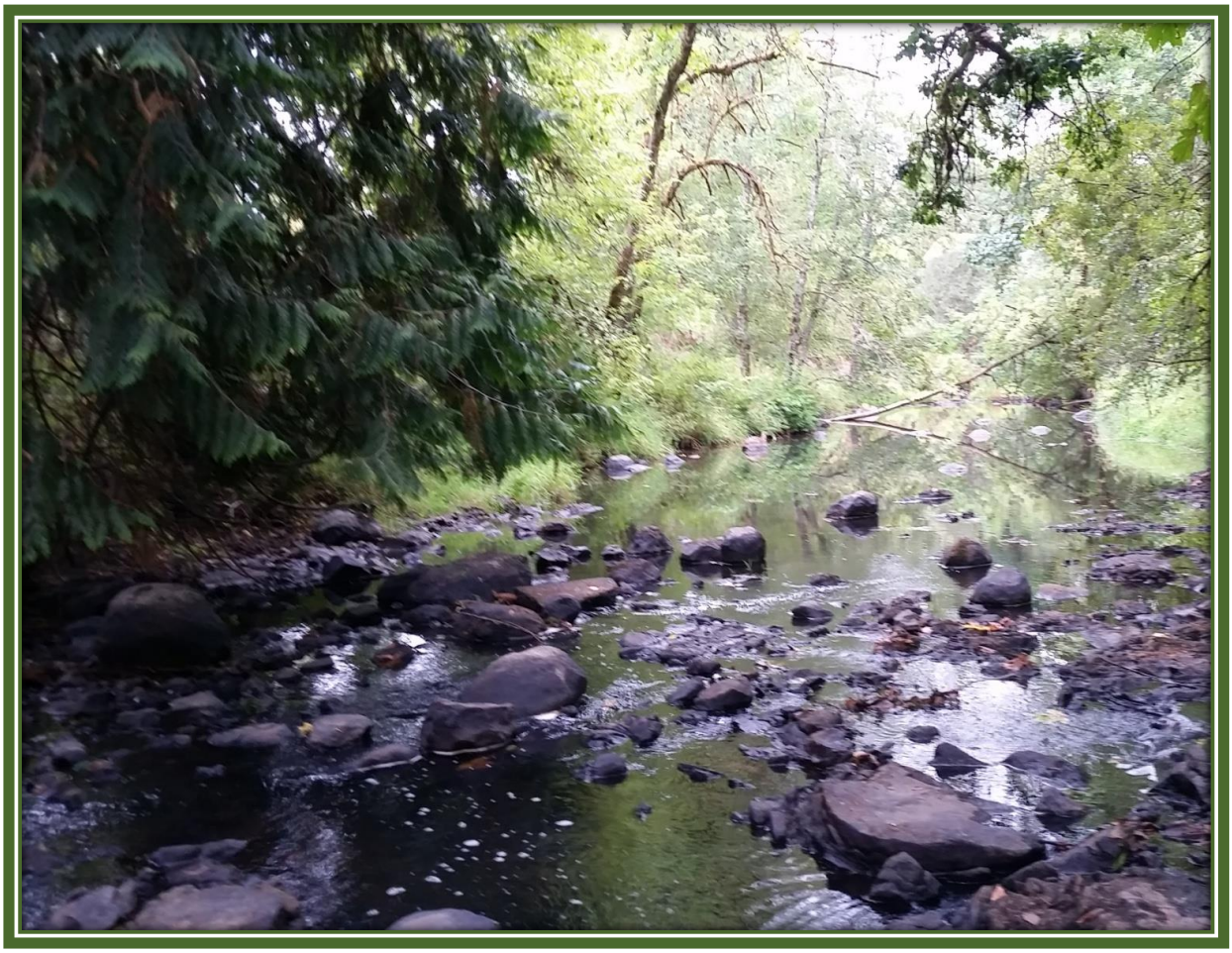

CITY OF NEWBERG TMDL IMPLEMENTATION PLAN

Annual Report Covering 2015 Activities

Submitted: March 30, 2015

Engineering Department
503-537-1273

City Attorney Office
503-537-1206

City of Newberg

414 E. First Street
Newberg, OR 97132

March 30, 2016

Ms. Nancy Gramlich
DEQ Western Region – Salem
750 Front Street NE, Suite 120
Salem, OR 97301-1039

RE: Willamette TMDL Implementation Plan for the City of Newberg
Annual Report for January 2015 to December 2015

Dear Nancy,

Enclosed is the annual report for the City of Newberg's Willamette TMDL Implementation Plan. This report, covering the time period between January 2015 and December 2015, fulfills the obligations of the City of Newberg under Oregon Administrative Rule 340-042-0080(4).

Please contact me if you have any questions.

Sincerely,

Sonja Johnson
TMDL Program
City of Newberg
414 E First St, Box 970
Newberg, OR 97132
sonja.johnson@newbergoregon.gov
(503) 537.1282

TABLE OF CONTENTS

TABLES

ACRONYMS

ACWA - Association of Clean Water Agencies

ASCE - American Society of Civil Engineers

AWWA - American Water Works Association

BMP - Best Management Practice

CESCL - Certified Sediment and Erosion Control Lead

CRRC - Citizen's Rate Review Committee

City - City municipal staff of Newberg, Oregon

DEQ - Oregon Department of Environmental Quality

ESC - Erosion and Sediment Control

EWRI - Environmental and Water Resources Institute

FOG - Fats, Oil, and Grease

GFU - George Fox University

GYWC - Greater Yamhill Watershed Council

IDDE - Illicit Discharge Detection and Elimination

NORP - Northwest Oregon Restoration Partnership

O&M - Operations and Maintenance

PW - Public Works

TMDL - Total Maximum Daily Load

YCSW - Yamhill County Solid Waste

EXECUTIVE SUMMARY

Even with one strategy and two measureable goals added in 2015, the City was able to implement 74% of its strategies and 75% of its goals. The measures with the most improvement for goal implementation were the Municipal Operations and Illicit Discharge measures and the measures with the most improvement for strategy implementation were the Post-Construction and Illicit Discharge measures.

The City continued to use booths, presentations, classroom education, and website outreach to fulfill the requirements of the Public Education measure. Information was included in the water quality report, storm drains were marked, and the City started using social media for outreach.

The City's stormwater fee was reviewed by the Citizen's Rate Review Committee in 2015 and an 8.3% increase was approved by the City Council in March 2016. A watershed grant for classroom education on water quality was given to the Newberg School District.

The public continues to report stormwater concerns through telephone calls to Code Enforcement and a link on the website. Illicit discharge reports from the public have increased as the City increases its public education effort and staff has been proactive in reporting illicit discharges found during regular maintenance. The effort to properly dispose of hazardous waste continues to be supported by the public with more than 13 tons of hazardous material collected at its 2015 events. The Newberg-Dundee police department worked with several partners to almost double the amount of medications collected in Newberg for 2015 and destroyed by Covanta.

One person was recertified as an erosion and sediment control inspector in 2015. One person attended the ACWA Stormwater Summit; one person attended the ASCE Stormwater Symposium; one person attended the APWA conference; and staff attended in-house training in 2015.

Staff updated the Public Works Construction and Design Standards in 2015. There were 293 erosion and sediment control inspections in 2015. There were 16 pre-application and five pre-construction meetings held in 2015. Stormwater facilities were not inspected.

The number of curb miles swept quintupled and the number of catch basins cleaned tripled. One trash rack was installed in 2015. Stormlines continued to be inspected and cleaned with staff replacing 11% of the stormline that was inspected. The City did not update all of its operations and maintenance policies and procedures however the street sweeping procedures were reviewed and it was determined that the debris should be sent to the landfill.

There were no changes to the municipal code regarding stormwater nor was the stream corridor overlay changed in 2015. The City provided 321free native plants to the public for green infrastructure and stream corridor projects as part of its temperature stabilization program.

More than 75% of the strategies in four of the seven TMDL measures have been implemented by the City and more than 90% of the Public Education, Temperature, and Illicit Discharge goals have been implemented by staff. The City will continue to implement the remaining strategies and measurable goals.

STRATEGY AND MEASUREABLE GOAL STATUS

The City's TMDL Implementation Plan consists of overall strategies for reducing mercury and bacteria and stabilizing the temperatures of its three streams (See Appendix 1). The strategies are subdivided into goals for seven minimum measures with specific activities and deadlines. Six of the minimum measures are generally aligned with typical NPDES requirements. The seventh measure addresses temperature stabilization.

In 2015, the percentage of measureable goals completed or placed into an on-going status was 75% (see Table 1). The increase is significant as the City had measureable goals from Public Involvement and Illicit Discharge that became due in 2015. The Public Education and Temperature measures continue to be fully implemented while the Illicit Discharge and the Municipal Operations goal implementations saw the most improvement (see Table 2). Overall, the required measurable goals within the temperature requirement, the public education program, and the illicit discharge program have been substantially incorporated into City policies and procedures.

Table 1. Status of Measurable Goals, December 2015

Measure	Measurable Goals					
	Completed	Ongoing	Incomplete But Started	Not Implemented	Delayed	Added or Not Due
Public Education	0	5	0	0	0	1
Public Involvement	0	4	1	0	0	0
Illicit Discharge Detection and Elimination	3	7	1	0	0	0
Construction Site Stormwater Runoff Control	1	2	2	0	0	0
Post-Construction Stormwater Runoff Control	1	4	1	2	1	1
Pollution Prevention in Municipal Operations	1	8	1	1	3	0
Temperature	0	3	0	0	0	2
Totals	6	33	6	3	4	4
Percentage of Required Goals	12%	63%	12%	6%	7%	NA

NA: Not Applicable as these are goals that have a deadline after December 2015

On a broader outlook, the City has completed or incorporated 74% of the required strategies in its TMDL Implementation Plan (see Table 2). Required strategies for the temperature requirement, the public education program, and the illicit discharge program have been substantially incorporated into City policies and procedures.

Table 2. Status of Goals and Strategies with Deadlines before January 2016

Measure	Strategies			Measurable Goals		
	Implemented	Percent	Change*	Implemented	Percent	Change*
Public Education	5/5	100%	0%	5/5	100%	NA
Public Involvement	¾	75%	-25%	4/5	80%	-20%
Illicit Discharge Detection and Elimination	5/6	83%	+16%	10/11	91%	+11%
Construction Site Stormwater Runoff Control	2/3	67%	-33%	3/5	60%	-40%
Post-Construction Stormwater Runoff Control	2/5	40%	+20%	5/9	56%	0%
Pollution Prevention in Municipal Operations	6/9	67%	+11%	9/14	64%	+21%
Temperature	3/3	100%	0%	3/3	100%	0%
Total	**26/35**	**74%**	**+3%**	**39/52**	**75%**	**+3%**

* Change in number of measurable goals or strategies completed or placed in an on-going status from 2014 to 2015

MEASURE 1 – PUBLIC EDUCATION

Overview

The Public Education measure has three components: stormwater, watershed, and infrastructure education. Stormwater education includes providing information on the city website, public events and presentations, and information in the water quality report. The watershed component includes signage at stream crossings or stormwater facilities and classroom education. Infrastructure education provides markers at stormdrains located throughout the city. The signage is due in 2017 while the remaining goals require activities each year.

2015 Tasks Completed

PE-1 Stormwater Education

There were 16 stormwater **web pages** covering information on runoff, riparian vegetation, water quality, and the TMDL program. The City posted on social media seven times about stormwater and volunteer efforts as it began using social media for outreach. The 2014 **annual report** was available on the website after comments were received from DEQ.

A local civic group, Leadership Newberg, attended a PW Operations presentation in March on stormwater-related volunteer opportunities, our riparian planting program, water conservation program, FOG program, and compost program in March. The 12 participants were also given a tour of the wastewater treatment plant.

The City sponsored and co-staffed a booth with the GYWC at the Camellia Festival in April. Attendance was over 3,000 and we spoke with many people about water quality and riparian ecology while providing native plants and trees. Free packets of information on riparian vegetation, native plants, and water-efficient landscaping were also available to the public.

In June, as part of Public Works Day, the City provided information on the benefits of compost for increasing infiltration. Several hundred people attend Public Works Day every year.

In September, the City and the GYWC spoke with two groups, 60 and 70 people respectively, about the correlation between invasive plants, stormwater, and streambank erosion. Afterwards, the groups removed invasive blackberry, laid down compost, planted native trees and shrubs, and stabilized a restoration site for the winter.

The **Water Quality Report** was sent to residents of the city in June and contained information on stormwater volunteer opportunities, illicit discharges, riparian revegetation, and Mad Science presentations.

PE-2 Watershed Education

In March, the City sponsored a Mad Science presentation on the impact of individual actions on streams for 90 students in the 5th grade. In April, the City spoke to a class of 20 middle school students on the effect of stormwater on water quality. Ten of the students along with 10 GFU

student teachers then applied the information as they removed invasive blackberry and planted native trees and shrubs at a stream restoration site.

In April and May, the City partnered with the Newberg School District and SOLVE to provide a series of after-school ecology classes for 15 middle school students. The students learned about watersheds, stormwater, macro-invertebrates, native pollinators, and water quality in the classroom and on a restoration site.

The City partnered with the Newberg School District, GYWC, and GFU to sponsor World Water Monitoring events for over 400 8th grade students in late April and early May. Staff spoke to the students in the classroom about stream ecology and water quality. The following week, students were brought to Hess Creek on the GFU campus where they collected water samples, completed water-quality analyses, sampled for macro-invertebrates, and learned about the stream ecology of Hess Creek. After the field day, students worked on reports that summarized their experience.

PE-3 Infrastructure Education

Volunteers marked a little over 300 stormdrains in 2015. The markers were placed at stormdrains from College Street to Highway 219 in the south section of the city and from the west side of town to College Street in the north section of the city.

Effectiveness Summary (January 2013 to December 2015)

Stormwater Education (PE-1)

There were 16 pages on the City website with information on the TMDL program, stormwater, riparian vegetation, and water quality from 2013 to 2015. In 2015, the City started using social media and posted 7 items covering riparian vegetation, volunteer groups removing invasive plants, erosion, and urban forestry. The annual TMDL reports have been uploaded to the City's website each year for use by the public.

In 2014 and 2015, staff provided a presentation to Leadership Newberg in March on our stormwater program, compost program, and FOG program. The 12 to 15 participants were also given a tour of the wastewater treatment plant and its composting facilities.

In 2014, the City and the GYWC talked to 30 George Fox University students about the effect of invasive plants on streambank erosion before going to a restoration site to remove invasive plants. In 2015, the City and GYWC spoke with two groups, 60 and 70 people respectively, about the correlation between invasive plants, stormwater, and streambank erosion. The groups removed invasive blackberry, laid down compost, planted native trees and shrubs, and stabilized the restoration site for the winter. In 2014, a group of 50 people cleaned up Renne Park with the City's assistance.

From 2013 to 2015, the City staffed a booth with the GYWC at the Camellia Festival in April that was attended by 2,000 to 3,000 people. We spoke with many people about riparian habitat and restoration. In April 2014, the City spoke to people at the Newberg Earth Day where approximately 200 people learned about rain gardens, composting, and natural gardening. A booth was set up for a week in April 2014 at the city's library with similar information. On Public Works

Day in 2013 and 2014, the City included an area where children planted groundcovers and released ladybugs as they learned about the benefits of ladybugs for pest control and, in 2015, we had a booth with information on the benefits of compost on infiltration. The City staffed two booths in 2013 and one booth in 2014 at the Newberg Farmers Market where 600 to 800 people gather each week in the summer. We sponsored one booth for the GYWC in 2013 and two booths for the YCSW in 2014. The booths from 2013 to 2015 included information about natural gardening, erosion control, bioswales, water quality, recycling, and hazardous waste disposal. In 2013, the City staffed a booth with the GYWC and the Yamhill County Solid Waste at the 4-day Newberg Old-Fashioned Festival which attracts approximately 10,000 people each year. We spoke about fish habitat, water quality, natural gardening, and recycling. We included information about volunteer programs, illicit discharges, the Trees for Streams program, and volunteer opportunities in our annual Water Quality Report from 2013 to 2015.

In summary, the City has maintained 16 pages on its website, posted the annual TMDL reports, and started using social media to reach the public about stormwater issues. We provided six presentations that reached over 200 people and either staffed or sponsored 14 booths at events with attendances that varied from several hundred to several thousand. Each year, we have included information about stormwater in our Water Quality Report.

Watershed Education (PE-2)

In 2014 and 2015, the City partnered with the GYWC and the Newberg School District on an after-school ecology class that reached approximately 30 middle school students. In 2015, we spoke to 20 middle school students about watersheds, invasive plants, and erosion before working with them on a restoration site. We sponsored a Mad Science presentation on water quality to approximately 270 elementary students from 2013 to 2015. In 2013, the City provided a presentation to 15 high school students on water management and its effect on water quality.

From 2013 to 2015, the City partnered with the Newberg School District and GFU to hold World Water Monitoring events with middle school students. Staff taught students about streams and water quality for a day and then helped them collect water samples from Hess Creek for physical and chemical analyses during a field day. Students received instruction in soil types in 2014 and macro-invertebrates in 2015. Each year, staff at GFU provide historical information about the watershed and teach the students about stream ecology so they can better understand watershed issues. From 2013 to 2015, approximately 800 students have been introduced to the concept of water quality and watershed management.

Working with George Fox University and Green Girl Land Development Solutions, the City sponsored raingarden classes in 2013 and 2014. After the classes, the participants built bioswales that infiltrate a 2.5-inch rain event.

The City worked closely with the GYWC in 2013 and 2014 to provide watershed education to the public. We provided a $1,000 donation in 2013 and attended monthly meetings in 2013 and 2014. In addition, we reconnected the group in 2013 with NORP which provides low-cost plants for stream restoration purposes. In December of 2014, the City resigned from the GYWC board in order to work more closely with them on local projects.

In summary, the City has provided or sponsored 28 presentations that reached 1,200 people. The presentations contained information about infiltration, native vs. invasive plants, macro-

invertebrates, and water quality. The City attended GYWC meetings in 2013 and 2014 before resigning their board member status in 2014 to work more closely with the group on projects within the city's jurisdiction.

Infrastructure Education (PE-3)

Through its volunteer program, the City marked 560 stormdrains from 2013 to 2015.

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

MEASURE 2 – PUBLIC INVOLVEMENT

Overview

The strategies required for Public Involvement include reviewing the stormwater fee; providing funds for stream restoration and stormwater education projects; providing an avenue for responding to the public on illicit discharge, erosion, and stormwater issues; and conducting a public survey on stormwater. All of the strategies require activities each year with the exception of the public survey which is a BMP accomplishment.

2015 Tasks Completed

PI-1 Stormwater Utility Fee

The Citizen's Rate Review Committee was started in 1992 and consists of 7 volunteers from the public who meet every two years to review utility rates proposed by staff. After a discussion with the committee, the rates are presented by staff to the City Council for approval.

The CRRC met to review stormwater rates in October and November in 2015 and the City Council approved new rates for 2017 and 2018 in March 2016. The rates for 2016 are $8.67 and for 2017 and 2018 they will be $9.45 and $10.30, respectively. While the CRRC and City Council meetings were advertised and open to the public, no one from the public commented on the stormwater rates. The **minutes** from the CRRC meetings and the town hall are available on the City website.

PI-2 Public Participation in Stormwater Management

In 2015, the City provided $495 to the Newberg School District to purchase macro-invertebrate sampling supplies for 400 students.

PI-3 Public Participation in Reporting Stormwater Issues

In 2015, the City used social media twice to inform people about flooding and other stormwater issues in addition to information provided on the website. The city also uses YourGov for the

public to report stormwater issues. The City responded to six illicit discharge complaints, one erosion and sediment control complaint, and one Oregon Drainage Law complaint in 2015. Flood complaints were not documented. The illicit discharge complaints are detailed in Appendix 2.

PI-4 Public Participation in Educational Focus

The public survey will be sent out to the public in 2016.

Effectiveness Summary (January 2013 to December 2015)

Stormwater Utility Fee (PI-1)

The CRRC meets every two years to review the stormwater utility fee. The CRRC met in early 2014 and in late 2015 to discuss stormwater rates. While the meetings were advertised and open to the public, no one has commented on the stormwater rates. The rates were $7.30 in 2013 and will be $8.67 in 2016.

Public Participation in Stormwater Management (PI-2)

As part of its watershed grant program, the City provided $495 to the Newberg School District for macro-invertebrate sampling equipment which will be used by 200 to 400 students each year. We provided $1,000 in 2014 for a project restoring 240 feet of Hess Creek's streambank. The project partners were the Newberg School District, GYWC, Yamhill Watershed Stewardship Fund, and NORP.

Public Concerns with Stormwater (PI-3 and PI-4)

In 2015, the City used social media twice, in addition to its website, to inform the public of stormwater issues. In 2014 and 2015, the City provided a link (YourGov) for citizens to report stormwater issues. Complaints of street flooding were not documented from 2013 to 2015. There were two complaints regarding Oregon Drainage Law, 15 involving illicit discharges, and three about erosion and sediment control from 2013 to 2015. The public survey was not completed in 2015.

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

MEASURE 3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

Overview

The strategies for the IDDE measure require the development and implementation of a program for controlling illicit discharges, staff training on investigations, documentation of stormwater outfalls, removal of illegal dumps, responses to spills, the purchase of spill kits for municipal trucks, and

providing public access to proper hazardous waste disposal. The IDDE Plan is a BMP accomplishment while the remaining goals require activities each year.

2015 Tasks Completed

ID-1 Develop IDDE Plan

The IDDE Plan was completed in 2014.

ID-2 Train Staff to Implement IDDE

Each department or division within the City is responsible for their own employee training. There was in-house training for some of the staff on the IDDE procedures and policies in 2015.

ID-3 Implement IDDE Plan

The City is screening outfalls during storm system maintenance and during stream assessments. There was one outfall with a slight discharge at Chehalem Creek and Hwy 240 in October; a sample was taken and the analyses showed that the likely source was groundwater. No illegal dumps were reported in 2015.

There were six illicit discharge complaints investigated by staff (see Appendix 2). They resulted in three warning letters and two educational efforts. The remaining complaint was determined to be of natural origin.

Spill kits were available on 10 vehicles. There were no reportable spills nor spill kits used in 2015.

ID-4 Hazardous Waste Collection

The YCSW continues to sponsor the hazardous waste collection events in Newberg (May) and McMinnville (October). The 2015 events collected 12.3 tons of hazardous waste; 23.2 tons of paint and paint-related waste (see Table 3). In addition to other types of waste, there were 1,733 pounds of mercury-contaminated lights and thermometers; 1,600 pounds of batteries; and 680 pounds of propane cylinders collected at the events.

Table 3. Household Hazardous Waste and Medications Collected from 2013 to 2015

	Newberg			McMinnville		
Year	Hazardous Waste (tons)	Paint (tons)	Medications (pounds)	Hazardous Waste (tons)	Paint (tons)	Medications (pounds)
2013	9.5	13.7	168	5.0	7.3	440
2014	3.6	17.8	705	9.6	14.7	490
2015	4.8	12.7	1,200	7.5	10.5	318
Average	6.0	14.7	691	7.4	10.8	416

As part of the National Drug Take-Back program, the Newberg-Dundee police department maintained a drug drop-off box in the Public Safety Building, was present at the YCSW hazardous waste event in Newberg, staffed an additional collection event at RiteAid, and partnered with a retirement community and a rehabilitation facility to collect medications. Staff collected 318 pounds at the May hazardous waste collection event, 666 pounds from the Public Safety drop-off box, and 216 pounds from other events and partners in 2015. The YCSW collected 318 pounds of medications during their McMinnville collection event.

Effectiveness Summary (January 2013 to December 2015)

IDDE Plan (ID-1)

The IDDE Plan was completed in 2014. Tracking worksheets, investigation procedures, and sampling protocols were included in the plan.

Staff Training (ID-2)

In-house training on the IDDE Plan was provided in 2015 to some of the staff. One person attended a session on IDDE program implementation at the ACWA Stormwater Summit in May 2014. One person completed a course on industrial stormwater permits in December 2013.

IDDE Plan Implementation (ID-3)

Staff responded to 17 illicit discharges from 2013 to 2015 (see Appendix 2) with the investigations resulting in one citation, six warning letters, and eight clean ups of the affected areas by the dischargers. Two of the investigations resulted in no further action by the City due to the nature of the discharge. There was one dumping incident and one reportable spill in 2014. Basic spill kits were kept on two emergency response vehicles in 2014 and in ten municipal vehicles in 2015. No spill kits were used in 2015. Spill kit usage was not documented in 2013 and 2014.

Hazardous Waste Collection (ID-4)

From 2013 to 2015, the YCSW has collected an average of 6 tons of hazardous waste annually in Newberg and 7.4 tons annually in McMinnville. Although Oregon has the PaintCare collection program, people continue to bring an average of 14.7 tons of paint and paint-related products annually to the hazardous waste event in Newberg and 10.8 tons in McMinnville. The Drug TakeBack program has been implemented with great success in Newberg and McMinnville resulting in an average of 691 pounds of medication collected annually in Newberg and 416 pounds in McMinnville.

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

MEASURE 4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Overview

In Measure 4, the City is required to develop and implement an ESC program, train staff, review construction plans, inspect sites, and enforce the ordinance. Creating the ESC program is a BMP accomplishment while the remaining strategies require activities each year.

2015 Tasks Completed

CS-1 Develop Erosion and Sediment Control Program

Staff created an ESC program in 2014 for construction sites less than one acre. Sites greater than one acre are required to obtain a 1200-C permit and submit the DEQ-approved ESC plan to the City.

CS-2 Train Staff in Erosion and Sediment Control

Each department or division within the City is responsible for their own employee training. One person was re-certified in 2015.

CS-3 Implement Erosion and Sediment Control Program

ESC project information is listed in Appendix 3. There were 293 ESC inspections in 2015. The number of inspections for each project was not documented. One project was reported to DEQ for violation of its 1200-C permit.

Effectiveness Summary (January 2013 to December 2015)

ESC Plan Development (CS-1)

Staff completed an ESC manual in 2014 for construction sites less than one acre with sites greater than one acre required to provide a copy of their 1200-C permit and DEQ-approved plan to the City.

ESC Staff Training (CS-2)

Each department or division within the City is responsible for their own employee training. One person was re-certified in 2015, two people were certified in 2014, and no training occurred in 2013. There are three people currently certified to conduct ESC inspections.

ESC Plan Implementation (CS-3)

There were 293 ESC inspections in 2015. The number of inspections per project location was undocumented. The number of ESC inspections for 2013 and 2014 was not documented.

In 2015, a project was reported to DEQ for violation of its 1200-C permit. One notice of non-compliance was issued in 2014 and none were issued in 2013. Code Enforcement received a complaint in 2014 at 1405 Second Street and required sediment removal and straw on the disturbed area. At another location in 2014, they required a compost pile to be removed from the street. In 2013, a complaint was received about sediment from a project on Wynooski Road and a second complaint was received about erosion in a bioswale at another location. An ODOT project was the subject of a 2013 complaint, however the project was not within our jurisdiction and it was referred to the County.

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

MEASURE 5 – POST-CONSTRUCTION RUNOFF CONTROL

Overview

The strategies in Measure 5 require the City to update its design standards, provide training, require stormwater management for development and redevelopment, review plans, conduct pre-construction meetings, evaluate areas for retrofit opportunities, inspect stormwater facilities, and monitor streams. The design standards update is a BMP accomplishment and the remaining strategies require activities each year.

2015 Tasks Completed

DS-1 Develop Stormwater Management Program

Staff updated the **Design and Construction Standards** in August 2015. The manual requires projects to mitigate effects from impervious surfaces when the current impervious area is increased by 500 square feet or more. A fee of $304 for the first acre and $76 for each additional acre defray the cost of reviewing stormwater plans.

DS-2 Train Staff in Stormwater Management

Each department or division within the City is responsible for their employee training. One person attended the ACWA Stormwater Summit presentation on regulatory stormwater updates, new stormwater BMPs, and aquifer storage and recovery; one person attended the ASCE Stormwater Symposium presentations on bioretention, retrofits, and modeling; one person attended the APWA conference presentations on outfall design, design standards, and restoration; and in-house training occurred for stormwater maintenance procedures. There was no training for inspecting stormwater facilities.

DS-3 Implement Stormwater Management Program

There were 16 pre-application meetings where stormwater requirements were discussed with the applicant. Of those, 15 projects continued in the land-use process and were required to submit a stormwater management plan (see Appendix 4). There were five pre-construction conferences. The City has a stormwater credit program that had one participant in 2015.

In 2014 and 2015, College Street/Hwy 219 underwent a 0.46-mile renovation to add sidewalks and bike lanes in an area that was prone to flooding. The project included 334 feet of 6-ft wide filtration planters and 180 feet of 5-ft wide filtration planters to manage stormwater.

The City developed forms in 2015 for inspecting stormwater facilities (see Appendix 5).

Effectiveness Summary (January 2013 to December 2015)

Stormwater Management Program Development (DS-1)

Staff updated the stormwater design standards in March 2014 and August 2015 to conform with the municipal code adopted in 2012. It includes a requirement for applicants to use green infrastructure for at least some stormwater management.

Stormwater Staff Training (DS-2)

Each department or division within the City is responsible for their own employee training. In 2015, one person attended the ACWA Stormwater Summit presentation on regulatory stormwater updates, new stormwater BMPs, and aquifer storage and recovery; one person attended the ASCE Stormwater Symposium presentations on bioretention, retrofits, and modeling; one person attended the APWA conference presentations on outfall design, design standards, and restoration; and in-house training occurred for stormwater maintenance procedures. One person attended presentations on green infrastructure design, stream restoration, and HEC-RAS analyses at the 2014 ASCE-EWRI Conference and the 2014 AWWA Sustainable Water Management Conference. In 2013, one person attended webcasts on retrofitting techniques, one person attended a webcast on BMP selection for achieving TMDL goals, and one person attended two presentations on creating and implementing a stormwater retrofit program.

Stormwater Management Program Implementation (DS-3)

Fifteen projects were required to submit stormwater management plans in 2015 and 26 projects were required to submit plans in 2013. No projects were required to submit plans in 2014. There were five pre-construction conferences in 2015, three conferences in 2014, and one conference in 2013. In 2014 and 2015, College Street/Hwy 219 underwent a 0.46-mile renovation to add sidewalks and bike lanes in an area that was prone to flooding. The project included 334 feet of 6-ft wide filtration planters and 180 feet of 5-ft wide filtration planters to manage stormwater. Between 2013 and 2014, staff worked with GFU and Green Girl Land Development Solutions to create 2 bioswales that infiltrate a 2.5-inch rain event. The City has a stormwater credit program with one participant each year from 2013 to 2015

The City developed stormwater facility inspection forms in 2015. There were no stormwater facility inspections from 2013 to 2015.

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

MEASURE 6 – POLLUTION PREVENTION IN MUNICIPAL OPERATIONS

Overview

Measure 6 requires the City to update procedures and policies to optimize water quality in our streams; maintain stormwater infrastructure; train staff; and sweep the streets. The update to procedures and policies are BMP accomplishments while the remaining strategies require activities each year.

2015 Tasks Completed

OM-1 Operations and Maintenance Manuals

The City does not have an operations and maintenance manual. The catch basin cleaning program was reviewed with no changes. The street sweeping program was reviewed and material disposal practices established.

OM-2 Operations and Maintenance Staff Training

There was in-house training in 2015 for maintenance procedures.

OM-3 Stormwater Infrastructure Maintenance

The following maintenance was completed for the City's stormwater infrastructure:

- 126 catch basins cleaned
- 1 new trash rack installed
- 5,278 feet of stormline cleaned
- 1,519 feet of stormline inspected
- 160 feet of stormline replaced
- 0 culverts repaired
- 0 culverts installed

It is estimated that less than 5% of major inlets have trash racks. Over 5,000 feet of stormline was cleaned and over 1,500 feet of stormline was inspected. There were 13 stormline repairs resulting in 160 feet of replaced stormline.

The City cleans streets on a 5-week rotation. PW Maintenance reported 4,840 curb miles swept with 1,426 cubic yards of debris collected per curb mile. Debris was sent to the landfill.

Effectiveness Summary (January 2013 to December 2015)

Operations and Maintenance Manuals (OM-1)

The City does not have an operations and maintenance manual. The catch basin cleaning program was reviewed in 2015 with no changes. The street sweeping program was reviewed in 2015 and material disposal practices established.

Operations & Maintenance Training (OM-2)

In-house training was provided in 2015 for maintenance procedures. Seven staff attended a stormwater class in 2014. There was no stormwater training in 2013.

Stormwater Infrastructure Maintenance (OM-3)

Maintenance for the stormwater system is shown in Table 4. An average of 58 catch basins were cleaned from 2013 to 2015. An average of 1,300 feet of stormline was inspected and 5,000 feet cleaned from 2013 to 2015. Staff replaced 356 feet of stormline between 2013 and 2015.

Streets are swept on a 5-week rotation. An average 0.45 cubic yards of debris was collected per curb mile between 2013 and 2015 and sent to the landfill.

Table 4. Stormwater Infrastructure and Street Maintenance from 2013 to 2015

Component	2013	2014	2015	Average
Catch Basins Cleaned	-	47	126	58
Trash Racks Installed	-	-	1	0.33
Stormline Inspected, feet	500	1,859	1,519	1,293
Stormline Cleaned, feet	391	10,163	5,278	5,277
Stormline Repaired, feet	-	-	13	4.3
Stormline Replaced, feet	81	115	160	119
Street Sweeping, curb miles	3,109	1,022	4,840	2,990
Street Debris, cubic yards	1,131	1,436	1,426	1,331
Debris per Curb Mile, cubic yards	0.36	1.40	0.30	0.45

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

TEMPERATURE

Overview

The streams within the City's boundaries have been designated as rearing and migration corridors for salmon and trout; in addition, the Willamette River in the Newberg area is designated as a migration corridor for steelhead and salmon. In 2012, the City responded to DEQ comments by adding three temperature BMPs to the implementation matrix. The strategies are to maintain stream vegetation, increase canopy cover along streams, and complete stream assessments. All of the strategies require annual activities or staff review.

2015 Tasks Completed

T-1 Maintain Existing Stream Vegetation

There were no new ordinances adopted nor property annexed that affected streams in 2015.

T-2 Increase Effective Shade

The City continued its partnership with NORP to provide trees to homeowners with riparian property. In 2015, 99 trees, 169 shrubs and 53 groundcovers were provided to increase shade and decrease stream temperatures. Of those, 41 were planted in the Chehalem Creek watershed, 159 were planted in the Hess Creek watershed, 74 were planted in the Spring Brook watershed, and 47 were planted along the Willamette River (see Table 5). T-3 Stream Assessment

Stream assessments continued in 2015 with 0.8 stream miles assessed in Chehalem Creek.

Effectiveness Summary (January 2013 to December 2015)

Maintain Existing Stream Vegetation (T-1)

There have been no municipal code changes affecting stream health since 2012. In 2014, a property was annexed by the City that contained a Hess Creek tributary. The Stream Corridor Overlay was amended to include the stream.

Increase Effective Shade (T-2)

From 2013 to 2015, over 1,800 native trees, shrubs, and groundcovers were planted along streams and in raingardens through the Trees for Streams program and NORP partnership. Of those, 218 were planted in the Chehalem Creek watershed; 1,369 in the Hess Creek watershed; 110 in the Spring Brook watershed; and 142 along the Willamette River (see Table 5).

Table 5. Native Trees, Shrubs and Groundcovers Planted from 2013 to 2015

	2013	2014	2015	Total
Chehalem Creek				
Trees	7	26	18	51
Shrubs	17	56	1	74
Groundcovers	20	51	22	93
Hess Creek				
Trees	245	276	18	539
Shrubs	315	317	115	747
Groundcovers	25	32	26	83
Spring Brook				
Trees	0	6	40	46
Shrubs	0	30	31	61
Groundcovers	0	0	3	3
Willamette River				
Trees	18	16	23	57
Shrubs	17	37	22	76
Groundcovers	0	7	2	9
Program Total	664	854	321	1,839

Stream Assessment (T-3)

In 2015, the City assessed streambank vegetation, channel characteristics, and canopy cover for 0.8 stream miles of Chehalem Creek. Approximately 0.25 stream miles of Chehalem Creek were assessed in 2014 and 2 stream miles of Hess Creek were assessed in 2013.

2016 Adaptive Management

The City is not proposing adaptive management for this minimum measure.

SUMMARY

For its 2015 public education effort, the City maintained 16 webpages with stormwater information; uploaded the annual report to the website; used social media 7 times; sponsored or provided 6 presentations and 8 field events; sponsored or staffed 2 event booths; included stormwater information in the Water Quality Report, and marked 300 storm drains in high profile areas. Continued education avenues include Mad Science presentations, Water Monitoring Day, Camellia Festival, Newberg Farmers Market, Public Works Day, presentations to a local leadership group, and volunteer stormdrain marking.

The City had its stormwater fee reviewed by the CRRC in October and November of 2015. The 2016 stormwater fee is $8.67 and the newly adopted rates for 2017 and 2018 rates are $9.45 and $10.30, respectively. The Newberg School District was provided with $495 for macro-invertebrate sampling supplies as part of the City's watershed grant program.

The City used social media to remind people about how to report stormwater issues and provided a link for reporting stormwater concerns on the website. There was one public complaint about erosion control and one about the Oregon Drainage Law. There were five reports of illicit discharges. A public survey was not completed in 2015.

The illicit discharge program resulted in six complaints that were investigated and resolved by staff. Spill kits were kept on 10 vehicles and none were used in 2015. The hazardous waste collection events in 2015 kept 13.4 tons of hazardous waste, 25.5 tons of paint-related waste, and 1,107 pounds of medications out of the landfills and wastewater through efforts by the YCSW and the Newberg-Dundee police department.

There were 293 ESC inspections. The City notified DEQ of one project that was violating its 1200-C permit. One person was re-certified as an ESC inspector in 2015.

Staff updated the stormwater design standards in August 2015. There were 16 pre-application conferences and five pre-construction conferences in 2015. One person attended the ACWA Stormwater Summit presentation on regulatory stormwater updates, new stormwater BMPs, and aquifer storage and recovery; one person attended the ASCE Stormwater Symposium presentations on bioretention, retrofits, and modeling; one person attended the APWA conference presentations on outfall design, design standards, and restoration; and in-house training occurred for stormwater maintenance procedures. No stormwater facilities were inspected in 2015.

There were 126 catch basins cleaned and one trash rack installed by staff. No culverts were repaired or installed in 2015. Staff inspected 1,519 feet of stormline and cleaned 5,278 feet. They replaced 160 feet of stormline during 13 stormline repairs. Streets were cleaned on a 5-week rotation with 0.30 cubic yards of debris collected per curb mile in 2015. The City sweeps its streets on a 5-week rotating basis and updated its policies on debris disposal. The O&M manual and the catch basin cleaning program were reviewed with no changes occurring to them.

There were no changes to the stream corridor overlay or the municipal code in 2015. Through the Trees for Streams program, the City disbursed 53 groundcovers, 169 shrubs, and 99 trees to property owners for stream restoration and green infrastructure. There were 0.8 stream miles in assessed in 2015.

Even with one strategy and two measureable goals added in 2015, the City was able to implement 74% of its strategies and 75% of its goals. The City will continue to work on implementing the remaining strategies and measurable goals.

APPENDICES

Appendix 1 TMDL Implementation Matrix

Best Management Practice or Activity	Source	Strategy	Measurable Goal	Performance Measure	Expected Implementation Timeline	2015 Status	Pollutant				
							Nutrients	Bacteria	Tot Suspended Solids	Mercury	Temperature*
Measure No. 1 - Public Education											
PE-1 Stormwater Education	All	Website Education	Provide stormwater information on the city website	Provide links to webpages and post annual TMDL reports.	Ongoing	Ongoing	X	X	X	X	X
		Educate Citizen Groups	Present stormwater information to interested citizen groups or at local venues	Track number of presentations and events, program messages, and number participating	Ongoing	Ongoing	X	X	X	X	X
		Water Quality Report	Provide stormwater education in the annual Water Quality Report	Provide link to WQ report; track article message	June 2014 and annually	Ongoing	X	X	X	X	X
PE-2 Watershed Education		Watershed Education	Provide signage at stream crossings or green infrastructure	Track number of signs and locations	October, 2017	Not Due	X	X	X	X	X
		Classroom Education	Provide stormwater education in the classroom	Track number of presentations, program messages, and number participating	December 2013 and ongoing	Ongoing	X	X	X	X	X
PE-3 Infrastructure Education	Spills and illicit discharges	Mark storm drains in high profile areas	Mark 50 catch basins a year until all are marked	Track number of catch basins marked per year. Provide GIS map showing coverage.	Ongoing	Ongoing	X	X	X	X	X

Best Management Practice or Activity	Source	Strategy	Measurable Goal	Performance Measure	Expected Implementation Timeline	2015 Status	Pollutant				
							Nutrients	Bacteria	Tot Suspended Solids	Mercury	Temperature*
Measure No. 2 - Public Involvement											
PI-1 Stormwater Utility Fee	All	Participate in Citizen Rate Review Committee meetings.	Present funding needs to committee	Document meeting attendance, adopted rates, and effective dates of rate changes.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
PI-2 Public Participation in Stormwater Management	Post-Construction Runoff	Provide funds for projects by public groups or citizens that increase water quality or watershed awareness	Provide a minimum of $2,000 in a grant program to fund non-profit projects that fulfill goals of the TMDL Plan.	Track number of funded projects, amount disbursed per project, stream affected, and either the number of stream miles affected or the number of participants.	January, 2014 and ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
PI-3 Public Participation in Reporting Stormwater Issues	All	Provide mechanism for public to report stormwater, illicit discharge, and erosion control issues	Provide methods for citizens to report concerns during and after business hours. Notify public on a recurring basis.	Document methods.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**

							Pollutant				
Best Management Practice or Activity	**Source**	**Strategy**	**Measurable Goal**	**Performance Measure**	**Expected Implementation Timeline**	**2015 Status**	**Nutrients**	**Bacteria**	**Tot Suspended Solids**	**Mercury**	**Temperature***
			Respond to public concerns	Document number of flooding complaints reported by citizens. Document number of erosion complaints reported by citizens. Document number of illicit discharge complaints reported by citizens.	July, 2013 and ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
PI-4 Public Participation in Educational Focus	All	Determine focus of educational messages	Conduct survey to revise and refine educational message	Provide copy or link to survey and report results of survey	December, 2015	Incomplete But Started	**X**	**X**	**X**	**X**	**X**
Measure No. 3 - Illicit Discharge Detection and Elimination (IDDE)											
ID-1 Develop IDDE Plan	Spills and illicit discharges	Develop plan to detect illicit discharges	Develop procedures to address non-stormwater discharges	Document procedures	December, 2013	Completed (Original deadline 2010)	**X**	**X**	**X**	**X**	**X**
			Develop investigative sampling and monitoring plan	Document plan.	December, 2013	Completed (Original deadline 2010)	**X**	**X**	**X**	**X**	**X**
			Develop worksheets for inspections	Document worksheets.	December, 2013	Completed (Original deadline 2010)	**X**	**X**	**X**	**X**	**X**

							Pollutant				
Best Management Practice or Activity	**Source**	**Strategy**	**Measurable Goal**	**Performance Measure**	**Expected Implementation Timeline**	**2015 Status**	**Nutrients**	**Bacteria**	**Tot Suspended Solids**	**Mercury**	**Temperature***
ID-2 Train Staff to Implement IDDE	Spills and illicit discharges	Train employees in illicit discharge investigation and spill response.	Train staff who are new to illicit discharge investigation and spill response. Provide training in some aspect of illicit discharge investigation and spill response every 5 years for all applicable staff.	Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (maintenance, response, investigation, sampling, etc).	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
ID-3 Implement IDDE plan	Spills and illicit discharges	Conduct illicit discharge inspections	Fieldscreen outfalls	Inventory type, size, and location of public and private outfalls. Link to GIS.	November, 2015	Incomplete but Started	**X**	**X**	**X**	**X**	**X**
			Investigate outfalls for illicit discharges	Document location, number of samples taken, date, cause, and resolution	November, 2015	Ongoing	**X**	**X**	**X**	**X**	**X**
		Respond to illegal dumps	Clean up illegal dumps	Track number of citations issued and resolution.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
		Respond to spills	Fire Department Spill Response	Track date and cause of spills that occur. Document whether the spill reached the stormwater system or a stream and if water sampling was conducted. Document response resolution.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**

Best Management Practice or Activity	Source	Strategy	Measurable Goal	Performance Measure	Expected Implementation Timeline	2015 Status	Pollutant				
							Nutrients	Bacteria	Tot Suspended Solids	Mercury	Temperature*
			Public Works Spill Response	Track date and cause of spills that occur. Document whether the spill reached the stormwater system or a stream and if water sampling was conducted. Document response resolution.	Ongoing	Ongoing	X	X	X	X	X
			Provide spill response cards and spill response kits on municipal trucks and sweepers.	Track number of municipal trucks and sweepers with spill response cards and spill kits. Document the number of spill kits used in response to spills.	December 2014 and Ongoing	Ongoing	X	X	X	X	X
ID-4 Hazardous Waste Collection	Illicit discharges	Provide opportunity for residents to dispose of hazardous waste	Offer free hazardous waste collection service twice per year to city residents.	Track volume of waste received during collection events.	Ongoing	Ongoing	X	X	X	X	
Measure No. 4 - Construction Site Stormwater Runoff Control											
CS-1 Develop Erosion and Sediment Control Program	Construction Site Runoff	Develop ESC Manual	Develop and approve an ESC Manual. Post on website.	Provide link to ESC Manual.	June, 2013	Completed (Original deadline 2009)	X	X	X	X	X

							Pollutant				
Best Management Practice or Activity	**Source**	**Strategy**	**Measurable Goal**	**Performance Measure**	**Expected Implementation Timeline**	**2015 Status**	**Nutrients**	**Bacteria**	**Tot Suspended Solids**	**Mercury**	**Temperature***
CS-2 Train Staff in Erosion and Sediment Control	Construction Site Runoff	Train staff in plan review, inspection, and enforcement of ESC program	Train staff whose responsibilities change to include erosion and sediment control plan review and enforcement. Provide refresher training to all staff involved in ESC every 3 years.	Document number of staff trained and type of training (recertification or new certification)	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
CS-3 Implement Erosion and Sediment Control Program	Construction Site Runoff	Implement ESC program	Conduct plan review	Document location and size of all construction projects. Document which projects were required to have a 1200-C permit.	Ongoing	Incomplete but started	**X**	**X**	**X**	**X**	**X**
			Conduct site inspections at least once during active construction by trained or experienced staff.	Provide number of ESC inspections for each project. Document location and size of construction project.	Ongoing	Incomplete but started	**X**	**X**	**X**	**X**	**X**
			Enforce ordinance	Report number of warning letters or non-compliance citations by project and resolution.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**

Best Management Practice or Activity	Source	Strategy	Measurable Goal	Performance Measure	Expected Implementation Timeline	2015 Status	Pollutant				
							Nutrients	Bacteria	Tot Suspended Solids	Mercury	Temperature*
Measure No. 5 - Post-Construction Stormwater Runoff Control											
DS-1 Develop Stormwater Management Program	Development and Redevelopment	Update Development Manuals and Plans	Update design standards manual and notify development community of new requirements.	Provide summary of changes and link to new design standards when complete.	May, 2013	Completed August 2015	**X**	**X**	**X**	**X**	**X**
DS-2 Train Staff in Stormwater Management	Development, Infrastructure, Redevelopment, and Watershed Management	Train staff with stormwater runoff responsibilities in watershed and stormwater management	Provide training opportunities for staff	Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (plan review, inspection, enforcement, etc.)	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
			Train staff who are new to stormwater facility inspections. Provide refresher training for all staff every 3 years.	Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (plan review, inspection, enforcement, etc.)	June, 2014 and ongoing	Not implemented	**X**	**X**	**X**	**X**	**X**
DS-3 Implement Stormwater Management Program	Development, Redevelopment, and Watershed Management	Require Stormwater Management for Development and Redevelopment	Require plan submittals, conduct plan reviews	Document number of plan submittals, plan reviews, project type (commercial, institutional,residential, etc), size, and location.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**

							Pollutant				
Best Management Practice or Activity	**Source**	**Strategy**	**Measurable Goal**	**Performance Measure**	**Expected Implementation Timeline**	**2015 Status**	**Nutrients**	**Bacteria**	**Tot Suspended Solids**	**Mercury**	**Temperature***
			Require stormwater management for development	Document number and type (detention basin, flow dissipater, raingarden, filtration swale, etc.) of stormwater facilities required for each project.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
			Conduct pre-construction conferences	Document number of pre-construction conferences, project type (commercial, institutional, residential, etc), size, and location.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
		Improve Watershed Management	Evaluate Retrofit Opportunities	Summarize hierarchy used for screening. Document location and number of sites reviewed, drainage area, and result of evaluation.	May, 2014 and ongoing	Incomplete but started (Original deadline 2010)	**X**	**X**	**X**	**X**	**X**
			Implement Retrofit Program	Document number of projects including location, size, type (GI, traditional, etc), and drainage area.	May, 2014 and ongoing	Delayed	**X**	**X**	**X**	**X**	**X**

Best Management Practice or Activity	Source	Strategy	Measurable Goal	Performance Measure	Expected Implementation Timeline	2015 Status	Pollutant				
							Nutrients	Bacteria	Tot Suspended Solids	Mercury	Temperature*
		Optimize Water Quality	Inspect stormwater facilities	Document number of inspections, type of facility (detention basin, raingarden, porous pavement, swale, etc.) and whether facilities were categorized as excellent, fair, or poor condition.	July, 2014 and ongoing	Not implemented	X	X	X	X	X
			Implement monitoring program	Document sampling locations, dates, parameters, and results	January, 2016 and ongoing	Not Due	X	X	X	X	X
Measure No. 6 - Pollution Prevention in Municipal Operations											
OM-1 Operations and Maintenance Manual	Public Operations and Maintenance Practices	Update Policies	Review existing operation and maintenance practices	Document current procedures	July, 2013	Not completed (Original deadline 2009)	X	X	X	X	X
			Update O&M manual to optimize water quality	Document modifications to manual.	April, 2014	Delayed	X	X	X	X	X
		Update Infrastructure Procedures	Update catch basin cleaning program	Document current procedures and modifications to optimize water quality.	December, 2014	Incomplete but started	X	X	X	X	X
			Implement revised catch basin cleaning program	Track progress.	June, 2015	Delayed	X	X	X	X	X

							Pollutant				
Best Management Practice or Activity	**Source**	**Strategy**	**Measurable Goal**	**Performance Measure**	**Expected Implementation Timeline**	**2015 Status**	**Nutrients**	**Bacteria**	**Tot Suspended Solids**	**Mercury**	**Temperature***
		Update Street Sweeping Procedures	Evaluate street sweeping program and revise as necessary to optimize water quality	Document current procedures and modifications to optimize water quality.	March, 2016	Completed	**X**	**X**	**X**	**X**	**X**
			Implement revised street sweeping program	Track progress.	July, 2016	Ongoing	**X**	**X**	**X**	**X**	**X**
OM-2 Operations and Maintenance Training	Public Operations and Maintenance Practices	Train staff in infrastructure and street sweeping procedures that optimize water quality	Train staff new to stormwater maintenance duties in O&M procedures	Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.)	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
			Train all staff in revised O&M procedures	Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.)	July, 2014	Delayed	**X**	**X**	**X**	**X**	**X**
			Train staff in maintenance procedures that maximize water quality.	Track training events.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
OM-3 Stormwater Infrastructure Maintenance	Development and Redevelopment	Catch Basins	Clean catch basins	Track number of unique* catch basins cleaned per year.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**

							Pollutant				
Best Management Practice or Activity	**Source**	**Strategy**	**Measurable Goal**	**Performance Measure**	**Expected Implementation Timeline**	**2015 Status**	**Nutrients**	**Bacteria**	**Tot Suspended Solids**	**Mercury**	**Temperature***
		Inlets	Place trash racks over major inlets	Track number and percentage of major inlets installed with trash racks.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
		Stormline	Inspect, clean, repair, replace, and install stormline	Track length of stormline inspected. Document length of stormline cleaned. Document length and location of stormline repaired or replaced. Track length, diameter, and location of stormline installed	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
		Culverts	Inspect, repair, and replaceculverts	Document location of repaired and replaced culverts and reason for repair or replacement. For newly installed culverts, document new culvert size, material, and elevation from culvert bottom to stream bottom.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
	Street Debris	Remove debris from streets	Sweep streets every 4 to 6 weeks	Track curb miles swept and debris collected per curb mile each year. Document disposal method.	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**

Best Management Practice or Activity	Source	Strategy	Measurable Goal	Performance Measure	Expected Implementation Timeline	2015 Status	Pollutant				
							Nutrients	Bacteria	Tot Suspended Solids	Mercury	Temperature*
Temperature											
T-1 Maintain Existing Stream Vegetation	Development, Redevelopment, and Watershed Management	Use code and other measures to maintain stream vegetation	Update city code that can affect stream health	Update ordinances that affect stream vegetation	December, 2015	Ongoing	**X**	**X**	**X**	**X**	**X**
			Update Stream Corridor Overlay	Document changes to Stream Corridor Overlay map and code based on wetland inventory and property annexations	December, 2017	Not Due	**X**	**X**	**X**	**X**	**X**
T-2 Increase Effective Shade	Development, Redevelopment, and Watershed Management	Increase shade along city streams	Provide incentives for citizens to plant trees	Document watershed and number of native trees planted per year	Ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
T-3 Stream Assessment	Development, Redevelopment, and Watershed Management	Assess stream health and canopy coverage	Assess at least 2 stream miles annually for vegetative cover, stream channel configuration, and canopy coverage.	Document results of assessment	November, 2013 and ongoing	Ongoing	**X**	**X**	**X**	**X**	**X**
			Complete a wetland inventory that encompasses the Urban Reserve areas	Track Progress. Provide link to wetland inventory and map.	December, 2016 and ongoing.	Not Due	**X**	**X**	**X**	**X**	**X**

* unique definition: each device may be cleaned multiple times but will be listed once

Appendix 2 Illicit Discharge Investigations from 2013 to 2015

Date	Cause	Water Samples	Resolution
Chehalem Creek Watershed			
12/2015	Auto reconditioner's washwater discharged to catchbasin	0	Warning letter required owner to connect to wastewater system.
10/2015	Auto detailer's washwater discharged to catchbasin	0	Warning letter required owner to connect to wastewater system.
09/2014	Homeowner's wastewater lateral broke.	0	Discharge cleaned up and lateral fixed.
03/2014	Metal fabricator's wastewater discharged to stormwater ditch	4	2 warning letters written (1 from DEQ), area cleaned up, uncovered drums removed, and catchbasin cleaned out.
02/2013	Restaurant grease dumped into a catch basin	0	Owner educated about our illicit discharge ordinance
01/2013	Homeowner discharging wastewater from a broken lateral	0	Owner cleaned up the area.
Hess Creek Watershed			
11/2015	Residential paint cleanup discharged to stormdrain	0	Warning letter sent
12/2014	Iron precipitate	2	Two site visits. No further action taken.
10/2014	Grease from restaurant discharged to Hess Creek	0	Warning letter written and grease trap replaced.
12/2013	Swimming pool discharged into Hess Creek	0	Warning letter sent to swim center owner
11/2013	Grease trap overflowed to Hess Creek	0	Owner required to fix grease trap.
10/2013	Outfall with discharge	1	Discharge from failed pipe closure found and stopped in 2014.
Springbrook Creek Watershed			
04/2015	Washwater from auto dealership discharged to catchbasin	0	Owner required to connect to the wastewater system.
02/2015	Grease from dumpster entering catch basin	0	Grease cleaned up and new dumpster installed
06/2013	Leaking oil barrels	0	Citation written and property cleaned up.
04/2013	Oil and grease dumped into catchbasin in parking lot	0	Catchbasin cleaned.

Willamette River			
06/2015	Brown algae mats on river appeared to be raw septage	0	No action taken.

Appendix 3 Construction Site Stormwater Management, 2013 to 2015

CHEHALEM CREEK WATERSHED						
			ESC Inspections			
Project Name	Address	Acres	2013	2014	2015	Completed
521 W Fifth St	521 W Fifth St	1.24 (1200-C)	0	0	NA	2014
725 N College	725 N College	0.4	NA	NA	NA	Under Review
2215 Prospect Drive	2215 Prospect Drive	0.35	NA	NA	NA	Under Review
3509 N College	3509 N College	0.98	NA	NA	NA	Under Review
Chehalem Cultural Center	415 E Sheridan St	0.33	0	0	NA	2014
Edgewood Estates	Edgewood Dr/Crater Lane	1.58 (1200-C)	0	0	NA	2014
Heritage Meadows	Heritage Way / Lynn Dr	0.7	23	0	0	2014 (5 Lots) 2015 (3 Lots)
Homes at Creekside	Main St/Creekside Lane	0.55	0	NA	NA	2013
Shellie Park	735 N College Street	4.3 (1200-C)	NA	NA	0	Under Construction
Terra Estates	3805 Terrace Drive	7.9 (1200-C)	NA	0	0	2015
West of 725 N College	West of 725 N College	0.4	NA	NA	NA	Under Review

* NA = Not Applicable. Project either under review or completed

HESS CREEK WATERSHED						
Project Name	**Address**	**Acres**	**ESC Inspections**			**Completed**
			2013	**2014**	**2015**	
805 Wynooski Road	805 Wynooski Road	0.24	NA	NA	NA	Under Construction
Cal Portland	2716 Wynooski Road	3.34 (1200-C)	NA	NA	0	Under Construction
Church Street Apartments	215 S Church St	1.6 (1200-C)	0	0	0	2013
Deskin Commons	1103 N Meridian St	3.3 (1200-C)	16	15	NA	2014
Elliott Self-Storage	315 Elliott Road	3.27 (1200-C)	NA	NA	0	Under Review
Friendsview	1301 East Fulton St	2.5 (1200-C)	NA	NA	NA	Under Review
GFU Brandt Hall	East North / Fulton St		0	0	0	2015
GFU Commons Dining Hall and Pedestrian Bridge	1400 E North	2.0	0	0	0	Under Construction
GFU Stoffer Stadium	1150 Fulton St	4.4 (1200-C)	18	12	NA	2014
Habitat for Humanity ReStore	801 N Meridian	0.63	NA	NA	NA	Under Review
Highlands at Hess Creek Phase 3 and Phase 4	Donna Dr/ Kennedy Dr	2.5 (1200-C)	32	20	NA	2014 and 2015
Nova Grace	900 Wynooski Road	1.93 (1200-C)	NA	NA	NA	Under Review
Old Mill Marketplace	2401 Portland Road	0.43	NA	NA	0	Under Construction
Ursus Place	1500 E First Street	0.99	NA	NA	0	Under Construction
Verizon Tower	2401 E Hancock		NA	NA	0	2015

* NA = Not Applicable. Project either under review or completed

SPRING BROOK WATERSHED						
Project Name	**Address**	**Acres**	**ESC Inspections**			**Completed**
			2013	**2014**	**2015**	
Marquis Newberg	441 Werth Blvd	2.32	0	0	NA	2014
Oak Grove Apartments	3411 E Hayes St	3.66	0	0	NA	2014
Providence Parking Lot	1001 Providence Dr		NA	NA	0	Under Construction

* NA = Not Applicable. Project either under review or completed

Appendix 4 Post-Construction Stormwater Management, 2013 to 2015

CHEHALEM CREEK WATERSHED						
Project Name	**Address**	**Acres**	**Land Use**	**Project**	**Stormwater Facilities Required**	**Completed**
521 W Fifth St	521 W Fifth St	1.24 (1200-C)	Low Density Residential	2 Lot Partition	None	2014
725 N College	725 N College	0.4	Low Density Residential	3 Lot Partition	Under Review	
2215 Prospect Drive	2215 Prospect Drive	0.35	Low Density Residential	3 Lot Partition	Under Review	
3509 N College	3509 N College	0.98	Low Density Residential	2 Lot Partition	Under Review	
Chehalem Cultural Center	415 E Sheridan St	0.33	Institutional	Institutional	Pervious pavers in street and forecourt	2014
Edgewood Estates	Edgewood Dr/Crater Lane	1.58 (1200-C)	Low Density Residential	10 Lot Subdivision	ConTech StormFilter manhole	2014
Heritage Meadows	Heritage Way / Lynn Dr	0.7	Medium Density Residential	8 Lot Subdivision	8 infiltration raingardens and 8 bioswales	2014 (5 Lots) 2015 (3 Lots)
Homes at Creekside	Main St/Creekside Lane	0.55	Low Density PUD	5 Lot Subdivision	None	2013
Shellie Park	735 N College Street	4.3 (1200-C)	Low Density Residential	21 Lot Subdivision	Under Construction	
Terra Estates	3805 Terrace Drive	7.9 (1200-C)	Low Density Residential	44 Lot Subdivision	Detention Pond	2015
West of 725 N College	West of 725 N College	0.4	Low Density Residential	3 Lot Partition	Under Review	

HESS CREEK WATERSHED						
Project Name	**Address**	**Acres**	**Land Use**	**Project**	**Stormwater Facilities Required**	**Completed**
805 Wynooski Rd	805 Wynooski Rd	0.24	Medium Density Residential	2-Lot Partition	Under Review	
Cal Portland	2716 Wynooski Rd	3.34 (1200-C)	Heavy Industrial	Cement Plant	Under Construction	
Church Street	215 S Church St	1.6 (1200-C)	High Density Residential	18 Unit Apartments	None	2013
Deskin Commons	1103 N Meridian St	3.3 (1200-C)	High Density Residential	56 Unit Apartments	Contech Stormfilter vault (6'x12') and pervious concrete sidewalk	2014
Elliott Self-Storage	315 Elliott Road	3.27 (1200-C)	Community Commercial	RV Covered Parking	Under Review	
Friendsview	1301 E Fulton St	2.5 (1200-C)	Institutional	Retirement Community	Under Review	
GFU Brandt Hall	East North / Fulton St		Institutional	Campus Housing	StormTech SC-310 (12'x63'), 292 feet of flow-through planters, 1 flow-through ranigarden	2015
GFU Dining Hall and Pedestrian Bridge	1400 E North St	2.0	Institutional	Campus Building	Under Construction	
GFU Stoffer Stadium	1150 Fulton St	4.4 (1200-C)	Institutional	Campus Building	3 Infiltration planters and 3 infiltration swales	2014
Habitat for Humanity ReStore	801 N Meridian St	0.63	Light Industrial	Commercial Building	Under Review	
Highlands at Hess Creek Phase 3 (2014) and Phase 4 (2015)	Donna Drive/ Kennedy Drive	2.5 (1200-C)	Medium Density Residential	16 Lot Subdivision, 25 Lot Subdivision	Detention pond	2014 and 2015
Nova Grace	900 Wynooski Rd	1.93	Medium Density	14 Lot Subdivision	Under Review	

		(1200-C)	Residential			
Old Mill Marketplace	2401 Portland Rd	0.43	Community Commercial	Commercial Building	Under Construction	
Ursus Place	1500 E First St	0.99	Medium Density Residential	10-Lot Subdivision, 10 ADUs	Under Construction	
Verizon Tower	2401 E Hancock		Light Industrial	Telecommunications Tower	None	2015

* ADU= Accessory Dwelling Unit

SPRING BROOK WATERSHED						
Project Name	**Address**	**Acres**	**Land Use**	**Project**	**Stormwater Facilities Required**	**Completed**
Marquis Newberg	441 Werth Blvd	2.32	Residential Professional	54 Unit Skilled Nursing Facility	None	2014
Oak Grove Apartments	3411 Hayes St	3.66	Residential Professional	84-Unit Apartments	None	2014
Providence Parking Lot	1001 Providence Dr		Institutional	Parking Lot	Under Construction	

Appendix 5 Stormwater Facility Inspection Forms

Maintenance Inspection Checklist
Conveyance Structures

Structure ID:	_____	Maintenance Required:	Y / N
Address/Location:	_____	Date of Inspection:	_____
Facility Type	☐ Catch Basin ☐ Manhole ☐ Inlet ☐ Other: _____	Inspector:	_____
		Type of Inspection:	☐ Scheduled ☐ Problem Report ☐ Follow-up/Re-inspection

Circle codes related to required maintenance:

Code	**Element**	**Potential Problems**	**Comments** (Describe maintenance needed and schedule)
1	Accumulated Sediment	• Accumulated sediment exceeds 60% of the sump depth • Sediment depth within 6 inches of the lowest pipe invert.	Depth of sediment: _____
2	Trash & Debris	• Trash or debris in blocking inlet by more than 10%. • Trash or debris exceeds 60% of sump depth. • Trash or debris within 6 inches of lowest invert. • Trash or debris blocking more than 1/3 of any inlet or outlet pipe. • Trash and debris blocking more than 20% of grate surface. • Dead animals or vegetation that generates odors.	
3	Vegetation	• Vegetation blocking more than 10% of the grate opening. • Vegetation growing in inlet/outlet pipe joints more than 6 inches tall.	
4	Water Quality	• Any evidence of oil, gasoline, contaminants, or pollutants. Water flowing during dry weather – report as potential illicit discharge concern.	
5	Water Flow	• Impeded water flow due to vegetation or sediment – circle appropriate code number above.	
6	Erosion	• N/A for structures	
7	Structure	• Cover, frame, or grate is missing or damaged. • Cover is difficult to remove with normal lifting pressure. • Cracks, voids, or openings allowing material to be	

		transported into the structure. • Ladder is unsafe due to missing rungs, misalignment, not securely attached to structure wall, rust, or cracks. • Field inspector judges that the structure is unsound.	
8	Pipes	• Inlet or outlet piping damaged or broken and in need of repair.	
9	Mosquito Vector Breeding	• Suitable habitats exist for mosquito production (e.g., standing water for more than 72 hours in areas accessible to mosquitoes)	
10	Other	• Catch basin insert requires replacement. • Other concerns – note in comments.	
11	Could not locate	• Field inspectors are unable to locate the structure.	

Maintenance Inspection Checklist
Conveyance System (Pipes and Open Channels)

Structure ID:	_____	Maintenance Required:	Y / N
Address/Location:	_____	Date of Inspection:	_____
Facility Type	☐ Pipe ☐ Open Channel ☐ Other: _____	Inspector:	_____
		Type of Inspection:	☐ Scheduled ☐ Problem Report ☐ Follow-up/Re-inspection

Circle codes related to required maintenance:

Code	Element	Potential Problems	Comments (Describe maintenance needed and schedule)
1	Sediment	• Sediment or debris exceeds 20% of pipe diameter or 20% of debris barrier openings. • Accumulated sediment exceeds 20% of the design depth of the ditch.	Depth of sediment: _____
2	Trash & Debris	• Trash and debris accumulated in pipe or ditch. • Visual evidence of dumping	
3	Vegetation	• Vegetation reduces movement of water through pipes. • Excessive vegetation reduces water movement through ditches.	
4	Water Quality	• Any evidence of oil, gasoline, contaminants or other pollutants. • Water flowing in pipes or ditch during dry weather – report as potential illicit discharge concern.	
5	Water Flow	• Impeded water flow due to vegetation or sediment (use appropriate code from above). • Standing water in the pipe or swale between storm events.	
6	Erosion	• Erosion damage over 2 inches deep where cause is still present or there is potential for continued erosion. • Native soil is visible beneath the rock lining of a conveyance ditch.	
7	Structure	• Debris barrier/trash rack is missing, damaged, or not attached to pipe.	
8	Pipes	• Protective coating is damaged or rust is causing more than 50% deterioration to any part of pipe. • Any dent that decreases the flow area by more than 20% or puncture that impacts performance.	
9	Mosquito Vector Breeding	• Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes.)	
10	Other	• Other concerns – note in comments.	
11	Could not locate	• Field inspectors are unable to locate the structure.	

Maintenance Inspection Checklist
Stormwater Management Facilities

Structure ID:	_____	Maintenance Required:	Y / N
Address/Location:	_____	Date of Inspection:	_____
Facility Type	☐ Pond ☐ Swale ☐ Rain Garden ☐ Other: _____	Inspector:	_____
		Type of Inspection:	☐ Scheduled ☐ Problem Report ☐ Follow-up/Re-inspection

Circle codes related to required maintenance:

Code	**Element**	**Potential Problems**	**Comments** (Describe maintenance needed and schedule)
1	Accumulated Sediment	• Inlet/outlet pipe clogged with sediment. • Sediment accumulation in pond bottom exceeds 6 inches or 10% of the designed pond depth unless otherwise specified.	Depth of sediment: _____
2	Trash & Debris	• Trash and debris exceeding 5 cubic feet (equivalent to one standard size garbage can) per 1,000 square feet of pond area. • Visual evidence of dumping. • Inlet/Outlet pipe clogged with trash or debris.	
3	Vegetation	• Poisonous or nuisance vegetation constituting a hazard to maintenance personnel or the public. • Evidence of noxious weeds. • Tree growth does not allow access or interferes with slope mowing, silt removal, vactoring, or equipment movements. • Dead, diseased, or dying trees identified by a certified Arborist. • Tree growth on berms over 4 feet high that may lead to piping and eventual berm failure. • Tree growth on emergency spillways.	
4	Water Quality	• Prevalent and visible oil sheen. • Evidence of oil, gasoline, contaminants or other pollutants.	
5	Water Flow	• First cell (if applicable) is empty, doesn't hold water.	
6	Erosion	• Erosion of the pond's side slopes exceeding 2 inches deep where there is potential for continued erosion.	

		• Scouring of the pond bottom exceeding 6-inches deep, or where continued erosion is prevalent.	
7	Structure	• Damaged or missing control structure – see Conveyance Structure checklist. • Liner is visible and has more than three 1/4-inch holes in it. • Any part of the berm or emergency spillway that has settled 4 inches lower than the design elevation. • Discernable water flow through pond berm. (Consult with Geotechnical Engineer to evaluate condition and recommend repair.) • Emergency spillway: only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of flow path of spillway. (Rip-rap on inside slopes need not be replaced.)	
8	Pipes	• See Conveyance System inspection checklist.	
9	Mosquito Vector Breeding	• Suitable habitats exist for mosquito production (e.g., standing water for more than 72 hours in areas accessible to mosquitoes)	
10	Other	• Evidence of rodent holes or any evidence of water piping through dam or berm via rodent holes. (Consult with Geotechnical Engineer to evaluate condition and recommend repair.) • Beaver dam within the pond, resulting in change or function of the facility. • Insects such as wasps and hornets that interfere with maintenance activities.	
11	Could not locate	• Field inspectors are unable to locate the facility.	