



CITY OF MOSES LAKE

Stormwater Division



Stormwater Management Program

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CITY OF MOSES LAKE

Stormwater Management Program

Version 1.0

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RCW 90.48.080

Discharge of polluting matter in waters prohibited.

It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters according to the determination of the department, as provided for in this chapter.

[1987 c 109 § 126; 1967 c 13 § 8; 1945 c 216 § 14; Rem. Supp. 1945 § 10964n.]



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Acronyms and Abbreviations

AKART	All Known And Reasonable Treatment
BMP	Best Management Practices
CWA.....	Clean Water Act
DOE	Washington State Department of Ecology
EPA.....	United States Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4.....	Municipal Separate Storm Sewer System
NPS.....	Non Point Sources
NPDES.....	National Pollutant Discharge Elimination System
SPCC	Spill Prevention Control and Countermeasures plan
SWMP	Stormwater Management Program
SWMMEW	Stormwater Management Manual of Eastern Washington
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UIC.....	Underground Injection Control
WSDOT.....	Washington State Department of Transportation

Introduction

The City of Moses Lake... Lake Sports Capital of Washington

Moses Lake is a 6,500-acre freshwater lake centrally located in Grant County. The community lies in a prime tourism location on the I-90 corridor with good proximity to both east and west sides of the state. Moses Lake is the largest natural body of fresh water in Grant County, and has three main arms totaling over 18 miles long and up to one mile wide, offering 120 miles of shoreline and incomparable opportunities for wildlife and bird viewing, water sports, fishing, boating, and hiking. Due to its size, warm waters, location, and vast recreational offerings, it is Central Washington's recreational destination - the "Desert Oasis".

RECREATIONAL LAKE USES

- SIGHTSEEING (73%)
- HIKING (35%)
- WILDLIFE VIEWING (31%),
- WATER SPORTS (28%)
- FISHING (22%)
- BOATING (19%)
- BIRD WATCHING (13%)
- HUNTING (4%)

USER SURVEY (DDI, 2007)

The community of Moses Lake is centered around its waterbody, and recreation and tourism are keystones of the city. Visitors and residents enjoy a vast variety of recreational opportunities centered on the lake. The City of Moses Lake is dedicated to preserving its greatest asset.



Figure 1: Moses Lake - Parker Horn

NPDES Permit Background

The Clean Water Act (CWA) was enacted by the federal government in 1972, and has been the cornerstone of surface water quality protection in the United States. The Environmental Protection Agency (EPA), in conjunction with state and tribal governments, is responsible for the implementation of the CWA standards to regulate discharges from point and non-point sources to maintain surface water quality. The EPA developed the National Pollutant Discharge Elimination System (NPDES) program to administer these standards.

In 1987 the CWA was modified to include stormwater in the NPDES program. The regulations of the NPDES program require municipalities to obtain a permit to discharge stormwater from their Municipal Separate Sewer Systems (MS4s) into waters of the state, such as Moses Lake. The EPA has delegated authority to the Department of Ecology (DOE) to issue and enforce such permits.

The initial phase of the permitting process, Phase I, went into effect in 1990 and addressed cities over 100,000 in population. However, in 1999, the EPA amended the rules to include all municipalities in census defined urban areas with a population greater than 1,000. There are now three categories of NPDES permits tailored to the specific requirements and characteristics of a region, each with slightly different regulations:

- Phase I Municipal Stormwater Permit – Population of over 100,000; regulates the discharge from MS4s in Clark, King, Pierce and Snohomish counties, and the cities of Seattle and Tacoma
- Phase II Western Washington Municipal Stormwater Permit – Population of over 1,000; regulates the discharge from MS4s in at least 80 cities and portions of five counties in Western Washington
- Phase II Eastern Washington Municipal Stormwater Permit – Population of over 1,000; regulates the discharge from MS4s in 20 cities and portions of eight counties in Eastern Washington

Moses Lake was issued a Phase II Eastern Washington Municipal Stormwater Permit that became effective on February 16, 2007. This permit is scheduled to be renewed in February, 2012.

The requirements of the permit are to

- Reduce the discharge of pollutants from its MS4 to the Maximum Extent Practicable (MEP)
- Meet state AKART (All Known, Available, and Reasonable methods of prevention, control and Treatment) standards
- Protect water quality

The City is required to develop a stormwater management program (SWMP) that includes the following six components from section S5.C of the permit:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post Construction Stormwater Management for New Development and Redevelopment
- Pollution Prevention and Operation and Maintenance for Municipal Operations

The SWMP must also address any Total Maximum Discharge Limits (TMDLs) that may be in effect for the waterbody pursuant to Section S7 of the permit, must provide a program for long term monitoring of water quality, and must apply an adequate system for reporting and recordkeeping.



Administration

Moses Lake’s Stormwater Division is a branch of the City’s Municipal Services Department, which provides administration for water quality programs and policies. Maintenance of stormwater facilities and structures is provided by the City’s Public Works Street Department.

The Stormwater Division is committed to providing the public, local government, businesses and contractors with the education and tools that they need to maintain high standards of water quality throughout our watershed. This includes partnering with other agencies and individuals committed to protecting the environment, continuing to employ best management practices (BMPs) to maintain water quality, establishing new programs and opportunities for citizens to participate in the cause, and cooperating with the NPDES Phase II permitting requirements.

The NPDES Phase II permit requires the City to develop and implement its Stormwater Management Plan (SWMP) by 2011, addressing all segments of the permit. The City is also required to provide written documentation of the Plan both on its website and as submitted to the Department of Ecology (DOE) in conjunction with its Annual Report, no later than March 31 of each permit year. This SWMP is a living document, to be updated as policies and procedures evolve, and is not to be considered as a final document until so designated by the City.

The City strongly encourages the participation of interested citizens in providing comment on developing policies and procedures. If you would like to submit questions, comments or suggestions, please contact Michelle Shields, Stormwater Program Manager at:

- Mail:** 321 S. Balsam – P.O. Box 1579
Moses Lake, WA 98837
- Phone:** (509) 764-3783 Municipal Services main number
(509) 764-3792 Stormwater Program Manager/ Reporting hotline
- Email:** mshields@ci.moses-lake.wa.us
- Web:** <http://www.ci.moses-lake.wa.us>

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Public Education and Outreach

Permit requirements

**NPDES
S5.B.1**

The City is required to create a public education and outreach program designed to inform the public about the impacts of stormwater discharges to water bodies and what they can do to reduce their contribution to stormwater pollution. This program should target the following

audiences:

- The general public
- Businesses and industry
- Engineers, contractors and developers
- Municipal staff and elected officials

The permit also requires the City to perform periodic evaluation of the program's effectiveness in reducing or eliminating behaviors that contribute to stormwater impacts, and use that data to direct the program more effectively. The City must also maintain records and documentation of public education and activities within the program.

Current Activities

The City operates a stormwater web page on its home page (<http://www.ci.moses-lake.wa.us/259.html>), including the following information:

- Information for the general public explaining the importance of water quality, stormwater impacts, and actions individuals can take to improve water quality
- Information regarding illicit discharges, what constitutes an illicit discharge, and a reporting hotline and feedback form for spills or dumping
- Information on City programs impacting water quality
- Contact information for City departments involved in stormwater activities

Beginning in 2008, the City's Stormwater Division has partnered with the City's Water, Wastewater and Recycling programs, Washington State Department of Fish and Wildlife, and Grant County Solid Waste to provide an informational booth at the annual Grant County Fair



Figure 2: Grant County Fair booth 2008

This week-long event provides the Stormwater Division a valuable opportunity to make public contact, provide information and education about what the City does, how nonpoint activities make an effect on water quality, and how the public can make an impact within their own sphere.

This public event has the added benefit of allowing the City to gain new contacts with other agencies, which will be pursued in upcoming projects.

The Stormwater Division also provides public information through such avenues as the City’s outgoing utility bills, the city newsletter, and public service announcements (PSAs) on local AM/FM radio stations, which coordinate with the messages being run in the utility billing handouts.

Informational handout materials for the public and for local contractors are available on the web and in City Hall. Additionally, the City is currently partnering on three projects of statewide significance to develop educational materials targeted at specific outreach groups and demographics. These statewide grant projects are slated for completion in 2011, and will produce a suite of materials that will carry a cohesive message about water quality throughout the state. These materials will replace earlier materials borrowed from other jurisdictions or developed by the City.

- EDUCATION AND OUTREACH TO MOBILE & HOME BASED BUSINESSES
Partners: **Snohomish County**, City of Seattle, Kitsap County, City of Wenatchee, City of Moses Lake
 - EASTERN WASHINGTON CONSTRUCTION EROSION & SEDIMENT FIELD GUIDE
Partners: **Asotin County**, Eastern Washington NPDES Coordinators Group members
 - EASTERN WASHINGTON STORMWATER OUTREACH CAMPAIGN
Partners: **Asotin County**, Eastern Washington NPDES Coordinators Group members
- (Lead agencies in **bold**.)

Planned Activities

Beginning in 2011, the City anticipates the expansion of our PSAs to include other media outlets, such as the following:

- Local newspaper and the free Nickel classified gazette
- Channel 3 television

Video PSAs are among the educational materials being developed by the statewide grant projects, and will be customized for Moses Lake and distributed on local television media when they are available.

Initially, information was distributed in a broad manner, primarily to establish familiarity of the public with the Stormwater Division, its goals and practices. In 2010, the City identified three to four specific target audiences for the public information campaign and began to produce a more cohesive program of outreach. By 2011 we anticipate this targeted campaign to be fully operational.

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Public Involvement and Participation

Permit requirements

NPDES S5.B.2

The permit requires the City to ensure that its SWMP provides proper and legal public notice during implementation. The City must provide to the public opportunities for community involvement through such avenues as advisory panels, public hearings, participation in developing rate-structures, environmental activities, volunteer opportunities, or other similar activities.

The City must also provide some type of opportunity for the public to provide input on their SWMP, and must post the most current version of its SWMP document and its permit annual report on its website for public review.

Current Activities

Beginning with the establishment of the City Stormwater website, efforts have been made to solicit public input and participation. The webpage features a hotline number for water quality issues, and a comment form for public input.

As of the close of 2007, the latest version of this document (SWMP) has been available for viewing on the website, and shall be successively updated as new information becomes available.

The City held three public meetings on stormwater policies focusing on the creation of a stormwater utility. These informational meetings included City staff, council members, and a representative from the Department of Ecology's Eastern Regional office, and were a forum both to provide information on stormwater policies and procedures, and to obtain feedback from the public. The City also added a feedback form on the stormwater website for public comment.

In the process of holding public stormwater meetings, the City took input from a number of commercial business owners who were interested in stormwater issues. These individuals formed a committee, which has worked with the City to develop policies and regulations.

Most of the City's stormwater ordinances and regulatory mechanisms were introduced and passed in 2010, including those pertaining to the stormwater utility, utility rates and credits, construction and post-construction controls, and illicit discharges. As policies are adopted or changed, they are subject to review and approval by City Council, and thus open to public comment at that time. City Council agendas and meeting minutes are available to the public on the City website at <http://www.ci.moses-lake.wa.us> (see tab "Agendas & Minutes").

The City also held an informational meeting in 2010 for contractors, developers, and other construction professionals to provide information about the new municipal code, and how to meet local and state requirements for erosion and sediment control. This open house session included City staff and a representative from the Department of Ecology's Eastern Regional construction stormwater office, who were on hand to answer questions,

provide information, and receive feedback from the public. Additional sessions may be scheduled as public interest dictates.

Planned Activities

As the SWMP evolves, we anticipate that emerging policies and issues may necessitate additional opportunities for public input and participation. The City will hold public meetings or participate in the formation of watershed committees as the need arises. The City may also elect to solicit feedback in the form of online or physical questionnaires focusing on specific issues and policies, as well as maintain the general feedback form on the website.

Beginning in 2008, the City established a Storm Drain Marking Program for public participation. Groups holding events place markers at storm drain locations, leaflet neighborhoods with stormwater information, and log storm drain conditions in the area. The gathered information is then integrated into the Stormwater GIS map for each structure

During the summer of 2009 and 2010, several civic groups have held marking parties. The program has currently marked approximately two thirds of the City's storm drains in the past two years. The local newspaper has provided coverage of these events, which added visibility to both the Stormwater Program and the issue of water quality in general, as well as providing recognition to the groups for their achievement.

This program has provided the most impact of any other element in the City's stormwater program, and is responsible for a substantial increase in stormwater incident reporting and an increase in water quality comprehension on a public level.

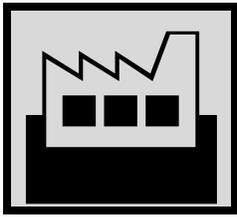
In recent years Moses Lake High School has adopted a required public service activity component to their graduation requirements ("Senior Project"). The City is partnering with the Key Club (Kiwanis) at the High School to offer the Storm Drain Marking Program as part of the list of suggested Senior Projects.

poster



Figure 3: Storm Drain Marking Program promo poster

Opportunities still exist for groups to hold marking parties, and other creative arenas for partnering are currently being sought.



Illicit Discharge Detection and Elimination (IDDE)

Permit requirements

**NPDES
S5.B.3**

The permit requires the City to develop, implement and enforce a program to detect and eliminate illicit connections and discharges, including spills, into the MS4.

The Permit's requirements for development of an IDDE program are focused on three primary areas:

▪ **MAPPING**

The City is required to develop a map of the MS4, identifying the entire stormwater system and all known connections. This map will be part of the City's master GIS mapping program, and include the following items:

- Stormwater structures, including underground injection control (UIC) wells
- Conveyance lines
- Outfalls
- Receiving waters
- Surface conveyances and structural BMPs owned or maintained by the City

These items may include the following information, depending on type: structure ID, direction of flow, size, type, project information and date of installation, incident and inspection reports, registration date and number (UIC wells) and photo/video documentation.

This master stormwater system map shall be supported by field surveys to locate and map any unknown connections, and shall be complete by the end of the permit term in 2012.

The City shall maintain the currency of this master map and, when requested, will make this map available to other agencies.

▪ **REGULATION**

The permit requires that the City provide a regulatory mechanism to prohibit non-stormwater discharges into the MS4.

Non-stormwater discharges that **are prohibited** include the following items, unless specific conditions in the permit are met:

- Discharges from potable water sources
- Discharges from lawn watering and other irrigation runoff.
- Dechlorinated swimming pool discharges.
- Street and sidewalk wash water
- Other non-stormwater discharges (as determined by the permit)

Non-stormwater discharges that **are not prohibited** include the following items:

- Diverted stream flow or flows from riparian habitats and wetlands
- Springs or rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Irrigation water from agricultural sources that is commingled with urban stormwater
- Water from crawl space pumps, footing or foundation drains, and air conditioning condensation

The permit requires the City to establish and implement an enforcement strategy including escalating enforcement procedures and actions.

▪ **DETECTION AND ELIMINATION**

The City is required to develop and implement an ongoing IDDE program to detect and address non-stormwater discharges to the MS4, including spills, illicit connections and illegal dumping. This program includes the following key areas:

- Develop procedures for locating priority areas which are likely to have illicit discharges or spills, or that have been sites of prior complaints
- Implement field assessment activities for the purposes of detecting illicit discharges
- Develop discharge evaluation and reporting procedures
- Develop source tracking and remediation procedures
- Implement an educational element that provides information to the public about the hazards associated with illegal discharges and improper disposal of waste.
- Establish and publicize a hotline for public reporting of spills and other illicit discharges. The City must keep a record of all calls received and all follow-up actions, and this information must be included in the annual report.
- Provide procedural training to all stormwater inspections and office staff, and other municipal field staff that may observe an illicit discharge or connection to the MS4 during the course of their duties.

Current Activities

The City conducts regular visual inspections of all known stormwater outfalls on an annual basis during the winter months when the lake level is low and all structures can be readily observed and accessed.

Maintenance, photography and cleaning of the structures are performed at this time. This visual inspection also includes an evaluation and report of any illicit discharge observed at the location.



Figure 4: Annual outfall inspection



Figure 5: FOG Illicit discharge event - catch basin

The City’s Stormwater Division regularly responds to reports of illicit discharge, including backtracking and remediation.

Until the creation of the Stormwater Division, all such reports and service calls were received and processed by the Street Division, which oversees maintenance of the City’s stormwater system.

As of 2008, these incoming calls began to be routed to the Stormwater Division via the hotline number (1-509-764-3792) or through the website’s illicit discharge reporting form. The City has developed a process for tracking and reporting all illicit discharge reports, and the Street Division supervisor and the Stormwater Division work jointly to investigate and remediate these discharges as they take place.

IDDE REPORTS BY YEAR	
2008	4
2009	7
2010	20

In 2009 City Council passed Ordinance #2539 creating Chapter 13.02 of the Moses Lake Municipal Code prohibiting illicit discharges and creating sanctions for illegal dumping and connections.

Mapping of the City’s stormwater system exists, but is outdated, and is currently being updated to reflect accurate locations of all structures, new and existing, including global positioning system (GPS) locations. This update began in 2009, and is ongoing. In 2008, the existing maps were imported into the City’s geographical information system (GIS) in order to link additional information to the structures which existed in several locations and formats (inspection reports, incidents, photos, as-builts, etc). Before the information was linked to the GIS system, users would have to search in several different locations for information pertaining to a particular part of the stormwater system, which carries a high cost in staff time and frustration, particularly in an emergency situation. Updating the stormwater map and integrating the database information is one of the Division’s highest priorities.

As part of a grant received by the City through the Department of Ecology in 2009 the City contracted with an outside agency to investigate and TV some of its storm main lines. Previous to this project, the City had no way to view or assess these existing storm lines, some of which have been in the ground for fifty years. This project provided condition and structural information on approximately 38,600 feet of storm line and allowed the City to

view any unknown connections to the system and prioritize lines for cleaning and/or repair. This information will be processed and added to the GIS system as well.

This grant also paid for a portable computer and handheld GPS unit, both of which will be utilized by the Illicit Discharge investigator in the field, both to access existing information and to input new information gathered during investigations.

During the summer of 2010, the majority of the remaining nonlocated storm structures were GPS located and imported into the master map during winter of 2010-2011. These updates, as well as simultaneous work on registration of the City's many UIC wells, will result in the storm master maps being approximately 80% complete in 2011.

Planned Activities

In 2010 the City began enforcement of IDDE regulations to prohibit illicit discharges, made investigations as needed, and provided public education where necessary. These activities are ongoing. In 2011, the City plans to conduct staff training on illicit discharge detection, elimination, and reporting for non-stormwater field personnel.

Also in 2011, the City will expand the GIS stormwater maps into our existing GIS program, which will give users the capability to track all outflow from intake to final discharge point. Users will be able to quickly access structure and system information, sizing and capacity, inspection information, photos and video. This will enable users to make quick and accurate assessments in the field, using existing technology to access the maps from a field location. This module will enhance the GIS database that is being built and provide access to a larger number of users.

The City will continue to inspect and maintain outfalls on an annual basis. This information will be fed into the stormwater database, as will the video inspections obtained from the main stormwater lines. Outfall and video inspection information is scheduled for import into the database as soon as the master map is substantially complete and all new structures are identified, named and located.



Construction Site Stormwater Runoff Control

Permit requirements

**NPDES
S5.B.4**

The permit requires that the City develop, implement and enforce a program to reduce pollutants in any stormwater runoff from construction activities that disturb one acre or more, and from construction projects of less than one acre that are part of a common plan of development or sale.

All public and private projects, including City projects, must comply with these requirements.

The City is required to have a regulatory mechanism requiring runoff pollution controls at all construction project sites that addresses the following minimum standards:

- Regulations shall apply to construction sites disturbing one acre or above, or projects of less than one acre that are part of a common plan of development or sale. The City shall retain the right to apply these regulations to smaller sites if they present a hazard to water quality.
- The City must provide information to construction site operators on the minimum requirements of the NPDES permit.
- Construction operators will be bound by these requirements, which include submittal of *Construction Stormwater Pollution Prevention Plans* (SWPPPs) and application of BMPs as necessary to protect water quality and satisfy state All Known and Reasonable Treatment (AKART) requirements. These SWPPPs shall address erosion and sediment control and control of other construction waste that may cause adverse impacts to water quality.
- The City must provide documentation that their BMP requirements will meet the state standards. The City adopts by reference the selection, design, installation, operation and maintenance standards in the most recent version of the *Stormwater Management Manual for Eastern Washington*.
- Regulations shall grant the City legal authority to inspect private stormwater facilities that discharge into the City's MS4, and include an appropriate enforcement strategy for ensuring compliance.

Additionally, the City must develop a plan review program which meets the Phase II permit standards. This plan review program includes these standards:

- Review of construction site plans and SWPPPs
- Site inspections to ensure compliance and to determine efficacy of selected BMPs. The permit requires a minimum of one site inspection; however, the standard shall be site inspection in the three major phases of construction: before groundbreaking, during construction, and post-construction prior to acceptance of project.
- Recordkeeping and documentation of SWPPPs and site inspections

- A hotline number for public reporting of spills and illicit discharges in conjunction with construction activities
- Adequate training for City staff involved in plan review, site inspection and enforcement to carry out the provisions of this component.

Current Activities

The City has made an informational handout on construction stormwater regulations available to contractors, developers and their design professionals doing business within the City. At this time, the City is utilizing a brochure obtained from outside the organization, but is partnering with a regional group for the development of a regionally-appropriate construction erosion and sediment BMP manual. This manual is scheduled to be available for distribution sometime in 2011.



Figure 6: Construction site erosion and sediment control violations

In compliance with Permit regulations, the City operates a public spill control hotline for illicit discharges, including construction site violations.

- **MOSES LAKE COMMUNITY STREET & UTILITY STANDARDS:**
[HTTP://WWW.CLMOSES-LAKE.WA.US/241.HTML](http://www.clmoses-lake.wa.us/241.html)

All construction within the MS4 is required to be conducted in accordance with the most recent Washington State Department of Transportation (WSDOT) *Standard Specifications for Road, Bridge, and Municipal Construction*, as revised by the City's *Community Street and Utility Standards* document. Construction site erosion and sediment and stormwater controls are specifically addressed in several sections of both documents. The *Community Standards* also provide design criteria for acceptable construction.

- **WSDOT STANDARD SPECIFICATIONS:**
[HTTP://WWW.WSDOT.WA.GOV/PUBLICATIONS/MANUALS/M41-10.HTM](http://www.wsdot.wa.gov/publications/manuals/m41-10.htm)

The City's Development Engineering Department and Building Department conduct plan reviews for all new and re-development projects within the City's jurisdiction.

Inspection of construction site erosion and sediment control is performed in conjunction with project inspection. Erosion and sediment violations are enforced under the Illicit Discharge regulations, which prohibit construction discharge into the City's MS4.

The City's Community Development Department regulates any construction activity within 200' of the shoreline under its Shoreline Master Program, including requiring BMPs per the SMMEW. Construction within this zone requires a shoreline permit, which is issued by the Community Development department.

- **SHORELINE MASTER PROGRAM:**
[HTTP://WWW.CLMOSES-LAKE.WA.US/254.HTML](http://www.clmoses-lake.wa.us/254.html)
- **MOSES LAKE MUNICIPAL CODE:**
[HTTP://WWW.CLMOSES-LAKE.WA.US/MUNICIPAL_CODE.HTML](http://www.clmoses-lake.wa.us/municipal_code.html)

Additional regulations are enforced in these areas per Municipal Code.

Phase II permit regulations require that the City adopt specific regulations and controls pertaining to construction site erosion and sediment control by year 2010. In 2010 City Council passed Ordinance #2571 creating Chapter 13.035 of the Moses Lake Municipal Code requiring runoff controls for construction sites.

Planned Activities



The City will review existing regulations for comprehensiveness and will draft and adopt additional regulations for site plan review, inspection and enforcement as necessary to meet the standards of the permit.

Figure 7: Construction site structure protection

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Post-Construction Stormwater Management for New Development and Redevelopment

Permit requirements

**NPDES
S5.B.5**

The permit requires that the City develop, implement and enforce a program to reduce pollutants in any stormwater runoff from construction activities that disturb one acre or more, and from construction projects of less than one acre that are part of a common plan of development or sale.

All public and private projects, including City projects, must comply with these requirements.

The City is required to have a regulatory mechanism requiring runoff pollution controls at all new development and redevelopment projects that addresses the following minimum standards:

- Regulations shall apply to new development and redevelopment project sites disturbing one acre or above, or projects of less than one acre that are part of a common plan of development or sale. The City shall retain the right to apply these regulations to smaller sites if they present a hazard to water quality.
- The City must provide information design professionals on the minimum requirements of the NPDES permit.
- Project proponents and property owners will be bound by the requirements of the NPDES permit, including application of BMPs as necessary to protect water quality and satisfy state AKART requirements. These BMP's shall be selected to maintain natural drainages and reduce the total amount of impervious surfaces to the Maximum Extent Practicable (MEP).
- The City shall include provisions to allow for and encourage Low Impact Development (LID) techniques, taking into consideration site conditions, access and long term maintenance.
- The City must provide documentation that their BMP requirements will meet the state standards. The City adopts by reference the selection, design, installation, operation and maintenance standards in the most recent version of the *Stormwater Management Manual for Eastern Washington (SMMEW)*.
- Regulations shall include provisions to ensure long-term operation and maintenance of post construction facilities, and establish standards for water quality.
- Regulations shall grant the City legal authority to inspect private stormwater facilities that discharge into the City's MS4, and include an appropriate enforcement strategy for ensuring compliance.

Additionally, the City must develop a plan review program which meets the Phase II permit standards. This plan review program includes these standards:

- Review of site plans to ensure that the plans include stormwater pollution prevention measures that meet the standards of the permit. In addition, staff shall review SWPPPs where required.
- Site inspections to ensure compliance and to determine efficacy of selected BMPs. Structural BMPs shall be inspected at least once during installation.
- Structural BMPs shall be inspected at least once every five years after final installation, or more frequently as determined by the City to be necessary to prevent adverse water quality impacts, to ensure that adequate maintenance is being performed.
- Operation and maintenance standards for structural BMPs in the most recent version of the *SMMEW* shall be met.
- Recordkeeping and documentation of site inspections and enforcement activities.
- Adequate training for City staff involved in plan review, site inspection and enforcement to carry out the provisions of this component.
-

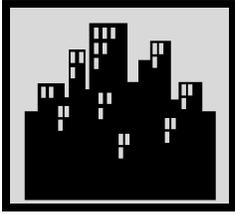
Current Activities

The City's Community Development Department conducts plan reviews for all new and re-development projects on private property within the City's jurisdiction. Field inspection of stormwater controls is performed in conjunction with project inspection.

Phase II permit regulations require that the City adopt specific regulations and controls pertaining to new and redevelopment stormwater control by year 2010. In 2010 City Council passed Ordinance #2571 creating Chapter 13.035 of the Moses Lake Municipal Code requiring post-construction runoff controls, in conjunction with construction site stormwater regulations.

Planned Activities

In 2011, the City will review its existing plan review and inspection process, and adopt or revise any additional regulations or procedures that may be required for site plan review, inspection and enforcement.



Pollution Prevention and Good Housekeeping for Municipal Operations

Permit requirements

NPDES S5.B.6

The City is required to develop and implement an operation and maintenance program to prevent or reduce pollutant runoff from municipal operations.

By 2010, the City was originally required to have an Operation and Maintenance Plan (an O&M Plan) in place that will protect water quality, reduce the discharge of pollutants and satisfy state AKART requirements. This deadline was extended to 2011 with the revision of the Eastern Washington Phase II Permit in 2009.

The City's O&M Plan is required to meet or exceed the standards listed in Chapters 5, 6, and 8 of the most current version of the *Stormwater Management Manual for Eastern Washington*. The Plan must address pollution prevention and good housekeeping procedures for all of the following types of facilities or activities:

- **Stormwater collection and conveyance systems**

- Stormwater system inspections and maintenance
- Structural BMP inspections and maintenance
- Pollution prevention/good housekeeping practices

- **Roads, highways, and parking lots**

- Deicing and snow removal practices and snow disposal areas
- Material (e.g. salt, sand, or other chemical) storage areas
- Reduction of road and parking lot debris and other pollutants from impervious surfaces that are owned, operated, or maintained by the City.

- **Vehicle fleets**

- Storage, washing, and maintenance of municipal vehicle fleets

- **Municipal buildings**

- Cleaning, washing, painting and other maintenance activities

- **Parks and open space**

- Chemical application (fertilizer, pesticides, and herbicides)
- Erosion and sediment control
- Landscape maintenance and vegetation disposal
- Trash management
- Building exterior cleaning and maintenance

- **Construction Projects/ Industrial Activities**

Public construction projects shall comply with the same NPDES permit requirements that are applied to private projects

All facilities owned or operated by the City that are required to have NPDES permit coverage shall be covered under the *General NPDES Permit for Stormwater Discharges Associated with Industrial Activities*

- **Material storage areas, heavy equipment storage areas and maintenance areas.**

By 2011, the City must implement a SWPPP at each of these facilities that are not already covered by the Industrial Activity NPDES permit

- **Other facilities** that would reasonably be expected to discharge contaminated runoff

The City's O&M Plan must include the following tasks:

- Perform inspections of at least 95% of all known stormwater treatment and flow control facilities in the MS4 during the permit term
- Perform spot checks of stormwater treatment and flow control facilities after major storm events
- Perform any needed repair or maintenance pursuant to the findings of a regular inspection or spot check.
- Provide training for all employees who have construction, operations, or maintenance job functions that are likely to impact stormwater quality
- Maintain documentation of all inspections and maintenance or repair activities

Current Activities

The City is currently in the process of reviewing and writing its O&M plan, which is scheduled to be completed by February, 2011. In the meantime, the City has taken steps to address O&M issues at several of its new and existing facilities.



Figure 8: New Municipal Operations & Maintenance building (l) and Surf and Slide Water Park (Aquatic Center) expansion (r)

In conjunction with renovation and new construction at City maintenance facilities, stormwater issues such as collection and conveyance, material storage, fleet maintenance, and oil and water separation have been addressed with BMPs.

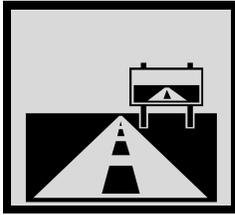
Review of existing standards and policies for all pertinent City departments is in progress. The O&M plan is scheduled to be complete by 2011.

Planned Activities

Staff is currently administering a construction project for a new decanting pad for street sweeping and storm structure cleaning residue on City property near the Larson Wastewater treatment facility. This project will be constructed in 2011 and is anticipated to be operational by late summer.

In 2011, the City shall create and adopt a SWPPP (Stormwater Pollution Prevention Plan) for municipal facilities, including a schedule for inspections and a training program for staff. As of this printing, staff training for Operations and Maintenance is tentatively scheduled for March of 2011, in conjunction with the City of Wenatchee's regional/statewide grant from the Dept of Ecology, which developed an O&M template and training package which will be available to other NPDES jurisdictions. Other training sessions sponsored by the City of Moses Lake will be scheduled and offered as department need and desire arises.

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Compliance with Total Maximum Daily Load Requirements (TMDL)

Permit requirements

NPDES

- S7** The City is required to comply with any requirements that may be in effect due to a TMDL for their MS4.

The Water Quality Assessment for the State of Washington lists the status of water quality for surface water bodies. This assessment evaluates water quality impairment into five different categories established by the EPA, in ascending order. The federal Clean Water Act Section 303d list of impaired water bodies represents those waters rated Category 5. These waters are eligible for the implementation of a TMDL plan.

Current Activities

As of 2010, no TMDL restrictions have been imposed on the waterbody of Moses Lake. Several studies of water quality have been undertaken in previous years identifying several areas of concern, primarily in nutrient (nitrogen and total phosphorus) content. As of this writing, Moses Lake was listed as a waterbody of concern on the state's 303d list in several parameters. The EPA has proposed TMDL status; however, as of December 2008, the status of this determination remains on legislative hold.

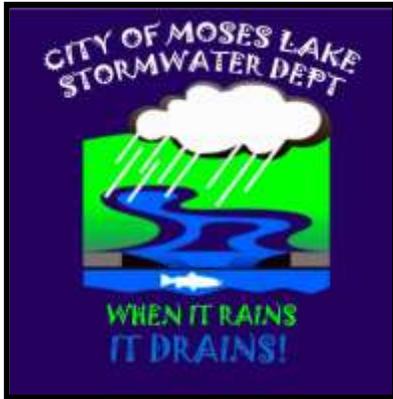
Planned Activities

At this time, as there are no TMDL requirements for Moses Lake, planned activities for this area do not exist. However, the City will continue to monitor the situation for any additional change in status, and will implement measures of compliance at that time.



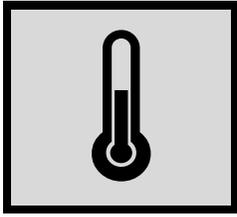
Figure 9: Outfall, summer

The City recognizes that nutrient loading has been and continues to be an ongoing issue with Moses Lake, resulting in the lake experiencing some degree of eutrophication. A large percentage of nutrient loading in Moses Lake comes from nonpoint sources, which are frequently difficult to trace. The DOE and several cities in the state of Washington have begun to take a proactive approach to eliminating these nonpoint sources of nutrient pollution.



In the upcoming years, the City plans to evaluate the establishment of an alternative program for charity car washing, which would eliminate some sources of nutrient loading to the lake. Several sites have already been eliminated from charity car washing due to direct discharge.

In addition, the elimination of nutrient loading from nonpoint sources will be strong focus of the City's public education program. The City will also continue to work with the Moses Lake Irrigation and Rehabilitation District on measures to reduce nutrient loading upstream of the watershed.



Monitoring and Program Evaluation

Permit requirements

NPDES

S8

The City is required to begin consideration of water quality monitoring and program effectiveness evaluation. Pursuant to this section, the City must begin preparation for future, long-term monitoring. The monitoring program must include three major components:

▪ Stormwater monitoring

Stormwater monitoring is intended to identify stormwater runoff quantity and quality at a sample set of locations in order to analyze pollution loading and changes in water quality conditions over time.

The City must identify two outfalls or conveyances where stormwater sampling could be conducted. One outfall or conveyance must represent commercial land use and the other high-density residential. The City must demonstrate their justification for site selection of these two structures.

▪ Targeted SWMP effectiveness monitoring

SWMP effectiveness monitoring is intended to improve stormwater management efforts by evaluating issues that significantly affect the success of the stormwater program.

The City must prepare to conduct monitoring to determine the effectiveness of the SWMP at controlling stormwater-related problems, by addressing whether the SWMP is adequately achieving its targeted goals.

To accomplish this end, the City must identify two suitable questions for water quality, and select sites where monitoring would be conducted, then develop a monitoring plan for each question. The plan must include the following elements:

- A statement of the question, an explanation of how and why the issue is significant to Moses Lake, and a discussion of whether and how the results of the monitoring may be significant to other MS4s;
- A specific hypothesis about the issue or management actions that will be tested;
- Specific parameters or attributes to be measured; and
- Expected modifications to management actions depending on the outcome of hypothesis testing.

▪ Runoff Treatment BMP Effectiveness Monitoring

BMP effectiveness monitoring is intended to evaluate the effectiveness and performance of runoff treatment BMPs by measuring pollutant removal. Categories to be monitored include basic treatment, metals treatment, and oil treatment BMPs.

At the time of the permit issuance, the permit requires that each City having a population **greater than 25,000** shall prepare to conduct monitoring to evaluate the effectiveness of runoff treatment BMPs applied in their jurisdiction. As of the latest census, the population of the City of Moses Lake was 20,086 (US Census Bureau, 2009) and below the limit of requirement for this element.

The City is not required to conduct water sampling or other testing during the permit term, with the following exceptions:

- Water quality monitoring in conjunction with TMDL compliance (not applicable at this time)
- Sampling or testing required for characterizing illicit discharges

If the City should perform or obtain any stormwater monitoring or testing, the description and results of testing are required to be part of the City's annual report within that year.

Current Activities

At this time, the City is not conducting any regular water quality testing. Pursuant to item S8.A.1, Moses Lake is not operating within the regulations of a TMDL, thus is not required to conduct water quality monitoring. However, pursuant to S8.A.2, the City will utilize sampling of suspected illicit discharges at its discretion and in the course of illicit discharge investigation and/or remediation.

The minimum permit requirements state that the City shall identify two outfalls at which stormwater sampling could be conducted (representing commercial and residential land uses) for the purpose of analysis of program effectiveness. Two outfalls have been selected, as well as backup locations, should site conditions prove prohibitive.

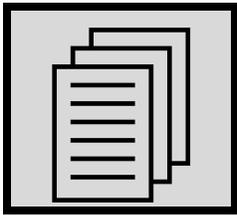
This testing program will include at least two parameters for which testing will take place, and include data collection and analysis as well as evaluation of any possible remediation for these sites.



Figure 10: Outfall

Planned Activities

The City proposes to expand this monitoring to include additional sites as they become evident. This data will be used to develop a long-term monitoring plan for water quality and program effectiveness.



Reporting and Record Keeping

Permit requirements

NPDES

S9

Permittees are required to keep adequate records in relation to this permit and submit an annual report to the Department of Ecology.

By March 31 of each permit year, the City is required to submit an annual report. The reporting period for the annual report will be the previous calendar year. The City is required to keep all records related to this permit and the SWMP for at least five years, and to make all such records available to the public.

Annual reports must include the following:

- The *Annual Report Form for Cities, Towns, and Counties*, which summarizes permit compliance
- A copy of the current SWMP
- Notification of any jurisdictional boundary changes resulting in an increase or decrease in the City's geographic area of permit coverage during the reporting period

Current Activities

The City is currently in compliance with the Annual Reporting requirements for the Phase II permit. This permit is within its fourth year. Annual Reports are submitted to DOE by March 31st of each year, and are posted on the City's website no later than one month following submission.

Pursuant to this task, copies of Annual Reports and the most current version of the City's Stormwater Management Program Manual are posted for public access on the City's Stormwater website at <http://www.ci.moses-lake.wa.us/259.html>. These documents will be updated as changes are made.

All stormwater records are kept by the City's archival authorities, and can be accessed during normal business hours by written request at City Hall, 321 S. Balsam, Moses Lake, WA 98837. The form for requesting records can be found on the City's website at *Available Forms/Executive/Request for Public Records Access*. Photocopies of all items are \$0.15 per letter-sized sheet. All oversized sheets are an additional charge; please ask at the Engineering Counter.

Planned Activities

The City plans to continue meeting the annual reporting guidelines in a timely manner. The SWMP manual is a dynamic document, and will continue to evolve as we go into subsequent years of this program. The City will be updating their manual and policies as new issues evolve.

The City is in the process of obtaining a new database system which will incorporate some of the stormwater recordkeeping documentation. This will be an ongoing process throughout the next few years, as staff consolidates

and restructures the existing data into this system. Additionally, new forms have been and will continue to be developed for IDDE reporting, field reconnaissance reporting, the storm drain marking program, and other uses yet to be determined.

Glossary of Stormwater Terms

AKART: All Known, Available and Reasonable methods of prevention, control and treatment

Aquatic: Living or growing in or on the water

Aquifer: An underground area that contains fresh water in sufficient amounts to yield useful quantities to wells and springs (see also “Groundwater”)

Bacteria: Single cell organisms found in nearly every environment on Earth. In large amounts, some types of bacteria such as fecal coliform are harmful to the quality of surface water.

Basin: A hydrologic unit consisting of a part of the surface of the Earth covered by a drainage system consisting of a surface stream or body of impounded surface water plus all tributaries. (See “Watershed”)

Best Management Practices (BMPs): Methods, measures, or practices designed to prevent or reduce water pollution. Stormwater BMPs can include rain gardens, wetlands, infiltration structures, sediment retention ponds, vegetation strips and grassy swales. BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bioretention: Various types of stormwater BMPs that use landscaping and soils to remove pollutants from urban stormwater runoff by collecting it in shallow depressions.

Buffer Strip or Zone: Undeveloped natural or vegetated land alongside a stream or lake that provides infiltration of stormwater runoff and filtering of pollutants.

Catch Basin: An entryway to the storm drain system, usually located at street corners and covered with a grate.

City: City of Moses Lake

Contaminant: Any substance that makes water impure and unfit for consumption or use

Culvert: A short, closed (covered) conduit or pipe that passes storm water runoff under an embankment, usually a roadway.

Clean Water Act (CWA): The cornerstone of surface water protection. Legislation that provides statutory authority for the NPDES program. Also known as the Federal Water Pollution Control Act, passed in 1972.

DOE: The Washington State Department of Ecology (Also “Ecology”)

Development: Any manmade change to improved and unimproved land, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavating or drilling operations

Discharge: An outflow of water from a stream, pipe, groundwater aquifer, or watershed

Drainage Basin: The area of land that drains to a given point on a body of water. A drainage basin might also be referred to as a watershed.

Dry Weather Flow: Runoff that enters the storm water drainage system from everyday activities such as car washing and lawn watering. Dry weather flow usually has a higher concentration of harmful nutrient chemicals and bacteria than does flow that results from rainfall.

EPA: The United States Environmental Protection Agency.

Ecosystem: The biological community (living plant and animals) and the non-living environment (water, rocks, chemicals, weather systems) functioning as one system

Erosion: The wearing away of the earth's surface by running water, wind, ice, gravity or other natural or man-made agents. Often the eroded debris (silt or sediment) becomes a pollutant via stormwater runoff. Erosion occurs naturally, but can be intensified by land clearing activities such as farming, development, road building and timber harvesting.

Eutrophication: Excessive levels of phosphorous, nitrogen, and nutrients in the water, which leads to a decrease in oxygen levels. Often characterized by excessive growth of algae and aquatic vegetation, which results in deteriorated water quality and beach closings.

Fecal Coliform Bacteria: A type of bacteria found in the intestines of humans and animals. The presence of fecal coliform bacteria in water is an indicator of a potential health risk for individuals exposed to this water. Fecal coliform can enter waterways through sewage treatment plant discharge, sewage pipe overflows, or from pet and wild animal waste.

Fertilizer: A substance used to increase growth of a plant or improve the quality of a crop. When used inappropriately, it can contribute to storm water pollution

Filtration: The act of filtering, such as removing pollutants and sediment from storm water runoff

Flood: A temporary rise in flow or stage of any watercourse or storm water conveyance system that results in storm water runoff exceeding its normal flow boundaries and inundating adjacent, normally dry areas.

GIS: Geographical Information System: a computer database program providing geographical and mapping information for an area. The City's stormwater master maps are based on GPS locations integrated into a GIS system which links physical structures to their properties photos, inspection reports, etc.

GPS: Global Positioning System: a global navigational satellite system used in precisely mapping locations of structures. The City's goal is that by its completion, the master stormwater map will contain GPS coordinates for all existing City-owned structures, insofar as is feasible.

General Permit: A permit issued under the NPDES program to cover a certain class or category of storm water discharges. These permits reduce the administrative burden of permitting storm water discharges.

Groundwater: That portion of the water beneath the surface of the Earth that can be collected with wells, tunnels, or drainage galleries, or that flow naturally to the Earth's surface via seeps or springs. (See also "Aquifer")

Hydrologic cycle: Also known as the water cycle. The paths water takes through its various states - vapor, liquid, solid - as it moves throughout the ocean, atmosphere, groundwater, streams, etc.

Illicit Connection: Any connection or discharge to a municipal separate storm sewer that is not permitted, not composed entirely of storm water, and is not authorized by an NPDES permit.

Illicit Discharge: Any discharge to a Municipal Separate Storm Sewer System (MS4) that is not entirely composed of stormwater. Sources of illicit discharges include but are not limited to sanitary wastewater, effluent from septic tanks, improper oil disposal, laundry wastewater, car wash wastewater, radiator flushing disposal, spills from roadway accidents, and improper disposal of auto and household toxins. Exceptions include NPDES permitted industrial sources and discharges from fire fighting activities.

Impaired waters list: Creeks, streams or other bodies of water that do not meet state water quality standards. Under Section 303(d) of the Clean Water Act, states are required to develop lists of impaired waters.

Impervious area: A surface which is covered with material that is resistant to infiltration by water, including but not limited to, most conventionally surfaced streets, roofs, sidewalks, patios, driveways, parking lots, and any other oiled, graveled, graded, compacted, or any other surface which impedes the natural filtration of surface water. Areas with more impervious surfaces generally contribute more to storm water runoff pollution and the amount (volume) of storm water runoff.

Infiltration: The penetration of water through the ground surface into sub-surface soil.

Low Impact Development (LID): The use of special landscaping techniques to reduce the impact that land development has on water quality. Rather than letting storm water run off or forcing it into a drainage and pipe system, LID captures storm water on site, filters it through vegetation and lets it gradually soak into the ground or into streams.

MLMC: Moses Lake Municipal Code

MS4: Municipal Separate Storm Sewer System (See "Small Municipal Separate Storm Sewer System")

Non-Point Source (NPS) Pollution: Pollution that cannot be traced to a single point because it comes from many individual places or a widespread area. Contamination occurs when rainwater, snowmelt or irrigation runoff picks up soil particles and pollutants (such as nutrients, motor oil, pet waste and pesticides) and deposits them into lakes, rivers, wetlands, and even our underground sources of drinking water

National Pollutant Discharge Elimination System (NPDES): A federally-mandated program authorized by Congress as part of the 1987 Clean Water Act and enacted by the EPA to control the discharge of pollutants to waters of the United States.

Nutrient: An element or compound, such as nitrogen, phosphorous, and potassium that is necessary for plant growth. If there are too many nutrients in a stream or lake, that can cause an overgrowth of algae and other plants that kill fish and other aquatic life.

Nutrient pollution: Human-caused addition of excess nutrients, such as grass clippings and pet waste that is carried to creeks, lakes and rivers by storm water runoff

100-year flood: More accurately referred to as a "one percent chance flood." There is a 1% chance that a flood this large will happen in that area in any given year

Outfall: The point where a sewer, drain or stream discharges to a receiving body of water.

Permit Issuing Authority (Permitting Authority): The state agency or EPA regional office that issues environmental permits to regulated facilities. The Permitting Authority for the State of Washington is the Washington State Department of Ecology (DOE).

Pervious: Surface that allows water to seep into the ground, such as soils, gravels and vegetation.

Phosphorus: A plant nutrient and an essential ingredient in fertilizer. High levels of phosphorus can cause algae blooms and fish kills.

Point Source Pollution: A type of pollution that can be traced to a specific source, such as a factory or sewage treatment plant. Most of this type of pollution is highly regulated at the state and federal levels.

Pollution: Presence of a contaminant to such a degree that the environment (land, water, or air) is not suitable for a particular use.

Pollutant Loading: The transfer of pollutants from one place to another, such as sediment carried by storm water runoff into a stream

Recharge: Re-supplying of water to the aquifer. Recharge generally comes from snowmelt and storm water runoff.

Receiving Waters: Bodies of water that receive runoff or wastewater discharges, such as rivers, streams, lakes, estuaries, and ground water.

Riparian: Area of grass, shrubs or trees alongside a stream or body of water. This zone provides shade for the stream and filters pollutants from storm water runoff (see “Buffer zone”)

Runoff: Rainwater, snowmelt and other water that is not absorbed into the ground but instead flows across the land picking up pollutants and eventually runs into surface water.

Sanitary Sewer: A system of underground pipes that carries sanitary waste or process wastewater to a treatment plant. The City of Moses Lake has a separate sanitary sewer system, which does not handle or treat stormwater. (See “Wastewater”)

Sediment/Silt: Soil, sand and materials washed from land into water, usually after rain. Sediment can destroy fish-nesting areas, clog animal habitats, and cloud water so that sunlight does not reach aquatic plants.

Small Municipal Separate Storm Sewer System (MS4): A storm sewer system located in an area serving a population less than 100,000, as determined by the latest U.S. Census, comprising multiple conveyance systems, including ditches, that transfers storm water from impervious surfaces to streams. The City of Moses Lake’s system is classified as a small MS4, and includes all stormwater structures and conveyance systems located within the incorporated area of the city of Moses Lake (City limits).

Spill Prevention Control and Countermeasures Plan (SPCC): Plans to prevent and respond to spills of hazardous substances as defined in the Clean Water Act.

Storm Drain: A slotted opening in a road system through which runoff from the road surface flows through an underground pipe into the closest receiving body of water. Some storm drains in the City’s MS4 lead to UIC wells, and the remainder lead directly to surface water such as the lake. Runoff in these facilities does not go through a treatment or processing plant. (See “Catch Basin”)

Storm Water: Precipitation from a storm event that flows quickly into streams or accumulates in natural or constructed storage systems. Storm water often includes pollutants and sediment from land surfaces.

Storm Water Facilities: Systems such as watercourses, constructed channels, storm drains, culverts, and detention/retention facilities that are used for the conveyance and/or storage of storm water runoff.

Storm Water Management: Functions associated with planning, designing, constructing, maintaining, financing and regulating the facilities (both constructed and natural) that collect, store, control and/or convey storm water.

Storm Water System: The entire assemblage of storm water facilities located within a watershed.

Storm Sewer Utility: A means of establishing a dedicated and reliable source of revenue based on user fees, rather than taxes, to help solve storm water management problems. This steady revenue source ensures that funds will be available to support a local storm water management program.

Storm water wetlands: An area of land designed with particular types of soils to hold excess storm water runoff and specially-chosen plants to absorb pollutants from the runoff

Surface Water: Water above the surface of the land such as a stream, river, pond, lake or reservoir

SWMP: Stormwater Management Program

SWMMEW: Stormwater Management Manual for Eastern Washington (Dept of Ecology publication #04-10-076). The SWMMEW is the guidance document for permit compliance in Eastern Washington, and the City adopts by reference the selection, design, installation, operation and maintenance standards for municipal stormwater contained within.

SWPPP: Construction Stormwater Pollution Prevention Plan

Total Maximum Daily Load (TMDL): Total amount of pollutants that a stream can contain without impairing the water or violating clean water laws, as determined by the EPA.

Underground Injection Wells (UICs): A structure whose design is intended to retain and infiltrate stormwater runoff beneath the surface of the soil. A typical example of an UIC well is a drywell. UIC wells can be affected by runoff pollution due to their proximity to groundwater.

Urban Runoff: Storm water from urban areas, which tends to contain heavy concentrations of pollutants from vehicles and industry.

Wastewater: Water in the sanitary sewer system which comes from sinks, toilets, showers, washing machines, etc. Wastewater is not the same as storm water runoff. Wastewater is treated before being released into the creeks. (See “Sanitary Sewer”)

Water Quality: The chemical, physical and biological condition of water, usually in respect to whether it is suited for a particular purpose such as supporting aquatic life

Water Quality Monitoring: Regular testing of water from lakes and streams to determine how healthy it is. Scientists measure the temperature; amount of oxygen; levels of certain bacteria, metals and toxic chemicals; and turbidity or how clear the water is.

Watershed: A region of land drained by a single stream, river or drainage network. Also known as a drainage basin. Everyone lives in a watershed. (See “Basin”)

Wetlands: Land with a wet, spongy soil, where the water table is at or above the land surface for at least part of the year. Wetlands are characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include swamps, bogs, fens, marshes, and estuaries. Wetlands provide a habitat for aquatic life, terrestrial plants and animals, store floodwater and are effective at removing certain pollutants from storm water runoff.

Wet Weather Flows: Water entering storm drains during rainstorms and/or snowmelt events.

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Appendix 1

Eastern Washington Phase II Municipal Stormwater NPDES Permit Overview

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Eastern Washington Phase II Municipal Stormwater NPDES Permit Overview – Permit Term 2007 to 2012

The timeline below provides an overview of major program component deadlines (“...no later than...”) for permit implementation of S5 Stormwater Management Program (SWMP) for Cities, Towns and Counties. Other permit elements are listed on the next page. This is guidance only: please see the permit for additional detail and related requirements.

S5 Program Component	Feb 16, 2007	Feb 2008	Feb 2009	Aug 2009	Feb 2010	Feb 2011	Aug 2011	Feb 2012
A <i>Stormwater Management Plan</i>	Set up SWMP process by 5/16/07	Establish coordination among permittees.	Begin tracking costs by 1/1/09					
B.1 <i>Public Education / Outreach</i>					Identify target audiences.		Program fully implemented	
B.2 <i>Public Involvement & Participation</i>		Adopt program for public input	By 5/31/08 and annually, SWMP is available to the public in an ongoing public participation process.					
B.3 <i>Illicit Discharge Detection and Elimination</i>			Establish public hotline to report spills & illicit discharges.	Adopt IDDE regulations to prohibit illicit discharge, start enforcement, IDDE staff training.	System maps 1/3 complete. Prioritize waters for visual inspection.	System maps 2/3 complete of all connections and outfalls, and discharges. Field assess priority areas.	Field assess one priority area per year. Program fully implemented including field inspections.	System maps completed
B.4 <i>Construction Site Controls</i>	Information for contractors on erosion & sediment control training.		Establish public hotline to report spills & illicit discharges.		Adopt regulations for erosion/sediment controls, other construction controls.	Adopt regulations site plan review, inspection & enforcement procedures. Staff training.		
B.5 <i>Post-Construction Stormwater Controls</i>	Information to designers on training to comply w/requirements				Adopt regulations for post-construction treatment, flow, source controls, Operations and Maintenance.	Adopt regulations for site plan review, inspection, and enforcement. Staff training.		
B.6 <i>Municipal Pollution Prevention & Good Housekeeping</i>	All public construction complies with Appx 1.					*Adopt schedule of municipal O & M, inspections. Staff training.	*O&M schedule is implemented for B.6.a.i activities	

*Due date revised by Eastern Washington Phase II NPDES Permit modification of June 17, 2009.

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Appendix 2

City of Moses Lake Element Goals Timeline

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City of Moses Lake Element Goals Timeline

TASK	BEGINNING IMMEDIATELY	2008	2009	2010	SPRING 2011	FALL 2011	2012	180 DAYS PRIOR TO EXPIRATION
1. STORMWATER MANAGEMENT PLAN	<ul style="list-style-type: none"> Set up SWMP process. 	<ul style="list-style-type: none"> Look at other municipal SWMPs & regulations. Begin draft document. Write draft regulations. 	<ul style="list-style-type: none"> Establish regulations. Begin tracking costs. Complete draft document & route for comment. 	<ul style="list-style-type: none"> Revision and additions to regulations and SWMP. 	<ul style="list-style-type: none"> Revision and additions to regulations and SWMP. 		<ul style="list-style-type: none"> Complete and publish final SWMP manual. 	<ul style="list-style-type: none"> Fully develop and implement SWMP.
2. PUBLIC EDUCATION & OUTREACH	<ul style="list-style-type: none"> Develop City stormwater web page. Identify potential partnering agencies and make preliminary contact. Identify outreach goals. 	<ul style="list-style-type: none"> Identify preliminary target audiences. Identify target issues. Begin limited community outreach. City presence at Grant County Fair. Begin posting blurbs in City utility billing. 	<ul style="list-style-type: none"> Develop and implement program for the grade school level. City presence at GC Fair & community events. Develop PSA materials and airtime schedule. Update City stormwater web page. Develop targeted and proprietary informational materials. 	<ul style="list-style-type: none"> Expand partnering opportunities. Continue efforts of previous years. Review target audiences/issues. Evaluate effectiveness of this program component. Work with group to utilize grant for targeted group outreach development 	<ul style="list-style-type: none"> Fine-tune the program strategy to ensure that it is meeting the goals effectively. Work with group to utilize grant for targeted group outreach development 	<ul style="list-style-type: none"> Evaluate effectiveness of this program component Field test grant group's developed materials 	<ul style="list-style-type: none"> All target audiences being reached 	<ul style="list-style-type: none"> Program completely functional and meets all goals of SWMP.
3. PUBLIC INVOLVEMENT & PARTICIPATION	<ul style="list-style-type: none"> Identify potential areas of public involvement and participation. 	<ul style="list-style-type: none"> Create opportunities for public feedback on SWMP. Develop storm drain marking program Add feedback component to website. 	<ul style="list-style-type: none"> Make contact with Moses Lake High School to promote storm drain marking with their graduation requirements. Explore potential of public meetings on new stormwater regulations and utility. 	<ul style="list-style-type: none"> Evaluate effectiveness of this program component Explore feasibility of feedback questionnaire in utility bill/ at utility counter. 	<ul style="list-style-type: none"> Solicit feedback about program elements (possible avenues: questionnaire in utility bill/ at utility counter, online survey, phone survey, direct mail). 	<ul style="list-style-type: none"> Evaluate effectiveness of this program component 		<ul style="list-style-type: none"> Adequate opportunities exist for public feedback and comment on SWMP policies, regulations and goals.

TASK	BEGINNING IMMEDIATELY	2008	2009	2010	SPRING 2011	FALL 2011	2012	180 DAYS PRIOR TO EXPIRATION
4. ILLICIT DISCHARGE DETECTION AND ELIMINATION	<ul style="list-style-type: none"> Investigate all reports within 7 days and make immediate report to DOE of any qualifying spill Identify source and nature of the discharge within 21 days, and ensure termination of the discharge within 180 days. 			<ul style="list-style-type: none"> Evaluate effectiveness of this program component 		<ul style="list-style-type: none"> Evaluate effectiveness of this program component 	<ul style="list-style-type: none"> IDDE program fully developed and implemented. 	<ul style="list-style-type: none"> Distribute IDDE information to all target audiences. All outfalls and structures identified and locations verified Staff trained to meet the goals of SWMP for this component.
5. CONSTRUCTION SITE STORMWATER CONTROL	<ul style="list-style-type: none"> Provide info to construction site operators about erosion and sediment control. Provide info to developers on BMPs and the SWMMEW. 	<ul style="list-style-type: none"> Evaluate existing erosion and sediment control regulations. 	<ul style="list-style-type: none"> Perform all necessary revisions and additions to erosion and sediment control regulations. Determine what department will handle site inspection and enforcement of construction site SW control measures. 	<ul style="list-style-type: none"> Require SWPPPs by developers that include construction site SW control. Evaluate effectiveness of this program component 		<ul style="list-style-type: none"> Evaluate effectiveness of this program component 		<ul style="list-style-type: none"> All construction site stormwater controls adequate to meet terms of NPDES permit. Regulations in place for inspection and enforcement. Staff trained to meet the goals of SWMP for this component.
6. POST CONSTRUCTION STORMWATER CONTROL	<ul style="list-style-type: none"> Begin to apply construction and post-construction SW controls to all projects prior to approval. 	<ul style="list-style-type: none"> Evaluate existing post construction SW control regulations. 	<ul style="list-style-type: none"> Perform all necessary revisions and additions to post-construction control SW regulations, including those on private property. Develop a procedure for Stormwater Site Plan review (Development Engineering/Building Dept) Determine what department will handle site inspection and enforcement of post-construction site SW controls. 	<ul style="list-style-type: none"> Require SWPPPs by developers that include post-construction SW controls & water quality impact. Evaluate effectiveness of this program component 		<ul style="list-style-type: none"> Evaluate effectiveness of this program component 		<ul style="list-style-type: none"> All post-construction stormwater controls adequate to meet terms of NPDES permit Regulations in place for inspection and enforcement. Staff trained to meet the goals of SWMP for this component.

TASK	BEGINNING IMMEDIATELY	2008	2009	2010	SPRING 2011	FALL 2011	2012	180 DAYS PRIOR TO EXPIRATION
7. MUNICIPAL POLLUTION PREVENTION & GOOD HOUSEKEEPING		<ul style="list-style-type: none"> Research other communities O&M plans. 	<ul style="list-style-type: none"> Evaluate existing controls at municipal facilities. 	<ul style="list-style-type: none"> Meet with department supervisors re: SW controls. Develop a draft O&M plan t 	<ul style="list-style-type: none"> Implement O&M plan. Identify and develop a SWPP for all City facilities not covered under an industrial permit. 	<ul style="list-style-type: none"> Evaluate effectiveness of this program component 	<ul style="list-style-type: none"> Implement park and open space maintenance pollution prevention & good housekeeping at all City- owned properties. 	<ul style="list-style-type: none"> O&M plan fully implemented and meets all goals of SWMP. Staff trained to meet the goals of SWMP for this component.
8. TMDL COMPLIANCE	<ul style="list-style-type: none"> Meet all TMDL requirements established by EPA. (No TMDL in effect as of date of permit) 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes. 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes 	<ul style="list-style-type: none"> Continue to monitor TMDL status and evaluate and respond to any changes
9. MONITORING & PROGRAM EVALUATION	<ul style="list-style-type: none"> Provide staff training. Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures. 	<ul style="list-style-type: none"> Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures Develop field reconnaissance report form to track structure condition. 	<ul style="list-style-type: none"> Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures 	<ul style="list-style-type: none"> Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures Evaluate effectiveness of this program component 	<ul style="list-style-type: none"> Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures Identify two high priority locations for monitoring purposes and develop a monitoring plan. Identify two BMPs (including two sites per each BMP) for effectiveness monitoring. 	<ul style="list-style-type: none"> Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures Evaluate possibility of long term monitoring of some structures. Evaluate effectiveness of this program component 	<ul style="list-style-type: none"> Annual inspection of all outfall structures. Periodic inspection and cleaning of stormwater system and structures 	<ul style="list-style-type: none"> 95% of all known stormwater structures inspected at least twice.

TASK	BEGINNING IMMEDIATELY	2008	2009	2010	SPRING 2011	FALL 2011	2012	180 DAYS PRIOR TO EXPIRATION
10. REPORTING & RECORDKEEPING	<ul style="list-style-type: none"> Begin evaluation of existing maps and information. 	<ul style="list-style-type: none"> Submit annual report. Begin update of stormwater master map. 	<ul style="list-style-type: none"> Submit annual report GIS location of all missing and new stormwater structures. Update of stormwater master maps; integration with new database system. 	<ul style="list-style-type: none"> Submit annual report GIS location of all new stormwater structures Continued update of stormwater master maps and GIS database Evaluate effectiveness of this program component 	<ul style="list-style-type: none"> Submit annual report 	<ul style="list-style-type: none"> All existing stormwater information integrated into the GIS mapping system. Evaluate effectiveness of this program component 	<ul style="list-style-type: none"> Submit annual report 	<ul style="list-style-type: none"> Map of MS4 completed.
11. UIC WELL REGISTRATION & COMPLIANCE	<ul style="list-style-type: none"> Require registration and rule authorization of all new UIC structures before plan approval GPS location of all new and missing structures. All new structures added to master map. Issue all UIC wells a City structure ID number. 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells. Begin registration of existing UIC wells. Add UIC registration requirements to Community Standards. 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells Continue registration of existing UIC wells. 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells Continue registration of existing UIC wells Evaluate progress of this program component Inspect, identify and assess all existing UIC wells 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells All known UIC structures registered with UIC program. 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells 	<ul style="list-style-type: none"> Continue registration, identification and mapping of all new UIC wells

Appendix 3

References & Links



City of Moses Lake

321 S. Balsam
P.O. Box 1579
Moses Lake, WA 98837

Municipal Services 509-764-3783
Stormwater Division 509-764-3792
Public Works Division 509-764-3951

<http://www.ci.moses-lake.wa.us>

Stormwater Home Page	http://www.ci.moses-lake.wa.us/259.html
Stormwater Management Program	http://www.ci.moses-lake.wa.us/270.html
Shoreline Master Program	http://www.ci.moses-lake.wa.us/254.html
Moses Lake Municipal Code	http://www.ci.moses-lake.wa.us/municipal_code.html
Community Street and Utility Standards	http://www.ci.moses-lake.wa.us/241.html

Washington State Department of Ecology



Eastern Regional Office
N. 4601 Monroe
Spokane, WA 99205-1295
509-329-3529

<http://www.ecy.wa.gov/programs/wq/stormwater/index.html>

Phase II Eastern Washington Municipal Stormwater Permit
<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseiiEwa/ewph2permit.html>

County, State and Watershed maps (includes 303(d) listed waters)
<http://www.ecy.wa.gov/services/gis/maps/maps.htm>

Underground Injection Control Program homepage
<http://www.ecy.wa.gov/programs/wq/grndwtr/uic/index.html>

Construction Stormwater General Permit
<http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html>



United States Environmental Protection Agency

1-800-490-9198

<http://www.epa.gov>

National Pollution Discharge Elimination System (NPDES) – Stormwater Program
http://cfpub2.epa.gov/npdes/home.cfm?program_id=6

EPA Phase II Regulations
http://cfpub1.epa.gov/npdes/regresult.cfm?program_id=6&view=all&type=1

Other links

Washington State Department of Transportation –
Standard Specifications for Road, Bridge and Municipal Construction
<http://www.wsdot.wa.gov/publications/manuals/M41-10.htm>

Revised Code of Washington – Illicit Discharge
<http://apps.leg.wa.gov/RCW/default.aspx?cite=90.48.080>