City of Milwaukie, Oregon

National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Discharge Permit

2012–2013 Annual Report

Prepared for the

Oregon Department of Environmental Quality

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Assisted by:

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CITY OF MILWAUKIE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MUNICIPAL STORMWATER SYSTEM ANNUAL REPORT

JULY 1, 2012 – JUNE 30, 2013

I, the undersigned, hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water System Annual Report in accordance with NPDES Permit Number 101348. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

10-29-13

Name: Gary Parkin
Title: Public Works Director
City of Milwaukie

Table of Contents

Section		Page No.
1.0	Introduction	1
1.1	MS4 NPDES Permit Background	1
1.2	Document Organization	1
2.0	Adaptive Management Process Implementation	2
2.1	Adaptive Management Program	2
2.2	SWMP Updates and Adaptive Management	3
3.0	Summary of Program Expenditures	4
4.0	Monitoring Data	4
4.1	Summary of the Comprehensive Clackamas County Stormwater Monitoring Plan (CCCSMP)	4
4.2	CCCSMP Updates and Modifications for the 2011-2012 Reporting Year	5
4.3	Summary of Monitoring Data	6
5.0	Overview of Planning and Land Use Changes, UGB Expansions and New Development Activities	6
5.1	Stormwater Planning, Land Use Changes, and UGB Expansions	6
5.2	Summary of Development Activities Within the UGB	7
6.0	Additional Activities	7

List of Tables

Table 1: Summary of the MS4 NPDES Annual Report Requirements 2

Table 2: Forecasted (Non-Audited) Expenditures for 2011–2012 and 2012–2013 4

List of Appendices

Appendix A Milwaukie SWMP Implementation Status

Appendix B Milwaukie Monitoring Data

Appendix C TMDL Implementation Plan

1.0 Introduction

1.1 MS4 NPDES Permit Background

The Oregon Department of Environmental Quality (DEQ) regulates stormwater runoff from the City of Milwaukie through the Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit No. 101348, issued to Clackamas County and its co-permittees. Clackamas County co-permittees include the City of Milwaukie along with the cities of Lake Oswego, Gladstone, West Linn, Oregon City, Wilsonville, Happy Valley, Johnson City, and Rivergrove, the Oak Lodge Sanitary District, and Clackamas County. Each co-permittee is a relatively small community, most having populations between 15,000 and 25,000 with some (Johnson City, Rivergrove) having populations significantly smaller.

The City's MS4 NPDES permit was reissued March 16, 2012, after a multi-year negotiation process with DEQ and an additional year-long delay related to an appeal. The 2012 reissued permit was not appealed, and thus maintains an effective date of March 16, 2012.

Each co-permittee is required to submit an annual report, summarizing accomplishments and implementation of their individual Stormwater Management Plans (SWMPs). In conjunction with the reissuance of the City's permit, SWMP updates to address requirements of the reissued permit were submitted and approved by DEQ. This annual report documents stormwater management activities from July 1, 2012 to June 30, 2013 in conjunction with the City's reissued MS4 NPDES permit.

1.2 Document Organization

The following table (Table 1) outlines the organization of this annual report document, with respect to the annual reporting requirements per Schedule B(5) of the City's MS4 NPDES permit.

Table 1: Summary of the MS4 NPDES Annual Report Requirements

	Annual reporting requirement	Location in document
a)	Status of implementing SWMP elements, including progress in meeting measurable goals.	Appendix A
b)	Status of any public education effectiveness evaluation conducted during the reporting year, and a summary of how results were used in adaptive management.	Appendix A
c)	Summary of the adaptive management process implementation during the reporting year including new BMPs.	Section 2.0
d)	Proposed changes to SWMP program elements to reduce TMDL pollutants to the MEP.	Section 2.0
e)	A summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year.	Section 3.0
f)	A summary of monitoring program results, including monitoring data that is accumulated throughout the reporting year.	Section 4.0 & Appendix B
g)	Any proposed modifications to the monitoring plan necessary to ensure that adequate data and information are collected to conduct stormwater program assessments.	Section 4.0
h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs.[a]	Section 6 and Appendix A
i)	An overview, as related to MS4 discharges, describing land use changes, UGB expansions, land annexations, and new development activities. The number of new post-construction permits issued and estimate of new and replaced impervious surface must also be included.	Section 5.0
j)	A summary related to MS4 discharges describing concept planning or other activities in preparation of UGB expansions or land annexations.	Section 5.0 and Appendix A
NA)	Additional Efforts Conducted by the City.	Section 6.0

[a] Enforcement actions, inspections, and public education programs are included in the City's SWMP as BMPs, and are reported along with the status of implementing all components of the SWMP in Appendix A.

Each section of this report corresponds to the specific permit requirements in Schedule B(5). This report emphasizes efforts and activities associated with individual Best Management Practices (BMPs) from the City's 2012 SWMP, as summarized in Appendix A.

2.0 Adaptive Management Process Implementation

2.1 Adaptive Management Program

In accordance with the issuance of the City's renewed MS4 NPDES permit (in 2012), the City was required to document their adaptive management approach to assess annually and modify, as necessary, existing and new SWMP components. The City submitted their approach to DEQ on November 1, 2012.

Historically, the City has implemented adaptive management principals to annually refine implementation methods and data collection activities in conjunction with their effective SWMP and BMPs. More significant modifications to SWMP activities occur every five years, in conjunction with their permit renewal application and updated permit requirements.

The City's adaptive management approach (submitted November 1, 2012) maintains consistency with the City's historical approach for implementing adaptive management principals.

Annually, as the City completes their NPDES MS4 annual report, the City reviews SWMP implementation through BMP-specific measureable goals and tracking measures. The City collects data and feedback from staff responsible for implementing and reporting on each BMP to gage whether implementation was deemed to be effective or whether there are suggested improvements to be made. Suggested adjustments to BMP implementation will include consideration of resource availability, budget/ funding, and overall need.

Every 5-years, during the permit renewal process and SWMP update effort, additional factors are considered as part of the City's overall adaptive management process. These factors include more detailed information related to BMP implementation, such as:

1. Whether technology or information is available that would help improve or refine BMPs,
2. How representative are the measureable goals and tracking measures to the BMP objective, and
3. Are resources available to make changes to the measureable goals and BMP objectives?

Additionally, at the end of the permit term, technical investigations and studies are required in conjunction with compliance dates outlined in the permit. Such studies include (but are not limited to) a water quality trends analysis, pollutant load reduction evaluation, hydromodification assessment, and a retrofit assessment. All studies will help target and identify specific issues that need to be addressed to maintain waterbody health and help formulate BMP activities (measureable goals and tracking measures) that can be used to support improvements.

2.2 SWMP Updates for the 2012-2013 Reporting Year

The 2012-2013 reporting year is the first full permit year in which the City's effective SWMP (dated 2012) has been implemented. The City's 2012 SWMP reflects the addition of multiple BMPs that were not included in the previous permit's SWMP including:

- Screen Existing and New Industrial Facilities
- Participate in a Public Education Effectiveness Evaluation
- Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities
- Private Water Quality Facility Maintenance Program

Additionally, significant modifications and changes to implementation activities were made to the following BMPs:

- Implement the Illicit Discharges Program
- Conduct Industrial and Commercial Inspections
- Implement Municipal Development Codes

For the 2012-2013 permit year, no updates were made to the 2012 SWMP or BMP measureable goals and tracking measures beyond those submitted to DEQ in May 2012. Review of BMP implementation during the preparation of this annual report did not reveal the need for adaptive management changes.

During the 2012-2013 permit year, the City did request a permit modification to remove the continuous monitoring location and requirement from their permit. Detail is provided in Section 4.0.

3.0 Summary of Program Expenditures

Stormwater program expenditures are funded from stormwater utility fees collected. The stormwater utility fee for one or two family residential customers is $11.94 monthly, which was established in July 2013. In conjunction with approval of the City's Stormwater Master Plan (in August 2013), City Council approved an additional rate increase effective for the next 10 years. Low income customers pay 50% of the utility fee. The commercial properties are charged based on the total amount of measured impervious surface divided by one EDU (2,706 sq. ft.) At this time the City is looking at implementing a residential customer stormwater fee reduction program for customers that treat stormwater on site.

Forecasted (non-audited) expenditures for 2012–2013 and 2013–2014 are listed below.

Table 2: Forecasted (Non-Audited) Expenditures for 2012–2013 and 2013–2014

2012–2013	
Personnel Services / 5. FTEs	*422,978.18
Materials and Services	*263,634.52
Capital Outlay	82,509.60
Transfers	740,000
Total	***$1,509,122.30**

2013–2014	
Personnel Services / 5.25 FTEs	439,000
Materials and Services	350,000
Capital Outlay	100,000
Transfers	760,000
Total	**$1,649,000**

* These numbers are estimated, not audited

4.0 Monitoring Data

4.1 Summary of the Comprehensive Clackamas County Stormwater Monitoring Plan (CCCSMP)

Per the 2004 MS4 NPDES permit requirements (Schedule B), the City of Milwaukie, along with Clackamas County and other co-permittees, was required to develop and implement a stormwater monitoring program. Given the effort associated with implementing an effective environmental monitoring program that adequately met all permit requirements and objectives, Clackamas County (i.e., CCSD#1 and SWMACC) and six other co-permittees including the City

of Milwaukie agreed to consolidate efforts and prepare one comprehensive stormwater monitoring plan. This plan, called the Comprehensive Clackamas County Stormwater Monitoring Plan (CCCSMP), was prepared for submittal with the 2006 NPDES Permit Annual Compliance Reports. The plan was implemented beginning July 1, 2007 and minor editorial changes were made in 2008.

In conjunction with requirements of the 2012 reissued MS4 NPDES permit, the 2007/2008 CCCSMP was reviewed for consistency with revised monitoring objectives. Monitoring locations and frequencies were adjusted to reflect requirements of the 2012 Permit. Additional efforts related to mercury monitoring, pesticide monitoring, macroinvertebrate (biologic) monitoring, and geomorphic monitoring were added to the CCCSMP. Detailed information related to use of the time-composite sampling technique was added as an appendix. Additional information such as quality assurance procedures were also added in conjunction with Schedule B.2 of the 2012 Permit.

The updated (2012) CCCSMP was submitted to DEQ in September 2012. Comments from DEQ were received in October 2012, and final revisions to the 2012 CCCSMP were submitted to DEQ June 30, 2013. For this reporting year (2012–2013), the 2012 CCCSMP was the effective, implemented monitoring plan for the City of Milwaukie. The 2012 CCCSMP was implemented starting October 2012.

As described in the CCCSMP, the MS4 NPDES stormwater monitoring program requires two components. The first component is program monitoring, which involves the tracking and assessment of programmatic activities, as described in the individual permittees SWMP, through the use of performance indicators or metrics. Results of the program monitoring are reported in Appendix A as the annual tracking measures. The second component is environmental monitoring, which includes visual monitoring and the actual collection and analysis of samples. Visual monitoring efforts include dry weather field screening as described in the City's SWMP under the following BMP: "Implement the Illicit Discharge Elimination Program". Results of the visual monitoring efforts are reported in Appendix A under the applicable BMPs. Environmental monitoring also consists of instream sample collection and outfall sample collection, and the City's sampling efforts are outlined in more detail in Section 4.2 and 4.3 and in the CCCSMP. Results of the instream and outfall sample collection efforts are provided in Appendix B.

4.2 CCCSMP Updates and Modifications for the 2012-2013 Reporting Year

New requirements related to stormwater monitoring were outlined in the City's reissued MS4 NPDES permit (dated March 16, 2012). As mentioned in Section 4.1, new requirements included the documentation of a rationale related to the time-composite sampling methodology, documentation of laboratory quality assurance and control procedures, and inclusion of mercury, pesticide, and macroinvertebrate monitoring. Monitoring frequencies and parameters were also revised based on requirements in the 2012 Permit and experience implementing the CCCSMP since 2006.

For the City of Milwaukie, continuous, instream monitoring activities along Johnson Creek are being conducted as a joint effort with the US Geological Survey (USGS). However, pollutant parameters including conductivity, pH, dissolved oxygen, and total dissolved solids are not being collected in accordance with requirements of the 2012 MS4 NPDES permit. The City applied to DEQ for a permit modification to update Table B-1 of the reissued (2012) MS4 NPDES permit to reflect the monitoring efforts employed by the City and USGS. The request

for permit modification was submitted June 21, 2013. The letter was received by DEQ on 6/24/2013 and is currently under review.

4.3 Summary of Monitoring Data

In accordance with the 2012 CCCSMP, Milwaukie conducted instream and outfall monitoring. Continuous instream monitoring of Johnson Creek was also performed by USGS. The City conducted instream monitoring at one location (Minthorn Springs Creek at Harmony Road), a tributary to the Kellogg Creek. Outfall monitoring was conducted at one outfall location (Roswell Street prior to discharge in Johnson Creek).
Time composite grab samples are required at the instream monitoring location twice during the reporting year (during storm events over the wet weather season). Single grab samples are also required during two additional monitoring events (during the dry weather season) at the instream monitoring location. Time composite grab samples are required at the outfall monitoring location three times during the monitoring year.

In addition to the required instream and outfall monitoring, the City was required to conduct mercury monitoring at one location (Roswell Street outfall) during the 2012-2013 water year (October 1, 2012 to September 30, 2013). Two samples, one during the wet weather season and one during the dry weather season, were required.

The City's reissued MS4 NPDES permit (effective date: March 16, 2012) prescribed new monitoring requirements that were to take effect October 1, 2012.

During the 2012-2013 monitoring year, the City collected their wet weather season mercury sample on 3/20/2013. The City collected a dry weather season mercury sample on 5/29/2013.

Complete sampling results are summarized and included in Appendix B. The sampling results presented have been formatted to simplify data review process.

5.0 Overview of Planning and Land Use Changes, UGB Expansions and New Development Activities

5.1 Stormwater Planning, Land Use Changes, and UGB Expansions

The City of Milwaukie updated their Citywide Stormwater Master Plan during the 2012-2013 reporting year. The updated Master Plan includes an evaluation of flooding and capacity deficiencies and capital improvement project development and prioritization for water quality and water quantity control. As part of the master plan, an evaluation of UIC's requiring retrofit or decommissioning was also conducted. The updated Master Plan addresses requirements of the City's water quality retrofit assessment, due November 1, 2014. The Master Plan was approved by City Council in August 2013.

During the 2012–2013 reporting year, the City did not receive any applications pertaining to zone changes.

The City of Milwaukie is located entirely within the UGB. City expansion is planned for certain unincorporated areas of the City located within the UGB. Recent annexation efforts have focused on properties that lie within or near the Johnson Creek floodplain, especially those properties that have on-site sewage disposal systems. City code requires hookup to public

sewer upon annexation. The City annexed a total of 50 properties within fiscal year 2012–2013. The City also had 19 new connections within the same time period.

A routine audit of sanitary sewer connections was performed in 2011. Eight properties were identified as not connected to the City's sanitary sewer. From 2010 to 2011, seven of the eight properties were connected to City sewer. The eighth property was given a time extension to January 2014 to connect to City sewer.

5.2 Summary of Development Activities Within the UGB

Current development activities mainly involve in-fill and redevelopment of existing properties ranging from single-family homes to larger commercial developments. The City of Milwaukie requires stormwater management for new and redevelopment activities exceeding 500 square feet of impervious surface in accordance with the City of Portland's Stormwater Management Manual. Stormwater management is considered early in the development process. Recent water quality facilities installed in the City include bioswales, raingardens, and green street planter strips.

During fiscal year 2012–2013, twenty private redevelopment projects submitted development applications. For all private redevelopment activities, total of 1,660 square feet of new/ redeveloped impervious area is associated. Public projects were primarily associated with water and wastewater utility mainline replacement and did not have any impervious surface replacement.

Of the private development projects, six projects were associated with commercial building additions, eight projects were associated with new residential, and six projects were associated with residential additions. Two new residential permits required frontage improvements which required stormwater planter construction to treat the street runoff. The total area of treatment was 1,660 square feet. All of the other private development permits did not trigger the stormwater treatment requirement.

No specific stormwater CIPs were constructed during the 2012–2013 reporting year, on account of the ongoing development of the updated Stormwater Master Plan and pending updated stormwater CIP list.

6.0 Additional Activities

The following stormwater-related activities occurred within the City and are not currently documented in Appendix A. A description of activities is provided by applicable BMP.

<u>Implement the Illicit Discharge Elimination Program</u>

A total of seven illicit discharges were reported to the Public Works Department.

1. 6/3/2013 - Responded to anonymous phone complaint regarding swimming pool discharge at 11241 SE 46th Ave. Spoke with the homeowner about stormwater rules and regulations and gave homeowner DEQ fact sheet on pool/spa discharges. No discharge was evident during the visit by City, so no enforcement action taken.
2. 4/4/2013 - Phone complaint forwarded from the Johnson Creek Watershed Council (JCWC) regarding discharges from Battin Power at 5004 SE Johnson Creek Blvd. Inspected property on 4/15/13 w/ a Code Compliance Officer. Mailed a Cease and

Desist letter on 4/22/13. Inspected property with DEQ staff on 4/24/13. Mailed Action Plan letter to Battin Power 5/13/13. Owner was given a six month timeframe to comply. DEQ has contacted property owner for UIC requirements.

3. 2/27/13 - Brick/concrete slurry entering street from Bernard's Garage at 2036 SE Washington St. Issued written notice to clean up. Slurry cleaned up and catch basin protected.
4. 1/16/13 - Received an email from DEQ regarding improper practices at Chevron station 10950 SE Oak St. Inspected station & interviewed station manager on 1/22/13. Collected their corporate policy on spill response at station and hazardous waste handling. Claims were made by disgruntled former employee and appear to be unfounded. No discharges were evident.
5. 12/14/12 - Sediment laden runoff was entering storm catch basin from Smith Rock at 9100 SE Johnson Cr. Blvd. Issued notice requiring owner to devise method/device for capturing stone cutting slurry onsite and submit plan for permanent measure by 12/21/2012.Issued 2nd notice to improve retention of slurry on 2/7/2013 after initial efforts failed. Property owners complied with notice.
6. 8/6/2012 - Milwaukie public works staff reported white flow from City outfall #65017. Conducted field inspection of nearby and upgradient storm MHs. No source found in Milwaukie system. Notified WES as flows appeared to originate from east, outside city limits. Review of Clackamas County pipe TV footage (conducted afterward) proved flows originating from east of city and outside City boundaries. Alerted WES of this fact and provided video footage.
7. 7/19/2012 - Liquid leachate from a trash compactor at the Albertson's grocery store was reported to be entering the storm system. Issued a written notice to Albertson's manager to correct the issue. Albertson's will repair the garbage grinder instead of placing outdated produce in the trash compactor. Area and catch basin were cleaned the next day.

Conduct Annual Dry Weather Field Screening

Outfall # 45010 (8/15/2012) - Tan colored slime was identified in the wetted perimeter of the pipe. The slime was traced to a grated-top MH @3705 SE Lycyntra; the slime was evident from a connection to the north and in the other portion of the upgradient system. Bacteria & Nutrient suite sample taken on 8/23/12 @1001.

- Results: E. coli=125 mpn/100ml, Total phosphate= 0.12 mg/L, Ammonia Nitrogen= <0.10 mg/L, Nitrate/Nitrate= 1.07 mg/L, Orthophosphate= 0.04 mg/L.
- Recommend TV inspection of this section of storm line.

Outfall # 65031 (8/21/12) - <1gpm constant flow observed; foam & tan slime present at outfall.

- Field samples collected: Conductivity =521 us/cm, above action levels. Water otherwise clear w/no sheen, solids, or odors. Also collected conductivity sample from outfall # 65032 = 263.8 us/cm. and MH# 99999 at 4700 SE Int'l Way = 292.9 us/cm.
- Also collected bacteria & Nutrient suite sample @ 0946 on 8/23/12. Results: E. coli= 14MPN/100ml, Total Phosphate= 0.15 mg/L, Ammonia Nitrogen= 0.72 mg/L, Nitrate-Nitrite= 0.56 mg/L, Ortho Phosphate= <0.04 mg/L.
- Recommend upstream TV investigation.

Outfall # 65023 (8/27/12) - Small trickle of flow evident; not enough to collect a sample. No flow evident upgrade @ MH 61059 & at untagged MH @ Beckman & Foxfire St. Same findings as last year. Presumed to be groundwater, recommend TV inspection.

Outfall # 45014 (8/28/12) - Slight amount of flow @ outfall. Water clear w/ no visible sheen or solids. No detectable odors. Flow steady; field sample readings were all under action levels. Traced "flow" upgradient through MHs 41105 & 41104, and flow was presumed to be groundwater. MHs 41100 & 41101 also appeared wet, MH 41099 is dry.

Outfall # 65003 (8/27/12) - Outfall is fully submerged- upgradient MH is backwatered by wetland. Checked all catchbasins within property area, and there were no signs of illicit discharges. Did not collect field sample because water was being detained and stagnant.

Outfall # 25225 (8/17/12) - Two outfalls are at this location. Corregated steel on left facing west and concrete pipe to the right. Both pipes have constant clear flow w/no visible sheen or solids. No detectable odors. All field sample readings under action levels. Origin of flow is unknown, presumed to be groundwater. Recommend TV inspection.

Implement the Spill Response Program

A total of five spills were reported and responded to by the Milwaukie Public Works (PW) Department:

1. 5/15/2013 - A contractor operating a loader suffered a broken hydraulic line causing a release of oil onto 99E and SE Washington St. The contractor made efforts to clean up spilled oil and called in an environmental company to complete clean-up. OERS case #2013-0916.
2. 3/4/2013 – Public works staff reported suspected used motor oil dumped in storm MH. Found oil pan & used oil filter near storm MH at 6604 SE Hemlock. Oil had run down the interior of the MH but did not appear to have entered the flow stream. Responsible Party claimed it was from an auto maintenance mishap and was issued citation #228575. No oil in storm line or outfall.
3. 12/21/2012 - Oil spill from abandoned truck on SE Railroad Ave. Truck was assumed to be a stolen vehicle (Milwaukie Police Dept. case#12-5137). Approximately 1qt transmission fluid spilled onto street from truck. All was confined to road surface. No oil entered drainage ditch near truck, material was cleaned up by Milwaukie public works.
4. 12/9/2012 - Reported by OERS, case # 2012-2936: Clackamas County Fire District #1 reported a release of an unknown amount of diesel to the asphalt and soil from a motor vehicle due to an unknown cause. Kitty litter applied, unknown if waterways have been affected. Near 12918 SE 24th Ave.
5. 12/4/2012 - Milwaukie public works crews responded to an oil sheen originating from 5611 SE Waymire. Used motor oil drain pan left out in weather overflowing due to rain. Oil sheen observed entering catch basin #32144. Crews responded by applying absorbent pads and booms to spill area. Less than one gallon was estimated to have been released.

Appendix A

Milwaukie SWMP Implementation Status

Appendix A. Status of Implementing Components of Milwaukie's 2012 SWMP

Key to Pollutant Symbols
A full circle (●) indicates the BMP is expected to address the parameter.
An empty circle (O) indicates the BMP may be expected to address the parameter.
A blank cell indicates that the effect of the BMP is unknown at this time.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2012-2013	Additional Detail Related to Activities Conducted
Element #1 **Illicit Discharge Detection and Elimination**							
Implement the Illicit Discharge Elimination Program	●	●	City of Milwaukie Public Works Department	• Document and implement the details of the City's IDDE program in a Standard Operating Procedures manual by November 1, 2012. • For identified illicit discharges, conduct appropriate actions to remove the discharge in conjunction with time frames outlined in the City's MS4 NPDES Permit and procedures documented in the City's IDDE SOP. • Track and record all identified illicit discharges and how such discharges were removed.	(1) Track the status of completing the IDDE SOP manual. (2) Track the number, location, resolution and enforcement activities related to any identified illicit discharge.	(1) The City of Milwaukie developed an IDDE SOP (effective date: November 1, 2012). The SOP includes guidelines for identification and enforcement of illicit discharges and pollutant parameter action levels and guidelines for tracking activities and follow-up procedures. This SOP was revised and updated on July 17, 2013 in preparation of EPA audit. (2) Seven Illicit discharges were reported and responded to by Milwaukie Public Works during the reporting year. A description of the illicit connections and resolution and enforcement is described in Section 6.0.	See Section 6.0 for additional detail.
Conduct Annual Dry Weather Field Screening	O	O	City of Milwaukie Public Works Department	• Conduct annual dry-weather illicit discharge inspections for all priority outfalls. • Conduct investigations on all suspected non-permissible discharges. • Develop pollutant parameter action levels to assist in the identification of non-permissible discharges by November 1, 2012. • Annually maintain a map of dry weather screening priority locations (i.e., priority outfalls).	(1) Track the number and location of high priority outfalls inspected during dry weather illicit discharge inspection activities. (2) Summarize inspection results and indicate outfalls requiring sampling and/or investigations. (3) Indicate the outcome and resolution of any investigation activities conducted.	(1) 26 outfalls were inspected as part of the annual dry weather field screening activities (conducted August 16, 2012 through August 28, 2012). (2) and (3) Potential illicit discharges were identified at a total of six outfalls. Two outfalls had samples collected for field and laboratory analysis. Four outfalls had flows of unknown origin and were investigated. Results of the dry weather field screening for outfalls with unknown flows are documented in Section 6.0	See Section 6.0 for additional detail.
Implement the Spill Response Program	O	O	Clackamas Fire District #1 (Hazardous Materials Team) and Milwaukie Public Works Department	• Respond to all reported non-hazardous material spills. • Equip all Public Works vehicles with spill response equipment, the Spill and Illicit Discharge Investigation Form, and spill response procedures continuously during the permit term.	(1) Indicate the number of spills reported to the Public Works Department. (2) Indicate the number of spills responded to by the Public Works Department. (3) Indicate sources, causes, and resulting types of discharges resulting from spill activities.	(1) The City Public works department received calls for 5 spills during reporting year 2012-2013. (2) The City of Milwaukie responded to the 5 small spills during reporting year 2012-2013. (3) Four spills Milwaukie Public Works responded to were the result of motor vehicle releases of oil or hydraulic fluid via accidents or mechanical failures. The other spill was the result of a resident improperly handling and storing drained motor oil causing oil to be carried into the street.	See Section 6.0 for additional detail.
Minimize Water Quality Impacts Related to Water Line Flushing			City of Milwaukie Public Works Department	• When chlorinated water is discharged to the City's stormwater distribution system, the City tests the chlorine residual at all entry points to the storm sewer for a maximum allowable concentration of 0.10 PPM. • Requirements for chlorination/DE chlorination are discussed at all pre-construction meetings and requirements are referenced in applicable contract documents.	(1) Chlorine test data is tracked in monitoring sampling logs and daily logs and data is kept on file at City.	(1) The City did not complete any water line flushing programs during the last reporting year. Some CIP projects were constructed and all flushing water was dechlorinated to a residual chlorine concentration of 0.1 mg/l or less. Chlorine test data was not tracked, logged or kept on file during these events.	Due to turnover in Public Works, the procedure of recording data and keeping it on file did not occur as necessary. The City is in the process of completing a written procedure for all water line flushing projects to include tracking and record keeping procedures for all projects. The procedure will be completed by November 2013.
Element #2 **Industrial and Commercial Facilities**							
Screen Existing and New Industrial Facilities	O	O	City of Milwaukie Public Works Department	• Review the business license inventory and new industrial development applications once during the permit term to identify additional facilities needing to obtain 1200-Z permits. If facilities are identified, DEQ and the facility will be notified within 30 days.	(1) Track the number of existing or new facilities subject to a stormwater industrial NPDES permit once during the permit term.	The City of Milwaukie Public Works Department continues to screen new Business Tax Receipts received from businesses locating within the City to assess for the possibility of discharging pollutants or to be subject to a NPDES stormwater permit. Per the City's measurable goals, review of the existing business tax receipt inventory will be conducted once over the permit term to determine whether any existing or new facilities would be subject to an industrial stormwater NPDES permit.	The new Business Tax Receipts reviewed during the 2012-2013 reporting year were for either small businesses, home based businesses, and/or not subject to an industrial stormwater permit. DEQ provided additional guidance on industrial facility screening in June 2013. The City of Milwaukie will refer to this guidance when it reviews the business tax receipt inventory.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2012-2013	Additional Detail Related to Activities Conducted
Conduct Industrial and Commercial Inspections	○	○	City of Milwaukie Public Works Department	• Inspect all facilities with 1200-Z permits two times per permit term. Inspect all commercial and industrial food service facilities required to install grease traps or grease interceptors in accordance with the City's FOG program at a minimum of semi-annually during the permit term. • Inspect any other high priority facilities if identified as potentially contributing a significant pollutant load. • Keep an inventory of all 1200-Z permitted industrial facilities within permit area and update it annually. • Require abatement measures for any industry found to be inappropriately discharging to the municipal stormwater system. • Develop an SOP for high priority facility inspections and implementation of strategies by July 1, 2013. • Develop an SOP for the FOG inspection program by July 1, 2013.	(1) Track the number of permitted (1200-Z) industrial facilities within the City. (2) Track the number of industrial and FOG inspections conducted. (3) Note any water quality concerns identified during inspections. (4) Report status and abatement measures required for any industry or food service facility found to be inappropriately discharging to the municipal stormwater system.	(1) The City of Milwaukie queried the active 1200-Z permits within the city limits from DEQ's website on 12/10/2012. There are currently 5 active 1200-Z permit holders within the City's boundaries discharging to the City's MS4. (2) and (3) Per the City's measurable goals, the City of Milwaukie will inspect facilities with current 1200Z Industrial Stormwater permits two times during the permit term. The City completed 284 Fats, Oils and Grease (FOG) trap or interceptor on -site inspections. (4) No abatement measures were required based on inspection results.	One of the1200Z permit holders, Beaver Heat Treating, has been displaced because of light rail construction and now resides in Tualatin. This brings the number of permit holders in Milwaukie to five from the previous six. An SOP was developed for inspections of high priority facilities by the City of Milwaukie on June 13, 2013 and for FOG inspections on June 11, 2013.
Element #3 **Construction Site Runoff Control**							
Implement Erosion Control for New and Redevelopment	●	○	City of Milwaukie Public Works and Engineering Departments	• Require structural and non-structural erosion and sediment control BMPs for all construction sites disturbing an area greater than 500 ft2. • Require sites disturbing over 500 ft2 to acquire an erosion control permit prior to issuing them a plumbing and electrical permit. • Conduct site plan reviews for applicable new and re-development to ensure compliance with the City's erosion control standards.	(1) Report any updates or modifications to the "Erosion Prevention and Sediment Control Planning and Design Manual (2008)". (2) Record the number of erosion control plan reviews completed and approved.	(1) There have been no updates to the 2008 "Erosion Prevention and Sediment Control Planning and Design Manual" during this permit year. (2) During the 2012-2013 reporting year, there were 25 erosion control plan reviews completed.	
Provide Educational Information to Construction Site Operators	○	○	City of Milwaukie Public Works Department	• Coordinate with other jurisdictions to provide Erosion Control Certification programs at the Clackamas Community College. • Give discounts on erosion control permit fees to contractors participating in the Erosion Control Certification Program.	(1) Track the number of contractors receiving a discount on erosion control permit fees. (2) Track number of program sessions and refresher courses offered each year.	(1) During the 2012-2013 reporting year, no contractors applied for this discount. (2) Due to the lack of participation in the program, program sessions and refresher courses were not scheduled.	With an improving economy, there may be renewed interest by contractors to seek the discounts provided by enrolling in education programs.
Conduct Erosion Control Inspections	●	○	City of Milwaukie Public Works Department	• Inspect all sites disturbing over 500 ft2 at least twice during construction activities. • Issue erosion control violations when ineffective erosion control is observed. • Issue stop work orders or fines if erosion control violations are not resolved. Timelines for corrections at construction sites are indicated on the inspection report given to the permit holder. Depending on the infraction, the timeline for correction could be 24, 48, 72 hrs. or other.	(1) Record the number of erosion control inspections conducted annually. (2) Report the number of written notices of non-compliance issued during inspections and the number of stop work orders issued annually.	(1) There were a total of 199 erosion control inspections conducted during the 2012-2013 reporting year. The larger sites with greater likelihood to have issues (i.e., Milwaukie Light Rail) were inspected more frequently. (2) There were 20 non-compliance notices issued and 4 stop work orders during the 2012-2013 reporting year. The timelines given for compliance were 24, 48 or 72 hours.	(1) The Portland Milwaukie Light Rail project consumes a great deal of staff time. 857 hours were dedicated to erosion control inspections and construction meetings for the permit year 2012/2013.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2012-2013	Additional Detail Related to Activities Conducted
Element #4 **Education and Outreach**							
Provide Public Education and Outreach Materials Regarding Stormwater Management	O	O	City of Milwaukie Public Works Department	• Promote public awareness of water quality issues through newsletters, brochures, and/or bill inserts. A minimum of one distribution of educational materials will be conducted annually. • Send an annual stormwater brochure to City residents. • Conduct annual catch basin stenciling.	(1) Track the number, types, and topics of public educational materials dispersed to the public annually. (2) Indicate any large-scale public educational campaigns initiated during a given year. (3) Track coordinated public outreach activities with local co-permittees. (4) Record the number of catch basins stenciled in a given year. (5) Record the number of storm manhole lids that have been retrofitted annually.	(1) Public awareness programs that are currently in place are: "Leaf Drop Program" and "Milwaukie Clean-Up Days." The City is still working with the ACWA Groundwater Committee to create an Underground Injection Control flyer to be placed in all utility bills as an insert. The brochure is in its final stages of completion and will be finalized and mailed in fiscal year 2013-201414. The City also mails reminders of stormwater discharging and code compliance matters in the cities informational newsletter, the "Pilot". A total of seven thousand mailers where sent to Milwaukie residents. (2) and (3) The City of Milwaukie is actively partnered with a number of other jurisdictions in the Regional Coalition for Clean Rivers and Streams. The City of Milwaukie conducted its 9th annual "Leaf Drop Program." The Leaf Drop program allows residents to dispose of their leaves 5 Saturdays each year, in the months of October, November and December, during heavy leaf season, at no charge to the residents. The Public Works department conducted a demonstration during Public Works Week in May of 2013for school age children in grades 1-6 during the last permit year. As part of ACWA, the City of Milwaukie participated in the "Love Your Rivers" campaign during the last fiscal year. (4) During the fiscal year 2012-2013, City employees placed stencils on 263 non curbed catch basins. They stenciled "Dump no waste, drains to stream" or "Protect our groundwater" with a bright blue background with white lettering.The City replaced 50 storm medallions on curbed catch basins that say "Dump no Waste Drains to Stream" or 'Protect Our Groundwater". (5) During the 2012-2013 reporting year, 1 storm lid was retrofitted with "Dump no Waste, Drains to Streams" lids on our conveyance system manholes.	(1) The city's public awareness programs are promoted on the City website and in the "Pilot" which is mailed to all City customers and residents. Programs promote healthy streams by keeping leaves out of the drains and garbage from being dumped illegally.
Participate in a Public Education Effectiveness Evaluation	O	O	City of Milwaukie Public Works Department	• Coordinate with other local, Phase 1 jurisdictions in providing/compiling information regarding a public education effectiveness evaluation by July 1, 2015.	(1) Report on activities conducted annually.	(1) The ACWA Stormwater Committee initiated a coordinated effort to compile existing educational survey information and develop conclusions to inform how public education efforts result in behavioral change. A proposal was received from DHM Consulting. ACWA coordinated with DEQ to ensure that the study would meet DEQ's intended requirements. ACWA developed a cost share breakdown among interested Phase I and Phase II communities, and Milwaukie has agreed to participate in the effort.	
Conduct Annual Staff Training	O	O	City of Milwaukie Public Works and Engineering Departments	• Provide City Storm crews with approximately 40 hours of stormwater related training per year. • Continue to train all operations and maintenance staff involved with stormwater activities. • Conduct regular stormwater staff meetings one to four times per year.	(1) Track the hours of stormwater related training provided to City Storm crews each year. (2) Track number and responsibilities of staff participating in training each year. (3) Track regular stormwater staff meetings.	(1) During fiscal year 2012-2013, the stormwater crew attended the Clackamas Community College Short School. This consisted of a minimum of 8 hours of training for 3 days, totaling 24 hours of training for each employee. The Storm and Wastewater crews also attended 2 hours of Rain Garden Maintenance training and the entire Public Works Department attended 3.5 hours of Erosion Prevention Training, both held at our facility. The Public Works Department also attended 1 hour of Spill Response Training during the last year. (2) The Storm department employs a total of 5.00 FTE. Three full-time Utility Worker I, one full time Utility Worker II, a half time Environmental Services Coordinator, and 1/2 Supervisor. The duties include; infrastructure maintenance, inspections, spill response, street sweeping, responding to flooding/ citizen complaints, vehicle maintenance, training and education, administration and record keeping, assistance to the Engineering Department, and leaf pick up. (3) The Storm and Wastewater crews meet each morning for a minimum of 15 minutes to discuss stormwater issues, erosion issues, local projects and issues related and equipment needs for the day. They also discuss stormwater issues with the public and updates to any NPDES SWMP changes or needs.	

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2012-2013	Additional Detail Related to Activities Conducted
Element #5							
Public Involvement and Participation							
Provide for Public Participation with Submittals			City of Milwaukie Public Works Department	• Provide a minimum 30-day public comment period for the updated SWMP elements and pollutant load reduction benchmarks prior to the permit renewal application deadline. • Provide a public comment period for the updated monitoring plan and annual reports prior to submittal to DEQ.	N/A	N/A	
Participate in Intergovernmental Coordination Efforts	○	○	City of Milwaukie Public Works and Engineering Department	• Annually coordinate with other Clackamas County co-permittees regarding regional water quality efforts. • Annually participate with local agencies involved in water quality issues.	(1) Indicate groups, committees, and organizations with which the City is currently participating.	(1) The City of Milwaukie is currently involved with the following groups and organizations: • Clackamas County NPDES MS4 Co-permittees • Johnson Creek Watershed Council • Oregon Association of Clean Water Agencies • American Public Works Association • Water Environment Federation • ACWA Water Pollution Control Facility Permit Committee.	
Element #6							
Post-Construction Site Runoff							
Implement Municipal Development Codes	●	●	City of Milwaukie Engineering Department	• Until completion of the City's review and possible update of their applicable code and development standards to meet provisions of the City's NPDES permit, continue to review all new and re-development plans for conformance with the City's Development Standards including design standards for water quality facilities. • By November 1, 2014, review and revise if necessary, the City's design storm and inspection and enforcement response procedures to be in accordance with permit requirements.	(1) Track the number of development applications reviewed and approved for compliance with the stormwater regulations. (2) Track status of the design storm reviews. Note: The number and type of water quality facilities constructed/implemented to address these requirements will be tracked and mapped under Element 8: BMP Private Water Quality Facility Maintenance Program.	(1) Development applications including drainage reports are routinely reviewed for proper compliance with stormwater regulations. The following applications were reviewed and approved during the 2012-2013 reporting year: • Commercial (New) = 0 • Commercial (Additions) = 6 • Residential (New) = 8 • Residential (Additions) = 6 (2) The City of Milwaukie currently references the City of Portland Storm water Management Manual. Revisions to standards will be made as necessary by November 1, 2014 for compliance with permit design storms, inspection and enforcement procedures.	Residential improvements do not trigger a Water Quality Facility Agreement. Any residential improvements will place water quality facilities in the right-of-way for the City to maintain. Commercial additions would require water quality facility agreement if the addition increases or changes more than 500 square feet of impervious surface. The additions that were approved last year were either internal or less than 500 square feet.
Element #7							
Conduct Street Sweeping and Roadway Repair Activities	●	●	City of Milwaukie Public Works Department	• Sweep curbed streets once per month. • Sweep roads promptly after icy conditions recede to remove fine gravel used for de-icing. • Schedule and conduct routine road repair and maintenance as needed, during the dry-weather conditions if possible.	(1) Track the number of miles swept per year. (2) Track the volume of debris removed during sweeping activities.	(1) and (2) During fiscal year 12-13 our Streets maintenance department swept 4,457 miles of curbed streets and removed 1,581 cubic yards of debris.	
Minimize Water Quality Impacts Associated with Landscape Management Practices	○	○	City of Milwaukie Public Works Department and Clackamas County Parks Department	• Require all chemical applicators (both City employees and City contractors) to be licensed and certified. • Use the Portland Integrated Pest Management (IPM) Program as a guide for appropriate pesticide and fertilizer application procedures along roadways, within public right-of-ways, and around water quality facilities.	(1) Track any policy and/or procedural changes associated with pest management activities within the City. (2) Track current number of staff licensed and certified for chemical application.	(1) During the reporting year 2012-2013, the Stormwater Department changed practice to only allow contractors and staff to apply minimal amounts of pesticides to vegetation growing between the street surface and the curb line, prior to installation of a crack seal and slurry seal. The chemical dissolves within 10 minutes and does not transfer to the street surface or the stormwater system. The size of the application did not require a license or to be certified. (2) Currently the City of Milwaukie does not have certified or licensed staff for large chemical applications. If the need arises, City staff would hire a licensed and certified contractor.	For many years the Stormwater staff has conducted manual removal of vegetation at all detention ponds and rain gardens and will continue to do so. Chemical application is a last resort only if the potential of the chemical entering the stormwater system is removed.
Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities	○	○	City of Milwaukie Public Works and Engineering Department	• Develop procedures for storage and disposal of street wastes in conjunction with operation of the covered, on-site Decant Facility. Such procedures shall be finalized by the beginning of the Decant Facility operation and implemented within 6 months thereafter.	N/A	The City completed construction of the Decant facility in July of 2012 and is continually working to enhance the facility operations for more sediment removal. The SOP for the facility was completed and the public works crews have been trained on the proper operation of the facility.	Public Works crews thoroughly understand the procedure for dumping and storing the sweeper and Vactor materials. All material dumped in the facility is recorded daily. Hard copies of the records are on file in the City of Milwaukie Public Works office.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2012-2013	Additional Detail Related to Activities Conducted
Control Infiltration and Cross Connections to the Stormwater Conveyance System	●		City of Milwaukie Public Works and Engineering Department	• Investigate sanitary lines for damage every five to six years. • Inspect for cross-connections during annual dry weather outfall inspections and remove any discovered cross connections. • Review all new and re-development plans associated with new building permits for possible cross-connections; eliminate them upon discovery.	(1) Indicate whether any cross-connections were discovered during illicit discharge investigations, and describe follow-up activities.	(1) Per results of the illicit discharge inspections, no cross connections were observed.	
Implement Master Plan Capital Improvement Projects for Stormwater Quality Improvement	●	●	City of Milwaukie Public Works and Engineering Department	• Annually contribute to the reserve fund for future CIP design and construction. • Review the CIP list and update as necessary each year.	(1) Track the number of CIP projects implemented each year and discuss the added benefit (water quality, habitat restoration, etc.) of each project. (2) Map the location and drainage area of CIPs. (3) Track the amount contributed to the CIP reserve fund each year. (4) Track changes to the CIP list.	(1) The City finalized their updated master plan in 2013 and obtained Council approval in August 2013. The City did not construct any CIPs this fiscal year because of the master plan update. (2) As CIPs are constructed, the City's asset manager incorporates as-builts into the Hanson system and City's GIS database for future mapping needs. Since the master plan was being updated, no CIPs were constructed in this fiscal year and, therefore, no mapping of CIPs was needed. (3) The amount contributed from the Storm Fund for Capital Outlay projects (CIPs) was $815,000, which will carry over to Fiscal Year 2014. (4) The City completed their stormwater master plan in August 2013, which included an updated CIP list.	The City is currently completing updates to their stormwater master plan and stormwater CIP list. No CIPs were constructed in this fiscal year due to the need to update the list.
Element #8 **Stormwater Management Facilities Operation and Maintenance**							
Conduct Stormwater Conveyance System Cleaning and Maintenance	●	●	City of Milwaukie Public Works Department	• Inspect stormwater conveyance system components (i.e., manholes, culverts and ditches) every two years and perform maintenance based on inspection results. • Perform ditch maintenance activities through an IGA between Clackamas County and the City based on inspection results.	(1) Track percent of conveyance system inspected each year. (2) Estimate the volume of debris removed during conveyance system cleaning activities. (3) Track the conveyance system repair efforts conducted.	(1) The City Stormwater Department video inspected 10% of storm mains. 50% of the catch basins and 50% of the sedimentation manholes were cleaned and inspected during FY 2012-2013. (2) The following volumes of debris were removed during conveyance cleaning activities: • 8,429.58 linear feet of storm line was cleaned. No total of measurable amounts of debris could be obtained. • 19,705.45 linear feet of storm lines were video inspected. • A total of 108 sediment manholes were cleaned for a total debris amount of 113.73 cubic yards of debris removed. • 125 ft. of ditch maintenance was completed. No total of measurable amounts of debris could be obtained. (3) The following maintenance/ repairs were conducted during reporting year 2012-2013: • 2 storm manholes were repaired • Repaired/replaced 1 storm manhole cover.	
Conduct Catch Basin Cleaning and Maintenance	●	●	City of Milwaukie Public Works Department	• Clean 50% of public catch basins each year. • Schedule repair or replacement of catch basins based on inspection results.	(1) Track the percent of total public catch basins cleaned per year. (2) Track the volume of debris removed during cleaning activities.	(1) During the 2012-2013 reporting year, 823 catch basins cleaned which translates to 50% of the total public catch basins. (2) The following volume of debris was removed during catch basin cleaning activities: • Catch basins = 374.60 cubic yards.	
Private Water Quality Facility Maintenance Program	●	●	City of Milwaukie Public Works Department	• Develop procedures to guide the private facility maintenance program by July 1, 2013.	(1) Track the number of onsite private stormwater quality facility inspections conducted annually.	(1) The Water Quality Facility Maintenance Agreement Program was completed and implemented FY 2011–2012. In 2012-2013, the City did not receive any development applications or new private facility maintenance agreements.	The SOP and supporting documents were created, FY 11-12, approved by the Planning and Engineering Departments.
Public Structural Control Facility Cleaning and Maintenance	●	●	City of Milwaukie Public Works Department	• Inspect and maintain public water quality facilities annually.	(1) Track the percent of total structural facilities inspected and maintained each year. (2) Track the volume of debris removed during cleaning activities.	(1) and (2) During the 2012-2013 reporting year, all public water quality facilities were inspected and/or maintained. • 374 hours of rain garden maintenance was completed. No total of measurable amounts of debris to be obtained. • 32.50 hours of detention pond maintenance was completed. No total of measurable amounts of debris to be obtained.	

Appendix B

Milwaukie Monitoring Data

Instream and Outfall Monitoring

The instream monitoring location at Minthorn Spring Creek concentrations improved over last year's (storm) data, and most parameters remaining stable or slightly decreased in concentration. Contributing drainage areas to both monitoring locations had appreciable changes in land use or redevelopment during the permit year 2012–2013.

Table B-1 Environmental Monitoring Results—Instream Minthorn Springs Creek at Harmony Road						
	ML_65015_C & ML_65015_G					
Sample Date	12/20/2012 (storm)	2/22/2013 (storm)	5/30/2013 (dry)	6/19/2013 (dry)	2011/12 Mean	2012/13 Mean
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Colilert	1553*	238*	387*	>2420*	523.5	1149.5**
Hardness	40	47	86	97	60	67.5
Nitrate-Nitrite	0.38	0.29	0.20	0.16	0.3075	0.2575
Orthophosphate	0.03	0.02	0.07	0.10	0.03	0.055
Total Phosphate	0.07	0.23	0.09	0.16	0.165	0.1375
Copper	0.0032	0.0123	0.00186	0.0012	0.00635	0.00464
Lead	0.00137	0.00524	0.00039	0.00069	0.00297	0.00192
Zinc	0.0233	0.265	0.011	0.007	0.04585	0.0766
TSS	10	67	3.7	9.0	29.5	22.43
Ammonia	<0.10	<0.10	<0.15	<0.05	<0.05	<0.10
BOD	1.5	3.9	1.04	<2.0		2.1
Field Test						
Temperature (C)	6.7	9.0	14.4	16.6	8.55	11.7
pH	6.7	7.0	7.2	7.3	7.0	7.05
DO-mg/l	11.1	10.4	8.2	9.2	9.75	9.73
Conductivity	63.3	161.2	192.8	223.8	132.95	160.3
Rainfall in.	1.28"	0.53"				

*= MPN/100ml

**= estimated mean calculated with a >value

The stormwater instream data shows a mean bacteria count higher than last year due to a greater than result for the 6/19/13 dry weather event. This outlier could be attributed to a robust and growing avian or wildlife population in the wetland area upstream. The other bacteria results are consistent with urban stormwater data. BOD results are extremely low and are a new monitoring requirement for this year. Other constituents are consistent with last year's data.

Table B-2 Environmental Monitoring Results—Outfall Roswell Outfall to Johnson Creek							
	ML_23003_C						
Sample Date	**12/20/2012**	**2/22/2013**	**4/19/2013**	**Min**	**Max**	**2011/12 Mean**	**2012/13 Mean**
	mg/l	**mg/l**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Colilert	1553*	1550*	1733*	1550	1733	2031.5	1612
Hardness	26	19	23	19	26	37	22.7
Nitrate-Nitrite	<0.09	0.17	0.15	<0.09	0.17	0.0775	0.137
Orthophosphate	0.02	0.02	<0.015	<0.015	0.02	0.06	0.0183
Total Phosphate	0.17	0.25	0.08	0.08	0.25	0.425	0.167
Copper	0.00634	0.0157	0.0059	0.0059	0.0157	0.0184	0.0093
Lead	0.00706	0.00996	0.00135	0.001358	0.00996	0.01434	0.00612
Zinc	0.0366	0.279	0.035	0.035	0.279	0.11225	0.117
TSS	52	83	9.0	9.0	83	120.5	48
Ammonia	<0.10	<0.10	<0.15	<0.10	<0.15	<0.05	<0.117**
BOD	2.8	7.7	3.3	2.8	7.7		4.6
Field Test							
Temperature (C)	5.9	8.6	11.6	5.9	11.6	8.35	8.7
pH	6.3	6.8	6.7	6.3	6.8	6.8	6.6
DO-mg/l	11.5	10.2	9.9	9.9	11.5	10.3	10.5
Conductivity	12.51	46.6	25.3	12.51	46.6	30.6	28.1
Rainfall in.	1.28"	0.53"	0.39"				

*= MPN/100ml

**= estimated mean calculated with a < value

Stormwater monitoring at Roswell Outfall showed improvements in water quality over last year's data. The arithmetic mean of storm results are lower than last year's data for most constituents, with only Nitrate-Nitrite indicating an increase. BOD results are extremely low and are a new monitoring requirement for this year. The Roswell site is monitored at a point prior to flows being introduced to the Roswell Detention Pond facility which offers further water quality treatment before discharging to Johnson Creek.

Mercury Monitoring

Table B-2 Environmental Monitoring Results—Outfall Roswell Outfall to Johnson Creek						
ML_23003_C						
Sample Date	3/20/2013 (Wet)	5/29/2013 (Dry)			2011/12 Mean	2012/13 Mean
	ng/l	ng/l			mg/L	ng/L
Total Hg	3.83	3.02			Na	3.425
Dissolved Hg	1.67	2.04			Na	1.855
Total MeHg	0.065	0.077			Na	0.071
Dissolved MeHg	0.022	0.045			Na	0.0335
TSS	19.3***	5.1***			Na	12.2***
Field Test						
Temperature (C)	12.7	15.3				
pH	6.9	6.7				
DO-mg/l	10.1	7.2				
Conductivity	18.5	22.8				
Rainfall in.	0.39"	0.28				

***= mg/L

Coordinated Mercury monitoring was conducted two times during permit year 2012/2013. This was completed through the considerable combined efforts of the communities of Lake Oswego, West Linn, Oregon City and the City of Milwaukie. Qualifying storms were evaluated and pursued by participating agencies to collect this data. Milwaukie Hg results are consistent between wet and dry conditions with the exception of dissolved Methyl Hg being higher during the dry monitoring period. As this is a new permit requirement for the City of Milwaukie, there is limited historical data for comparison.

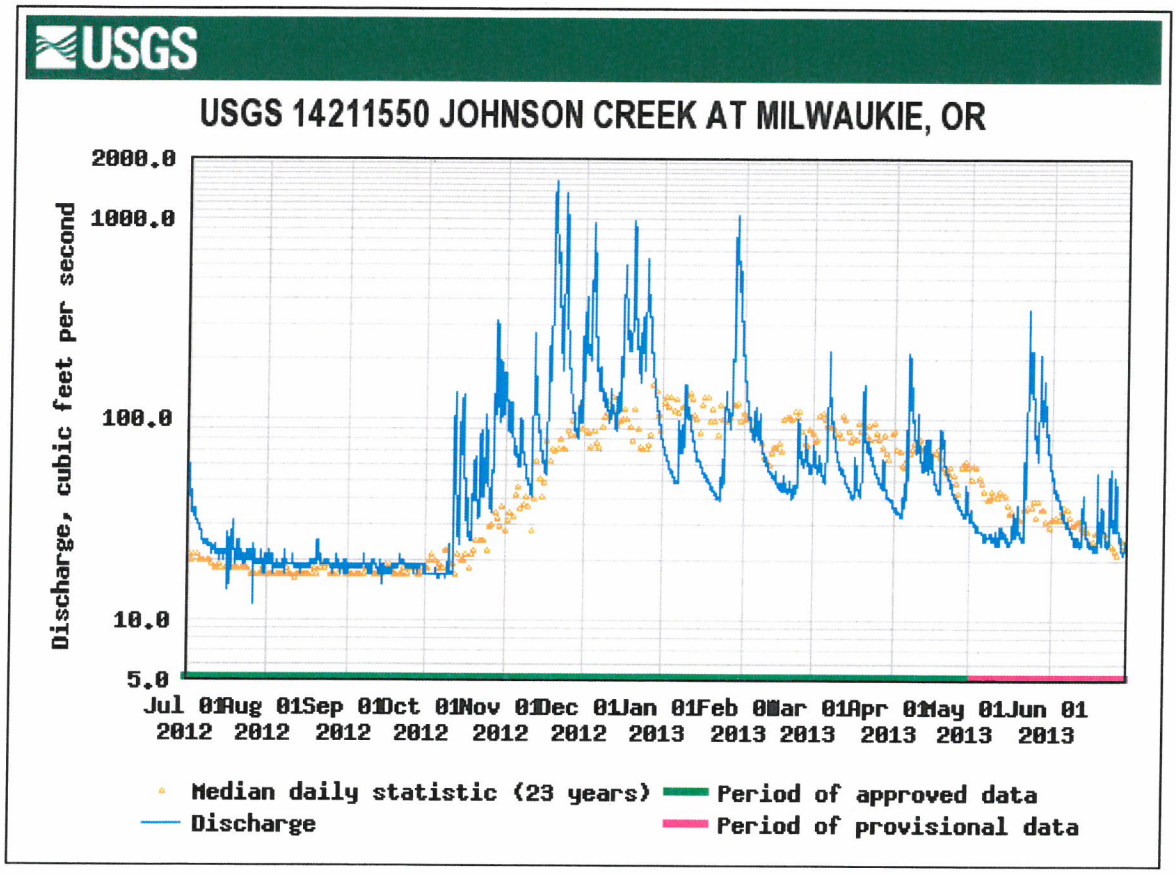
Continuous Monitoring

The City of Milwaukie continues to contract with the USGS for continuous hydrological monitoring of the Johnson Creek Basin at a cost of $7,700 per year. Milwaukie is joined in this effort with the Cities of Gresham, Damascus, and Portland, Multnomah and Clackamas Counties, and East Multnomah Soil and Water Conservation District. Water quantity parameters stream flow and gage height are measured at this station along with stream temperature, turbidity and suspended sediment. The report for this program will be completed in 2014. Further details for the data collected at this site can be found at:

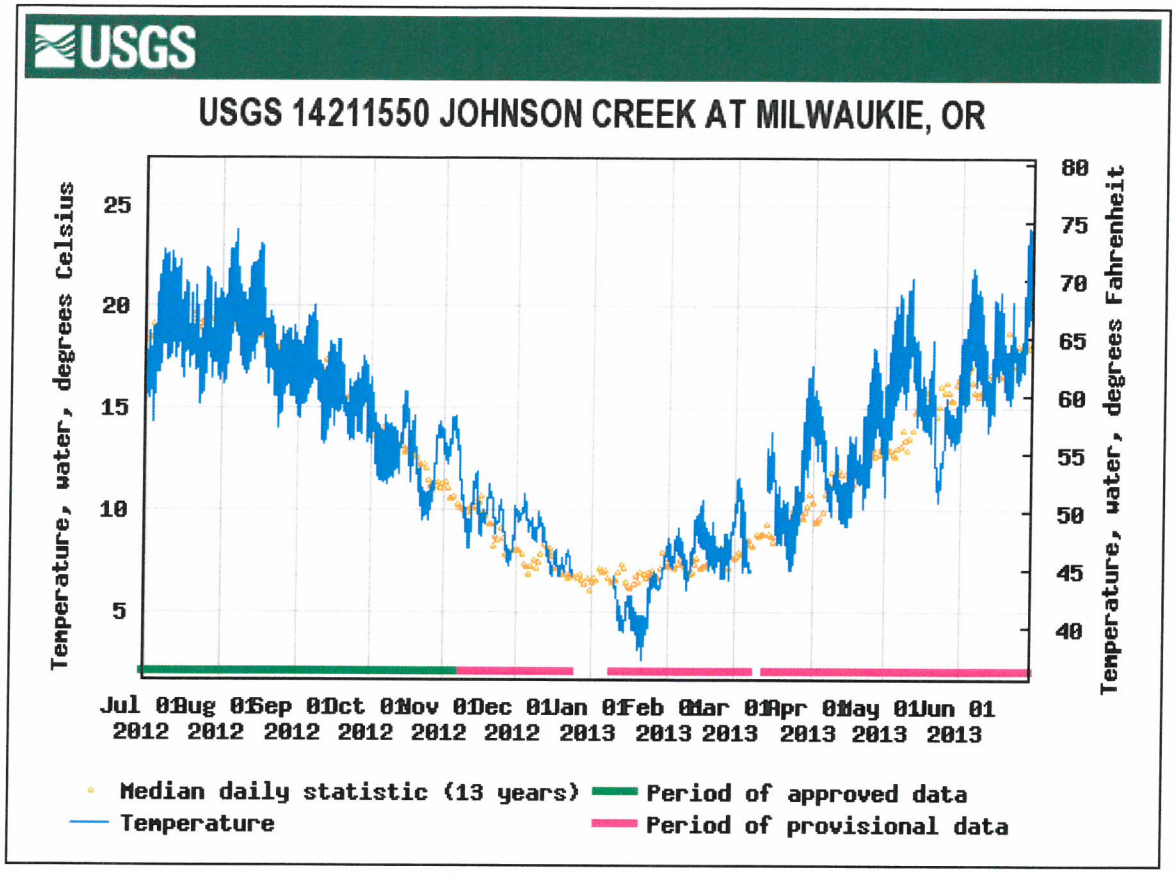
http://waterdata.usgs.gov/or/nwis/dvstat/?format=sites_selection_links&search_site_no=14211550&agency_cd=USGS&referred_module=sw

Continuous Monitoring Location information is as follows:

- USGS 14211550 Johnson Creek at Milwaukie, Oregon
- Location: Lat 45 degrees 27'11", Long 122 Degrees 38' 31", in NE ¼ SE ¼ SEC. 26, T. 1 S., R 1 E.
- Clackamas County, Hydrologic Unit 17090012, on the right bank upstream side of the Millport Rd. Bridge, in the city limits of Milwaukie, at mile 0.7



Continuous flow monitoring data at USGS site #14211550 located on Johnson Creek at SE Milport road in Milwaukie, Oregon.



Continuous temperature monitoring data at USGS site #14211550 located on Johnson Creek at SE Milport road in Milwaukie, Oregon.

Appendix C

TMDL Implementation Plan

Technical Memorandum

6500 SW Macadam Avenue, Suite 200
Portland, Oregon 97239
Tel: 503-244-7005
Fax: 503-244-9095

Prepared for: City of Milwaukie

Project Title: Milwaukie TMDL Implementation Plan Annual Report

Project No: 143011

Technical Memorandum

Subject: Willamette River TMDL Implementation Progress Report, Year 4

Date: October 1, 2013

To: Brad Albert, P.E., Milwaukie Public Works

From: Angela Wieland, P.E., Brown and Caldwell

Copy to: Doug Drake, Lower Willamette Basin Coordinator
Oregon Department of Environmental Quality

Limitations:

This document was prepared solely for City of Milwaukie in accordance with professional standards at the time the services were performed and in accordance with the contract between City of Milwaukie and Brown and Caldwell dated May 29, 2012. This document is governed by the specific scope of work authorized by City of Milwaukie; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by City of Milwaukie and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Introduction

The City of Milwaukie (City) submitted its Willamette River Total Maximum Daily Load Implementation Plan (TMDL Plan) to the Oregon Department of Environmental Quality (DEQ) on March 31, 2008. Comments from DEQ were received and addressed by the City, and DEQ approved of the City's TMDL Plan in May 2009. The 2012–2013 reporting year (July 2012–June 2013) is the fourth year of implementation of the TMDL Plan. This progress report provides a summary of the City's efforts during implementation year four.

Background

The City's TMDL Plan identifies and describes management strategies that the City will implement to address nonpoint sources of pollution generated in the Lower Willamette River subbasins in the Willamette River watershed. The TMDL parameters of concern for these subbasins include temperature, bacteria, and mercury.

Management strategies for bacteria and mercury are summarized in the City's municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) stormwater permit and associated Stormwater Management Plan (SWMP). DEQ addresses TMDL requirements within the City's MS4 NPDES permit as they pertain to pollutants associated with point sources of stormwater runoff. The MS4 NPDES permit requires best management practices (BMPs) to be applied to address sources of pollution in stormwater runoff. For TMDL pollutant parameters, the MS4 NPDES permit also requires Milwaukie to develop pollutant load reduction benchmarks to show progress towards meeting TMDL wasteload allocations. Additionally, the MS4 NPDES permit requires an adaptive management approach that focuses on refining BMPs over time until wasteload allocations are achieved. The City was reissued their MS4 NPDES permit on March 16, 2012. The City's effective (2012) Stormwater Management Plan (SWMP) outlines BMPs to comply with the reissued permit.

Stormwater runoff in the Willamette Valley is not considered a problem with respect to temperature, and therefore, temperature is not a point source that is addressed under City's MS4 NPDES permit. Management strategies for nonpoint sources of temperature were developed and identified in the TMDL Plan. Historically, riparian vegetation removal and channel modifications result in reduced baseflow, reduced stream shade, and increased instream temperatures. As part of the TMDL Plan, strategies to address temperature were identified.

Implementation Status

The City's MS4 NPDES permit serves as the Willamette River TMDL Plan for bacteria and mercury. Progress towards implementing best management strategies (or BMPs) to address bacteria and mercury are summarized in the City's 2012–2013 MS4 NPDES Annual Report, submitted to DEQ on November 1, 2013. Additionally, the City conducts the following activities to specifically address bacteria:

- Onsite Survey (of private sanitary waste systems).
- Require private systems to connect to the public system.
- Extend public collection systems to unincorporated areas northeast of the City.

Status related to these additional activities to address bacteria are described in Section 5.1 of the City's 2012-2013 MS4 NPDES Annual Report.

The City's progress towards implementing strategies to address temperature is summarized in Table 1 of this technical memorandum. Such strategies include pursuing removal of the Kellogg Creek Dam and applying for grants to support shade preservation activities. Additionally the City conducts public education and outreach activities and implementation of development standards that promote infiltration, both of which would be expected to improve temperature in receiving waters.

On April 10, 2013, DEQ invited designated management agencies (DMAs) with TMDL obligations to a TMDL implementation workshop. The intent of the workshop was to: 1) provide background information and summarize TMDL implementation strategies conducted by select agencies, and 2) discuss the need for DEQ to conduct a 5-year look back on TMDL implementation this year (2013). At the time, the City of Milwaukie, along with other Clackamas County Phase I co-permittees, had only completed three years of TMDL implementation.

Currently, the City's status with regards to implementing their TMDL Plan is documented in the submitted TMDL annual reports, and this annual report supplements the previously submitted information. The City provided an abbreviated 3-year TMDL Implementation Review Report to DEQ October 31, 2013.

Table 1. TMDL Implementation Plan Progress Report 2012–2013
Summary of Strategies to Address Temperature (as described in the TMDL Plan)

Best Management Practice or Activity	Commitment/Implementation Strategy	Measureable Goal	Implementation Tracking/Performance Measure	2012–2013 Activities	Responsible Division
Public Education	Include articles regarding temperature-related issues and shade planting projected in the City newsletter and through direct mailings.	Ensure a minimum of one temperature-related piece of educational material during the implementation period.	Record temperature-related educational materials.	The City is a partner with the Johnson Creek Watershed Council (JCWC). The JCWC has educational resources on their website that promote remediation of temperature related issues. http://jcwc.org/wp-content/uploads/2013/05/riparian-strategy-poster_small1.pdf	Public Works
Implement Stormwater Design Standards	Implement the City's development code and water quality standards, which include provisions for use of infiltration- based stormwater treatment systems.	Update design standards to include additional infiltration-based guidelines for stormwater treatment in accordance with provisions of the reissued NS4 NPDES permit.	Track modifications to the City's development standards related to use of LID and BMPs for new and redevelopment.	The City will review and revise as necessary their stormwater quality guidelines to determine modifications necessary to comply with language of the recently reissued MS4 NPDES permit. Finalization is expected in conjunction with compliance deadlines established in the permit.	Public Works
Kellogg Creek Dam Removal	Remove Kellogg Creek Dam, return Kellogg Lake to a creek, and revegetate the affected area.	Apply for and receive funding to support Kellogg Creek Dam removal activities.	Track any grant funds received. Track any planting activities conducted.	The City continues to pursue options for removal of the Kellogg Creek Dam and is actively developing IGA's with stakeholders to maintain this effort. The city received approximately $20,000 in FY 2011-2012 as part of a small grant application. The City received an additional $20,000 as part of the grant in FY 2012-2013. The City is focused on and awaiting completion of the dam removal project and therefore did not conduct any vegetation enhancement during the 2012-2013 reporting year.	Public Works