CITY OF Salem AT YOUR SERVICE
PUBLIC WORKS DEPARTMENT
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October 30, 2014

Nancy Gramlich
Middle Willamette Basin Coordinator
Oregon Department of Environmental Quality
750 Front Street NE Suite 120
Salem OR 97301

SUBJECT: **City of Salem Total Maximum Daily Load Implementation Plan Progress Report FY 2013-14**

Dear Ms. Gramlich:

The enclosed Total Maximum Daily Load (TMDL) Implementation Plan progress report describes activities the City of Salem completed from July 1, 2013, through June 30, 2014. As a Designated Management Agency, the City of Salem is pleased to submit this progress report per the requirements listed in *Oregon Administrative Rule* Chapter 340 Division 042. We trust you will find that this report sufficiently demonstrates the City of Salem is fulfilling its responsibilities associated with the Willamette Basin and Molalla/Pudding Subbasin TMDLs.

Please contact Heather Dimke, Management Analyst, at 503-588-6063, extension 7734, if you have any questions or request additional information.

Sincerely,

Francis Kessler
Operations Division Manager

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Enclosure: City of Salem TMDL Implementation Plan Progress Report FY 2013-14
cc: Peter Fernandez, P.E., Public Works Director
Keith Bondaug-Winn, Stormwater Quality Supervisor
Sam Kidd, Wastewater and Stormwater Services Manager
File: Chrono; Regulatory

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TOTAL MAXIMUM DAILY LOAD (TMDL) IMPLEMENTATION PLAN PROGRESS REPORT: FY 2013-2014

For the

City of Salem

October 30, 2014

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Public Works Department
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LIST OF APPENDICES

1 INTRODUCTION

This report summarizes the progress of Total Maximum Daily Load (TMDL) associated implementation activities conducted by the City of Salem (the City) in response to the Willamette Basin and Molalla-Pudding Subbasin TMDLs and as described in the City's TMDL Implementation Plan, which was approved by the State of Oregon Department of Environmental Quality (ODEQ) in July 2010. This is the City of Salem's fifth annual TMDL progress report, detailing implementation activities for the fiscal year beginning July 1, 2013, and ending June 30, 2014 (FY 2013-14).

2 BACKGROUND AND REPORTING REQUIREMENTS

On September 21, 2006, ODEQ issued the Willamette Basin TMDL as an Order, and submitted the TMDL to the Environmental Protection Agency (EPA) for approval. In late December 2008, ODEQ similarly issued the Molalla-Pudding Subbasin TMDL as an Order, and subsequently submitted that TMDL to the EPA for approval. ODEQ developed a Water Quality Management Plan (WQMP) to describe the overall framework for implementing the TMDLs for both basins. The WQMP includes a description of activities, programs, legal authorities, and other measures for which ODEQ and other designated management agencies (DMAs) have regulatory responsibility. TMDL implementation activities would be carried out under existing regulatory authorities, programs, and water quality restoration plans, as well as by TMDL Implementation Plans that certain DMAs would develop to fulfill requirements of the TMDL.

As a DMA, the City of Salem was required to develop a TMDL Implementation Plan for review and approval by ODEQ, and to subsequently implement activities associated with the approved plan. On January 22, 2010, City and ODEQ staff met regarding the inter-relationship between the City's existing National Pollutant Discharge Elimination System (NPDES) permits, the Willamette Basin and Molalla-Pudding Subbasin TMDL programs, and associated annual reports. It was agreed that November 1st was an acceptable date for the City's submission of its TMDL Implementation Plan Progress Report, and that report would encompass the City's responsibilities under both the Willamette and Molalla-Pudding TMDLs. However, because of the differing effective dates of the two TMDLs (which in turn trigger subsequent reporting requirements), the following specific reporting requirements were agreed upon:

- The TMDL Progress Report (for both TMDLs) will be submitted to the ODEQ by November 1st of each year, coinciding with the City's Municipal Separate Storm Sewer System (MS4) Permit Annual Report.
- The MS4 Permit Annual Report will be submitted to ODEQ's Portland Office, with a copy being provided to ODEQ's Salem Office as an exhibit or appendix to the TMDL Progress Report.
- The first Progress Report for the Willamette Basin TMDL will be submitted by **November 1, 2010**. It will encompass the time period from August 5, 2009 (date of ODEQ's approval of the City's Implementation Plan), through June 30, 2010 (end of fiscal year).
- The first Progress Report for the Molalla-Pudding Subbasin TMDL will be submitted by **November 1, 2011**, and encompass the time period beginning with the date of ODEQ's approval of the City's

Implementation Plan through June 30, 2011. It will also encompass the City's activities relative to the Willamette TMDL and serve as the City's second Progress Report for that TMDL.

3 LOCAL AREA TMDL WATER BODIES

3.1 WILLAMETTE RIVER TMDL

The Willamette Basin TMDL pollutants of concern are elevated summer temperatures, elevated bacteria levels, and mercury. This TMDL encompasses the Willamette River and tributaries within the City of Salem's jurisdiction.

3.2 MOLALLA-PUDDING TMDL

The Molalla-Pudding Subbasin TMDL pollutants of concern are elevated summer temperatures, elevated bacteria levels, iron, and DDT. The Molalla-Pudding Subbasin encompasses an eastern portion of Salem's wastewater and stormwater service area. All wastewater collected from within the eastern City limits and adjacent service areas within the unincorporated East Salem Service District (within Salem's Urban Growth Boundary but outside the City limits) is collected and transported to the Willow Lake Water Pollution Control Facility (WLWPCF) for treatment and discharge to the Willamette River. The City's stormwater system is intertwined with the stormwater system owned and operated by Marion County (through the East Salem Service District). The collected (and in many cases co-mingled) stormwater runoff in much of East Salem is ultimately discharged at several locations into the Little Pudding River drainage system.

4 RELEVANT WATER QUALITY PERMITS AND PROGRAMS

City of Salem activities associated with maintaining compliance with four (4) individual ODEQ-issued NPDES water quality permits contribute, in part, to maintaining compliance with the City's ODEQ-approved TMDL Implementation Plan. These activities are summarized in the sub-sections that follow, in context of the following NPDES permits:

- City of Salem Willow Lake Water Pollution Control Facility (WLWPCF) National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge Permit (Permit No. 101145, File No. 78140)
- City of Salem NPDES Municipal Separate Storm Sewer System (MS4) Discharge Permit (Permit No. 101513, File No. 108919)
- City of Salem 1200-CA Permit (File No. 109744) for Erosion Prevention and Sediment Control (EPSC) on All City Land Disturbing Construction Projects
- City of Salem 1200-Z Industrial Stormwater Permit for McNary Field Airport Operations (File No. 106923)

The City's TMDL Implementation Plan includes Best Management Practice (BMP) activities that are related to the NPDES MS4 Permit and Stormwater Management Plan (SWMP), the NPDES Wastewater Discharge Permit, and additional non-point source BMPs. The non-point source BMPs were identified to supplement activities associated with the compliance of the ODEQ-issued NPDES permits.

The BMP activities are listed in the TMDL Implementation Plan BMP Progress Matrix (provided in Appendix A). A column labeled "BMP Source" identifies the origin of the activity. The MS4 SWMP encompasses a significant component of the City's TMDL strategies, therefore a summary of MS4 SWMP activities completed in FY 2013-14 can be found in the MS4 Annual Report (Appendix B).

The TMDL Implementation Plan BMP Progress Matrix was updated in FY 2011-12 to reflect appropriately the BMP activities currently required under the renewed MS4 Permit and 2010 SWMP.

4.1 NPDES WASTEWATER DISCHARGE PERMIT

The City of Salem submitted its NPDES Wastewater Discharge Permit Annual Report for FY 2013-14 to the ODEQ on August 25, 2014. The submittal consisted of two separate reports as required by the City's NPDES Permit. These reports included:

1. Inflow Removal Program Report
2. Salem's Management, Operation, and Maintenance (sMOM) Program Report

During the reporting period of FY 2013-14, the City continued to comply with requirements of its NPDES Wastewater Discharge Permit, and as a result, in part, has satisfied requirements of its TMDL Implementation Plan.

4.2 NPDES MS4 PERMIT

The MS4 Permit and associated Stormwater Management Plan (SWMP) authorize discharges from the municipal stormwater system into waters of the state. The City's current NPDES MS4 Permit was issued on December 30, 2010, and is scheduled to expire on December 29, 2015. The approved 2010 SWMP has been incorporated into this renewed MS4 Permit by reference and is now reflected in the TMDL Implementation Plan BMP Progress Matrix (Appendix A).

The Environmental Protection Agency (EPA) conducted an inspection of the City's MS4 and SWMP from July 31, 2012, through August 2, 2012, to assess compliance with the NPDES MS4 Permit. The results of the audit were released during the FY 2013-14 reporting period, and indicated that the City was deficient in meeting its construction site runoff control requirements. An EPA Administrative Compliance Order by Consent (Consent Order) was issued for the City of Salem to: 1) develop and document its construction site plan review procedures; 2) develop and document inspection procedures for construction sites; and 3) submit a separate report of all construction site inspections annually through the expiration of the current MS4 permit. The City remedied the deficiencies in its construction site erosion control program within 90 days of the Consent Order, submitted its first annual construction site inspection report on November 1, 2013, and continues to meet the requirements of the NPDES MS4 Permit and the EPA Consent Order.

As reported in the City's NPDES MS4 Annual Report (FY 2013-14), the City continues to implement activities identified in the 2010 SWMP. Pending ODEQ approval of the report, the City believes itself in continued compliance with MS4 Permit requirements, and as a result, continues to satisfy, in part, the requirements of its TMDL Implementation Plan.

4.3 NPDES 1200-CA PERMIT

The City possesses an NPDES 1200-CA Permit that addresses Erosion Prevention and Sediment Control (EPSC) measures for all land disturbing construction projects conducted and owned by the City. By minimizing the potential for sediment-laden runoff from construction sites, pollutants associated with sediment (principally metals, but also bacteria, iron, and DDT) are also minimized. As a result, EPSC requirements are incorporated into construction drawings and specifications, the 1200-CA Permit is included in City contract documents, and EPSC measures are an agenda item at all preconstruction conferences.

The City initiated its local EPSC program in 2001 with the adoption of Salem Revised Code (SRC) Chapter 75, *Erosion Prevention and Sediment Control*. Amendments to SRC Chapter 75 were initiated in FY 2012-13 and completed in FY 2013-14 to ensure consistency with MS4 Permit requirements. The EPSC program continues to be managed adaptively and proactively to provide increased education and training as well as enforcement. During this reporting period, EPSC training was provided to regional area contractors, design consultants, and municipal employees by City and local agency staff at the "3rd Annual Mid-Willamette Valley Erosion Control and Stormwater Management Summit" on January 28, 2014. There were 101 participants at this event. The City continued to utilize a dedicated EPSC inspector during this fiscal year to ensure compliance at all 1200-CA permitted projects.

During the reporting period of FY 2013-14, the City continued to comply with requirements of its 1200-CA Permit, and as a result, in part, has satisfied requirements of its TMDL Implementation Plan.

4.4 NPDES 1200-Z PERMIT

Effective July 1, 2012, the ODEQ assigned renewed coverage of the City of Salem's (City) National Pollutant Discharge Elimination System (NPDES) 1200-Z Stormwater Permit for the Salem Municipal Airport (McNary Field). This permit, which expires on June 30, 2017, requires that the airport facility implements and updates as necessary, an ODEQ-approved Stormwater Pollution Control Plan. This permit also requires monthly facility inspections as well as the routine collection of stormwater outfall samples.

During the FY 2013-14 reporting period, Public Works staff collected the outfall samples for statewide benchmark parameters as well as impairment pollutants required under the renewed 1200-Z Permit. The results of these sampling efforts were submitted to the ODEQ in an annual Discharge Monitoring Report by the July 31 deadline.

The Airport continues to maintain a proactive geese control and pocket gopher eradication program which provides a secondary stormwater benefit of reducing the impact that wildlife may be having on bacteria levels in the Airport's stormwater runoff.

During the reporting period of FY 2013-14, the City continued to comply with requirements of its NPDES 1200-Z Permit, and as a result, in part, has satisfied requirements of its TMDL Implementation Plan.

5 HIGHLIGHTS OF BACTERIA MANAGEMENT STRATEGIES

5.1 WASTEWATER TREATMENT FACILITIES

The Willow Lake Water Pollution Control Facility (WLWPCF) has continued to comply with NPDES Wastewater Permit effluent standards for bacteria. The City continues to invest in improvements at the WLWPCF, the North River Road Wet Weather Treatment Facility (NRRWWTF), and various collection system/pump station improvements as part of its efforts to reduce SSOs and to comply with ODEQ's water quality bacteria standard. The total treatment capacity of the wastewater treatment system is 205 MGD. The following improvement projects were identified in the Adopted CIP Plan for the 2013-14 fiscal year:

- WLWPCF – Outfall/Diffuser Evaluation ($30,000)
- WLWPCF – Medium Voltage Transformer Replacement ($250,000)
- WLWPCF – Reactor Train #2 – Diffuser Improvements ($2,320,000)

Future improvement projects will be identified in the 5-year Capital Improvement Plan and budgeted for annually. A copy of the Adopted CIP Plan has been placed on the City's website at the following location: http://www.cityofsalem.net/Departments/AdministrativeServices/Finance/capital-improvememts-program-cip/Pages/default.aspx.

5.2 PUBLIC EDUCATION AND OUTREACH

Outreach activities have been identified in the TMDL Implementation Plan BMP Progress Matrix (Appendix A) that enhance the City's comprehensive effort to improve local water quality through public education. Each year the Public Works Natural Resources Outreach Specialist develops a work plan based on targeted pollutants and audiences. Tools are developed and/or implemented to meet the work plan elements based on staff and funding resources. TMDL pollutants are included as a component of other outreach efforts, such as programs relating to water conservation and stormwater. Activities conducted during this reporting period are highlighted in the following sections.

5.2.1 FIVE YEAR STORMWATER OUTREACH PLAN

During FY 2012-13, the 5-year stormwater outreach plan was completed. Staff continue to operate under the guidance of the plan, with continued outreach targeting E. coli. An outreach effectiveness evaluation, complete with phone survey results, is scheduled for completion in the fall of 2014.

A noteworthy outcome of these outreach efforts is the collaboration between the City of Salem, the City of Keizer, and Marion County in the development of the Capital Canine Club (CCC). The CCC is based on social marketing principles for promoting a desired public behavior (i.e., pet waste pick up). When CCC

members pledge to pick up after their pets, the City agrees to post their pet's photo on the CCC webpage and provides a free clip-on leash mutt mitt dispenser.

During this reporting period, the City once again partnered with Marion County and the City of Keizer to host "Howl-a-Palooza," a community resource event for dog owners that includes pet waste information and the chance to become a CCC member.

Quarterly "*Know the Scoop"* news briefs were mailed to 620 people in FY 2013-14. This newsletter provides information about what the City of Salem and other community members are doing to help share the "pick up after your pet" message.

5.3 RETROFIT PLAN & PROJECT IDENTIFICATION

Schedule A.6 of the MS4 Permit requires that the City complete a retrofit plan as well as identify and construct a retrofit project that targets the reduction of bacteria. During this reporting period, City staff identified a stormwater retrofit site and hired a consultant to design a project that reduces bacteria. A total of $180,000 is budgeted for the design and construction of the facility as of FY 2013-2014. Through desktop and field analyses, City staff evaluated multiple retrofit sites, and decided to pursue retrofitting an existing flow-through detention basin in Eola Ridge Park NW into a stormwater treatment train employing a Contech CDS Hydrodynamic Separator and a subsurface flow wetland. This stormwater retrofit project is one component of a larger Parks Capital Improvement Project. A letter identifying this as the City's retrofit project was sent to the ODEQ on October 28, 2013. Project construction will be completed before the expiration of the current MS4 permit.

As part of the identification and selection process for the aforementioned retrofit project, City staff developed desktop and field analysis methods for evaluating future potential stormwater retrofit sites. The knowledge and skills gained from this process will be used to develop the City's overarching stormwater retrofit plan. In addition, a stormwater retrofit team has been formed that includes representatives from the City's Engineering, Stormwater O&M, Stormwater Quality, and Public Works Operations sections. This group will continue to meet regularly throughout the next fiscal year to develop a robust stormwater retrofit plan that will be submitted to the DEQ by the November 1, 2014, deadline. The implementation of Low Impact Development (LID) stormwater retrofits result in reductions in stormwater volume, bacteria concentrations, total suspended solids (TSS), metals (such as iron and mercury), and DDT in areas lacking existing stormwater treatment.

6 HIGHLIGHTS OF MERCURY MANAGEMENT STRATEGIES

6.1 WASTEWATER MERCURY MANAGEMENT STRATEGIES

Through implementation of SRC Chapter 74 *Pretreatment Provisions*, the City established local discharge limits for mercury to reduce its introduction to the wastewater collection system and WLWPCF. Compliance with discharge limits is achieved through the City's Industrial Wastewater Pretreatment Program, which consists of regular inspections of both permitted and non-permitted facilities. In addition, the WLWPCF collects monthly influent and effluent mercury concentration data.

6.2 UPDATE OF THE CITY'S STORMWATER MANAGEMENT DESIGN STANDARDS

During FY 2013-14, revisions to the Stormwater Management Design Standards (Design Standards) and a new stand-alone stormwater chapter (Chapter 71) for the Salem Revised Code (SRC) were completed. The revised Design Standards now include requirements for structural stormwater quality facilities (e.g., stormwater planters, rain gardens, and vegetated filter strips), as well as measures to further address stormwater quantity and source controls. Under these new requirements, single family projects and commercial development projects that generate 1,300 and 10,000 square feet, respectively, of new or replaced impervious surface area must now address the increased water quantity and quality concerns and employ green stormwater infrastructure to the maximum extent feasible. Through infiltration or filtration mechanisms, these treatment facilities can result in significant reductions in flow, bacteria, total suspended solids (TSS), and heavy metals such as mercury. The revised Design Standards and new SRC Chapter 71 became effective on January 1, 2014, and apply citywide to both public and private development and redevelopment projects.

6.3 AMALGAM SEPARATORS

Environmental Services staff continued to survey dental offices in FY 2013-14 to certify compliance with Oregon Senate Bill 704. Senate Bill 704 requires new dental offices to install amalgam separators and comply with BMPs recommended by the Oregon Dental Association (ODA); and it requires established offices operating in accordance with the BMPs to have installed amalgam separators by January 1, 2011. Although the City has no responsibility for regulatory oversight under SB 704, Environmental Services continues to track new dentists through the building permit process and verify amalgam separator installations and good mercury housekeeping practices in order to limit discharges of mercury to the WLWPCF.

Accomplishments during the life of the program:

- 261 dentists/offices surveyed
- 148 amalgam separator installations verified
- 54 do not use amalgam due to the nature of their practice

Accomplishments during fiscal year 2013-14:

- 3 new dentists/offices identified through the plans review process
- 1 new survey sent and returned
- 2 surveys will be sent upon completion of the project

6.4 EROSION CONTROL OUTREACH PLAN

According to ODEQ's analysis in the Willamette Basin TMDL, the two principal contributors of mercury to the Willamette River are surface soil erosion (50.2 percent) and air deposition either directly through the air or through runoff (43.6 percent). Effective implementation of the City's erosion prevention program follows requirements of its MS4 Permit and 1200-CA Permit. As mentioned in Section 4.3, the City

continues to provide training to City staff, local consultants and developers, individual homebuilders, and subcontractors. As part of the Mid-Willamette Outreach Group (M-WOG), Salem staff continued to collaborate with the City of Keizer, City of Albany, City of Corvallis, Marion County, and the Marion Soil and Water Conservation District to coordinate the "3rd Annual Mid-Valley Erosion Control and Stormwater Management Summit" at Keizer City Hall on January 28, 2014, which aimed at educating local contractors.

6.5 MERCURY TAKE-BACK PROGRAMS

The City does not currently administer its own public take back program for mercury, and thus has focused its energy collaborating with local partners by promoting existing residential and small business programs administered by Marion County. The Salem-Keizer Recycling & Transfer Station now takes mercury-containing waste, including compact fluorescent lights (CFLs), seven days-a-week excluding major holidays. The new hours improve recycling opportunities and convenience, while reducing the need to plan and promote designated collection events.

Under the Resource Conservation and Recovery Act (RCRA), the City's Environmental Services section administers an internal hazardous waste program. This program includes mercury waste collection (including spent CFLs) by the City's Facilities section for all City facilities. The Facilities staff is responsible for the collection of thousands of spent CFLs annually, and the Environmental Services section is responsible for the proper storage and disposal of these materials through a licensed hazardous waste contractor.

7 HIGHLIGHTS OF TEMPERATURE MANAGEMENT STRATEGIES

7.1 WASTEWATER TREATMENT TEMPERATURE MANAGEMENT STRATEGIES

Maximum wastewater discharge limits for temperature as well as other water quality constituents are enforced for area businesses per SRC Chapter 74 *Pretreatment Provisions* and associated City-issued wastewater discharge permits. A waste load allocation for temperature will be incorporated into the WLWPCF NPDES Wastewater Discharge Permit once it is renewed. The City has complied and will continue to comply with its NPDES Wastewater Discharge Permit at its treatment facilities, and it will continue to enforce industrial pretreatment temperature effluent limits on local businesses.

7.2 CHANNEL AND STREAM BANK ENHANCEMENTS

During FY 2012-13, City staff continued efforts to develop a Stream Mitigation Bank Program for City-funded projects that require mitigation for in-stream impacts. One objective under the program is to preserve and improve targeted stream reaches on a prioritized basis. The viability of such a program depends on the cooperation and approval from the U.S. Army Corps of Engineers (COE), the Oregon Department of State Lands (DSL), and the Interagency Review Team (IRT).

The final draft of the stream mitigation process was completed in January 2010. City staff and Pacific Habitat Services (consultant) completed the mitigation bank "prospectus," which describes the framework

and a pilot project for the stream banking program. The prospectus was submitted to and approved by the COE and DSL in June 2011.

Upon approval of the Prospectus, the City held meetings with the state/federal IRT to discuss the technical aspects of the stream mitigation program. Based on input from the IRT, a draft Mitigation Bank Instrument (MBI) was completed and submitted to the DSL and COE in late February 2012. A completeness review by the agencies identified a number of issues that required revision of the MBI document. A revised MBI document has been submitted to the DSL and COE for a completeness review.

In FY 2012-13 the City and consultant updated the methodology in response to IRT questions, prepared a draft of the Waln Creek prospectus, and updated the MBI draft in response to IRT comments. In FY 2013-14 the City finalized the Waln Creek prospectus, MBI, and the credit calculation methodology. Final documents were submitted to the IRT and the City is awaiting its approval.

7.3 RIPARIAN DATA PRIORITIZATION

The City has conducted several analyses related to riparian and urban tree canopy. Although no actual reduction in temperature loading takes place through these studies, the activities help prioritize and identify specific locations for future temperature-related projects. To date, the City has conducted the following activities:

- Completed a Riparian Shade Inventory (FY 2008-09)
- Conducted a Riparian Shade Prioritization study, including the development of a GIS-based decision support tool (FY 2010-11)

Data from the Riparian Shade Prioritization Study and Urban Tree Canopy study helped the City to identify priority locations for targeted riparian and neighborhood tree planting activities in FY 2012-13 (see Section 7.4.1). These efforts will continue as necessary during the next fiscal year. It is the long-term goal of the project to increase native riparian canopy shade and reduce temperature in the waterbodies.

7.4 RIPARIAN ACTION PLAN

The City's Riparian Action Plan was completed in 2009 to prioritize the protection of riparian areas through identified objectives and action items, to identify staff and budget needs, and to create a strategic timeframe for recommended activities. The defined priorities of this plan are to protect existing riparian areas, increase riparian vegetation coverage, and increase public awareness of riparian benefits and good development practices.

7.4.1 RIPARIAN DEMONSTRATION PROJECT

One objective of the Riparian Action Plan that is designed to increase public awareness about riparian areas while also increasing riparian vegetation is the identification and implemention of a City demonstration project. During FY 2012-13, City staff discussed options for modifying the City's Free Tree Program to bring about this goal. Using data from the riparian shade inventory, City staff surveyed five potential project sites with low riparian canopy cover. From this list of sites, Clark Creek Park was selected to receive targeted riparian planting/restoration work in FY 2013-14. During this reporting

period, Public Works staff collaborated with Friends of Trees on the Clark Creek Park demonstration project. The park and surrounding private riparian properties that chose to participate, received riparian enhancements that included: the removal of invasive plant species, installation of streambank stabilization materials, the insertion of 2,000 live plant stakes along the streambank, and the planting of 650 riparian trees and shrubs. Parks staff and Stormwater Operations & Maintenance crews performed the bulk of the invasive weed removal efforts in the park. Friends of Trees staff coordinated the volunteer based planting events, provided outreach to neighboring property owners, and supplied the plants for this project. Friends of Trees were able to enlist 280 volunteers to assist with this effort during this reporting period.

7.5 TREE AND WETLAND PRESERVATION

The City recognizes that the preservation of urban trees and existing wetlands aids in water quality, minimizes the quantity of stormwater runoff, and reduces erosion while enhancing habitat. As such, the City continues to coordinate with its departments and the public regarding tree and wetland preservation, consistent with Chapters 86 and 126 of the Salem Revised Code (SRC). In pursuit of developing an outreach plan for educating the public about trees, a City Tree Team was assembled in 2009 to review major tree and vegetation-related code. In FY 2009-10 the Team began coordination of tree preservation issues within the City, including coordination under a proposed Urban Forestry Program.

In FY 2013-14, the City Tree Team was expanded to include other natural resources and is now called the Natural Resource Working Group, and it meets on a quarterly basis. In May of 2013, Salem City Council requested that the street tree code (SRC 86) be updated and revised. A stakeholder committee was formed and changes to the code were drafted. In addition to code revisions, tree design standards will be proposed to ensure proper tree planting, tree selection, and tree protection standards.

7.5.1 URBAN TREE CANOPY

The City's Community Development and Public Works Planning staff led a citywide, interdepartmental effort to review tree and vegetation preservation-related chapters of the Salem Revised Code. The City Tree Team made suggestions for short-term, long-term, minor, and major changes for tree protection and code language consistency. Efforts to align and/or revise the language within the new stormwater-dedicated chapter of the SRC, erosion control code, Public Works Design Standards, and the City's Unified Development Code process have continued during this reporting year.

The City updated its Urban Tree Canopy study in FY 2010-11 and conducted a Potential Urban Tree Canopy study in FY 2011-12. In FY 2012-13, a stakeholder Community Forestry Advisory Committee was formed to assist in developing a strategic plan, including a recommendation to set a canopy goal. This group completed its work in December 2012, with six goals and 145 specific actions related to protecting, increasing, and enhancing the City's urban forest. In the form of a Community Forestry Strategic Plan, final recommendations were presented to the Public Works Director in December 2012. Following the work of the committee, public outreach about the strategic plan and urban canopy benefits was conducted throughout the remainder of the fiscal year (January 2013 through June 30, 2013).

7.5.2 NONPROFIT COORDINATION

The Community Forestry Strategic Plan recommended the involvement of a nonprofit tree group, such as Friends of Trees, to expand into Salem. Having such a group increases the visibility of tree planting opportunities, trains and recruits local volunteers, and provides other services to the public that may otherwise lay outside the City's capacity (like securing charitable funds). For example, in March of 2013, Friends of Trees was contracted by the City to conduct a community tree planting event in a low canopy neighborhood. The event was a collaborative effort between the City, Friends of Trees, and the Salem-Keizer School District. Twenty trees were planted at Hoover Elementary School and at adjacent Hoover Park.

Additionally, the City continued to work with Friends of Trees, neighborhood associations, and the Salem-Keizer School District during the reporting period to increase the urban tree canopy on both public and private land. Three planting projects were contracted with Friends of Trees (Morningside Elementary School, NESCA and Lansing Neighborhoods, and Clark Creek Park upland trees). The City also worked directly with the South East Salem and North East neighborhood associations for new street tree plantings using local volunteers. The City provided the trees and technical support for the event.

8 HIGHLIGHTS OF TOTAL SUSPENDED SOLIDS (TSS) STRATEGIES

Total Suspended Solids (TSS) is closely correlated to iron and DDT, and may therefore serves as a surrogate for those pollutants in the Molalla-Pudding Subbasin TMDL. Although iron is a naturally occurring material, it may be contributed in unnatural concentrations through runoff and erosion. Similarly, DDT may be introduced to water bodies through runoff and/or bank erosion at higher stream flows. In both cases erosion is seen as a major contributor of iron and DDT and is therefore addressed in the Molalla-Pudding Subbasin TMDL.

The City has continued its efforts to reduce erosion into local area water bodies through point source and non-point source BMPs. The City has complied with the requirements of the NPDES 1200-CA Permit during the FY 2013-14 reporting period and continues to comply with such requirements to minimize the potential for pollution and sediment-laden runoff from construction sites (see Section 4.3). Concurrently, improvements to the City's EPSC program as a result of an EPA Consent Order (see section 4.2) were completed during this reporting period to maintain compliance with the requirements listed under Schedule A.4.c of the NPDES MS4 Permit.

The development of a retrofit plan and hydromodification assessment will specifically address opportunities for improving the water quality and flow control capabilities of the City's MS4 infrastructure. To reduce further the stormwater impacts to City streams, both of these documents will be completed in accordance with the time schedules set forth in Schedules A.5 and A.6 of the MS4 Permit.

Of note in the City's efforts to reduce TSS, is the new stormwater dedicated chapter in the SRC, as well as the revised Stormwater Design Standards (see Section 6.2) requiring the application of Low Impact Development and Green Stormwater Infrastructure techniques to the maximum extent practicable. This effort is currently underway to reduce the concentration of soil particles in stormwater discharges, which may ultimately contain mercury, iron, and DDT.

9 PRESCRIPTION DRUG TAKE-BACK PROGRAM

Water pollution prevention organizations have been concerned for several years over the method of disposal of prescription drugs. Improper disposal down sinks and toilets have contributed to the drugs showing up in treatment facilities and passing through to rivers and streams. Likewise, improper disposal in household waste has led to drugs leaching through landfills and ending up in rivers and streams. This program is not included in the City's TMDL Implementation Plan but remains relevant to the goals of improving water quality.

In October of 2011 the City opened a prescription drug collection facility in the Salem Police Department lobby. Citizens may bring unwanted prescriptions and medications to the site for free disposal 24 hours a day, seven days a week. A total of 759.81 pounds of medications and associated packaging were received during the 2013 calendar year. Since the collection facility opened in 2011, a total of 1,433.06 pounds of medications have been collected.

10 COMPLIANCE WITH LAND USE REQUIREMENTS

The City has sole jurisdiction for the administration of land use requirements and actions within its City limits. Accordingly, all of the strategies outlined in the TMDL Implementation Plan are considered to be consistent with the City's land use plans and implementing codes. The City will evaluate and endeavor to maintain consistency with local and statewide land use laws in any future actions related to TMDL implementation. During this reporting period, City staff completed the effort to incorporate selected chapters of the Salem Revised Code (SRC) into a single, Unified Development Code (UDC). Led by the Community Development Department, this effort involved grouping related sections and subsections of existing chapters of the SRC into a more cohesive format. The new Unified Development Code went into effect May 14, 2014, and is published online at: (http://www.cityofsalem.net/Departments/Legal/Pages/SalemRevisedCodes.aspx)

11 FISCAL ANALYSIS

Salem Public Works activities identified in the TMDL Implementation Plan are funded through the recently adopted stormwater utility as well as through water and wastewater user fees (Water and Sewer Fund 310). Stormwater-specific budgets are provided in the City's 2014 MS4 Annual Report (Appendix B, Section 3, Table 2). The Water and Sewer Fund 310 adopted budget for FY 2013-14 can be found online at the following location: http://www.cityofsalem.net/Departments/Budget/Pages/FY2013-14.aspx

In 2009, City staff began working on the proposal to create a stormwater utility that would fund stormwater services with a separate stormwater fee. The purpose of creating a stormwater utility was to align stormwater rates with the stormwater impacts of the ratepayer's property, which can be directly linked to the property's impervious surface area. On December 6, 2010, the Salem City Council voted to approve creation of a stormwater utility. The new Stormwater Utility was successfully implemented in January 2013, and will be phased in over three successive years. The fee structure includes credits that provide for reductions in the impervious surface-based portion of the utility fee for ratepayers who have stormwater treatment and/or flow control facilities on their property. Generally, the credit is higher for

facilities that are categorized as green stormwater infrastructure than for more traditional stormwater facilities.

The Water and Sewer Fund 310 is self-supporting, with water and wastewater rates currently being reviewed and updated every two years through the City's utility rate-setting process. Salem's utility rates are based on cost of service rate-setting principles: respective system users pay in accordance with the level of utility service they receive. The Cost of Service Analysis (COSA) itself is also periodically reviewed and updated to reflect changes in the systems that have occurred over time. The most recent update to the COSA was adopted by City Council in August 2012.

12 LEGAL AUTHORITY

12.1 WASTEWATER

The City operates its wastewater collection system, NRRWWTF, and WLWPCF, in accordance with its ODEQ-issued NPDES Permit. The legal authority governing the system's operation is generally set forth by SRC Chapter 73 (Sewers), with much more specific authority and responsibilities set forth by SRC Chapter 74 (Pretreatment Provisions). SRC Chapter 74 specifically addresses the operation of the City's wastewater collection system, NRRWWTF, WLWPCF, and constitutes the City's "Pretreatment Ordinance."

12.2 STORMWATER

In addition to the specific SRC Chapters 73 and 74 related to wastewater and stormwater management, the City also has the legal authority to implement and enforce its Erosion Prevention and Sediment Control (EPSC) Program through SRC Chapter 75. Additional riparian protections are contained in SRC Chapter 808 (Preservation of Trees and Vegetation), SRC Chapter 601 (Floodplain Overlay Zones), and SRC Chapter 600 (Willamette Greenway).

In conjunction with the revisions to the Stormwater Management Design Standards (see Section 6.2), a stand-alone chapter for stormwater (new SRC Chapter 71) was adopted during FY 2013-14. Salem City Council approved the updated SRC in December 2013, and both the revised Design Standards and stormwater-dedicated chapter became effective on January 1, 2014. With these updates, the City has the authority to implement the requirements of the renewed MS4 Permit.

13 CONCLUSION

As discussed in this TMDL progress report, by fulfilling the requirements of the City's NPDES Wastewater Discharge Permit, MS4 Permit, 1200-CA Permit, and 1200-Z Permit, as well as implementing non-point source BMP's in the TMDL Implementation Plan, the City of Salem believes it continues to fulfill its responsibilities as a DMA under the Willamette River and Molalla-Pudding Subbasin TMDLs.

Appendix A

City of Salem TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
RC1 - Planning					
1. Provide City-wide Master Planning for stormwater to address both water quality and water quantity. As part of master planning efforts, continue to evaluate new detention and water quality opportunities within the Urban Growth Boundary (UGB), and consider sites in upstream areas that may affect Salem, and in downstream areas that may be affected by runoff from Salem.	2010 SWMP	Track Schedule for updating the Master Plan. Report on master plan update actions.	Maintain Master Plan and complete next update within the MS4 permit cycle.	Community is involved with permit review process. This task is implemented citywide and addresses regulatory requirements addressed by the TMDL.	See FY 2013-14 MS4 Annual Report
2. Develop and maintain watershed management plans by developing a prioritized schedule and implementing watershed management plans based on available funding. Develop the Pilot Pringle Creek Watershed Management Plan as a model for the City's other prioritized urban watersheds. Identify capital improvement needs and potential "early action" activities and projects to ensure that the plan has a strong implementation component.	2010 SWMP	Report on completion of hydromodification study.Report on completion of retrofit plan.Track implementation actions of Pringle Creek Watershed Management Plan.Report on strategy for completing future watershed management plans.	Complete a hydromodification study and retrofit plan by November 1, 2014.Incorporate recommendations and early action items of watershed management plans with completion of hydromodification study and retrofit plan.Develop strategy for completing future watershed management plans by November 1, 2014.	A pilot watershed plan would address issues and areas that are in need of water quality improvement. This plan would also identify priority capital improvement projects within a watershed. The pilot watershed plan would identify areas within an urban watershed that require attention and offer guidance on what to look for and areas to address in other urban watersheds. The point of this task is to identify activities that would aid in water quality enhancement and identify ways to implement watershed CIPs and activities. The Pringle Creek Watershed Plan is currently available in draft form.	See FY 2013-14 MS4 Annual Report
3. City staff will continue to update the official "waterways" map for use by City staff in applying various regulations and standards. As studies are performed that warrant the revision of the designated waterways, including goundtruthing, that information will be incorporated into the update process.	2010 SWMP	Track completion of groundtruthing and map updates.	Compile database of maps and waterways references.Complete field groundtruthing by end of FY 2011-12. Update map by end of FY 2012-13.	The official waterways map is in the constant process of being updated. This waterways map does not directly effect pollutants or regulatory factors. The main purpose for the waterways map is so that the city has a standard to go by that can act as an official document.	See FY 2013-14 MS4 Annual Report
4. City staff will meet a minimum of once per year to discuss coordination of efforts relating to stormwater. Topics may include the following, as they are applicable: grant funding, outreach, program review, annual report, monitoring, sharing of data, adaptive management, review/update of documents and programs, training needs, documentation of protocols, coordination of databases, involvement of inspections, maintenance, and operations in plan review and program developed, checklists, effective Erosion Prevention and Sediment Control Program including enforcement, strategizing addressing hotspots, plan review, stormwater BMPs, and development of written enforcement strategy. Provide factsheets/manuals to new employees at the City to inform them about the City's efforts for pollution prevention. At least annual trainings will be provided to specified City of Salem employees involved in MS4-related activities regarding the permit, including its intentions and their responsibilities in relation to the MS4. Feedback for improving processes will be encouraged and brought to the coordination meeting(s). Training needs will be determined by City staff meeting mentioned above. Consider adding stormwater pollution prevention training as an action item of the FY 2011-12 Environmental Action Plan that addresses pollution prevention on a city-wide level.	2010 SWMP	Prepare an annual meeting summary.Track changes made to the implementation of the stormwater program based on coordination discussions.Track major items of coordination.Track training attendance.Share and document training suggestions for MS4 implementation changes.	Conduct annual formal coordination meetings for stormwater, more often if necessary. Conduct annual training of employees involved in MS4-related positions, more often if necessary.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
5. Coordinate with other agencies such as NGOs, private environmental groups, and watershed councils.	2010 SWMP	Document any MOAs.	Develop a list of contacts and identify issues of coordination.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
6. The City will work with Marion and Polk Counties and the City of Keizer to coordinate stormwater management programs and activities within the greater Salem-Keizer Urban Growth Boundary. Coordination may include the establishment of appropriate intergovernmental agreements (IGAs) regarding potential uniform stormwater design standards, operations and maintenance activities, and public education and involvement efforts within the UGB.	2010 SWMP	Report on significant coordination activities or programs.Report on completion of SKAPAC Agreement and other IGAs.	Review and update the October 2000 SKAPAC Stormwater Management Agreement by the end of the permit term to reflect each jurisdiction's respective MS4 Permit and SWMP.	Pollutants are not directly effected by coordinating operations and maintenance activities between city and county. This process is not very readily implemented and also does not directly address regulatory programs. The City coordinates with the county when we are performing operations in their area and have the opportunity to help them. The city occasionally cleans ditches for the county and we also share the workload of the inmate crew between the City and the County; This is more of a utilities planning issue.	See FY 2013-14 MS4 Annual Report

TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
7. Evaluate existing detention facilities and potential new detention sites for potential conjunctive uses (as water quality facilities and for retrofitting opportunities). Continue to perform facility site searches to locate ponds, wetlands, vegetated swales and other water quality facilities as existing water quantity and quality facilities are evaluated and potential new sites are identified. Coordinate with RC1-1 and RC1-2.	2010 SWMP	Complete a retrofit plan before end of year four of the MS4 permit cycle. Develop a strategy to identify and prioritize potential retrofit projects by November 1, 2013.Identify a minimum annual budget for stormwater retrofit projects as part of the retrofit strategy by November 1, 2014.	Report on available budget and completion of retrofit project efforts.	Evaluation of sites, no action done that would impact water quality.Activity is a tracking and planning activity, does not directly impact actual water quality or regulatory factors.Community involvement projects such as Eola Basin, 12th street bioswale and Kroger Park.	See FY 2013-14 MS4 Annual Report
8. The City will continue to be an active member of the Oregon Association of Clean Water Agencies (ORACWA). The City will use this medium to obtain copies of materials that have been produced by others. City staff will stay current on latest available educational and technical guidance materials.	2010 SWMP	Report on City participation with ORACWA events.	Attend a minimum of one stormwater-related workshop or conference annually. Attend groundwater-related workshops and conferences as funds allow.Make information obtained at these events available to other City staff.	The City attends many ACWA meetings that address varying issues. This task does not address pollutants directly, but does highly address regulatory factors by means of City staff gaining insight on implementation of jurisdictional requirements. This is an educational opportunity as well as an opportunity to share and learn about successes, failures, and processes that have been acted out by other jurisdictions. This task is highly implemented and meetings are attended by staff citywide.	See FY 2013-14 MS4 Annual Report
RC2 - Capital Improvements					
1. Implement stormwater projects (including stormwater conveyance, quantity, quality, and stream/habitat improvement) based on priorities established under the Capital Improvement Program (CIP) and the Stormwater Master Plan consistent with available funding.	2010 SWMP	Track number and description of projects completed. Report updated CIP list annually.	• Include a funding line item for CIPs in proposed stormwater budget. • Review and prioritize CIPs and budget annually. • Implement CIPs based on prioritization and available funding.	Sediment bonded pollutant loading decreased by pipe replacements, no anticipated impact on pesticides; projects include structures for fish passage.	See FY 2013-14 MS4 Annual Report
2. Continue to coordinate capital improvement projects with the Water Resources Section to integrate multiple resource agency permitting needs. The review is intended to identify integrated opportunities and permitting needs to meet water quality-related requirements.	2010 SWMP	• Track number of projects reviewed. • Track number of projects permitted.	• Review and integrate multiple resource agency permitting needs, including MS4 permit requirements, into 100% of CIP projects.	Integrated water quality requirements are up and coming. This task has the potential of addressing certain polluting factors and reducing polluting factors. Both regulatory organizations are addressed through this task.	See FY 2013-14 MS4 Annual Report
3. The City continues to acquire physical access-easements for public and private stormwater facilities. This is done by identifying existing facilities for which easements, rights-of-way, or permit-of-entry agreements are needed for stormwater facilities; and developing a plan for acquiring the same, given current funding limitations.	2010 SWMP	• Report on easement acquisition and prioritization process.	• Within one year of completion of the hydromodification study and retrofit plan, prioritize easement acquisitions for stormwater facilities. • Following prioritization, identify funding source(s) for inclusion in budget.	Stormwater Services has a file of Stormwater easements within the city. The next step would be to identify assets that are not among those listed in the file.	See FY 2013-14 MS4 Annual Report
RC3 - Update of Stormwater Management Design Standards					
1. Continue to encourage the use of structural BMPs for stormwater quality improvement and flood peak reduction opportunities. Develop stormwater quality design and associated maintenance standards for new and redevelopment. Continue to evaluate opportunities to provide incentives for alternative stormwater management practices, including Low Impact Development (LID). Maintain and update the Stormwater Management Design Standards after they are developed.	2010 SWMP	• Document revisions made to Stormwater Management Design Standards. • Document the development of any incentives for implementation of LID techniques.	• Develop incentives for LID and other stormwater quantity and quality management practices. • Develop updated stormwater design standards to include structural stormwater quality BMPs. • Maintain Stormwater Management Design Standards and update as needed.	The process of reviewing and recommending does not directly affect pollutants or regulatory factors. Current design standards, when implemented, are to follow that of the City of Portland and Clean Water Services. Design standards and stormwater code currently being revised and developed.	See FY 2013-14 MS4 Annual Report
2. Continue to implement process to identify and remove barriers for implementing LID techniques. Update the Stormwater Management Design Standards and associated Salem Revised Code (SRC) provisions as appropriate.	2010 SWMP	• Document the review of design standards and SRC to minimize barriers to implementation of LID techniques.	• Within three years of implementing the revised stormwater design standards, review and, as appropriate, modify design standards and SRC to minimize barriers to implementation of LID techniques.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
3. City staff is implementing the Water Quality Development Standards set forth by SRC Chapter 141 for all development requiring a Willamette Greenway Permit.	2010 SWMP	• Track number of Willamette Greenway Permits issued and description of water quality measures employed. • Track number of new facilities constructed.	• Implement Water Quality Development Standards in Willamette Greenway.	Water quality development standards set forth in SRC 141 are designed to protect and enhance the floodway and riparian zone of the Willamette Greenway. This task directly addresses certain pollutants and regulatory requirements. The code is implemented and requires public involvement in order to be reviewed and accepted.	See FY 2013-14 MS4 Annual Report

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
4. Continue to review all residential, commercial, and industrial plans submitted for City-issued building permits for compliance with the City's Stormwater Management Design Standards. Conduct inspections of completed projects prior to the City's acceptance of those projects and project close-out to ensure work was done in accordance with approved plans. Maintain database of plans reviewed and final inspections conducted. See IND1-Task 2 for standards specific to industrial facilities.	2010 SWMP	• Maintain database of plans reviewed and final inspections conducted.	• Review all residential, commercial, and industrial plans submitted for City-issued permits for compliance with the City's Stormwater Management Design Standards and associated SRC provisions. • Conduct inspections once construction is completed to ensure work was done in accordance with approved plans.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
RC4 - Operations & Maintenance					
1. Continue with the existing street sweeping schedule for all areas, maintaining the record of observations, quantity, and quality of material collected in the daily log books. Collect and compile this information for making recommendations for modified methods, schedules, and for NPDES MS4 permit annual reporting and overall program evaluation.	2010 SWMP	• Record quantity of material collected during sweeping operations. • Record number of curb-miles of streets swept. • Track and report changes made to sweeping schedule, if any.	• Review street sweeping program annually for effectiveness and any necessary revisions to sweeping schedule. • Continue sweeping City streets on four zone schedule, sweeping heaviest zone 8 times per year and lightest zone 2-3 times per year. • Continue sweeping City-owned parking lots as needed.	Street sweeping mainly effects the amount of debris settable solids that enter or do not enter the storm system and the pollutants that are associated with those solids. TMDL is affected by addressing polluting factors that are associated with sediment particles and of concerns in the mid-Willamette Basin watershed. ESA is addressed due to the effects street sweeping has on the sediment load that enters water bodies within the city, in turn increasing the quality of water for fish use. A leaf pick-up program is implemented every fall, city wide, by the street sweeping crew to pick up leaves throughout the city in coordination with volunteers.	See FY 2013-14 MS4 Annual Report
2. The City will continue to perform de-icing operations in a way that minimizes stormwater pollution such as conducting annual inspections and training to ensure proper operation of the de-icing chemical storage facility, utilization of the expanded covered storage areas for de-icing materials, maintaining proper function of sediment traps and catch basins in the storage yard, and coordinating de-icing activities with Airport Operations and their 1200-Z permit. The City is also looking for ways to improve current operations by investigating and evaluating potential cost-effective recycling opportunities for used de-icing sand material.	2010 SWMP	• Document review of recycling opportunities. • Document dates of activities for annual inspections and training. • Document de-icing quantities applied annually.	• Continue current de-icing operations to prevent stormwater pollution. • Investigate potential cost-effective recycling opportunities for de-icing sand material	Dissolved oxygen and Debris Settable Solids are of concern because they are pollutants that are effected by de-icing activities. De-icing does not occur very often and on a limited scale, so regulatory factors are effected on a limited scale. This BMP addresses the proper handling of pollutants to decrease runoff and regulatory factors that are concerned with those pollutants. This is also an implemented task.	See FY 2013-14 MS4 Annual Report
3. Continue to review and update the O&M practices and activity schedules defined in the Drainage Program Evaluation Notebook (DPEN) (including updating GIS database). Utilize Hansen IMS data to develop and refine work programs. This review will serve as a basis for budgeting and allocating resources; scheduling work; and reporting on and evaluating the performance and costs for the overall O&M program and specific activities.	2010 SWMP	• Track revisions made to O&M practices and activity schedules.	• Update DPEN and IMS database activities and schedules. • Create line items in budget for specific O&M activities. • Review and update O&M practices and activity schedules every 3 years.	Utilization and updates to the O&M practices and activity schedules databases and mapping systems does not directly effect pollutants or regulatory factors. This task is moderately implemented.Setting performance standards for this program would affect certain pollutants concentrations and would address regulatory criteria based on the performance standards put into action. This is a way to address the effectiveness of the program and implement new actions. Direct impact on types of material replaced- pvc replacing metal, timing of schedule to reduce most amount of sediment load through system.	See FY 2013-14 MS4 Annual Report
4. Continue to improve the O&M training program and activities especially with regards to safety and protection of water quality.	2010 SWMP	• Document reviews and modifications to the O&M training program. • Record O&M training activities completed. • Document ACWA meetings and workshops attended.	• Conduct O&M safety meetings twice per month. • Attend ACWA committee meetings and workshops as scheduled. • Conduct weekly tailgate meetings with Operations crews.	Relates directly to how operations conducts business, erosion control measures taken in field, SOP's; primary effect is on sediment and sediment bound pollutants.	See FY 2013-14 MS4 Annual Report
5. Integrated Pest Management (IPM) Program: Salem Parks Operations Division will continue their program for careful monitoring and management of pesticides, herbicides and fertilizers, and will provide public information. Review and refine the IPM Program during the permit cycle, ensuring proper handling and storage of pesticides, herbicides, and fertilizers.	2010 SWMP	• Document revisions made to IPM Program. • Document inspections of storage facilities.	• Review and refine IPM Program during the MS4 permit cycle. • Routine inspections of storage facilities for proper storage of materials and chemicals.	Integrated Pest Management, when implemented on a citywide scale through the Parks department, greatly decreases the amount of pesticides that enter a waterway and directly address regulatory organizations by enhancing water quality within city waterways. City of Salem Parks currently has standards that exceed the Oregon Department of Agriculture standards for pesticide applications.	See FY 2013-14 MS4 Annual Report

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
6. Continue the storm sewer cleaning and TV inspection program, concentrating on known areas of localized flooding complaints (this alerts the City to locations of debris build-up and minimizes erosion potential) and persistent operation and maintenance problems, and looking for potential illicit discharges and seepage from sanitary sewers, see ILL2. Also focus on significant industrial/commercial areas where potential illicit discharges may be of concern.	2010 SWMP	• Track number of inspections; identify areas with persistent O&M problems. • Track number of cross-connections found. • Track length of conveyance system cleaned and inspected.	• Concentrate storm sewer cleaning and TV inspection on areas with historical problems and high potential for illicit discharges. • Inspect 120,000 LF of conveyance system annually.	Pollutants that are sediment bound are affected by the cleaning of storm sewer systems are addressed by this task. This is a highly implemented program and in certain situations can address issues that are focused on by ESA and TMDL.	See FY 2013-14 MS4 Annual Report
7. Continue supporting annual Stream Cleaning Program. More than one half of the stream miles in the City of Salem are inspected annually by walking each stream segment. Using summer interns the City inspects the riparian areas and streams, picks up litter and garbage, inspects for illicit discharges (ILL2), addresses potential conveyance concerns, and evaluates areas for stream restoration.	2010 SWMP	• Track length of waterways walked each year. • Document stream restoration projects completed each year. • Document the amount of litter and garbage removed each year.	• Walk 50% of the waterways within the City each year for stream cleanup and enhancement. • Complete one stream restoration project each year.	Removal of trash and excess debris, invasive species removal and restoration and replanting projects all directly effect pollutant levels in the stream and address issues pertaining to regulatory organizations. Community involvement is also a key role in the stream cleanup program, which involves attending community events such as watershed council meetings and preparing and presenting data at these events. This program is implemented annually.	See FY 2013-14 MS4 Annual Report
8. Continue to regularly inspect and maintain public structural stormwater control facilities. Coordinate with RC4 Task 9.	2010 SWMP	• Track number of public facilities inspected and maintained. • Track amount of sediment and debris removed from all facilities.	• Regularly inspect all public detention and water quality facilities.	Low ratings for pollutants based on minimal sediment retained in a detentions facility. ESA is a factor due to fish passage concerns on detention designs. Since the facilities are private, there is a level of community involvement that takes place such as contacting the owner of the basin. This is also a highly implemented task.	See FY 2013-14 MS4 Annual Report
9. Develop and implement a long-term maintenance strategy for public and private stormwater control facilities. This strategy will identify procedures and/or priorities for inventorying, mapping, inspecting, and maintaining facilities.	2010 SWMP	• Track number of private facilities located, mapped, and inspected. • Track progress toward developing a facility long-term maintenance strategy.	• Document and implement a long-term maintenance strategy for public and private stormwater control facilities during the MS4 permit cycle.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
10. Ditch maintenance is performed to assure adequate conveyance, and consists of two components: (1) Ditch Cleaning – Cleaning consists of removal of sediment in the bottom of roadside ditches only as needed for proper conveyance, with limited vegetation disturbance and the use of straw wattles to reduce sedimentation and erosion within the ditch. (2) Ditch Mowing – Mowing is typically conducted by inmate crews using hand-held equipment. Vegetation cutting facilities conveyance and reduces the risk of potential fires in summer months.	2010 SWMP	• Track length of ditch maintenance performed (cleaning and mowing). • Track amount of sediment and debris removed.	• Regularly inspect and maintain 100% of City ditches using appropriate water quality BMPs.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
11. Public catch basins are cleaned on a regular basis with a Vactor truck. During catch basin cleaning activities, inspections are done and repairs are scheduled if needed.	2010 SWMP	• Track the number and percent of catch basins cleaned annually. • Report on any analysis of removed material.	• Clean and inspect 75% of catch basins annually. • Periodically analyze the material removed from the catch basins.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
12. Continue to refine the maintenance program for public and private stormwater detention and water quality facilities. The City maintains an informational packet outlining ownership and maintenance responsibilities and compliance assurance procedures to encourage owners of private detention and water quality systems to perform maintenance. Coordinate with RC 4 Task 9.	2010 SWMP	• Track number of information packets distributed regarding private stormwater control facilities. • Track maintenance requirements of long-term maintenance strategy.	• Maintain informational package for ownership maintenance responsibilities for detention and water quality facilities. • Implement maintenance activities and requirements identified in long-term maintenance strategy (RC4 Task 9).	Low rating for WQ parameters of concerns based on minimal water retention time in detention basin. Fish passage on design criteria for these structures is a main concern in placement and types used. Letter are also sent out to inform the public and private owners about responsibilities and maintenance if their detention basin is in poor condition, thus enhancing community involvement and implementation of the program.	See FY 2013-14 MS4 Annual Report
RC5 - Public Education & Participation					
1. Develop and implement a public outreach and education strategy with goals, objectives, identified target audiences, partners, identified target contaminants, and messaging. Conduct a public education program effectiveness evaluation of outreach procedures/efforts. Adjust the program based on the results in year five. (See Table A.1 – Public Outreach Program Matrix, June 2008).	2010 SWMP	• Document public outreach and involvement activities for two (2) education campaigns. • Document outreach activities for other divisions. • Document the results of the effectiveness evaluation and subsequent changes to the outreach procedures/efforts.	• Create two (2) public education campaigns* from the Public Outreach Program Matrix. • Support outreach and educational activities for other divisions**. • Conduct an effectiveness evaluation of the outreach program before the end of year four of the MS4 permit cycle.	Public information to support the SWMP is highly implemented through public response efforts conducted through the stormwater division and other operations divisions throughout the City. Informing public on SWMP issues does address regulatory requirements, but does not have a direct effect on pollutants by actively removing them. This task is based on public involvement. Public information is a step to increase the involvement of the public and the active removal of pollutants.	See FY 2013-14 MS4 Annual Report
2. Coordinate activities of various groups within the Public Works Department and other City departments assigned responsibility for public outreach and citizen contacts on stormwater matters.	2010 SWMP	• Document quarterly meetings and outcomes.	• Quarterly meetings of various groups assigned responsibility for public outreach and citizen contacts on stormwater matters.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
3. Increase the use of community partnerships to carry out outreach goals.	2010 SWMP	• Document partnerships and outcomes of partnership activities.	• Develop one new partnership per year to carry out outreach goals.	This task also addresses public awareness and education while correlating with other organizations to address issues of common concern. This task supports public involvement and is highly implemented. This task supports efforts to constructively deal with regulations and concerns within the community to give different organizations an understanding of view points.	See FY 2013-14 MS4 Annual Report
4. Investigate the use of a stormwater utility to provide an adequate funding base to support expanded public outreach (see RC6).	2010 SWMP	• Document public education budget and expenditures. • Document Utility implementation plan showing public education and outreach needs.	• Develop a yearly public education budget. • Document public education and outreach needs in the Stormwater Utility Implementation Plan.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
RC6 - Stormwater Management Program Financing					
1. In conjunction with the updated Stormwater Master Plan (RC1-1), review and update the Stormwater System Development Charge (SDC) methodology to address both stormwater quantity and quality.	2010 SWMP	• Report on update to Stormwater SDC methodology.	• Adopt updated Stormwater SDC methodology by the end of the MS4 permit cycle.	Modify system development charges with incentives for pervious surface in order to decrease storm water discharge load. SDCs are implemented city-wide, but review process of SDCs is on a small scale. SDC program methodology has no direct impact on pollutants, but can decrease pollutant loading in storm water discharge in the long run by encouraging pervious surface and decrease urban runoff.	See FY 2013-14 MS4 Annual Report
2. Implement a new stormwater utility capable of generating stormwater fees historically paid for by water and/or sewer utility customers. The new utility will include incentives to encourage users to implement alternative stormwater management practices such as LID.	2010 SWMP	• Report on adoption of new stormwater utility.	• Adopt new stormwater utility by the end of the MS4 permit cycle.	This task fits in as a requirement under the WQMP in order to secure funds for water quality monitoring and sampling. This task does not directly effect pollutants, but could have a decreasing pollutant load effect by encouraging pervious surface through a stormwater utility. This task is not currently implemented, and would effect the public on a city-wide scale.	See FY 2013-14 MS4 Annual Report
3. Identify and pursue grant opportunities for stormwater quality projects, including potential retrofit and LID project opportunities.	2010 SWMP	• Track number of grants applied for each year. • Track number of grants received each year.	• Pursue grant opportunities as staff resources allow.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
RC7 - Maintain & Update GIS System					
1. Continue maintenance of the GIS database and Hansen IMS database. These on-going updates will also reflect completion of any stormwater Master Plan capital improvement projects, new facilities added to the system, potential "hot-spots" for illicit discharges, refinement of data for the existing system, updated information on wetlands, perennial streams, waterways, and floodplain/floodway designations, and information updated on a periodic basis for the City's Urban Growth Boundary. The GIS database will be accessible by City departments for review purposes.	2010 SWMP	• Record maintenance/updates made to database.	• Continue performing database updates annually. • Create record of GIS maintenance activities.	This task is based on updating an information source, therefore; does not directly effect pollutants, regulatory requirements, or require any public involvement. All maintenance activities are updated on an ongoing basis.This task has no direct effect on pollutants, but effects ESA by designating waterways and hydraulic connections where fish are or would be present. The completion of this task would increase the knowledge base of potential impacts for TMDL and methodology for collecting and analyzing data. This information is not updated on a consistent basis.	See FY 2013-14 MS4 Annual Report
2. Integrate the information in the GIS and IMS. The City plans to integrate the data from both the GIS and Hansen IMS databases so that information in the Hansen IMS database can be visualized using the GIS system.	2010 SWMP	• Track completion of action plan items. • Track implementation status of database integration.	• Create an action plan for how the GIS and IMS system will be integrated and updated. • Implement action plan to integrate GIS and IMS.	This task is pursued for 2010. Currently stormwater services attaches a GIS JPEG to Hansen Service Requests and Work Orders. This task is implemented, but has no direct effect on pollutants or regulatory requirements.	See FY 2013-14 MS4 Annual Report
RC8 - City Stormwater Grant Program					
1. Expand matching grant program for watershed protection and preservation to allow for funding of stormwater-related activities, such as promoting water-wise landscaping, reduction of stormwater discharges, restoring riparian areas, stormwater quantity reduction, stormwater quality/treatment, etc.	2010 SWMP	• Maintain a list of grant awards tracking funding and projects.	• Continue to fund $50,000 grant program. • Expand matching grant program for watershed protection. • Promote the grant program in conjunction with RC5 outreach activities.	Grants awarded can greatly impact local water quality and some enhancement projects can greatly reduce the potential erosion and subsequent pollution of surface water bodies. It is expected that community involvement and awareness would increase with an expanded grant program while addressing issues of concern enforced by regulatory programs. Impact of small scale project have limited effect of overall stream temperature. This program only targets stream side property owners limiting its scope of community involvement without much advertisement.Programs that encourage riparian protection and enhancement effect most pollutants by decreasing soil erosion and increase stream bank infiltration, hence increasing the uptake of potential water pollutants. The riparian vegetation also enhances shade area over waterways in turn addressing specific ESA and TMDL parameters. The free tree program is highly implemented and based on public involvement.	See FY 2013-14 MS4 Annual Report
RC9 - Legal/Ordinances					

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
1. In process of revising the Stormwater Management Design Standards (RC 3 Task 1) and developing a stormwater-dedicated chapter to the SRC (RC 9 Task 3), coordinate with Community Development's effort to adopt a Unified Development Code (UDC). It is envisioned that the stormwater dedicated SRC would be integrated into the UDC framework.	2010 SWMP	• Report on progress for adoption of UDC and integration of stormwater-related SRC.	• Adopt the UDC and integrate stormwater-related revisions to the SRC by the end of the MS4 permit cycle.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
2. Continue to enforce the SRC and review and revise it as necessary to reflect the updated Stormwater Management Design Standards that principally focus on requirements associated with on-site water quality facilities for new development or redevelopment (RC3).	2010 SWMP	• Track any MS4 stormwater pertinent revisions made to the SRC.	• Revise SRC (as needed).	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
3. Develop a new SRC chapter dedicated solely to stormwater management. It is currently envisioned that this will be done after the City's renewed MS4 Permit is issued, and in conjunction with implementation of the new stormwater utility and updated Stormwater SDC Methodology (RC6) and the updated Stormwater Master Plan (RC1).	2010 SWMP	• Report on adoption of the new SRC chapter for stormwater, and processes/milestones enroute to formal adoption of the SRC revisions.	• Adopt the new SRC chapter for stormwater by the end of the MS4 permit cycle.	City codes and revisions involve the public for review. This task has the possibility of being implemented on a city wide scale, but is not currently at that level. Pollutants are directly effected with the revision of city codes due to the code focusing on reducing pollutant load and enforcing water quality treatment facilities	See FY 2013-14 MS4 Annual Report
ILL1 - Spill Prevention & Response					
1. Continue to review and refine the existing spill prevention and emergency response program to protect ground and surface water quality. New activities will be proposed and implemented as appropriate, and coordination and cooperation among other relevant agencies and ODOT will be maintained and improved. This review will be coordinated with the de-icing activities of the Airport Operations and their 1200-Z permit, and possibly the Oregon Air National Guard.	2010 SWMP	• Document refinements to cleanup procedures for vehicular accidents and structural fires.	• Continue to implement the spill prevention and emergency response program and review and revise as needed.	Refining spill emergency response plan directly effects spill pollutants by improving the response and clean-up of these pollutants. This task does not require public involvement, but does address regulatory requirements.	See FY 2013-14 MS4 Annual Report
2. Continue to coordinate timely responses to, and clean-up of emergency response sites and structural fires among Fire, Building and Safety, Development Services, and Environmental Services staff. The Fire Department has the lead role for response at emergency response and structural fire sites and all major vehicular accidents. Environmental Services (ES) staff will provide assistance when requested by the on-scene incident commander. One of the ES responsibilities is to make sure that the cleanup activities are conducted in an environmentally sensitive manner.	2010 SWMP	• Track the number and category of spill events responded to, including an estimate of the amount of spilled materials collected and any associated enforcement actions.	• Develop a review schedule with a checklist for the spill response plan.	Spill materials, house fires, and car crashes are factors that are being considered in comparison to polluting factors that this task is addressing. Habitat requirements and spill materials addresses ESA requirements. This task can also be implemented as part of the TMDL Implementation plan as a spill response effort.	See FY 2013-14 MS4 Annual Report

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
3. Continue to conduct daily City vehicle and equipment inspections for leaks and repairs as needed. Staff will review current procedures on an ongoing basis and implement improvements as necessary.	2010 SWMP	• Report revisions to the daily inspection program	• Continue to implement the daily equipment inspection program.	Daily inspections are performed by operator and turned into fleet services daily. This is a cause to reduce runoff pollution by preventative measures. Most polluting factors are not addressed by this task, although regulatory requirements are being addressed by decreasing pollutant loading in a proactive manner. This task is highly implemented.	See FY 2013-14 MS4 Annual Report
4. Develop an updated Operations Pollution Prevention Plan; incorporating new/expanded/relocated Operations-oriented facilities.	2010 SWMP	• Track progress toward updating the Operations Pollution Prevention Plan. • Track implementation of the Operations Pollution Prevention Plan.	• Update the Operations Pollution Prevention Plan by the end of the MS4 permit cycle. • Implement the updated Operations Prevention Plan upon completion.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
ILL2 - Illicit Discharge Elimination Program					
1. Continue to respond to reports of unusual discharges or suspicious water quality conditions within the stormwater system and urban streams. Where able, identify sources/causes and implement appropriate corrective actions. Utilize database to document associated activities.	2010 SWMP	• Track calls and mitigation actions taken in database.	• Respond to reports of illicit discharges and suspicious water quality conditions. • Maintain database to document unusual/suspicious discharges, sources found, and corrective actions taken.	This task directly impacts the discharge of point source pollutants and their effects on water quality. This task is also highly implemented and reports of unusual discharges are recorded into a database for further tracking.	See FY 2013-14 MS4 Annual Report
2. Environmental Services staff will continue inspections of the City's wastewater users, through the pretreatment program, verifying the proper handling and disposal of both wastewater and stormwater.	2010 SWMP	• Track number of inspections and associated findings.	• Inspect City's wastewater users for proper management of wastewater and stormwater.	Inspections help to ensure that proper pollution load reduction methods are being taken for permit holders.	See FY 2013-14 MS4 Annual Report
3. Work with Wastewater Collection Services to identify and correct cross-connections between the sanitary sewer and stormwater systems.	2010 SWMP	• Document number of cross-connections identified and corrective actions taken.	• Review stormwater and ambient stream monitoring data to identify possible cross-connection discharges into the stormwater system. • Maintain communications with Wastewater Collections and other City staff to identify any stream cross connection problems.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
4. Develop and update a storm sewer outfall dry weather inspection and monitoring prioritization plan.	2010 SWMP	• Document review of outfall monitoring plan. • Document priorities established for monitoring and inspection. • Track dry weather inspections conducted and results of inspection.	• Prioritize outfalls for storm sewer outfall inspection and monitoring, and inspect annually. • Coordinate prioritization process with ILL 2 Task 5.	Dry weather discharge sampling being implemented by stormwater services. This sampling is random and identifies pollution sources therefore having no direct effect on pollutants. The sampling is a monitoring process that is in coordination with the TMDL Implementation plan. This task is in the process of being implemented and involves the public if they report or are the cause of a dry weather discharge.	See FY 2013-14 MS4 Annual Report
5. Identify and map contaminated sites in the GIS system. With input from other City departments, identify a list of areas where there either has been a substantial spill or there is the potential for a spill or illicit discharge. These areas are identified based on activities on site, history of problems, or specific industry, for example. These areas will be mapped in the GIS system for use across City departments.	2010 SWMP	• Track number of contaminated sites added to the GIS system.	• Continue to identify and map contaminated sites in the GIS system.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
ILL3 - Illegal Dumping Control Program					
1. Continue to sponsor the Adopt-a-Street Program. The program is an effective way to get residents involved in keeping the community's streets clean and consequently preventing trash and debris from entering the storm drainage system.	2010 SWMP	• Record the miles of adopted streets, number of participating groups, and volume of litter collected through the Adopt-a-Street Program.	• Continue to support the Adopt-a-Street Program.	Adopt-A-Street program decreases the amount of trash on streets that would eventually enter the waterways by encouraging litter pick up. This program is highly implemented and on a citywide scale.	See FY 2013-14 MS4 Annual Report
2. Continue to provide the 24-hour Public Works Dispatch Reporting Center to receive and respond to calls regarding illegal dumping and other environmental complaints/problems and responses thereto. Continue to advertise hotline on City website, utility bill inserts, business cards, public brochures, and consumer confidence reports. As circumstances warrant, publicly report illicit discharges through use of various media outlets.	2010 SWMP	• Record number and types of reported illegal dumping incidents. • Track media outreach when a discharge warrants.	• Continue to operate the 24-hour Public Works Dispatch Reporting Center. • Assign reports to appropriate City staff for action, including actions taken under ILL2-1.	Taking calls and recording illegal dumping incidents does not directly effect pollutants, but is highly implemented. This task is based on public involvement and city residence calling in to report illegal dumping. The follow-up on this task is addressed in ILL-2 task 3.	See FY 2013-14 MS4 Annual Report

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
3. Continue to support the Adopt-a-Stream program, which involves teachers and students in gathering water quality data from streams, thereby providing water resource education to students through experience. The City supports the program by facilitating projects and providing technical assistance and resources.	2010 SWMP	• Maintain a descriptive list of adopt a stream program projects, objectives, outcomes upon completion, and number of participants.	• Continue to support the Adopt-A-Stream Program.	The Adopt-a-Stream program addresses regulatory factors by assisting the City with water quality testing. The program also encourages riparian area enhancement. The restoration projects that are completed through the Adopt-a-Stream program aid in water quality enhancement by increasing infiltration in riparian zones which increases the uptake of nutrients from the waterway and decreasing erosion potential. Increased riparian vegetation also increases shade zones within the streams.	See FY 2013-14 MS4 Annual Report
4. Continue to support Marion County in their efforts to provide convenient alternatives for legal disposal of household hazardous wastes and other recyclable materials.	2010 SWMP	• Document frequency and type of support activities	• Continue to support Marion County in providing alternatives for household hazardous waste disposal.	Offering convenient means for waste disposal has the potential to reduce pollutant loads of certain polluting factors that are commonly found in hazardous waste. This program is based on public involvement and is highly implemented. This program also addresses priority issues in the TMDL Implementation Plan and ESA habitat requirements.	See FY 2013-14 MS4 Annual Report
5. Continue to support the annual yard debris cleanup effort.	2010 SWMP	• Record amount of debris cleaned up and level of participation.	• Support the annual yard debris cleanup effort.	Debris clean-up addresses a few specific polluting factors directly, but in a major way. Regulatory requirements are addressed by directly impacting these polluting factors. This task is implemented and is based on public involvement.	See FY 2013-14 MS4 Annual Report
IND1 - Industrial Stormwater Discharge Program					
1. Environmental Services will inspect stormwater systems while conducting inspections of City-permitted industrial wastewater users, and work with DEQ to coordinate the permitting and compliance processes for industrial users in the Salem area, including DEQ-issued 1200-Z permitted sources, underground storage tank (UST) removal, and site remediation permits issued by DEQ for sources/sites within the City. Coordination options include: receiving information on proposed 1200-Z permits, commenting on proposed permits, and meeting periodically with DEQ on coordination efforts.	2010 SWMP	• Track coordination efforts with DEQ. • Include stormwater observations as appropriate on inspection reports and follow-up actions.	• Inspect stormwater systems while conducting inspections of City-permitted wastewater users. • Develop process to coordinate with DEQ on industrial permits within the City.	Coordinating the permitting process has no direct effect on pollutants. Coordinating with DEQ will assist the City with addressing TMDL issues through permit requirements. New permits are open for public comment.	See FY 2013-14 MS4 Annual Report
2. During plan review, review industrial facilities for the potential of requiring pretreatment of stormwater prior to discharge based on the industrial activities of the specific facility. Conduct inspections of industrial facilities requiring stormwater pretreatment to ensure structural controls have been built according to approved plans.	2010 SWMP	• Maintain database of plans reviewed and final inspections conducted.	• Review industrial plans as necessary for additional stormwater treatment. • Conduct inspections once construction is completed to ensure work was done in accordance with approved plans.	Reviewing plans for stormwater pretreatment addresses regulatory factors by assessing the water quality and level at which the City will allow non-treated discharge to enter the storm system. This task also includes identifying and managing those sources. This influences waste load allocations, critical habitat improvements, and the overall water quality of the storm system. Certain levels of pollutants are addressed with the requirement of pretreatment facilities. This task also requires public involvement.	See FY 2013-14 MS4 Annual Report
3. Surveys are sent to applicable business classes (restaurants, metal finishers/platers, radiator shops, dry cleaners, printing shops, photo processors, etc.) as part of the pretreatment business survey database, part of the industrial pretreatment program for wastewater. Customers will be surveyed on major on-site activities to identify potential locations for public education, future sampling, and tracking down illicit discharges. Illicit stormwater discharges from these business groups are address in ILL2.	2010 SWMP	• Track number of surveys sent out. • Track number of surveys returned and entered into database. • Track targeted public education activities for specific industries.	• Send surveys to new customers as accounts are opened. • Enter survey results into database – on-going as surveys are returned.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
4. Continue the semi-annual Technical Bulletin for the City's industrial users and produce other materials for these users. This activity is principally associated with the City's wastewater Pretreatment Program, but will be used as a vehicle to address stormwater related issues as well.	2010 SWMP	• Track published technical materials prepared for industrial users each year.	• Produce two technical bulletins for industrial users each year.	Impact of technical material provided to user on user behavior is unknown at this time	See FY 2013-14 MS4 Annual Report
CON1 - Construction Site Control Program					
1. Continue implementation of the Erosion Prevention and Sediment Control program for developments that meet or exceed the threshold indicated in SRC Chapter 75, which includes the submission of erosion prevention and sediment control plans with structural and non-structural BMPs. Review program experiences annually and implement improvements as appropriate including Code amendments if needed.	2010 SWMP	• Track number of erosion control plans reviewed for compliance with SRC 75.	• Implement SRC 75. • Conduct annual program reviews. • Implement appropriate improvements and/or Code amendments. • Perform plan reviews for erosion control requirements.	Implementing SRC 75 addresses pollution reduction for those pollutants associated with sediment loads and erosion. This task also addresses TMDL with sediment pollution load reduction strategies. This task is implemented , but enforcement actions are minimal. DEQ 1200-C coordination could be better. This task does not involve the public.	See FY 2013-14 MS4 Annual Report

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
2. Continue to train and educate City staff and private contractors about stormwater pollution at construction sites, with an emphasis on prevention and control BMPs. Provide notice to construction site operators concerning where education and training to meet erosion and sediment control requirements can be obtained.	2010 SWMP	• Track education and training programs conducted and number of staff/public trained.	• Provide annual erosion control training to City staff and private contractors.	This task does not directly effect pollutants, but addresses the educational component of the TMDL Implementation. Educating city staff allows for further education of the public and a smarter work force.	See FY 2013-14 MS4 Annual Report
3. Document and streamline site plan review, inspection, and enforcement procedures for the construction site runoff control program.	2010 SWMP	• Track completion of documented procedures.	• Complete documentation of site plan review, inspection, and enforcement procedures before the end of year four of the MS4 permit cycle.	NPDES MS4 Permit	See FY 2013-14 MS4 Annual Report
4. Continue to review and update the Erosion Prevention and Sediment Control Technical Guidance Handbook.	2010 SWMP	• Track updates made to the Technical Guidance Handbook.	• Update Technical Guidance Handbook before the end of year four of the MS4 permit cycle.	The Technical Guidance Handbook addresses pollution reduction by means of standards set forth within the guidebook. Setting standards for pollution reduction methods addresses TMDL . This task is implemented and involves the public on a limited scale.	See FY 2013-14 MS4 Annual Report
5. Continue to coordinate with the City's 1200-CA Permit for City construction projects subject to its program.	2010 SWMP	• Track renewal of 1200-CA permit.	• Requirements for 1200-CA compliance incorporated into City construction plans, specifications, and contract documents. • Make erosion prevention and sediment control a key agenda item at all pre-construction conferences. • Include inspection of all site erosion prevention and sediment control measures as part of City projects.	Compliance of the permit requires pollution reduction within the permit's jurisdiction. TMDL is addressed by complying with the permit standards in order to address pollution load reductions. The standards are not always met when the city is permitted by the 1200-CA permit.	See FY 2013-14 MS4 Annual Report
MON1 - Monitoring					
1. Continue to install and maintain flow and water quality monitoring stations in City waterways to support selection of capital improvement projects, update the hydrologic-hydraulic computer model, and help direct policies to protect the health of these water bodies. The actual rate of installation and the total number of stations will be based on the maintenance requirements of the stations, available funding, and coordination with urban watershed assessments/plans.	2010 SWMP	• Track number of additional monitoring stations implemented.	• Install additional monitoring stations. • Monitor the station alarms in conjunction with the illicit discharge control program (ILL2, Task 1). • Follow up on potential hotspots or problem areas as may be identified through data analyses.	Monitoring water quality has no impact on it, but is essential for establishing baseline condition, in forming benchmarks and recording if progress is being made towards meeting those benchmarks.	See FY 2013-14 MS4 Annual Report
2. Continue the urban stream and Willamette River water quality sampling program, with emphasis on reviewing and evaluating sampling data to prioritize investigations and improvement/maintenance projects. This sampling augments the monitoring plan included in the City's 2008 NPDES MS4 Permit Renewal application.	2010 SWMP	• Document findings regarding trends.	• Update database for collected data. • Review collected data for purposes of trending and benchmarking by the end of the permit term. • Follow-up on potential hotspots or problem areas as may be identified by the data review.	Sampling does not directly affect the outlined pollutants, but does address critical measures enforced by the TMDL. Implementation and community involvement of this procedure continue to increase with participation of community organizations to take part in sampling and the increasing improvements in our sapling technique and materials. Cooperation with North Salem HS for data gathering.	See FY 2013-14 MS4 Annual Report
3. Continue to implement all components (MS4 outfall, instream, pesticide, and macro-invertebrate) of the City's "Surface Water and Stormwater Monitoring Plan."	2010 SWMP	• Provide summary statistics for sampling results from each wet-weather season. • Track any modifications to the monitoring plan.	• Implement the City's Stormwater Monitoring Plan, including MS4 outfall, instream, pesticide, and macro-invertebrate monitoring components	Bioassessments quantify the amount of pollutants found, but have no direct impact on the pollutant load of the area. Pringle Creek Watershed Bioassessment is still in the process of completion, therefore no other bioassessments have been implemented. We are not currently in the position to prioritize watershed basins for assessments.	See FY 2013-14 MS4 Annual Report
NPDES Wastewater Permit					
WW1. Complete the new River Road Wet Weather Treatment Facility.	NPDES Wastewater Discharge Permit	Construction Completed and Facilities Operational	Completed November 2008	Compliance with Willow Lake NPDES Permit and MAO	Completed November 2008
WW2. Increase the Willow Lake WPCF hydraulic capacity from 105 to 155 MGD maximum wet weather flow.	NPDES Wastewater Discharge Permit	Construction Completed and Facilities Operational	Completed November 2009	Compliance with Willow Lake NPDES Permit and MAO	Completed November 2009
WW3. Maintain compliance with the NPDES Permit and MAO for the Willow Lake WPCF.	NPDES Wastewater Discharge Permit	Monthly Discharge Monitoring Report (DMR) Submitted to the DEQ	On-going and December 31, 2009	Compliance with Willow Lake NPDES Permit and MAO	The City's obligation under MAO No. WQ/M-WR-97-147 has been fulfilled and the MAO was terminated on March 1, 2012.

TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
WW4. Submit the annual Collection System Report to the DEQ.	NPDES Wastewater Discharge Permit	Annual Report Submitted to the DEQ	Annually - November 1st	Compliance with Willow Lake NPDES Permit and MAO	Submitted August 2, 2013
WW5. Update the Wastewater Master Plan and Willow Lake WPCF Facilities Plan.	NPDES Wastewater Discharge Permit	Adopted Master Plan	Incorporate wastewater projects into 5-year CIP Plan	Needed to Reflect Completed CIP Projects and Success at Reducing SSOs.	On-going
WW6. Collect Willow Lake WPCF influent and effluent mercury concentration data monthly, and twice a year low-level analytical data of the influent and effluent concentrations for total and methyl mercury.	NPDES Wastewater Discharge Permit	Sampling Results reported in Monthly Discharge Monitoring Report (DMR)	On-going	Compliance with Willow Lake NPDES Permit and MAO	On-going
Non-point					
NP1. Assess Salem tree canopy, conduct a riparian shade analysis, and identify priority areas which are heat sink locations.	Riparian plan	Completed Shade Inventory Completed Canopy Study Completed Riparian Shade Prioritization	Shade Inventory occurred in FY 08/09. Riparian Shade Prioritization and Tree Canopy Study completed in FY 10/11.	No actual reduction in temperature loading takes place through these activities, but activities set up site specific locations for future temperature-related projects.	Completed Riparian Outreach Strategic Plan in FY 2012-13. Data from Riparian Shade Inventory used to identify targeted area for riparian planting in FY 2012-13. Location to be planted in FY 2013-14.
NP2. Temperature reduction incentives plan, using locations identified in the shade prioritization study in 10-12, target neighborhoods using various pre-existing programs and funds, including free tree, the watershed protection grant, OWEB grants, and Oregon 319 grants.	Riparian plan	Use of prioritization in incentive plan and targeted projects.	Target native riparian plantings by FY12-13 and ongoing based on prioritization.Promote riparian restoration and plantings through Watershed Protection and Preservation Grant Program.	Without the shade analysis study done it is unknown the impact current City programs have on temperature loading in the city streams	See BMP RC 8-1 of MS4 Annual Report for a list of FY 2012-13 projects that received funding through the City's Watershed Protection & Preservation Grant Program. Shade Inventory/Prioritization was used to target priority taxlots for riparian planting in FY 2013-14 (Clark Creek Park and adjacent taxlots) and will be used in FY 2014-15 prioritization. Funds for targeted riparian planting were previously allocated to citywide "Free Tree Program".
NP3. Look for opportunities to incorporate riparian restoration when conducting City CIP projects, and pursue acquisition of easements on riparian lands both on and near CIP sites.	Non-point (Temperature CIP Plan)	Document number of easements and restoration activities conducted within the CIP process, number and mapping of properties acquired.	Easement acquisition shall occur on an individual project by project basis.	Conservation and restoration of riparian areas has a solid well documented improvement on water quality, however scores assigned to individual parameters are lower than typically reported due to the City being reactive to builders and building project, and not having funding for City implementation for proactive plan in either CIP processes or private building sector.	Easement prioritization and acquisition will follow completion of Retrofit Plan and Hydromodifcaion Assessment required under current NPDES MS4 Permit.
NP4. Assess and address target audiences with public education efforts; cooperate with others to leverage resources.	Non-Point	Update list of stakeholders and target groups, including relation to stormwater program.	Check permit	Public education efforts does not directly effect pollutants, but does assist in addressing polluting sources and reducing water quality polluting factors within the city.	A five-year outreach plan was completed in FY 2012-13 that includes options for addressing targeted pollutants (E. coli and turbidity). Annual "Mid-Willamette Valley Erosion Control Summit" and "Howl-a-Palooza" are City sponsored events that engage targeted audiences. Targeted outreach in FY 2013-14 to streamside residents (upstream and downstream of Clark Creek Park) based on Shade Inventory.

TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
NP5. Creatively use a combination of publications, media and other appropriate public information tools to support and implement the Stormwater Management Program. Coordinate with the public information activities of related programs and allied agencies. Where appropriate, utilize cooperative public information opportunities. Much of this effort will be a product of other BMPs from this Stormwater Management Plan, but should consider the following areas: *Erosion and sediment control (one for general use, one for engineers-developers-contractors, and one for City staff – especially construction inspectors) *Water quality facilities and best management practices (general use and engineers-developers-contractors) *Stream and riparian restoration, including fish issues, the Endangered Species Act, and water quality (temperature) *Wetlands for both habitat and water quality management *Stormwater system maintenance *Chemical use reduction (fertilizers and pesticides)	Non-Point	List of materials and methods used for public information; list of cooperative programs and agencies used by the City.	On-going	Public information to support the SWMP is highly implemented through public response efforts conducted through the stormwater division and other operations divisions throughout the City. Informing public on SWMP issues does address regulatory requirements, but does not have a direct effect on pollutants by actively removing them. This task is based on public involvement. Public information is a step to increase the involvement of the public and the active removal of pollutants.	See RC5 of the MS4 Annual Report (Public Education and Participation).
NP6. Participate in watershed council and neighborhood association meetings; assist local citizens groups.	Non-Point	List of relative requests and follow up action items	On-going	This task also addresses public awareness and education while correlating with other organizations to address issues of common concern. This task supports public involvement and is highly implemented. This task supports efforts to constructively deal with regulations and concerns within the community to give different organizations an understanding of view points.	See RC1 (Planning)Task 5 of the MS4 Annual Report.
NP7. Distribute an updated "perceptionnaire" (Your Opinion Please) to the public via mail, personal contact, urban watershed workshops, and the City's Internet site. An updated perceptionnaire will be developed and targeted for distribution during fiscal year 2005 - 06.	Non-Point	Survey results/indications	Once per permit term.	The development of a public response/feedback form about various resources within the City of Salem's departments would be a great way to gain insight on the overall opinion of the public and the City's response to their needs and concerns. This task does not directly effect pollutants or regulatory factors, but does increase involvement within the community and allows the City to gain further information on public contact methods that could be improved and gain an overall understanding of the public's general perception.	A survey for streamside residents requesting information about pollution prevention behaviors was created and mailed during FY 2011-12. Nother survey of Salem residents is anticipated to be conducted in FY 2014-15.
NP8. Continue to regularly maintain the Water Resources website. Website topics include: Natural resources issues (landslide hazards, wetlands, fish and the Endangered Species Act, trees, and native plants), outreach educational programs, topical news, and current events. Water Resources staff will maintain the website, with stormwater quality items and community feedback opportunities being regular features.	Non-Point	List of website updates and number of "hits."	DELETE TASK: The City of Salem changed to a unified website that does not track website hits. This performance indicator is no longer valid.	Website maintenance does not directly effect pollutants or regulatory requirements, but does involve the public and is highly implemented.	Water Resources Section no longer exists. Recommended for modification/deletion.
NP9. Review consistency of public education / participation program goals and objectives against the Stormwater Master Plan and BMPs set forth in the revised Stormwater Management Plan.	Non-point	Education and participation addressing goals and objectives of Master Plan and Management Plan.	Annually	Reviewing goals of public education/participation objectives does not directly effect pollutants. The review of BMP objectives is important to consider when providing public education and addressing stormwater concerns within the City. The public is not involved in the review process, but is effected by it. BMP objectives are related to regulatory requirements, therefore; regulating factors are addressed in the review process of BMPs when considering public education.	The public education and public participation program is defined by the new MS4 Permit and associated Stormwater Management Plan, not the Stormwater Master Plan.
NP10. Continue to coordinate with City departments and educate the public regarding trees, consistent with Chapters 68, 86, and 132, and new stormwater and erosion control codes of the Salem Revised Code (SRC).	Non-point	Development of outreach and education plan for trees	Coordination began FY 2009-10, and will be ongoing. Development of outreach and education plan to begin FY 2010/11	Preservation of urban trees aids in water quality and quantity treatment of stormwater runoff and reduces erosion while enhancing habitat. Response to the public about tree concerns is implemented citywide.	Ongoing

TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
NP11. City Pet Waste Program, continue to work with public and interested parties to reduce dog waste, including presentations about dog fecal disposal during Take the pledge presentations, Bark in the Park, and installation of mutt mitt stations in city parks	Non-Point (Bacterial Education Sections)	Development of program and number of groups included with distribution of program material, number of bags equipped and stations installed, and number of park patrol volunteers participating in the program. Types and number of information dissemination.	Campaign was held in FY 08/09, and limited in 09/10. Targeted pet waste campaign re-initiated in FY 11/12.	It is recognized that this program results in actual reduction in fecal matter waste streams in Salem park areas, therefore warranting a 2 rating on bacterial reduction, it was however not given a greater reduction value because it is unknown at this time effectiveness of volunteer effort in lbs of reduction and removal of Fecal matter, as information of program increases and implementation expands this will increase values of bacterial reduction.	See RC 5 (Public Education and Participation) Task 1 of the MS4 Annual Report.
NP12. Review city code conditions, and other regional examples to determine if an Animal Waste Ordinance is needed and whether it would provide benefit	Non-Point (Bacterial Education Sections)	Determine if code is necessary and/or politically feasible	FY 2010-11	It is unknown the effect a City ordinance would have on bacterial loads with in the city.	No current need has been identified.
NP13. Public mercury educational program, collaborate with local partners by promoting take back programs already operating in area for mercury containing items	Non-point (Mercury, public sector)	Promotion of mercury take back opportunities and events with Marion County.	On-going	Marion County is the leading local agency regarding mercury take back. The City will assist with promoting activities. City currently does not actively have a program schedule for promoting take back program and does not currently have drop off sites thus at this time the mercury waster load is not being reduced by this city activity	The Salem-Keizer Recycling & Transfer Station now takes CFLs 7 days/week excluding major holidays. The hours improve recycling opportunities and convenience, and reduce the need to hold collection events. The City participates in advertising that the facility now accepts CFLs from residents during business hours.
NP14. Internal City operational mercury reduction program, review and update and ensure Standard Operating Procedures for material replacement and waste containing mercury is done properly	Non-point (Mercury , internal)	Reduction strategies identified and implemented. Coordinate with Tye and Don.	Review of current mercury reduction strategies in City Operations FY 2010-11, particularly fleet and facilities. Implementation of mercury reduction strategies --ongoing	Proper handling and disposal of mercury - containing items ensures, that HG is not improperly disposed.	Fleet Services follows all pertinent laws regarding proper disposal of mercury switches found in older vehicles; Facilities collects, packages, and stores CFLs, then contacts Environmental Services to dispatch pickup by City's contracted Hazardous Waste hauler.
NP15. Work closely with Marion County staff on mercury reduction programs. Distribute water and sewer bill inserts, and participate in compact fluorescent light take back program.	Non-Point	Number of inserts distributed. Number of CFLs Recycled.	On-going	Compliance with Mercury TMDL	On-going
NP16. Environmental Services will track new dentists through the building permit process and will verify sites for amalgam separator installations and good mercury housekeeping practices; visit with all of the community's identified, existing dentists and provide compliance certifications to ODA	Non-Point	Number of dentists contacted. Number of Amalgam Separators Installed and Certified. Pounds of Mercury Collected Annually.	On-going	Compliance with Mercury TMDL	On-going
E. Coli outreach tasks	Non-Point	Will vary based on program elements, but can include measures such as: number of Mutt Mitts in Parks replenished annually; number of participants in public involvement; number of responses to promotions; number of partners sharing our message; survey of pet owners.	On-going	Compliance with Bacteria TMDL	See individual BMPs listed under RC5 (Public Education and Participation) of the MS4 Annual Report.
Mercury outreach tasks	Non-Point	Will vary based on program elements, but can include measures such as: number of retailers in Salem-Keizer that participate in a Take-Back CFLs program; erosion outreach plan development; increase in minimum buffer width; number of promotions for mercury take-back; number of riparian plants planted, including ground cover; number of dentists receiving fact sheets or information packets.	On-going	Compliance with Mercury TMDL	

TMDL Implementation Plan BMP Progress Matrix for the Willamette Basin and Molalla/Pudding Subbasin

Best Management Practices and Tasks	BMP Source	Tracking Measures	Measurable Goals	Justifications: Explanation of Key Points in Analysis of BMP	Status/Reporting Summary (Through June 30, 2014)
Temperature outreach tasks	Non-Point	Will vary based on program elements, but can include measures such as: number of trees and shrubs planted; number of site plans developed and planted; number of milestones of Elements of the Riparian Action Plan Enacted.	On-going	Compliance with Temperature TMDL	

Appendix B

NPDES MS4 Annual Report (FY 2013-14)

CITY OF SALEM, OREGON

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT

(Permit Number 101513, File Number 108919)

ANNUAL REPORT
FY 2013-14

October 28, 2014

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Francis Kessler, Operations Division Manager

10/30/14

Date

Prepared by
City of Salem Public Works Department

CITY OF Salem AT YOUR SERVICE

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ACWA	Association of Clean Water Agencies
BMP	Best Management Practice
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
COE	U.S. Army Corps of Engineers
CON	Construction-related BMPs
DEQ	Oregon Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
EPSC	Erosion Prevention and Sediment Control
ES	Environmental Services (City of Salem)
FEMA	Federal Emergency Management Act
GIS	Geographic Information System
IDEP	Illicit Discharge Elimination Program
IGA	Inter-governmental Agreement
ILL	Illicit discharge-related BMPs
IND	Industrial-related BMPs
MEP	Maximum Extent Practicable
mg/L	Milligrams per liter
MOA	Memorandum of Agreement
MS4	Municipal Separate Storm Sewer System
MWOG	Mid-Willamette Valley Outreach Group
ODA	Oregon Department of Agriculture
ODOT	Oregon Department of Transportation
ppm	Parts per million
RC	Residential and commercial area-related BMPs
SDC	System Development Charge
SRC	Salem Revised Code
SSORP	Sanitary Sewer Overflow Response Plan
SWMP	Stormwater Management Plan
TMDL	Total Maximum Daily Load

1 INTRODUCTION

1.1 Background

In 1990, the United States Environmental Protection Agency (EPA) published its Phase I regulations governing stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program of the Clean Water Act. In Oregon, EPA has delegated the permitting of NPDES municipal separate storm sewer system (MS4) discharges to the Oregon Department of Environmental Quality (DEQ).

Under EPA's initial Phase I implementation of the program, municipalities having a population greater than 100,000 were required to obtain an NPDES MS4 Permit. The City of Salem (the City) passed that threshold with the 1990 Census and was included in the program by the DEQ, with the Oregon Department of Transportation (ODOT) originally designated as a co-permittee with Salem.

The regulations established a two-part application process for obtaining an NPDES Permit to discharge municipal stormwater to "waters of the state." The City submitted the Part 1 NPDES Stormwater Permit Application in April 1994. The supplemental Part 2 Application and associated Stormwater Management Plan (SWMP) were subsequently finalized and submitted to DEQ in July 1996. DEQ issued the City's initial MS4 Permit in December 1997, with an expiration date of September 2002.

In April 2002, the City submitted an application for renewal of its NPDES MS4 Permit, along with a revised SWMP that outlined the City's stormwater management efforts for the next five-year permit period. The DEQ issued the renewed MS4 permit in March 2004. In accordance with that permit's conditions, the City evaluated and updated the SWMP in conjunction with the 2nd Annual Report submitted to DEQ on November 1, 2005. The 2004 MS4 permit (and updated 2005 SWMP) expired on February 28, 2009, and was administratively extended by the DEQ.

The City submitted its NPDES MS4 permit renewal application to DEQ on September 2, 2008. Along with other required documents for the permit renewal process, the application included a revised SWMP. This SWMP (2008 SWMP) was developed in part using the EPA document *Municipal Separate Storm Sewer System Program Evaluation Guidance* (January 2008), followed by continued evaluation and revision of the 2005 SWMP. Following permit negotiations, this updated SWMP was further revised and submitted to the DEQ on August 13, 2010.

The City of Salem received a renewed MS4 permit on December 30, 2010. Consistent with requirements of Schedule D.6 of the renewed MS4 permit, the City re-submitted the SWMP (revised 2010 SWMP) to the DEQ on March 17, 2011. This Annual Report (FY 2013-14) describes the status of BMP-related activities in the 2010 SWMP. The renewed MS4 permit and revised 2010 SWMP are available on the City's website (www.cityofsalem.net).

The Environmental Protection Agency (EPA) conducted an inspection of the City's MS4 and SWMP from July 31, 2012, through August 2, 2012, to assess compliance with the NPDES MS4 Permit. The results of the audit were released during the FY 2013-14 reporting period, and indicated that the City was deficient in meeting its construction site runoff control requirements. An EPA Administrative Compliance Order by Consent (Consent Order) was issued for the City of Salem to: 1) develop and document its construction site plan review procedures; 2) develop and document inspection procedures for construction sites; and 3) submit a separate report of all construction site inspections annually through the expiration of the current MS4 permit. The City remedied the deficiencies in its construction site erosion control program within 90 days of the Consent Order, submitted its first annual construction site inspection report on November 1, 2013, and continues to meet the requirements of the NPDES MS4 Permit and the EPA Consent Order.

1.2 Purpose and Scope

The MS4 permit area is defined as being within the current City Limits, as exhibited in Figure 1. Land use within this permit area is exhibited in Figure 2.

This NPDES MS4 Annual Report summarizes stormwater-related activities listed in the 2010 SWMP that were completed during the period of July 1, 2013, through June 30, 2014, as required by the City's current MS4 permit. The information presented in this report is based on the requirements listed in Schedule B.5 of the renewed MS4 Permit (see Table 1).

Table 1. Annual Reporting Requirements for the MS4 Permit		
Permit Section	**Reporting Requirement**	**Location in Annual Report**
B(5)(a)	The status of implementing the stormwater management program and each SWMP program element, including progress in meeting the measurable goals identified in the SWMP.	Section 2
B(5)(b)	Status or results, or both, of any public education program effectiveness evaluation conducted during the reporting year and a summary of how the results were or will be used for adaptive management.	Section 2 (RC 5-1), Appendix B
B(5)(c)	A summary of the adaptive management process implementation during the reporting year, including any proposed changes to the stormwater management program (e.g., new BMPs) identified through implementation of the adaptive management process.	Section 1.3
B(5)(d)	Any proposed changes to SWMP program elements that are designed to reduce TMDL pollutants.	Section 1.3
B(5)(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
B(5)(f)	A summary of monitoring program results, including monitoring data that are accumulated throughout the reporting year and/or assessments or evaluations.	Section 2 (MON 1-1, 1-2, and 1-3), Appendix B
B(5)(g)	Any proposed modifications to the monitoring plan that are necessary to ensure that adequate data and information are collected to conduct stormwater program assessments.	Appendix C
B(5)(h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs, including results of ongoing field screening and follow-up activities related to illicit discharges.	Section 2 (ILL 2-4), Section 4, Appendix A, Appendix B, Appendix C
B(5)(i)	An overview, as related to MS4 discharges, of concept planning, land use changes and new development activities that occurred within the Urban Growth Boundary (UGB) expansion areas during the reporting year, and those forecast for the following year including the number of new post-construction permits issued, and the estimate of the total new or replaced impervious surface area related to new development and redevelopment projects commenced during the reporting year.	Section 5
B(5)(j)	Results of ongoing field screening and follow-up activities related to illicit discharges.	Section 2 (ILL 2-4), Appendix B

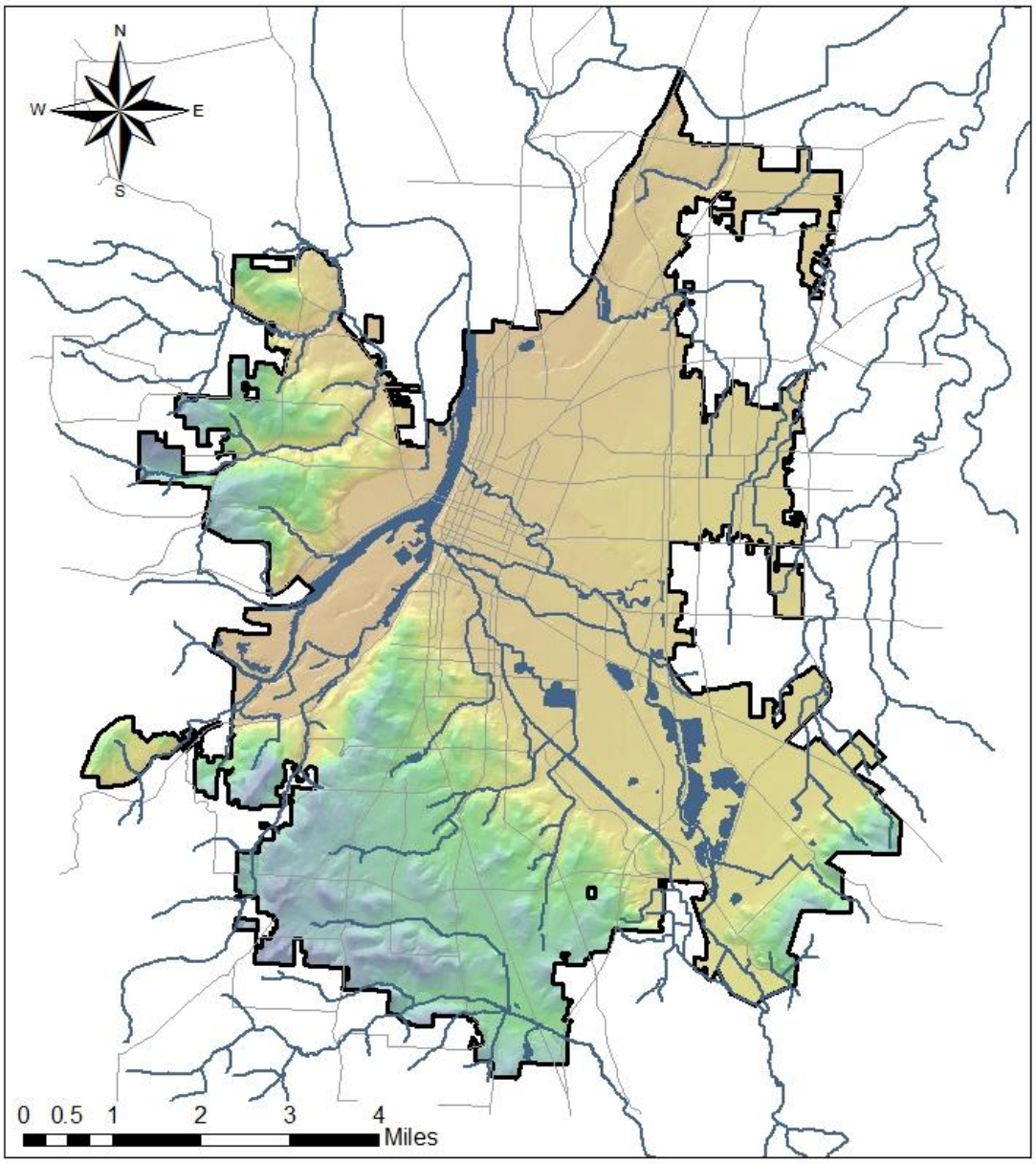
1.3 Adaptive Management

The stormwater management program that is described in the City of Salem's current SWMP is the result of adaptively managing (e.g., implementing, evaluating, and adjusting) the program since first being issued an MS4 permit in 1997. The history of this adaptive management approach may be found in Section 2 of the City of Salem's "National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit Renewal (September 2, 2008)," and describes how the current DEQ-approved SWMP meets the 'maximum extent practicable' requirement. By adaptively managing its stormwater management program, the City of Salem continues to reduce the discharge of pollutants from its stormwater system.

Consistent with Schedule D.4 of the renewed MS4 permit, City staff submitted an "Adaptive Management Approach" to the DEQ on October 24, 2011, that will be adhered to through expiration of the MS4 permit on December 29, 2015. This approach involves both an annual review of BMP activities and collected data, as well as a comprehensive assessment of BMP activities in preparation for MS4 permit renewal.

In preparation of this annual report and as described in the Adaptive Management Approach, City staff were asked to consider if changes in BMP activities were anticipated in the next fiscal year (FY 2014-15) Staff reported on activities likely to support a number of specific BMP measurable goals and MS4 requirements. Based on staff feedback, there are no specific changes proposed to the existing BMPs in the current SWMP at this time.

Figure 1. Permit Area Map



Legend

City Limit/MS4 Permit Boundary

City Limits

Waterbodies

Major Roadways

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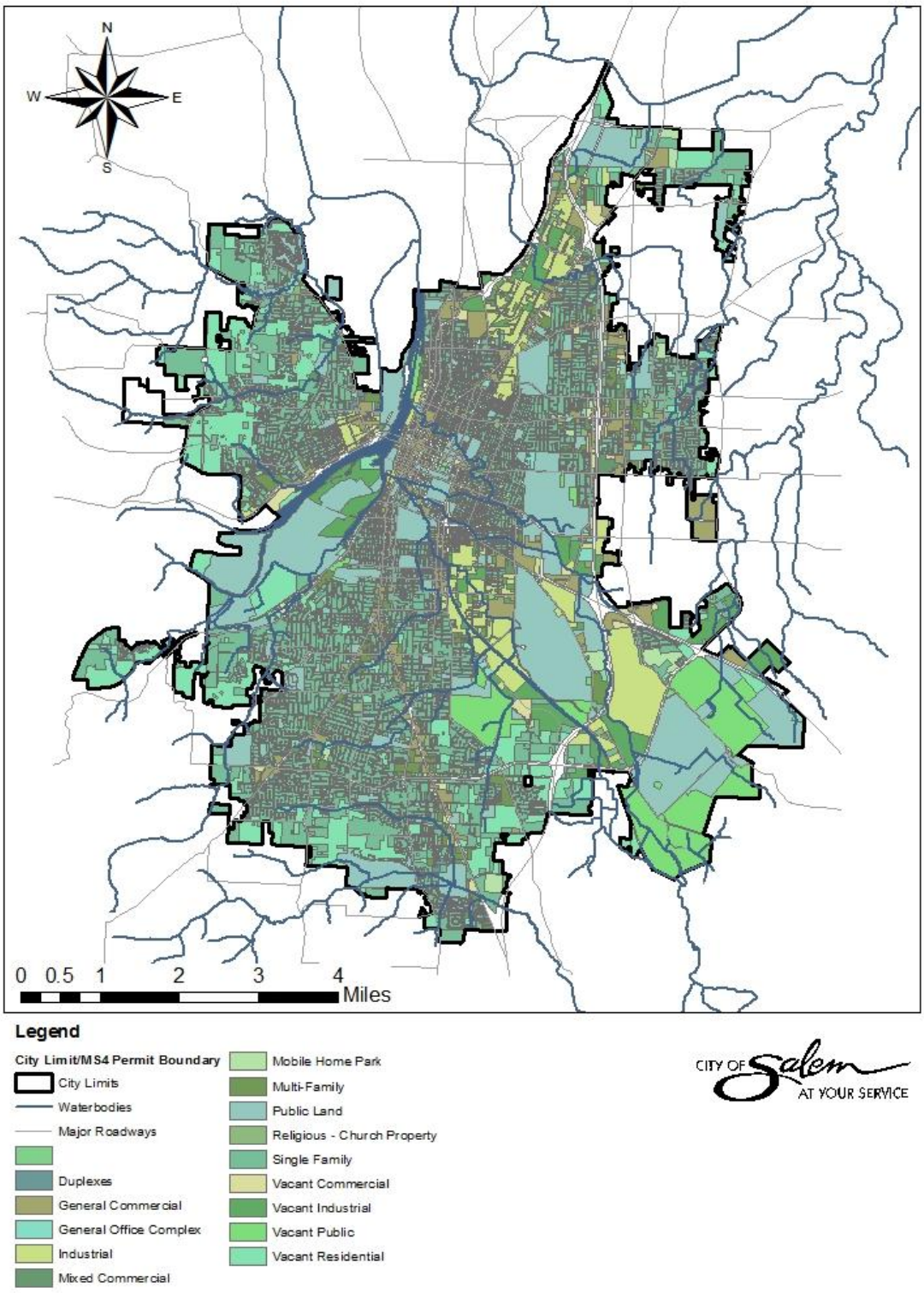
Figure 2. Land Use



2 STATUS OF THE STORMWATER MANAGEMENT PLAN

The primary objective of the SWMP is to provide an outline of City activities that will satisfy the NPDES Phase I stormwater regulatory requirements (the MS4 permit) [40 CFR 122.26(d)(2)(iv)]. The intent of the regulations is to allow each permittee the opportunity to design a stormwater management program tailored to suit the individual and unique needs and conditions of the permit area, and reduce the discharge of pollutants from the stormwater sewer system to the maximum extent practicable.

The status of BMP activities listed in the 2010 SWMP is discussed in this section of the Annual Report. BMPs within the SWMP have been categorized into five types:

1. Structural and source controls for residential and commercial areas (RC);
2. A program for the control of illicit discharges and improper disposal into the storm drainage system (ILL);
3. A program to monitor and control pollutants from industrial facilities, hazardous waste treatment, storage and disposal facilities, and municipal landfills (IND);
4. A program to implement and maintain structural and non-structural BMPs to reduce pollutants from construction sites (CON); and
5. A program to conduct water quality monitoring activities within the MS4 drainage system and City waterways (MON).
6. Each BMP identified in the 2010 SWMP is discussed in this report with the following information:
    - A table describing BMP tasks, associated measurable goals, and tracking measures as stated in the 2010 SWMP.
    - A summary of activities completed during fiscal year 2013-2014 (July 1, 2013 through June 30, 2014) that demonstrate progress toward meeting the measurable goals and tracking measures.

2.1 RC1 – Planning

RC1 – PLANNING, TASK 1

Task Description	Measurable Goals	Tracking Measures
Provide City-wide Master Planning for stormwater to address both water quality and water quantity. As part of master planning efforts, continue to evaluate new detention and water quality opportunities within the Urban Growth Boundary (UGB), and consider sites in upstream areas that may affect Salem, and in downstream areas that may be affected by runoff from Salem.	• Maintain Master Plan and complete next update within the MS4 permit cycle.	• Track schedule for updating Master Plan. • Report on Master Plan update actions.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

After a very competitive process, a consultant team was selected in early June 2014, to support the project to update the City's 2000 Stormwater Master Plan. The project was formally kicked off on June 30, 2014, with a meeting of City staff and the consultant team. Data and information to support basin planning are being gathered and the drafting of the updated plan has commenced. The updated Master Plan will include new basin plans for Battle Creek, Pringle Creek, and Mill Creek. The basin plans for the remaining creek basins will be updated over time, with the initial plans largely based on the Drainage System Improvement Plans from the 2000 Stormwater Master Plan. The Citywide Stormwater Master Plan is scheduled to be completed before the end of the current MS4 permit cycle.

RC1 – PLANNING, TASK 2

Task Description	Measurable Goals	Tracking Measures
Develop and maintain watershed management plans by developing a prioritized schedule and implementing watershed management plans based on available funding. Develop the Pilot Pringle Creek Watershed Management Plan as a model for the City's other prioritized urban watersheds. Identify capital improvement needs and potential "early action" activities and projects to ensure that the plan has a strong implementation component.	• Complete a hydromodification study and retrofit plan by November 1, 2014. • Incorporate recommendations and early action items of watershed management plans with completion of hydromodification study and retrofit plan. • Develop strategy for completing future watershed management plans by November 1, 2014.	• Report on completion of hydromodification study. • Report on completion of retrofit plan. • Track implementation actions of Pringle Creek Watershed Management Plan. • Report on strategy for completing future watershed management plans.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

In January 2013, ESA submitted the Phase 1 Hydromodification Assessment Final Report to the City of Salem, which: 1) provided an overview of hydromodification processes; 2) detailed data sources and methods; 3) presented the landscape context for the City's streams; 4) provided results at a landscape-scale analysis regarding the extent of land use changes that can influence rainfall-runoff relationships; 5) provided results of a rapid channel reconnaissance and other channel data collection that identifies existing status and trends of channel condition throughout the City of Salem; and 6) concluded with an overall summary of conditions and discussion of implications for potential strategies and approaches to address hydromodification.

In April 2013, ESA was awarded the contract for Phase 2 of the Hydromodification Assessment, which focuses on applying the outcomes from Phase 1 to the development of strategies to address hydromodification. The components in the Phase 2 scope of work, which was completed during the reporting period included, among other things: 1) technical memo that reviewed existing City documents and regional approaches; 2) analysis of impacts of continuous modeling; 3) field work for a sediment transport analysis; and 4) modeling and calculations for the 95th percentile rainfall event. A joint presentation on Salem's hydromodification assessment was given by ESA and City Stormwater Staff at the 2014 American Public Works Association (APWA) Oregon Chapter Spring Conference. A second presentation by the same individuals is planned for the 2014 StormCon in Portland, Oregon on August 5, 2014.

Findings and strategies resulting from the hydromodification study will be used to: 1) develop an in-stream hydromodification monitoring plan that the annual stream cleaning crew can implement; 2) inform an in-stream flow channel stabilization strategy; 3) inform selection criteria of stormwater treatment retrofit projects; and 4) guide the development of drainage basin plans as part of the City's stormwater master plan.

Future tasks, which will be completed prior to November 1, include: 1) the completion of a hydromodification executive summary; 2) the completion of a hydromodification monitoring plan; and 3) posting of the hydromodification assessment to the City's public website.

The City has made progress toward developing a stormwater retrofit strategy, with the formation of a stormwater retrofit team consisting of representatives from the City's Engineering, Stormwater O&M, Stormwater Quality, and Public Works Operations sections. They are using guidance from the Center for Watershed Protection's Urban Stormwater Retrofit Practices Manual for developing the strategy. Preliminary GIS desktop analysis and field reconnaissance of possible retrofit locations were completed during the reporting period as part of the process for identifying a stormwater retrofit project that targets bacteria. They plan to meet regularly throughout the next fiscal year to develop a robust stormwater retrofit plan that will be submitted to the DEQ by November 1, 2014.

Future watershed management plans are to be developed through the updated Stormwater Master Planning basin plan process. The updated Master Plan will include new basin plans for Battle Creek, Pringle Creek, and Mill Creek by the end of the permit term. Basin plans for the remaining creek basins will be updated over time, with the initial plans largely based on the Drainage System Improvement Plans from the 2000 Stormwater Master Plan.

RC1 – PLANNING, TASK 3

Task Description	Measurable Goals	Tracking Measures
City staff will continue to update the official "waterways" map for use by City staff in applying various regulations and standards. As studies are performed that warrant the revision of the designated waterways, including groundtruthing, that information will be incorporated into the update process.	• Compile database of maps and waterways references. • Complete field groundtruthing by end of FY 2011-12. • Update map by end of FY 2012-13.	• Track completion of groundtruthing and map updates.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Minor edits were made to the waterways data during this reporting period as errors were brought to the attention of GIS staff. At this time, no additional errors are known to exist. This activity has been completed.

RC1 – PLANNING, TASK 4

Task Description	Measurable Goals	Tracking Measures
City staff will meet a minimum of once per year to discuss coordination of efforts relating to stormwater. Topics may include the following, as they are applicable: grant funding, outreach, program review, annual report, monitoring, sharing of data, adaptive management, review/update of documents and programs, training needs, documentation of protocols, coordination of databases, involvement of inspections, maintenance, and operations in plan review and program development, checklists, effective Erosion Prevention and Sediment Control Program including enforcement, strategizing addressing hotspots, plan review, stormwater BMPs, and development of written enforcement strategy. Provide factsheets/manuals to new employees at the City to inform them about the City's efforts for pollution prevention. At least annual trainings will be provided to specified City of Salem employees involved in MS4-related activities regarding the permit, including its intentions and their responsibilities in relation to the MS4. Feedback for improving processes will be encouraged and brought to the coordination meeting(s). Training needs will be determined by City staff meeting mentioned above. Consider adding stormwater pollution prevention training as an action item of the FY 2011-12 Environmental Action Plan that addresses pollution prevention on a city-wide level.	• Conduct annual formal coordination meetings for stormwater, more often if necessary. • Conduct annual training of employees involved in MS4-related positions, more often if necessary.	• Prepare an annual meeting summary. • Track changes made to the implementation of the stormwater program based on coordination discussions. • Track major items of coordination. • Track training attendance. • Share and document training suggestions for MS4 implementation changes.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Employees from across the City participated in smaller group meetings that were scheduled throughout this reporting year to continue the coordination needed for the completion of individual MS4 Permit deliverables as well as the measurable goals listed in the 2010 SWMP. These coordination meetings included but were not limited to the following MS4 related efforts:

- Hydromodification – several meetings were set aside with multiple staff to review technical memorandums summarizing City polices, effective discharge modeling results, and recommended tools/approaches
- Erosion Prevention and Sediment Control – Engineering and Operations staff reviewed MS4 Permit requirements and SRC Ch. 75

- Outreach – multiple staff met on a number of occasions to discuss website updates, options for E. *coli* and turbidity outreach, the MS4 Permit required Effectiveness Evaluation, and coordination of the annual “Mid-Valley Erosion Control and Stormwater Summit” and “Howl-a-Palooza” coordination
- Operations & Maintenance – staff met on multiple occasions to review catch basin cleaning progress and facility inspections/maintenance
- TMDL/303(d) Evaluations – staff and consultants met to review and plan for November 1, 2014 deliverables
- Retrofit Project/Strategy – Operations and Engineering staff held numerous meetings to make a final determination on the MS4 Permit required E. coli retrofit project and to discuss options for completing the Retrofit Strategy

A City of Salem Shops Complex Stormwater Pollution Control Plan (SWPCP) was completed in September of 2012 (see ILL1 Task 4). As a result of this plan, Operations employees now receive annual training covering spill prevention and response, good housekeeping, and chemical storage. An "Employee Guide for Pollution Prevention" has been developed that is now distributed to all new employees during employee orientation.

Public Works staff continued to participate in Oregon Association of Clean Water Agencies (ACWA) MS4 Phase I and Stormwater subcommittees this last year (see RC1 Task 8) and continue to attend internal safety/training meetings every two weeks (see RC4 Task 4).

RC1 – PLANNING, TASK 5

Task Description	Measurable Goals	Tracking Measures
Coordinate with other agencies such as NGOs, private environmental groups, and watershed councils.	• Develop a list of contacts and identify issues of coordination.	• Document any MOAs.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Pringle Creek Watershed Council:
The City provided the Pringle Creek Watershed Council information updates about work that the City performed at the Fairview mitigation wetland. These efforts included the use of an inmate crew to repair a portion of the wetland trail.

Claggett Creek Watershed Council:
The City received a request from the Claggett Creek Watershed Council during this reporting period to help coordinate a riparian planting event for "Make a Difference Day" in October of 2014. Staff from Stormwater Services and Parks met to discuss options and determine the next steps for this event.

Glenn-Gibson Creeks Watershed Council:
The City assisted with the Oregon Watershed Enhancement Board project report that documented planting activities along Gibson Creek at the City-owned Van Kleeck property and continued to work with the Council on the coordination and management of the educational rain garden at Wallace Marine Park. Seven project coordination meetings were held that included City parks personnel, watershed council staff, artists, the sign maker, and contractors. Project funds came from the Urban Renewal District. The project was completed in November 2013 and includes the construction of the rain garden, three interpretive signs, an ADA accessible path, and viewing bench. A tour for the Mayor and Urban Renewal District was conducted on December 4, 2013. Additional planting at the rain garden was conducted as an Earth Day event in April 2014.

Friends of the Straub Environmental Learning Center (FSELC):
City staff attended monthly Executive and Board meetings at the FSELC. The Center held over 91 lectures, programs, presentations, and activities during this reporting period. These activities covered a broad environmental outreach spectrum and reached an audience of over 3,700 people.

Oregon Green Schools:
City staff attended the monthly Board meetings designed to guide the organization's direction and programs. There are presently 17 Green Schools in the Salem-Keizer Area. Oregon Green Schools is a nonprofit organization that has over 25 regional coordinators throughout the state and nearly 300 participating schools. Regional coordinators work with schools on programs related to recycling, reducing waste, and conserving energy and water; helping them to conduct waste audits, providing guidance and training for new programs, and recommending curriculum resources and grant opportunities.

No Ivy Coalition:
This group was initiated to help address ivy along Salem's creeks and within City parks. City staff met with this group to assist with the coordination of ivy pulls at Minto Brown Island Park. These efforts will resume again in the fall of 2014. The group has also been a proponent for the use of goats for invasive weed control in the City. A motion went to City Council in July that has directed staff to prepare an ordinance that will amend Salem Revised Code to allow selective use of goats in prescribed grazing activities.

RC1 – PLANNING, TASK 6

Task Description	Measurable Goals	Tracking Measures
The City will work with Marion and Polk Counties and the City of Keizer to coordinate stormwater management programs and activities within the greater Salem-Keizer Urban Growth Boundary. Coordination may include the establishment of appropriate intergovernmental agreements (IGAs) regarding potential uniform stormwater design standards, operations and maintenance activities, and public education and involvement efforts within the UGB.	• Review and update the October 2000 SKAPAC Stormwater Management Agreement by the end of the permit term to reflect each jurisdiction's respective MS4 Permit and SWMP.	• Report on significant coordination activities or programs. • Report on completion of SKAPAC Agreement and other IGAs.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

There were no new IGAs developed during this reporting period. The City of Salem, Marion County, and the City of Keizer have made a collective decision that the existing SKAPAC Agreement adequately addresses any concerns the jurisdictions may have regarding potential development activities in identified Stormwater Agreement Areas. No updates are necessary at this time. SKAPAC participants continued to meet in FY 2013-14, and will continue to meet at least once a year unless there is a need to review public projects or private developments that may impact the agreement.

Salem staff discussed Phase I and Phase II MS4 Permit requirements and permit renewal options during Polk County's public "Stormwater Meeting" on March 18, 2014. Stormwater staff continued to work with Marion County, the Marion Soil and Water Conservation District, and the City of Keizer to coordinate multiple outreach events pertaining to turbidity and E. coli during this last fiscal year (see RC 5 Task 2).

RC1 – PLANNING, TASK 7

Task Description	Measurable Goals	Tracking Measures
Evaluate existing detention facilities and potential new detention sites for potential conjunctive uses (as water quality facilities and for retrofitting opportunities). Continue to perform facility site searches to locate ponds, wetlands, vegetated swales and other water quality facilities as existing water quantity and quality facilities are evaluated and potential new sites are identified. Coordinate with RC1-1 and RC1-2.	• Complete a retrofit plan before end of year four of the MS4 permit cycle. • Develop a strategy to identify and prioritize potential retrofit projects by November 1, 2013. • Identify a minimum annual budget for stormwater retrofit projects as part of the retrofit strategy by November 1, 2014.	• Report on available budget and completion of retrofit project efforts.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During the reporting period, City staff identified a stormwater retrofit site and a consultant to design a project that reduces bacteria. A total of $180,000 is budgeted in the CIP for the construction of the facility as of FY2013-2014. Through GIS desktop analyses and field reconnaissance, City staff evaluated multiple retrofit sites, and decided to pursue retrofitting an existing flow-through detention basin in Eola Ridge Park NW into a stormwater treatment train system employing a Contech CDS Hydrodynamic Separator and a subsurface flow wetland. This stormwater retrofit project is one component of a larger Parks Capital Improvement Project. A letter identifying this as the City's retrofit project was sent to the DEQ on October 28, 2013. Project construction will be completed before the expiration of our current MS4 permit.

During the identification and selection process of the aforementioned retrofit project, City staff developed desktop and field analysis methods using the guidance described in the Center for Watershed Protection Urban Stormwater Retrofit Manual. The knowledge and skills gained from this process will be used to develop the City's overarching stormwater retrofit plan. A stormwater retrofit team was formed with representatives from the City's Engineering, Stormwater O&M, Stormwater Quality, and Public Works Operations sections. They will meet regularly throughout the next fiscal year to develop a robust stormwater retrofit plan that will be submitted to the DEQ by the November 1, 2014, deadline.

RC1 – PLANNING, TASK 8

Task Description	Measurable Goals	Tracking Measures
The City will continue to be an active member of the Oregon Association of Clean Water Agencies (ORACWA). The City will use this medium to obtain copies of materials that have been produced by others. City staff will stay current on latest available educational and technical guidance materials.	• Attend a minimum of one stormwater-related workshop or conference annually. Attend groundwater-related workshops and conferences as funds allow. • Make information obtained at these events available to other City staff.	• Report on City participation with ORACWA events.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Public Works staff continued to actively participate in Oregon Association of Clean Water Agencies Stormwater and MS4 Phase I subcommittee meetings during this reporting period. City staff provided multiple updates to other Phase I municipalities on Salem's progress toward meeting its permit requirements, and has worked actively on the ACWA Rangers and Effectiveness Evaluation subcommittees. Information acquired through ACWA meetings/activities is routinely passed on to other employees at regularly scheduled staff meetings and/or MS4 Permit coordination meetings. Two staff members attended the ACWA Stormwater Summit on May 15, 2014.

2.2 RC2—Capital Improvements

RC2 – CAPITAL IMPROVEMENTS, TASK 1

Task Description	Measureable Goals	Tracking Measures
Implement stormwater projects (including stormwater conveyance, quantity, quality, and stream/habitat improvement) based on priorities established under the Capital Improvement Program (CIP) and the Stormwater Master Plan consistent with available funding.	• Include a funding line item for CIPs in proposed stormwater budget. • Review and prioritize CIPs and budget annually. • Implement CIPs based on prioritization and available funding.	• Track number and description of projects completed. • Report updated CIP list annually.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The copy of the Adopted CIP Plan for FY 2013-14 has been place on the City's website at the following location: http://www.cityofsalem.net/Departments/AdministrativeServices/Finance/capital-improvememts-program-cip/Pages/default.aspx.

All of the Streets and Bridges Bond projects with a focus on new street construction included stormwater treatment. In addition, certain Urban Renewal Agency projects managed by Public Works Engineering also incorporated stormwater treatment facilities. The City continued to work with ODOT in FY 2013-14 to install treatment facilities on the Marion and Center Street Bridges across the Willamette River. These facilities will contain and treat the stormwater runoff from the entire length of these bridges. This project has been funded by an ODOT Retrofit Program Grant.

Stormwater quality and quantity facilities were incorporated into the design and construction of projects during FY 2013/14 as follows:

Parks and Transportation

- Aumsville Hwy. Widening and Signals - Stormwater quality and detention (construction 2013)
- Hawthorne Ave. Widening and Improvements - Stormwater quality and detention (construction in 2013)
- Commercial St. Bridge Replacement - Stormwater quality (construction in 2013)
- Eola Dr. Transportation Improvements - Stormwater quality and detention (construction in 2013)
- Marion/Center St. Bridges - Stormwater quality and detention (construction in 2013)
- Market/Swegle Transportation Improvements - Stormwater quality and detention (construction in 2013 & 2014)
- Glenn Creek/Wallace Rd Transportation Improvements - Stormwater quality (construction in 2014 & 2015)
- Minto Bike and Pedestrian Bridge - Stormwater quality (construction in 2015)
- Construction Waste Processing and Transfer Center - Stormwater quality and detention (construction 2015)
- Skyline Road Widening Project - Stormwater quality and detention (construction 2016)

Water Projects

- Mill Creek Reservoir - Stormwater quality and detention (construction in 2013 & 2014)

Wastewater Projects

- River Rd./Windsor Island Road at Willow Lake WPCF - Stormwater quality (construction in 2013)

RC2 – CAPITAL IMPROVEMENTS, TASK 2

Task Description	Measureable Goals	Tracking Measures
Continue to coordinate capital improvement projects with the Water Resources Section to integrate multiple resource agency permitting needs. The review is intended to identify integrated opportunities and permitting needs to meet water quality-related requirements.	• Review and integrate multiple resource agency permitting needs, including MS4 permit requirements, into 100% of CIP projects.	• Track number of projects reviewed. • Track number of projects permitted.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The Water Resources Section was eliminated at the end of last fiscal year (FY 2012-13) due to a reorganization of Salem Public Works. Therefore, the Water Resources Section, as it were, did not review any projects. Public Works staff, however, continued to coordinate permitting needs for individual projects, either in-house or through consultants of record. Several bridge and dam repair projects required additional agency permits during this past fiscal year. Staff are currently pursuing a permit for the Geren Island Flow Maintenance Project. In all, 10 different projects were reviewed that required additional agency permitting during this last fiscal year.

RC2 – CAPITAL IMPROVEMENTS, TASK 3

Task Description	Measureable Goals	Tracking Measures
The City continues to acquire physical access-easements for public and private stormwater facilities. This is done by identifying existing facilities for which easements, rights-of-way, or permit-of-entry agreements are needed for stormwater facilities; and developing a plan for acquiring the same, given current funding limitations.	• Within one year of completion of the hydromodification study and retrofit plan, prioritize easement acquisitions for stormwater facilities. • Following prioritization, identify funding source(s) for inclusion in budget.	• Report on easement acquisition and prioritization process.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Easement acquisition and prioritization are anticipated to occur following completion of the retrofit strategy and hydromodification assessment, which must be submitted to the DEQ by November 1, 2014. These efforts will help identify areas where easement acquisition should be prioritized. It is anticipated that additional easement identification and prioritization may occur following the completion of the updated Stormwater Master Plan. Revisions to the Master Plan were initiated during this reporting period (see RC1 Task 1).

During FY 2013-14, Public Works Engineering completed revisions to the City's Stormwater Design Standards (see RC 3 Task 1). These standards clarify easement requirements for stormwater infrastructure.

2.3 RC3—Update of Stormwater Management Design Standards

RC3 – STORMWATER MANAGEMENT DESIGN STANDARDS, TASK 1

Task Description	Measureable Goals	Tracking Measures
Continue to encourage the use of structural BMPs for stormwater quality improvement and flood peak reduction opportunities. Develop stormwater quality design and associated maintenance standards for new and redevelopment. Continue to evaluate opportunities to provide incentives for alternative stormwater management practices, including Low Impact Development (LID). Maintain and update the Stormwater Management Design Standards after they are developed.	• Develop incentives for LID and other stormwater quantity and quality management practices. • Develop updated stormwater design standards to include structural stormwater quality BMPs. • Maintain Stormwater Management Design Standards and update as needed.	• Document revisions made to Stormwater Management Design Standards. • Document the development of any incentives for implementation of LID techniques.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Incentives for Low Impact Development (LID) have been incorporated into Salem's Stormwater Utility in the form of credits that allow the impervious surface-based portion of the utility fee to be reduced based on the presence of stormwater quality and quantity facilities on the ratepayer's property. The Stormwater Utility was initially implemented in January 2013 and is now in its second year. Work on drafting new Stormwater Design Standards was completed in late 2013, and the new standards became effective as Administrative Rules on January 1, 2014. The new standards are consistent with the new stormwater regulations and include design criteria for green stormwater infrastructure with an emphasis on infiltration. The new Stormwater Design Standards are published on the City's website and may be found at www.cityofsalem.net/Departments/PublicWorks/Engineering/Pages/DesignStandards.aspx.

RC3–UPDATE OF STORMWATER MANAGEMENT DESIGN STANDARDS, TASK 2

Task Description	Measureable Goals	Tracking Measures
Continue to implement process to identify and remove barriers for implementing LID techniques. Update the Stormwater Management Design Standards and associated Salem Revised Code (SRC) provisions as appropriate.	• Within three years of implementing the revised stormwater design standards, review and, as appropriate, modify design standards and SRC to minimize barriers to implementation of LID techniques.	• Document the review of design standards and SRC to minimize barriers to implementation of LID techniques.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Barriers to implementing Low Impact Development techniques have been identified, and recommended changes to the Salem Revised Code have been incorporated into a Staff Report that went before Salem City Council at the end of 2013. An update of the Stormwater Management Design Standards to incorporate LID techniques was completed in late 2013 and the new standards became effective on January 1, 2014 (see RC3-1). These standards will continue to be reviewed and updated in the future to incorporate new BMP technologies and sizing methodologies as the information becomes available.

RC3 – UPDATE OF STORMWATER MANAGEMENT DESIGN STANDARDS, TASK 3

Task Description	Measureable Goals	Tracking Measures
City staff is implementing the Water Quality Development Standards set forth by SRC Chapter 141 for all development requiring a Willamette Greenway Permit.	• Implement Water Quality Development Standards in Willamette Greenway.	• Track number of Willamette Greenway Permits issued and description of water quality measures employed. • Track number of new facilities constructed.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Willamette Greenway permits are processed as either conditional uses or as administrative conditional uses, depending on their location. Greenway permits are tracked through AMANDA, the City's permit tracking system. No Greenway permit applications were received during this reporting period.

RC3 – UPDATE OF STORMWATER MANAGEMENT DESIGN STANDARDS, TASK 4

Task Description	Measureable Goals	Tracking Measures
Continue to review all residential, commercial, and industrial plans submitted for City-issued building permits for compliance with the City's Stormwater Management Design Standards. Conduct inspections of completed projects prior to the City's acceptance of those projects and project close-out to ensure work was done in accordance with approved plans. Maintain database of plans reviewed and final inspections conducted. See IND1-Task 2 for standards specific to industrial facilities.	• Review all residential, commercial, and industrial plans submitted for City-issued permits for compliance with the City's Stormwater Management Design Standards and associated SRC provisions. • Conduct inspections once construction is completed to ensure work was done in accordance with approved plans.	• Maintain database of plans reviewed and final inspections conducted.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

All residential, commercial, and industrial plans submitted for City-issued permits are reviewed by Public Works staff for compliance with Stormwater Management Design Standards. Constructed stormwater facilities are inspected by Plumbing Inspectors within Community Development and/or Public Works to ensure that work was done in accordance with approved plans. All plan reviews and inspections are tracked in AMANDA, the City's permit tracking database. Once stormwater treatment facilities on private and public properties are constructed, Stormwater technical staff will inventory and track these facilities in our GIS and Hansen databases following the Stormwater Facility Inventory, Inspection, and Maintenance Program that the City submitted to DEQ on December 21, 2012.

2.4 RC4 – Operations & Maintenance

RC4 – OPERATIONS AND MAINTENANCE, TASK 1

Task Description	Measurable Goals	Tracking Measures
Continue with the existing street sweeping schedule for all areas, maintaining the record of observations, quantity, and quality of material collected in the daily log books. Collect and compile this information for making recommendations for modified methods, schedules, and for NPDES MS4 permit annual reporting and overall program evaluation.	• Review street sweeping program annually for effectiveness and any necessary revisions to sweeping schedule. • Continue sweeping City streets on four zone schedule, sweeping heaviest zone 8 times per year and lightest zone 2-3 times per year. • Continue sweeping City-owned parking lots as needed.	• Record quantity of material collected during sweeping operations. • Record number of curb-miles of streets swept. • Track and report changes made to sweeping schedule, if any.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The City's Streets Department continued to utilize two regenerative air sweepers during this reporting year to sweep residential and collector streets that have been categorized as having *High, Medium*, or *Light* debris accumulation, as well as those within the Central Business District zone. A third sweeping machine is operated during the peak leaf drop season (fall/winter) or when one of the other machines is unavailable. Two operators sweep residential and collector streets during the day and two operators sweep arterial streets at night. City-owned parking lots are swept on an as-needed basis. The City does not sweep any commercial parking lots, which are the responsibility of the private property owner. During this reporting year the City swept a total of 16,000 miles, collected approximately 1,590 tons of street sweeping debris, and removed approximately 4,710 cubic yards of leaves.

RC4 – OPERATIONS AND MAINTENANCE, TASK 2

Task Description	Measureable Goals	Tracking Measures
The City will continue to perform de-icing operations in a way that minimizes stormwater pollution through: conducting annual inspections and training to ensure proper operation of the de-icing chemical storage facility; training and verification that application equipment is applying deicer at 1/2 to 1/3 the industry standard; construction of an expanded covered storage area for de-icing aggregate materials combined with FEMA floodgates to mitigate migration of aggregates (2011) ; maintaining proper function of adjacent sediment traps and catch basins in the storage yard; sweeping removal of operational de-icing aggregate spillage; and coordinating de-icing activities with Airport Operations and their 1200-Z permit.	• Continue current de-icing operations to prevent stormwater pollution.	• Document dates of activities for annual inspections and training. • Document de-icing quantities applied annually.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Recycling opportunities for used deicing sand material have not yet been identified. Deicing aggregate materials cannot be reused as sanding material for reasons that include: the loss of angular surfaces that provide snow and ice traction, the accumulation of additional street debris, and the presence of street surface contaminants (heavy metals, petro chemicals, trash, etc.). Used aggregate can only be utilized as fill material in approved fill sites, depending on the levels of intermingled debris and/or contaminants.

Deicing material use is documented on time sheets and in the liquid deicing storage facility log book. City staff also document the number of lane miles that are treated annually. During FY 2013/14, the City treated 2,331 lane miles with liquid deicer. This equates to approximately 18,648 gallons of applied deicer.

Annual Snow & Ice Response training takes place the first week in November each year and covers the setup of a heavy dump truck with plow and sander, tire chaining and chain repair, operation of the sand storage facility, filling and emptying of liquid deicer tanks, deicer storage containment pond drainage protocols, and full operation of our liquid deicer storage facility; including the use of redundant backup pump systems should power fail. A list of training dates and the staff who attend is kept on file.

The liquid deicer storage facility is maintained and inspected monthly during the off season and weekly during Snow and Ice season which runs from November 1st through March 30th. A Public Works Project Leader is assigned this task, which includes controlled drainage of accumulated liquid within the containment pond for the storage tanks and plumbing. With the assistance of Environmental Services and Wastewater Treatment staff, clear rainwater is released to the storm drain and contaminated water is released to the sanitary sewer. The drainage controls for this facility are locked and can only be accessed by authorized staff.

PreCise MRM GPS tracking systems were installed and utilized for the first time this past winter on deicing trucks. Staff were able to gather GPS reports to assist with the tracking of sanding and deicing activities during Salem's only two snow events this season. City staff will continue to test the capabilities of this system for continued improvement in program tracking.

RC4 – OPERATIONS AND MAINTENANCE, TASK 3

Task Description	Measureable Goals	Tracking Measures
Continue to review and update the O&M practices and activity schedules defined in the Drainage Program Evaluation Notebook (DPEN) (including updating GIS database). Utilize Hansen IMS data to develop and refine work programs. This review will serve as a basis for budgeting and allocating resources; scheduling work; and reporting on and evaluating the performance and costs for the overall O&M program and specific activities.	• Update DPEN and IMS database activities and schedules. • Create line items in budget for specific O&M activities. • Review and update O&M practices and activity schedules every 3 years.	• Track revisions made to O&M practices and activity schedules.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During the FY 2013-14 reporting period stormwater quality facilities and detention basins were inspected by Operations and Maintenance staff. The associated asset/inspection information was entered into the Hansen Database for work order record keeping and future maintenance needs. One significant change that occurred in the operation and maintenance of stormwater facilities during the reporting period was an increase in the cleaning of large diameter stormwater pipes while crews were cleaning catch basins.

These large lines are typically not cleaned unless there is an emergency situation. The amount of debris removed from the storm system during this reporting period was twice that of FY 2012-13.

RC4 – OPERATIONS AND MAINTENANCE, TASK 4

Task Description	Measureable Goals	Tracking Measures
Continue to improve the O&M training program and activities especially with regards to safety and protection of water quality.	• Conduct O&M safety meetings twice per month. • Attend ACWA committee meetings and workshops as scheduled. • Conduct weekly tailgate meetings with Operations crews.	• Document reviews and modifications to the O&M training program. • Record O&M training activities completed. • Document ACWA meetings and workshops attended.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

City staff continued to conduct safety meetings on a biweekly basis during this reporting period. The following topics were covered during this reporting period: MS4 spill prevention, Confined Space, Chemical/Gas Safety, Natural Gas, Hand Tool Safety, Environmental Hazards, Power Tools, Gas Detectors, Blood Borne Pathogens, Alcohol/Drug Awareness, Erosion Control, Haz-Mat Refresher, Excavations, Lifting/Back Safety, Heat Stress, Housekeeping (slips, trips, falls), Heavy Equipment, Self Defense, Personal Protection Equipment, Chainsaw Safety, Fire/Electrical Safety, Bypass Pumping, Lockout/Tagout, Asbestos, and Vehicle Operation. There were no significant modifications to the O&M Training program during the reporting period. An attendance sheet for all biweekly O&M training activities is kept on file.

In addition, Public Works staff continued to participate in ACWA Phase I, Stormwater, and Water Quality Committee meetings during the 2013-14 fiscal year (see RC1 Task 8).

RC4 – OPERATIONS AND MAINTENANCE, TASK 5

Task Description	Measureable Goals	Tracking Measures
Integrated Pest Management (IPM) Program: Salem Parks Operations Division will continue their program for careful monitoring and management of pesticides, herbicides and fertilizers, and will provide public information. Review and refine the IPM Program during the permit cycle, ensuring proper handling and storage of pesticides, herbicides, and fertilizers.	• Review and refine IPM Program during the MS4 permit cycle. • Routine inspections of storage facilities for proper storage of materials and chemicals.	• Document revisions made to IPM Program. • Document inspections of storage facilities.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

City staff utilized 2012 weed survey maps during this reporting period to target pesticide applications of invasive weed populations in wetlands and sensitive management areas. Routine inspections of the pesticide storage facilities and application equipment were conducted quarterly, and all staff possessing an Oregon Department of Agriculture Pesticide Applicators license received Hazcom/spill prevention and management/pesticide safety training. Budget tracking over the last three years has shown a decrease in the amount of pesticides purchased to control invasive weed populations. There were no revisions to the IPM Program in FY 2013-14.

RC4 – OPERATIONS AND MAINTENANCE, TASK 6

Task Description	Measureable Goals	Tracking Measures
Continue the storm sewer cleaning and TV inspection program, concentrating on known areas of localized flooding complaints (this alerts the City to locations of debris build-up and minimizes erosion potential) and persistent operation and maintenance problems, and looking for potential illicit discharges and seepage from sanitary sewers, see ILL2. Also focus on significant industrial/commercial areas where potential illicit discharges may be of concern.	• Concentrate storm sewer cleaning and TV inspection on areas with historical problems and high potential for illicit discharges. • Inspect 120,000 LF of conveyance system annually.	• Track number of inspections; identify areas with persistent O&M problems. • Track number of cross-connections found. • Track length of conveyance system cleaned and inspected.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-14, the TV/Flow Monitoring Section inspected 279,059 linear feet and cleaned 12,663 linear feet of stormwater mainlines. As a result of cleaning activities in large diameter pipes during this reporting period, crews removed 391.75 cubic yards of debris from storm main lines. Public Works crews also performed 592 unique inspections of new storm service connections. One cross-connection was identified and corrected during this reporting period.

RC4 – OPERATIONS AND MAINTENANCE, TASK 7

Task Description	Measureable Goals	Tracking Measures
Continue supporting annual Stream Cleaning Program. More than one half of the stream miles in the City of Salem are inspected annually by walking each stream segment. Using summer interns the City inspects the riparian areas and streams, picks up litter and garbage, inspects for illicit discharges (ILL2), addresses potential conveyance concerns, and evaluates areas for stream restoration.	• Walk 50% of the waterways within the City each year for stream cleanup and enhancement. • Complete one stream restoration project each year.	• Track length of waterways walked each year. • Document stream restoration projects completed each year. • Document the amount of litter and garbage removed each year.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The 2013 Stream Crew began work on June 17, 2013 and ended on September 27, 2013. Over the course of the season, the Stream Crew walked nearly 47 miles of Salem waterways, removing trash, debris jams, recyclable materials, and invasive vegetation. The crew removed 11,845 pounds of trash; 3,055 pounds of recyclable material; and 63.25 cubic yards of natural debris. Every year since 2000, the Stream Crew has completed one riparian restoration project, which is designed to provide bank stabilization, shade, wildlife habitat, and increase native plant diversity. The 2013 restoration site is located along Mill Creek, off of State Street. This project incorporated the removal of invasive vegetation followed by the planting of 317 native trees, shrubs, rushes, and sedges.

The 2014 Stream Crew, which began work on June 16, 2014, walked 45.31 miles of Salem's waterways and removed 10,302 pounds of trash; 3,297 pounds of recycled material; and 88.5 cubic yards of natural debris. This year the Stream Crew will complete three restoration projects. The first project is located along Pringle Creek, near Madrona Avenue. The Crew will prepare the site by removing dense Himalayan blackberries and trimming tree branches to reduce canopy density. This site has some existing native plants that will be preserved on site. Additional native trees, shrubs, and sedges will be planted to stabilize the bank.

The second restoration project is located near Indiana Court, along the West Fork Little Pudding River. This site is a monoculture of reed canary grass, a highly invasive riparian plant. The crew will use large sheets of black plastic and straw waddles to shade out the existing grass throughout the summer. Once the grass has died, the crews will plant a mix of deciduous trees, conifer trees, and large shrubs. As these trees and shrubs become established they will provide shade, help prevent the streambank erosion, and reduce invasive grass populations.

The third restoration project is located near Judson Middle School along Pringle Creek. This site is actively eroding from people sliding down the bank to access the water. The crew will lay down bank stabilizing fabric, straw waddles, and plant native sedges to fill in the exposed soil. They will also put up orange fencing and a "Do Not Enter" sign to discourage people from continuing to access the creek at that location.

RC4 – OPERATIONS AND MAINTENANCE, TASK 8

Task Description	Measureable Goals	Tracking Measures
Continue to regularly inspect and maintain public structural stormwater control facilities. Coordinate with RC4 Task 9.	• Regularly inspect all public detention and water quality facilities.	• Track number of public facilities inspected and maintained. • Track amount of sediment and debris removed from all facilities.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During this reporting period, staff conducted 190 public water quality facility inspections, and removed a total of 46.5 cubic yards of sediment/debris as a result of City maintenance activities. Projects currently under construction with public structural stormwater control facilities are inspected on a biannual basis for contractor compliance with construction standards and warranty issues. The breakdown of water quality facility inspections and debris removed through maintenance activities is listed below:

WQ Manholes: 141 inspections / 36.70 cubic yards removed
WQ Catch Basins: 3 inspections / 0 cubic yards removed
WQ Tree Boxes: 28 inspections / 5.75 cubic yards removed
WQ Planters: 2 inspections / 4.00 cubic yards removed
WQ Vegetated Facilities (rain garden, bioswale, etc.): 16 inspections / 0.037 cubic yards

In addition to water quality facilities, 162 public and 657 private detention basins and associated control structures (manhole with orifice) were inspected during the fiscal year, but no maintenance activities have yet occurred. Prioritized maintenance for debris removal is planned for later this summer/early fall in FY 2014-15.

Operations & Maintenance staff developed an ArcGIS Online workflow process to populate an electronic inspection form that is built off of the previous year's GPS collection efforts associated with these detention facilities. Staff also collected GPS data points for detention control structures that were not collected last year. This will allow future crews to locate and inspect these structures more quickly and efficiently.

RC4 – OPERATIONS AND MAINTENANCE, TASK 9

Task Description	Measureable Goals	Tracking Measures
Develop and implement a long-term maintenance strategy for public and private stormwater control facilities. This strategy will identify procedures and/or priorities for inventorying, mapping, inspecting, and maintaining facilities.	• Document and implement a long-term maintenance strategy for public and private stormwater control facilities during the MS4 permit cycle.	• Track number of private facilities located, mapped, and inspected. • Track progress toward developing a facility long-term maintenance strategy.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During the reporting period, the City continued implementation of its Stormwater Facility Inventory, Inspection, and Maintenance program for private and public water quality facilities. This program outlines the City's process for mapping public and private stormwater facilities in GIS, as well as the asset tracking methodology used in the Hansen database. Since implementation, the City has inventoried, mapped, inspected, and maintained all of its 99 public vegetative (e.g. bioswales) and 108 mechanical (e.g. water quality manholes) treatment facilities through a quarterly inspection process. In June 2012, a seasonal employee was hired to commence the inventory of stormwater treatment facilities on private property. In FY 2013-14, a full-time, permanent Engineering Technician III was hired to continue with the City's quarterly inspection and maintenance program of its public stormwater treatment facilities, and continued inventorying all private stormwater treatment facilities in Hansen and GIS.

During this reporting period, City staff inventoried and field verified 244 private water quality facilities and 28 private detention basins. During the reporting period, 79 of the private water quality facilities were updated in the City's Hansen asset management and GIS databases. Stormwater and GIS technical staff continue to update both databases with field verified information of the newly inventoried private assets, which should be completely updated during the next fiscal year.

Additionally, 43 public water quality facilities and 5 public detention basins were added to the GIS storm grid maps as a result of plans and as-built reviews, field verifications, and map edits completed by city staff.

There were a total 657 private and 162 public detention basin inspections completed by City staff during the reporting period.

The City continues to inventory public and private water quality and detention facilities as new plans come in, old plans are reviewed, and field crews discover existing facilities in the field.

RC4 – OPERATIONS AND MAINTENANCE, TASK 10

Task Description	Measureable Goals	Tracking Measures
Ditch maintenance is performed to assure adequate conveyance, and consists of two components: (1) Ditch Cleaning – Cleaning consists of removal of sediment in the bottom of roadside ditches only as needed for proper conveyance, with limited vegetation disturbance and the use of straw wattles to reduce sedimentation and erosion within the ditch. (2) Ditch Mowing – Mowing is typically conducted by inmate crews using hand-held equipment. Vegetation cutting facilitates conveyance and reduces the risk of potential fires in summer months.	• Regularly inspect and maintain 100% of City ditches using appropriate water quality BMPs.	• Track length of ditch maintenance performed (cleaning and mowing). • Track amount of sediment and debris removed.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Inmate crews mowed 37 miles of drainage ditches in the city during this reporting period. Stormwater Operations & Maintenance crews mowed approximately 35 miles of roadside ditches. Roadside ditches are inspected prior to cleaning, and only those found to have significant sediment loading are cleaned. Approximately 8.2 miles of roadside ditches required cleaning. Crews removed 485 cubic yards of material.

RC4 – OPERATIONS AND MAINTENANCE, TASK 11

Task Description	Measureable Goals	Tracking Measures
Public catch basins are cleaned on a regular basis with a Vactor truck. During catch basin cleaning activities, inspections are done and repairs are scheduled if needed.	• Clean and inspect 75% of catch basins annually. • Periodically analyze the material removed from the catch basins.	• Track the number and percent of catch basins cleaned annually. • Report on any analysis of removed material.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-14, City crews cleaned and inspected 11,927 (77.9%) of the 15,318 public catch basins that were present in the city at the start of the fiscal year. Through this process, a total of 274 cubic yards of sediment/debris was removed from these structures using a Vactor truck and/or hand tools. As resources allow, staff anticipate utilizing GIS to map debris accumulations throughout the city, so that a prioritization scheme may be developed for future inspections and cleanings.

During this reporting period, stormwater monitoring staff drafted a Catch Basin Sediment Sampling Plan to outline a strategy for periodically sampling and analyzing the materials in City catch basins. It is expected that the plan will be finalized and implemented in the upcoming fiscal year.

RC4 – OPERATIONS AND MAINTENANCE, TASK 12

Task Description	Measureable Goals	Tracking Measures
Continue to refine the maintenance program for public and private stormwater detention and water quality facilities. The City maintains an informational packet outlining ownership and maintenance responsibilities and compliance assurance procedures to encourage owners of private detention and water quality systems to perform maintenance. Coordinate with RC 4 Task 9.	• Maintain informational package for ownership maintenance responsibilities for detention and water quality facilities. • Implement maintenance activities and requirements identified in long-term maintenance strategy (RC4 Task 9).	• Track number of information packets distributed regarding private stormwater control facilities. • Track maintenance requirements of long-term maintenance strategy.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

City staff have inventoried 244 private water quality facilities on 95 private property taxlots, and created a dynamic GIS database for tracking purposes. Seventy private water quality facility packets were created by staff during the reporting period. It is expected that the remaining 25 packets will be completed and distributed during the next fiscal year. The purpose of the packets are to provide private facility owners with information on the number of facilities on site, the type of facilities, maintenance procedures and/or checklists, an inspection log, and other resources to help them keep facilities operational. As adopted in the 2014 Stormwater Design Standards, owners of newly installed private water quality facilities will be required to inspect each facility, at a minimum, quarterly for the first two years, and two times per year thereafter, unless otherwise stated in the manufacturer's maintenance specifications. This is to ensure proper functioning of the facility for maximum pollutant removal.

2.5 RC5—Public Education & Participation

RC5 – PUBLIC EDUCATION AND PARTICIPATION, TASK 1

Task Description	Measureable Goals	Tracking Measures
Develop and implement a public outreach and education strategy with goals, objectives, identified target audiences, partners, identified target contaminants, and messaging. Conduct a public education program effectiveness evaluation of outreach procedures/efforts. Adjust the program based on the results in year five. (See Table A.1 – Public Outreach Program Matrix, June 2008).	• Create two (2) public education campaigns* from the Public Outreach Program Matrix. • Support outreach and educational activities for other divisions**. • Conduct an effectiveness evaluation of the outreach program before the end of year four of the MS4 permit cycle.	• Document public outreach and involvement activities for two (2) education campaigns. • Document outreach activities for other divisions. • Document the results of the effectiveness evaluation and subsequent changes to the outreach procedures/efforts.

*A public education campaign focuses outreach efforts on a target contaminant. The Public Outreach Matrix (Table A.1) contains the outline for educational campaigns by target contaminant. The matrix is a complete list of prioritized outreach activities, tools, partners, key audiences, and measurable goals for Salem's stormwater management program. The City will develop robust educational campaigns for the top priority contaminants – focusing limited resources on the most critical contaminants first. Top priority contaminants were selected based on the review of monitoring data.

**Many of the City's BMPs, in addition to RC5, contain outreach tasks. To ensure that all required outreach is being completed, outreach tasks from BMPs other than RC5 are included in the Public Outreach Matrix. RC4 – Inventory Private Stormwater Facilities is an example of a BMP that has an outreach task: Annual letters will be mailed to detention basin/water quality facility owners. That task is shown on the matrix and will be completed and documented each year.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The two City selected public education campaigns required under this BMP target turbidity and E. coli bacteria. Turbidity outreach is presently conducted through coordination of the Mid-Willamette Outreach Group sponsored "Erosion Control and Stormwater Management Summit" (see CON1 Task 2). E. coli outreach efforts include:

- Radio Advertisements
- "Know the Scoop" mailers
- Capital Canine Club website (www.cityofsalem.net/canineclub)
- Social Media ("Clean Streams Clear Choices" Facebook page)
- Posters and flyers
- Outreach Events
- Signs and dispensers in parks

Staff initiated efforts to complete a public education Effectiveness Evaluation that will be submitted to the DEQ by the November 1, 2014 deadline. Additional information about all of the various outreach activities that were conducted during the 2013-14 reporting period can be found in Appendix C of this report.

RC5 – PUBLIC EDUCATION AND PARTICIPATION, TASK 2

Task Description	Measureable Goals	Tracking Measures
Coordinate activities of various groups within the Public Works Department and other City departments assigned responsibility for public outreach and citizen contacts on stormwater matters.	• Quarterly meetings of various groups assigned responsibility for public outreach and citizen contacts on stormwater matters.	• Document quarterly meetings and outcomes.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Mid-Willamette Valley Outreach Group (MWOG):
During FY 2013-14, the City worked to solidify regional coordination of stormwater education through the Mid-Willamette Valley stormwater outreach group, which includes the City of Keizer, City of Albany, City of Corvallis, Marion County, and the Marion County Soil & Water Conservation District. The primary goal of the group is to host the "3rd Annual Erosion Control & Stormwater Management Summit" in January 2014. In addition, the group worked to host a second event, "Howl-a-Palooza," an educational event for pet owners that provides community resources and information on stormwater education. The group generally meets once a month to discuss event planning and the coordination of stormwater outreach activities.

Riparian Planting Program:
City staff met several times during this reporting year to coordinate a pilot riparian planting project in and around Clark Creek Park. The project location was selected based on riparian shade data that was compiled for the City in 2009 (*City of Salem Shade Modeling and Riparian Inventory Report*). Staff met several times during this reporting period to refine the contractor's scope of work, to discuss project details and constraints, assist with the coordination of three separate volunteer based planting/maintenance events, and to coordinate project related outreach efforts.

Citywide Communications Network:
The citywide Strategic Communications Group meets at least quarterly throughout the year. This group is not specifically dedicated to stormwater matters, but works to provide consistency in City publications and the various avenues of public relations.

RC5 – PUBLIC EDUCATION AND PARTICIPATION, TASK 3

Task Description	Measureable Goals	Tracking Measures
Increase the use of community partnerships to carry out outreach goals.	• Develop one new partnership per year to carry out outreach goals.	• Document partnerships and outcomes of partnership activities.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Seven new partnerships were developed during this reporting period. Two new partners joined the Mid-Willamette Valley Outreach Group (City of Corvallis and the City of Albany) to participate in and assist with the coordination of the "3rd Annual Erosion Control and Stormwater Management Summit". The Willamette Valley Humane Society (WVHS) partnered with the City to promote the "Capital Canine Club" (CCC), and four local commercial car wash companies signed up with the City to be identified as "Clean Streams Car Wash".

As a result of these new partnerships, the City has begun to provide personal mutt mitt dispensers in the WVHS's new dog adoption kit, water quality concerns surrounding pet waste are reaching a larger audience (507 CCC website views in FY 2013-14), and local non-profit community groups have gained the ability to utilize commercial car washes to promote their fundraising efforts. The "Clean Stream Car Wash" Program will help the City increase local awareness about the importance of directing wash water to the treatment facility rather than through the storm drain and to the nearest stream. Efforts to further strengthen and expand upon all of these partnerships will continue in the next fiscal year.

RC5 – PUBLIC EDUCATION AND PARTICIPATION, TASK 4

Task Description	Measureable Goals	Tracking Measures
Investigate the use of a stormwater utility to provide an adequate funding base to support expanded public outreach (see RC6-2).	• Develop a yearly public education budget. • Document public education and outreach needs in the Stormwater Utility Implementation Plan.	• Document public education budget and expenditures. • Document Utility implementation plan showing public education and outreach needs.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Stormwater outreach needs have been documented in a five-year MS4 Education and Outreach Plan. The City expended $38,630 from the total FY 2013-14 stormwater budget on outreach related activities. The requested public education/outreach budget for FY 2014-15 is $43,390. These funds were requested for the following materials and services:

Supplies: $4,000
Advertisement: $9,860
Other Professional Services: $21,780
Erosion Control Summit: $3,500
Membership: $250
Copy Services: $4000

A separate request of $990 to fund the Youth Environmental Education Program (YEEP) was for the following:

Supplies: $740
Mileage: $250

RC6—Stormwater Program Management Financing

RC6 – STORMWATER MANAGEMENT PROGRAM FINANCING, TASK 1

Task Description	Measureable Goals	Tracking Measures
In conjunction with the updated Stormwater Master Plan (RC1-1), review and update the Stormwater System Development Charge (SDC) methodology to address both stormwater quantity and quality.	• Adopt updated Stormwater SDC methodology by the end of the MS4 permit cycle.	• Report on update to Stormwater SDC methodology.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

A review and update of the Stormwater System Development Charge (SDC) methodology will be conducted in concert with the update to the Stormwater Master Plan to be completed by the end of the MS4 permit cycle (See Activities & Accomplishments under RC1 Task 1).

RC6 – STORMWATER MANAGEMENT PROGRAM FINANCING, TASK 2

Task Description	Measureable Goals	Tracking Measures
Implement a new stormwater utility capable of generating stormwater fees historically paid for by water and/or sewer utility customers. The new utility will include incentives to encourage users to implement alternative stormwater management practices such as LID.	• Adopt new stormwater utility by the end of the MS4 permit cycle.	• Report on adoption of new stormwater utility.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The new Stormwater Utility was successfully implemented in January 2013. The fee structure includes credits that provide for reductions in the impervious surface-based portion of the utility fee for ratepayers who have stormwater treatment and/or flow control facilities on their property. Generally, the credit is higher for facilities that are categorized as green stormwater infrastructure than for more traditional stormwater facilities.

RC6 – STORMWATER MANAGEMENT PROGRAM FINANCING, TASK 3

Task Description	Measureable Goals	Tracking Measures
Identify and pursue grant opportunities for stormwater quality projects, including potential retrofit and LID project opportunities.	• Pursue grant opportunities as staff resources allow.	• Track number of grants applied for each year. • Track number of grants received each year.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

In FY 2010-11, the City received a $2M grant from ODOT to treat stormwater runoff off on the State Hwy. 22 bridges in Salem. Construction on this project continued during this fiscal year. Funds have been used to construct five infiltration basins and install 10 pollution control manholes along Front St. and at Wallace Marine Park. ODOT currently maintains four infiltration basins and eight pollution control manholes; and the City maintains one infiltration basin and two pollution control manholes along Front St.

During the reporting period, the City also received a $4M Oregon Jobs and Transportation Act (JTA) grant to construct 30 street planters, 3 bioslopes, and 1 biostrip along Aumsville Highway as part of a road widening project. These facilities are fully functional and are maintained by City staff.

2.6 RC7—Maintain & Update GIS System

RC7 – MAINTAIN AND UPDATE GIS SYSTEM, TASK 1

Task Description	Measurable Goals	Tracking Measures
Continue maintenance of the GIS database and Hansen IMS database. These on-going updates will also reflect completion of any stormwater Master Plan capital improvement projects, new facilities added to the system, potential "hot-spots" for illicit discharges, refinement of data for the existing system, updated information on wetlands, perennial streams, waterways, and floodplain/floodway designations, and information updated on a periodic basis for the City's Urban Growth Boundary. The GIS database will be accessible by City departments for review purposes.	• Continue performing database updates annually. • Create record of GIS maintenance activities.	• Record maintenance / updates made to database.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The GIS Section continued to perform routine maintenance activities of the GIS database and posted 4,177 linear feet of new Storm Mains during the 2013-14 fiscal year. These new installations were the result of CIP and permitted development projects.

RC7 – MAINTAIN AND UPDATE GIS SYSTEM, TASK 2

Task Description	Measurable Goals	Tracking Measures
Integrate the information in the GIS and IMS. The City plans to integrate the data from both the GIS and Hansen IMS databases so that information in the Hansen IMS database can be visualized using the GIS system.	• Create an action plan for how the GIS and IMS system will be integrated and updated. • Implement action plan to integrate GIS and IMS.	• Track completion of action plan items. • Track implementation status of database integration.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

GIS and Hansen staff continued efforts to clean up data errors and inconsistencies in their respective databases during this reporting year in anticipation of the GIS/Hansen IMS integration that is expected to occur within the next few years. It will be necessary for staff to continue these cleanup duties in the next fiscal year, during, and after the final integration of the two IMS databases.

2.7 RC8—City Stormwater Grant Program

RC8 – CITY STORMWATER GRANT PROGRAM, TASK 1

Task Description	Measureable Goals	Tracking Measures
Expand matching grant program for watershed protection and preservation to allow for funding of stormwater-related activities, such as promoting water-wise landscaping, reduction of stormwater discharges, restoring riparian areas, stormwater quantity reduction, stormwater quality/treatment, etc.	• Continue to fund $50,000 grant program. • Expand matching grant program for watershed protection. • Promote the grant program in conjunction with RC5 outreach activities.	• Maintain a list of grant awards tracking funding and projects.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-14, $50,000 was available in the Watershed Protection and Preservation Grant program to fund watershed related projects. This grant can be awarded for projects that include stormwater-related activities, such as the following:

- Streamside riparian restoration, including erosion control using tree plantings and bioengineering techniques
- Removal or replacement (with native vegetation) of noxious vegetation in riparian areas
- Environmental education programs
- Preservation and/or enhancement of wetlands
- Preservation of watersheds by restoring and/or preserving upland green space and native vegetation
- Design, construction, or improvement of stormwater management facilities (e.g., bioswale, eco-roof, or pervious pavement) that serves more than a single residential property

Three grant applications were awarded during FY 2013-14 for a total of $16,005. Two of these were awarded to the Straub Environmental Center for environmental education ($3,505 and $5,000), and one was awarded to the North Santiam Watershed Council for project implementation ($7,500).

2.8 RC9—Legal/Ordinances

RC9 – LEGAL/ORDINANCES, TASK 1

Task Description	Measureable Goals	Tracking Measures
In process of revising the Stormwater Management Design Standards (RC 3 Task 1) and developing a stormwater-dedicated chapter to the SRC (RC 9 Task 3), coordinate with Community Development's effort to adopt a Unified Development Code (UDC). It is envisioned that the stormwater dedicated SRC would be integrated into the UDC framework.	• Adopt the UDC and integrate stormwater-related revisions to the SRC by the end of the MS4 permit cycle.	• Report on progress for adoption of UDC and integration of stormwater-related SRC.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During this reporting period, City staff completed the effort to incorporate selected chapters of the Salem Revised Code (SRC) into a single, Unified Development Code (UDC). Led by the Community Development Department, this effort involved grouping related sections and subsections of existing chapters of the SRC into a more cohesive format. The new Unified Development Code went into effect May 14, 2014.

Additional information and details regarding the UDC are provided on the City's website at:

http://www.cityofsalem.net/Departments/CommunityDevelopment/Planning/Documents/Unified-Development-Code_Ord-No-31-13.pdf

RC9 – LEGAL/ORDINANCES, TASK 2

Task Description	Measureable Goals	Tracking Measures
Continue to enforce the SRC and review and revise it as necessary to reflect the updated Stormwater Management Design Standards that principally focus on requirements associated with on-site water quality facilities for new development or redevelopment (RC3).	• Revise SRC (as needed).	• Track any MS4 stormwater pertinent revisions made to the SRC.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Salem Revised Code (SRC) Chapter 20J (Administrative Rule Making and Contested Case Procedures) contains provisions for enforcement proceedings and civil penalties.

New subsections in SRC Chapter 70 (Utilities General) were adopted by City Council in December 2012, which clarifies inspection procedures for enforcing the Utility Code and establishes operation and maintenance requirements for owners/operators of private stormwater facilities.

RC9 – LEGAL/ORDINANCES, TASK 3

Task Description	Measureable Goals	Tracking Measures
Develop a new SRC chapter dedicated solely to stormwater management. It is currently envisioned that this will be done after the City's renewed MS4 Permit is issued, and in conjunction with implementation of the new stormwater utility and updated Stormwater SDC Methodology (RC6) and the updated Stormwater Master Plan (RC1).	• Adopt the new SRC chapter for stormwater by the end of the MS4 permit cycle.	• Report on adoption of the new SRC chapter for stormwater, and processes/milestones enroute to formal adoption of the SRC revisions.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

A new chapter of the Salem Revised Code specific to stormwater (SRC 71) was adopted in December 2013 and became effective January 1, 2014. The Stormwater Code is linked to the updated Public Works Design Standards (see RC 3 Task 1), which also became effective on January 1, 2014.

2.9 ILL1—Spill Prevention and Response Program

ILL1 – SPILL PREVENTION & RESPONSE PROGRAM, TASK 1

Task Description	Measurable Goals	Tracking Measures
Continue to review and refine the existing spill prevention and emergency response program to protect ground and surface water quality. New activities will be proposed and implemented as appropriate, and coordination and cooperation among other relevant agencies and ODOT will be maintained and improved. This review will be coordinated with the de-icing activities of the Airport Operations and their 1200-Z permit, and possibly the Oregon Air National Guard.	• Continue to implement the spill prevention and emergency response program and review and revise as needed.	• Document refinements to cleanup procedures for vehicular accidents and structural fires.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Salem Fire continues to respond to emergencies related to vehicular crashes, structural fires, and hazardous materials incidents utilizing *Salem Fire Standard Operation Guideline* (SOG) #4.16 – *Minor Spill Response*. This SOG provides guidance on best management practices for preventing discharges into storm drains. Salem Fire will continue to respond to any spill or leak of de-icing material at the Salem Airport and continues to use SOG #2.6.3 – *Live Fire Training*, to incorporate practices related to the prevention and/or control of materials related to firefighter training. This guideline now includes site surveys as well as additional procedures to eliminate runoff/discharge from firefighter training exercises.

ILL1 – SPILL PREVENTION & RESPONSE PROGRAM, TASK 2

Task Description	Measurable Goals	Tracking Measures
Continue to coordinate timely responses to, and clean-up of emergency response sites and structural fires among Fire, Building and Safety, Development Services, and Environmental Services staff. The Fire Department has the lead role for response at emergency response and structural fire sites and all major vehicular accidents. Environmental Services (ES) staff will provide assistance when requested by the on-scene incident commander. One of the ES responsibilities is to make sure that the cleanup activities are conducted in an environmentally sensitive manner.	• Develop a review schedule with a checklist for the spill response plan.	• Track the number and category of spill events responded to, including an estimate of the amount of spilled materials collected and any associated enforcement actions.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Salem Fire continued to respond to hazardous/chemical spills as requested by their emergency dispatch center in FY 2013-14. If spills and/or leaks are beyond Salem Fire's capability or exceed the amount of equipment carried on Fire response vehicles, the Fire Department incident commander will request assistance from Environmental Services. Fire staff responded to 24 chemical leaks/spills, 959 vehicle accidents, and 166 fuel/oil spills during this reporting period.

ILL1 – SPILL PREVENTION & RESPONSE PROGRAM, TASK 3

Task Description	Measurable Goals	Tracking Measures
Continue to conduct daily City vehicle and equipment inspections for leaks and repairs as needed. Staff will review current procedures on an ongoing basis and implement improvements as necessary.	• Continue to implement the daily equipment inspection program.	• Report revisions to the daily inspection program

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Staff continued to stress the importance of completing daily vehicle inspections and submitting the inspection forms at monthly safety committee meetings. These inspection forms were revised during this reporting period to reflect updated OSHA requirements.

ILL1 – SPILL PREVENTION & RESPONSE PROGRAM, TASK 4

Task Description	Measurable Goals	Tracking Measures
Develop an updated Operations Pollution Prevention Plan; incorporating new/expanded/relocated Operations-oriented facilities.	• Update the Operations Pollution Prevention Plan by the end of the MS4 permit cycle. • Implement the updated Operations Prevention Plan upon completion.	• Track progress toward updating the Operations Pollution Prevention Plan. • Track implementation of the Operations Pollution Prevention Plan.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During this reporting period, Stormwater Quality staff continued to implement the City of Salem Shops Complex Stormwater Pollution Control Plan (SWPCP), which was completed in September 2012 and adopted in December 2012 as a new Public Works policy, the "City of Salem Shops Complex Maintenance Policy." The purpose of this policy was to unify all users of the Shops Complex in pollution prevention and maintenance activities of the user groups at the Shops Complex. This policy also formally adopts the SWPCP, which serves as a resource for identifying potential spill locations at the Shops Complex, identifies drainage patterns, the storm drainage system, and also refines training requirements. The SWPCP contains site description overviews for the East Yard and West Yard areas, maintenance activities, chemical storage areas, emergency spill control measures at the Shops Fueling Station, locations of outfalls, best management practices, spill prevention and response, preventative maintenance, building inspections, and good housekeeping practices. Additionally, this plan also contains a map which notes locations for catch basins, diversion valves, oil/water separators, storm sewer piping, a map highlighting sheet flow directions in the event of a spill, and building identification numbers. Copies of these maps were given to the Shops user groups to post in their buildings for spill response needs.

As a result of the Shops Complex Stormwater Pollution Control Plan, a new central recycling area has been established in the East Yard area of the Shops Complex. Recyclable materials now include metals, mixed recycling, glass, and PVC pipe products. On August 1, 2013, the Shops Complex was awarded a Marion County EarthWISE Certification for its efforts.

A Stormwater Quality staff member attends the bi-monthly Yard Master Committee Meetings, in which general housekeeping, illicit discharges, and best management practices are discussed among all the Shops' user groups (Fleet Services, Warehouse, Facilities, Parks, and Operations). Regular monthly street sweeping (on or around the first Wednesday of each month) of the parking areas and travel lanes, a more frequent sweeping of the materials stockpile area (average of three times per week), and twice daily sweeping in and around the equipment wash rack, have been implemented and adaptively managed as part of the SWPCP.

As part of the SWPCP new employees are introduced to good stormwater pollution control prevention practices, and provided a brochure during the new hire orientation process. Pollution prevention is further emphasized as tailgate topics and at section-wide safety meetings.

Annual SWPCP training refreshers for the Shops user groups began in August of 2013 and continued throughout the budget year. Stormwater staff plan for future SWPCP training refreshers again in August 2014, which will continue through the wet season.

2.10 ILL2—Illicit Discharge Elimination System Program

ILL2 – ILLICIT DISCHARGE ELIMINATION PROGRAM, TASK 1

Task Description	Measurable Goals	Tracking Measures
Continue to respond to reports of unusual discharges or suspicious water quality conditions within the stormwater system and urban streams. Where able, identify sources/causes and implement appropriate corrective actions. Utilize database to document associated activities.	• Respond to reports of illicit discharges and suspicious water quality conditions. • Maintain database to document unusual/suspicious discharges, sources found, and corrective actions taken.	• Track calls and mitigation actions taken in database.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Environmental Services continues to provide staff to respond to reports of unusual discharges or suspicious water quality conditions 24-hours a day, seven days a week, 365 days a year. Staff responded to 102 water quality-related dispatches during the reporting year. All responses and corrective measures are tracked in the Hansen system database. A summary of enforcement actions and inspections is provided in Section 4 of this report. Appendix A contains a complete list of MS4 violations during this reporting period.

ILL2 – ILLICIT DISCHARGE ELIMINATION PROGRAM, TASK 2

Task Description	Measurable Goals	Tracking Measures
Environmental Services staff will continue inspections of the City's wastewater users, through the pretreatment program, verifying the proper handling and disposal of both wastewater and stormwater.	• Inspect City's wastewater users for proper management of wastewater and stormwater.	• Track number of inspections and associated findings.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During this reporting period, Environmental Services staff continued to inspect wastewater users for proper handling and disposal of wastewater and stormwater. Staff screened 209 industrial/commercial facilities and conducted 1,084 wastewater discharge inspections/business contacts during the reporting year.

ILL2 – ILLICIT DISCHARGE ELIMINATION PROGRAM, TASK 3

Task Description	Measurable Goals	Tracking Measures
Work with Wastewater Collection Services to identify and correct cross-connections between the sanitary sewer and stormwater systems.	• Review stormwater and ambient stream monitoring data to identify possible cross-connection discharges into the stormwater system. • Maintain communications with Wastewater Collections and other City staff to identify any system cross connection problems.	• Document number of cross-connections identified and corrective actions taken.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Wastewater Collections provide smoke and dye testing inspection of both sanitary and stormwater lines to identify cross connections. One sanitary to stormwater cross-connection was identified and corrected in July 2013.

ILL2 – ILLICIT DISCHARGE ELIMINATION PROGRAM, TASK 4

Task Description	Measurable Goals	Tracking Measures
Develop and update a storm sewer outfall dry weather inspection and monitoring prioritization plan.	• Prioritize outfalls for storm sewer outfall inspection and monitoring, and inspect annually. • Coordinate prioritization process with ILL 2 Task 5.	• Document review of outfall monitoring plan. • Document priorities established for monitoring and inspection. • Track dry weather inspections conducted and results of inspection.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-2014, 34 stormwater structures (outfalls and manholes) received dry weather inspections. All 34 of the structures inspected were identified in the "City of Salem's Dry Weather Outfall and Illicit Discharge Screening Plan" that was submitted to the DEQ on July 25, 2012. This plan identifies a total of 35 structures; however, staff have still been unable to locate one of the structures.

For coordination with ILL2 Task 5, a GIS shapefile was created for the priority outfall locations. All analytical test results have been included in the attribute table of this shapefile. Structures with elevated fluoride concentrations (found during FY 2012-2013) were sampled for E. Coli bacteria this last fiscal year. For further information on the results of the inspections refer to Appendix B.

ILL2 – ILLICIT DISCHARGE ELIMINATION PROGRAM, TASK 5

Task Description	Measurable Goals	Tracking Measures
Identify and map contaminated sites in the GIS system. With input from other City departments, identify a list of areas where there either has been a substantial spill or there is the potential for a spill or illicit discharge. These areas are identified based on activities on site, history of problems, or specific industry, for example. These areas will be mapped in the GIS system for use across City departments.	• Continue to identify and map contaminated sites in the GIS system.	• Track number of contaminated sites added to the GIS system.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Environmental Services provides information on any newly discovered contaminated sites to the Public Works GIS Supervisor in the Engineering Division. This Division adds new sites to the City GIS mapping system used throughout the City. A variety of sources/activities can lead to site contamination. These sources can include leaks from storage tanks and process lines, releases during loading or off-loading activities, or discharges during accidents or emergencies. During this reporting period there were two contaminated sites added to the contaminated sites layer in the Public Works GIS system.

2.11 ILL3—Illegal Dumping Control Program

ILL3 – ILLEGAL DUMPING CONTROL PROGRAM, TASK 1

Task Description	Measurable Goals	Tracking Measures
Continue to sponsor the Adopt-a-Street Program. The program is an effective way to get residents involved in keeping the community's streets clean and consequently preventing trash and debris from entering the storm drainage system.	• Continue to support the Adopt-a-Street Program.	• Record the miles of adopted streets, number of participating groups, and volume of litter collected through the Adopt-a-Street Program.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The City continued to sponsor the Adopt-a-Street Program during this last reporting year and utilized an internal database to track active/inactive volunteer group activity, dates of cleanup activities, total pounds of trash removed, and miles of street right-of-way maintained. During FY 2013-14, there were 85 different participating groups; 1,700 total volunteers; 170 street miles maintained; and 9,600 pounds of litter removed as a result of this program.

ILL3 – ILLEGAL DUMPING CONTROL PROGRAM, TASK 2

Task Description	Measurable Goals	Tracking Measures
Continue to provide the 24-hour Public Works Dispatch Reporting Center to receive and respond to calls regarding illegal dumping and other environmental complaints/problems and responses thereto. Continue to advertise hotline on City website, utility bill inserts, business cards, public brochures, and consumer confidence reports. As circumstances warrant, publicly report illicit discharges through use of various media outlets.	• Continue to operate the 24-hour Public Works Dispatch Reporting Center. • Assign reports to appropriate City staff for action, including actions taken under ILL2-1.	• Record number and types of reported illegal dumping incidents. • Track media outreach when a discharge warrants.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Environmental Services provides staff to respond to reports of illegal dumping and environmental complaints received through the Public Works Dispatch Center 24-hours a day, seven days a week, 365 days a year. Actions taken when responding to calls include the completion of "Service Requests," a computerized record of calls received and actions taken. This database is in the Public Works Dispatch Center. Staff responded to 14 prohibited discharge violations during this reporting period. Refer to Section 4 and Appendix A for a list of MS4 related enforcement actions during the reporting year.

ILL3 – ILLEGAL DUMPING CONTROL PROGRAM, TASK 3

Task Description	Measurable Goals	Tracking Measures
Continue to support the Adopt-a-Stream program, which involves teachers and students in gathering water quality data from streams, thereby providing water resource education to students through experience. The City supports the program by facilitating projects and providing technical assistance and resources.	• Continue to support the Adopt-A-Stream Program.	• Maintain a descriptive list of adopt a stream program projects, objectives, outcomes upon completion, and number of participants.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Staff continued to support the Adopt-a-Stream program by providing water resource education to teachers and students, loaning water quality kits and macroinvertebrate sampling supplies, and providing $1,000 in the budget for bus services for Adopt-a-Stream-related field trips. The City supports the program by facilitating projects and providing technical assistance and resources upon request.

ILL3 – ILLEGAL DUMPING CONTROL PROGRAM, TASK 4

Task Description	Measurable Goals	Tracking Measures
Continue to support Marion County in their efforts to provide convenient alternatives for legal disposal of household hazardous wastes and other recyclable materials.	• Continue to support Marion County in providing alternatives for household hazardous waste disposal.	• Document frequency and type of support activities.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The City continued to promote Marion County programs through radio advertisements and articles in the City's Community Connections Newsletter. These advertisements included such topics as: household hazardous waste (HHW) disposal, compact fluorescent lamp (CFL) disposal, e-cycling, and proper motor oil disposal. Radio and printed advertisements during FY 2013-14 occurred per the schedule that follows:

Radio

- July 15 - 19, 2013: Oil recycling (toxins)
- October 28 - November 1, 2013: CFL recycling (mercury)
- November 11 - 15, 2013: E-cycling (toxins)
- December 9, 2013: CFL recycling (mercury)
- December 16 - 20, 2013: CFL recycling (mercury)
- December 23 - 27, 2013: E-cycling (toxins)
- March 10 - 14, 2014: Battery recycling (toxins)

Salem Weekly

- January 2014: E-cycling (toxins)

Facebook Posts

- September 5, 2013: Magnet reuse (trash)
- September 12, 2013: SOLVE Clean up event post (trash)
- September 24, 2013: SOLVE Clean up event post (trash)
- November 13, 2013: America Recycles Day post (HHW)
- December 27, 2013: E-cycling/reuse (toxics)

During FY 2013-2014, topics related to providing "convenient alternatives for legal disposal of household hazardous wastes and other recyclable material," consumed 14% of budgeted radio spots, 8% of paid print ads, and were the focus of 4% of the "Clean Streams Clear Choices" Facebook posts.

ILL3 – ILLEGAL DUMPING CONTROL PROGRAM, TASK 5

Task Description	Measurable Goals	Tracking Measures
Continue to support the annual yard debris cleanup effort.	• Support the annual yard debris cleanup effort.	• Record amount of debris cleaned up and level of participation.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Inclement weather during this reporting period resulted in two of the three drop-off locations being closed for the annual Leaf Haul on December 7, 2013. The only site that was available to collect leaves was at the State Fairgrounds. As a result, one extra date was scheduled during the reporting period for leaf collection (December 14, 2013) at the Browns Island Demolition site. Nevertheless, the amount of leaves collected this year (180 cubic yards) is significantly lower than the yearly average of the previous five-years (547.5 cubic yards). In addition, volunteer participation in 2013 was 33 percent of the number in 2012 (75 volunteers verses 25 volunteers, respectively). This is likely due to inclement weather and the closing down of two of the three locations.

This event, as well as the importance associated with the removal of leaves from storm drains, was publicized via radio, Facebook, and the Salem Weekly according to the following schedule:

Radio

- October 21 - 25, 2013: Adopt-A-Storm-Drain
- November 4 - 8, 2013: Call for volunteers (Fall Leaf Haul)
- November 18 - 22, 2013: Adopt-A-Storm-Drain
- December 2 - 6, 2013: Fall Leaf Haul Event
- December 10 - 13, 2013: Second Fall Leaf Haul Event

Facebook posts

- October 23, 2013: Adopt-A-Storm-Drain
- November 4, 2013: Call for volunteers (Fall Leaf Haul)
- November 18, 2013: Link to Adopt-A-Storm-Drain video on CCTV
- November 26, 2013: Fall Leaf Haul Event
- December 6, 2013: Bad weather alert - cancellations and closure of two locations
- December 9, 2013: Second Fall Leaf Haul date and details

Salem Weekly ad

- October 2013: Adopt-A-Storm-Drain
- November 2013: Fall Leaf Haul Event

Fall Leaf Haul website

- Total hits: 1,094

2.12 IND1—Industrial Stormwater Discharge Program

IND1 – INDUSTRIAL STORMWATER DISCHARGE PROGRAM, TASK 1

Task Description	Measurable Goals	Tracking Measures
Environmental Services will inspect stormwater systems while conducting inspections of City-permitted industrial wastewater users, and work with DEQ to coordinate the permitting and compliance processes for industrial users in the Salem area, including DEQ-issued 1200-Z permitted sources, underground storage tank (UST) removal, and site remediation permits issued by DEQ for sources/sites within the City. Coordination options include: receiving information on proposed 1200-Z permits, commenting on proposed permits, and meeting periodically with DEQ on coordination efforts.	• Inspect stormwater systems while conducting inspections of City-permitted wastewater users. • Develop process to coordinate with DEQ on industrial permits within the City.	• Track coordination efforts with DEQ. • Include stormwater observations as appropriate on inspection reports and follow-up actions.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Environmental Services continued to inspect stormwater systems as part of their facility inspection activities performed under the industrial pretreatment program. Inspection records are maintained in the Environmental Services database. The DEQ includes the City of Salem in notifications of DEQ-regulated remediation of contaminated sites affecting the Salem area.

Salem is not a permitting agent for the 1200-Z program, but has developed a process (consistent with the MS4 Permit requirements) to notify the DEQ when a site in Salem is undergoing development, which may be subject to State permitting. Environmental Services identified 2 existing facilities with the potential of requiring a DEQ 1200-Z permit during this reporting period. Environmental Services notified the facility owner or contact person by letter. Regional staff from the DEQ were contacted by email with a scanned copy of the letter that was sent to the facility. Refer to ILL2 Task 2 for a summary of facility inspections, and IND1 Task 2 for a summary of facility plans reviewed.

IND1 – INDUSTRIAL STORMWATER DISCHARGE PROGRAM, TASK 2

Task Description	Measurable Goals	Tracking Measures
During plan review, review industrial facilities for the potential of requiring pretreatment of stormwater prior to discharge based on the industrial activities of the specific facility. Conduct inspections of industrial facilities requiring stormwater pretreatment to ensure structural controls have been built according to approved plans.	• Review industrial plans as necessary for additional stormwater treatment. • Conduct inspections once construction is completed to ensure work was done in accordance with approved plans.	• Maintain database of plans reviewed and final inspections conducted.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Environmental Services continued to participate in the plan review and inspection processes to help insure appropriate treatment is included during construction, or remodel of industrial sites. All plans reviewed and inspections completed are tracked in the AMANDA database. Staff reviewed 353 industrial plans and performed 245 post-construction inspections during the reporting year.

IND1 – INDUSTRIAL STORMWATER DISCHARGE PROGRAM, TASK 3

Task Description	Measurable Goals	Tracking Measures
Surveys are sent to applicable business classes (restaurants, metal finishers/platers, radiator shops, dry cleaners, printing shops, photo processors, etc.) as part of the pretreatment business survey database, part of the industrial pretreatment program for wastewater. Customers will be surveyed on major on-site activities to identify potential locations for public education, future sampling, and tracking down illicit discharges. Illicit stormwater discharges from these business groups are address in ILL2.	• Send surveys to new customers as accounts are opened. • Enter survey results into database – on-going as surveys are returned.	• Track number of surveys sent out. • Track number of surveys returned and entered into database. • Track targeted public education activities for specific industries.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

Environmental Services continued to send surveys to newly identified targeted businesses, at least twice annually. Of the 14 surveys that were distributed, 12 were returned and entered into the pretreatment database. Businesses failing to return the survey were visited by an inspector to obtain the necessary information.

IND1 – INDUSTRIAL STORMWATER DISCHARGE PROGRAM, TASK 4

Task Description	Measurable Goals	Tracking Measures
Continue the semi-annual Technical Bulletin for the City's industrial users and produce other materials for these users. This activity is principally associated with the City's wastewater Pretreatment Program, but will be used as a vehicle to address stormwater related issues as well.	• Produce two technical bulletins for industrial users each year.	• Track published technical materials prepared for industrial users each year.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During the FY 2013-14 reporting period, Environmental Services communicated directly with the City's industrial users through multiple individualized emails to alert these users to upcoming regulatory changes and provide tailored information regarding common pollution prevention practices. Staff will continue to provide direct communication with industrial users as new information becomes available and/or to address individual needs.

2.13 CON1—Construction Site Control Program

CON1 – CONSTRUCTION SITE CONTROL PROGRAM, TASK 1

Task Description	Measureable Goals	Tracking Measures
Continue implementation of the Erosion Prevention and Sediment Control program for developments that meet or exceed the threshold indicated in SRC Chapter 75, which includes the submission of erosion prevention and sediment control plans with structural and non-structural BMPs. Review program experiences annually and implement improvements as appropriate including Code amendments if needed.	• Implement SRC 75. • Conduct annual program reviews. • Implement appropriate improvements and/or Code amendments. • Perform plan reviews for erosion control requirements.	• Track number of erosion control plans reviewed for compliance with SRC 75.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-14, the following improvements/activities associated with the Erosion Prevention and Sediment Control (EPSC) program occurred:

- Amendments to SRC 75 were adopted
- SRC 75 continued to provide the basis for updated plan review, inspection procedures, and enforcement response
- Erosion control plan review process continued to include an updated checklist that is completed by the EPSC Inspection Lead
- 266 EPSC plans were reviewed by City staff for compliance with SRC 75

CON1 – CONSTRUCTION SITE CONTROL PROGRAM, TASK 2

Task Description	Measureable Goals	Tracking Measures
Continue to train and educate City staff and private contractors about stormwater pollution at construction sites, with an emphasis on prevention and control BMPs. Provide notice to construction site operators concerning where education and training to meet erosion and sediment control requirements can be obtained.	• Provide annual erosion control training to City staff and private contractors.	• Track education and training programs conducted and number of staff/public trained.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-14, Erosion Prevention and Sediment Control training was provided to contractors, design consultants, City Engineering Division, City staff, and other local agency staff to ensure compliance with 1200-CA and MS4 Permit requirements. Staff also continued efforts to provide training to concrete suppliers concerning truck washout procedures. All Engineering Inspection staff are ODOT certified Environmental/Erosion Control Inspectors and certified as DEQ Erosion & Sediment Control Inspectors.

In addition, City staff continued to participate in the Mid-Willamette Outreach Group (MWOG) during this reporting period and helped to coordinate the "3nd Annual Mid-Valley Erosion Control & Stormwater Management Summit," on January 28, 2014. This event provides education regarding erosion control practices and options for LID to local developers, contractors, and regional municipal staff.

CON1 – CONSTRUCTION SITE CONTROL PROGRAM, TASK 3

Task Description	Measureable Goals	Tracking Measures
Document and streamline site plan review, inspection, and enforcement procedures for the construction site runoff control program.	• Complete documentation of site plan review, inspection, and enforcement procedures before the end of year four of the MS4 permit cycle.	• Track completion of documented procedures.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During this reporting period staff continued to use updated site plan review procedures, EPSC checklists, and inspection procedures. Updated enforcement procedures are also being implemented. All of these procedures will continue to be reviewed and updated for improvements. Staff reviewed 266 erosion control plans, performed 4,576 erosion control inspections, and issued 562 erosion control permits in FY 2013-14.

CON1 – CONSTRUCTION SITE CONTROL PROGRAM, TASK 4

Task Description	Measureable Goals	Tracking Measures
Continue to review and update the Erosion Prevention and Sediment Control Technical Guidance Handbook.	• Update Technical Guidance Handbook before the end of year four of the MS4 permit cycle.	• Track updates made to the Technical Guidance Handbook.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The City completed SRC and design standard revisions during this reporting period that guide implementation of the EPSC program. The City is presently using the ACWA Construction Site Stormwater Guide for field inspection. The Technical Guidance Handbook will now be revised to fill any gaps in the program not covered in the design standards and field handbook. A draft update of this handbook has been completed. EPSC Standard Plans, which will be referenced in the revised handbook, have already been updated and adopted.

CON1 – CONSTRUCTION SITE CONTROL PROGRAM, TASK 5

Task Description	Measureable Goals	Tracking Measures
Continue to coordinate with the City's 1200-CA Permit for City construction projects subject to its program.	• Requirements for 1200-CA compliance incorporated into City construction plans, specifications, and contract documents. • Make erosion prevention and sediment control a key agenda item at all pre-construction conferences. • Include inspection of all site erosion prevention and sediment control measures as part of City projects.	• Track renewal of 1200-CA permit.

FY 2013-14 ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The following 1200-CA Permit coordination activities continued through the FY 2013-14 reporting year:

- 1200-CA Permits were included in City contract documents
- 1200-CA Permit and EPSC enforcement continued to be a key discussion point at pre-construction conferences
- A designated EPSC Inspector inspected all City 1200-CA permitted projects

2.14 MON1—Monitoring

MON1 – MONITORING, TASK 1

Task Description	Measurable Goals	Tracking Measures
Continue to install and maintain flow and water quality monitoring stations in City waterways to support selection of capital improvement projects, update the hydrologic-hydraulic computer model, and help direct policies to protect the health of these water bodies. The actual rate of installation and the total number of stations will be based on the maintenance requirements of the stations, available funding, and coordination with urban watershed assessments/plans.	• Install additional monitoring stations. • Monitor the station alarms in conjunction with the illicit discharge control program (ILL2, Task 1). • Follow up on potential hotspots or problem areas as may be identified through data analyses.	• Track number of additional monitoring stations implemented.

FY 2013-14ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

The City did not install any new continuous water quality or stream gauging monitoring stations during this reporting period. Two additional continuous stream gauging stations will be installed in FY 2014-15 in the eastern half of the Mill Creek Watershed. These gauging stations will be located outside the City's jurisdictional boundaries and are being installed as part of an effort to develop an early flood warning system for the Mill Creek Watershed.

Environmental Services staff responded to 25 monitoring station alarms during FY 2013-14. Of the 25 alarms, 8 were deemed erroneous due to instrument error. Of the remaining 17 alarms, 6 occurred during storm conditions and 11 occurred during dry conditions. Some alarms were caused by permissible activities (e.g. in water work permits, exemptions identified in the NPDES MS4 permit (water main break/emergency repair), and some were the result of wildlife and/or kids playing in the creek. Regardless of what caused the alarm, each of the 25 alarms elicited some type of follow up response. All alarms that occurred during dry conditions were considered hotspot/problem areas that prompted field investigation. When dry condition alarms show a recurring pattern, some form of source tracking activity was conducted; including TV inspection and/or smoke testing.

In April of 2014, the continuous telemetry network was compromised by a radio that was locked in transmitter mode, thus not allowing for alarm notification to the City's dispatch center. The City's Stormwater Services work group utilized a consultant to help the City troubleshoot the problem. However, this issue was not resolved until after the end of FY 2013-2014. During this time, staff completed daily reviews of the station data and investigated abnormalities as they occurred.

MON1 – MONITORING, TASK 2

Task Description	Measurable Goals	Tracking Measures
Continue the urban stream and Willamette River water quality sampling program, with emphasis on reviewing and evaluating sampling data to prioritize investigations and improvement/maintenance projects. This sampling augments the monitoring plan included in the City's 2008 NPDES MS4 Permit Renewal application.	• Update database for collected data. • Review collected data for purposes of trending and benchmarking by the end of the permit term. • Follow-up on potential hotspots or problem areas as may be identified by the data review.	• Document findings regarding trends.

FY 2013-14ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

All data collected last fiscal year has been verified for accuracy and imported into the Aquarius Database.

Review of the data prompted Stormwater Services to budget for microbial source tracking efforts in the Clark Creek Watershed. These source tracking efforts will be implemented during FY 2014-2015. Refer to Appendix B for a summary of sampling data collected during FY 2013-14.

MON1 – MONITORING, TASK 3

Task Description	Measurable Goals	Tracking Measures
Continue to implement all components (MS4 outfall, instream, pesticide, and macro-invertebrate) of the City's "Surface Water and Stormwater Monitoring Plan."	• Implement the City's Stormwater Monitoring Plan, including MS4 outfall, instream, pesticide, and macro-invertebrate monitoring components.	• Provide summary statistics for sampling results from each wet-weather season. • Track any modifications to the monitoring plan.

FY 2013-14ACTIVITIES & ACCOMPLISHMENTS

Briefly summarize specific activities completed in FY 2013-14, which demonstrate that Measurable Goals were attained or that progress was made.

During FY 2013-14, Stormwater Services monitoring staff completed 5 Instream Storm, 4 Stormwater, and 1 Mercury sampling events. The Mercury monitoring requirement is now complete. The Macroinvertebrate monitoring requirement was completed during FY 2012-13. Appendix B contains summary statistics for all sampling that was conducted during this reporting period.

3 PROGRAM EXPENDITURES AND FUNDING SOURCES

Stormwater-related program costs in Salem have been historically funded through wastewater rates, which are comprised of a water consumption (flow) component and a fixed user charge. In December of 2010, Salem City Council approved the adoption of a separate stormwater service charge or utility. Initial implementation of the stormwater utility began on January 1, 2013, and will be phased in over a period of four rate cycles.

The stormwater utility has been developed to provide an equitable way of paying for Salem's stormwater programs by more accurately and fairly linking the stormwater impacts of the ratepayer's property to the rate paid by each ratepayer. The stormwater service charge is based on each property's impervious surface and an assessment of stormwater programmatic costs that are shared equally among all ratepayers. Additionally, properties that take steps to reduce their impervious surface areas, or that have onsite facilities that reduce stormwater impacts, have an opportunity to reduce their stormwater service charge. There currently is no mechanism for residential ratepayers to reduce their stormwater service charge.

Table 2 provides a summary of the total stormwater program expenditures for the current reporting year, as well as those anticipated through the next (FY 2014-15) as identified in the adopted budget.

Table 2. Stormwater Expenditures		
Stormwater Operating Costs	**FY 2013-14 Budget**	**FY 2014-15 Budget**
Stormwater Operations & Maintenance	$2,061,450	$2,164,930
Stormwater Quality	$1,698,400	$2,010,870
Cleaning	$389,649	$386,432
T.V. Inspection	$185,912	$233,992
Water and Environmental Resources	$105,086	*$0
Environmental Services	$250,029	$296,213
Planning & Development	$723,198	$990,278
Laboratory	$32,092	$28,970
Operations Administration	$129,070	$207,124
Utility Billing	$319,263	$361,884
Dispatch	$69,999	$72,963
Debt for Capital	$767,005	$738,138
Department Administration and Indirect Costs (Nondivisional)	$1,780,409	$2,035,822
Nondivisional (Street Sweeping, Watershed Grants, HazMat/Emergency Management)	$1,427,740	$1,427,740
Budgeted Capital Improvements	$6,792,390	$5,981,470
TOTAL:	**$16,731,692**	**$16,936,825**

*The Water and Environmental Resources Section was eliminated at the end of last fiscal year.

4 ENFORCEMENT ACTIONS, INSPECTIONS, AND OUTREACH

Environmental Services staff responded to 102 water quality related issues and reported 14 prohibited discharge violations during this reporting period. Enforcement actions related to these violations included warnings, notice of violations, and citations (refer to Appendix A).

Erosion control and 1200-CA Permit requirements are an integral part of all City-issued construction plans and specifications. The City of Salem continues to coordinate efforts with Department of Environmental Quality (DEQ) staff regarding 1200-C permitted sites. During the FY 2013-14 reporting period 4,576 erosion control-related inspections were conducted by Public Works Development Services Inspectors and a total of 562 erosion control permits were issued (refer to CON 1 Task 1 through 5).

A complete description of outreach activities that occurred during this reporting year can be found in Section 2 of this report.

5 PLANNING, LAND USE CHANGES, AND DEVELOPMENT

Revisions to the City of Salem Public Works Department Stormwater Management Design Standards (Design Standards) to reflect the post-construction requirements presented in the MS4 Permit were completed during this reporting period. Before these updates were adopted via the City's relatively new administrative rule process, a new stand-alone stormwater chapter (SRC 71) also had to be developed and approved. This new stormwater dedicated chapter was adopted by City Council in December 2013. SRC 71 and the updated Design Standards became effective on January 1, 2014.

The City's Community Development Department completed a multi-year effort in FY 2013-14 to develop a Uniform Development Code (UDC). Development of the UDC principally focused on revisions to the City's Zoning Ordinance as set forth by Salem Revised Code (SRC) Title X, Chapters 110 through 166. The UDC was adopted by City Council in April 2014.

5.1 Land Use Changes

There were no approved annexations or changes to city limits during this reporting period.

5.2 New Development

The City of Salem has continued to see a steady stream of new projects at all phases of development. During the FY 2013-14 reporting period, there was the addition of 2,388,518 square feet (54.8 acres) of new or replaced impervious surface area related to development projects in Salem. Below are several noteworthy projects that are moving forward in the development process:

Under Construction:

- Boise North and South - 315 Commercial Street SE. Will reuse existing Boise Cascade Building for Mixed Use Development. Under construction.
- Memory Care Facility – 2030 Wallace Road NW. Facility to be approximately 31,867 square feet and contain 56 beds. Permits have been issued. Under construction.
- Aspen Grove Apartments – 1936-1980 Wallace Road NW. 102-unit multi-family development. Close to completion.
- Garmin – expansion of existing business on Turner Road SE. Close to completion.
- Lithia Motors (formerly O'Brien) – moving from Liberty/High Street NE to Salem Parkway/Cherry Ave location. Will include the development of a vacant site with new buildings and car sales/display areas. Under construction.

Estimate of Potential Future Development:

- Baggage Depot – 500 13th Street SE. Reuse of historical structure and site improvements for transit station. In review.
- Former KIA Redevelopment – 4403 Commercial Street SE. Demo existing car dealership and redevelop with multi-tenant retail. In review.
- Union Gospel Mission – 885 Commercial Street NE. Expansion of existing homeless shelter. In review.
- River Bend Apartments – 642-750 River Valley Drive NW. 60-unit multi-family development. In review.
- Macleay Development – 5100 Block of Macleay Road SE. New multi-tenant retail/gas service station. In review.
- Fairview Hills multi-family development at Fairview site (Reed Rd), 435 units total and 22,000 square feet of commercial buildings. Approved but construction has not started.

- Salem Hospital new rehabilitation center and parking lot at former School for the Blind site. In review.
- PacTrust medical office and shopping center, 4826 Battle Creek Rd. SE. Medical office is complete – future retail development.
- Brush College Development – 2825 Brush College Road NW. 140-lot phased subdivision. In review.
- Liberty Road Subdivision – 5782 Liberty Road S. 69-lot subdivision. Approved.
- Landau Subdivision – 2526 Landau Street SE. 36-lot subdivision. Preliminary discussions.
- Sunnyside Subdivision – 7002-7028 Sunnyside Road SE. 137-lot subdivision. Approved.
- North Campus of the State Hospital (between Center Street and D Street) 47 acres to be surplussed by the State. Before development the following land use procedures are required: Historic Design Review of any proposed demolition or changes to existing buildings; possible changes to the National Historic District are required; Urban Growth Area permit to determine required infrastructure upgrades (water, sewer, stormwater and transportation); Comprehensive Plan Change and Zone Change to allow uses other than public hospitals; Site Plan Review and Building permits.

APPENDIX A. MS4 VIOLATIONS FY 2013-14

MS4 Violations Issued July 1, 2013 to June 30, 2014

Record	Business Name	Date	Violation	Action Taken	Outfall	Response	Received	Citation	Amount	Court Date	Date Paid	Compliance	Discharge	SRC1	SRC2	Address	Zipcode
6601	Walgreens Drug Store #9287	8/1/2013	Prohibited Discharge To The Storm Sewer	Warning	Storm							8/1/2013	Wash Water	73.160		124 Lancaster Dr SE	97301
2005	Oregon State Fair and Exposition Center	8/13/2013	Prohibited Discharge To The Storm Sewer	Warning	Storm							8/13/2013	Wastewater	73.160	73.165	2330 17th St NE	97301
731	Norpac 7	9/26/2013	Prohibited Discharge To The Storm Sewer	Notice of Violation	Storm	Yes	9/27/2013					9/26/2013	Wastewater	73.160		2325 Madrona Ave SE	97302
8075	Evening Land Vineyards	10/17/2013	Prohibited Discharge To The Storm Sewer	Warning	Storm							10/17/2013	Soapy Wash Water	73.160		572 Patterson St NW	97304
8993	Davcor Industrial Center	9/11/2013	Prohibited Discharge To The Storm Sewer	Citation	Storm			138586	$250	9/25/2013	10/17/2013	10/17/2013	Paint Wash Water	73.160		2035 Davcor St SE	97302
6262	Annette's Westgate Cafe	11/24/2013	Prohibited Discharge To The Storm Sewer	Citation	Storm			138587	$250	12/11/2013	12/5/2013	12/5/2013	Food Grease	73.160		1311 Edgewater St NW	97304
7725	Little Caesar's Pizza	12/11/2013	Prohibited Discharge To The Environment	Warning	Storm	Yes	12/13/2013					12/13/2013	Trash and Garbage	73.160		5757 Commercial St SE	97306
8726	Petco Animal Supplies Inc	12/27/2013	Prohibited Discharge To The Environment	Warning	Environment							1/2/2014	Trash and Garbage	73.160		4450 Commercial St SE	97302
8933	Auto Additions Inc	2/19/2014	Prohibited Discharge To The Environment	Warning	Storm							2/19/2014	Soapy Wash Water	73.160		3925 Fairview Industrial Dr SE	97302
7725	Little Caesar's Pizza	2/24/2014	Prohibited Discharge To The Environment	Citation	Environment			38654	$250	3/17/2014	3/27/2014	3/27/2014	Trash and Garbage	73.160		5757 Commercial St SE	97306
8274	Super Pho Vietnamese Cuisine	3/10/2014	Prohibited Discharge To The Environment	Warning	Environment							3/10/2014	Wash Water	73.160	73.165	1630 Lancaster Dr NE	97301
9043	A-1 Straight Line Striping Company	3/15/2014	Prohibited Discharge To The Environment	Response Billing	Environment	Yes	5/15/2014					5/15/2014	Striping Paint	73.160		13th St SE and Hoyt St SE	97302
9054	Pruitt Carpet Care	4/8/2014	Prohibited Discharge To The Storm Sewer	Warning	Storm							4/8/2014	Carpet Wash Water	73.160		3042 Hyacinth St NE	97301
3177	Allied Building Products Corp	4/21/2014	Prohibited Discharge To The Storm Sewer	Warning	Storm	Yes	4/22/2014					4/22/2014	Wash Water	73.160		1575 Salem Industrial Dr NE	97303

APPENDIX B. SUMMARY OF WATER QUALITY DATA FOR FISCAL YEAR 2013-14

City of Salem
National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4)

Summary of Water Quality Data
For Reporting Year 2013/2014

Prepared by:
City Salem Public Works Department
Stormwater Services
Stormwater Monitoring Staff

November 1, 2014

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(All Tables follow text of this document)

List of Figures

(All Figures follow Tables at end of this document)

List of Attachments

1.0 Introduction

This document provides all monitoring data, collected for the reporting year of July 1, 2013, to June 30, 2014 (RY 2013/14), in accordance with the City of Salem's NPDES MS4 permit requirements listed in Schedule B(5)(f)&(g). It also includes any additional data collected beyond the environmental data requirements in Table B-1, as required in Schedule F, Section C. A background narrative for each monitoring element for which data were collected for RY2013/14 is provided below, and all collected data are provided in the attached tables and figures[1].

2.0 Monitoring Elements

Specific details for each monitoring element can be found in the City's *Stormwater and Surface Water Monitoring Plan*. Progress toward meeting monitoring requirements defined in Table B-1 of the City's MS4 Permit is summarized in Table 1. Monitoring site locations are described in Table 2 and denoted in Figure 1, and each parameter analyzed for each different monitoring element are described in Table 3. Figure 8 displays the total monthly rainfall for each of the four rain gauge sites used for analysis.

2.1 Monthly Instream Monitoring

Sampling of designated urban streams for the Monthly Instream[2] monitoring element is conducted on a predetermined monthly schedule. This monitoring element includes the collection of grab samples and field measurements on 11 of Salem's MS4 stormwater runoff receiving streams. Ten of these streams are paired with upstream (at or near where the stream enters the City's jurisdiction) and downstream (at or near where the stream exits the City's jurisdiction or enters a receiving stream) site locations. The eleventh stream, the West Fork Little Pudding River, only has a downstream site location, because the West Fork Little Pudding River starts in the greater Salem area (outside city limits) and runs dry during the summer months.

Effective July 1, 2013, and with approval from the Oregon Department of Environmental Quality (DEQ), the City combined the Willamette River water quality sampling program with the Monthly Instream monitoring element. A copy of the City's revised *Surface Water and Stormwater Monitoring Plan* was included with last year's Annual Report, which described the program changes in detail. These changes included adding three Willamette River sampling sites to the Monthly Instream monitoring element, for a total number of 24 sites. The new Willamette River sites, are located upstream, mid-way, and downstream of city limits, and are included in Table 2 and Figure 1.

Per Table B-1 of the City's MS4 permit, additional water quality parameters are monitored for the sites within the Pringle Creek Watershed (PRI1, PRI5, CLA1, and CLA10), West Fork Little Pudding River (LPW1), and the Willamette River (WR1, WR5, and WR10); these additional parameters are denoted with **bold lettering** in the list below.

[1] All tables, figures, and attachments at the end of this document are not discussed in the order in which they appear.
[2] Identified as "Urban Streams monitoring" in the City of Salem Stormwater Management Plan 2010.

Water quality parameters collected include:

- Temperature
- Turbidity
- Specific Conductivity
- pH
- Dissolved Oxygen (DO)
- Nitrate + Nitrite as Nitrogen (NO_3+NO_2-N)
- *Escherichia coli (E. coli)*
- Biochemical Oxygen Demand (BOD_{stream})
- Zinc -total recoverable and dissolved **(CLA1, CLA10, PRI1, PRI5 only)**
- Copper -total recoverable and dissolved **(CLA1, CLA10, PRI1, PRI5 only)**
- Lead -total recoverable and dissolved **(CLA1, CLA10, PRI1, PRI5 only)**
- Hardness **(CLA1, CLA10, PRI1, PRI5only)**
- Total Suspended Solids (TSS) **(LPW1, WR1, WR5, WR10 only)**
- Alkalinity **(WR1, WR5, WR10 only)**
- Ammonia **(WR1, WR5, WR10 only)**
- Total Phosphorus (TP) **(WR1, WR5, WR10 only)**
- Total Solids (TS) **(WR1, WR5, WR10 only)**
- Total Dissolved Solids (TDS) **(WR1, WR5, WR10 only)**

Data for this monitoring element are provided in Tables 5 through 8, and Figures 2 and 3.

2.2 Continuous Instream Monitoring

The City maintains a network of Continuous Instream water quality monitoring sites and stream gauging sites on seven different urban streams within the city. There are currently 11 water quality monitoring and stream gauging sites and two stream gauge-only sites (PRI4 and LPW1). The City will be adding two new stream gauge-only sites next fiscal year as part of a flood warning system for the Mill Creek Watershed. Figure 1 denotes the locations of each current site.

The monitoring sites for this monitoring element are positioned in an upstream/downstream configuration. The upstream sites are adjacent to where the stream enters the City and the downstream sites are either above the confluence with another stream or where the stream exits the City's jurisdictional boundary.

Continuous data collected include:

- Turbidity
- Specific Conductivity
- Temperature
- pH
- DO
- Stage

All data are recorded in 15-minute intervals. All continuous statistical data summaries presented in the attached tables and figures were computed using grade A and/or grade B data. Qualifications for what constitutes grade A and grade B data are provided in Table 9.

The Continuous Instream monitoring element incorporates an alarm system that supports the City's Illicit Discharge Detection and Elimination (IDDE) program. The alarm system is used to

record, notify, and prompt investigation of water quality abnormalities that may be indicative of illicit discharges. It serves as an important tool to aid in the elimination of periodic illicit discharges, helps to prioritize dry weather outfall screening activities (see section 2.7), and serves as an outreach/education opportunity for residents.

Monthly medians for collected data are summarized in Table 10. Plots of continuous data and a summary of system alarms are provided in Figures 4 through 7.

2.3 Instream Storm Monitoring

Instream Storm refers to the monitoring of MS4 receiving streams during defined storm events. Sampling occurs at three sites in the Pringle Creek Watershed (continuous instream monitoring sites PRI12, PRI3, and CLK1). Data collected are used to increase understanding of receiving waters within the Pringle Creek Watershed and help guide Salem's stormwater management strategies in watersheds throughout the city. This monitoring element was initiated during this permit cycle and is expected to continue beyond the current MS4 permit cycle; ultimately providing a dataset for long-term trending and spatial analyses.

Sampling consists of flow weighted composite samples, grab samples, and field measurements. Parameters include:

- TSS
- BOD_{stream}
- Total Phosphorus (TP)
- Ortho Phosphorus
- NO_3+NO_2-N
- Ammonia Nitrogen (NH_3)
- Copper (Total Recoverable and Dissolved)
- Lead (Total Recoverable and Dissolved)
- Zinc (Total Recoverable and Dissolved)
- Hardness
- Specific Conductivity
- DO
- Temperature
- pH
- *E. coli*

Data for this monitoring element are provided in Table 11.

2.4 Stormwater Monitoring

The City has collected water quality samples from a number of sites throughout the piped MS4 system since 1995. Three monitoring sites are identified in the current monitoring plan, one each for residential, commercial, and industrial land use. The commercial and industrial sites are new sites for this permit cycle, while the residential site was sampled during the previous MS4 Permit cycle. Data from this monitoring element will be aggregated with previous data collected from similar land use types. The aggregated datasets will be used to characterize Salem's MS4 stormwater runoff pollutant concentrations per land use and compare them with the ACWA characterized land use concentrations.

Sampling consists of flow weighted[3] composite samples, grab samples, and field measurements. Parameters include:

- TSS
- $BOD_{5\text{-day}}$
- TP
- Ortho Phosphorus
- NH_3
- NO_3+NO_2-N
- Copper (Total Recoverable and Dissolved)
- Lead (Total Recoverable and Dissolved)
- Zinc (Total Recoverable and Dissolved)
- Hardness
- Specific Conductivity
- Temperature
- pH
- DO
- *E. coli*

Data for this monitoring element are provided in Table 12.

2.5 Pesticide Monitoring

Due to a lack of quality fall rainstorms, no pesticide sampling occurred during this fiscal year. The City will sample next fall to fulfill the requirement for this monitoring element.

2.6 Mercury Monitoring

Monitoring of low-level mercury and methyl mercury (total recoverable and dissolved) in MS4 discharges during storm events is a new requirement of the current MS4 Permit. Monitoring occurs twice per year (summer and winter) at the same residential and commercial land use sites used for Stormwater and Pesticide monitoring. EPA Method 1669 ultra clean sampling protocols are followed to collect all samples.

Per the DEQ's request, additional grab samples were collected at the same time as the mercury samples and analyzed for:

- TSS
- Dissolved Organic Carbon (DOC)
- Total Organic Carbon (TOC)
- Sulfate
- Alkalinity

[3] Due to hydraulic conditions, accurate flow pace sampling is not achievable at the residential land use, therefore the City has employed a time paced sampling protocol for this site.

Field Measurements were taken for:

- Temperature
- pH
- Oxygen Reduction Potential (ORP)
- DO
- Specific Conductivity

Mercury data collected for this monitoring element are provided in Table 13 and additional data collected are provided in Table 14. See Section 3.0 for more information on the future of Mercury sampling.

2.7 Priority Dry Weather Outfall/Manhole Screening

For RY 2013/2014, dry weather inspections were completed at a total of 34[4] structures (outfalls and manholes), all of which were identified in the City of Salem's Dry Weather Outfall and Illicit Discharge Screening Plan. Additionally, the plan identifies action levels (i.e. level that triggers a source investigation by City staff of a suspected illicit discharge) for all observed and analytical data collected.

Observational Data

Observational data collected did not produce any direct indication of the presence of an illicit discharge at any of the 34 priority structures.

Field Screening Pollutant Parameters

Field screening pollutant parameters include temperature, pH, specific conductivity, turbidity, and chlorine. Only chlorine had concentration levels above the action level, which occurred at four of the 34 sites. Two of the four samples had further analytical testing completed for detergents, fluoride, potassium, sodium, and ammonia. The results of this additional screening did not show any conclusive evidence that an illicit discharge was present. The other two sites with detectable chlorine concentrations did not have additional analytical testing done, because it was determined during the RY 2012/2013 sampling efforts that a drinking water main leak was the source of the water/chlorine.

Laboratory Analysis for E. Coli Bacteria

For RY 2013/2014, E. coli bacteria were analyzed at all but two (the two were determined to be groundwater) of the flowing priority outfalls, resulting in 18 samples analyzed. Of the 18 samples analyzed, seven had E. Coli concentrations greater than the 406 MPN/100 mL acute water quality criteria. Additional sampling and investigation of these catchments did not result in a definitive identification of a source. In an attempt to determine if the E. coli bacteria is of human origin, the city has budgeted for bacteria source analysis to be done by-way-of an outside laboratory during RY 2014/2015.

Additional E. coli monitoring was performed on Clark Creek near South Salem High School. Follow up sampling will be completed during RY 2014/2015, including a source tracking analysis by an outside laboratory.

All data collected for this monitoring element are provided in Tables 15 through 17.

[4] The plan had identified a total of 35 structures; however, staff were unable to locate one of the structures during field investigations.

2.8 Additional Data Collected

In addition to the required environmental monitoring data collected, the City also chose to conduct monitoring of the stormwater entering and leaving a subsurface gravel treatment wetland that the City installed during the summer of 2012. The treatment wetland was designed based off a treatment wetland installed by the University of New Hampshire (UNH) Stormwater Center in 2006. Originally these anaerobic wetlands were used in wastewater treatment, but due to their success in the removal of bacteria, nutrients, sediment, and other pollutants, treatment wetlands were adapted for stormwater starting as early at 1996[5].

Although the data from the UNH gravel treatment wetland showed great promise, very little data about treatment capabilities of these types of BMPs for stormwater use exist. The City chose to retrofit an existing surface detention basin into a subsurface gravel treatment wetland, and conduct water quality monitoring before using it as a widespread BMP. A Performance Monitoring Strategy was created and is included as Attachment A. This document details the objectives and goals for data collection. The monitoring has been conducted in conjunction with the Stormwater and Instream Storm monitoring, and it follows the same criteria for storm event size, as well as analysis of the same parameters. Data collected are included in Table 18.

3.0 Correspondence with the DEQ

On November 20, 2013, the City submitted a letter to the DEQ requesting elimination of mercury monitoring in accordance with Table B-1 Special Condition 6, which states *"after two years of monitoring (minimum of four samples), the permittee may request in writing to the Department that the mercury and methyl mercury monitoring be eliminated"*. A formal approval of elimination was received via email from Benjamin Benninghoff, MS4 Stormwater Coordinator, on January 1, 2014.

A copy of the letter sent to the DEQ and a copy of the email approval from the DEQ are included as Attachment B.

4.0 Conclusion

The City completed all MS4 Permit monitoring requirements for this reporting year, and is on track to meet all of the minimum monitoring requirements outlined in the MS4 Permit before its expiration on December 29, 2015. Cumulatively, data collected throughout this MS4 Permit cycle will be used to meet monitoring objectives identified in the City's monitoring plan, while also supporting data analyses that will be conducted in preparation for an MS4 Permit renewal package.

[5] http://stormwater.wef.org/2012/07/subsurface-gravel-wetlands-for-stormwater-management/

Table 1.

Progress Towards Completion of Table B-1 Environmental Monitoring Elements

Monitoring Type	# of sites	Total "Events" Needed	Completed 2010/2011	Completed 2011/2012	Completed 2012/2013	Completed 2013/2014	Remaining "Events" Needed
Monthly Instream	21	48 / site	12[1]	12[1]	12[1]	12[1]	12
Continuous Instream	10	On going	NA	NA	NA	NA	NA
Instream Storm	3	25 / site	0[2]	6	6	5	8
Stormwater (MS4)	3	15 / site	0[2]	4	4	4	3
Pesticides	3	4 / site	0[2]	1	2	0	1
Mercury	2	2 / site / year	0[2]	2	1	1	COMPLETE[3]
Macroinvertebrates	3	2 / site	0[2]	1	1		COMPLETE

[1] Due to no flow or access issues, several of the sites had less than 12 data collection events; however, all sites are on track to meet the minimum permit requirements.

[2] The City's monitoring plan was not approved by the Department until June 29, 2011; therefore, no sampling was conducted during this year for this element.

[3] Following Table B-1 Special Condition #6 of the City's NPDES MS4 permit, the City requested and received aproval from Department to eliminate the mercury and methyl mercury monitoring requirement after completing the required two years of monitoring.

Table 2.

Site Locations for Each Monitoring Element

Monthly Instream	
Site ID	Site Location
BAT 1	Commercial St SE
BAT 12	Rees Hill Rd SE
CGT 1	Mainline Dr NE
CGT 5	Hawthorne St NE @ Hyacinth St NE
CLA 1	Bush Park
CLA 10	Ewald St SE
CRO 1	Courthouse Athletic Club
CRO 10	Ballantyne Rd S
GIB 1	Wallace Rd NW
GIB 15	Brush College Rd NW
GLE 1	River Bend Rd NW
GLE 10	Hidden Valley Dr NW
LPW 1	Cordon Rd NE
MIC 1	Front St Bridge
MIC 10	Turner Rd SE
MRA 1	High St SE
MRA 10	Mill Race Park
PRI 1	Riverfront Park
PRI 5	Bush Park
SHE 1	Church St SE
SHE 10	State Printing Office
WR1	Sunset Park (Keizer)
WR5	Union St. Railroad Bridge
WR10	Halls Ferry Road (Independence)

Continuous Instream	
Site ID	Site Location
BAT3	Commercial St SE
BAT12	Lone Oak Rd SE
CLK1[2]	Bush Park
CLK12	Ewald St SE
GLE3	Wallace Rd NW
GLE12	Hidden Valley Dr NW
LPW1[1]	Cordon Rd
MIC3	North Salem High School
MIC12	Turner Rd SE
PRI3[2]	Pringle Park
PRI4[1]	Salem Hospital Footbridge
PRI12[2]	Trelstad Ave SE
SHE3	Winter St. Bridge

Stormwater / Pesticides / Mercury	
Site Id	Site Location
Electric[3]	Electric St. SE and Summer St. SE
Hilfiker[3]	Hilfiker Ln. SE and Commercial St. SE
Salem Industrial	Salem Industrial Dr. NE and Hyacinth St. NE

[1] Stage-only gauging station. [2] Instream Storm sampling done at these sites. [3] Mercury monitoring conducted at these sites.

BAT = Battle Creek, CGT = Claggett Creek, CLA / CLK = Clark Creek, CRO = Croisan Creek, GIB = Gibson Creek, GLE = Glenn Creek, MIC = Mill Creek, MRA = Mill Race, PRI = Pringle Creek, SHE = Shelton Ditch, LPW = West Fork Little Pudding River, WR = Willamette River

Table 3.
Parameters for Each Monitoring Element

Parameter	Units	Monitoring Element			
		Instream Storm	Stormwater	Monthly Instream	Continuous Instream
Alkalinity	mg/L			x[3]	
Biological Oxygen Demand (BOD_{stream})	mg/L	x		x	
Biological Oxygen Demand (BOD_{5day})	mg/L		x		
Specific Conductivity (Sp. Cond)	µS/cm	x	x	x	x
Copper (Total Recoverable and Dissolved)	mg/L	x	x	x[1]	
Dissolved Oxygen (DO)	mg/L	x	x	x	x
E. coli	MPN/100 mL	x	x	x	
Hardness	mg/L	x	x	x[1]	
Lead (Total Recoverable and Dissolved)	mg/L	x	x	x[1]	
Ammonia Nitrogen (NH_3-N)	mg/L	x	x	x[3]	
Nitrate and Nitrite (NO_3.NO_2)	mg/L	x	x	x	
pH	S.U.	x	x	x	x
Total Dissolved Solids (TDS)	mg/L			x[3]	
Temperature	˚C	x	x	x	x
Total Phosphorus (TP)	mg/L	x	x	x[3]	
Ortho Phosphorus	mg/L	x	x		
Total Solids (TS)	mg/L			x[3]	
Total Suspended Solids (TSS)	mg/L	x	x	x[2,3]	
Turbidity	NTU			x	x
Zinc (Total Recoverable and Dissolved)	mg/L	x	x	x[1]	

[1] Pringle Creek Watershed sites only (PRI1, PRI5, CLA1, and CLA10).

[2] West Fork of Little Pudding River site only (LPW 1).

[3] Willamette River sites only (WR1, WR5, and WR10).

Table 4.
Water Quality Criteria for Monitored Streams

Parameter	Season	Criteria	Applicable Waterbody
Dissolved Oxygen	January 1-May 15	Spawning: Not less than 11.0 mg/L or 95% saturation	Battle Creek*, Claggett Creek*, Clark Creek*[3], Croisan Creek*, Glenn Creek*, West Fork Little Pudding River*
	October 1- May 31	Spawning: Not less than 11.0 mg/L or 95% saturation	Gibson Creek*□ , Glenn Creek, Willamette River
	October 15 - May 15	Spawning: Not less than 11.0 mg/L or 95% saturation	Mill Creek*, Pringle Creek*[1], Shelton Ditch*
	Year Around (Non-spawning)	Cold water: Not less than 8.0 mg/L or 90% saturation	Battle Creek*, Croisan Creek*, Clark Creek, Glenn Creek*[4], Pringle Creek[2]
		Cool water: Not less than 6.5 mg/L	Claggett Creek*, Glenn Creek*, Mill Creek, Pringle Creek[1], Shelton Ditch, West Fork Little Pudding River
pH	Year Around	Must be within the range of 6.5 to 8.5 pH units	All Monitoring Streams
Temperature	October 15 - May 15	Salmon and steelhead spawning: 13˚C 7-day average maximum	Mill Creek, Shelton Ditch
	October 1- May 31	Salmon and steelhead spawning: 13˚C 7-day average maximum	Gibson Creek□
	Year Around (Non-spawning)	Salmon and trout rearing and migration: 18˚C 7-day average maximum	All Monitoring Streams
E. coli	Fall-Winter-Spring	30 day log mean of 126 E. coli organisms per 100 ml (or) no single sample > 406 organisms per 100 ml	All Monitoring Streams
	Summer	30 day log mean of 126 E. coli organisms per 100 ml (or) no single sample > 406 organisms per 100 ml	All Monitoring Streams
Biological Criteria	Year Around	Waters of the state must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.	Claggett Creek*, Clark Creek*, Croisan Creek*, Glenn Creek*, Pringle Creek Trib*
Copper	Year Around	Freshwater Acute and Chronic Criteria: 18 and 12 µg/L respectively with values calculated for a hardness of 100 mg/L	Pringle Creek*
Lead	Year Around	Freshwater Acute and Chronic Criteria: 82 and 3.2 µg/L respectively with values calculated for a hardness of 100 mg/L	Pringle Creek*
Zinc	Year Around	Freshwater Acute and Chronic Criteria: 120 and 110 µg/L respectively with values calculated for a hardness of 100 mg/L	Pringle Creek*

Note: All waterbodies in this table are included under the Willamette Basin or Molalla-Pudding Subbasin TMDL for Temperature and E. coli.

* Oregon's 2010 Integrated Report Section 303(d) listed.

□ Gibson Creek is referred as Gibson Gulch in Oregon's 2010 Integrated Report.

[1] Applies to Pringle Creek from river mile 0 to 2.6.

[2] Applies to Pringle Creek from river mile 2.6 to 6.2.

[3] Applies to Clark Creek from river mile 0 to 1.9.

[4] Applies to Glenn Creek from river mile 4.1 to 7.

Table 5.
Median Values for Monthly Instream Sites (RY 2013/14)

Station	Number of Samples	Temperature (C)	DO (mg/L)	Sp. Cond (µS/cm)	Turbidity (NTUs)	pH (S.U.)	E. Coli (MPN/100 mL)	NO_3 NO_2 (mg/L)	BOD_{stream} (mg/L)
BAT 1	12	10.7	10.1	49.5	9.5	6.8	118.0	0.63	1.08
BAT 12	12	9.9	10.5	43.7	7.0	6.9	77.0	0.56	0.89
CGT 1	12	13.6	9.1	182.3	8.1	7.4	139.5	0.18	2.00
CGT 5	12	12.1	9.8	167.3	17.9	7.3	530.0	0.18	1.71
CLA 1	12	11.6	10.4	91.9	3.5	7.3	403.0	0.81	1.08
CLA 10	12	12.4	9.9	70.4	4.3	6.9	178.0	1.41	1.07
CRO 1	12	10.4	10.3	72.0	5.9	7.2	133.5	0.44	0.93
CRO 10	12	10.2	9.8	52.8	8.8	6.9	43.0	0.42	0.93
GIB 1	12	11.1	10.4	87.1	9.7	7.1	79.5	1.02	1.26
GIB 15	12	11.0	10.4	93.0	9.9	7.3	49.0	1.87	1.20
GLE 1	12	11.3	10.1	97.2	9.3	7.2	160.0	0.85	1.37
GLE 10	12	10.8	10.6	65.0	7.8	7.3	56.0	1.03	1.09
LPW 1	11	11.3	8.5	205.7	12.0	7.0	105.0	0.21	2.14
MIC 1	12	11.9	10.3	80.7	5.3	7.3	106.5	1.41	1.03
MIC 10	12	11.9	10.6	83.6	6.7	7.4	110.0	1.75	1.14
MRA 1	12	11.6	10.7	78.2	5.6	7.4	172.0	1.44	1.20
MRA 10	12	11.5	10.0	82.8	6.0	7.2	106.5	1.62	1.03
PRI 1	12	11.5	10.6	79.5	5.5	7.3	117.0	1.31	1.21
PRI 5	12	12.1	10.6	88.5	5.9	7.5	168.0	0.89	1.47
SHE 1	12	11.4	10.6	81.5	5.5	7.3	70.0	1.59	1.05
SHE 10	12	11.5	10.5	80.7	5.9	7.0	57.0	1.68	1.16
WR1	12	12.8	10.9	62.4	4.0	7.5	32.5	0.23	0.95
WR5	12	11.3	10.6	61.0	4.2	7.4	30.0	0.17	1.10
WR10	12	11.7	10.6	60.2	4.1	7.4	13.5	0.18	0.90

Table 6.

Water Quality Criteria Exceedances for Monthly Instream Sites (RY 2013/14)

Station	Number of Samples	DO	pH	E. Coli[5]			Copper[6]		Lead[6]		Zinc[6]	
				Total #	Dry[2]	Rain[3]	Total	Dissolved	Total	Dissolved	Total	Dissolved
BAT 1	12	4	1	4	3	1						
BAT 12	12	2	0	1	1	0						
CGT 1	12	4	0	2	1	1						
CGT 5	12	3	0	7	6	1						
CLA 1	12	1	0	6	5	1	1	0	0	0	1	0
CLA 10	12	0	0	5	2	3	1	0	0	0	1	1
CRO 1	12	3	0	4	3	1						
CRO 10	12	4	2	0	0	0						
GIB 1	12	5[1]	0	2	0	2						
GIB 15	12	4[1]	0	4	3	1						
GLE 1	12	4	0	3	1	2						
GLE 10	12	4	0	3	2	1						
LPW 1[4]	11	6	0	4	3	1						
MIC 1	12	3	0	1	0	1						
MIC 10	12	3	0	0	0	0						
MRA 1	12	NA	0	3	1	2						
MRA 10	12	NA	0	1	0	1						
PRI 1	12	2	0	2	0	2	0	0	0	0	0	0
PRI 5	12	2	0	3	2	1	1	0	0	0	1	0
SHE 1	12	2	0	1	0	1						
SHE 10	12	2	0	0	0	0						
WR1	12	3	0	0	0	0						
WR5	12	4	0	0	0	0						
WR10	12	4	0	0	0	0						

Note: Copper, lead, and zinc collected at Pringle Creek Watershed sites only (PRI1, PRI5, CLA1, and CLA10).

NA = Not available (No dissolved oxygen water quality criteria associated with this waterbody).

[1] No year-round dissolved oxygen water quality criteria associated with this waterbody.

[2] Dry is < 0.05 inches of rainfall in previous 24 hours.

[3] Rain is ≥ 0.05 inches of rainfall in previous 24 hours.

[4] Unable to complete one sampling due to lack of flow.

[5] Single sample criterion of > 406 organisms per 100 mL used

[6] Exceedences calculated based on hardness concentration for each event

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: BAT1
Site Description: Commercial St

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 10:25	18	7.78	57	13	6.73	411	0.46	1.22	0
8/20/2013 10:42	17.1	7.22	61	13	6.79	687	0.34	0.91	0
9/17/2013 11:30	16.4	8.32	59.1	11	6.8	1203	0.46	1.02	0
10/15/2013 11:23	10	10.27	51.1	7.13	6.75	115	0.58	0.77	0
11/19/2013 11:00	11	9.43	20.6	109	6.77	>2420	0.06	3.69	0.96
12/19/2013 11:06	5.4	11.71	48.7	9.83	6.3	74	0.67	1.43	0.16
1/14/2014 10:50	7.2	11.58	50.2	7.83	6.55	56	0.98	0.74	0
2/24/2014 11:10	9.2	10.54	45	19.7	6.65	205	1.46	1.62	0.16
3/18/2014 10:50	8.2	11.38	47.4	8.24	6.7	10	1.36	1.14	0.01
4/15/2014 10:30	10.3	10.77	45.5	5.07	6.8	36	1.04	0.71	0
5/20/2014 11:00	13.2	9.84	46.8	6.46	6.85	118	0.74	0.79	0
6/17/2014 10:52	13.2	9.12	70	9.22	6.75	365	0.59	1.28	0.1
Median	**10.65**	**10.055**	**49.5**	**9.525**	**6.75**	**118**	**0.63**	**1.08**	

Site Name: BAT12
Site Description: Rees Hill Rd.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 10:10	17.7	8.22	57.6	9.83	6.96	77	0.21	0.82	0
8/20/2013 10:26	16.9	7.12	69.5	9	7.05	96	0.29	0.96	0
9/17/2013 11:10	15.8	8.84	63.4	10	7.16	>2420	0.49	0.8	0
10/15/2013 11:06	9.3	10.77	43.1	6.16	6.93	135	0.43	0.61	0
11/19/2013 10:50	10.2	9.94	45.2	10.4	6.85	326	0.4	1.17	0.96
12/19/2013 10:55	4.8	12.22	42.7	3.81	6.6	59	0.62	1.31	0.16
1/14/2014 10:35	6.2	11.97	43.5	5.74	6.83	32	0.9	0.75	0
2/24/2014 10:30	8.3	10.84	43.9	9.43	6.66	30	1.73	1.51	0.15
3/18/2014 10:30	7.7	11.46	43	4.7	6.74	55	1.36	1.13	0.01
4/15/2014 9:55	9.6	11.07	42.4	4.18	7	38	1.04	0.75	0
5/20/2014 10:20	12	10.3	42.7	6.07	6.95	248	0.73	0.56	0
6/17/2014 10:29	13.1	9.85	45.2	7.79	6.86	345	0.42	1.06	0.1
Median	**9.90**	**10.54**	**43.70**	**6.98**	**6.90**	**77**	**0.56**	**0.89**	

Site Name: CGT1
Site Description: Mainline Dr S

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 13:05	23.3	4	223	7.91	7.37	126	0.15	2.74	0
8/20/2013 13:10	22.5	4.04	214.6	5	7.2	248	0.1	2.03	0
9/17/2013 13:36	20	7	186	6	7.36	276	0.15	1.43	0
10/15/2013 13:32	12.7	6.79	170.1	7.78	7.19	49	0.2	1.3	0
11/19/2013 12:55	11.4	9.37	25.7	35	6.8	2420	0.15	2.89	0.92
12/19/2013 13:15	5.1	9.98	178.5	8.19	7.01	104	0.46	2.22	0.07
1/14/2014 12:45	7.4	9.88	186.3	13.7	7.32	153	0.9	1.9	0
2/24/2014 12:54	9.8	10.38	72.1	20.4	7.4	291	0.51	2.62	0.32
3/18/2014 12:55	10.8	11.29	174.6	8.94	7.52	84	0.84	1.71	0
4/15/2014 12:05	14.5	11.04	218.8	5.06	7.82	91	0.22	1.64	0
5/20/2014 12:12	19.4	8.88	195.6	4.65	7.66	93	0.12	1.97	0
6/17/2014 12:44	16.5	7.18	168.2	9.73	7.44	613	0.08	3.12	0
Median	**13.60**	**9.13**	**182.25**	**8.05**	**7.37**	**139.5**	**0.18**	**2.00**	

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: CGT5
Site Description: Hawthorne Ave

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 12:50	21.7	5.58	190.2	41.4	7.16	649	0.22	1.69	0
8/20/2013 12:38	17.8	6.44	215.4	32	7.2	1203	0.13	1.67	0
9/17/2013 13:20	18.5	8.13	105.8	34	7.24	1414	0.14	1.54	0
10/15/2013 13:25	12.4	10.25	140.7	20.3	7.4	1986	0.1	1.28	0
11/19/2013 12:45	11.6	9.36	35.8	32	6.87	1733	0.24	2.93	0.92
12/19/2013 12:15	4.1	11.57	196.8	18.7	7.17	75	0.4	2.32	0.07
1/14/2014 12:30	7.7	11.37	176.1	12.5	7.6	54	1.22	0.91	0
2/24/2014 12:42	9.9	10.33	110.3	15.9	7.22	238	1.08	2.03	0.32
3/18/2014 12:45	11	13.16	177.7	10.1	7.86	75	1.19	1.36	0
4/15/2014 11:42	11.8	12.12	247	17.1	7.99	214	0.08	1.72	0
5/20/2014 11:57	15.7	8.2	158.5	12.7	7.41	411	0.11	1.73	0
6/17/2014 11:46	14.7	8.26	114	15.3	7.31	1986	0.08	2.37	0
Median	**12.10**	**9.81**	**167.30**	**17.90**	**7.28**	**530**	**0.18**	**1.71**	

Site Name: CLA1
Site Description: Bush Park

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Total Copper (mg/L)	Dissolved Copper (mg/L)	Total Lead (mg/L)	Dissolved Lead (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)	Hardness
7/23/2013 10:15	17.7	9.01	88.5	12.8	7.02	308	0.59	1.1	0	<0.0025	<0.0025	0.0019	0.0007	0.014	0.0073	24
8/20/2013 11:28	17.1	9.24	91.3	2.93	7.4	461	0.57	0.81	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0066	0.0055	35
9/17/2013 11:15	16.7	9.52	93.9	2.98	7.65	1046	0.67	0.76	0	0.0026	<0.0025	0.0032	0.0007	0.0048	0.0031	33
10/15/2013 10:25	11.6	10.57	98	2.17	7.54	461	0.75	0.89	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0064	0.0059	30
11/19/2013 10:30	11.6	10.32	29	36.7	7.03	2420	0.2	5.47	0.89	0.0062	0.0031	0.0027	<0.0005	0.042	0.0166	22
12/19/2013 10:40	6.8	11.83	94.4	7.27	7.22	161	0.8	1.31	0.09	<0.0025	<0.0025	<0.0005	<0.0005	0.0146	0.0127	32
1/14/2014 10:10	9.2	11.37	93.9	5.94	7.44	727	1.52	1.01	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0139	0.0114	40
2/24/2014 9:50	9.5	11.16	64	27	7.18	248	0.89	2.3	0.24	0.0049	0.0032	0.0019	0.0005	0.0327	0.0236	32
3/18/2014 10:05	9.6	11.25	94.9	3.51	7.37	77	1.62	1.23	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0113	0.0098	32
4/15/2014 9:40	11	10.8	92.4	2	7.44	79	1.23	0.9	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0049	0.0058	34
5/20/2014 11:00	13.8	10.02	90.8	*	7.05	866	1.03	1.27	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0084	0.0084	29
6/17/2014 10:00	14	9.77	90.7	2.96	7.29	345	0.82	1.06	0.12	<0.0025	<0.0025	<0.0005	<0.0005	0.0062	0.0051	26
Median	**11.60**	**10.45**	**91.85**	**3.51**	**7.33**	**403**	**0.81**	**1.08**		**NA**	**NA**	**NA**	**NA**	**0.0099**	**0.0079**	**32**

Site Name: CLA10
Site Description: Ewald Ave

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Total Copper (mg/L)	Dissolved Copper (mg/L)	Total Lead (mg/L)	Dissolved Lead (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)	Hardness
7/23/2013 9:20	16.5	8.86	67.6	4.76	6.87	>2420	1.21	1.21	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0057	0.0039	15
8/20/2013 9:25	15.9	9.06	68.4	5	6.78	1986	1.07	0.92	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0059	0.0048	25
9/17/2013 10:15	16.2	9.13	70.2	5	6.93	145	1.25	0.6	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0058	0.0028	23
10/15/2013 10:10	13.1	9.69	72.4	3.07	6.9	387	1.42	1.01	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0061	0.0064	24
11/19/2013 9:55	11.6	10.1	22.1	13.1	6.8	1553	0.29	3.7	0.95	0.0031	<0.0025	0.0005	<0.0005	0.02	0.0146	15
12/19/2013 9:45	9.5	10.68	74.4	3.87	6.52	89	1.26	1.32	0.16	<0.0025	<0.0025	<0.0005	<0.0005	0.0567	0.054	22
1/14/2014 9:35	10.4	10.81	74.6	4.95	6.71	109	1.71	0.72	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0114	0.0108	27
2/24/2014 9:35	10.2	10.29	68.3	13.9	6.53	488	1.58	1.96	0.14	0.0031	<0.0025	0.0005	<0.0005	0.0167	0.0148	24
3/18/2014 9:40	10.2	10.79	75.5	2.82	6.86	178	2.01	1.12	0.01	<0.0025	<0.0025	<0.0005	<0.0005	0.0124	0.0114	26
4/15/2014 9:00	11.2	10.42	72.2	2.94	6.96	17	1.61	0.7	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0072	0.0065	24
5/20/2014 9:30	13.1	9.73	70.6	2.84	6.88	93	1.47	0.78	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0082	0.0086	20
6/17/2014 9:40	13.7	9.36	69.1	3.58	6.9	1300	1.39	1.85	0.1	<0.0025	<0.0025	<0.0005	<0.0005	0.0073	0.0063	21
Median	**12.35**	**9.92**	**70.40**	**4.32**	**6.87**	**178**	**1.41**	**1.07**		**NA**	**NA**	**NA**	**NA**	**0.0078**	**0.0076**	**23.5**

* No data available for this parameter due to sensor malfunction.

NA=Medians not calculated for copper and lead due to the large number of censored values.

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli. Metals exceedances were calculated based on hardness results by site.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: CRO1
Site Description: River Rd S

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 9:35	17	7.26	94.8	6.22	7.13	727	0.41	1.01	0
8/20/2013 9:50	16.5	5.7	108.3	5	7.04	517	0.4	0.84	0
9/17/2013 10:32	15.9	7.98	100.4	5	7.17	488	0.46	0.72	0
10/15/2013 10:32	9	10.46	84.7	3.61	7.15	46	0.41	0.68	0
11/19/2013 10:10	10.9	10.03	48.8	51.3	7.31	1986	0.28	3.77	0.96
12/19/2013 10:04	4.2	12.67	72.2	4.71	7.02	46	0.55	1.34	0.16
1/14/2014 9:45	6.3	12.33	69.1	10.6	7.27	42	1.09	0.84	0
2/24/2014 9:50	8.5	11.23	61.4	11.8	6.99	77	1.44	1.89	0.14
3/18/2014 9:54	7.7	11.84	63.9	7.75	7.17	32	1.1	1.17	0.01
4/15/2014 9:20	9.9	11.12	65.5	5.64	7.22	142	0.6	0.73	0
5/20/2014 9:45	12.3	10.11	71.7	5.95	7.28	125	0.4	0.82	0
6/17/2014 10:00	12.5	9.79	79.9	5.84	7.28	147	0.36	1.03	0.1
Median	**10.40**	**10.29**	**71.95**	**5.90**	**7.17**	**133.5**	**0.44**	**0.93**	

Site Name: CRO10
Site Description: Ballantyne Rd.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 9:50	15.9	7.99	71.5	10.6	6.88	186	0.36	0.78	0
8/20/2013 10:10	15.8	5.81	86.8	16	6.83	91	0.31	1.12	0
9/17/2013 10:50	15.2	8.13	73.6	10	6.88	187	0.27	0.85	0
10/15/2013 10:52	9.5	9.81	53.1	7.66	6.7	64	0.42	0.85	0
11/19/2013 10:25	10.3	9.61	54.5	12.4	6.83	240	0.39	1.98	0.96
12/19/2013 10:35	4.4	11.55	51.4	5.5	6.4	2	0.54	1.42	0.16
1/14/2014 10:05	6.1	11.96	52.4	9.08	6.7	10	1.17	0.85	0
2/24/2014 10:15	8.5	10.92	50.9	11.2	6.89	6	1.71	1.42	0.15
3/18/2014 10:15	7.8	11.5	49.1	7.77	6.98	5	1.18	1.11	0.01
4/15/2014 9:40	10	10.75	49	6.87	5.43	8	0.7	0.87	0
5/20/2014 10:05	12.3	9.7	51.4	7.55	6.9	22	0.41	0.71	0
6/17/2014 10:15	12.6	9.44	58	8.54	6.98	210	0.41	0.99	0.1
Median	**10.15**	**9.76**	**52.75**	**8.81**	**6.86**	**43**	**0.42**	**0.93**	

Site Name: GIB1
Site Description: Wallace Rd.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 11:30	17.9	5.95	110.1	9.3	6.73	64	0.54	1.06	0
8/20/2013 13:05	20.4	*	114.1	8.03	6.97	83	0.37	1.02	0
9/17/2013 12:30	17	6.93	112.2	10	7.27	152	0.46	1.4	0
10/15/2013 11:45	10.5	10.36	87.7	8.3	7.37	76	0.98	0.89	0
11/19/2013 12:00	11	9.88	78.9	94.5	6.96	1986	0.89	3.3	0.57
12/19/2013 12:10	4.3	12.32	87.6	6.44	7.04	114	1.18	1.89	0.08
1/14/2014 10:55	6.7	11.72	86.6	15.8	7.31	36	1.5	1.02	0.01
2/24/2014 10:35	9.4	10.98	74.5	39.4	7.19	40	1.92	1.7	0.25
3/18/2014 10:45	8.5	11.28	79.1	20.1	7.24	44	1.85	1.3	0
4/15/2014 10:35	11.1	10.37	83.1	10	7.3	56	1.62	1.22	0
5/20/2014 12:05	16.2	9.26	85.8	8.16	6.9	179	1.06	1.11	0
6/17/2014 10:50	14.4	7.96	94.5	9	7.01	649	0.8	1.56	0.1
Median	**11.05**	**10.36**	**87.10**	**9.65**	**7.12**	**79.5**	**1.02**	**1.26**	

* No data available for this parameter due to sensor malfunction.

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: GIB15
Site Description: Brush College Rd.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 11:45	20.1	8.01	110.6	10.4	7.06	435	1.32	1.05	0
8/20/2013 13:30	18.5	*	110.5	9.53	7.16	66	0.36	1.1	0
9/17/2013 12:40	17.2	8.34	108.1	10.4	7.51	>2420	1.01	0.95	0
10/15/2013 12:00	10.6	10.43	97.7	6.2	7.37	921	1.83	0.56	0
11/19/2013 12:20	10.9	9.83	87.1	72.2	7.02	461	1.3	2.08	0.58
12/19/2013 12:22	4.8	12.42	93.3	4.85	6.98	37	2.18	1.66	0.08
1/14/2014 11:20	7.1	11.67	92.2	18.5	7.28	30	2.13	0.75	0.01
2/24/2014 10:50	9.2	11.14	81.7	16.6	7.27	49	2.5	1.21	0.25
3/18/2014 11:00	8.9	11.3	84.6	10.2	7.29	15	2.28	1.22	0
4/15/2014 10:55	11	10.68	91.3	6	7.45	20	2.46	1.25	0
5/20/2014 12:20	15.8	9.45	92.6	8.9	7.01	46	1.91	1.18	0
6/17/2014 11:05	14.7	9.49	101.4	5.34	7.36	105	1.8	1.25	0.09
Median	**10.95**	**10.43**	**92.95**	**9.87**	**7.28**	**49**	**1.87**	**1.20**	

Site Name: GLE1
Site Description: River Bend Rd.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 11:00	18.5	7.45	121	8.96	7.08	326	0.68	1.71	0
8/20/2013 12:50	18.8	*	126.8	11.6	7.24	1300	0.63	1.09	0
9/17/2013 12:15	17.3	8.07	124.2	6.34	7.44	248	0.75	0.91	0
10/15/2013 11:30	11.3	9.97	110	4.36	7.46	59	0.96	0.99	0
11/19/2013 11:50	11.3	10.11	44.2	54.6	6.94	2420	0.29	2.09	0.57
12/19/2013 11:45	5.4	11.92	95.4	22.6	7.19	121	0.7	1.8	0.08
1/14/2014 10:40	7.6	11.67	101	9.6	7.42	75	1.51	0.83	0.01
2/24/2014 10:25	9.1	11.28	69.3	19.3	7.18	199	1.5	1.76	0.25
3/18/2014 10:35	8.7	11.4	87.6	9.63	7.31	41	1.71	1.56	0
4/15/2014 10:20	11.2	10.43	89.4	6	7.4	91	1.29	1.42	0
5/20/2014 11:35	14.3	9.63	98.9	5.3	7.06	105	0.94	1.31	0
6/17/2014 10:40	13.7	9.23	94.7	7.24	7.23	659	0.66	1.18	0.11
Median	**11.30**	**10.11**	**97.15**	**9.28**	**7.24**	**160**	**0.85**	**1.37**	

Site Name: GLE10
Site Description: Hidden Valley Dr.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 12:05	16.6	8	109.9	6.35	7.15	1414	0.4	1.31	0
8/20/2013 13:40	17	*	137.2	5.03	7.21	579	0.26	0.99	0
9/17/2013 13:00	16.1	8.6	106.3	4.08	7.48	131	0.26	0.82	0
10/15/2013 12:15	10.9	10.6	70.4	3.54	7.32	56	0.85	0.75	0
11/19/2013 12:25	10.7	10.39	68.7	68.3	7.18	>2420	1.31	2.18	0.58
12/19/2013 12:40	4.8	12.4	61.6	7.19	7.07	32	1.01	1.53	0.08
1/14/2014 11:50	7.3	11.68	65.9	14.6	7.36	70	1.71	0.76	0.01
2/24/2014 11:05	8.7	11.32	57.2	19.9	7.22	29	1.96	1.41	0.25
3/18/2014 11:15	8.8	11.26	55.2	10.9	7.29	20	1.49	1.23	0
4/15/2014 11:10	10	10.93	57	9	7.44	22	1.19	0.89	0
5/20/2014 12:35	13.3	10.22	62.1	8.39	7.04	47	1.04	0.83	0
6/17/2014 11:20	12.3	9.83	64	6.49	7.36	108	0.72	1.19	0.09
Median	**10.80**	**10.60**	**64.95**	**7.79**	**7.26**	**56**	**1.03**	**1.09**	

* No data available for this parameter due to sensor malfunction.

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name:	LPW1									
Site Description:	Cordon Rd.									
Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	TSS
7/23/2013 12:20	19.4	1.63	342	78.3	6.93	16	0.18	7.58	0	58
8/20/2013 0:00	No samples taken - site was dry									
9/17/2013 12:50	18.2	0.67	224	7	6.76	147	0.16	2.8	0	9.6
10/15/2013 12:06	10.3	6.2	191.3	12.3	7.03	308	0.15	1.03	0	18.4
11/19/2013 11:45	11.3	8.52	51.5	39.5	6.87	2420	0.21	3.57	0.89	42.4
12/19/2013 11:55	4	11	224	10.8	7.03	63	0.65	2.14	0.07	8.4
1/14/2014 11:45	7.4	11.25	217.7	7.47	7.17	43	2.16	1.39	0	5.6
2/24/2014 12:25	9.9	11.99	143.3	13.5	7.19	36	1.61	2.13	0.32	7.6
3/18/2014 12:25	10.1	15.36	205.7	5.57	7.45	45	1.75	1.59	0	6
4/15/2014 11:10	12.2	8.76	258	4.64	7.34	770	0.48	1.46	0	2.8
5/20/2014 11:35	15.5	5.87	166	12	7.11	1414	0.13	2.56	0	12.4
6/17/2014 11:30	14.8	3.59	199.1	80.6	6.87	>2420	0.12	5.05	0	128
Median	**11.30**	**8.52**	**205.70**	**12.00**	**7.03**	**105**	**0.21**	**2.14**		**9.60**

Site Name:	MIC1								
Site Description:	Front St.								
Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 8:35	20.3	8.64	54.5	5.22	7.45	129	0.32	0.93	0
8/20/2013 8:30	18.7	8.92	49.4	6	7.27	111	0.16	0.78	0
9/17/2013 9:15	16.4	9.54	64.6	4	7.51	276	0.6	0.68	0
10/15/2013 9:05	10.6	10.83	84.4	4.62	7.45	102	1.58	0.78	0
11/19/2013 9:00	11	10.39	67.8	22.7	7.17	365	1.24	2.43	0.85
12/19/2013 8:45	5	12.73	97.7	4.52	7.4	73	2.45	1.35	0.08
1/14/2014 8:50	7.3	12.2	100.2	14.4	7.37	50	3.48	0.65	0
2/24/2014 8:45	8.7	11.19	90.2	11.4	7.11	88	3.1	1.79	0.24
3/18/2014 8:45	8.8	11.61	92	10.7	7.27	82	2.7	1.06	0
4/15/2014 8:10	12.7	10.3	90.3	3.76	7.41	102	1.89	1.04	0
5/20/2014 8:40	14.8	9.81	76.9	5.42	7.15	140	1.08	1.01	0
6/17/2014 8:43	14.2	10.04	59.6	4.48	7.03	613	0.33	1.36	0.12
Median	**11.85**	**10.35**	**80.65**	**5.32**	**7.32**	**106.5**	**1.41**	**1.03**	

Site Name:	MIC10								
Site Description:	Turner Rd								
Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 10:40	18.8	9.18	52.2	6.04	7.45	172	0.23	1.16	0
8/20/2013 11:05	17.8	9.32	48.4	6	7.31	155	0.22	0.77	0
9/17/2013 11:55	15.7	10.18	60.1	5	7.55	96	0.56	0.78	0
10/15/2013 11:45	10.8	10.82	86.4	7.31	7.39	124	1.58	1.47	0
11/19/2013 11:25	10.7	10.14	96.3	15.7	7.39	387	1.94	1.52	0.97
12/19/2013 11:27	4.5	13.16	90.6	5.22	7.14	23	2.36	1.49	0.16
1/14/2014 11:10	6.8	12.18	94.7	13.8	7.33	20	3.41	0.87	0
2/24/2014 12:05	8.9	10.89	87	11.1	7.09	72	3.3	1.83	0.17
3/18/2014 11:15	*	11.56	87.9	8.24	7.25	44	2.7	1.12	0.01
4/15/2014 10:50	11.9	11.38	80.7	4.63	7.42	88	1.92	1.12	0
5/20/2014 11:17	14.2	10.44	71.4	6.82	7.43	144	1.08	0.99	0
6/17/2014 11:10	13.6	10.38	52.9	6.53	7.32	345	0.44	1.33	0.1
Median	**11.90**	**10.63**	**83.55**	**6.68**	**7.36**	**110**	**1.75**	**1.14**	

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: MRA1
Site Description: High St.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 9:45	20.1	9.01	52.1	4.67	7.29	127	0.19	0.84	0
8/20/2013 10:20	18.8	9.33	48.2	4.2	7.1	248	0.16	0.81	0
9/17/2013 10:35	16.3	9.83	62.6	5.09	7.58	613	0.6	0.74	0
10/15/2013 9:50	10.6	11.18	81.3	3.43	7.56	137	1.5	0.7	0
11/19/2013 10:00	10.9	10.4	75.1	7.31	7.4	816	1.37	1.71	0.89
12/19/2013 10:05	4.7	12.92	93.7	5.4	7.35	210	2.33	1.69	0.09
1/14/2014 9:45	7.2	12.21	98.3	13.8	7.4	41	3.55	0.85	0
2/24/2014 9:25	8.2	10.93	91.5	7.33	7.32	>2420	3.12	1.88	0.24
3/18/2014 9:35	8.5	11.7	90.5	21.3	7.34	107	2.49	1.65	0
4/15/2014 9:05	12.2	11.11	84.5	3	7.73	133	1.85	1.37	0
5/20/2014 10:15	15.1	10.15	73.4	6.89	7.18	172	1.13	1.19	0
6/17/2014 9:25	14.1	10.23	55.4	5.78	7.35	285	0.37	1.21	0.12
Median	**11.55**	**10.67**	**78.20**	**5.59**	**7.35**	**172**	**1.44**	**1.20**	

Site Name: MRA10
Site Description: 19th St.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 9:00	19.7	8.58	52.5	6.1	7.45	140	0.21	0.91	0
8/20/2013 9:00	18.4	8.74	48.6	4.53	6.57	96	0.21	0.83	0
9/17/2013 9:40	15.9	9.25	62.1	4.27	7.39	285	0.61	0.73	0
10/15/2013 9:15	10.5	10.57	81.2	3.75	7.38	111	1.57	0.72	0
11/19/2013 9:10	10.8	10.24	84.4	7.42	7.4	517	1.67	1.47	0.8
12/19/2013 8:55	4.7	12.21	93.6	5.26	7.33	93	2.31	1.81	0.07
1/14/2014 8:55	7.2	11.69	98	14.5	7.19	29	3.45	0.74	0
2/24/2014 8:35	8.3	11.33	90.9	10.2	7.07	43	3.12	1.64	0.3
3/18/2014 9:00	8.2	11.2	90.1	10.2	7.18	102	2.61	1.2	0
4/15/2014 8:10	12.2	9.68	84.3	4	7.18	72	1.9	1.16	0
5/20/2014 9:10	14.7	9.76	74	7.09	6.98	150	1.09	1.05	0
6/17/2014 8:45	14	9.6	55.8	5.84	7.07	261	0.36	1.01	0
Median	**11.50**	**10.00**	**82.75**	**5.97**	**7.19**	**106.5**	**1.62**	**1.03**	

Site Name: PRI1
Site Description: Waterfront Park

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Total Copper (mg/L)	Dissolved Copper (mg/L)	Total Lead (mg/L)	Dissolved Lead (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)	Hardness
7/23/2013 9:20	19.6	9.09	53.3	4.95	7.03	140	0.25	0.78	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0027	<0.0025	19
8/20/2013 9:50	18.4	9.35	51.3	4.33	6.87	96	0.19	0.78	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0081	0.0039	27
9/17/2013 10:00	16	9.83	64.6	3.5	7.63	162	0.59	0.7	0	<0.0025	<0.0025	<0.0005	<0.0005	<0.0025	<0.0025	28
10/15/2013 9:30	10.6	11.2	83.3	3.39	7.52	88	1.51	0.62	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0035	0.0031	32
11/19/2013 9:30	11	10.57	62.4	24.2	7.35	1300	1	3.21	0.88	0.0048	<0.0025	0.0017	<0.0005	0.03	0.0114	30
12/19/2013 9:30	4.8	12.91	93.5	5.11	7.42	64	2.28	1.58	0.08	<0.0025	<0.0025	<0.0005	<0.0005	0.0025	0.003	36
1/14/2014 9:30	7.3	12.27	96	14.5	7.33	108	3.27	1.04	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0125	0.0057	43
2/24/2014 8:55	9.1	11.3	87	12.7	7.24	1553	2.95	1.8	0.24	0.0027	<0.0025	<0.0005	<0.0005	0.0115	0.0099	39
3/18/2014 9:20	8.1	11.8	90.5	11.9	7.3	70	2.48	1.38	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0119	0.0086	38
4/15/2014 8:45	12	10.67	84.1	4	7.46	56	1.83	1.25	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0033	0.0034	34
5/20/2014 9:40	14.7	10.19	75.7	6.2	7.19	126	1.1	1.17	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0044	0.0028	29
6/17/2014 9:05	14	10.27	57.4	5.92	7.34	249	0.42	1.36	0.12	<0.0025	<0.0025	<0.0005	<0.0005	0.0025	<0.0025	24
Median	**11.50**	**10.62**	**79.50**	**5.52**	**7.34**	**117**	**1.31**	**1.21**		**NA**	**NA**	**NA**	**NA**	**0.0063**	**0.0048**	**31**

NA= Medians not calculated for copper and lead due to the large number of censored values.

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli. Metals exceedances were calculated based on hardness results by site.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: PRI5
Site Description: Bush Park

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Total Copper (mg/L)	Dissolved Copper (mg/L)	Total Lead (mg/L)	Dissolved Lead (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)	Hardness
7/23/2013 10:30	20.4	8.48	89.5	3	7.03	548	0.34	1.16	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0042	0.0027	28
8/20/2013 11:50	19.8	*	83.2	2.96	7.34	548	0.29	1.1	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0048	<0.0025	32
9/17/2013 11:25	17.3	9.28	84.2	6.71	7.73	214	0.58	1.73	0	<0.0025	<0.0025	<0.0005	<0.0005	0.004	<0.0025	35
10/15/2013 10:35	11.1	10.57	95.7	4.85	7.58	194	0.88	0.95	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0068	0.0063	37
11/19/2013 10:43	11.3	9.86	35.9	106	7.01	2420	0.18	5.83	0.89	0.0132	0.0031	0.0048	<0.0005	0.1396	0.022	29
12/19/2013 10:50	4.8	12.22	103.1	8.85	7.49	64	0.96	1.98	0.09	<0.0025	<0.0025	<0.0005	<0.0005	0.0073	0.0064	43
1/14/2014 10:20	8	11.53	99.2	11.6	7.45	31	1.28	1.19	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0101	0.0081	40
2/24/2014 10:00	9.2	11.06	76.9	25.5	7.35	142	1.4	2.07	0.24	0.0041	<0.0025	0.0008	<0.0005	0.023	0.0158	28
3/18/2014 10:15	9.5	11.33	87.4	7.96	7.45	82	1.58	1.3	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0081	0.007	34
4/15/2014 9:55	12.8	11.1	90.5	3	7.95	55	1.09	1.6	0	<0.0025	<0.0025	<0.0005	<0.0005	0.0046	0.0043	40
5/20/2014 11:10	17.2	9.55	93.5	3.42	7.35	137	0.9	1.34	0	<0.0025	<0.0025	<0.0005	<0.0005	0.006	0.0047	34
6/17/2014 10:15	16.1	9.33	84.4	5.07	7.53	222	0.5	2.07	0.12	<0.0025	<0.0025	<0.0005	<0.0005	0.0059	0.003	32
Median	**12.05**	**10.57**	**88.45**	**5.89**	**7.45**	**168**	**0.89**	**1.47**		**NA**	**NA**	**NA**	**NA**	**0.0064**	**0.0064**	**34**

Site Name: SHE1
Site Description: Church St.

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 10:00	19.5	8.88	53	4.91	7.06	119	0.2	0.76	0
8/20/2013 10:40	18.4	9.21	49.4	4.18	6.68	91	0.18	0.68	0
9/17/2013 11:00	16	9.79	62	3.42	7.68	71	0.59	0.7	0
10/15/2013 9:55	10.6	11.01	81.2	3.43	7.52	69	1.56	0.63	0
11/19/2013 10:08	10.8	10.56	81.8	11.1	7.45	1733	1.62	1.47	0.89
12/19/2013 10:25	4.7	12.99	91.9	4.69	7.29	19	2.42	1.44	0.09
1/14/2014 10:00	7.1	12.08	96.6	13.6	7.39	62	3.54	1.06	0
2/24/2014 9:35	8.3	11.61	89.4	10.8	7.27	57	3.41	1.36	0.24
3/18/2014 9:40	8.2	11.56	89.5	8.95	7.31	32	2.61	1.03	0
4/15/2014 9:20	11.9	10.72	82.5	4	7.51	39	1.97	1.04	0
5/20/2014 10:40	14.6	10.04	74.4	6.38	7.17	84	1.06	1.49	0
6/17/2014 9:40	13.9	10.12	55.7	6.15	7.33	150	0.41	1.24	0.12
Median	**11.35**	**10.64**	**81.50**	**5.53**	**7.32**	**70**	**1.59**	**1.05**	

Site Name: SHE10
Site Description: Airport Road

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/23/2013 8:30	19.4	9	52.3	5.68	7.07	129	0.2	0.89	0
8/20/2013 8:30	18.5	9.08	48.6	4.59	6.51	64	0.18	0.84	0
9/17/2013 9:15	15.9	9.74	60.8	3.99	7.42	104	0.61	0.83	0
10/15/2013 9:00	10.81	11.02	79.6	3.92	7.39	50	1.59	0.54	0
11/19/2013 8:55	11	10.51	88.6	10.4	7.39	345	1.76	1.46	0.85
12/19/2013 8:35	5	12.6	91	4.59	7.36	26	2.36	1.49	0.17
1/14/2014 8:45	7.4	11.81	95.4	14.2	7.01	47	3.41	0.95	0
2/24/2014 8:20	8.4	11.5	89.1	10.3	6.95	36	3.12	1.24	0.13
3/18/2014 8:35	8.2	11.42	86.9	9.54	6.88	43	2.6	1.12	0.01
4/15/2014 7:55	12	10.5	81.8	4	6.9	28	1.91	1.24	0
5/20/2014 8:30	14.2	10.11	74	6.44	6.8	115	1.06	1.19	0
6/17/2014 8:30	14	10.17	54.8	6.18	7.12	276	0.41	1.42	0.1
Median	**11.50**	**10.51**	**80.70**	**5.93**	**7.04**	**57**	**1.68**	**1.16**	

* No data available for this parameter due to sensor malfunction. NA= Medians not calculated for copper and lead due to the large number of censored values.

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli. Metals exceedances were calculated based on hardness results by site.

Table 7.
Monthly Instream Data (RY 2013/14)

Site Name: WR1
Site Description: Sunset Park (Keizer)

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
7/23/2013 13:25	23.3	10.08	70.2	1.76	7.47	8	0.17	0.74	0	29	0.05	0.031	58.8	62	3.2
8/20/2013 13:45	21.5	10.49	66.2	2	8.28	8	0.26	0.84	0	28	0.05	0.027	55	59	4
9/17/2013 14:15	17	10.15	63.8	4	7.62	14	0.14	0.81	0	29	0.05	0.036	60.6	67	6.4
10/15/2013 14:01	13.5	10.44	60.1	3.69	7.36	46	0.19	0.55	0	28	0.05	0.044	56.8	62	5.2
11/19/2013 13:15	10.3	10.6	56.9	6	7.35	72	0.15	1.23	0.92	30	0.05	0.042	58	65	7.2
12/19/2013 13:41	5.2	12.79	69	4.58	7.08	5	0.32	1.49	0.07	29	0.05	0.033	50.7	56	5.3
1/14/2014 13:15	7.1	11.96	60.9	24.9	7.48	42	0.56	1.01	0	23	0.05	0.075	66	88	22.4
2/24/2014 13:15	7.4	11.2	52.2	22.6	7.4	42	0.41	1.4	0.32	22	0.05	0.082	64	84	19.6
3/18/2014 13:16	8.8	11.38	55.6	11.4	7.29	33	0.28	1.22	0	22	0.05	0.053	50	66	16
4/15/2014 13:10	12	11.03	66.9	3.84	7.75	32	0.29	0.88	0	27	0.05	0.034	48	52	4.4
5/20/2014 12:50	14.7	10.75	58.1	4.01	7.66	91	0.14	0.8	0	27	0.05	0.036	60	65	4.5
6/17/2014 13:10	15.1	11.4	66.3	2.6	7.67	21	0.1	1.33	0	29	0.05	0.026	58	63	4.8
Median	**12.75**	**10.89**	**62.35**	**4.01**	**7.48**	**32.5**	**0.23**	**0.95**		**28**	**0.05**	**0.036**	**58**	**64**	**5.25**

Site Name: WR5
Site Description: Union Street Railroad Bridge

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
7/23/2013 8:50	20.9	8.34	69.5	2.68	7.47	8	0.15	0.65	0	30	0.05	0.034	56.8	62	5.2
8/20/2013 8:55	19.7	8.7	68.2	2	7.32	6	0.12	0.86	0	55	0.05	0.026	63	67	4
9/17/2013 9:35	16	9.67	62.5	4	7.5	15	0.16	0.79	0	30	0.05	0.034	61	67	6
10/15/2013 9:35	11.2	10.61	59.9	4.08	7.43	96	0.11	0.66	0	27	0.05	0.045	60	64	4
11/19/2013 9:15	10.4	10.6	58	11.6	7.48	71	0.15	1.08	0.85	30	0.05	0.038	58	65	6.8
12/19/2013 9:05	4.5	12.57	66.1	4.47	7.25	10	0.22	1.52	0.08	28	0.05	0.031	55.4	59	3.6
1/14/2014 9:10	6.8	12.11	60.7	24.5	7.37	54	0.53	1.11	0	23	0.05	0.076	70	93	22.8
2/24/2014 9:10	7.4	11.29	51.2	23	7.06	21	0.34	1.36	0.24	22	0.05	0.084	67	85	17.6
3/18/2014 9:00	8.2	11.54	54.5	11.7	7.37	39	0.32	1.24	0	23	0.05	0.052	54	66	11.6
4/15/2014 8:35	11.4	10.88	63.9	3.5	7.37	52	0.22	0.86	0	26	0.05	0.028	52	55	3.2
5/20/2014 9:00	13.9	10.23	58.2	4.38	7.41	91	0.17	1.12	0	27	0.05	0.039	63	69	6
6/17/2014 9:15	14.1	10.19	61.2	2.47	7.27	19	0.08	1.35	0.12	28	0.05	0.027	56	60	4
Median	**11.30**	**10.61**	**60.95**	**4.23**	**7.37**	**30**	**0.17**	**1.10**		**27.5**	**0.05**	**0.036**	**59**	**65.5**	**5.6**

Site Name: WR10
Site Description: Halls Ferry Road (Independence)

Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
7/23/2013 13:30	22.4	9.16	70	2.65	7.33	2	0.25	0.63	0	30	0.05	0.032	56.8	62	5.2
8/20/2013 14:20	22.6		67.7	1.4	7.44	1	0.12	0.81	0	28	0.05	0.029	62	66	3.6
9/17/2013 13:25	16.5	9.73	62.8	3.4	7.59	14	0.17	0.75	0	31	0.05	0.035	59.8	67	7.2
10/15/2013 12:35	11.9	10.71	59.1	3.62	7.47	66	0.12	0.65	0	27	0.05	0.043	56.6	61	4.4
11/19/2013 13:00	10.4	10.62	55.5	5.47	7.52	29	0.12	1.15	0.96	29	0.05	0.035	59	65	5.6
12/19/2013 13:05	5.1	12.46	65	4.15	7.3	6	0.19	1.32	0.16	28	0.05	0.03	52.4	56	3.6
1/14/2014 12:50	7.5	11.82	58.2	26.6	7.45	37	0.42	0.96	0	24	0.05	0.073	68	94	25.6
2/24/2014 12:20	7.5	11.13	53.6	24.8	7.28	12	0.36	1.66	0.15	22	0.05	0.103	67	86	19.2
3/18/2014 12:20	8.8	11.28	56.7	11.5	7.26	20	0.28	1.34	0.01	24	0.05	0.056	53	65	12.4
4/15/2014 11:30	11.5	10.49	63.4	4	7.4	13	0.25	0.84	0	25	0.05	0.032	65	69	3.6
5/20/2014 13:00	14.4	10.35	55.8	4.18	7.15	50	0.11	0.77	0	27	0.05	0.034	61	67	6
6/17/2014 11:40	14.9	10.44	61.3	1.99	7.51	11	0.1	1.28	0.1	27	0.05	0.028	58	62	3.6
Median	**11.70**	**10.62**	**60.20**	**4.08**	**7.42**	**13.5**	**0.18**	**0.90**		**27**	**0.05**	**0.0345**	**59.4**	**65.5**	**5.4**

Note: Data in red exceed applicable water quality criteria (see Table 4). Single sample criterion (406 organisms/100 mL) used for E. Coli.

Table 8.

Monthly Instream Data - Duplicates (RY 2013/14)

Site ID	Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	TSS	Total Copper (mg/L)	Dissolved Copper (mg/L)	Total Lead (mg/L)	Dissolved Lead (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)	Hardness
SHE10	07/23/2013 08:40	19.2	9.04	52.4	5.48	7.12	162	0.24	0.81								
MIC10	07/23/2013 10:50	18.9	9.18	52.2	6.39	7.46	145	0.22	0.87								
MRA10	08/20/2013 09:01	18.5	8.71	48.6	4.44	6.56	83	0.19	0.93								
CGT5	08/20/2013 12:45	17.5	6.54	216.6	30	7.25	309	0.12	1.38								
CGT1	08/20/2013 13:13	22.5	4.07	214.4	5	7.32	249	0.14	1.92								
PRI1	09/17/2013 10:05	16.1	9.82	64.6	3.39	7.64	148	0.53	0.75		<0.0025	<0.0025	<0.0005	<0.0005	<0.0025	<0.0025	26
MRA1	09/17/2013 10:40	16.3	9.84	62.4	4.82	7.65	411	0.54	0.75								
CGT1	09/17/2013 13:38	20.1	6.99	186	7	7.43	365	0.15	1.36								
MIC1	10/15/2013 09:12	10.5	10.85	84.4	4.09	7.45	108	1.8	0.64								
SHE1	10/15/2013 10:00	10.6	11.05	81.1	3.57	7.48	55	1.52	0.64								
CLA1	11/19/2013 10:35	11.7	10.3	29.5	36.7	6.97	>2420	0.24	4.07		0.0066	0.0032	0.0027	0.0005	0.0422	0.0181	21
PRI5	11/19/2013 10:45	11.3	9.86	36	101	6.99	>2420	0.18	5.26		0.0134	0.0028	0.0057	<0.0005	0.1407	0.0219	25
CLA10	12/19/2013 09:50	9.6	10.63	74.1	3.15	6.58	121	1.33	1.12		<0.0025	0.004	<0.0005	<0.0005	0.0576	0.0552	25
CRO1	12/19/2013 10:13	4.1	12.71	72.3	4.69	7.05	26	0.57	1.5								
GLE1	12/19/2013 11:50	5.4	11.93	95.5	22.5	7.21	179	0.74	1.3								
CRO10	01/14/2014 10:10	6.1	11.94	52.4	7.85	6.79	2	1.23	0.89								
GIB1	01/14/2014 11:00	6.7	11.76	86.5	14.9	7.33	26	1.43	0.86								
GIB15	01/14/2014 11:25	7.2	11.65	92.1	18.3	7.28	36	2.11	0.72								
BAT12	02/24/2014 10:35	8.3	10.87	43.9	8.5	6.71	47	1.63	1.26								
GLE10	02/24/2014 11:10	8.5	11.41	57.4	20.6	7.24	23	1.86	1.29								
BAT1	02/24/2014 11:15	8.8	10.69	45	18.4	6.58	91	1.42	1.19								
SHE10	03/18/2014 08:40	8.2	11.51	88.5	9.07	6.92	59	2.89	0.79								
MIC10	03/18/2014 11:20	8.2	11.6	88	8.44	7.34	26	2.58	1.07								
MRA10	04/15/2014 08:20	12.2	9.71	84.2	4	7.29	88	1.82	1.12								
LPW1	04/15/2014 11:19	12.1	8.94	259	4.54	7.31	866	0.45	1.14	3.6							
PRI1	05/20/2014 09:45	14.8	10.19	75.8	5.58	7.15	91	1.1	1.12		<0.0025	<0.0025	<0.0005	<0.0005	0.006	0.0045	29
MRA1	05/20/2014 10:20	15.1	10.15	73.5	7.29	7.16	276	1.1	1								
MIC1	06/17/2014 08:44	14.1	10.05	59.7	4.81	7.13	435	0.44	1.12								
SHE1	06/17/2014 09:40	13.9	10.15	55.7	5.71	7.4	127	0.42	1.17								

Willamette River Sites Duplicates (RY 2013/14)

Site ID	Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (MPN/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
WR10	07/23/2013 13:55	22.6	9.24	70.1	2.47	6.97	6	0.16	0.9	30	0.05	0.032	56.2	61	4.8
WR1	10/15/2013 14:10	13.5	10.42	60.6	3.65	7.41	54	0.23	0.5	29	0.05	0.042	59.8	65	5.2
WR5	11/19/2013 09:20	10.3	10.63	56.6	8.2	7.54	127	0.11	1.15	22	0.05	0.037	62	67	5.2
WR10	03/18/2014 12:30	8.6	11.24	56.9	11.4	7.28	22	0.26	1.09	24	0.05	0.057	56	67	11.2
WR1	06/17/2014 13:12	15.3	11.46	66.8	2.13	7.6	25	0.09	1.4	29	0.05	0.028	57	62	4.8

Note: Duplicate field measurements and duplicate grab samples are taken at 10 percent of the sites each month. These sites are selected prior to sampling.

Table 9.
Continuous Instream Grade A and Grade B Data Qualifications

Grade Values	Temperature (˚C)	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
A	± < 0.5	± ≤ 0.30	≤ 10%	± ≤ 3 or 5% (whichever is greater)	± ≤ 0.3
B	± 0.51 to 2.00	± > 0.3 to 0.50	> 10% to ≤ 15%	± ≤ 5 or 30% (whichever is greater)	± > 0.3 to ± ≤ 1.0

Note: As stated in the "Continuous Water Quality Monitoring Program Quality Assurance Project Plan", data grades are a result of the absolute difference (value or percent) of station instrument reading and audit instrument reading at the time of site audit.

Table 10.
Monthly Medians Values for Continuous Instream Data (RY 2013/14)

Monthly Medians for **Turbidity** at Continuous Instream Sites

Station Name	Jul 2013 Turbidity (NTU)	Aug 2013 Turbidity (NTU)	Sep 2013 Turbidity (NTU)	Oct 2013 Turbidity (NTU)	Nov 2013 Turbidity (NTU)	Dec 2013 Turbidity (NTU)	Jan 2014 Turbidity (NTU)	Feb 2014 Turbidity (NTU)	Mar 2014 Turbidity (NTU)	Apr 2014 Turbidity (NTU)	May 2014 Turbidity (NTU)	Jun 2014 Turbidity (NTU)
BAT3	15.18	14.12	13.50	9.13	14.31	NA	16.44	No sonde	8.95	6.93	6.74	7.79
BAT12	7.34	4.66	4.96	6.40	5.91	5.89	5.14	No sonde	5.20	5.20	5.90	6.10
CLK1	6.06	6.68	NA	3.46	6.82	No sonde	No sonde	3.65	6.30	2.40	3.10	4.20
CLK12	6.70	6.10	6.12	4.01	4.29	4.00	4.07	11.93	6.18	3.56	7.34	9.24
GLE3	7.30	7.30	NA	3.30	4.80	4.10	5.30	4.40	13.30	9.30	5.90	6.70
GLE12	5.30	5.00	3.40	3.10	NA	4.60	7.50	12.10	14.50	11.20	NA	NA
MIC3	8.45	8.89	7.68	5.42	6.33	7.06	8.02	18.30	NA	8.11	11.19	9.42
MIC12	9.18	11.06	9.51	NA	10.35	10.52	11.28	17.87	18.63	9.42	7.75	10.79
PRI3	3.90	5.21	NA	3.08	5.51	5.42	6.05	17.14	16.50	6.94	5.50	5.43
PRI12	10.46	11.50	10.22	9.44	10.06	10.20	11.70	11.43	17.08	9.56	NA	9.33
SHE3	7.66	8.05	NA	NA	7.08	11.19	6.87	14.88	14.60	7.19	7.10	8.08

Monthly Medians for **Specific Conductivity** at Continuous Instream Sites

Station Name	Jul 2013 Specific Conductivity (µS/cm)	Aug 2013 Specific Conductivity (µS/cm)	Sep 2013 Specific Conductivity (µS/cm)	Oct 2013 Specific Conductivity (µS/cm)	Nov 2013 Specific Conductivity (µS/cm)	Dec 2013 Specific Conductivity (µS/cm)	Jan 2014 Specific Conductivity (µS/cm)	Feb 2014 Specific Conductivity (µS/cm)	Mar 2014 Specific Conductivity (µS/cm)	Apr 2014 Specific Conductivity (µS/cm)	May 2014 Specific Conductivity (µS/cm)	Jun 2014 Specific Conductivity (µS/cm)
BAT3	55.4	60.6	59.7	50.3	49.2	46.4	45.4	44.7	45.2	47.4	48.4	52.3
BAT12	49.7	58.2	NA	42.6	43.9	41.7	41.5	44.9	NA	33	36	38
CLK1	93.8	90.1	90.3	95.5	94.3	No sonde	No sonde	NA	94.0	95.0	NA	85.0
CLK12	65.0	66.0	68.9	70.3	69.8	70.0	68.9	74.5	73.0	71.4	73.2	69.0
GLE3	119.0	124.0	123.0	115.0	100.0	100.0	96.0	82.0	NA	86.0	106.0	110.0
GLE12	104.0	117.0	100.0	74.0	70.0	63.0	63.0	58.0	57.0	59.0	64.0	67.0
MIC3	55.5	48.5	66.1	83.0	91.4	96.1	94.0	92.9	90.1	87.6	81.9	61.6
MIC12	53	60.8	64	76.3	83.2	89.2	86.3	86.1	82.5	79.2	57.3	54
PRI3	97	96.7	92.3	101.5	98.8	100	98.9	90.2	88.1	91.8	96.4	97
PRI12	62.6	54.2	85	100.6	101.3	91.8	91.3	85.5	80.6	79.6	82.5	71.8
SHE3	58.5	46.9	62.4	78.2	84.3	88.2	86.5	86.5	84.7	82.1	73.3	55.7

Presented median values consist of A and B grade data only. NA = 60% of the continuous record for a given month is not represented by A and B grade data.

No sonde = The WQ monitoring station did not have a sonde deployed during this time due to equipment malfunction.

Table 10.
Monthly Medians Values for Continuous Instream Data (RY 2013/14)

Monthly Medians for **Temperature** at Continuous Instream Sites

	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
Station Name	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)	Temperature (˚C)
BAT3	18.84	18.88	16.60	11.11	9.83	6.15	6.55	5.88	9.50	10.84	13.27	15.58
BAT12	17.64	17.31	16.98	9.71	8.76	5.36	6.04	5.31	8.93	10.28	13.01	15.17
CLK1	17.69	17.99	17.02	12.67	12.05	No sonde	No sonde	9.82	10.70	11.78	13.81	15.46
CLK12	15.92	16.81	16.40	14.15	12.85	10.25	10.08	9.93	10.86	11.53	12.95	14.30
GLE3	17.47	17.81	16.71	12.03	10.81	6.49	6.59	8.03	10.07	11.40	14.06	15.30
GLE12	15.84	16.56	15.69	10.88	9.39	5.58	6.23	7.25	9.11	10.01	12.09	12.81
MIC3	20.46	19.39	16.62	11.42	9.76	5.14	5.59	7.34	9.81	12.14	15.55	17.44
MIC12	20.05	18.75	16.08	11.42	9.91	5.48	6.00	7.38	9.78	11.48	14.55	16.75
PRI3	19.12	19.08	17.50	12.17	10.70	6.12	6.69	8.28	10.63	12.69	15.76	17.44
PRI12	19.62	19.11	16.93	11.82	10.13	6.07	6.76	7.81	9.78	11.31	14.23	16.44
SHE3	20.29	19.29	16.60	11.56	10.02	5.51	5.98	7.55	10.02	12.00	15.48	17.33

Monthly Medians for **pH** at Continuous Instream Sites

	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
Station Name	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
BAT3	6.89	6.96	6.65	6.75	6.66	6.63	6.66	6.75	6.56	6.59	6.66	6.86
BAT12	6.95	6.82	7.04	7.02	7.15	7.02	7.24	7.75	7.08	7.03	7.10	7.20
CLK1	7.80	7.48	7.51	7.47	7.34	No sonde	No sonde	7.33	7.25	7.18	7.04	7.07
CLK12	6.72	7.13	7.11	6.98	6.88	6.96	6.95	6.62	6.61	6.78	7.26	6.98
GLE3	7.51	7.53	7.42	7.33	7.25	7.30	7.35	7.05	7.10	7.27	7.26	7.39
GLE12	7.29	7.30	7.28	7.11	7.10	7.15	7.15	6.99	7.01	7.22	7.25	7.34
MIC3	7.70	7.84	7.80	7.75	7.63	7.62	7.69	7.55	NA	7.55	7.77	7.75
MIC12	7.59	7.50	7.53	7.46	7.53	7.43	7.47	7.06	7.12	7.30	7.62	7.38
PRI3	7.45	7.59	7.52	7.26	7.34	7.59	7.51	7.34	7.36	7.42	7.51	7.66
PRI12	7.27	7.42	7.14	7.02	6.98	7.04	7.08	6.78	6.71	6.93	6.91	6.57
SHE3	7.37	7.38	7.56	7.48	7.44	7.45	7.25	7.18	7.25	7.43	7.32	7.36

Presented median values consist of A and B grade data only. NA = 60% of the continuous record for a given month is not represented by A and B grade data.
No sonde = The WQ monitoring station did not have a sonde deployed during this time due to equipment malfunction.

Table 10.
Monthly Medians Values for Continuous Instream Data (RY 2013/14)

Monthly Medians for **Dissolved Oxygen** at Continuous Instream Sites

	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
Station Name	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)
BAT3	7.59	6.85	7.91	9.78	9.72	11.51	11.40	11.52	10.74	10.42	9.34	8.39
BAT12	8.48	8.27	NA	10.84	11.09	12.38	12.21	12.33	11.66	11.19	10.49	9.89
CLK1	8.60	8.46	8.76	9.54	8.83	No sonde	No sonde	11.08	11.22	10.65	10.19	9.30
CLK12	9.18	9.01	8.85	9.31	9.17	10.30	10.46	10.57	10.33	9.72	9.60	9.17
GLE3	8.63	8.71	9.12	10.11	10.31	11.87	12.21	11.75	10.89	10.57	10.11	9.55
GLE12	8.71	8.19	8.89	10.17	10.42	11.90	11.78	11.78	11.02	10.90	10.74	10.58
MIC3	8.80	8.77	9.13	10.37	10.72	12.45	12.37	11.68	11.06	10.75	9.94	9.44
MIC12	8.45	8.69	9.17	10.11	10.71	12.28	12.18	11.19	10.62	10.44	9.78	9.28
PRI3	8.11	8.14	8.62	9.76	10.06	12.03	11.88	11.21	10.64	9.99	8.76	8.42
PRI12	7.74	8.18	8.00	8.93	9.30	11.18	10.99	10.46	10.04	9.85	NA	8.81
SHE3	8.59	8.81	9.17	10.34	10.83	12.49	12.34	11.54	10.85	10.29	9.59	9.05

Monthly Medians for **Stage** at Continuous Instream Sites

	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
Station Name	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)	Stage (ft)
BAT3	4.01	3.98	4.08	4.22	4.26	4.26	4.30	5.02	4.88	4.57	4.39	4.12
BAT12	4.63	4.55	4.71	4.97	4.97	4.97	5.00	5.29	5.24	5.12	5.00	4.84
CLK1	3.86	3.89	4.12	4.19	4.32	4.23	4.26	4.46	4.48	4.36	4.22	3.94
CLK12	3.90	3.89	3.94	3.95	4.01	4.00	4.02	4.20	4.20	4.09	4.05	4.00
GLE3	4.12	4.11	4.19	4.26	4.39	4.35	4.40	4.88	4.80	4.50	4.39	4.24
GLE12	0.66	0.64	NA	NA	0.83	0.83	0.86	1.10	1.07	0.98	0.88	0.81
LPW1	Dry	Dry	2.00[1]	1.73[1]	1.61[1]	1.57[1]	1.6[1]	2.00	1.90	1.57	1.66[1]	Dry
MIC3	5.61	5.65	5.44	5.53	5.46	5.31	5.37	6.45	6.40	5.74	5.41	5.24
MIC12	7.19	7.22	7.11	7.07	7.26	7.32	7.36	8.22	8.14	7.68	7.41	7.28
PRI3	4.29	4.29	4.36	4.35	4.40	4.38	4.43	4.40	4.63	4.54	4.46	4.34
PRI4	7.39	7.38	7.51	7.51	7.61	7.59	7.66	8.05	8.07	7.85	7.68	7.50
PRI12	4.22	4.18	4.09	4.09	4.15	4.18	4.23	4.61	4.58	4.50	4.38	4.32
SHE3	5.48	5.51	5.42	5.43	5.74	5.80	5.82	6.80	6.66	6.13	5.87	5.72

Presented median values consist of A and B grade data only. NA = 60% of the continuous record for a given month is not represented by A and B grade data.

No sonde = The WQ monitoring station did not have a sonde deployed during this time due to equipment malfunction. [1]Median calculated when >50% of data were > 0.00

Table 11.
Instream Storm Monitoring Data (RY 2013/14)

Site Name:	CLK1																		
Site Description:	Lower Clark Creek just upstream of confluence with Pringle Creek																		
Sample Collection Date/Time	**E. Coli**	**Diss. Oxygen**	**pH**	**temp**	**Sp. Cond, field**	**Sp. Cond, comp**	**Cu**	**Cu diss**	**Zn**	**Zn diss**	**Pb**	**Pb diss**	**Hardness**	**NH3**	**NO_3-NO_2**	**Ortho P**	**TP**	**BODs**	**TSS**
mm/dd/yyyy HH:MM	MPN/100 mL	mg/L	S.U	˚C	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/02/2013 03:09	1986	10.21	7.08	12	42.13														
11/04/2013 08:45						59.6	0.0087	0.0039	0.087	0.0383	0.0044	0.0025	35	<0.05	0.38	0.088	0.284	7.6	63
12/12/2013 17:40	461	12.09 (11.82)	7.23	5.6	277														
12/13/2013 9:10						299	0.0103	0.0045	0.113	0.0659	0.0039	0.0009	104	0.337	0.9	0.035	0.266	8.8	67.6
03/05/2014 04:52	291	10.53	6.55	11.3	32.2														
03/06/2014 09:27						40.8	0.0093	<0.0025	0.0801	0.0412	0.0072	<0.0005	19	<0.05	0.66	0.016	0.254	2.4	128
3/25/2014 7:20	197	10.49	7.01	10.4	91.1														
3/26/2014 10:53						84.5	0.009	0.0036	0.0626	0.0303	0.0029	<0.0005	36	0.078	0.98	0.024	0.176	8.3	62.8
4/17/2014 9:50	770	10.1	7.29	12	66.53														
4/17/2014 9:52 -duplicate	727	10.09 (9.32)	7.28	12	67.19														
4/18/2014 8:54						56.6	0.0071	0.0031	0.0414	0.0176	0.0032	<0.0005	30	<0.05	0.56	0.017	0.156	6.3	40.4
Median	**594**	**10.35**	**7.16**	**11.65**	**66.86**	**59.6**	**0.009**	**0.00375**	**0.0801**	**0.0383**	**0.0039**	**0.0017**	**35**	**0.2075**	**0.66**	**0.024**	**0.254**	**7.60**	**63.0**

Site Name:	PRI3																		
Site Description:	Lower Pringle Creek in Pringle Park, just upstream of confluence with Shelton Ditch																		
Sample Collection Date/Time	**E. Coli**	**Diss. Oxygen**	**pH**	**temp**	**Sp. Cond, field**	**Sp. Cond, comp**	**Cu**	**Cu diss**	**Zn**	**Zn diss**	**Pb**	**Pb diss**	**Hardness**	**NH3**	**NO_3-NO_2**	**Ortho P**	**TP**	**BODs**	**TSS**
mm/dd/yyyy HH:MM	MPN/100 mL	mg/L	S.U	˚C	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/2/2013 3:20	1733	9.31	7.01	12	72.83														
11/4/2013 9:05						72.7	0.0047	0.0026	0.0465	0.0217	0.0017	0.0007	38	<0.05	0.44	0.042	0.153	4.7	34
12/12/2013 18:03	457	12.24	7.24	4.3	367.5														
12/13/2013 9:25						208	0.0038	0.0026	0.0349	0.0267	0.001	0.0005	61	0.156	1.14	0.018	0.098	3.7	20
3/5/2014 5:17	144	10.34	7.14	10.97	53.83														
3/5/2014 5:18 - duplicate	133	10.35 (10.0)	7.15	10.97	53.59														
3/6/2014 9:13						54.2	0.0069	0.0026	0.061	0.0387	0.004	<0.0005	23	<0.05	1.05	0.011	0.208	2.1	97.5
3/25/2014 7:58	158	9.98	7.02	10.59	84.3														
3/26/2014 11:07						85.3	0.0026	<0.0025	0.0159	0.0112	<0.0005	<0.0005	31	<0.05	1.05	0.012	0.04	2.3	9.2
4/17/2014 9:30	548	9.85	7.41	12.7	81.68														
4/18/2014 8:35						70.1	0.0035	<0.0025	0.0183	0.0089	0.0012	<0.0005	33	<0.05	0.88	<0.01	0.085	3.5	20.6
Median	**307.5**	**9.98**	**7.15**	**10.97**	**77.255**	**72.7**	**0.0038**	**NA**	**0.0349**	**0.0217**	**0.00145**	**NA**	**33**	**0.156**	**1.05**	**0.015**	**0.098**	**2.33**	**20.6**

Site Name:	PRI12																		
Site Description:	Upper East Fork Pringle Creek																		
Sample Collection Date/Time	**E. Coli**	**Diss. Oxygen**	**pH**	**temp**	**Sp. Cond, field**	**Sp. Cond, comp**	**Cu**	**Cu diss**	**Zn**	**Zn diss**	**Pb**	**Pb diss**	**Hardness**	**NH3**	**NO_3-NO_2**	**Ortho P**	**TP**	**BODs**	**TSS**
mm/dd/yyyy HH:MM	MPN/100 mL	mg/L	S.U	˚C	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/2/2013 3:50	461	7.82 (7.88)	7.2	11.3	98.5														
11/4/2013 9:40						77.9	<0.0025	<0.0025	0.217	0.0984	0.0009	0.0017	27	<0.05	0.88	<0.01	0.065	2.9	14
12/12/2013 18:33	145	11.45	7.33	4.6	92.32														
12/13/2013 10:30						85.9	<0.0025	<0.0025	0.0096	0.0073	<0.0005	<0.001	34	<0.05	2.32	0.016	0.026	1.2	5.4
3/5/2014 6:04	192	9.27	7.01	10.01	80.24														
3/6/2014 9:56						80.9	0.0027	<0.0025	0.0336	0.0225	0.0008	<0.0005	25	<0.05	2.32	0.016	0.108	<1	36
3/25/2014 7:23	33	9.29	6.89	9.32	79.65														
3/25/2014 7:25 -duplicate	82	9.28	6.89	9.32	79.5														
3/26/2014 10:10						73.4	<0.0025	<0.0025	0.0106	0.0085	<0.0005	<0.0005	34	<0.05	2.02	<0.01	0.023	1.2	6.8
4/17/2014 10:20	345	10.07	7	11.13	81.32														
4/18/2014 9:20						74.2	<0.0025	<0.0025	0.0075	0.0085	<0.0005	<0.0005	33	<0.05	1.66	<0.01	0.03	1.3	6.6
Median	**169**	**9.29**	**7.005**	**9.67**	**80.78**	**77.9**	**NA**	**NA**	**0.0106**	**0.0085**	**0.00085**	**NA**	**33**	**NA**	**2.02**	**0.016**	**0.03**	**1.25**	**6.8**

NA= Median not calculated because ≥ 50% of values were censored values.

Data in red exceed applicable water quality criteria (see Table 4).

Data in blue are QA/QC DO readings done using Winkler Titration.

Table 12.
Stormwater Monitoring Data (RY 2013/14)

Site Name:	Electric[1]																	
Land use Type:	Residential																	
Sample Collection Date/Time	**E. Coli**	**Diss. Oxygen**	**pH**	**temp**	**Sp. Cond, field**	**Sp. Cond, comp**	**Cu**	**Cu diss**	**Zn**	**Zn diss**	**Pb**	**Pb diss**	**Hardness**	**NH3**	**NO_3-NO_2**	**Ortho P**	**TP**	**BOD5**	**TSS**
mm/dd/yyyy HH:MM	MPN/100 mL	mg/L	S.U	˚C	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/2/2013 3:23	1986	10.47	6.4	12.6	41.3														
11/2/2013 3:24- duplicate	1986	10.4	6.5	12.7	43.7														
11/4/2013 8:20						41.6	0.0081	0.0061	0.0569	0.041	0.002	0.0029	21	0.05	0.49	0.354	0.015	17.6	22
12/12/2013 16:10	3654	12.27	6.74	6.7	723														
12/13/2013 8:45						534	0.0163	0.0074	0.193	0.128	0.004	0.0008	204	0.386	0.98	0.103	0.529	18.9	94.4
3/5/2014 5:10	687	10.58	6.57	11.5	38.7														
3/6/2014 9:39						59.4	0.005	0.0031	0.0347	0.0305	0.002	0.0005	23	0.05	1.25	0.063	0.163	3.8	31.2
3/25/2014 7:05	488	10.76	6.7	10.4	70.1														
3/26/2014 10:40						90.6	0.0052	0.0034	0.134	0.119	0.0006	0.0005	41	0.088	1.38	0.066	0.111	5	11.8
Median	**1336.5**	**10.58**	**6.57**	**11.5**	**43.7**	**75**	**0.00665**	**0.00475**	**0.09545**	**0.08**	**0.002**	**0.00065**	**32**	**0.069**	**1.115**	**0.0845**	**0.137**	**11.3**	**26.6**

Site Name:	Hilfiker																	
Land use Type:	Commercial																	
Sample Collection Date/Time	**E. Coli**	**Diss. Oxygen**	**pH**	**temp**	**Sp. Cond, field**	**Sp. Cond, comp**	**Cu**	**Cu diss**	**Zn**	**Zn diss**	**Pb**	**Pb diss**	**Hardness**	**NH3**	**NO_3-NO_2**	**Ortho P**	**TP**	**BOD5**	**TSS**
mm/dd/yyyy HH:MM	MPN/100 mL	mg/L	S.U	˚C	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/2/2013 2:55	96	10.68	6.3	11.6	13.7														
11/4/2013 9:25						15.4	0.0088	0.0049	0.0803	0.046	0.0017	0.0009	10	0.078	0.14	0.063	0.143	9.8	27
12/12/2013 17:50	23	12.02	6.6	5.8	204.8														
12/13/2013 8:30						742	0.0377	0.0139	0.451	0.299	0.0075	0.0019	197	0.05	0.41	0.013	0.807	21	190
3/25/2014 6:40	1	9.6	5.97	10.5	32.5														
3/26/2014 10:28						32.1	0.0142	0.009	0.105	0.0817	0.0015	0.0005	16	0.264	0.38	0.026	0.151	9	42
Median	**23**	**10.68**	**6.3**	**10.5**	**32.5**	**32.1**	**0.0142**	**0.009**	**0.105**	**0.0817**	**0.0017**	**0.0009**	**16**	**0.078**	**0.38**	**0.026**	**0.151**	**9.8**	**42**

Site Name:	Salem Industrial																	
Land use Type:	Industrial																	
Sample Collection Date/Time	**E. Coli**	**Diss. Oxygen**	**pH**	**temp**	**Sp. Cond, field**	**Sp. Cond, comp**	**Cu**	**Cu diss**	**Zn**	**Zn diss**	**Pb**	**Pb diss**	**Hardness**	**NH3**	**NO_3-NO_2**	**Ortho P**	**TP**	**BOD5**	**TSS**
mm/dd/yyyy HH:MM	MPN/100 mL	mg/L	S.U	˚C	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/2/2013 4:01	649	9.84	5.9	12.3	25.3														
11/4/2013 10:15						24.8	0.0064	0.0047	0.0928	0.0677	0.0006	0.0005	15	0.05	0.25	0.099	0.207	8	25
12/12/2013 19:23	150	8.62	7.23	10.9	82.45														
12/12/2013 19:30-duplicate	260	8.66	7.08	10.5	81.2														
12/13/2013 12:30						106	0.01	0.0067	0.0785	0.054	0.0005	<0.0005	40	0.05	0.26	0.058	0.294	3.8	24.6
3/5/2014 5:53	58	9.75	6.64	11.4	18.68														
3/6/2014 10:45						35.8	0.0118	0.0088	0.0997	0.0889	0.0011	0.0005	12	0.05	0.12	0.017	0.157	2.3	32.4
3/25/2014 8:15	3	6.54	6.6	10	83.4														
3/26/2014 11:30						78.3	0.0099	0.0044	0.156	0.0623	0.001	0.0005	39	0.05	0.36	0.043	0.233	2.6	64
Median	**150**	**8.66**	**6.64**	**10.9**	**81.20**	**57.05**	**0.00995**	**0.0057**	**0.09625**	**0.065**	**0.0008**	**0.0005**	**27**	**0.05**	**0.255**	**0.0505**	**0.22**	**3.2**	**28.7**

[1]Due to the velocity and lift of water coming through the pipe at this site, the flow module is unable to detect the height of the water and often doesn't sample; thefore a time paced sampling method is utilized.

Table 13.
Mercury Monitoring Data (RY 2013/14)

Sample Date	Site Name	Time:	Analyte	Result (ng/L)	Detection Limit (ng/L)	Reporting Limit (ng/L)
9/5/2013	Hilfiker-native	18:05	Total Hg	3.11	0.28	1.00
			Diss. Hg	2.28	0.28	1.00
			Total MeHg	0.091	0.014	0.05
			Diss. MeHg	0.05	0.014	0.05
	Electric-blank	16:40	Total Hg	U	0.28	1.00
	Electric-native	16:52	Total Hg	29.3	0.56	2.00
			Diss. Hg	4.06	0.28	1.00
			Total MeHg	0.44	0.014	0.05
			Diss. MeHg	0.089	0.014	0.05
	Electric-dup	17:13	Total Hg	19.1	0.56	2.00
			Diss. Hg	2.37	0.28	1.00
			Total MeHg	0.47	0.014	0.05
			Diss. MeHg	0.081	0.014	0.05

Note: CH2MHill Applied Sciences Laboratory used for analysis. Samples were composited in the field by City staff to help eliminate discrepancies in data due to length of time between total and dissolved Hg and MeHg sample collection.

U= Not detected at specified reporting limit.

Table 14.
Mercury Monitoring - Additional Data (RY 2013/14)

Site Name:	Electric							
Sample Date/Time:	TSS (mg/L)	DOC (mg/L)	Sulfate (mg/L)	Total Alkalinity (mg/L)	TOC (mg/L)	pH (S.U)	ORP (V)	Sp. Cond (µS/cm)
09/05/2013 16:52	332	6.17	1.78	12.70	8.25	7.03	0.36	18.45
Site Name:	**Electric duplicate**							
Sample Date/Time:	TSS (mg/L)	DOC (mg/L)	Sulfate (mg/L)	Total Alkalinity (mg/L)	TOC (mg/L)	pH (S.U)	ORP	Sp. Cond (µS/cm)
09/05/2013 17:13	316	6.05	0.86	5	8.06	6.5	0.36	19.33
Site Name:	**Hilfiker**							
Sample Date/Time:	TSS (mg/L)	DOC (mg/L)	Sulfate (mg/L)	Total Alkalinity (mg/L)	TOC (mg/L)	pH (S.U)	ORP	Sp. Cond (µS/cm)
09/05/2013 18:05	15.00	2.37	0.52	5.00	2.44	6.45	0.34	8.69
Reporting Limit:	**2.0 mg/L**	**0.5 mg/L**	**0.10 mg/L**	**5.0 mg/L**	**0.5 mg/L**			

Note: CH2MHill Applied Sciences Laboratory used for analysis of TSS, DOC, Sulfate, Total Alkalinity, and TOC. pH, Oxygen Reduction Potential (ORP) and specific conductivity are field measurements collected by City staff.

Table 15.

Priority Dry Weather Outfall/Manhole Screening Data (RY 2013/14)

Site Information				Flow		Physical Indicators		Field Screening					Laboratory Testing						
ID	location note	west, north, south	Date/time	Flow Present	Estimated flow	Flowing Outfalls	Flowing and non-flowing outfalls	Temp (C)	pH (S.U.)	Specific Conductivity (uS/cm)	Turbidity (NTU)	Chlorine (mg/L)	E. Coli (MPN/100 mL)	Detergents (mg/L)	Fluoride (mg/L)	K (mg/L)	Na (mg/L)	NH3 (mg/L)	**Notes**
D39476232*		west	10/17/13 11:45	n		n	n												
D45468241		south	10/17/13 13:20	y	20	n	n	15.1	7.67	150.6	0.7	0.3	1						
D39478271		west	10/17/13 12:00	n	50	n	n	14.1	7.16	118.3	5.03	0.5	228						
D42482228*		north	10/11/13 0:00	y	10	n	n	16.9	7.6	160	3.14	0	116						
D36472227*		west	10/17/13 10:30	y	5			16.3	6.51	139.7	6.84	0.5	22	<0.25	0.34	2.24	10.6	<0.5	
D30470204*		west	10/17/13 9:42	y	0.3	n	n												not enough flow to sample
D42480223		north	10/11/13 10:50	y	200	n	n	16.0	7.06	146	2.52	0	8164						
D42480214*		north	10/11/13 11:20	y	20	n	n	16.3	7.89	290	3.55	0.5	517	<0.25	0.16	2.06	10.9	<0.01	
D42480205		north	10/11/13 11:45	n		n	n												
D42482211*		north	10/11/13 12:15	n		n	n												
D42482210		north	10/11/13 12:10	n		n	n												
D39456229		south	10/11/13 9:40	y	15	n	n	13.1	6.52	80	0.96	0	<1						
D39460252		south	9/11/13 0:00	y	15	n	n	17.1	6.05	66.4	2.8	0	210						
D42466227*		south	9/11/13 13:45	y	30	n	n	21.3	6.8	98.7	5.87	0	2420						
D42468232		south	9/11/13 12:00	n		n	n												
D42468244		south	9/11/13 11:40	y	100	n	y (green bethnic growth)	19.3	7.61	128.3	5.23	0	1414						
D45464207		south	9/11/13 10:10	y	5	n	n	19.0	7.51	87.4	1.98	0							
D48464249		south	9/11/13 9:00	n		n	n												
D48464203		south	10/11/13 9:40	y	15	n	n	13.1	6.52	80	0.96	0	<1						
D45466212		south	9/11/13 8:30	y	5	n	n	20.5	7.6	101.3	1.83	0							
D42468235		south	9/11/13 10:27	n		n	n												
D48460230*	sub for 229	south	9/11/13 10:50	y	10	n	n	18.7	7.38	278.9	3.65	0	17						
D42476203		north	9/4/13 12:35	n		n	n												
D54494201		north	9/4/13 14:10	n		n	n												
D45476207		north	9/4/13 12:40	y	270	n	n	16.7	7.36	242.5	1.41	0	1120						
D45476217		north	9/4/13 12:35	y	5	n	n	19.8	7.46	146.8	1.74	0	387						
D51486211*	sub for 201	north	9/4/13 10:50	n				19.6	6.67	96.1	4.4	0	109						stagnant water
D51488203		north	9/4/13 10:35																couldn't access
D51488236		north	9/4/13 10:30	n		n	n												
D48486207		north	9/4/13 11:05	n		y (green faint color, some cloudiness)		20.0	6.87	176.2	4.22	0	146						stagnant water
D51486216		north	9/4/13 10:00	y	5	n	n	17.4	6.92	82.1	1.99	0	2420						
D51470203	sub for 205	north	9/4/13 8:40	n			n	19.1	7.29	249	2.5	0							stagnant water
D54486217		north	9/4/13 9:40	y	225	n	y (brown bethnic growth)	17.6	7.32	74.5	2.27	0	816						
D54470205		north	9/4/13 9:00	n			n												

Data in red exceed action levels, see Dry Weather Outfall and Illicit Discharge Screening Plan for more info.

* Stormwater Manhole.

Table 16.

Priority Dry Weather Screening Data - Follow Up Sampling (RY 2013/14)

Structure Sampled	Orignal E.Coli Sample Date	Original E.Coli Result	Follow up E. Coli Sample Date	Follow up E. Coli Result	Upstream Structure Sampled	Upstream E.Coli Sample Date	Upstream Structure E.Coli Result
ID	Date_time	E. Coli (MPN/100 mL)	E. Coli (MPN/100 mL)		ID	Date_time	E. Coli (MPN/100 mL)
D42480223	10/11/2013 10:50	8164	10/22/2013 11:20	>2420			
					D42480217	10/22/2013 12:00	>2420
					D45478203	10/22/2013 12:22	<1
					D45478207	10/22/2013 12:35	<1
					D45478210	10/22/2013 12:43	<1
D42480214*	10/11/2013 11:20	517	10/22/2013 11:30	185			
D42466227*	9/11/2013 13:45	2420	10/11/2013 9:20	11200			
					D42466226	10/16/2013 10:50	<1
					D42466240	10/16/2013 11:00	<1
					D42466207	10/16/2013 10:25	816
					D42466208	10/16/2013 11:17	58
					D42466228	10/16/2013 12:09	96
					D42466229	10/16/2013 12:16	<1
					D39466220	10/16/2013 12:35	7
					D39466224	10/16/2013 12:46	<1
D42468244	9/11/2013 11:40	1414	10/11/2013 8:40	55			
D45476207	9/4/2013 12:40	1120	10/22/2013 10:00	276			
					D45476213	10/22/2013 10:50	308
					D45476220	10/22/2013 10:45	184
D51486216	9/4/2013 10:00	2420	No follow up sample - not enough flowing water to sample, will re-sample in in 2014				
D54486217	9/4/2013 9:40	816	No follow up sample - perenial flow from road side ditch with nutria and ducks in it				

* Stormwater Manhole.

Table 17.

Priority Dry Weather Screening Data - Additional Sampling (RY 2013/14)

Clark Creek (concrete lined section near South Salem H.S)	Sample Date	E.Coli (mpn/100mL)	Notes
Clark Creek 100' Upstream of Sewer Line	9/11/2013 12:30	1046	Sampling was conducted 100 feet upstream and 100 feet downstream of a sewer manhole near Clark Creek at South Salem High School. Based on results, more testing will be conducted in RY 2014/2015 to try and indentify sources of *E. coli.*
Clark Creek 100' Upstream of Sewer Line	10/11/2013 8:50	2382	
Clark Creek 100' Upstream of Sewer Line	10/16/2013 10:10	115	
Clark Creek 100' Downstream of Sewer Line	9/11/2013 12:35	1986	
Clark Creek 100' Downstream of Sewer Line	10/11/2013 8:55	4884	
Clark Creek 100' Downstream of Sewer Line	10/16/2013 10:00	870	
Clark Creek at top of Conrete Lined Section	10/16/2013 10:15	308	
Clark Creek at bottom of Conrete Lined Section	10/16/2013 10:00	326	

Table 18.
Additional Data - Saddle Club Subsurface Gravel Treatment Wetland Data (RY 2013/14)

Saddle Club- IN	E. coli	cond	DO	temp	pH	Cu	Zn	Cu (Dis)	Zn (Dis)	BOD5	Cond (comp)	Hard	NH3	NO3/NO2	Ortho P	Pb	(Pb Dis)	TP	TSS
Date/Time	MPN/100 mL	uS/cm	mg/L	°C	S.U	mg/L	mg/L	mg/L	mg/L	mg/L	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/12/2013 16:37	28	139.8	13.37	2.7	7.41														
12/12/2013 18:40	58	Not enough flow to take field measurements																	
12/13/2013 11:02						0.0103	0.136	0.0071	0.0973	14	115	26	0.169	0.3	0.124	0.0006	<0.0005	0.223	32
03/05/2014 04:42	96	50.65	8.77	10.74	6.98														
03/05/2014 06:16	162	33	9.6	10.95	7.1														
3/6/2014 10:19						0.0042	0.0318	0.003	0.0222	<3.8	53	18	<0.05	0.45	0.035	0.0005	<0.0005	0.146	15.2
03/25/2014 06:45	291	42.51	10.35	10	6.82														
03/25/2014 08:28	1414	116.3	5.4	10.48	6.94														
3/26/2014 9:58						0.0114	0.0538	0.0082	0.0368	11.9	66.8	28	0.117	0.74	0.021	<0.0005	<0.0005	0.13	18.8

Saddle Club- OUT	E. coli	cond	DO	temp	pH	Cu	Zn	Cu (Dis)	Zn (Dis)	BOD5	Cond (comp)	Hard	NH3	NO3/NO2	Ortho P	Pb	Pb (Dis)	TP	TSS
Date/Time	MPN/100 mL	uS/cm	mg/L	°C	S.U	mg/L	mg/L	mg/L	mg/L	mg/L	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/12/2013 16:50	<1	127.5	2.05	5.1	7.17														
12/12/2013 18:50	<1	106.5	0.92	6.6	7.06														
12/13/2013 11:15	6					0.009	0.0071	0.0057	0.0044	1.1	95.7	51	0.066	< 0.05	0.122	< 0.0005	< 0.0005	0.077	12.2
03/05/2014 04:50	<1	169.7	0.44	8.99	6.75														
03/05/2014 06:23	<1	169	0.36	8.99	6.74														
03/06/2014 10:23	<1					0.0137	0.0035	0.0124	0.0041	< 5.4	172	74	0.051	< 0.05	0.073	< 0.0005	< 0.0005	0.131	3.5
03/25/2014 06:53	<1	157.3	0.56	10.41	6.47														
03/25/2014 08:44	<1	159.9	0.36	10.18	6.6														
03/26/2014 09:50	2					0.0129	0.0039	0.0113	0.0049	< 2.0	151	82	0.079	0.26	0.208	< 0.0005	< 0.0005	0.288	3.5

Additional E. coli samples taken from effluent during storm events

Date/Time	E. coli MPN/100 mL
01/13/2014 09:50	2
02/24/2014 08:24	<1

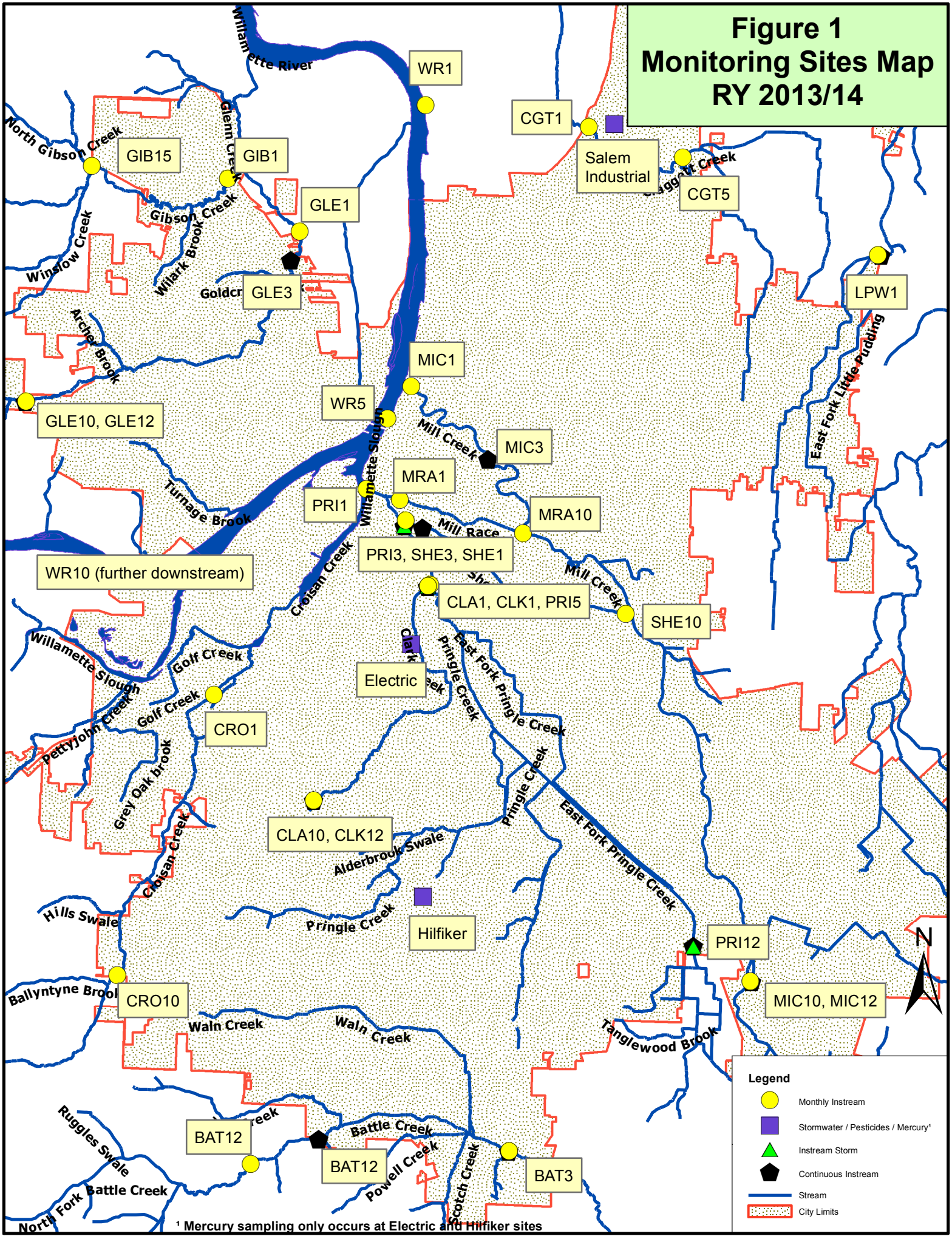
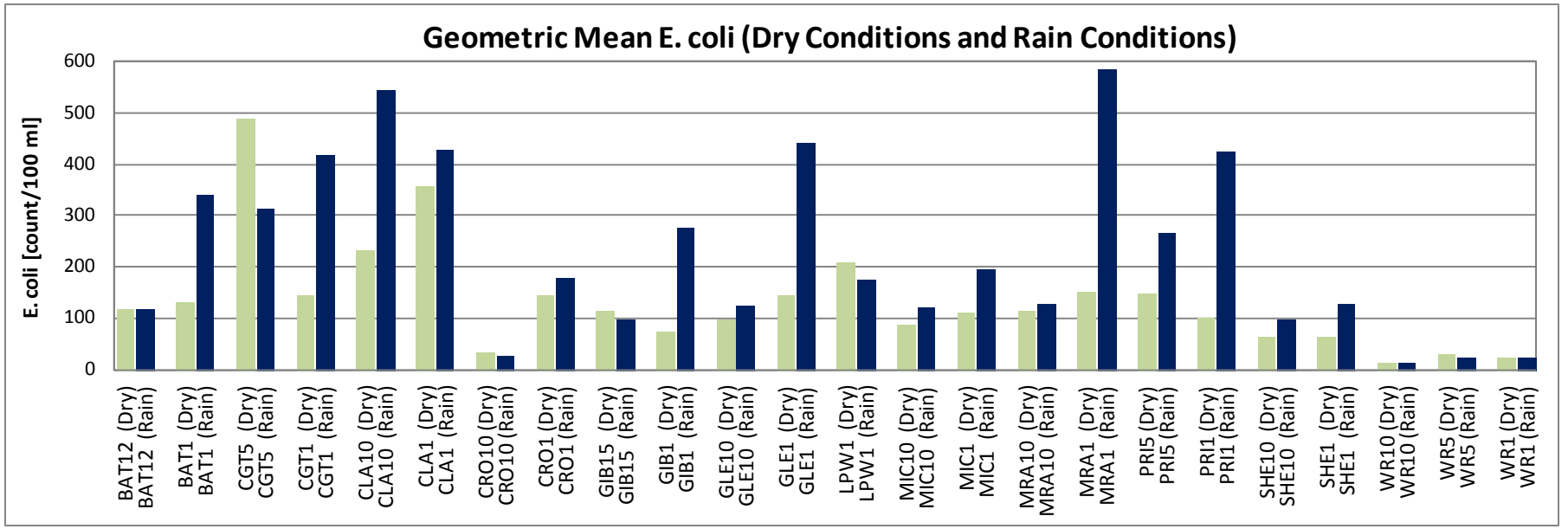
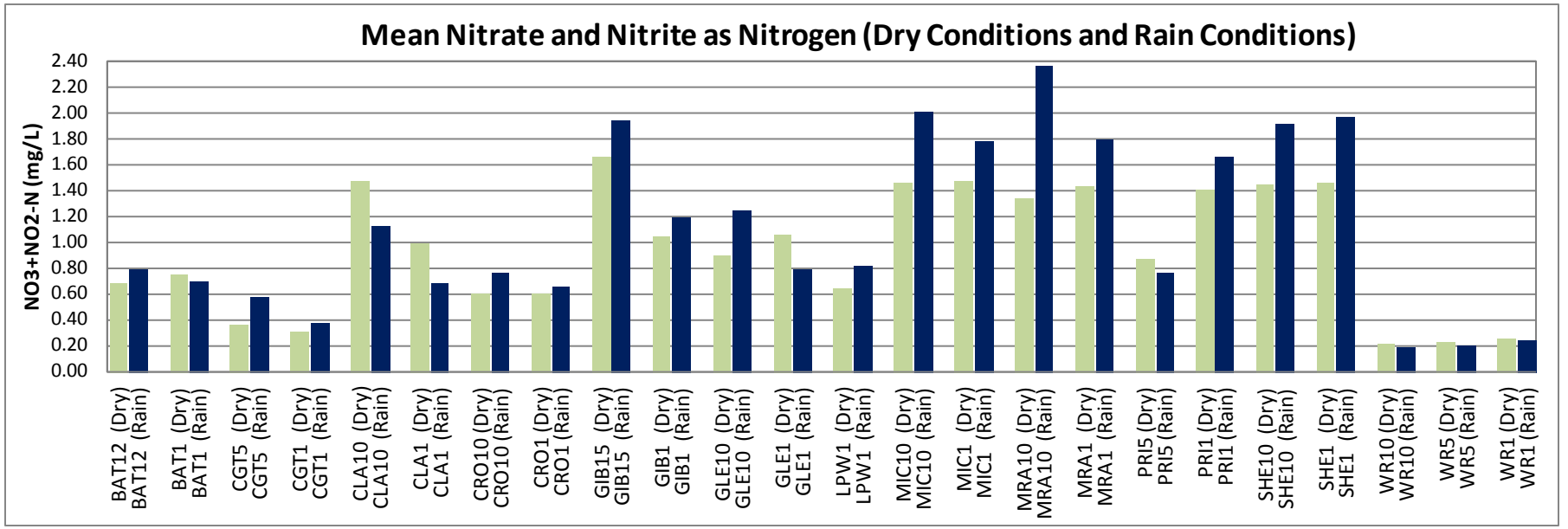


Figure 1
Monitoring Sites Map
RY 2013/14
WR1
CGT1
Salem Industrial
CGT5
GIB15
GIB1
GLE1
GLE3
LPW1
MIC1
WR5
MIC3
GLE10, GLE12
MRA1
PRI1
MRA10
PRI3, SHE3, SHE1
WR10 (further downstream)
CLA1, CLK1, PRI5
SHE10
Electric
CRO1
CLA10, CLK12
Hilfiker
PRI12
MIC10, MIC12
CRO10
BAT12
BAT12
BAT3
Willamette River
North Gibson Creek
Glenn Creek
Gibson Creek
Winslow Creek
Wilark Brook
Archer Brook
Willamette Slough
Mill Creek
Turnage Brook
Mill Race
Croisan Creek
East Fork Little Pudding
Pringle Creek
East Fork Pringle Creek
Golf Creek
Pettyjohn Creek
Grey Oak brook
Alderbrook Swale
Hills Swale
Ballyntyne Brook
Waln Creek
Tanglewood Brook
Ruggles Swale
Battle Creek
North Fork Battle Creek
Powell Creek
Scotch Creek
N
Legend
Monthly Instream
Stormwater / Pesticides / Mercury¹
Instream Storm
Continuous Instream
Stream
City Limits
¹ Mercury sampling only occurs at Electric and Hilfiker sites

Figure 2

Monthly Instream Mean Value Comparison for Dry and Rain Conditions (RY 2013/14)

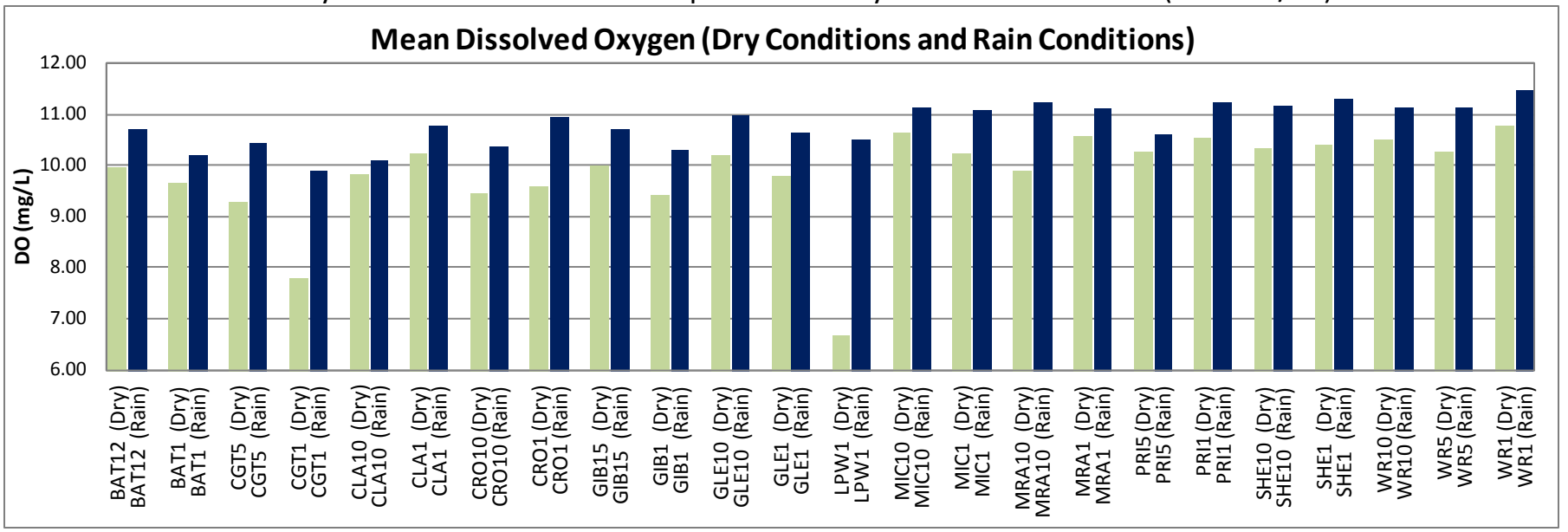


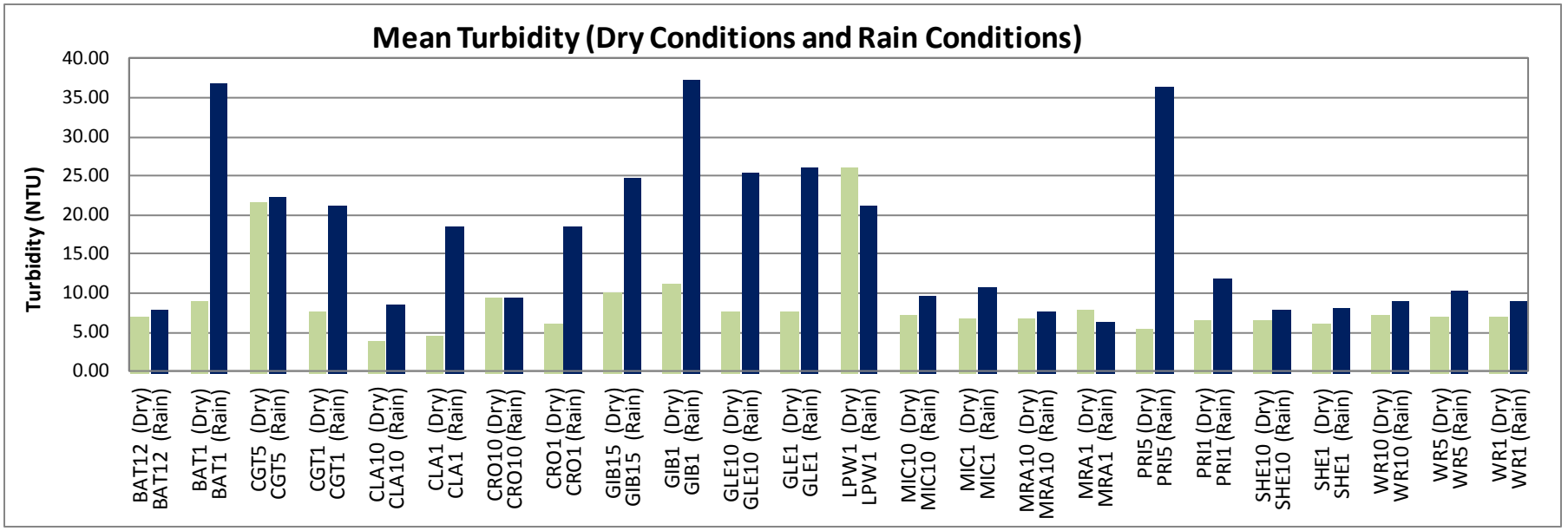


Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

Figure 2

Monthly Instream Mean Value Comparison for Dry and Rain Conditions (RY 2013/14)

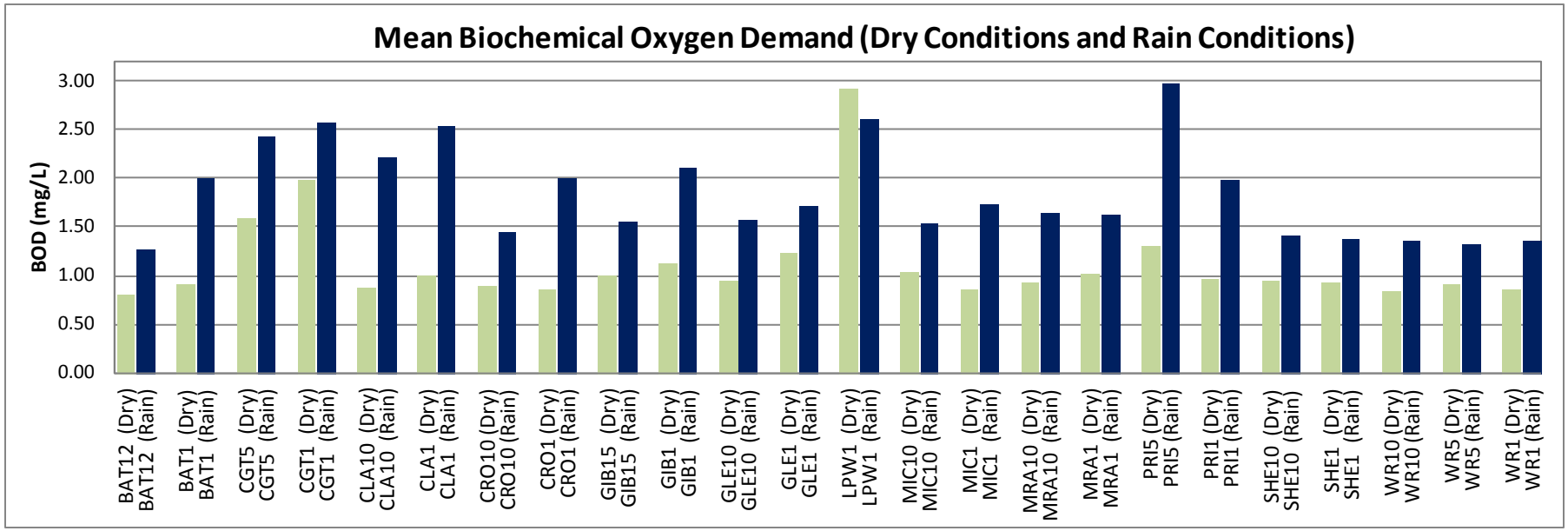


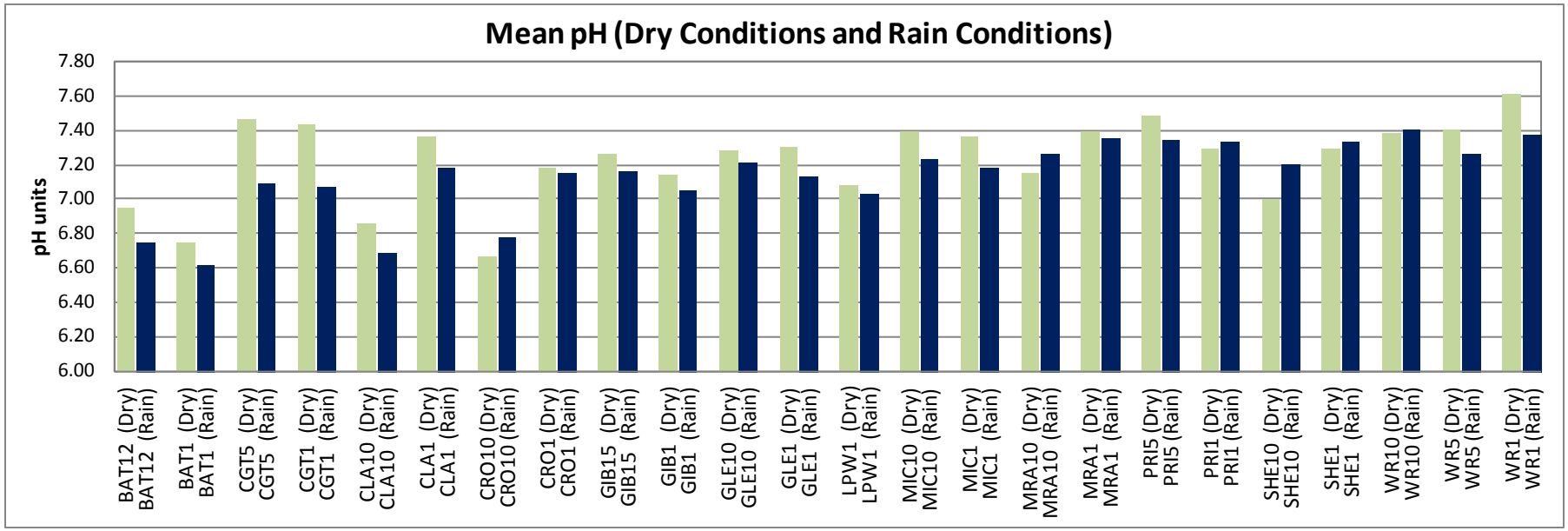


Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

Figure 2

Monthly Instream Mean Value Comparison for Dry and Rain Conditions (RY 2013/14)

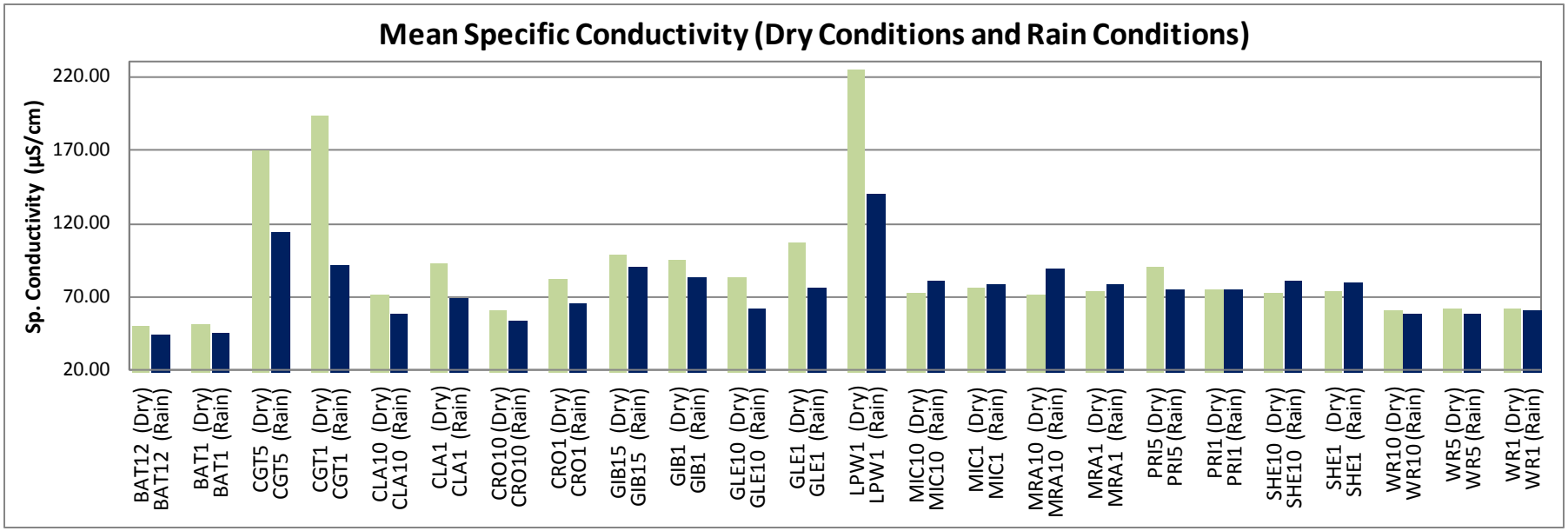




Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

Figure 2

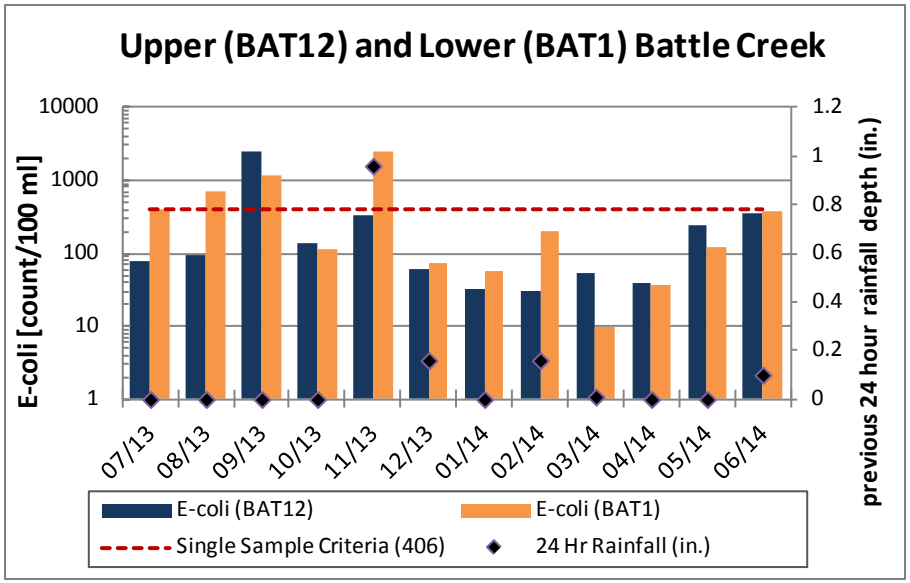
Monthly Instream Mean Value Comparison for Dry and Rain Conditions (RY 2013/14)

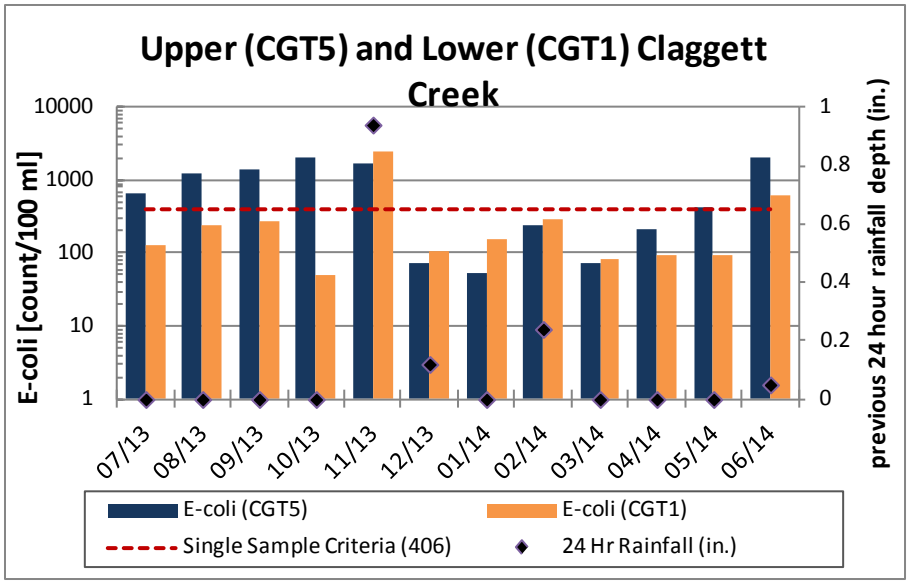


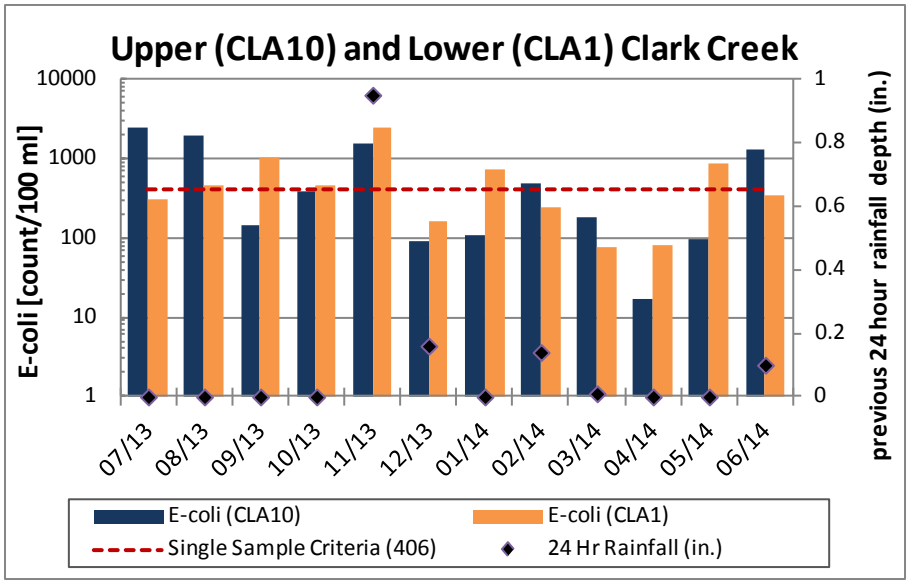
Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

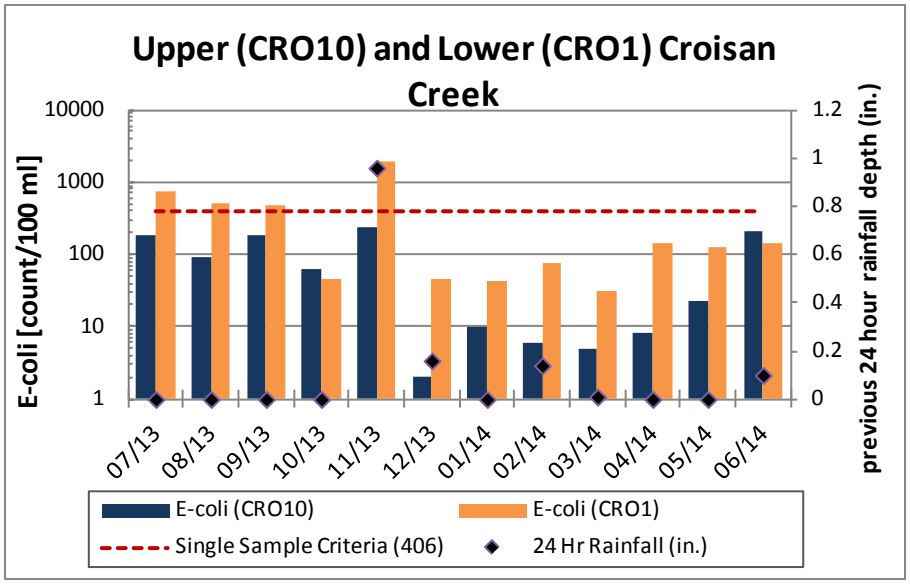
Figure 3

Monthly Instream E. Coli Upstream / Downstream Site Comparison (RY 2013/14)





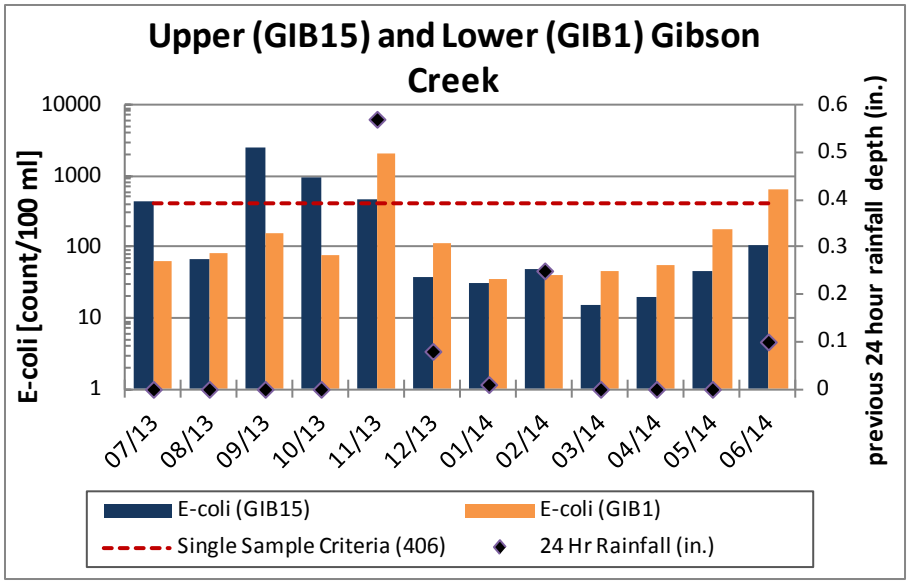


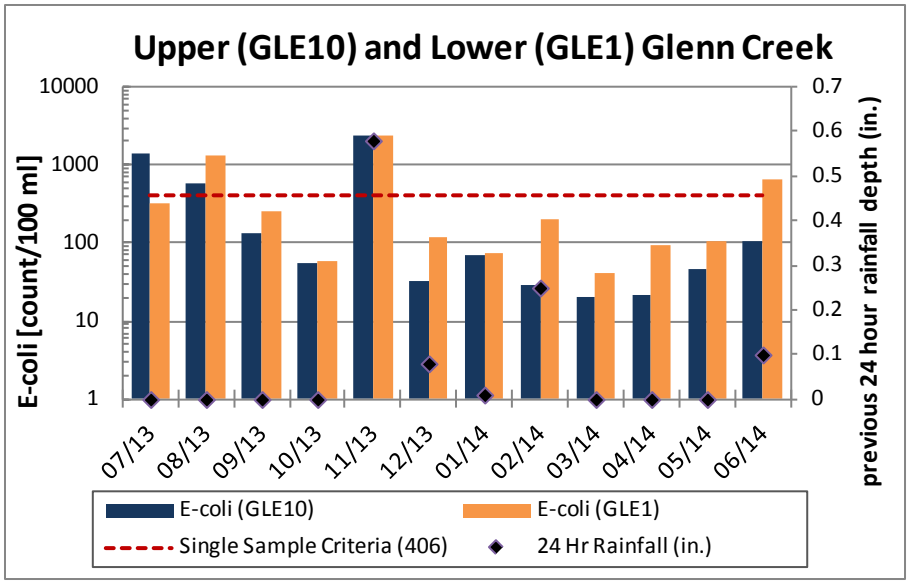


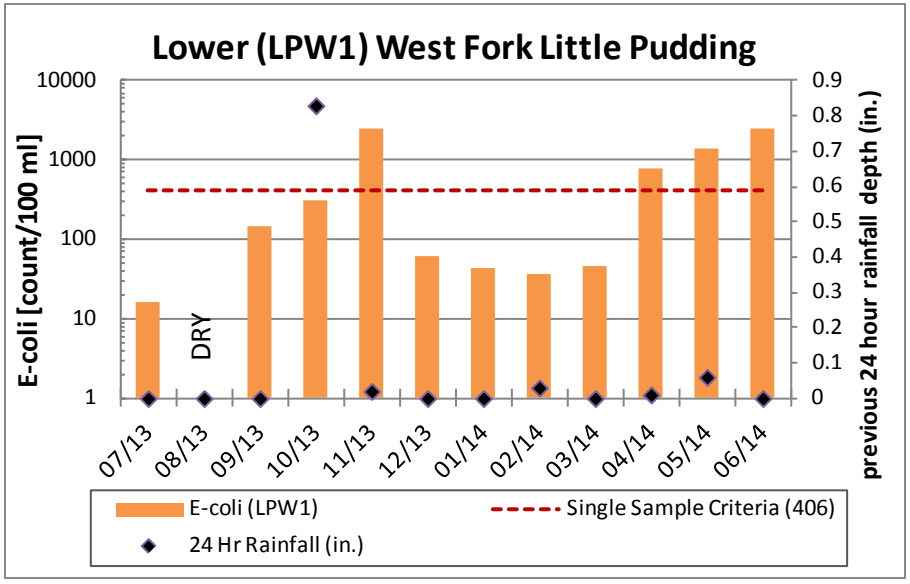
If 24 hour rainfall depth prior to sample collection differed between upstream and downstream sites, the average rainfall of the two sites was used.

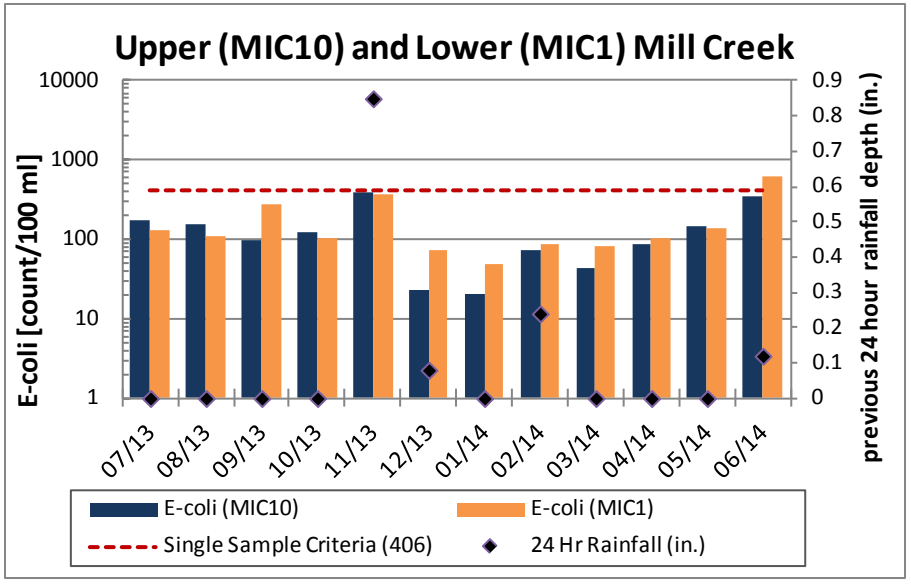
Figure 3

Monthly Instream E. Coli Upstream / Downstream Site Comparison (RY 2013/14)





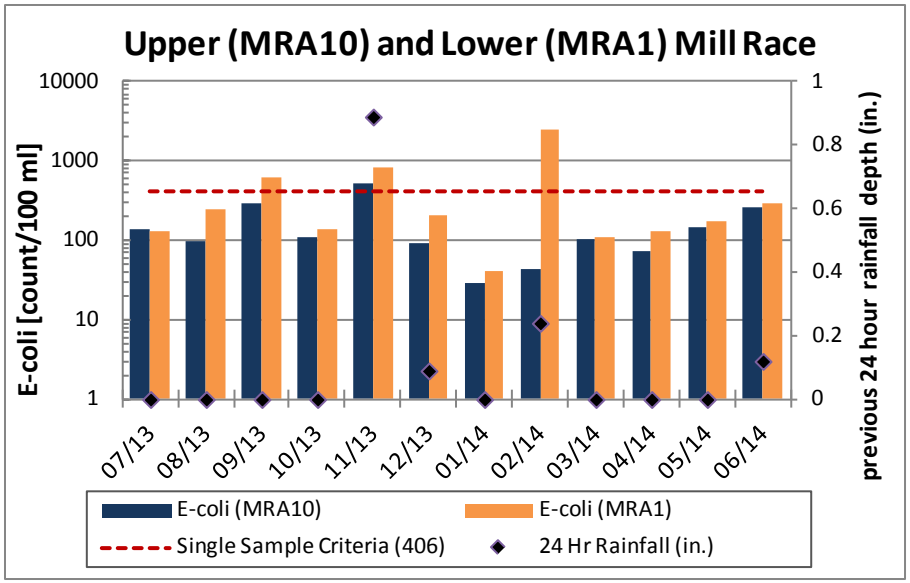


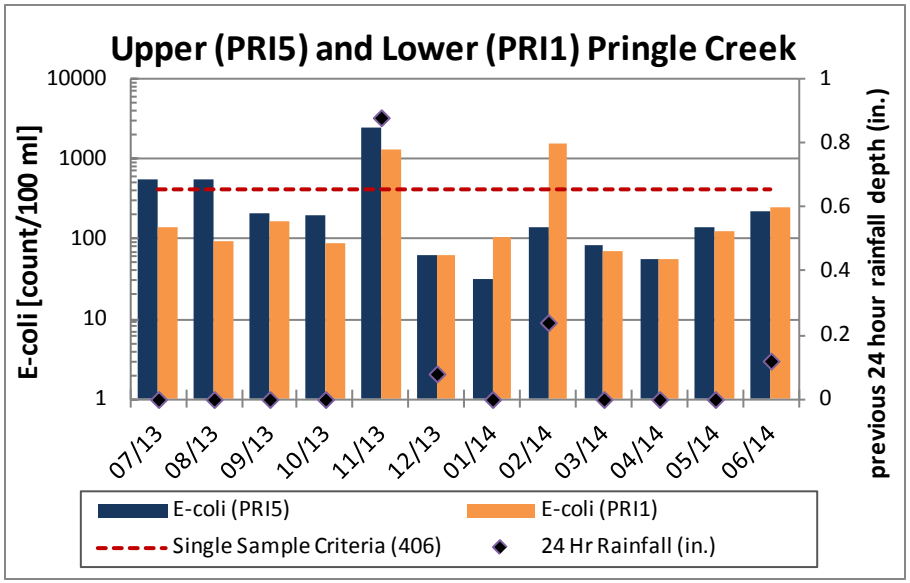


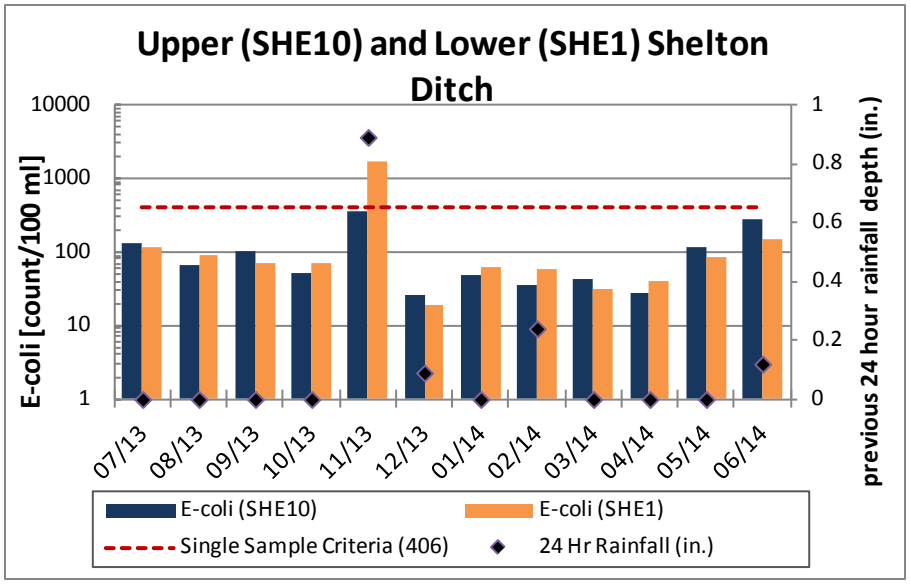
If 24 hour rainfall depth prior to sample collection differed between upstream and downstream sites, the average rainfall of the two sites was used.

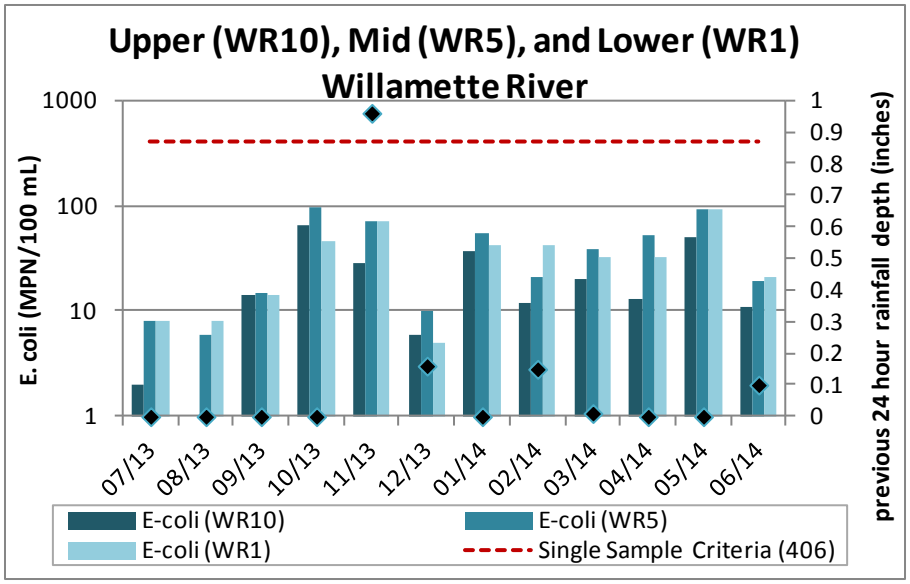
Figure 3

Monthly Instream E. Coli Upstream / Downstream Site Comparison (RY 2013/14)





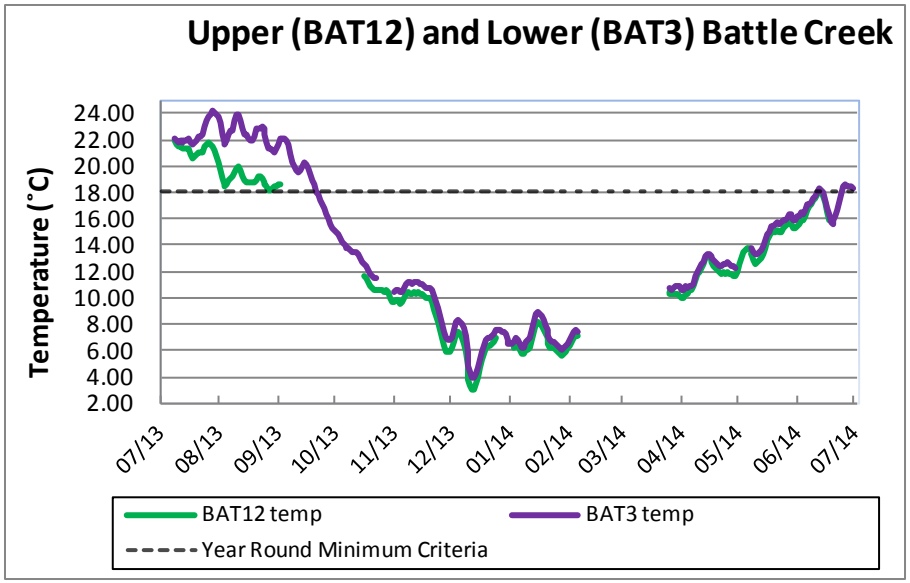


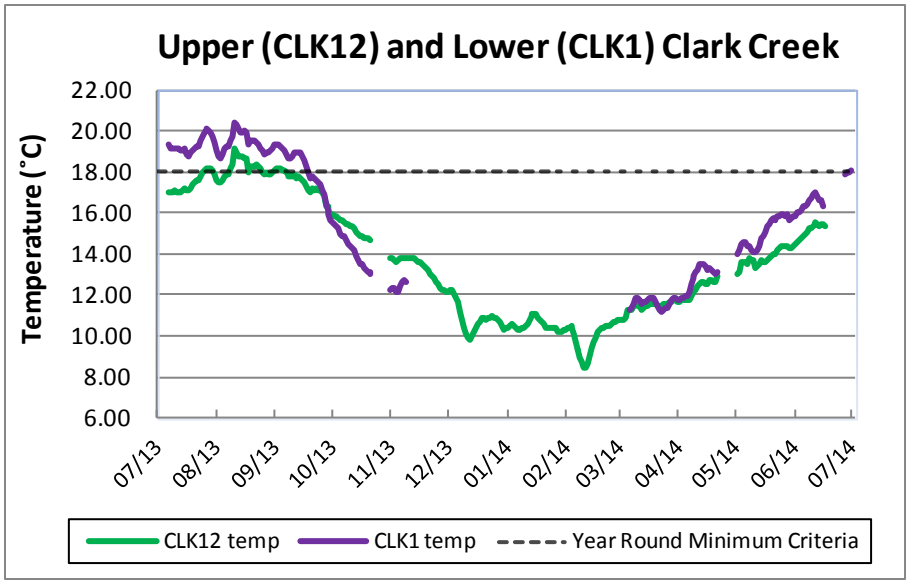


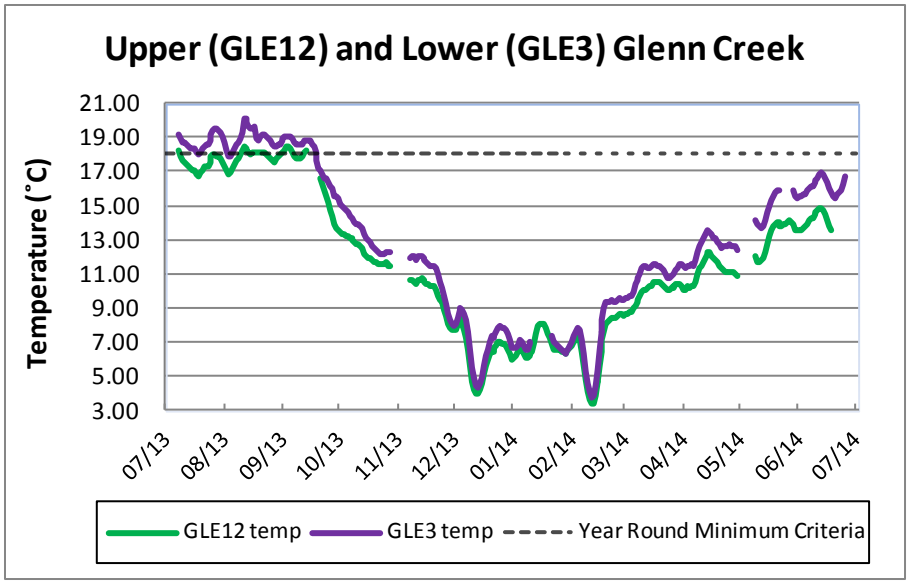
If 24 hour rainfall depth prior to sample collection differed between upstream and downstream sites, the average rainfall of the two sites was used.

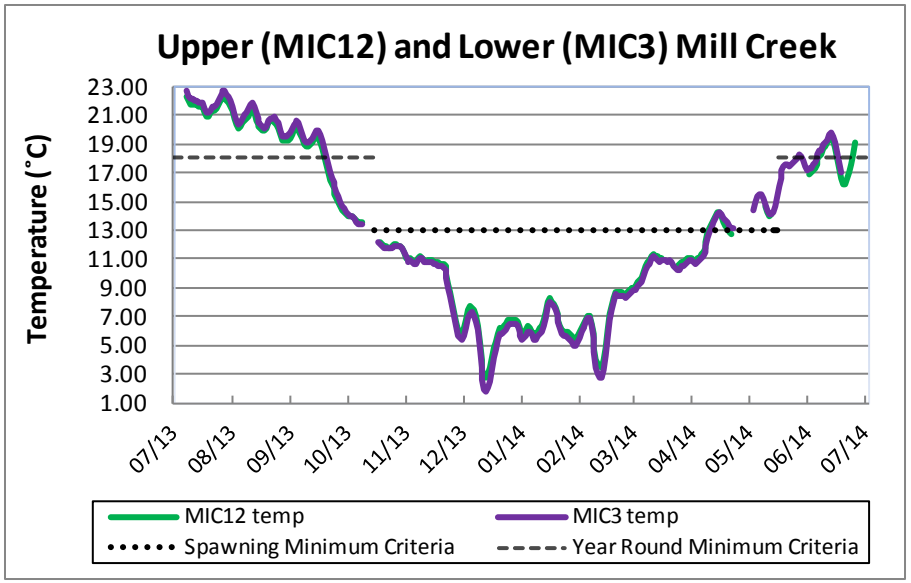
Figure 4

Continuous Instream Temperature 7-Day Moving Average Maximum (RY 2013/14)









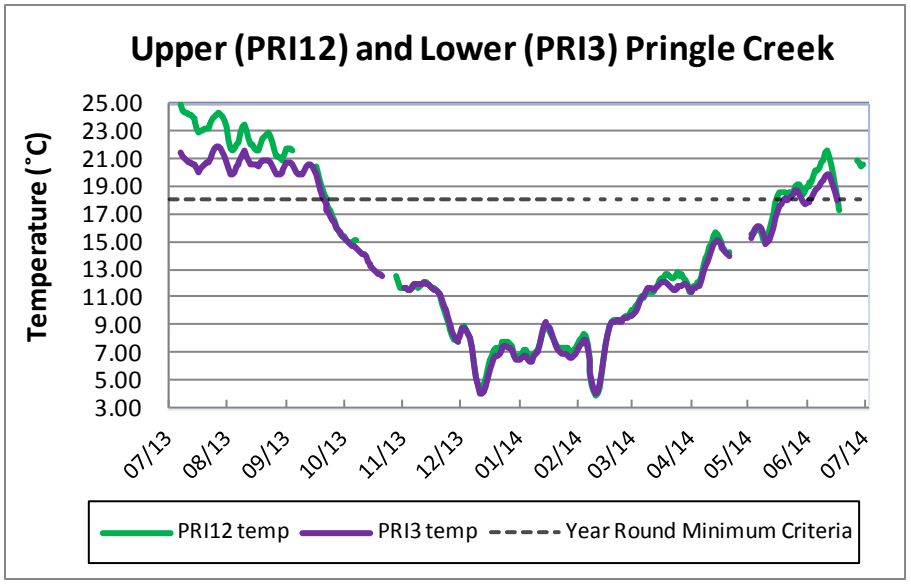
Presented temperature data consists of A grade data with greater than 80% of data points collected per day.

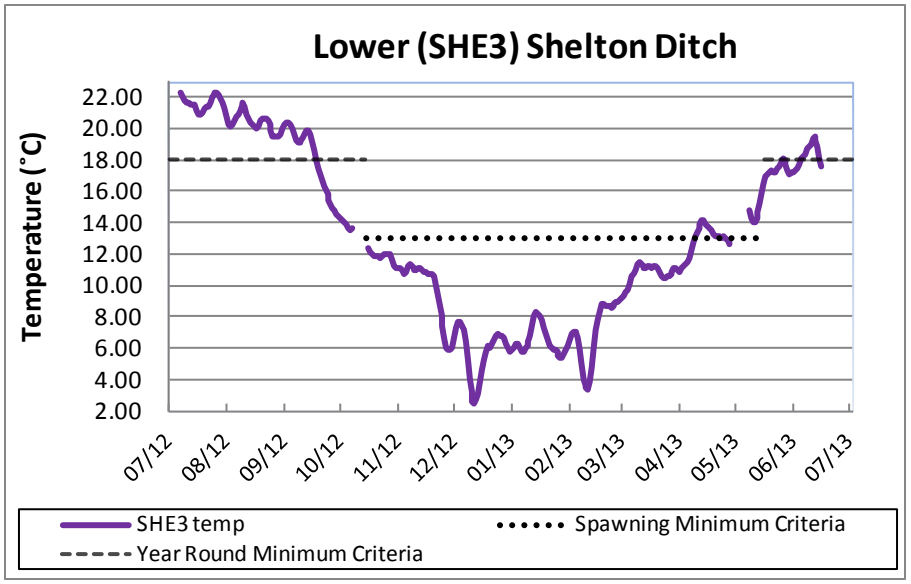
Temperature Criteria as defined in OAR 340-041-0028 and OAR-340-0340, Tables 340A and 340B.

- Spawning Minimum Criteria for applicable streams may not exceed 7-day average maximum of 13˚C.
- Year Round Minimum Criteria may not exceed 7-day average maximum of 18˚C.

Figure 4

Continuous Instream Temperature 7-Day Moving Average Maximum (RY 2013/14)





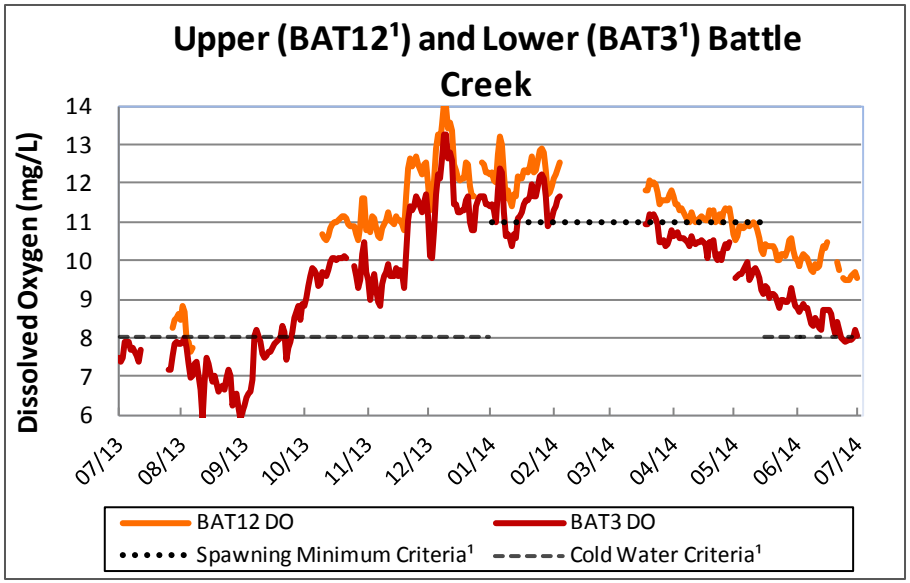
Presented temperature data consists of A grade data with greater than or equal to 80% of data points collected per day.

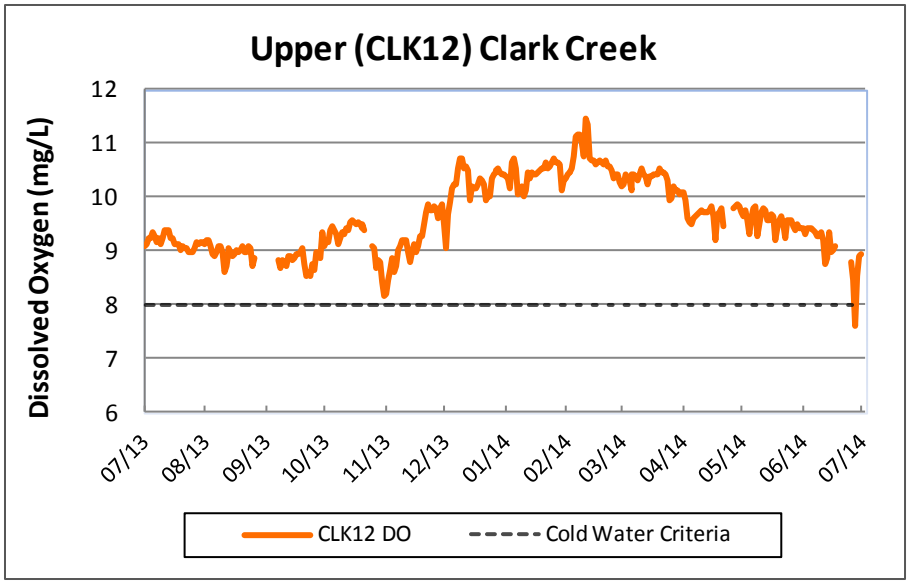
Temperature Criteria as defined in OAR 340-041-0028 and OAR-340-0340, Tables 340A and 340B.

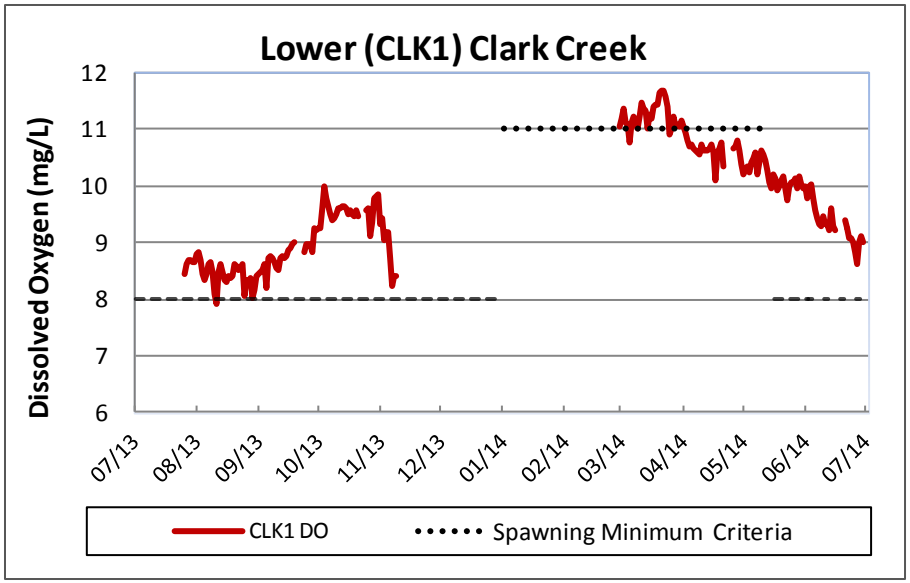
- Spawning Minimum Criteria for applicable streams may not exceed 7-day average maximum of 13˚C.
- Year Round Minimum Criteria may not exceed 7-day average maximum of 18˚C.

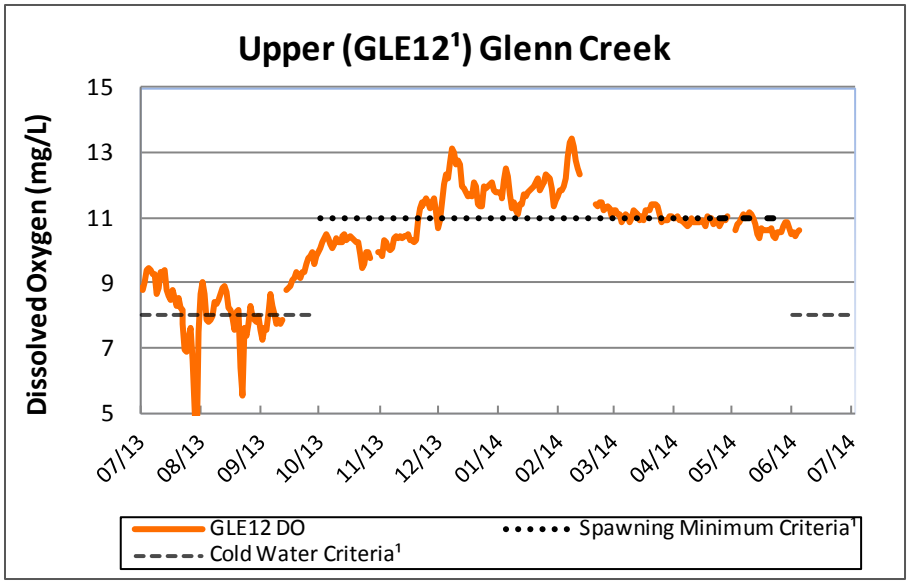
Figure 5

Continuous Instream Dissolved Oxygen Daily Mean (RY 2013/14)









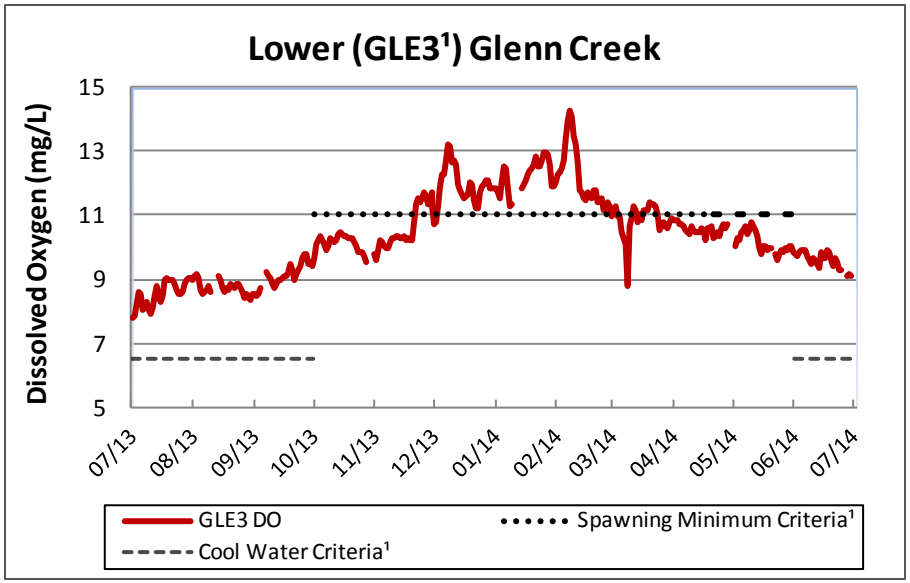
Presented DO data consists of A and B grade data with greater than or equal to 80% of data points collected per day.

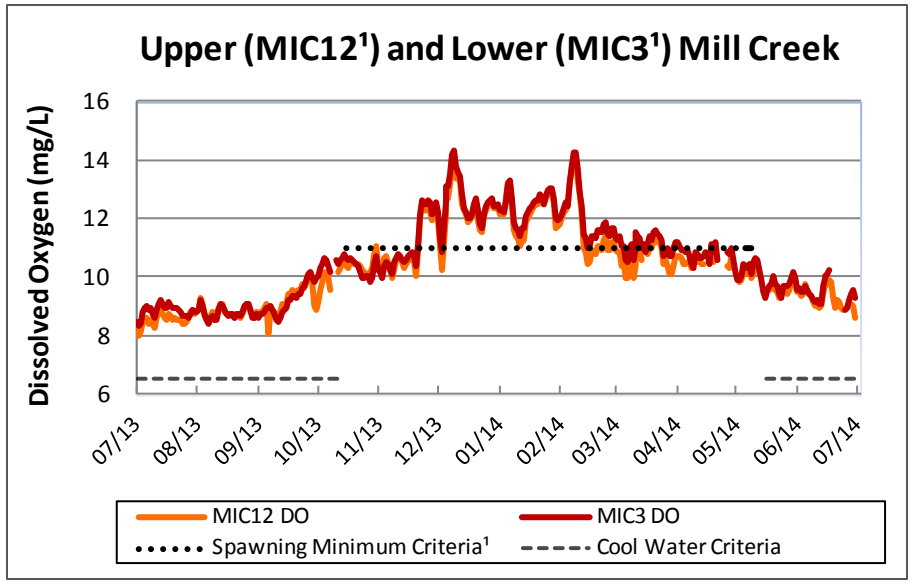
DO Criteria as defined in OAR 340-041-0016 and OAR-340-0340, Tables 340A and 340B.

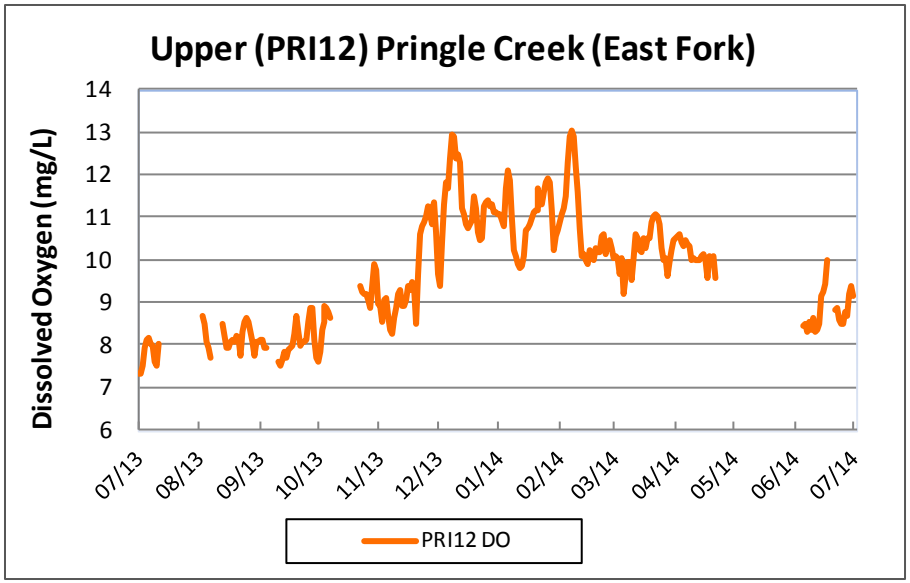
- Spawning Minimum Criteria for applicable streams may not be less than 11 mg/L .
- Cold Water Criteria for applicable streams may not be less than 8 mg/L.

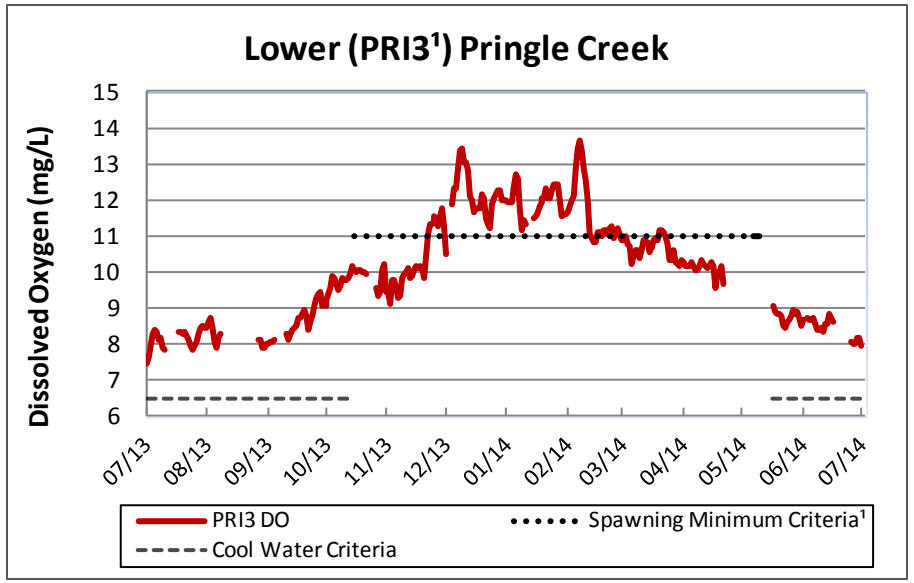
[1] Oregon's 2010 Integrated Report Section 303(d) listed.

Figure 5
Continuous Instream Dissolved Oxygen Daily Mean (RY 2013/14)







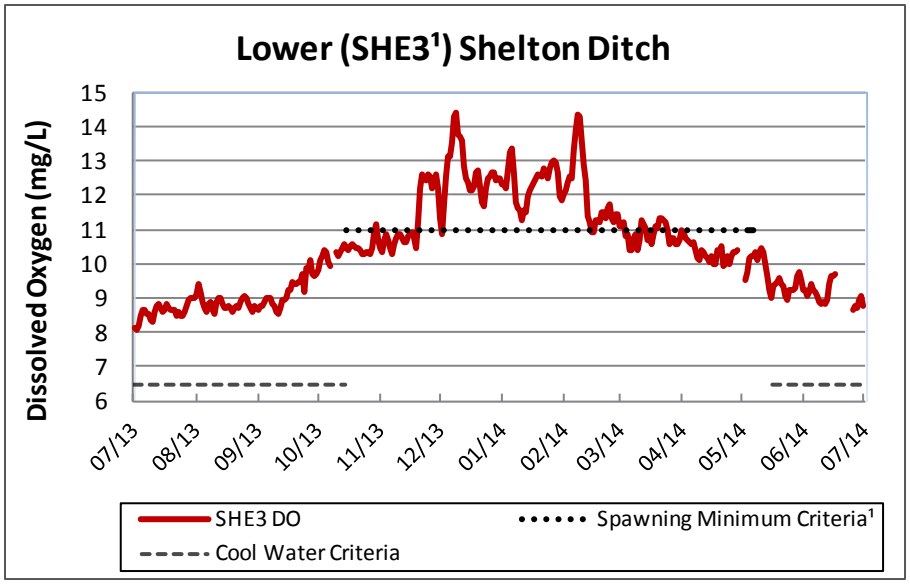


Presented DO data consists of A and B grade data with greater than or equal to 80% of data points collected per day.
DO Criteria as defined in OAR 340-041-0016 and OAR-340-0340, Tables 340A and 340B.

- Spawning Minimum Criteria for applicable streams may not be less than 11 mg/L .
- Cool Water Criteria for applicable streams may not be less than 6.5 mg/L.

[1] Oregon's 2010 Integrated Report Section 303(d) listed.

Figure 5
Continuous Instream Dissolved Oxygen Daily Mean (RY 2013/14)



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- Spawning Minimum Criteria for applicable streams may not be less than 11 mg/L .
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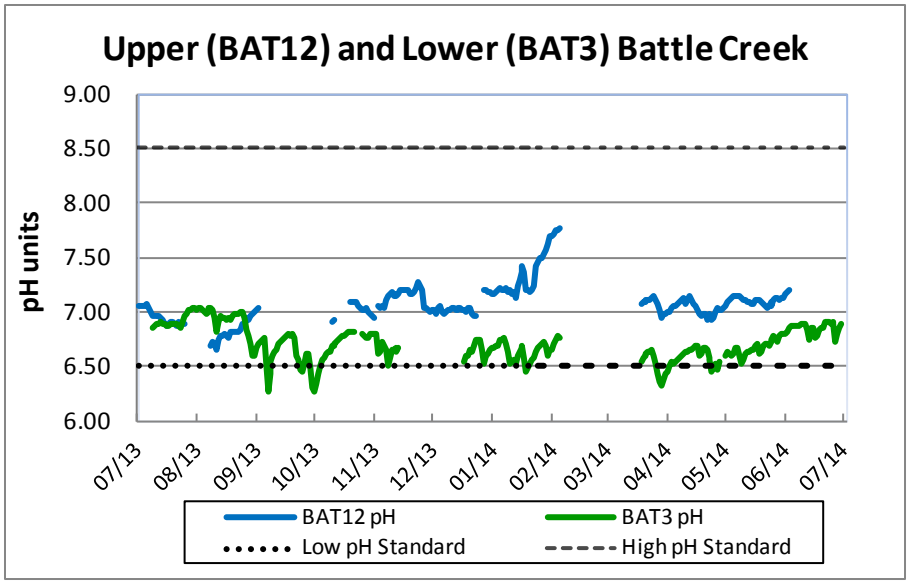
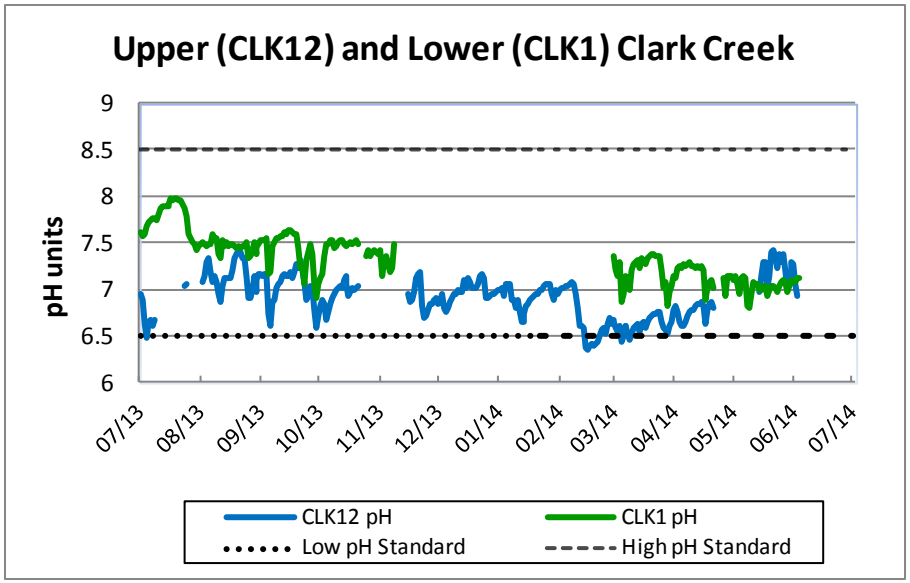
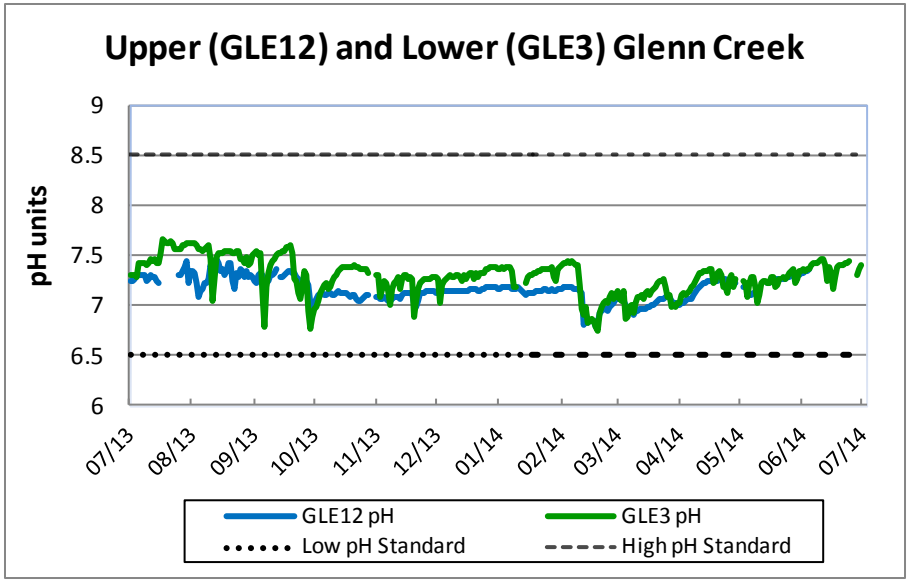
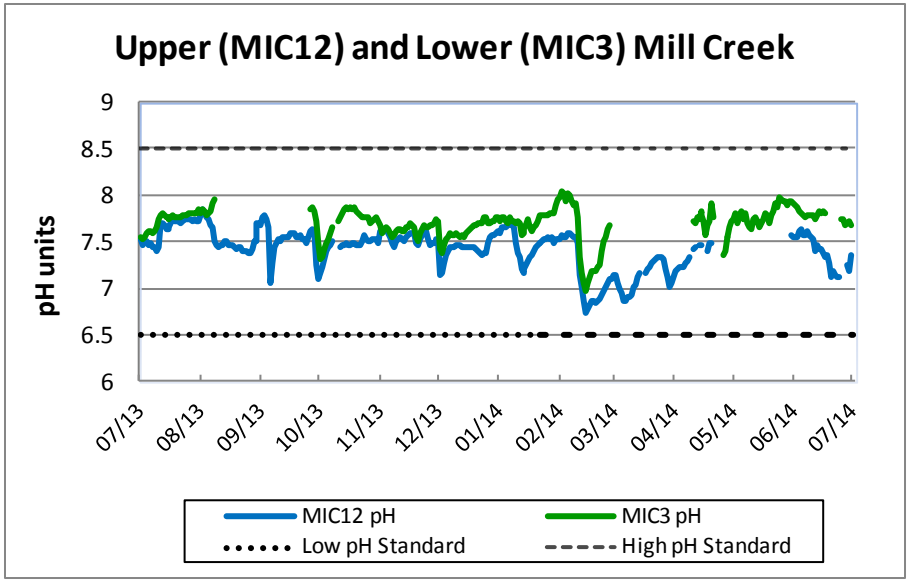
[1] Oregon's 2010Integrated Report Section 303(d) listed.

Figure 6
Continuous Instream pH Daily Mean (RY 2013/14)



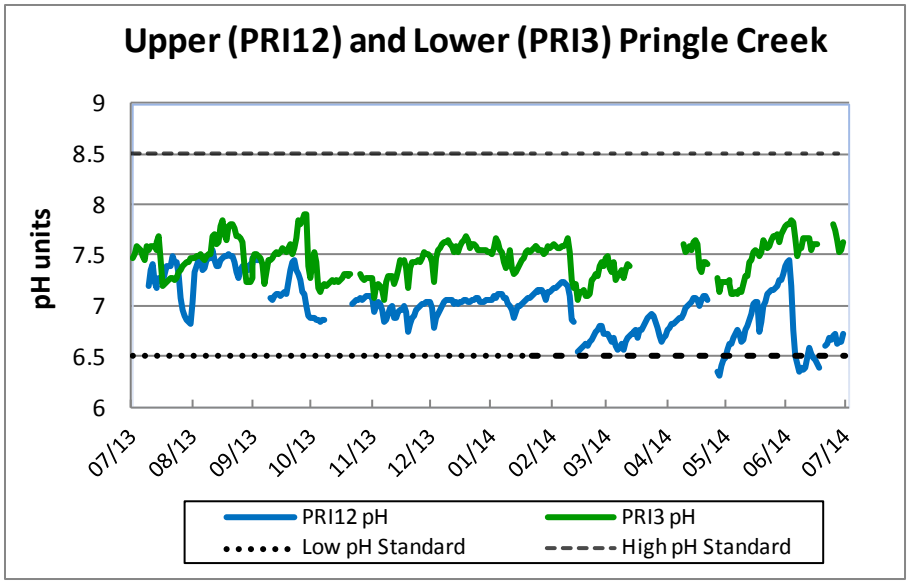


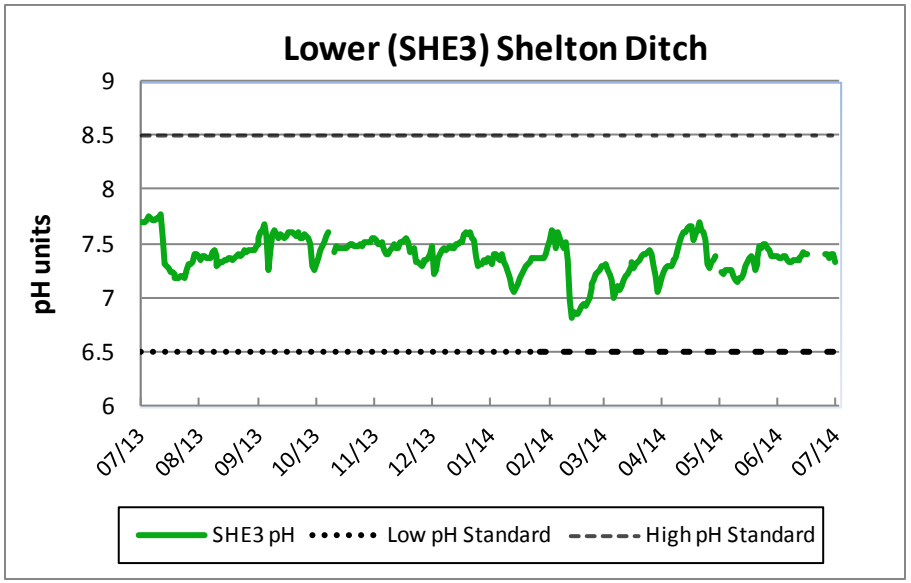




Presented pH data consists of A and B grade data with greater than or equal to 80% of data points collected per day.
As defined in OAR 341-041-0035, Water Quality Standards for the Willamette Basin, pH may not fall outside the ranges of 6.5 to 8.5.

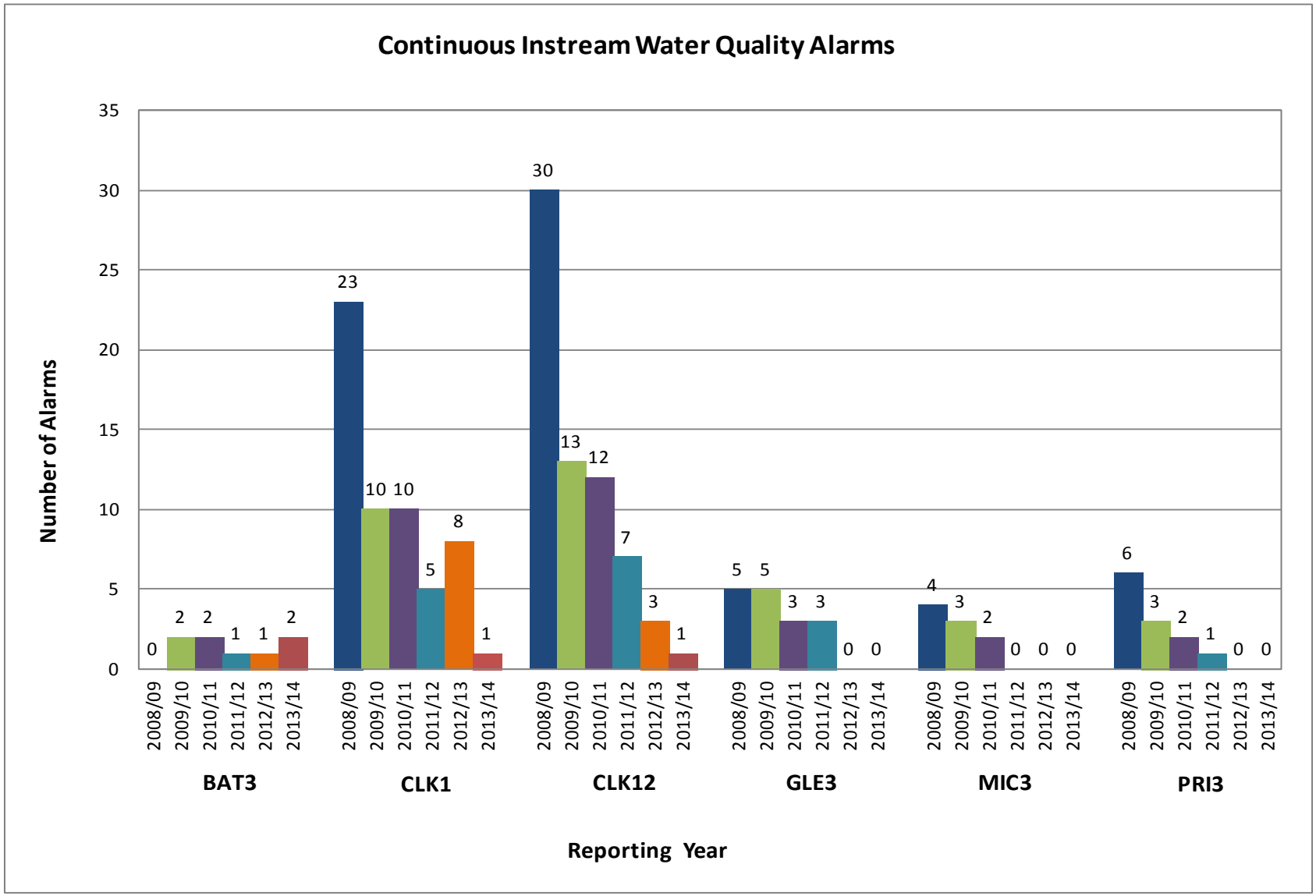
Figure 6
Continuous Instream pH Daily Mean (RY 2013/14)





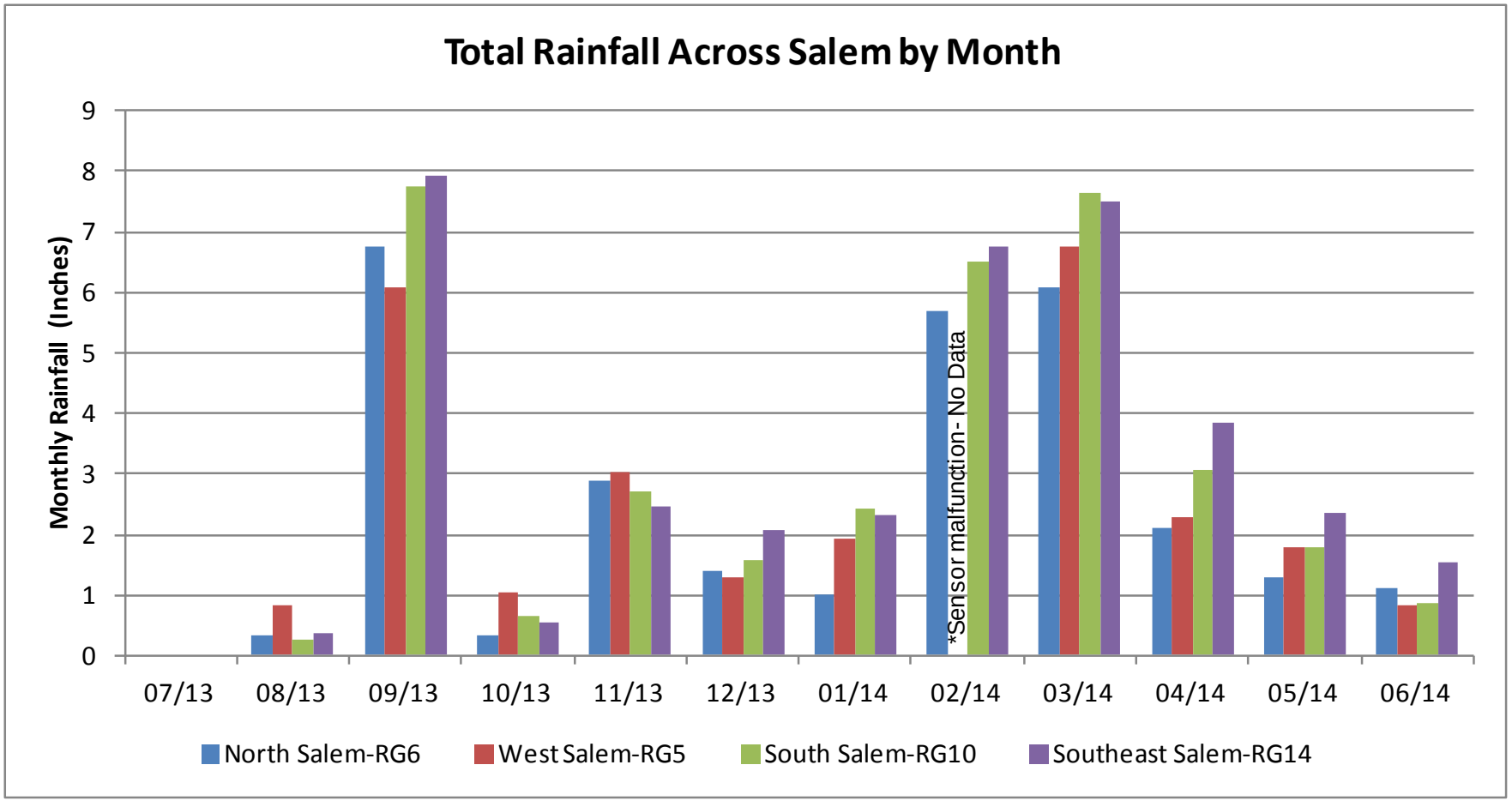
Presented pH data consists of A and B grade data with greater than or equal to 80% of data points collected per day.
As defined in OAR 341-041-0035, Water Quality Standards for the Willamette Basin, pH may not fall outside the ranges of 6.5 to 8.5.

Figure 7
Continuous Instream Water Quality Alarms (RY 2008/09 to 2013/14)



Note: The alarm counts have been filtered, based on best professional judgment, to remove alarms resulting from: rain events, non-prohibited activities identified in Schedule A.4.a.xii in the City's NPDES MS4 permit, permitted activities during the in-water work period, and wildlife activity.
Between April 2014 and August 2014, a malfunctioning radio prevented alarm notifications to the City's dispatch center, which may account for the lower number of alarms counts this reporting year.

Figure 8
Total Rainfall Across Salem by Month (RY 2013/14)



Rainfall data are from 4 rain gauges (RG) maintained by City of Salem that best represent each section of town.

ATTACHMENT A. City of Salem Saddle Club Structural BMP Subsurface Gravel Treatment Wetland Performance Monitoring Strategy.

City of Salem
Saddle Club Structural BMP
Subsurface Gravel Treatment Wetland

Performance Monitoring Strategy

Prepared by: City Salem Public Works Department
Stormwater Services

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1.0 Background

During the summer of 2012, the City of Salem's Public Works Department engineered a subsurface gravel treatment wetland, a structural stormwater treatment best management practice (BMP), off of Saddle Club drive in Southeast Salem. Very little data about the treatment capabilities of these types of BMPs exists at this time. For that reason, the City's Stormwater Service Section was tasked with developing a monitoring strategy to better understand and quantify the treatment capabilities of this type of BMP.

2.0 Monitoring Objectives

There are three monitoring objectives related to this strategy. The three objectives include:

- Determine the percent removal efficiency of core stormwater pollutant influent concentrations entering the BMP;
- Characterize core stormwater pollutant effluent concentrations;
- Characterize E. coli effluent concentrations leaving the BMP by September, 2014 so that the data can be used to model *E. coli* load reduction for TMDL attainment and the benchmarking NPDES MS4 permit requirement.

3.0 Percent Removal Efficiency

3.1 Study Design / Sampling Process

3.1.1 Study Design

The study design is a spatial layout of the two different sampling points at the site that are to be monitored during storm events only. The names of the sampling points are Saddle Club-IN (influent) and Saddle Club-OUT (effluent). To determine the percent removal efficiency, a minimum of 12 samples will be collected and analyzed for core stormwater pollutant parameters identified in Table 1 under section 3.1.3. After the twelve paired samples have been collected the data will be analyzed to determine the central tendency of the percent removal efficiency.

3.1.2 Sampling Point Locations

The Saddle Club In sampling point will be located at the catch basin that diverts flow in the BMP. The photo below shows the location of the influent sampling point.

The Saddle Club Out sampling point will be located at the stand pipe (northeast end of basin) that is connected to the perforated pipe that conveys effluent water out of the BMP. The photo below shows the location of the effluent sampling point.

3.1.3 Sample Collection Method

Sample collection methods will include grab samples, field measurements, and timed composites (see Table 1 for the collection method for specific parameters). Portable sampling units will be programmed to collect a time composite sample based on the forecasted length of the storm. To account for hydraulic detention time of the BMP, different sampling protocols will be applied to both the influent and effluent sampling points. These protocols are detailed below.

Influent:

- An initial *E. coli* grab sample will be collected during the first 3~~2~~ hours of the storm event;
- Field measurements will be collected at the same time as the initial *E. coli* sample;
- Portable sampler will be programmed to collect a total of 24 discrete samples;
- Portable sampler will be programmed to start at the beginning of the forecasted event;
- Sampler suction tubing will be placed ¼" to ½" above the standing water surface level prior to the sampling event (to ensure that sampler only collects stormwater runoff that occurred during the sampling event);
- Portable sampler will be programmed to end at the beginning of the first predicted 6 hour dry period or at the end of 24 hours (whichever comes first); and,
- A second E. coli grab sample will be collected 1 ½ to 3 hours after the initial *E. coli* sample.

Effluent:

- An initial *E. coli* grab sample will be collected during at the same time as the initial *E. coli* grab sample is collected from the influent;
- Initial field measurements will be collected at the same time as the initial E. coli sample;
- Portable sampler will be programmed to collect a total of 24 discrete samples;
- Portable sampler will be programmed to start 1 hour after the beginning of the forecasted event;
- Sampler suction tubing will be placed at the bottom of the stand pipe (to ensure that the end of the suction tubing is in the perforated pipe that conveys water out of the BMP);
- Portable sampler will be programmed to end 6 hours after the end of the predicted storm sampling event or at the end of 30 hours (whichever comes first);
- A second *E. coli* grab sample will be collected at the same time as the second influent *E. coli* grab sample is collected (1 ½ to 3 hours after the initial *E. coli* sample);
- A second set of field measurements will be collected at the same time as the second *E. coli* grab sample is collected; and,
- If effluent flow is still observed when the portable sampler samples are collected, a third *E. coli* grab sample will be collected.

Table 1: Core Stormwater Pollutant Parameters

Pollutant Parameter	Collection Method
TSS	Composite
$BOD_{5\text{-day}}$	Composite
Total Phosphorus	Composite
Nitrate+Nitrite as Nitrogen	Composite
Ammonia Nitrogen	Composite
Copper (Total Recoverable & Dissolved)	Composite
Lead (Total Recoverable & Dissolved)	Composite
Zinc (Total Recoverable & Dissolved)	Composite
Hardness	Composite
Sp. Conductivity	Field and Composite
Temperature	Field
pH	Field
Dissolved Oxygen	Field
E. coli	Grab

3.1.4 Storm Selection Criteria

The following criteria will be used to select storm events for sampling:

- Storm event must be greater than 0.1 inch of rainfall
- When possible, samples must be collected after an antecedent dry period of a minimum of 24 hours

4.0 Characterize Pollutant Effluent Concentrations

If the variances of the central tendency of the effluent pollutant concentrations are not statistically defensible after the twelve sample collection events have been completed, additional effluent samples will be collected. Additional effluent samples will follow the sample protocol outlined in section 3.1.3.

5.0 Characterize Effluent E. coli by 9/2014

It is not expected that all twelve sampling events will be collected prior to September 2014. However, Stormwater Services would like to have a statistically defensible effluent concentration for *E. coli* bacteria prior to September of 2014, so that the data can be used to model *E. coli* load reduction from the BMP for TMDL attaninment / benchmarking permit requirements. Therefore, additional effluent grab *E. coli* samples will be collected whenever feasible. These samples can be collected whenever effluent is observed leaving the site as long as it is within 24 hours of the end of a storm event.

6.0 Data Management

All composite and grab sample data from each wet-weather sampling event will be entered into Willow Lake Laboratory's LIMS database. Stormwater personnel receive hard and electronic copies of these data. All data will be imported into Stormwater Services Aquarius database.

7.0 Data Validation and Verification

The Stormwater Monitoring Analyst assigned as Project Manager will review all field and laboratory data. It will be the responsibility of the Project Manager to perform the final review and verification of the data reported prior to analyses. In addition, the Project Manager will follow up with the laboratory on any laboratory-generated data that has fallen outside an expected range. Decisions to accept, qualify or reject any data collected under this monitoring strategy will be made by the Project Manager.

ATTACHMENT B. Request for Elimination of Mercury and Methyl Mercury Monitoring memo, November 20, 2013; and DEQ approval email (January 3, 2014).

CITY OF Salem AT YOUR SERVICE
PUBLIC WORKS DEPARTMENT
555 Liberty Street SE / Room 325 • Salem OR 97301-3513 • Phone 503-588-6211 • Fax 503-588-6025

November 20, 2013

Benjamin Benninghoff
Stormwater Coordinator
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland OR 97204-1390

SUBJECT: **City of Salem National Pollutant Discharge Elimination System**
Municipal Separate Storm Sewer System
Permit No. 101513, File No. 108919
Request for Elimination of Mercury and Methyl Mercury Monitoring

Dear Mr. Benninghoff:

The City of Salem operates its stormwater system under authority of a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (Permit No. 101513, File No. 108919). Table B-1 Special Condition 6 of the Permit states, *"After two years of monitoring (minimum of four samples), the permittee may request in writing to the Department that the mercury and methyl mercury monitoring be eliminated."*

All four mercury monitoring samples were collected in accordance with DEQ's December 23, 2010, memorandum, *Mercury Monitoring Requirements for Willamette Basin Permittees*, and followed EPA Method 1699 ultra clean sampling protocol for collection, and were analyzed using EPA Method 1631E (mercury) and US EPA Method 1630 (methyl mercury).

The City completed its fourth sampling event for mercury on September 5, 2013. Consequently, the mercury data from this storm event fell in FY 2013-14 and was not included in the City's annual report for FY 2012-13. The official lab report and data from this event are provided as an enclosure to this letter and will be included as part of the annual report for FY 2013-14.

The City is pleased to submit these documents showing the fulfillment of the minimum sampling requirements and requests written approval from the Department that the mercury and methyl mercury monitoring be eliminated.

If you have any questions or need additional information, please contact me at 503-589-2188 or ampanko@cityofsalem.net.

Sincerely,

Anita Panko
Stormwater Monitoring Analyst

VLS/KC:G:\Group\Files\CHRONO\2013\AP 112013 DEQ_MercuryLetter.doc
Enclosure: Attachment A—CH2MHill Applied Sciences Laboratory Analytical Report for City of Salem
cc: Sam Kidd, Stormwater and Wastewater Collections Services Manager
Keith Bondaug-Winn, Stormwater Quality Supervisor
File: Chrono; Regulatory

Engineering Division
Parks and Transportation Services Division
555 Liberty Street SE / Room 325
Salem OR 97301-3513
Phone 503-588-6211
Fax 503-588-6025

Operations Division
1410 20th Street SE / Building 2
Salem OR 97302-1209
Phone 503-588-6063
Fax 503-588-6480

Parks Operations
1460 20th Street SE / Building 14
Salem OR 97302-1209
Phone 503-588-6336
Fax 503-588-6305

Willow Lake Water Pollution Control Facility
5915 Windsor Island Road N
Keizer OR 97303-6179
Phone 503-588-6380
Fax 503-588-6387

APPENDIX C. STORMWATER OUTREACH ACTIVITIES FY 2013-14

STORMWATER OUTREACH ACTIVITIES (E. COLI & TURBIDITY) FOR FISCAL YEAR 2013-14

Outreach Partners	Audiences	Tools	Measureable Goals	Deliverables	Promotional item(s)
Target Contaminant = E. Coli					
City of Keizer: FY 13/14 Howlapalooza and Capital Canine Club partner			1 of 3 partners sharing the pet waste / clean streams message		
Marion County Dog Services: FY 13/14 Howlapalooza and Capital Canine Club partner			2 of 3 partners sharing the pet waste / clean streams message		
Willamette Humane Society: CCC and pet waste message in new dog adoption kits. New partner			3 of 3 partners sharing the pet waste / clean streams message	Postcard about CCC to go in adoption kit (~400); CCC in service listing in quarterly newsletter and online directory	Dispenser with CSCC logo 150 in October 2013; 100 dispensers delivered November 27, 2013; plus more.
	Dog owners in pilot study area.	Direct mailing of "Know the Scoop"	Effectiveness Eval: 2014 as separate report	Sep 2013, Jan 2014, and Apr 2014 mailings to 620 residents per mailing.	
	Event participants	Events:			
		Salem Green Fair: July 11, 2013	2 new Capital Canine Club members; approx 200 participants		Dispenser with pledge
		National Night Out Pre-Party: July 23, 2013			Howl flyers, water quality, and water conservation items
		Willamutt Strut: August 3, 2013	2 new Capital Canine Club members; approx 50 booth visitors; 346 event attendees.		Dispenser with pledge
		SAIF Green Fair: August 27, 2013	3 new Capital Canine Club members		Dispenser with pledge
		Walk N Wag (Willamette Valley Hospice September 2013	6 new Capital Canine Club members; approximately 250 participants	CCC postcards distributed with dispensers (200)	175 dispensers and CCC card in event participant bags
		Howlapalooza	Approximately 200 participants. 26 vendors, 32 new pledges	Web ad, Vendor registration;30 event posters; 200 event flyers, 500 Praise your pet postcards.	
		Facebook	Posts: 2; Reach 104	Aug 13: Seeking Howl vendors (32)	
				Sept 20: Howl event announcement (72)	
	Dog walkers in parks and schools	Signs and dispensers in parks	Mutt mitt dispensers in Salem Parks: 103 Bags used In FY 2013/14: 151,200		
		Signs and dispensers	1 request and installation. Location: near Battle Creek School		
	General	Radio advertisements		July 29 - Aug 2 Family Building Block and Willamutt Strut Events promos	
				Aug 12 - 16: Call for Howl Vendors	
				Aug 26 - 30: General pet waste	
				Sept 9 - 13: Walk N Wag event promo	
				Sept 30 - Oct 4: Howlapalooza event promo	
				Jan 20 - 24: mutt mitt volunteer thank you	
				Feb 17 - 21: Responsible Pet Owner Month	
				March 24 - 28: E. coli	
				May 5 - 9 National pet week -- pick up.	

STORMWATER OUTREACH ACTIVITIES (E. COLI & TURBIDITY) FOR FISCAL YEAR 2013-14

Outreach Partners	Audiences	Tools	Measureable Goals	Deliverables	Promotional item(s)
Target Contaminant = E. Coli					
		radio interview		Sept 12: radio interview promoting pet waste pick up, Walk N Wag, and Howl	
		Website	Development of CCC website: 507 visits between July 7, 2013 and August 6, 2014)	Canine club for clean streams;howl; CCC photo gallery	
		Social media -- FB	Posts: 6; Reach 232	July 23 (25), 25 (15), and August 2 (26): Willamutt Strut Promo. 8/6 (24) Thank you	
				Aug 16: Walk N Wag event announcement (19)	
				Sept 9: Walk N Wag reminder (22). Sept 18 event follow up (23)	
				Sep 27: mutt mitt location contest (95); Sep 30 final clue (19)	
				Oct 18: Willamette Humane Society partner (30)	
				May 7: Willamutt Strut announcement (29)	
		Salem Weekly		December 2013 Capital Canine Club	
		Community Connections		Jul 2013 Introduce Capital Canine Club; Sep 2013 Howlapalooza Save the Date; Jan 2014 Thank you mutt mitt volunteers	
		Newspaper article / Press Releases			
Target Contaminant = Turbidity					
Marion SWCD			1 of 5 Erosion Control and Stormwater Management partners		
Marion County Stormwater			2 of 5 Erosion Control and Stormwater Management partners		
City of Keizer			3 of 5 Erosion Control and Stormwater Management partners		
City of Corvallis new partner			4 of 5 Erosion Control and Stormwater Management partners		
			5 of 5 Erosion Control and Stormwater Management partners		
City of Albany new partner		Event information		Save the date post cards; Erosion Control Registration forms posted online	
		Erosion Control Summit	Event participatin: 101 participants; no vendors requested this year		
			July: call for Erosion Control Summit abstracts posted on website		
	City staff	Erosion Control Training			
	General public	Print ads			
		Radio			
		Facebook	Post 1; Reach: 13	Nov 18: ECS registration opens (13)	
	Creekside homeowners	Streamside Guide mailing			
Parks			Number of trees and shrubs planted in low shade areas: 2650 riparian trees and shrubs along approx.800 feet of Clark Creek.		

STORMWATER OUTREACH ACTIVITIES (E. COLI & TURBIDITY) FOR FISCAL YEAR 2013-14

Outreach Partners	Audiences	Tools	Measureable Goals	Deliverables	Promotional item(s)
Target Contaminant = E. Coli					
		Stream Crew	Number of trees and shrubs planted for stream crew restoration project(s) 1 new project, Fluent Engineering; Mill Creek, 281 shrubs, perennials, and grasses, sedges, and rushes Planting 2: 36 rushes planted at Pringle Creek @ Dakota Rd SE.		
		Watershed Grant	Jan 24: Kooskooski meeting to discuss grant		