFAS
	Hangars 1 and 2 Buildings J00001 and J00002	McChord - West of central portion of runways	AFFF systems, and releases of AFFF to adjacent surfaces.	1939 through present day

Joint Base Lewis-McChord Municipal Separate Storm Sewer System

AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 5 - McChord Airfield, South Hangar Area (cont'd)	Hangars 3 and 4 Buildings J00003 and J00004	McChord - West of central portion of runways	AFFF systems, and releases of AFFF to adjacent surfaces. System activation release in 2012 of approximately 3,000 gallons, foam accumulated 20 feet deep in hangar. System activations also possibly in 2008, 2010, 2012 & 2013, release volume unknown.	1939 through present day
	Hangar 301 McChord Field Runway	McChord – South end, west side of McChord Field runway	AFFF systems, and releases of AFFF to adjacent surfaces.	1957 through present day
	Historical wash rack and Taxiway D	McChord – Northwest of Hangar 2	Historical use of surfactants at Wash Rack/ARFF vehicles foam spray pattern testing at Taxiway D.	1950s through early 1970s
AOPI 6 – McChord Airfield FT031, FT032, Landfill 022, Landfill 013	FT031	McChord - East side of runway, approximately 500 feet south of Morey Creek	Historical use for firefighting practice.	1950 to 1955
	FT032	McChord - East side of runway, near Clover Creek	Historical use for firefighting practice and AFFF use.	1975 through 1990, reconstructed in 1997 to current configuration
	Landfill 013	McChord - East side of runway, approximately 800 feet south of FT 032	Disposal of soils excavated from FT032.	1950 – 1979. Soils excavated from FT032 were deposited possibly in 1990
AOPI 7 – McChord Airfield Main Bulk Fuel Tank Farm	McChord – Main Bulk Fuel Tank Farm	West of North Well	Potential use of AFFF for firefighting, and release to surrounding environment.	Unknown date to present day

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AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 8 – American Lake Garden Tract Landfill 005	Landfill 005	Northeast of Logistics Center and Landfill #2	Potential leaching of PFAS compounds to groundwater.	1951 – 1961, waste oil burning 1952 - 1964.
AOPI 9 – Northwest Logistics Center	Historical waterproofing in area of Buildings 9570/9580	Logistics Center, northwest portion	Historical use of waterproofing.	Unknown
AOPI 10 – Central Logistics Center	Building 9612 Current wash rack	Northeast of Rainier Drive	Surfactants use.	Unknown date through present day
	Building 9626 Historical wash rack	North of Rainier Drive and South L Street intersection	Historical surfactants use.	Unknown
	Building 9636 Bulk “Fuel Spot”	Logistics Center, center portion	Potential release from AFFF system. This is dry system charged only during fire, so no PFAS supply remains onsite.	Unknown date through present day
	Historical waterproofing in area of Buildings 9630/9640	Logistics Center, middle northwest portion	Historical use of waterproofing.	Unknown
	Historical Laundry-Building 9060	Logistics Center	Historical use of surfactants.	Unknown
AOPI 11 – Logistics Center Landfill #2	Landfill #2	Southeast of Logistics Center	Potential leaching of PFAS compounds to groundwater.	1940s to 1970s
AOPI 12 – Lewis North Landfill #4	Lewis North - Landfill #4	North of Sequelitchew Lake	Potential leaching of PFAS compounds from landfill contents to groundwater.	1951 - 1967
AOPI 13 – Lewis North AOC 15-1 and Wash Rack	AOC 15 (1957)	Along north side of South Drive	Historical use of AFFF for firefighting practice.	At least in the 1950s
	Current wash rack	South Drive and A Street Intersection Adjacent to Lewis North AOC 15-1 and 15-2	Surfactants use.	Unknown date through present day

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AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 14 – Historic Solvent Refined Coal Power Plant	SRCPP (FTLE-32)	South of Sequalitchew Lake, near drinking water production Well 12B	Unknown compounds used in coal solvent refining process, could have included PFAS, proximal to Sequalitchew Spring Well and Well 12 A/B.	1974 - 1981
AOPI 15 – Lewis North Landfill #5	Landfill #5	West side of Lewis North	Potential leaching of PFAS compounds from landfill contents to groundwater, wastewater treatment plant biosolids disposal, surface water drainage to the landfill and infiltration through landfill contents.	Primarily in 1950s through 1960s, with non-landfilling operations in more recent years
AOPI 16 – Gray Army Airfield Hangars 3106, 3146, 3101 and FTLE-17	Army National Guard Hangar 3106	Ft Lewis – Northeast corner of Gray Army Airfield	AFFF system, and releases of AFFF to adjacent surfaces. AFFF concentrate release in approximately 1985 of unknown volume to mechanical room.	1985 through present day
	FTLE-17	Ft Lewis – Within northeast portion of Gray Army Airfield flight line, approximately 600 feet northwest of Hangar 3146, beneath 10” thick concrete helicopter ramp (parking)	Historical Fire Training Area.	1962 - 1982
	Hangar 3146	Ft Lewis – Within northeast portion of Gray Army Airfield, south of larger Hangar 31010 (31010 is very new hangar)	AFFF system, and releases of AFFF to adjacent surfaces. AFFF concentrate release in 2001 of approximately 10 gallons to mechanical room.	1987 through present day
	Hangar 3101	Northeast Portion of Gray Army Airfield	AFFF system, and releases of AFFF to adjacent surfaces.	Constructed last year so not used with PFAS AFFF

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AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 17 – Gray Army Airfield Hangar 3273 and storm drainage	Army Reserve Hangar 3273	Ft Lewis – Southeast Portion of Gray Army Airfield, East of Flight Line	AFFF system, and releases of AFFF to adjacent surfaces.	2006 through present day
	Storm water Drainage Swale near Hangar 3273	Approximately 500 feet southwest of Hangar 3273	Receives storm water from near hangar equipped with AFFF System.	Unknown date through present day
AOPI 18 – Lewis Main SWMU-47 and FLT-54 Wash Rack	SWMU-47 Historical Firefighting Training Area	Ft Lewis – Southeast of Gray Army Airfield, west of wash rack	Historical Firefighting Training Area.	Unknown date range
	FLT-54 Wash Rack Equipment 3559 - 3562	South of Gray Army Airfield - near SWMU-47	Surfactants.	Unknown date through present day
AOPI 19 – Gray Army Airfield Hangar 3063 and Fire Station 102	Hangar 3063	Gray Army Airfield – along flight line on west side	AFFF system, and releases of AFFF to adjacent surfaces. Reported AFFF release of one pint in 2009.	Unknown date through present day
	Fire Station 102 – Building 3081	Gray Army Airfield – along flight line on west side	AFFF bulk storage in adjacent outbuilding. AFFF storage and refilling.	Unknown date through present day
AOPI 20 -Gray Airfield Hangar 3098 and Buildings 3095 and 3099	Hangar 3098	West side of Gray Army Airfield	AFFF system, and releases of AFFF to adjacent surfaces. AFFF concentrate release in 2008 of approximately 250 gallons to mechanical room.	Unknown date through present day
	Building 3095	West side of Gray Army Airfield	AFFF system, and releases of AFFF to adjacent surfaces.	Unknown date through present day
	Building (Temporary) 3099	Gray Army Airfield – along flight line on west side	AFFF release reportedly occurred inside of an aircraft. Reported AFFF release of 500 gallons to the inside of an aircraft.	Unknown date through present day

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AOPI	Known/Potential PFAS Operations/Uses	General Location	Potential Concern	Approximate Years of Operation
AOPI 21 – Gray Airfield Landfill #1	Landfill #1	Approximately 1,000 feet west of southwest corner Gray Army Airfield	Potential leaching of PFAS compounds to groundwater.	1946 – 1951, or through early 1970s (sources vary)
AOPI 22 – Lewis Main Fire Station 7 Building 2014	Fire Station 7 – Building 2014	On Pendleton Avenue, between 3rd and 4th Streets	AFFF storage in, and refilling of, ARFFs, and delivery of bulk quantities of AFFF. Dry wells indicated as adjacent to building.	Unknown date through present day
AOPI 23 – Lewis Main Buildings 04074,04076, 1401, 4100, 1206 and 1210	Buildings 04074 & 04076	West part of Ft Lewis – Southwest of Traffic Circle	Historical canvas waterproofing.	Specific date range not known. Was observed active in 1990s
	Building 1401 - Formerly known as Building 1402 Historical Laundry operation since 1941	West part of Lewis Main – South of I-5 near Exit 119/ Dupont Gate	Historical use of surfactants at laundry operation.	1941 through 1999
	Fire Station 1 – Building 4100	Northwest of Intersection of West Way and Lewis Drive	AFFF storage in, and refilling of, ARFF vehicles, and delivery of bulk quantities of AFFF.	Unknown date through present day
	Buildings 1206/ 1210 Ranges	West Lewis Main (Forestry)	Storage of AFFF, and unknown area of use.	Unknown. A database of chemicals distributed to various locations, indicated AFFF was on inventory here in 2003-2004)
AOPI 24 - Lewis Main Landfill #9	Landfill #9	West part of Ft Lewis – I-5 Interchange, Exit 118, south and north of I-5	Potential leaching of PFAS compounds from landfill contents to groundwater.	1930s and 1950s

Appendix B – Analysis of Water Quality Monitoring Data in Clover Creek

For Clover Creek, outfall J003 is the greatest contributor of copper, total kjeldahl nitrogen (TKN) and phosphorus. Outfalls J002 and J007 also discharge to Clover Creek and contribute the highest concentrations of zinc and fecal coliform. In addition, sampling results from January 2019 at J002 and J007 for dissolved zinc and dissolved copper are consistent with previous findings. This supplementary data for J002 found dissolved copper levels at 2.86 µg/L and dissolved zinc at 98.8 µg/L. The data for J007 found dissolved copper at 1.60 µg/L and dissolved zinc at 27.7 µg/L. These two areas are also the greatest contributors of NWTPH-Gx (Gas) and NWTPH-Dx (Diesel) when compared to J003. While the average fecal coliform levels at J002 and J007 exceeded Ecology's water quality standards of 200 cfu/100mL, J003 levels remained well below the average.

Pierce County analyzed surface water samples for temperature based on a maximum of 17.5°C. Samples collected by the JBLM Stormwater Program were collected quarterly at outfall locations to assess temperature input along with other pollutants. All average inputs were below Pierce County's maximum average. For dissolved oxygen (DO), Pierce County used 8.0 mg/L as a benchmark for surface water, which outfalls J002 and J007 fail to meet. Lower DO levels are expected from runoff in comparison to surface water.

The EPA is outlining requirements for JBLM to continue to conduct benthic macroinvertebrate sampling in both Murray Creek and Clover Creek at least twice during the permit term. The Puget Sound Partnership established Ecosystem Recovery Targets for the Puget Sound basin in July 2011 which include a target stating that "By 2020, 100% of Puget Sound lowland stream drainage areas monitored with baseline Benthic Index of Biological Integrity (BIBI) scores of 42-46 or better retain these excellent scores, and mean BIBI scores of 30 Puget Sound Lowland drainage areas improve from 'fair' to 'good.'" Using BIBI as an indicator of the effects of development and stormwater runoff on watershed health is viewed by many regional experts working with the Puget Sound Partnership as appropriate and accurate monitoring for Puget Sound lowland streams.³⁰ Pierce County, Thurston County, and others currently are conducting such monitoring of stream health using similar macroinvertebrate sampling protocols. These organizations are conducting analysis/scoring of samples according to the Puget Sound Lowlands BIBI, which is reflected on the Puget Sound Stream Benthos website (www.pugetsoundbenthos.org).

BIBI was conducted at Clover Creek in October 2016 and October 2017. Any score lower than 25 gives a low biological integrity and is considered poor. Both BIBI scores, a score of 20 in 2016 and 22 in 2017, point to poor health of indicator species populations insinuating a lack of biodiversity. These low scores show the need for JBLM to continue BIBI testing in the proposed permit cycle. While low scores indicate poor health of indicator species populations, JBLM pointed out that available habitat along stream banks and within the stream can also play a major role. For future benthic macroinvertebrate sampling it may be beneficial for JBLM to consider conducting an additional biodiversity assessment on downstream on Clover Creek, as well as assess the creek overall for future vegetation projects to improve shading and habitat availability for wildlife.

³⁰ For example, see: Karr, J.R., and E.W. Chu. 1997. *Biological Monitoring and Assessment: Using Multimetric Indexes Effectively*, EPA 235-R97-001. University of Washington, Seattle, and Pierce County. 2011. Appendix A. BIBI Sampling SOP & Field Sheet *Quality Assurance Project Plan for Targeted Stormwater Management Program Effectiveness Monitoring*. Prepared in Compliance with Section S8.E of Pierce County, Washington's Phase I Municipal Stormwater Permit. Feb. 2011; and Puget Sound Partnership – Setting Targets for Puget Sound Recovery – Revised Addendum to Technical Memorandum on Runoff from the Built Environment (May 16, 2011 Draft).

Appendix C – Antidegradation Analysis

The EPA is required under Section 301(b)(1)(C) of the CWA, 33 U.S.C. § 1311(b)(1)(C) and implementing regulations (40 CFR §§ 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with State water quality standards, including antidegradation requirements. The State of Washington has established antidegradation rules (WAC 173-201A-300).

The antidegradation policy of a state's WQS represents a three-tiered approach to protecting and maintaining current water quality and uses into the future (40 CFR 131.12). Tier I of antidegradation protection applies to all water bodies under the CWA and ensures that existing in-stream water uses and the water quality necessary to protect those uses will be maintained and protected. Tier II protection applies to any water bodies considered to be high quality waters (where the water quality exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water) and provides that water quality will be maintained and protected unless allowing for lower water quality is deemed by the state as necessary to accommodate important economic or social development in the area. In allowing any lowering of water quality, the state must ensure adequate water quality to fully protect existing uses, as well as designated uses. Tier III protection applies to water bodies that have been designated by the state as outstanding national resource waters and provides that water quality is to be maintained and protected.

The objectives of Washington's antidegradation requirements are to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface waters.
- Ensure that all human activities likely to contribute to a lowering of water quality at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three Tiers of protection for surface waters of the State.

Tier I ensures the maintenance and protection of existing and designated uses. Tier I applies to all waters and all sources of pollution. Tier II prevents the degradation of waters that are of higher quality than the criteria assigned, except where such lowering of water quality is shown to be necessary and in the overriding public interest. Tier II applies only to a specific listing of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resources waters," and applies to all sources of pollution. This Draft Permit addresses antidegradation to Tier I and Tier II waters. The Draft Permit does not propose to authorize discharges to Tier III waters.

The MS4 Permit for JBLM is a renewal of the permit to authorize these discharges. All permit conditions in the Draft Permit are equally or more stringent as the previous permit, and beneficial uses will not be impaired by JBLM.

As a permanent army and air force military base, JBLM has been in existence for almost century. It was formally established as a U.S. Army facility in 1927 and a U.S. Army airfield in 1938. Thus, the stormwater discharges being authorized have been ongoing for many years. As such, the permit does not authorize the increased discharge of any pollutant, and EPA contends that there will be no new or expanded discharges of stormwater that would cause a measurable lowering of water quality. Through required activities under the first permit term, JBLM retrofitted areas of the base to reduce the overall volume of stormwater discharged into receiving waters and improved the treatment of stormwater prior to discharge throughout the MS4 system.

The quality of JBLM MS4 discharges will continue to improve, and the quantity of stormwater discharged will continue to decrease, after the permit is reissued because JBLM is required to continue stormwater management controls consistent with the updated 2019 Stormwater Management Manual for Western Washington. The permit requires the continuation of the stormwater retrofit program that will result in a continued net reduction in stormwater volume. Further, the reissued permit continues to include an adaptive management process that requires JBLM to implement timely revisions to their stormwater management program when discharges may cause or contribute to exceedances of water quality standards. Therefore, the EPA believes that this permit will maintain and protect the existing and designated uses of the receiving water, consistent with WAC 173-201A-310 and 40 CFR 131.12(a)(1).