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 2018-19

October 30, 2019

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.

Mark Becktel, AICP, Operations Division Manager 10/31/2019 **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
PSFA	Private Stormwater Facility Agreement
ppm	Parts per million
RC	Residential and commercial area-related BMPs
SDC	System Development Charge
SKAPAC	Salem/Keizer Area Planning Advisory Committee
SRC	Salem Revised Code
SSORP	Sanitary Sewer Overflow Response Plan
SWMP	Stormwater Management Plan
TMDL	Total Maximum Daily Load

1 INTRODUCTION

1.1 Permit 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 (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 NPDES MS4 permit in December 1997, with an expiration date of September 2002.

An application for permit renewal was submitted to the DEQ in April 2002, and the City's second MS4 permit was issued in March 2004. The next permit renewal application was submitted to the DEQ in 2008. This application included a revised SWMP (2008 SWMP) that was developed in part using the EPA document *Municipal Separate Storm Sewer System Program Evaluation Guidance* (January 2008). Following permit negotiations, the 2008 SWMP was further revised and submitted to the DEQ on August 13, 2010.

The City's renewed (third) MS4 permit was issued on December 30, 2010. Consistent with requirements of Schedule D.6 of the renewed MS4 permit, the City resubmitted the SWMP (revised 2010 SWMP) to DEQ on March 17, 2011. The EPA conducted an inspection of the City's MS4 program 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 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.

The City's current permit had an expiration date of December 29, 2015. A renewal application was submitted in December 2015 (per the conditions listed under Schedule F, Section A.4) and the DEQ has confirmed (in a letter dated March 1, 2016) that the permit has been administratively extended. A copy of the MS4 permit, revised 2010 SWMP, and 2015 permit renewal application has been posted on the City's website (cityofsalem.net/Pages/ms4-permits-and-annual-reports) along with all subsequent annual reports associated with the current permit cycle. This document represents the City's FY 2018-19 Annual Report, and describes the status of BMP-related activities in the revised 2010 SWMP.

1.2 Purpose and Scope

The MS4 permit area is defined as the area included within the city limits (encompassing 47 square miles), as exhibited in Figure 1. This is the area for which the City has responsibility for implementing its stormwater management program. Land use within the 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, 2018, through June 30, 2019, to address the requirements of the City's current MS4 permit. The information presented in this report is based on the requirements listed in Schedule B.5 of the 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 and 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 A
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 A
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)
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 A

1.3 Adaptive Management

The stormwater management program that is described in the City'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'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 continues to reduce the discharge of pollutants from its stormwater system.

Consistent with Schedule D.4 of the MS4 permit, City staff submitted an "Adaptive Management Approach" to DEQ on October 24, 2011, that will continue to be adhered to through expiration of the MS4 permit. 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.

Per the Adaptive Management Approach, a series of 12 meetings were held with staff across the City in reporting year (FY 2014-15) to review BMP activities completed over the permit term, information received through the annual adaptive management process, and to complete a comprehensive assessment of BMP activities listed in the 2010 SWMP. Information collected through this assessment informed the proposed SWMP modifications that were submitted to DEQ as part of the MS4 Permit Renewal Package in December 2015. The proposed revisions were posted on the City's website for an open public comment period prior to submittal to DEQ.

In preparation of this annual report and as described in the Adaptive Management Approach, City staff were again asked to consider if changes in BMP activities were anticipated or proposed in the next fiscal year (FY 2019-20). Staff completed the documents for their individual BMP activity; some staff proposed minor changes to how programs may be implemented, and others submitted items to consider during permit renewal or an update to the Stormwater Management Plan. Currently no proposed changes to the SWMP that reduce TMDL pollutants were made.

Figure 1. Permit Area Map

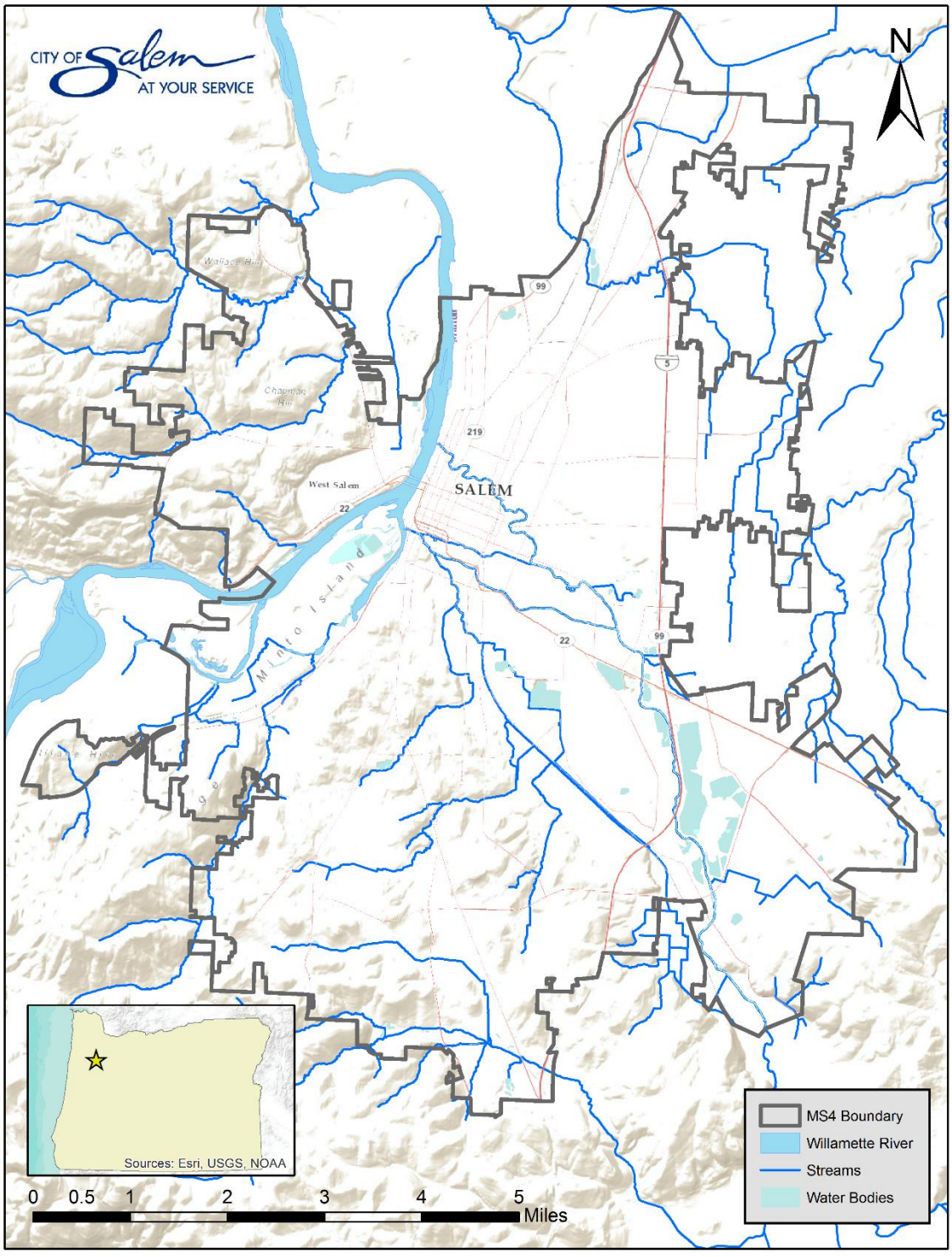
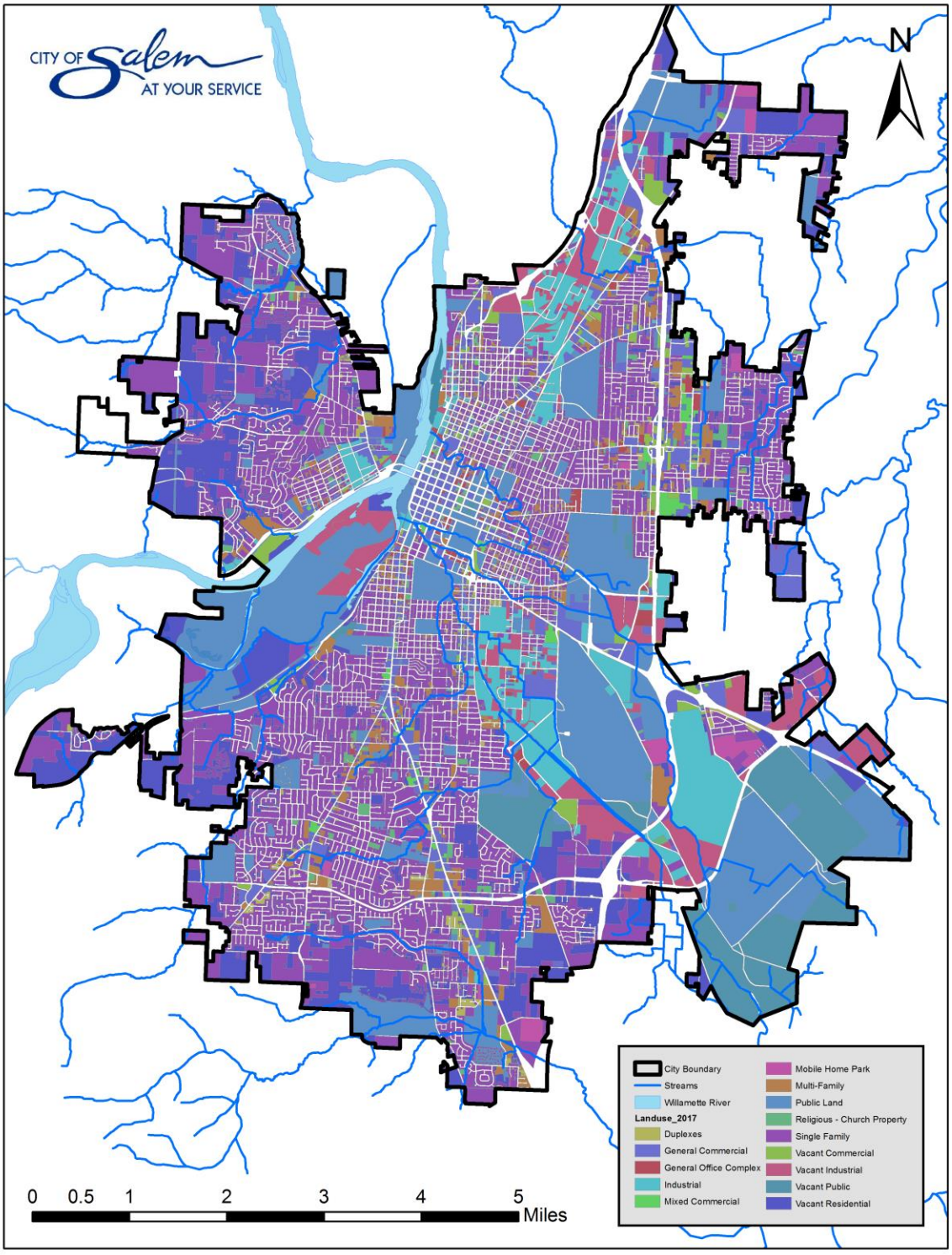


Figure 2. Land Use



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).

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 FY 2018-19 (July 1, 2018 through June 30, 2019) that demonstrates progress toward meeting the measurable goals and tracking measures.

Table 2. RC1—Planning

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 1-1: 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.	Maintain Master Plan and complete next update within the MS4 permit cycle.	Track schedule for updating Master Plan. Report on Master Plan update actions.	An updated Stormwater Master Plan has been drafted. The draft plan carries forward analysis conducted for the 2000 Stormwater Master Plan and will contain updated basin plans for Battle Creek, Mill Creek, and Pringle Creek. Hydraulic and hydrologic modeling has been completed for all three basins. Recommended facilities and cost estimates have also been drafted. Remaining work includes integrating information from the three basin plans into the master plan, conducting public outreach, and obtaining City Council approval. The completed update to the Stormwater Master Plan is expected to go to City Council before the end of 2019.
RC 1-2: 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.	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.	The Hydromodification Assessment and Stormwater Retrofit Plan were completed and submitted to DEQ on October 28, 2014. During the 2018-19 reporting period, City staff utilized the stormwater retrofit prioritization tool (completed in 2017-18) when preparing the FY 2019–FY 2023 Capital Improvement Plan (CIP). City Council adopted the CIP in June 2019, which includes a total of approximately $12.8M for stormwater-related projects, of which $887,500 is allocated specifically for implementing the Stormwater Retrofit Plan.
RC 1-3: 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 groundtruthing, that information will be incorporated into the update process.	Compile database of maps and waterways references. Complete field ground-truthing by end of FY 2011-12. Update map by end of FY 2012-13.	Track completion of ground-truthing and map updates.	All waterway layers were consolidated into one "channels" feature layer in SDE (Spatial Database Engine) as part of the Stormwater utilities migration from Hansen to Infor Public Sector (IPS). This consolidated layer is the master data set for all waterways.
RC 1-4: 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 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 City employees to inform them about the City's efforts for pollution prevention. At least annual trainings will be provided to specified City employees involved in MS4-related activities regarding the permit, including its intentions and their responsibilities in relation to the MS4 permit. 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.	Throughout the 2018-19 reporting period, City stormwater staff participated in MS4 coordination meetings with staff from a variety of workgroups in order to review MS4 program tasks, to discuss adaptive management, and to complete permit deliverables. These coordination meetings included but were not limited to the following MS4 related efforts: public education and outreach, operations and maintenance, capital improvements, and GIS System. The natural resources group, which used to meet quarterly, began meeting monthly. Of interest is the development of an Integrated Pest Management Plan, which is being developed by a subcommittee from three sections of Public Works: Parks Planning and Natural Resources, Parks Operations, and Stormwater Quality. Staff met throughout the FY to discuss the redesign and reorganization of the recycling center. The update included purchasing two new weather-resistant bins for electronics recycling, nine new signs detailing what items are accepted in each bin and best management practices for the center, installation of a shed with cleaning supplies and a spill response kit, installation of a shed for transient possessions storage, implementation of a rotating schedule for all Shops sections for cleaning and maintenance of the center, and refinement of the process for abandoned shopping carts. City of Salem Public Works has been working on APWA accreditation. As part of this process, many policies, plans, and projects related to stormwater have been reviewed and formally documented. The accreditation process will continue into FY 2019-20. Staff continued to participate in Oregon Association of Clean Water Agencies (ACWA) Stormwater subcommittees this last year (see RC1 Task 8). City staff attended the May 2019 Stormwater Summit in Eugene and the July 2018 Stormwater Summer Conference in Bend. City staff attends the City of Keizer's Stormwater Advisory Committee.
RC 1-5: 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.	Clean Rivers Coalition: Roy IWAI, Water Resources Specialist, roy.iwai@multco.us The Clean Rivers Coalition is a group of agencies and non-profit organizations building a statewide Healthy Waters campaign. Public Works staff attends regular meetings. Items of coordination included the following:

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			* An RFQ and interview process that led contracting with BRINK Communications * Phase I, the "discovery" phase of the contract was completed in March 2019. This included a literature and research assessment and interviews with experts and key stakeholders. Priority pollutants were identified to move forward with Phase II. * Phase II began in June 2019. This involves the development of two focus groups and a public survey to provide baseline information. *** Friends of Trees (FOT): Logan Luvray, Green Space Manager, LoganL@friendsoftrees.org The City of Salem contracted with FOT again this year to assist with riparian and upland tree plantings. The organization hosted one crew lead training event, seven tree and shrub planting events, and one tree care event. 702 volunteers provided 2,467 volunteer hours and planted a total of 6,277 plants of which 97 were large-stock trees and 6,180 were small-stock native trees and shrubs. *** Glenn-Gibson Watershed Council: Ken Bierly, Chair, bierlykenneth@gmail.com Staff serve as a City representative to the Glenn-Gibson Watershed Council. The following were items of assistance and/or coordination: • Creation of a pollinator garden at Eola Ridge Park in West Salem. • Maintenance of the Eola Ridge Detention Basin. • Coordination of a speaker on pollinator gardens in the City. • Coordination of additional pollinator garden sites in West Salem. • Coordination of a booth for the watershed council at the City's Public Works Day event. • Attendance and input at the council assessment process. *** Mid-Willamette Outreach Group Staff attends monthly meetings to coordinate issues and events. * On January 29, 2019, the Mid-Willamette Outreach Group (MWOG) hosted their eighth Erosion Control and Stormwater Management Summit (Summit). The event had 140 registered attendees and 27 MWOG members and presenters. * The group hosted three classes (~90 students) from Hallman Elementary School at the Water Festival on April 30, 2019. Courses were provided by MWOG staff and associates and were dedicated to water and watershed health. Oregon Green Schools: Jackie Wilson, President, jackie@envirocenter.org, Public Works personnel sit on the board and the executive committee of Oregon Green Schools. Staff attends monthly meetings and provides overall direction for the organization. Highlights for the year include implementing a World Wildlife Federation Food Waste Warriors grant, beginning rebranding efforts, and hosting the annual Oregon Green School Summit at the Oregon Gardens. *** Salem Environmental Education (SEE): Jon Yoder, President, joyoder@wildblue.net Staff sits on the board and attends regular board meetings that provide overall direction for the organization. Staff is helping to coordinate a session on urban ecology. Youth education staff provides eSTEM afterschool activities in coordination with SEE once a month for three different schools between October and May. Staff is also assisting with the development of a three-day day-camp outdoor school experience to offer to fifth grade classes in the Salem-Keizer School District and to potentially serve as a model day-camp experience statewide.

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			*** Salem No Ivy Coalition: Margaret Stephens, Lead, mlstep@msn.com City of Salem staff help coordinate ivy pull events at local parks. The City of Salem and the Salem No Ivy Coalition hosted or attended 11 events, with 128 volunteers providing 598 hours of ivy pulling.
RC 1-6: 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.	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.	Staff from the City of Salem, City of Keizer, and Marion County made a collective decision during the 2013-14 reporting period that the existing SKAPAC Agreement adequately addresses any concerns the jurisdictions may have regarding potential development activities in identified Stormwater Agreement Areas. No updates to the agreement are presently necessary. SKAPAC participants will continue to meet, if needed, to review public or private development projects that may impact the agreement. City of Salem staff attend the monthly Stormwater Advisory Committee with staff from City of Keizer and Marion County. Stormwater staff continued to work with Marion County, the Marion Soil and Water Conservation District, the City of Keizer, the City of Albany, and the City of Corvallis through the Mid-Willamette Valley Outreach Group (MWOG) to coordinate outreach pertaining to Erosion Prevention and Sediment Control and Low Impact Development practices (see RC 5 and CON 1). There were no new IGAs developed during this reporting period.
RC 1-7: 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.	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.	The Stormwater Retrofit Plan was completed and submitted to DEQ on October 28, 2014. During Reporting Year 2017-18 a prioritization tool was refined and went into use for ranking potential retrofits so they could be placed into the City's Capital Improvement Program (CIP). Each year, $100,000 is budgeted for completion of a retrofit project out of the CIP. Additional money is allocated within the Stormwater Program budget for small-scale retrofit projects that can be done in-house or cost less than $50,000. During reporting year 2018-19, one retrofit was completed using funds from the CIP retrofit fund. This was a project to divert fire-fighting foam and contaminated water created during training at Airport Fire Station No. 6 from the stormwater system to the sanitary sewer system. A treatment swale was also created to treat stormwater runoff from the site before it enters the stormwater system.
RC 1-8: 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.	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.	Public Works staff continued to actively participate in ORACWA through attendance at regularly scheduled meetings for the Stormwater, Pretreatment, and Water Quality Committees. Staff have also engaged with the Willamette River Mercury TMDL process (as well as utilizing a consultant), and MS4 phase 1 and 2 permit renewal efforts. Staff attended the annual Stormwater Summit in May in Eugene, and the Annual Conference that was held in Bend in July. Information acquired through ACWA meetings/events is routinely passed on to other City staff.

Table 3. RC2—Capital Improvements

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 2-1: 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.	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.	The following CIP projects were completed: 1. 12th Street SE Stormwater Improvements: Stormwater system improvements which included the installation of a new culvert crossing at Clark Creek. 2. Shelton Ditch Bank Stabilization Plan: Creation of a Channel Erosion Repair Plan for addressing existing and future erosion issues on Shelton Ditch; as well as developing erosion repair treatments that can be scaled and used on channel erosion problem areas that meet specific hydraulic, geomorphic, geologic, and vegetation criteria. 3. Mandy Avenue Stormwater Improvements: Installation of an 80-foot concrete valley gutter and channel drain, tied into the existing stormwater system to alleviate flooding issues. 4. Fire Station No. 6 Stormwater Retrofit: Installation of 300 LF of 8-inch sanitary sewer pipe, two additional manholes, one catch basin, and one reconstructed catch basin. The purpose of these infrastructure improvements was to properly drain fire suppression foam away from the storm sewer system and into the sanitary sewer system. 5. Other: Three Stormwater Basin Plans (Battle Creek, Mill Creek, and Pringle Creek) have been drafted and are scheduled to be finalized in December 2019. Projects identified in the draft basin plans were added to the Five-Year CIP database, scored, and prioritized.
RC 2-2: 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.	Review and integrate multiple resource agency permitting needs, including MS4 permit requirements, into 100 percent of CIP projects.	Track number of projects reviewed. Track number of projects permitted.	1. 12th Street Stormwater Improvements: -US Army Corps of Engineers and DSL permit, No. 59326GP. 2. Brown Road NE Widening (San Francisco - Sunnyview): -US Army Corps of Engineers, No. NWP-2018-89 -Department of Environmental Quality, Section 401 Water Quality Certification 3. North Block at Pringle: -US Army Corps of Engineers, No. NWP-2018-217 -Dept of Fish and Wildlife, ODFW Rescue/Salvage Authorization, No. 23150
RC 2-3: 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.	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.	The Retrofit Plan and Hydromodification Assessment that were submitted to DEQ by the November 1, 2014 deadline, identified prioritized areas for stormwater improvement projects. Priorities will be further defined as part of the Stormwater Master Plan update currently underway on a basin by basin basis. Easement acquisitions, if needed, will be prioritized and pursued as projects are funded. Easement acquisition costs will be factored in and budgeted for along with all other associated project costs.

Table 4. RC3—Update of Stormwater Design Standards

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 3-1: 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.	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.	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 first phase of the Stormwater Utility fee was implemented in January 2013 and the utility was fully implemented January 1, 2016. New Stormwater Design Standards were approved as Administrative Rules completed in late 2013 and have been effective since January 1, 2014. The new standards are consistent with new stormwater regulations and include design criteria for green stormwater infrastructure.
RC 3-2: 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.	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.	Barriers to implementing Low Impact Development techniques have been identified and modified through Ordinance 34-13, which was adopted by Salem City Council on November 4, 2013. Updating the Stormwater Management Design Standards related to LID techniques was completed in late 2013 and new standards became effective on January 1, 2014 (see RC3-1).
RC 3-3: 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.	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. Requirements from SRC 71 (Stormwater Code) and associated Design Standards for use in the Greenway are incorporated as appropriate. During the fiscal year, one Willamette Greenway permit was issued. Construction has not been permitted yet. The stormwater design will be required at plan review.
RC 3-4: 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.	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.	All residential, commercial, and industrial plans submitted for City-issued permits are reviewed by Public Works staff for compliance with Stormwater Management Design Standards. Construction of stormwater-related 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.

Table 5. RC4—Operations and Maintenance

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 4-1: 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.	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 eight times per year and lightest zone two to three 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.	The City 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. The heavy debris accumulation zone contains 19 routes and is swept 13 times per year. The medium debris accumulation zone contains 15 routes and is swept 8 times per year. The light debris accumulation zone contains 8 routes and is swept 6 times a year. A fourth zone that encompasses the Central Business District (CBD) and Capitol Mall is swept at night on a weekly basis. Heavy debris areas within the CBD are also swept three times per week during summer and twice per week in fall through spring. Arterial streets are swept at night, approximately every four weeks. A third machine is operated during peak season leaf season or when one of the other machines is broken down. Two operators sweep residential and collector streets during the day and two operators sweep arterial streets during the night time. City-owned parking lots are swept on an as-needed basis. The City does not sweep any commercial parking lots. During this reporting year the City swept a total of 14,044 miles, collected approximately 1,750 tons of street sweeping debris and removed approximately 4,732 cubic yards of leaves.
RC 4-2: 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.	Continue current de-icing operations to prevent stormwater pollution. Investigate potential cost-effective recycling opportunities for de-icing sand material.	Document review of recycling opportunities. Document dates of activities for annual inspections and training. Document de-icing quantities applied annually.	Numerous snow and ice events in the month of February 2019 required the application of deicer and sanding rock off and on for a three-week period. Sweeping to recover the sanding rock occurred between events where possible. Once the events were over, street sweeping resources were dedicated to recovering the sanding rock until all roadways were cleared. Annual training for snow and ice operators occurred on November 13, 2018. Our annual equipment inspection and set up for snow and ice season began on October 15, 2018 and concluded on November 9, 2018. Our quantities of deicer materials utilized during snow and ice season are maintained in our Units of Accomplishment database annually. Four hundred cubic yards of sanding rock was applied to 596.25 lane miles and 13,466 gallons of deicer were applied to 1,683.25 lane miles.
RC 4-3: 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.	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 three years.	Track revisions made to O&M practices and activity schedules.	DPEN is not used; IPS is the database that provides work orders and scheduling. During FY 2018-19 the Stormwater Section has continued to focus on maintenance of the older infrastructure with higher potential of failing causing localized flooding. Flood prevention and customer impacts are our top priorities. Each year, O&M staff develop a budget that includes many tasks such as ditch cleaning, TV inspections of stormwater pipes, vacuum excavations, catch basin cleaning, and transient camp cleanup. For FY 2018-19, the adopted budget that includes personal services, material and services, and capital outlay was $4,249,720. The adopted budget for FY 2019-20 is $3,979,590. During FY 2018-19, stormwater O&M practices, policies, and procedures began a review as part of the American Public Works Association's accreditation process.
RC 4-4: 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.	Field staff attend practical training such as CESCL (Certified Erosion and Sediment Control Lead Training). Weekly tailgate meeting with job related topics and continued Target Solutions training modules.
RC 4-5: 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.	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.	Representatives from Stormwater Operations, Parks Operations, and Parks Planning groups worked to reestablish a task force responsible for updating the City's Integrated Pest Management Policy and Plan. The goal of this group is to create a policy and operations guidance manual for City employees involved in making pest management decisions. So far, the task force has revised the policy, goals, and objectives of the City's IPM strategy. They have also reached out to

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			other cities in the Willamette Valley for coordination on the new IPM manual. Finally, the task force has begun revising the City's 2004 Pest Management Plan to align with best available science and evolving strategies for pest management. This revision/update will become the new Integrated Pest Management Policy and Operations Manual for the City of Salem. Tentatively, the task force would like to have a draft of the new IPM Policy and Operations Manual ready for departmental review by spring 2020.
RC 4-6: 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.	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.	Stormwater Operations and Maintenance (O&M) staff use Granite NET software for CCTV inspections. Granite NET uses a national standard scoring to rate sanitary sewer and stormwater systems to determine risk and consequence of pipe/structure failure. Based on the rating system, maintenance needs can be prioritized objectively based on flooding issues, pipe size, area affected, and customer impact. Flood prevention and customer impacts are our top priorities. No cross-connections were found this fiscal year. TV inspections were performed for 127,968 linear feet of pipe. IPS recorded 186,709 linear feet of the system cleaned.
RC 4-7: 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.	Walk 50 percent 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.	During the 2018 Stream Crew field season, Public Works Interns inspected 56.88 miles of streams within the City's Urban Growth Boundary, cleaning 55.5 of those miles. The miles of stream that were cleaned and inspected are located within seven different watersheds: Battle Creek, Pringle Creek, Croisan Creek, Mill Creek, Little Pudding River, Claggett Creek, and Glenn/Gibson Creek. Over the course of this effort, the Stream Crew removed 5,702 pounds of trash and 52 cubic yards of vegetative material. The Stream Crew identified 57 debris jams and cleared 54 of them to maintain conveyance and reduce flood hazards. In addition, the Stream Crew completed one restoration project.
RC 4-8: 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.	Seasonal workers were hired to inspect facilities. Application in ArcGIS has helped increase productivity in completing inspections and notifying when something is wrong. Total detention basin inspections recorded: 473. Of these, 77 are publicly owned and 396 are privately owned. Total flow control structure inspections recorded: 449. Of these, 161 are publicly owned and 287 are privately owned. Total work orders generated from these inspections equal 63. Of these, 37 were assigned to publicly owned structures and 26 were assigned to privately owned structures.
RC 4-9: 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.	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.	Cleanup of existing undocumented facilities possibly 95 percent complete. The public and private facilities that have been identified have been mapped and fall into three types: complex, inlet, and manhole. • WQ facilities types in the complex layer: WQ detention basin, WQ planter, WQ pond, WQ rain garden, WQ sand filter, WQ soakage trench, WQ underground tank or pipe, WQ construct treatment wetland, WQ filter strip, WQ bioslope, WQ infiltration basin, WQ swale, WQ green roof, WQ pervious pavement • WQ facilities types in the inlet layer: WQ catch basin • WQ facilities types in the manhole layer: WQ manhole, WQ vault, WQ tree Total WQ facilities inventoried in GIS for the fiscal year: 1,629 (993 in complex layer, 341 in inlet layer, and 295 in manhole layer), of which 1,264 do not have an associated date. Of that number, 592 are public facilities (368 complex, 65 inlet, and 159 inlet types). The documentation process of proposed/new facilities are

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			documented by the GIS/Technical Services group and will be undergoing a fine-tuning process for capturing information. Cleanings/repairs had been made when they became over-capacity. Technical inspections and review of repairs. This is an upgrade to our old technique; the inspectors would have an opportunity to review the plans and help with repairs to ensure proper functionality or know where a problem could occur.
RC 4-10: 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 facilitates conveyance and reduces the risk of potential fires in summer months.	Regularly inspect and maintain 100 percent of City ditches using appropriate water quality BMPs.	Track length of ditch maintenance performed (cleaning and mowing). Track amount of sediment and debris removed	Road side ditches are inspected during the mowing program. Visual inspections determine whether ditches need cleaning. If a need is determined, the ditch is placed on the cleaning list. Once cleaned, straw wattles are strategically placed throughout to prevent erosion. Drainage ditches are mowed by contracted Department of Corrections Crews (DOC). Drainage ditches are mowed twice a year to reduce summer fire and winter time flooding risk. 118,402 linear feet of mowing occurred in FY 2018-19 and 83, 928 linear feet of ditch were cleaned. Amount of sediment and natural debris removed was just over 860 cubic yards.
RC 4-11: 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.	Clean and inspect 75 percent 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.	Staff cleaned at total of 12,179 catch basins between July 1, 2018 and October 28, 2019 and has met the goal of 75 percent. Through this process, 477 cubic yards of sediment/debris were removed from these structures using a Vactor truck and/or hand tools. The City is looking at a change in methodology in the upcoming year to better track and assess this information.
RC 4-12: 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.	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.	We continued to maintain an informational letter that is available upon request. Packets are no longer sent because Private Stormwater Facility Agreements (PSFAs) are recorded by private facility users. 103 PSFAs have been recorded by private facility owners this reporting period. Within the reporting period, 21 projects with related GSI have been opened, meaning that they are either in the planning state or have been completed.

Table 6. RC5—Public Education and Participation

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 5-1: 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).	Create two 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.	Two social marketing campaigns are in various stages of development. The Social Marketing Proposal Targeting Stormwater Pollutant: Toxins is in the early stages of gathering target market demographics. The proposal targeting plastic pollution is in draft form. The Watershed Enhancement Team (WET) pledge program was highlighted this year resulting in 69 pledges taken. Outreach for the Clean Streams Initiative and campaigns was done at 37 outreach events with total attendance of 25,825. Outreach and support of other divisions included promotion of the Fall Leaf Haul with social media posts and a billboard, outreach for the Mayor's Monarch Pledge, creation and delivery of informational materials for Environmental Services and the Natural and Green Infrastructure section. For further marketing and outreach details for all campaigns see Appendix B. The effectiveness evaluation was completed and submitted to DEQ prior to November 1, 2014.
RC 5-2: 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.	Quarterly meetings of various groups assigned responsibility for public outreach and citizen contacts on stormwater matters.	Document quarterly meetings and outcomes.	Annual Streamside Mailer Staff met to discuss the content for the annual streamside outreach mailer. Topics that were included the community alert system and flooding issues, stream crew access, knotweed ID, FAQs, watershed protection grant, Clean Streams update, and native plant spotlight. This document was mailed to all streamside residents in June 2019. Stormwater Messaging Staff coordinated with street sweeping crews to provide messaging regarding keeping leaves out of the storm drains. Staff added an insert to water bills, and promoted messages on social media, radio, and print. Rain Gardens Staff held meetings to develop rain garden priorities on a residential street, which will be built in FY 2019-20. Citywide communications: Staff attends regular citywide communications meetings to discuss stormwater issues to gain a greater audience for stormwater matters. An event calendar has been shared with the group.
RC 5-3: 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.	This year our community partner was Les Schwab Tires. As a part of the campaign targeting pollution runoff from car wash fundraisers, we distributed brochures to each of the five Les Schwab locations in Salem. All locations will distribute a brochure to any groups that they work with, or act as a host, for car wash fundraising events.
RC 5-4: 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.	Goal 1: The items budgeted for were received in FY 2018-19. Mail: $200 Supplies: $7,700 SW, $1,100 YEEP Advertising: $27,900 Training: $1,200 Mileage: $250 Erosion Control Summit: $3,500 Adopt-A-Stream Support: $5,000 Invasive Species-- Knotweed treatment: $10,000 Youth Corps: $12,000 Surveys and Research: $10,000 Translation Services: $2,000

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			Riparian Restoration: $40,000 Copy services: $6,200 Goal 2: A request to move two part-time staff to full-time was submitted and approved for the FY 2018-19 budget.

Table 7. RC6—Stormwater Management Program Financing

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 6-1: 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.	Adopt updated Stormwater SDC methodology by the end of the MS4 permit cycle.	Report on update to Stormwater SDC methodology.	In February 2019, City Council updated the SDC methodologies for Parks, Transportation, Water, Wastewater, and Stormwater under Resolution 2019-7. Stormwater SDC policies and charges did not change significantly under the updated methodology. The methodology adoption process was directed by a stakeholder committee, which recommended that the Stormwater SDC project list be revisited after completion of Stormwater Master Plan updates.
RC 6-2: 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.	Adopt new stormwater utility by the end of the MS4 permit cycle.	Report on adoption of new stormwater utility.	The Stormwater Utility was adopted by Salem City Council in December 2010 and the first of four phases implementing the stormwater fee took place in January 2013. The stormwater fee is now fully implemented. 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.
RC 6-3: 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.	The City did not apply for nor receive any grants for stormwater quality projects this fiscal year.

Table 8. RC7—Maintain and Update GIS System

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 7-1: 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.	Continue performing database updates annually. Create record of GIS maintenance activities.	Record maintenance / updates made to database.	All stormwater layers are consolidated in the Spatial Database Engine (SDE) and updated as required. All edits are tracked internally in the database with who last updated and created an asset and corresponding dates. In addition, a log of incoming plan sets is maintained by Technical Services that are entered into GIS. Since GIS and IPS are now synced, only tracking one system is required rather than both. The Stormwater GIS data has been made available to City departments via multiple sources including Salem Maps Online, GeoPlanIT, and the GeoWorks web mapping applications.
RC 7-2: Integrate the information in 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.	All pertinent stormwater GIS layers were consolidated into feature layers in SDE (Spatial Database Engine) as part of the Stormwater utilities migration from Hansen to Infor Public Sector (IPS). SDE and IPS assets are fully synchronized.

Table 9. RC8—City Stormwater Grant Program

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 8-1: 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.	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.	Goal 1: The City of Salem provided $50,000 for the grant program in FY 2018-19. Eight grants were received; $26,862.00 was awarded and $22,637.56 was actually spent. The following grants were received and awarded and are presented in the format of Organization: Amount Awarded: Project, Focus 1. Straub Environmental Center, $1,750, Vida Arriba High School Careers Path Training: Natural Resources High School Learning Projects, Careers and Environmental Education 2. West Salem High School, $543, Salmon Watch Field Trip at Pack Saddle Park, Environmental Education 3. Marion-Polk Food Share: $1,000, Pollinator Habitat Initiative; Pesticides and Environmental Education 4. Brush College Elementary School, $284, Discovery Hike at Minto Brown Park, Environmental Education 5. Kaleidoscope Preschool, $1,285, Garden and Naturescape, Pesticides and Environmental Education 6. Salem-Keizer Outdoor School Coalition, $4,500, Environmental Education at Outdoor School 7. North Santiam Watershed Council, $7,500, Project Implementation 8. North Santiam Watershed Council, $10,000, Riparian Restoration Projects. Goal 2: The grant has been expanded previously and continues to have a larger range of project types for which grants may be requested. This year's grant recipients received funding for the following types of projects: environmental education, habitat improvement, and tree planting projects. Goal 3: The grant is promoted via a few outreach mechanisms but is most effective by word of mouth.

Table 10. RC9—Legal/Ordinances

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
RC 9-1: 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.	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.	City staff incorporated selected chapters of the Salem Revised Code (SRC) into a single, Unified Development Code (UDC). Led by the Community Development Department, the effort involved grouping related sections and subsections of existing chapters of the SRC into the more cohesive UDC format. The new Unified Development Code went into effect May 14, 2015. Additional information and details are provided on the City's website at: http://www.cityofsalem.net/Departments/CommunityDevelopment/Planning/Documents/Unified-Development-Code_Ord-No-31-13.pdf This activity is complete.
RC 9-2: 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).	Revise SRC (as needed).	Track any MS4 stormwater pertinent revisions made to the SRC.	Salem Revised Code (SRC) Chapter 20J (Administrative Rule Making and Contested Case Procedures) contains provisions for enforcement proceedings and civil penalties. Subsections in SRC Chapter 70 (Utilities General) were adopted by City Council in December 2012 that clarify inspection procedures for enforcing the Utility Code and establishes operation and maintenance requirements for owners/operators of private stormwater facilities. This task will remain ongoing.
RC 9-3: 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).	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.	A new chapter of the Salem Revised Code (SRC) specific to stormwater was adopted in December 2013 and became effective January 1, 2014. An update to City's Public Works Design Standards was completed in December 2013 and became effective January 1, 2014. This activity has been completed.

Table 11. ILL1—Spill Prevention and Response Program

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
ILL 1-1: 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 deicing activities of 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.	Salem Fire continues to respond to emergencies related to vehicular crashes, structural fires, and hazardous materials incidents utilizing Salem Fire Standard Operation Guideline (SOG) Tactical Guideline #4.16 – Minor Spill Response. This Tactical Guideline provides guidance on Best Management Practices (BMP) for preventing discharge into storm drains. Salem Fire will continue to respond to any spill or leak of deicing material at the Salem Airport. Salem Fire continues to use Standard Operation Guideline (SOG) #2.6.3 – Live Fire Training, to incorporate best management practices related to the prevention and/or control of materials related to firefighter training. This guideline includes site surveys and procedures to eliminate runoff/discharge from firefighter training exercises into storm drain systems. In addition and recognizing that the Fire department training grounds at 2740 25th Street SE (Station 6) did not have a way to divert runoff into the sewer system from training exercises that utilized foam, Public Works installed diverting valves that would allow for this runoff to be routed into the sewer system.
ILL 1-2: 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.	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.	Salem Fire Department responded to the following: Chemical leaks or spills = 19 Vehicle accidents =1096 Fuel or oil spills =202 Salem Fire reports on baseline amount of spilled materials. The baselines were not exceeded during this FY. Salem Fire continues to respond to hazardous/chemical spills as requested by the emergency dispatch center. If spills and/or leaks are beyond Salem Fire's capability or exceed the amount of equipment carried on their response vehicles, the Fire Department incident commander will request assistance from Environmental Services.
ILL 1-3: 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.	Continue to implement the daily equipment inspection program.	Report revisions to the daily inspection program.	City staff continued to conduct daily inspections of City vehicles and equipment in FY 2018-19. These inspections are documented on weekly inspection sheets that are routinely submitted to Section Supervisors. Per City policy, if a leak/repair is identified, the vehicle/equipment is promptly turned into Fleet for servicing.
ILL 1-4: Develop an updated Operations Pollution Prevention Plan; incorporating new/expanded/relocated Operations-oriented facilities.	Update Operations Pollution Prevention Plan by the end of the MS4 permit cycle. Implement updated Operations Prevention Plan upon completion.	Track progress toward updating Operations Pollution Prevention Plan. Track implementation of Operations Pollution Prevention Plan.	Stormwater Staff continue to implement the Operations Pollution Prevention Plan, which includes training that is provided to all new employees and monthly inspections of the Shops complex using an electronic field data collection form and a smartphone or tablet. Staff plan to make revisions and updates to the Operations Pollution Prevention Plan next fiscal year. Staff have also invested a lot of time into improving the recycling center located in the East Yard. This has included adding additional bins for electronics recycling, clear signage and procedures for what can be recycled and where, and a rotating schedule for each workgroup to keep the area clean, and a form to fill out when cleaning has taken place. A shed with cleaning supplies has been added, and a cover will be installed over the area next fiscal year as further protection from creating stormwater pollution.

Table 12. ILL2—Illicit Discharge Elimination Program

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
ILL 2-1: 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.	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.	Environmental Services continues to provide staff to respond, 24/7, to reports of unusual discharges or suspicious water quality conditions. Staff responded to 392 water quality related responses during the reporting year. All responses and corrective measures are tracked in the database.
ILL 2-2: 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.	Inspect City's wastewater users for proper management of wastewater and stormwater.	Track number of inspections and associated findings.	Staff completed the following inspections and business contacts during the reporting year: Business Inspections = 78 New Businesses Identified = 82
ILL 2-3: 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.	Wastewater Collections provide smoke and dye inspection of lines to identify cross connections. No cross-connections were identified during the reporting year.
ILL 2-4: 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.	The FY 2018-19, dry weather outfall screening effort included a total of 46 outfall inspections (outfall structures or the first available upstream manhole), 32 of which received analytical sampling. A total of five pipesheds were investigated based on these outfall inspections. Of the 46 outfalls inspected, 33 were identified in the City of Salem's Dry Weather Outfall and Illicit Discharge Screening Plan. Additional outfalls were inspected based upon Stream Crew reports of dry-weather flow and one outfall was inspected opportunistically due to its proximity to two existing priority outfalls. Three outfalls listed in the City of Salem's Dry Weather Outfall and Illicit Discharge Screening Plan are no longer inspected, outfall D48486207, which was determined to be a culvert structure above an existing priority outfall; D42456216, which requires confined space entry; and D30470203, which has become dangerous due to slope instability caused by the addition of large rip rap by the property owner. Environmental Services was notified of two illicit discharges at outfall locations that were discovered by the City's Stream Crew. One was determined to be cooling water from Ameri Cold Logistics on Lower Claggett Creek and one, at McKay High School, was determined to be due to students disposing of used mop water into a catch basin. One water leak was discovered during a pipeshed investigation (D48468246) and was reported to the Water Department. Field screening parameters for FY 2018-19 include temperature (outfall and receiving water), pH, specific conductivity, turbidity, total chlorine, fluoride, detergents/surfactants, and ammonia and were analyzed using a multi-parameter colorimeter and multi-parameter data sonde. Laboratory parameters include Potassium, Sodium, and E. coli and were analyzed by the City's laboratory at the Willow Lake Waste Water Treatment Plant. In total, 21 structures (outfalls and manholes) exceeded the City's screening parameters. Of these 21 structures, 9 had concentrations of total chlorine above the action level (> 0 mg/L), 3 had concentrations of fluoride exceeding the action level (0.1 mg/L), 2 had a specific conductivity exceeding the action limit (250 µS/cm), 9 had temperatures greater than 3° C above the receiving stream, 1 had turbidity greater than 15 NTU, and 1 had an E. coli concentration exceeding the action limit (406 MPN/100mL). Fluoride was not collected at all locations where chlorine was detected because the City's drinking water treatment plant was not fluoridating water at the time of the inspection. Due to ongoing bacteria issues in Clark Creek, all flowing outfalls in the Clark Creek basin were sampled for E. coli regardless of analytical screening results. For further information on the results of the inspections refer to Appendix A.

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			In addition to the priority outfall inspections detailed above, the City's Stream Cleaning Crew used a mobile GIS application to document physical inspections of outfalls with dry weather flow over the course of the 58.6 miles of stream that were inspected. The crew documented a total of 22 outfalls with dry weather flow. Of these 22 outfalls, 13 received follow-up inspections with analytical sampling (listed above). In FY 2018-19, the mobile GIS application was updated to include the use of Survey123 to provide increased data validation and guidance for documenting outfall inspections. Interns were also provided test strips for measuring free and total chlorine in the field. This practice will continue in future seasons and continue to be refined in order to increase the quality and quantity of outfall inspections.
ILL 2-5: 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.	Continue to identify and map contaminated sites in the GIS system.	Track number of contaminated sites added to the GIS system.	Information from DEQ regarding contaminated sites and facilities that generate hazardous waste are populated into the City's GeoWorks map. There was one update during FY 2018-19.

Table 13. ILL3—Illegal Dumping Control Program

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
ILL 3-1: 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.	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.	Miles of adopted streets: 112.55 Number of groups: 96 Number of volunteers: 2,192 Number of pounds collected in 2018: 18,089 Additionally, an interactive map on the Adopt a Street web page was created showing every street in the Adopt a Street Program. It provides color-coded information on the status of every street (Adopted, Pending, Available) as well as the specifics of each street such as length, ID number and who the adopter is. The goal was to make it simple for the public to see, at a glance, what streets are available in the program and increase the number of streets adopted by making that information readily available. In one year, the number of unadopted streets reduced from 16 to 8.
ILL 3-2: 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.	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.	Environmental Services provides staff to respond, 24/7, to reports of illegal dumping and environmental complaints received through both the Public Works Dispatch Center and 911 Dispatch Center. Stormwater provides public education and outreach to inform the public of environmental issues. Actions taken when responding to calls includes 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 392 incidents during this reporting period.
ILL 3-3: 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.	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.	Staff continued to support the Adopt-A-Stream Program. We provided presentations and supplies for interested teachers as well as project facilitation and technical assistance upon request. We also budget expenses for field trips to water bodies, the drinking water facility, or the wastewater facility. Through the Adopt-A-Stream program students experience outdoor learning that piques their interest in both science and the environment, connecting students to the natural world, ultimately promoting environmental awareness and stewardship of our natural waterways. Elementary classes receiving Adopt-A-Stream activities: Objectives • Adopt A Stream supports the Clean Streams Initiative which was developed to educate Salem residents about the importance of keeping our streams clean and preventing pollution in our natural waterways. • Through the Adopt-A-Stream program students experience outdoor learning that piques their interest in both science and the environment connecting students to the natural world, ultimately promoting environmental awareness and stewardship of our natural waterways. Projects • Livingston Academy 7th–8th Grade ~ October 9, 2018; 2 classes 16 students • Salem Christian Academy 2nd Grade ~ October 16, 2018; 3 classes 45 students • Battle Creek Elementary 2nd Grade ~ October 23, 2018; 4 classes 100 students • Battle Creek Elementary Water World Event ~ March 1, 2019; Community Event; 200 participants • Sumpter Elementary 3rd Grade ~ March 19, 2019; 1 classes 30 students • Brush College Elementary 5th Grade~ April 2, 2019; 2 classes 48 students • Chapman Hill Elementary 4th Grade~ May 21, 2019; 2 classes 48 students Outcomes:

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
			• Students taking ownership of community parks and streams by picking up garbage independently. • Letters from students demonstrating environmental awareness and stewardship. Letters stating the name of their community stream, its connection to other watersheds, and ultimately connection to the ocean. For instance, a letter arrived from a second-grade student from Battle Creek Elementary with pictures and labels identifying Battle Creek connecting to Waln Creek and then flowing to the ocean. • Student's ability to identify a storm drain and explain how pollutants travel to the ocean through our natural waterways. High School: Staff provided or assisted with the following activities this year: North Salem High School (30 students): * staff provided a presentation regarding the Mill Creek Watershed, its adjoining watershed, and ways to protect water quality. * provided AAS funding for a trip to the wastewater treatment facility. South Salem High School (20 students) * Assisted with macroinvertebrate studies at Bush Park. * Assisted with field research at Opal Creek regarding macroinvertebrate studies.
ILL 3-4: 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.	The City of Salem advertises items associated with their 13 pollutant types. Those that overlap with Marion County HHW are listed here. Five of 52 weeks (9.6 percent) of our aired radio spots discussed proper disposal of household hazardous waste and recyclable materials. These items also align with our outreach pollutants of concern: prescription drugs and household hazardous waste, heavy metals, and garbage. Oct 22 - 26: Drug Take Back Oct 29 - Nov 1: Battery Recycling (metals) Dec 24- 28: E'cycling (Heavy metals) May 20 - 24: Car maintenance (Oil recycling) May 24 - 28: #ORTrashTag (garbage) and 6 Facebook posts for the summer campaign.
ILL 3-5: 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.	Two Leaf Haul Events were held during 2018: November 16: Leaves collected = 250 cubic yards Number of volunteers at site = 3 Number of volunteer hours = 15 December 8: Leaves collected = 250 cubic yards Number of volunteers at site (including drivers) = 20 Number of volunteer hours (including drivers) = 110 TOTALS Leaves collected = 500 cubic yards Number of volunteers (including drivers) = 23 Number of volunteer hours (including drivers) = 125 Approximately 10 volunteers picked up 293 bags of leaves from the homes of 15 senior citizens.

Table 14. IND1—Industrial Stormwater Discharge Program

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
IND 1-1: 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.	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.	Environmental Services continues to inspect area stormwater systems as part of facility inspections performed under the industrial pretreatment program. Inspection records are maintained in the Environmental Services database. Salem is not a permitting agent for DEQ's 1200-Z program but has been developing a process (consistent with the MS4 permit) to notify DEQ when a site in Salem is undergoing development which may be subject to State permitting. Environmental Services notified the facility owner or contact person by letter. Regional staff for the DEQ Western Region were contacted by email with a scanned copy of the letter that was sent to the facility. Refer to ILL2 Task 2 for a total of facility inspections, and IND1 Task 2 for a total of facility plans reviewed.
IND 1-2: 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.	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.	Environmental Services continued to participate in the plan review and inspection processes to help ensure appropriate treatment is included during construction, or remodel, of industrial sites. All plans reviewed and inspections completed are tracked in the Environmental Services database and the AMANDA database. Staff reviewed 81 industrial and commercial plans during the reporting year.
IND 1-3: 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.	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.	Environmental Services continues to send or deliver surveys to newly identified targeted businesses. Businesses failing to return the survey were visited by an inspector to obtain the necessary information. Grease surveys sent: 21. Surveys returned and entered: 15 Dental Amalgam Surveys sent: 74. Surveys returned and entered: 60 Environmental Services Staff attended the annual Public Works Day held in June 2019.
IND 1-4: 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.	Produce two technical bulletins for industrial users each year.	Track published technical materials prepared for industrial users each year.	Targeted and individualized (email and/or direct phone call) communication with permitted industrial users continued during FY 2018-19 in order to better ensure compliance with pretreatment and stormwater regulations. This form of communication has proven more effective than continued production of technical bulletins.

Table 15. CON1—Construction Site Control Program

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
CON 1-1: 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.	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.	SRC 75 continues to be used as the basis for plan review, inspection procedures, and enforcement. An annual internal program review was completed. During FY 2018-19, 20 Capitol Improvement and 132 Development ESPC plans were reviewed by City staff. In addition, 772 single family applications were reviewed.
CON 1-2: 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.	Provide annual erosion control training to City staff and private contractors.	Track education and training programs conducted and number of staff/public trained.	Conducted annual Mid-Willamette Erosion Control and Stormwater Management Summit training on January 29, 2019, to provide training for regional area contractors and design consultants. The event had 140 registered attendees and 27 MWOG members and presenters. Continue outreach to Home Builders, Contractors, and Material Suppliers concerning standard construction specifications and standard drawing updates. All inspectors maintain a CESCL cert per DEQ requirement.
CON 1-3: 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.	No change from previous year cycle report. -Site plan review procedures and checklists are in place and actively used. Staff continues to update the checklists as procedures change. -Inspection procedures and reports are in place and actively being followed by Public Works Inspectors. Training and accountability on inspection documentation details and photo integration is ongoing. -Enforcement procedures are adopted and implemented when appropriate. Training on procedures and practices is ongoing.
CON 1-4: 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.	No change from previous year cycle report. City Design Standard, Standard Construction Specifications, and Standard Drawings for erosion prevention and sediment control have been implemented and are continued to be followed for all design and construction activities. These three items have systematically replaced the need for the Technical Guidance Handbook.
CON 1-5: 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.	No change from previous year cycle report. 1200 CA Permits are included in City contract documents. 1200 CA Permit and EPSC enforcement is key discussion point at pre-construction conferences. Designated EPSC Inspector inspects all City 1200 CA permitted projects.

Table 16. MON1—Monitoring

Task Description	Measurable Goals	Tracking Measures	FY 2018-19 Activities
MON 1-1: 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.	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.	No additional monitoring stations were installed during FY 2018-19. No hotspot or problem areas were identified using the continuous instream monitoring stations this year. Any calls received from the public with concerns about water quality were given to Environmental Services to follow up on, and data was analyzed to see if any noticeable changes occurred. Several pollution concerns were reported by Stormwater staff to Environmental Services staff, found during site visits and field observations, and they followed up.
MON 1-2: 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.	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.	Staff input the data collected from the Monthly Instream Sampling Program into the Aquarius database on a monthly basis for field parameters, and as soon as possible upon receipt of laboratory results. Data are verified by at least two people, once before it is entered into the database, and again on a yearly basis when all data goes under a thorough review before being included in the annual report. City staff completed an evaluation of monitoring data from 2001 to 2016 that included time series and spatial trends analyses, as well as summary statistics and boxplots of data. This data was submitted to DEQ as part of the 2016 annual report. The City will continue to update, and compute trends analyses as needed. Every year staff produce an Appendix of Monitoring Data that is included in the Annual Report submission. This summarizes the data for the year and documents any water quality exceedances. This provides a visual comparison of stream health from year to year, and helps staff target where issues may be occurring. No hot spots were identified during FY 2018-19 based on a review of data.
MON 1-3: 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.	The City continues to collect data as part of the monitoring requirements listed in Table B-1 of the City's NPDES MS4 permit. Because the permit was administratively extended, the City will continue to implement its "Surface Water and Stormwater Monitoring Plan" and report all results as part of the Annual Report. No changes or modifications were made to that monitoring plan. Appendix A contains summary statistics for all sampling that was conducted during FY 2018-19.

3 PROGRAM EXPENDITURES AND FUNDING SOURCES

Stormwater-related program costs in Salem were historically funded through wastewater rates comprised of a water consumption (flow) component and a fixed user charge. In December 2010, Salem City Council approved the adoption of a separate stormwater service charge or utility. Implementation of the stormwater utility was initiated on January 1, 2013, and completed over a period of four rate cycles.

The stormwater utility was 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.

Recently the City of Salem changed its budgeting methodology to reflect priority-based budgeting and result areas. The FY 2018-19 budget and the FY 2019-20 budget shown in Table 17 reflect these changes from prior years. Table 17 provides a summary of the total stormwater program budgeted per result area for the reporting year (FY 2018-19), as well as those anticipated through the next (FY 2019-20) as identified in the adopted budget.

Table 17. Stormwater Budgeting

Operational Task/Result Area	FY 18-19 Budget	FY 19-20 Budget
Chemical Handling and Disposal	$ 96,170	$ 103,656
Code Compliance—PW	$ 112,530	$ 120,833
Environmental Compliance for Outside Departments/Agencies	$ 167,720	$ 337,536
Environmental Monitoring	$ 1,166,760	$ 1,355,721
Floodplain Management and Regulatory Compliance	$ 390,160	$ 406,161
Flow Monitoring	$ 198,409	$ 244,183
Green Stormwater Infrastructure Maintenance	$ 564,650	$ 394,259
Mapping and Data Management	$ 224,548	$ 255,657
Natural Areas Management	$ 389,570	$ 404,289
Natural Resources Education and Outreach	$ 391,260	$ 455,673
Operational and Technology Transfers—Infrastructure	$ 193,540	$ 232,230
Public Works Dispatch	$ 189,445	$ 171,521
Storm Sewer Pipe Cleaning	$ 989,380	$ 674,645
Stormwater Construction	$ 7,414,950	$ 7,158,670
Stormwater Facility Inspections	$ 307,710	$ 220,163
Stormwater Open Channel System Maintenance	$ 1,586,730	$ 2,132,527
Stormwater Pipe Inspection	$ 868,630	$ 697,619
Stormwater Pipe Maintenance	$ 1,502,720	$ 1,155,191
Stormwater Quality Monitoring	$ 151,770	$ 207,101
Utility Billing and Customer Service	$ 627,870	$ 634,575
Stormwater Infrastructure Planning	$ 1,164,244	$ 1,223,186
Hazardous Materials/Emergency Management; Street Sweeping Services	$ 1,220,940	$ 982,680
Debt Service—Stormwater Utility	$ 534,425	$ 494,924
Total	**$ 20,454,132**	**$ 20,063,001**

4 ENFORCEMENT ACTIONS, INSPECTIONS, AND PUBLIC EDUCATION

Environmental Services staff responded to 392 water-quality-related incidences during the reporting and reported three prohibited/illicit discharge violations during this reporting period. Enforcement actions related to these violations included warnings and a citation and are shown in the chart below.

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. The ESPC Annual Report for FY 2018-19 indicates that 8,865 erosion-control-related inspections were conducted by Public Works Inspectors on 1,025 projects. The report also indicates that there were 223 enforcement actions, all of which have been corrected.

Name	Date	Violation	Action Taken	Discharge	SRC
Salem Aviation Fueling and Pilot Supplies	7/3/2018	Prohibited Discharge to Storm Sewer	Citation	Fuel	71.050
Private Residence—Leaking Vehicle	10/22/2018	Prohibited Discharge to Storm Sewer	Warning	Oil	71.050
Private Residence—Leaking Vehicle	3/11/2019	Prohibited Discharge to Storm Sewer	Warning	Oil	71.050

5 PLANNING, LAND USE CHANGES, AND DEVELOPMENT

The City of Salem Public Works Department Stormwater Management Design Standards (Design Standards) were revised in FY 2013-14 to reflect the post-construction requirements presented in the MS4 Permit. Before these updates were adopted via the City's relatively new administrative rule process, a new stand-alone stormwater chapter (SRC 71) was 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 Design Standards will continue to be revised as new information becomes available.

5.1 Planning

Salem is engaged in a comprehensive plan update called *Our Salem;* the updated comprehensive plan will guide development in the Salem area. *Our Salem* is a multi-year project consisting of three phases. The first phase of the project focused on examining the existing conditions of the city and evaluated different scenarios for how Salem could grow under current policies. It resulted in a report card that evaluates whether we are heading in the right direction given current policies. It also resulted in a greenhouse gas (GHG) inventory. All this work is informing critical discussions and decisions about future growth in the city. More information can be found at https://www.cityofsalem.net/our-salem.

5.2 Land Use Changes

Six annexations became effective from July 1, 2018 through June 30, 2019:

Date	Location and description
8/10/2018	6719 Devon Avenue SE—20.35 acres including approximately 0.61 acres of right-of-way of Devon Avenue SE
8/10/2018	1338-1340 Wallace Road NW—0.80 acres
10/11/2018	2487 Robins Lane S—0.53 acres including 0.08 acres of right-of-way of Robins Lane SE
12/27/2018	5826 Battle Creek Road SE—11.167 acres including 0.24 acres of right-of-way of Battle Creek Road SE
3/18/2019	3641 Boone Road SE—1.88 acres including 0.23 acres of right-of-way of Boone Road SE
4/12/2019	4945 Delton Lane SE—0.277 acres including 0.037 acres of right-of-way of Hoffman Road NE

5.3 New Development

The City of Salem has continued to see a steady stream of new projects at all phases of development. During the FY 2018-19 reporting period completed projects resulted in approximately 78 acres of new or replaced impervious surface area related to development projects in Salem. The list below includes development projects and their status between July 1, 2018, and August 9, 2019:

Commercial/Industrial Development	Address	Description	Status	Impervious Surface (Sq. Ft.)
Amazon Phase 1	4775 Depot Court SE	1,018,020 SF Warehouse/Fulfillment Center for Amazon	Complete	2154939.95
Fred Meyer Fuel Facility	3415 Commercial Street SE	9-pump fueling station	Complete	41678.00
Hyacinth/Claxter Storage Units	1940 Claxter Road NE	Self-Service Storage Facility, 4.88 acres in size	Complete	181098.50
Retail Shell Buildings	3997 Carson Drive SE	Two New Retail Buildings, 6,000 sf and 2,375 sf	Complete	23544.95

Assisted Living Facility	2950 Boone Road SE	90-unit assisted living and 32-units for memory care	Complete	145162.71
Self-Storage Facility	1200 Block of Hawthorne Avenue NE	Development of new self-storage facility	Complete	184713.25
The Pointe at Glen Creek	Glen Creek Road/Wallace Road	Redevelopment at SW corner of intersection, three new buildings	Complete	98921.44
Walling Properties	2685 Lancaster Drive NE	20,320 sf warehouse; future 12,000 sf office, 24,000 sf warehouse and 12,000 sf office	Complete	40675.77
Memory Care Facility	1805 Waln Drive SE	68-unit memory care facility	Near Completion	
Northwest Rehabilitation Associates	245 Patterson St NW	9,900-square foot medical	Near Completion	
Petco	831 Lancaster Dr NE/ 3811 Center St NE	13,200 square foot retail	Near Completion	
Vehicle storage for auto dealership	700 Auto Group Ave NE	Vehicle storage lot	Near Completion	
Court Street	245 Court Street NE	5-story Mixed Use Building	Near Completion	
Industrial Park	1745 Oxford Street SE	96,000 sq. ft. building and 26,200 sq. ft. building	Near Completion	
Commercial Shell Building	3994 Portland Road NE	Retail commercial building with drive-through	Near Completion	
Marietta	3311–3325 Marietta Street SE	Integrated phased development, five new buildings	Under Construction	
Office Building	2332 Saginaw Street S	New 2,400 SF office building	Under Construction	
Vehicle storage	1885 Fisher Road NE	Auto inventory storage lot	Under Construction	
Marion County Juvenile	2970 Center Street NE	20,460 SF building	Under Construction	
Carmax	395 Lancaster Drive SE	7,480 SF building	Under Construction	
River Bend Mixed-Use	1200 Block of River Bend Road NW	Two new retail buildings, approximately 11,250 SF	Under Construction	
City of Salem Police Facility	333 Division Street NE	Approx. 104,000 SF new police facility	Under Construction	
Oxford Industrial	1850 Oxford Street	18,460 SF buildings, 9,777 parking	Under Construction	
North Salem High School	765 14th Street	61,674 SF addition	Permits Issued	
Church addition	4227 Lone Oak Rd SE	17,000 SF	Permits Issued	
Mini-storage	2535 Salem Dallas Hwy NW	38,000 SF	Building Permits in Review	

Roofing Company Building	4910 Turner Road SE	12,000 SF building and 3,800 SF buildings	Land Use Approved	
Pringle Road	3000 Block Pringle Road SE	New Commercial Kitchen Building	Land Use Approved	
Kuebler Gateway Shopping Center—Costco	2500 Block of Boone Road SE	Four new retail shell buildings, and 168,550 SF Costco building, with fuel station	Land Use Board of Appeals	
Edgewater Landing	1690 Edgewater Street NW	22,500 SF retail shell building	Project on Hold, No construction	
Memory Care Facility	901 Front Street NE	48-unit Memory care and 69-unit assisted living facility	Project on Hold, No construction	
Hawthorne Business Park	865 Hawthorne Avenue SE	Three story, 72,150 SF building	Project on Hold, No construction	
Keizer Mist	3139-3159 Broadway Street NE	New car wash and convenience store	Project on Hold, No construction	
Corban University Dormitories	5000 Deer Park Drive SE	3 dorm buildings and 3 future dorm buildings	Project on Hold, No construction	
Hotel	390 Hawthorne Avenue SE	82-room hotel	Project on Hold, No construction	
Boise Cascade North Block	295 Commercial Street SE	Mixed-use building consisting of hotel and post-acute rehabilitation facility	Project on Hold, No construction	
Future Commercial/Industrial Projects	**Address**	**Description**	**Status**	**Impervious Surface (Sq. Ft.)**
State Hospital North Campus Redevelopment	2600 Center Street NE	Comprehensive Plan Change and Zone Change for mixed use development	Zone Change Approved, Site Plan Review Required	
Reuse of Former Sanyo Building	5475 Gaffin Road SE	Expansion of vehicle storage area for package delivery use	Land Use in Review	
Union Gospel Mission Men's Shelter Relocation	700–800 Blocks of Commercial Street NE	Relocation of UGM Men's shelter with maximum capacity of 300 overnight occupants	Modification of land use approval is currently in review	
Credit union/office building	465 Division Street NE	Three story building, parking lot improvements	Land use decision pending	
Food manufacturing	0 Rose Garden Street NE	Quesederia	Land use decision pending	
Mixed use	2499 Wallace Road NW	CPC-ZC for future mixed-use development	Land Use in Review	
Mixed-Use	4700 Block of Liberty Road S	Future mixed-use project. 26 dwelling units and 10,716 square feet of retail/office	Land Use in Review	
Self Service Storage	5611 Woodside Drive SE	New 16,000 SF of self-service storage	Land Use in Review	

New office/retail	2020 State Street	New office and retail on 0.48-acre size	Land Use in Review	
Multi-Family Residential	**Address**	**Description**	**Status**	**Impervious Surface (Sq. Ft.)**
Portland Road	2500 Block of Rose Garden Street NE	180-Units	Near Completion	
Caplinger	5200 Block of Caplinger Road SE	108-Units	Complete	192112.70
Greenway Development	102 Pine Street NE	8-Lots, Single Family or Duplex Dwellings, partially in Greenway	Project on Hold, No construction	
Claxter Road	2758 Claxter Road NE	24-Units	Complete	27490.5.1
May's Landing	23rd and Mission Street SE	96-Units	Near Completion	
Red Leaf Apartments	5710 Red Leaf Drive S	127-Units	Complete	193597.59
Harold Drive Apartments	3271 Lancaster Drive NE	84-Units	Complete	112222.36
Rushing Mixed Use	5775 Commercial Street SE	61,500 SF mixed use building with 52-units	Project on Hold, No construction	
Orchard Heights Apartments	1800–2000 Block of Linwood Street NW	312-Units	Near Completion	
River Bend Apartments	1200 Block of River Bend Road NW	48-units	Under Construction	
The Grove at Fairview	2250 Strong Road SE	180-units	Building Permits in Review	
Claxter Court	4265 Claxter Court NE	102-units	Land Use Approved	
Captial Manor	1955 Salem Dallas Highway NW	Demolition of existing dwellings, zone change, construction of multi-family	Under Construction	
Silverton at Lansing	3010 Silverton Road NE	96-Units	Land Use Approved	
Nishioka Building	260 State Street	New 148-unit studio/microunit apartment/mixed-use building	Permits in Review	
Future Multi-Family Projects	**Address**	**Description**	**Status**	**Impervious Surface (Sq. Ft.)**
Pictsweet PUD	State Street/Cordon Road/Auburn Road	Mix of housing types, approximately 659 units	Planning Stage	

State Hospital North Campus Redevelopment	2600 Center Street NE	Comprehensive Plan Change and Zone Change for mixed use development	Zone Change Approved, Site Plan Review Required	
Subdivisions	**Address**	**Description**	**Status**	**Impervious Surface (Sq. Ft.)**
Whispering Heights	2960 Michigan City Lane NW	110-Lot Phased Subdivision	Under Construction	
Liberty Road Subdivision	4333 Liberty Road S	5-Lots	Under Construction	
9th Court Addition	5320 Sunnyside Road SE	11-Lots	Plat in Review	
Illahe Forest	3800 Block of Illahe Hill Road S	11-Lots	Plat in Review	
Rainier Ridge	197 Rainier Drive SE	34-Lots	Public Construction Plans in Review	
Dogwood Heights	3700 and 3800 Blocks of Dogwood Drive S	46-lots	Public Construction Plans in Review (Phase 1)	
Devin Estates	6179 Devin Road SE	86-Lots	Land Use Approved	
Quail Estates	5500 Block Skyline Road	22 Lots	Land Use Approved	
Springwood Estates	600 Block Mildred Lane	48-lots	Land Use Approved	
Boone Wood	1395 Boone Road	12-Lots	Land Use Approved	
Fairview Woods	Pringle Road SE and Battle Creek Road SE	16-lots	In Review	
Coburn Grand View Estates	Reed Road and Battle Creek Road	225-lots	In Review	
Wren Heights	575 Salem Heights Avenue	34-Lots	In Review	
Anthony Place	5775 Commercial Street	5-Lots	In Review	
Landau Estates	5800 Block Battle Creek Road	27-Lots	In Review	
			SUM:	**3396157.74**
				77.97 Acres

APPENDIX A. SUMMARY OF WATER QUALITY DATA

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

Summary of Water Quality Data
For Reporting Year 2018/2019

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

November 1, 2019

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List of Tables

(All Tables follow Figures of this document)

List of Attachments

1.0 Introduction

This document provides all monitoring data collected for the reporting year of July 1, 2018, to June 30, 2019 (RY 2018/19), in accordance with the City of Salem's NPDES MS4 permit requirements listed in Schedule B(5)(f)&(g). A background narrative for each monitoring element for which data were collected and a brief summary of results for RY 2018/19 is provided below, and all collected data are provided in the attached tables and figures.

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 the monitoring requirements defined in Table B-1 of the City's MS4 Permit are summarized in Table 1. Monitoring site locations are described in Table 2 and denoted in Figure 1, and the parameters analyzed for each monitoring element are listed in Table 3.

2.1 Monthly Instream Monitoring

Sampling of designated urban streams for the Monthly Instream[1] monitoring element is conducted on a predetermined monthly schedule at 24 different locations. This monitoring element includes the collection of grab samples and field measurements on 11 of Salem's MS4 stormwater runoff receiving streams and the Willamette River. 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 and runs dry during the summer months. The Willamette River has three sites located upstream, mid-way, and downstream of city limits.

The general locations of all sites are provided in Table 2 and Figure 1.

A general suite of water quality parameters are collected for each site, with additional water quality parameters analyzed 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).

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})

[1] Identified as "Urban Streams monitoring" in the City of Salem Stormwater Management Plan 2010.

- 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, PRI5 only)
- 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. Some general observations from this reporting period compared to the last reporting period include:

- **E. coli** – this year saw a significant decrease in the number of exceedances of the 406 MPN/100mL single sample criterion.
- **Dissolved Oxygen** – 16 of 24 sampling site dissolved oxygen medians were higher than the previous year.
- **Copper** – there were no Copper exceedances for the 2018/19 reporting year.
- **Lead** – there were no Lead exceedances for the 2018/19 reporting year.
- **Zinc** – there were no Zinc exceedances for the 2018/19 reporting year.
- **Nitrate & Nitrite** – only two sampling sites had median values higher than last year.
- **BOD** – three sampling sites saw higher monthly median values than last year.
- **Specific Conductivity** – 70% of results were higher than last year.
- **pH** – 22 sites had higher pH medians than last year.
- **Turbidity** – for the third year in a row, turbidity saw a significant decrease in results overall.
- **Rainfall** – this reporting year saw less rainfall observed in the 24 hours prior to sample collection than last year, and only 2 of 12 of the sampling days had measurable rainfall in the preceding 24 hours.

2.2 Continuous Instream Monitoring

The City maintains a network of Continuous Instream water quality monitoring stations and stream gauging stations on seven different urban streams within the city. There are currently ten water quality and stream gauging stations and three established stream gauge-only stations (SHE3, PRI4, and LPW1) within city limits. Figure 1 identifies the location of each of the existing stations.

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

Continuous data collected includes:

- Turbidity

- Specific Conductivity
- Temperature
- pH
- DO
- Stage

All data are recorded in 15-minute intervals. All continuous statistical data summaries presented in the various 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, and monthly medians for collected data are summarized in Table 10. Plots of continuous data are provided in Figures 4 through 6.** Temperatures trended slightly cooler overall this year, however there were no significant changes in data trends or exceedances from last year.

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 2.5), and serves as an outreach/education opportunity for residents.

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 this permit cycle and is expected to continue beyond the current MS4 permit; 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:

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

- TSS

Data for this monitoring element are provided in Table 11. For reporting year 2018/2019, staff captured five storm events.

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, but the residential site had been sampled previously during the last MS4 Permit and continued to be sampled through this 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 by land use and compare them with the ACWA characterized land use concentrations.

For reporting year 2018/2019, staff captured four storm events.

2.5 Pesticide Monitoring

Staff collected one sample for the pesticide monitoring element for RY 2018/2019 during the fall. 2,4-D (herbicide), Triclopyr (herbicide), MCPA (herbicide), and Ethofumesate (herbicide) were detected at the residential land use site; 2,4-D (herbicide), Triclopyr (herbicide), Ethofumesate (herbicide), and Metribuzin (herbicide) were detected at the commercial land use site; and Propiconazole (fungicide), Tebuconazole (fungicide), 2,4-D (herbicide), Diuron (algicide and herbicide), Triclopyr (herbicide), and Ethofumesate (herbicide) were detected at the industrial land use site.

The analytical lab report from Pacific Agricultural Laboratory is provided as Attachment B.

2.6 Priority Dry Weather Outfall/Manhole Screening

The RY 2018/2019, dry weather outfall screening effort included a total of 46 outfall inspections (outfall structures or the first available upstream manhole), 32 of which received analytical sampling. A total of 5 pipesheds were investigated based on these outfall inspections. Of the 46 outfalls inspected, 33 were identified in the City of Salem's Dry Weather Outfall and Illicit Discharge Screening Plan. Additional outfalls were inspected based upon Stream Crew reports of dry-weather flow and 1 outfall was inspected opportunistically due to its proximity to 2 existing priority outfalls. Three outfalls listed in the City of Salem's Dry Weather Outfall and Illicit Discharge Screening Plan are no longer inspected, outfall D48486207, which was determined to be a culvert structure above an existing priority outfall; D42456216, which requires a confined space entry; and D30470203, which has become dangerous due to slope instability caused by the addition of large rip rap by the property owner.

Environmental Services was notified of two illicit discharges at outfall locations that were discovered by the City's Stream Crew. One was determined to be cooling water from Ameri Cold Logistics on Lower Claggett Creek and one, at McKay High School, was determined to be

due to students disposing of used mop water into a catch basin. One water leak was discovered during a pipeshed investigation (D48468246) and was reported to the Water Department.

Field screening parameters for RY 2018/2019 include temperature (outfall and receiving water), pH, specific conductivity, turbidity, total chlorine, fluoride, detergents/surfactants, and ammonia and were analyzed using a multi-parameter colorimeter and multi-parameter data sonde. Laboratory parameters include Potassium, Sodium, and E. coli and were analyzed by the City's laboratory at the Willow Lake Waste Water Treatment Plant.

In total, 21 structures (outfalls and manholes) exceeded the City's screening parameters. Of these 21 structures, 9 had concentrations of total chlorine above the action level (> 0 mg/L), 3 had concentrations of fluoride exceeding the action level (0.1 mg/L), 2 had a specific conductivity exceeding the action limit (250 µS/cm), 9 had temperatures greater than 3° C above the receiving stream, 1 had turbidity greater than 15 NTU, and 1 had an E. coli concentration exceeding the action limit (406 MPN/100mL). Fluoride was not collected at all locations where chlorine was detected because the City's drinking water treatment plant was not fluoridating water at the time of the inspection. Due to ongoing bacteria issues in Clark Creek, all flowing outfalls in the Clark Creek basin were sampled for E. coli regardless of analytical screening results.

In addition to the priority outfall inspections detailed above, the City's Stream Cleaning Crew used a mobile GIS application to document physical inspections of outfalls with dry weather flow over the course of the 58.6 miles of stream that were inspected. The crew documented a total of 22 outfalls with dry weather flow. Of these 22 outfalls, 13 received follow-up inspections with analytical sampling (listed above).

In RY 2018/2019, this mobile GIS application was updated to include the use of Survey123 to provide increased data validation and guidance for documenting outfall inspections. Interns were also provided test strips for measuring free and total chlorine in the field. This practice will continue in future seasons and continue to be refined in order to increase the quality and quantity of outfall inspections.

Data for this monitoring element are provided as Attachment A at the end of this document.

3.0 Conclusion

The City continues to meet all monitoring requirements of its administratively extended MS4 Permit. 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.

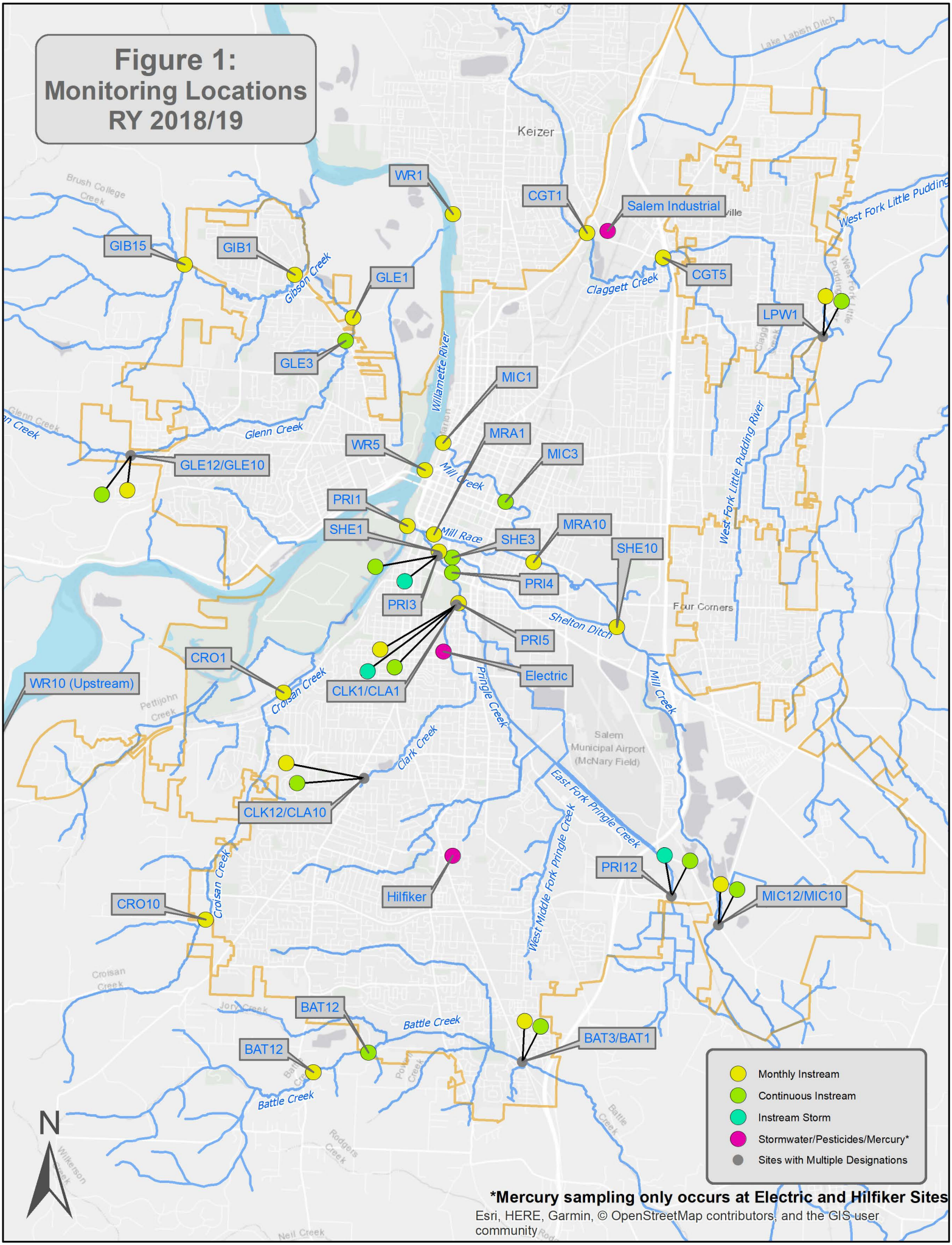
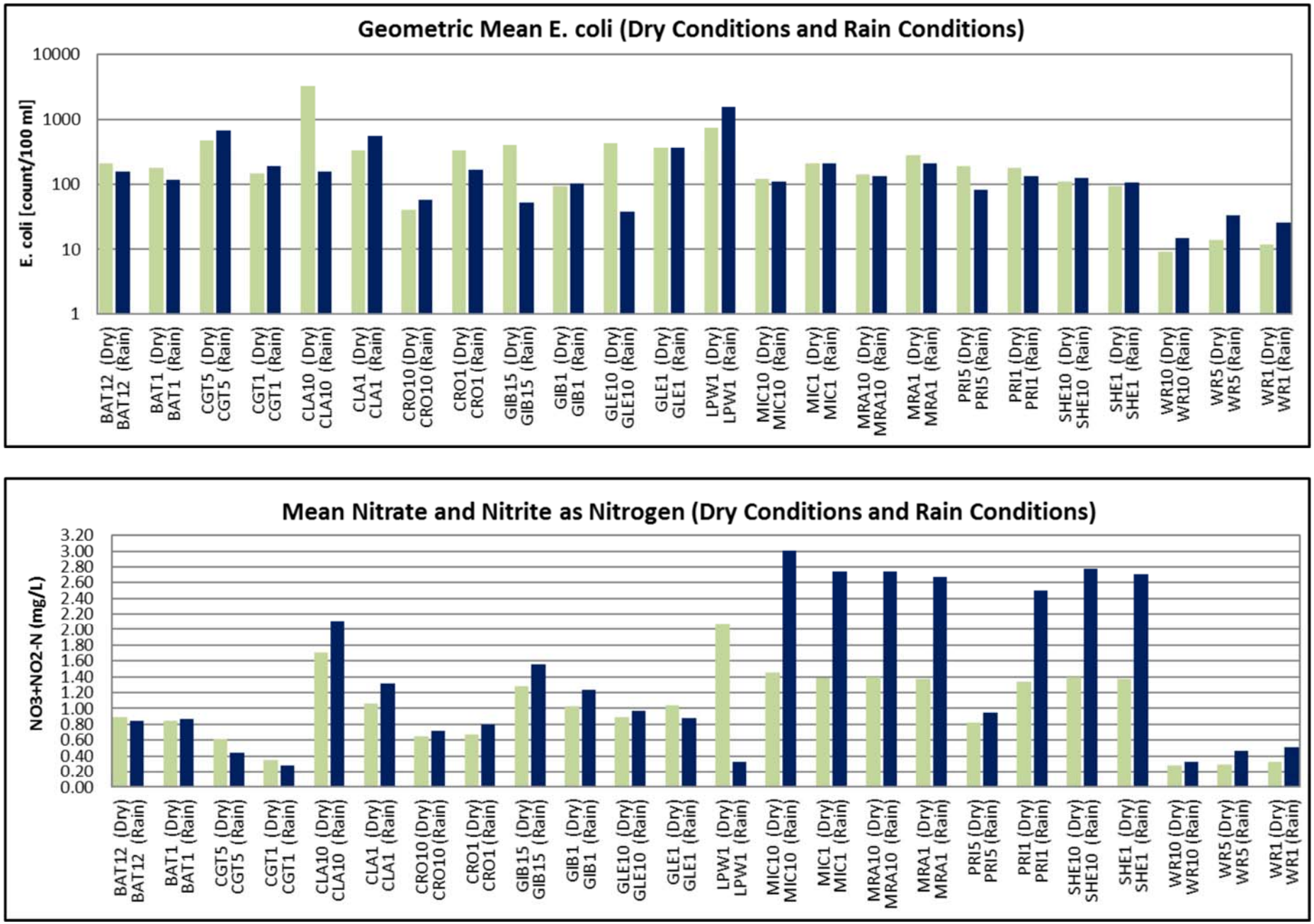


Figure 1:
Monitoring Locations
RY 2018/19
Keizer
WR1
CGT1
Salem Industrial
GIB15
GIB1
Gibson Creek
GLE1
CGT5
Claggett Creek
LPW1
West Fork Little Pudding
GLE3
Willamette River
MIC1
Glenn Creek
MRA1
WR5
MIC3
GLE12/GLE10
Mill Creek
PRI1
SHE1
Mill Race
SHE3
MRA10
SHE10
PRI4
PRI3
Four Corners
Shelton Ditch
PRI5
CRO1
Electric
WR10 (Upstream)
Croisan Creek
CLK1/CLA1
Pringle Creek
Mill Creek
Salem
Municipal Airport
(McNary Field)
Clark Creek
East Fork Pringle Creek
CLK12/CLA10
West Middle Fork Pringle Creek
PRI12
Hilfiker
MIC12/MIC10
CRO10
BAT12
Battle Creek
BAT12
BAT3/BAT1
Monthly Instream
Continuous Instream
Instream Storm
Stormwater/Pesticides/Mercury*
Sites with Multiple Designations
N
*Mercury sampling only occurs at Electric and Hilfiker Sites
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

Figure 2

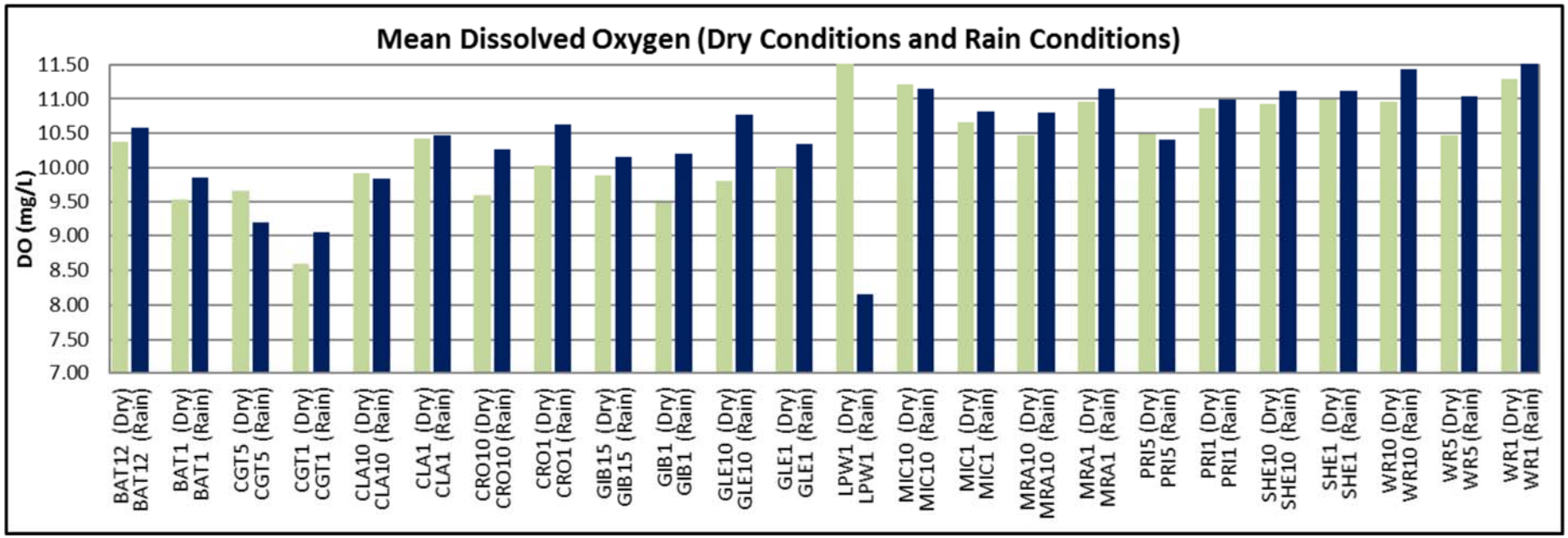
Monthly Instream Mean Value Comparison for Dry and Rain Conditions (Reporting Year 2018/2019)

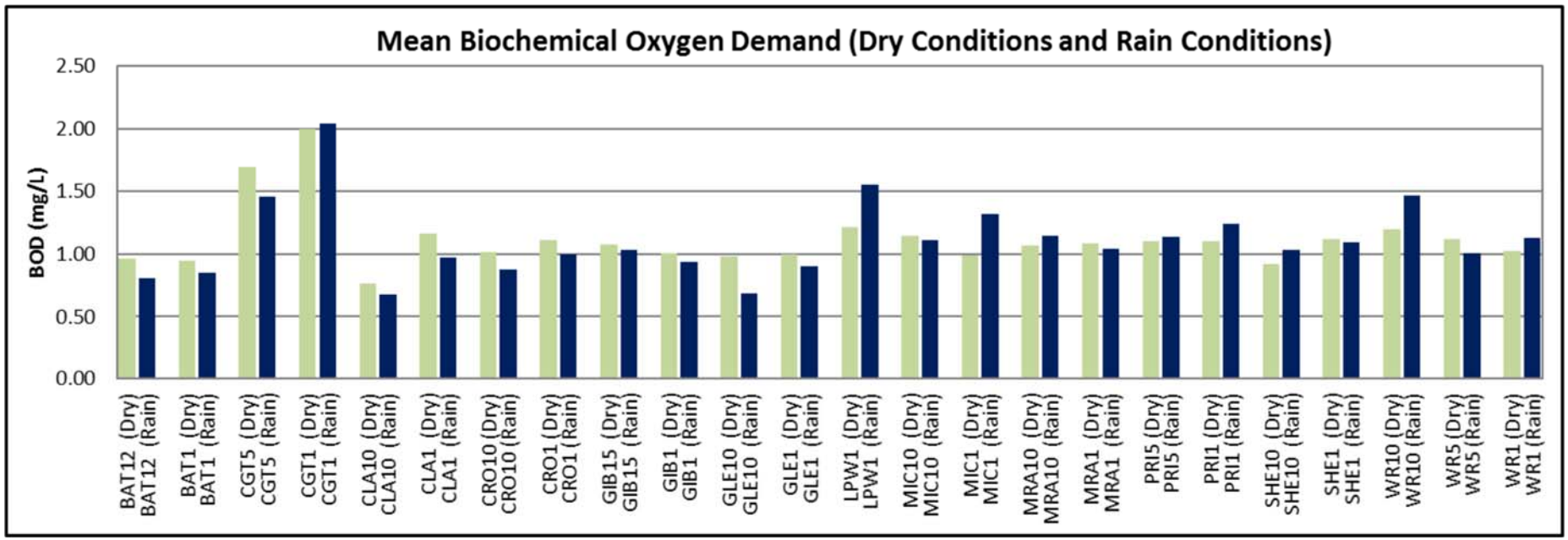


Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

Figure 2

Monthly Instream Mean Value Comparison for Dry and Rain Conditions (Reporting Year 2018/2019)





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.

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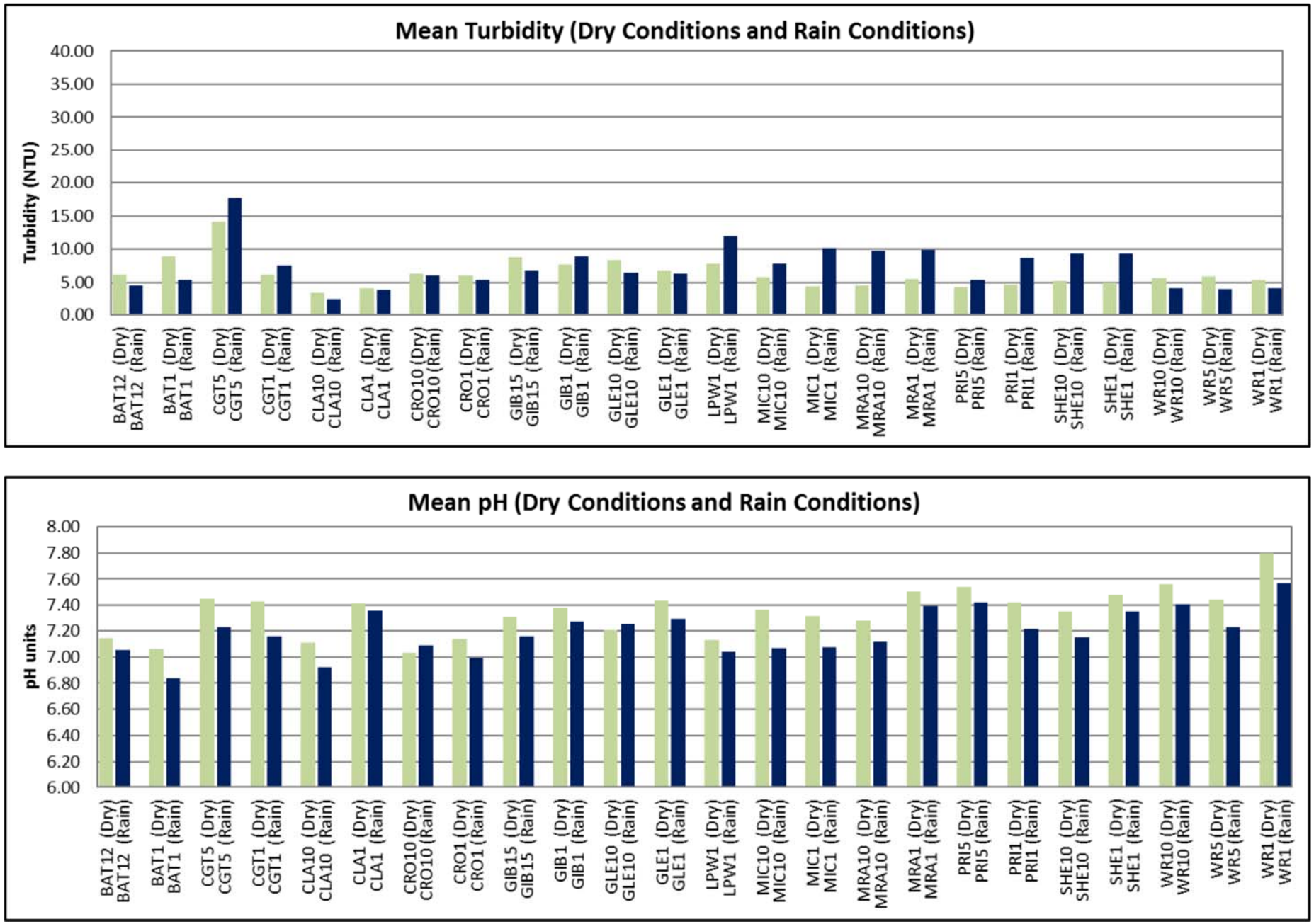
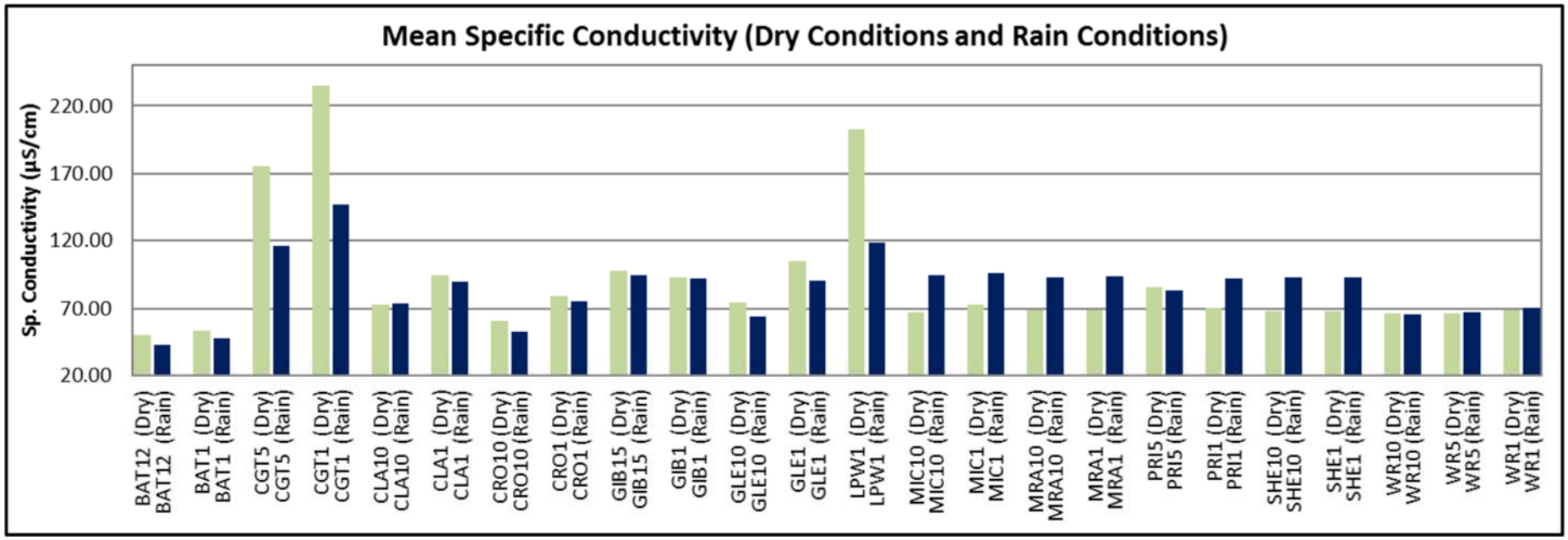


Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

Figure 2

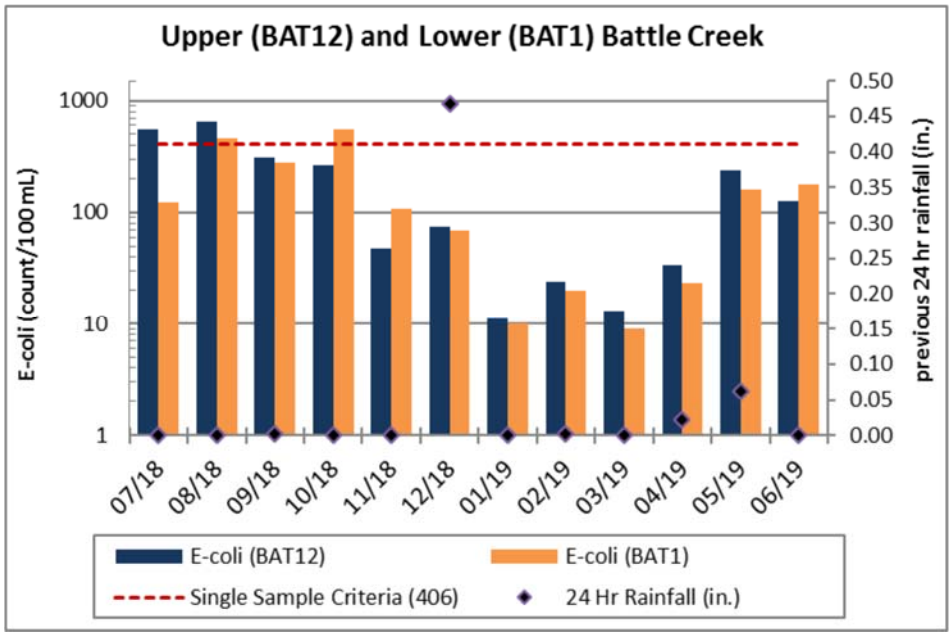
Monthly Instream Mean Value Comparison for Dry and Rain Conditions (Reporting Year 2018/2019)

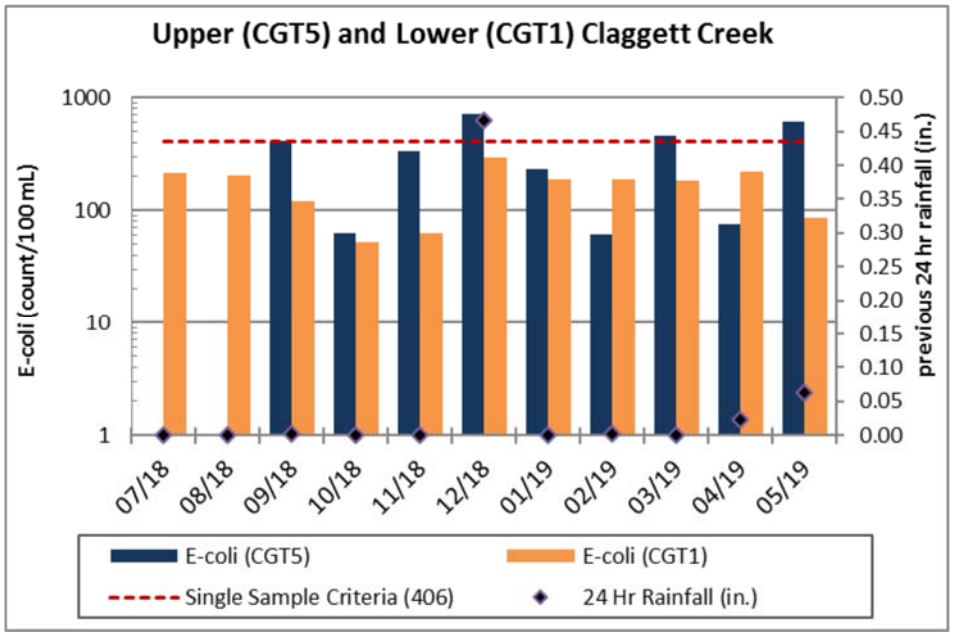


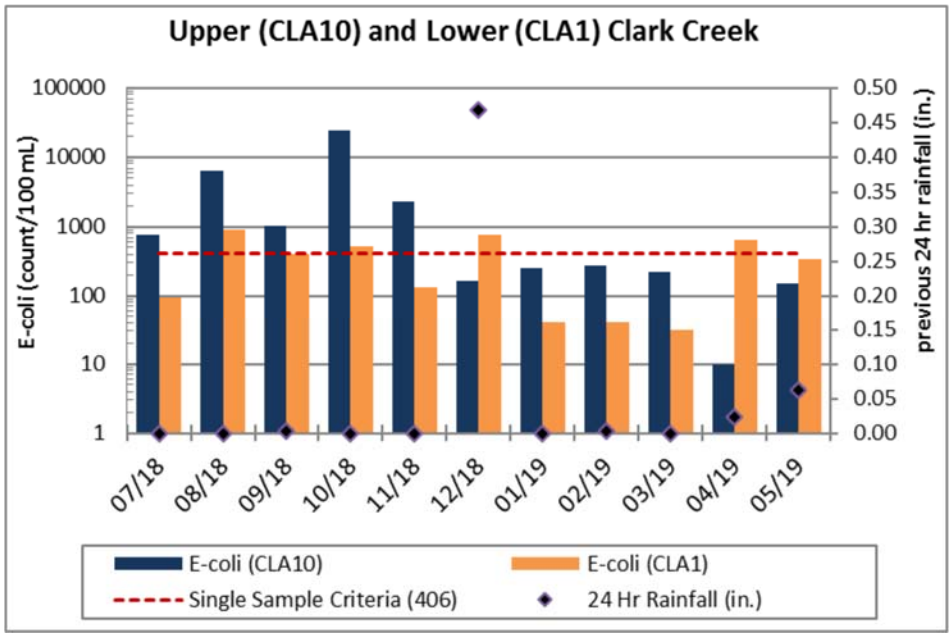
Dry conditions defined as less than 0.05 inches of rainfall in the 24 hours prior to sample collection; **rain** conditions defined as greater than or equal to 0.05 inches of rainfall in the 24 hours prior to sample collection.

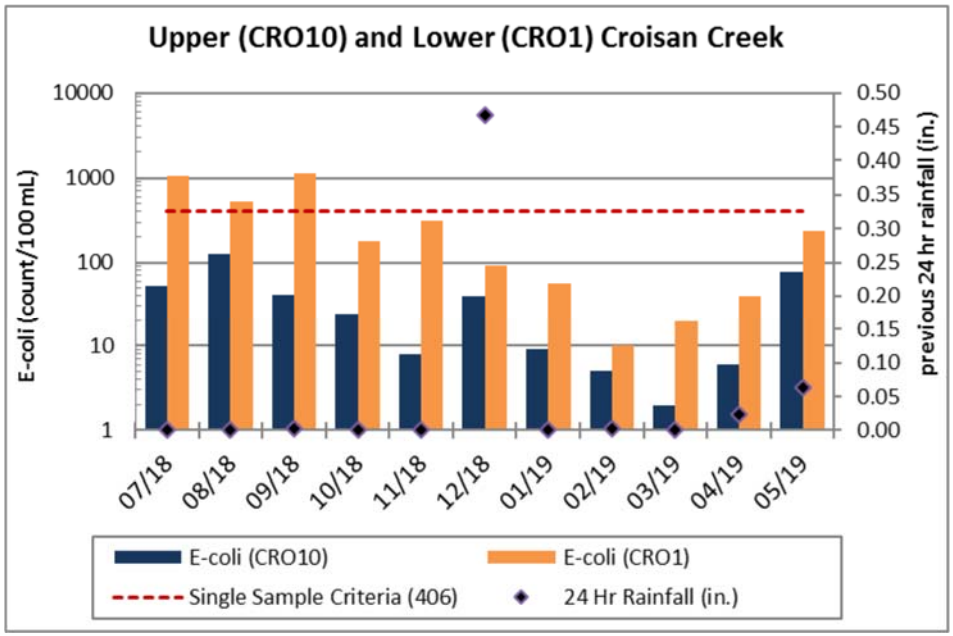
Figure 3

Monthly Instream E. Coli Upstream / Downstream Site Comparison (Reporting Year 2018/2019)





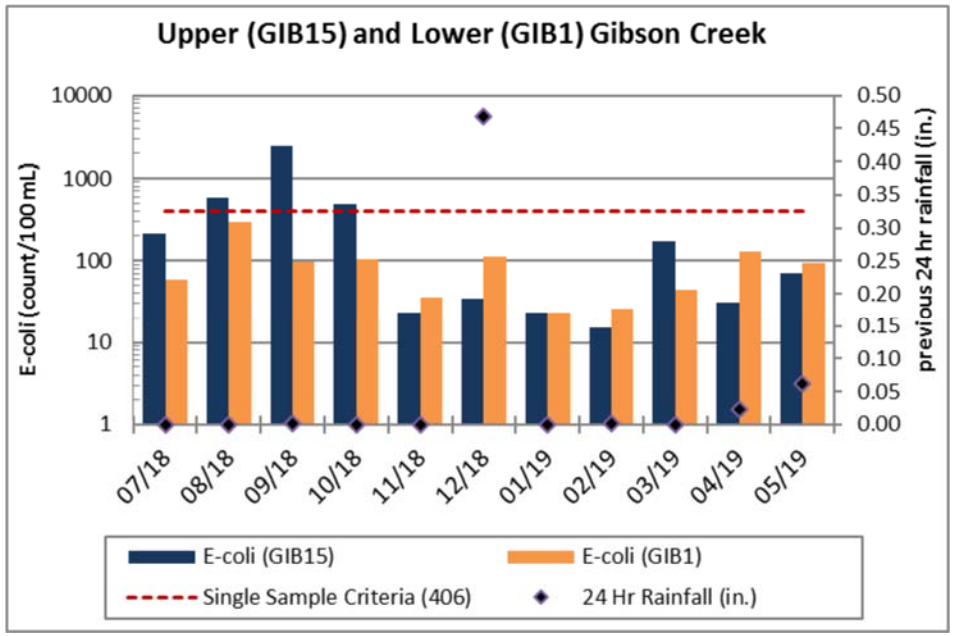


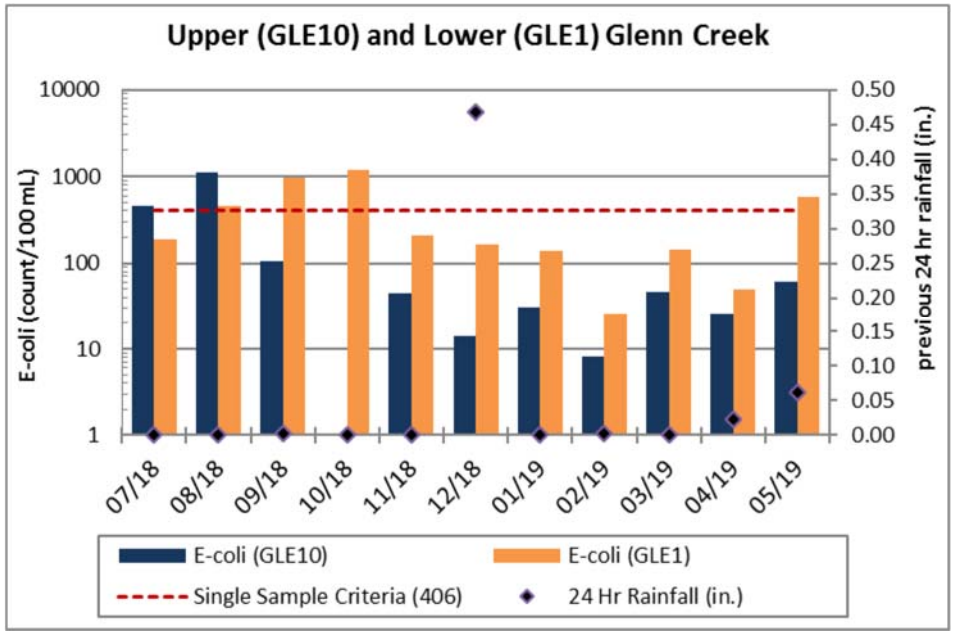


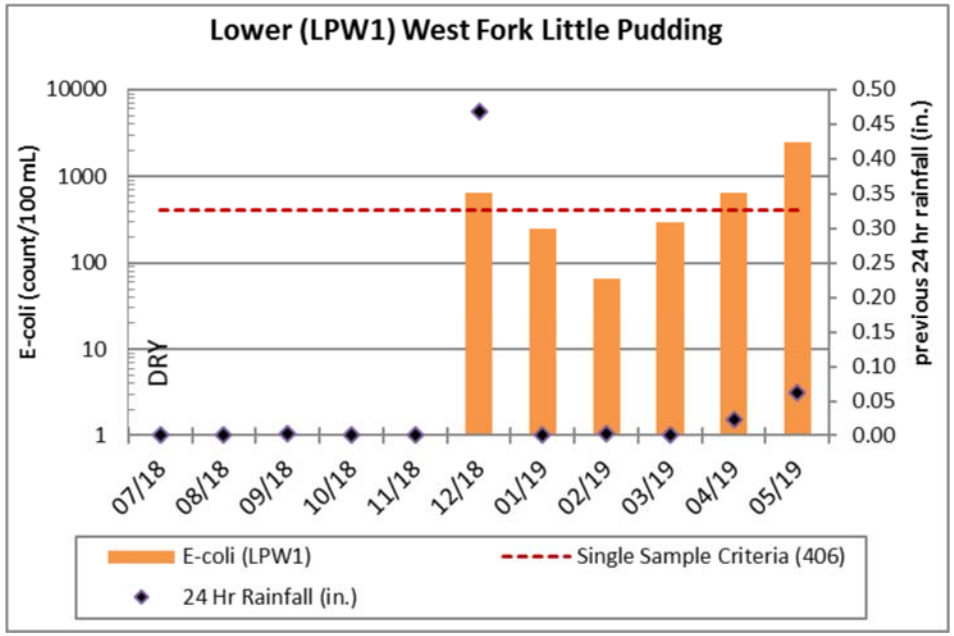
If 24 hour rainfall depth prior to sample collection differed between upstream and downstream sites, the average rainfall of the two sites was used.

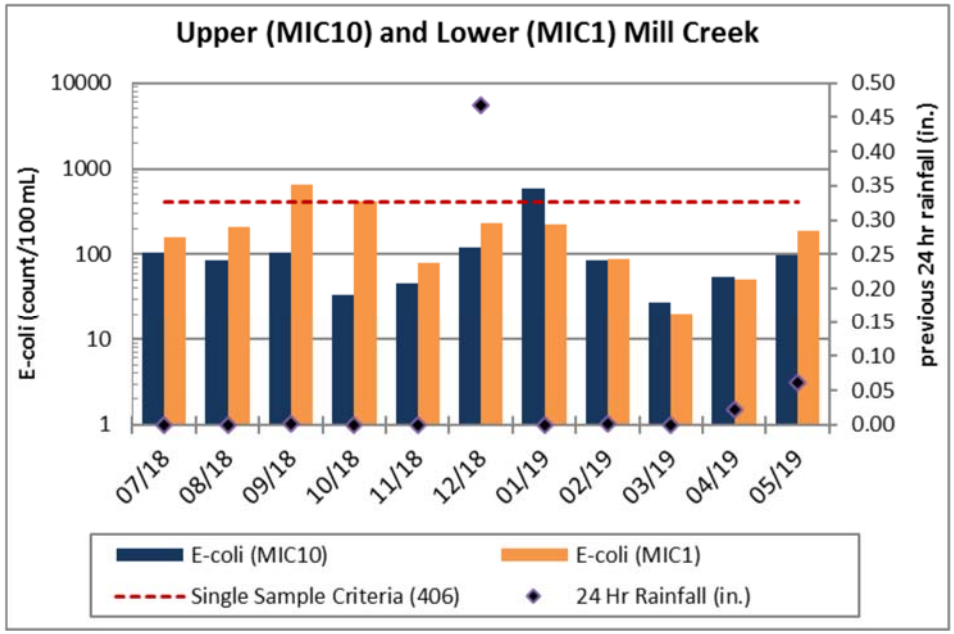
Figure 3

Monthly Instream E. Coli Upstream / Downstream Site Comparison (Reporting Year 2018/2019)





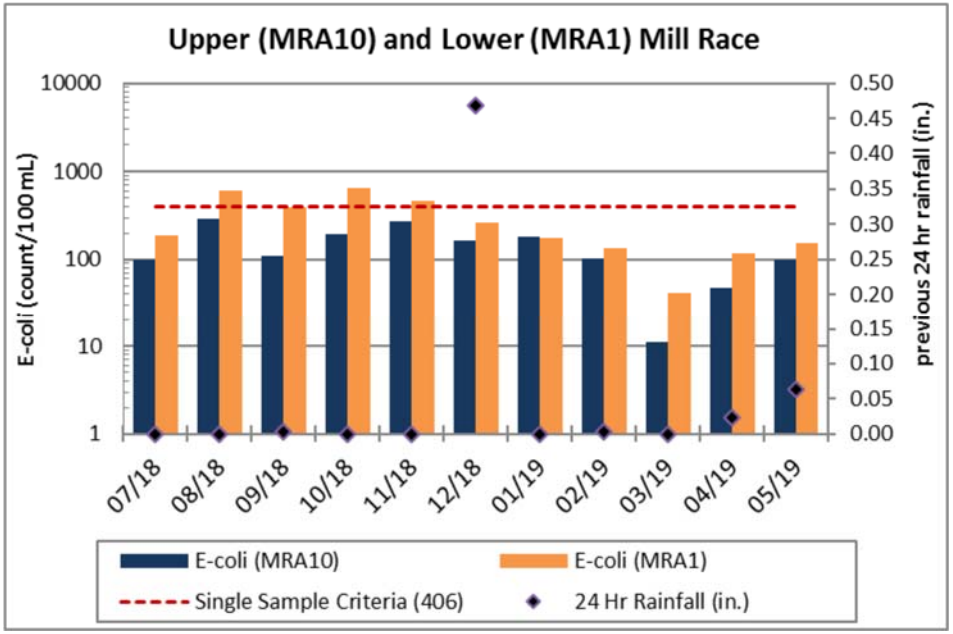


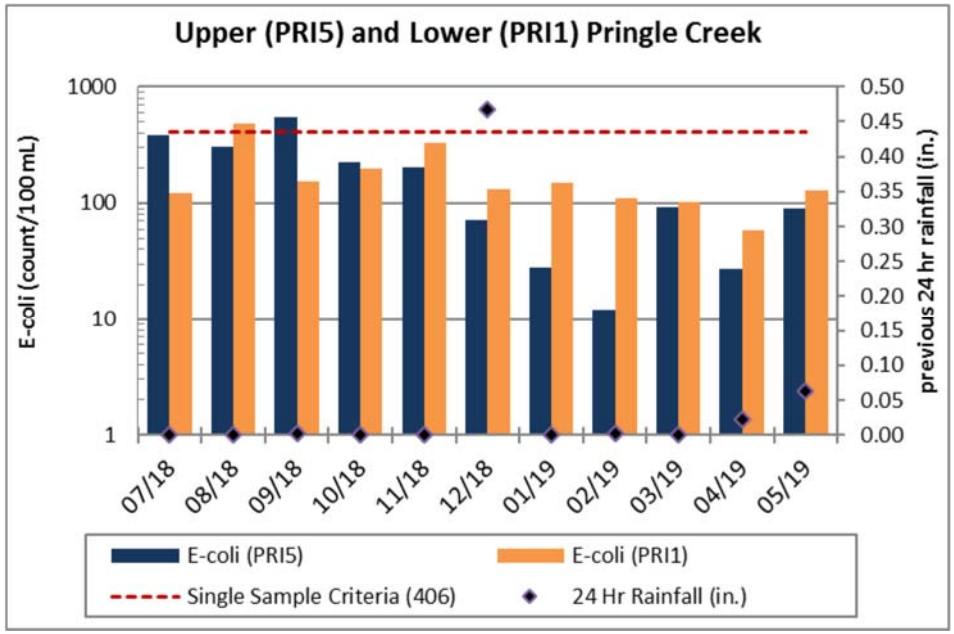


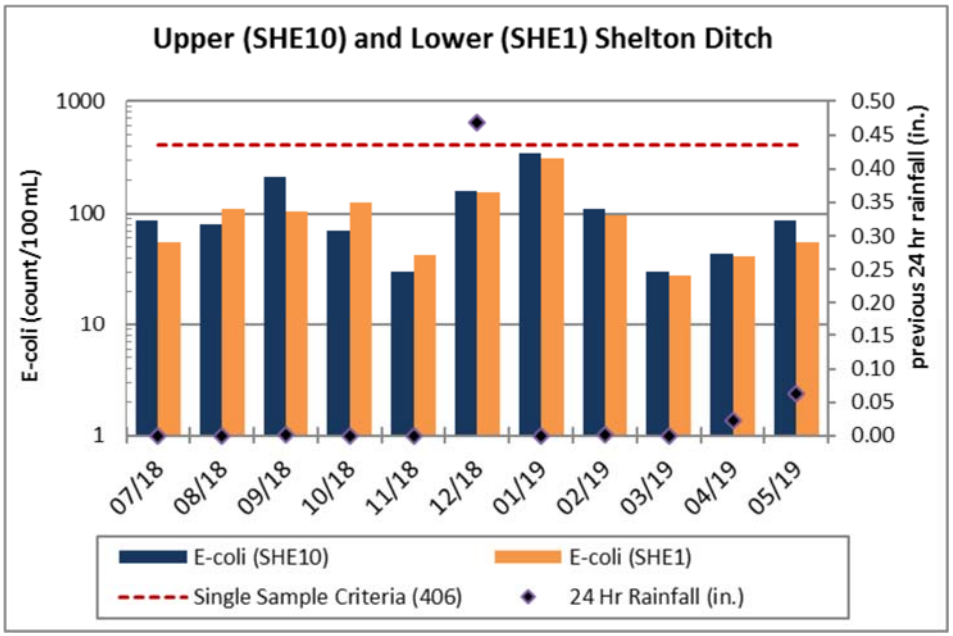
If 24 hour rainfall depth prior to sample collection differed between upstream and downstream sites, the average rainfall of the two sites was used.

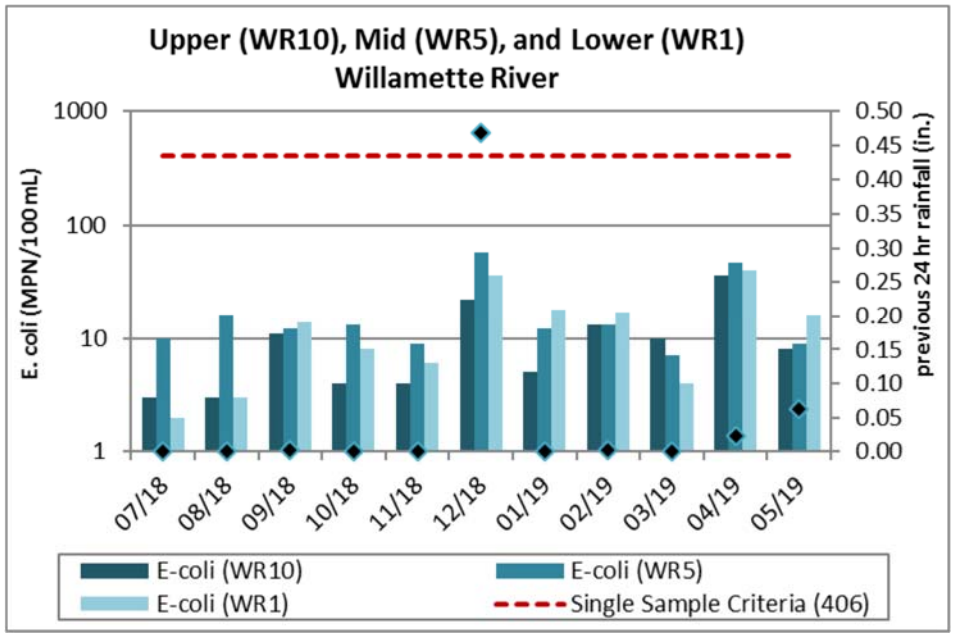
Figure 3

Monthly Instream E. Coli Upstream / Downstream Site Comparison (Reporting Year 2018/2019)





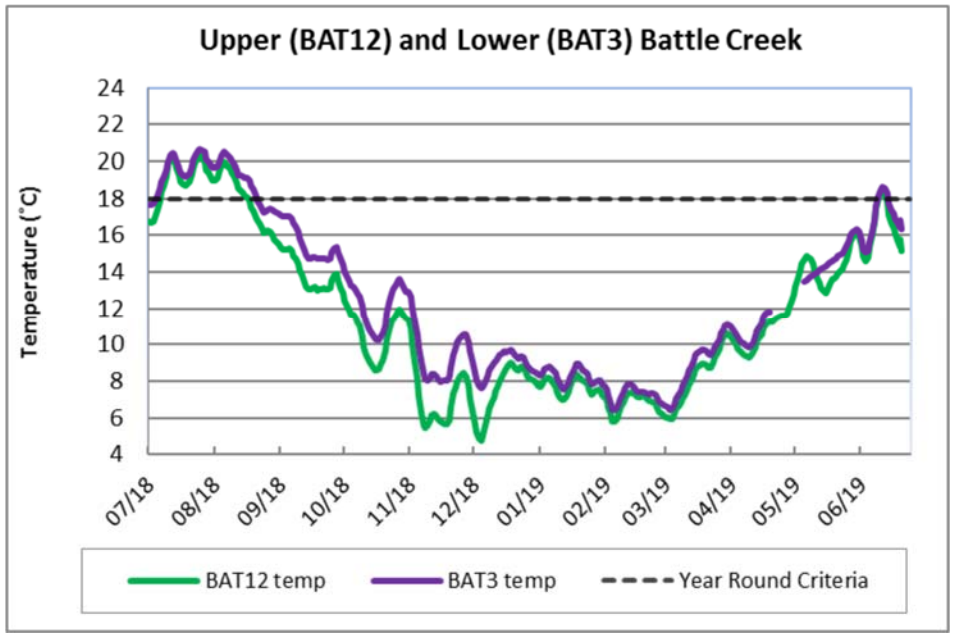


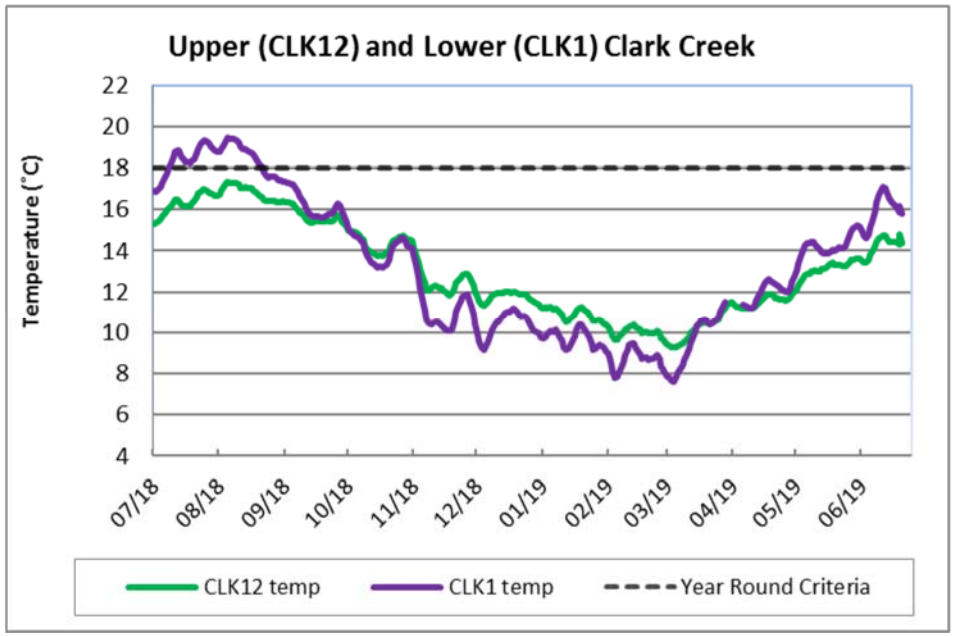


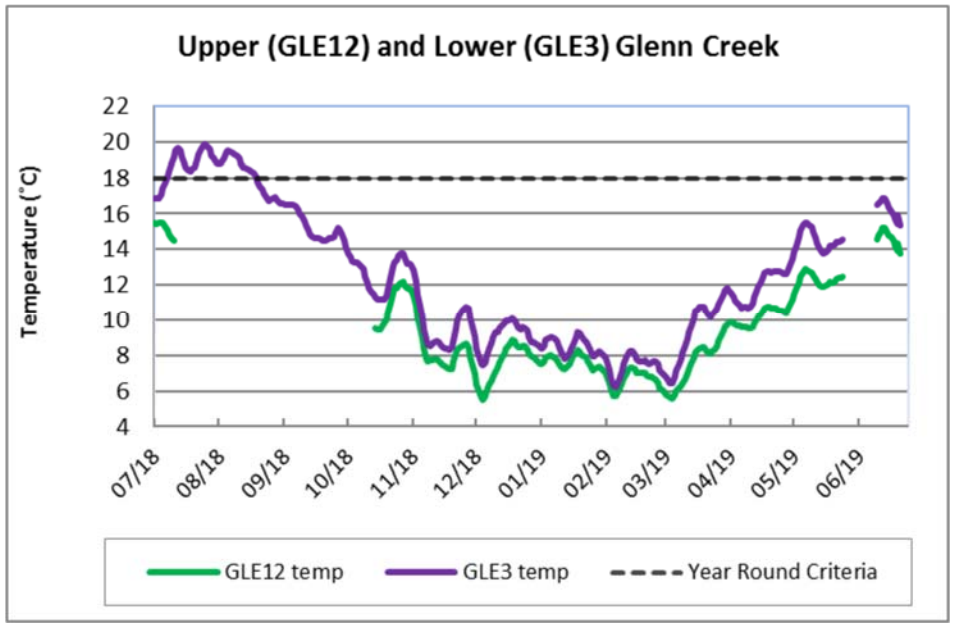
If 24 hour rainfall depth prior to sample collection differed between upstream and downstream sites, the average rainfall of the two sites was used.

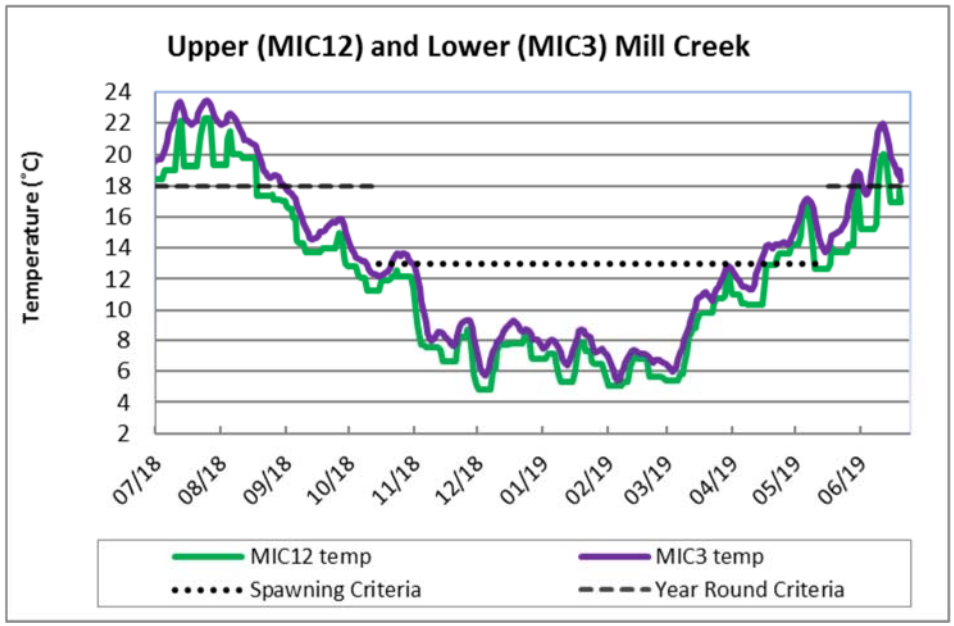
Figure 4

Continuous Instream Temperature 7-Day Moving Average Maximum (Reporting Year 2018/2019)







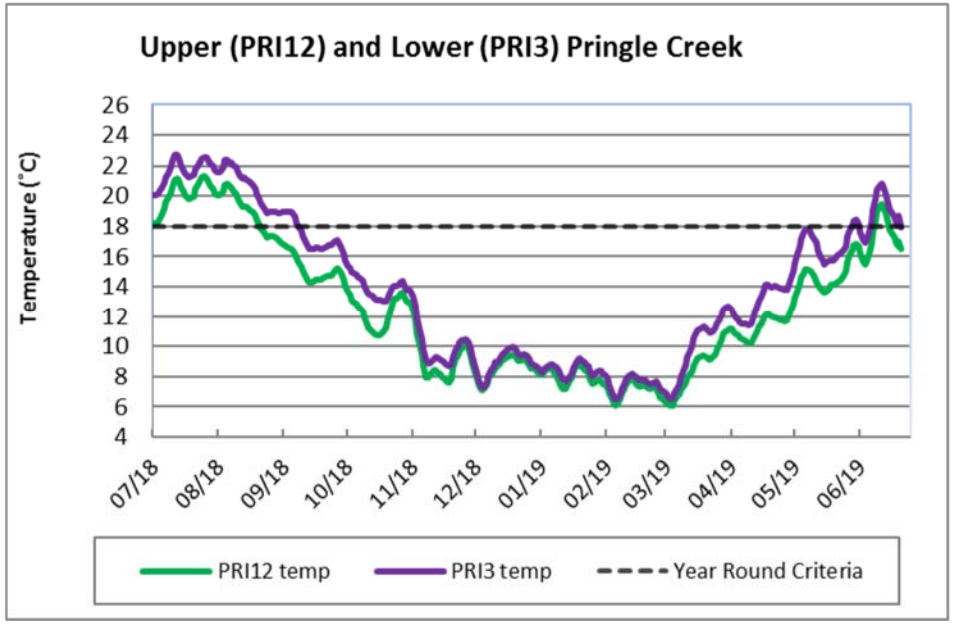


Presented temperature data consists of A grade data with greater than 80% of data points collected per day. Temperature criteria is defined in OAR 340--04100028 and OAR 340-0340, Tables 340A & B.

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

Figure 4

Continuous Instream Temperature 7-Day Moving Average Maximum (Reporting Year 2018/2019)

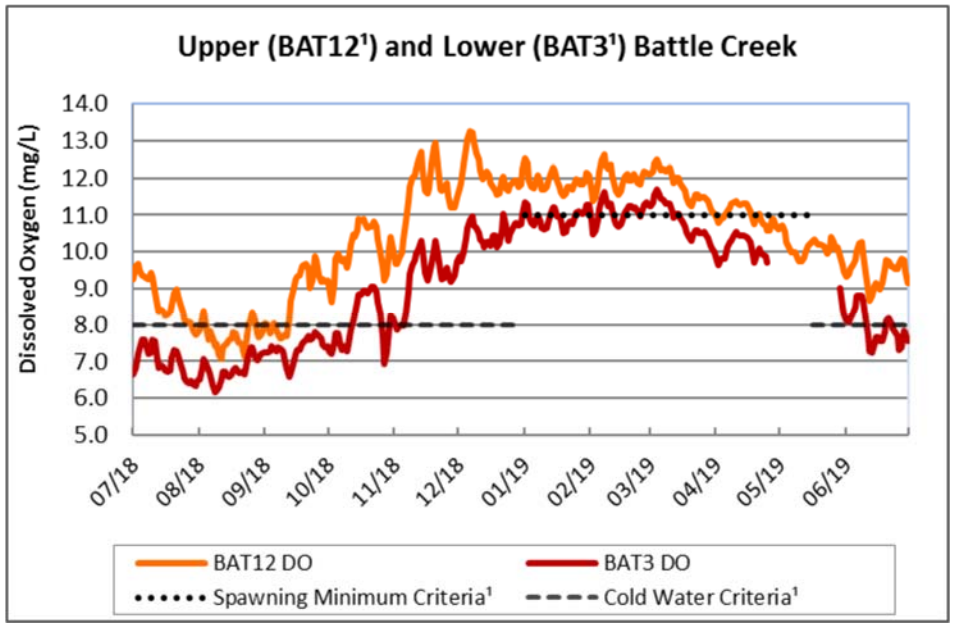


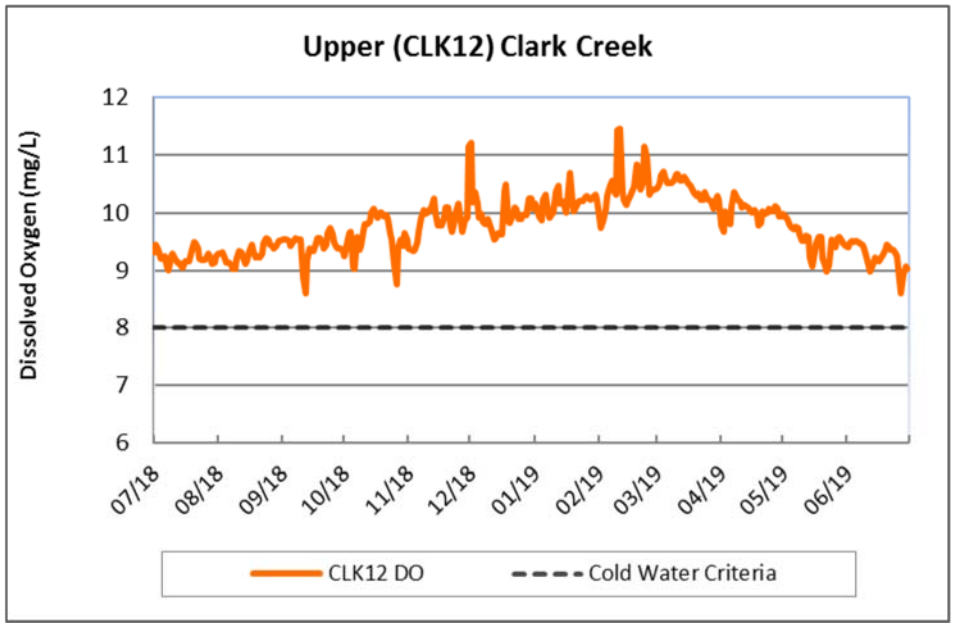
Presented temperature data consists of A grade data with greater than 80% of data points collected per day. Temperature criteria is defined in OAR 340--04100028 and OAR 340-0340, Tables 340A & B.

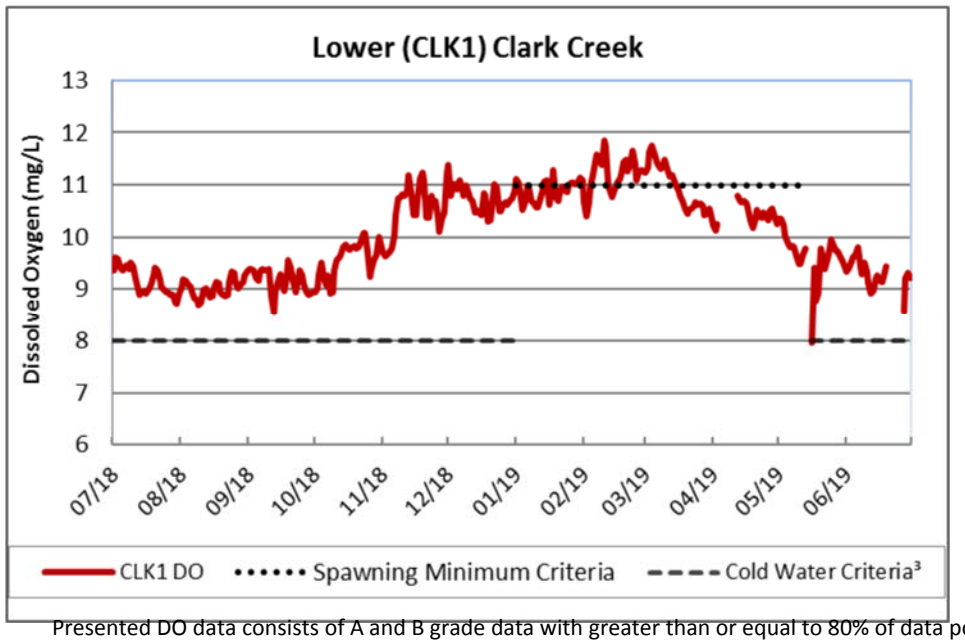
- Spawning Minimum Criteria for applicable streams may not exceed 7-day average maximum of 13 degrees C.
- Year Round Minimum Criteria may not exceed 7-day average maximum of 18 degrees C.

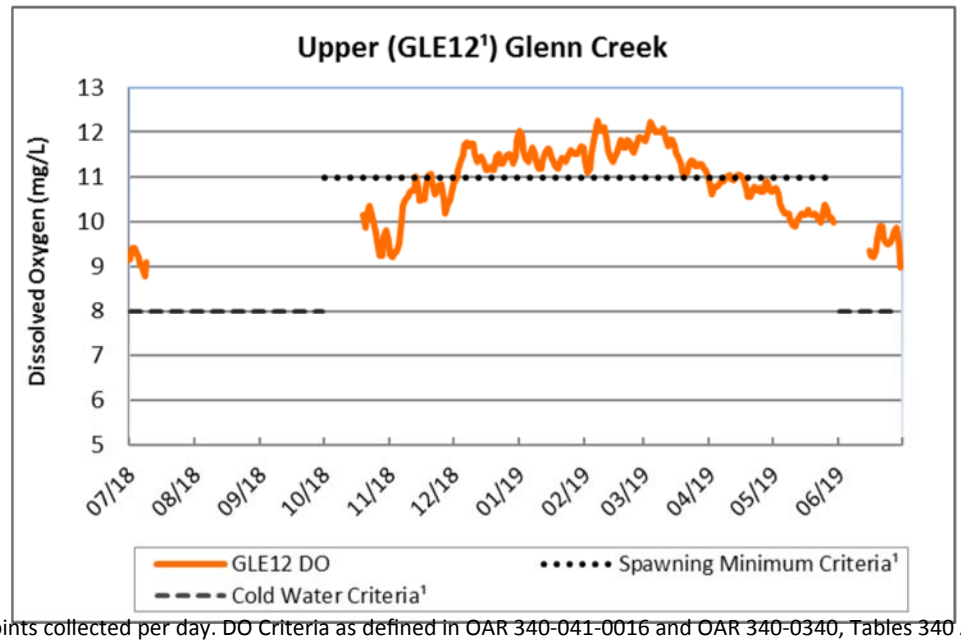
Figure 5

Continuous Instream Dissolved Oxygen Daily Mean (Reporting Year 2018/2019)









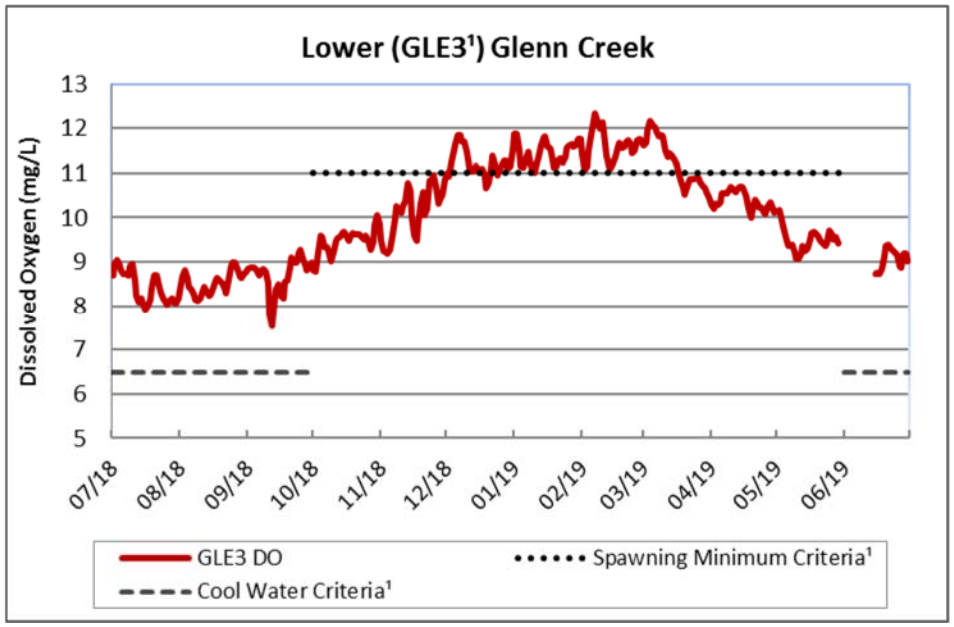
Presented DO data consists of A and B grade data with greater than or equal to 80% of data points collected per day. DO Criteria as defined in OAR 340-041-0016 and OAR 340-0340, Tables 340 A & B.

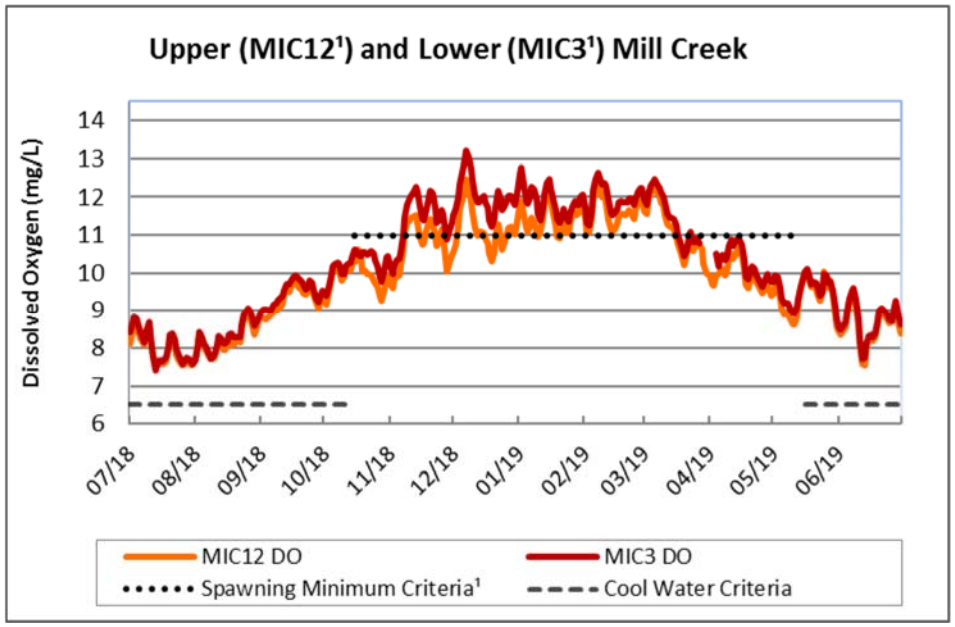
- Spawning Minimum Criteria for applicable streams may not be less than 11 mg/L.
- Oregon Cold Water Criteria for applicable streams may not be less than 8 mg/L.

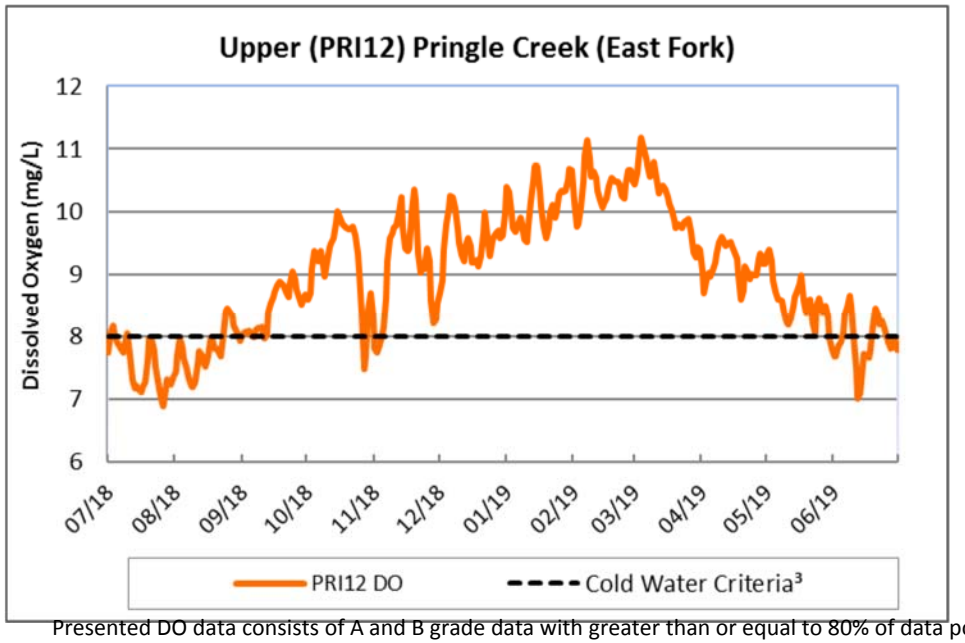
[1] Oregon's 2012 Integrated Report Section 303(d) listed.

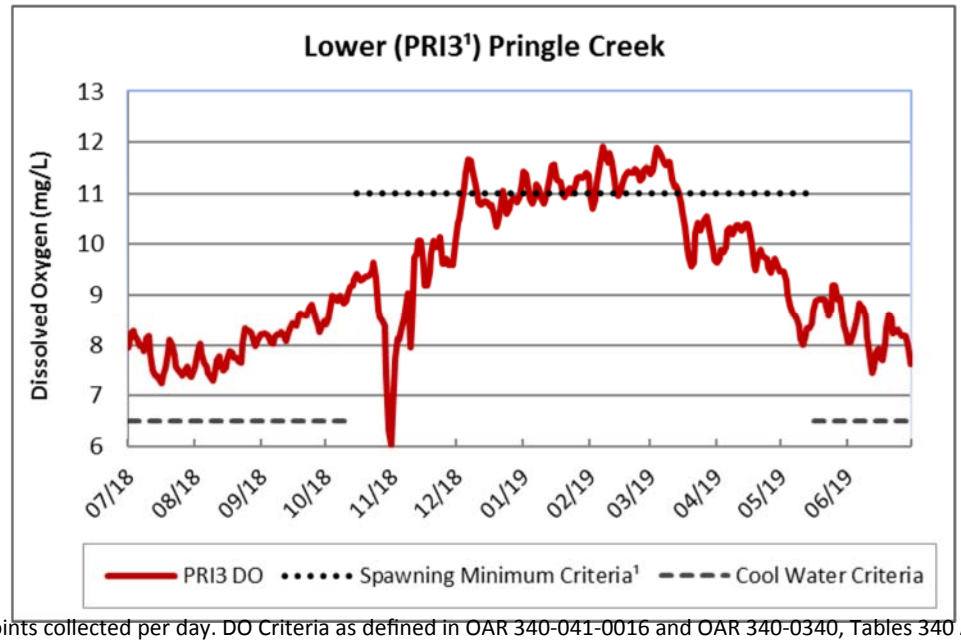
Figure 5

Continuous Instream Dissolved Oxygen Daily Mean (Reporting Year 2018/2019)







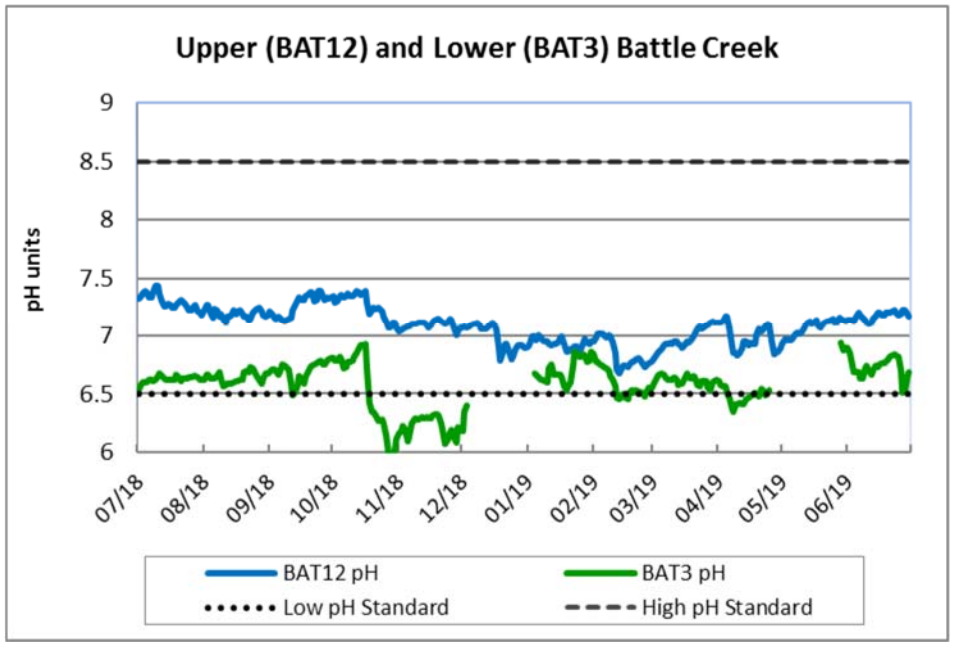


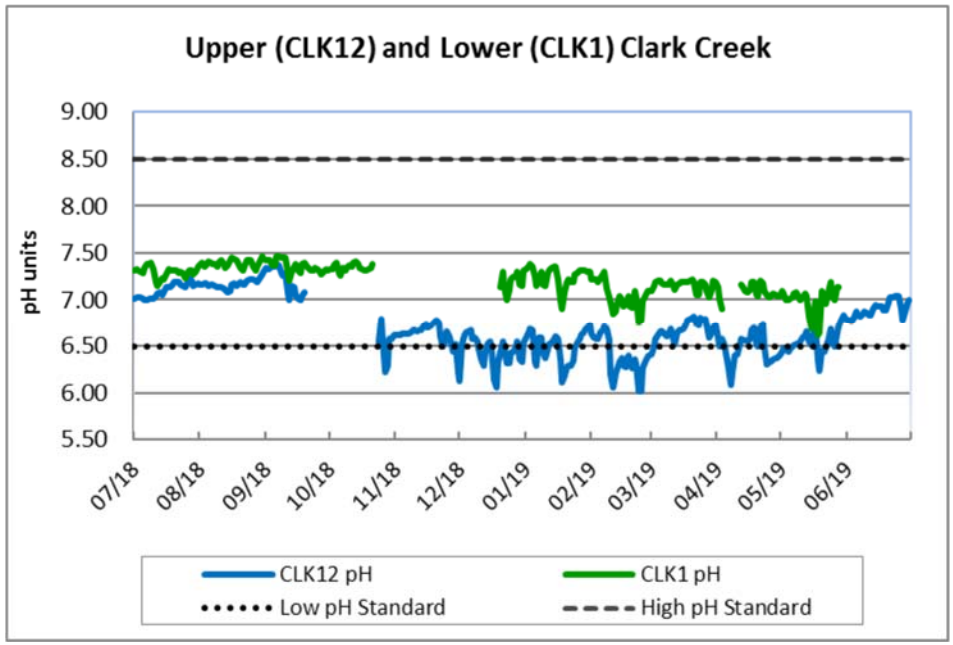
Presented DO data consists of A and B grade data with greater than or equal to 80% of data points collected per day. DO Criteria as defined in OAR 340-041-0016 and OAR 340-0340, Tables 340 A & B.

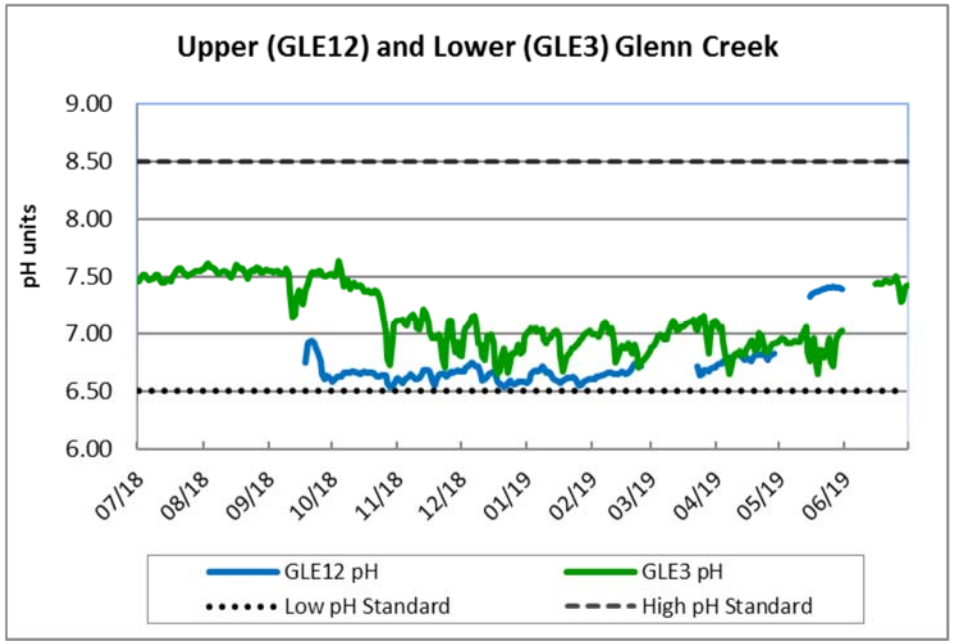
- Spawning Minimum Criteria for applicable streams may not be less than 11 mg/L.
- Oregon Cold Water Criteria for applicable streams may not be less than 8 mg/L.

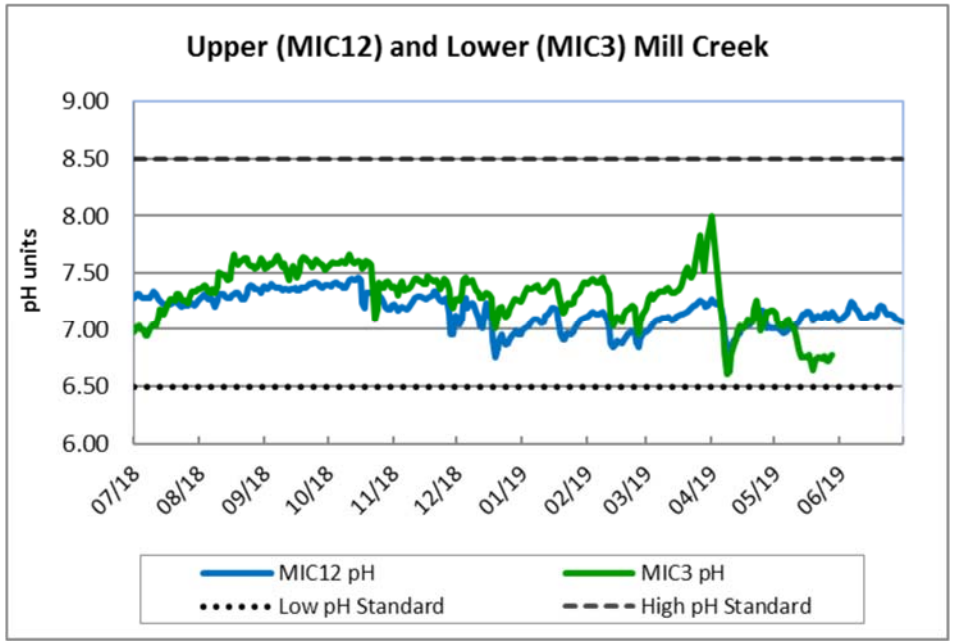
[1] Oregon's 2012 Integrated Report Section 303(d) listed.

Figure 6
Continuous Instream pH Daily Mean (Reporting Year 2018/2019)



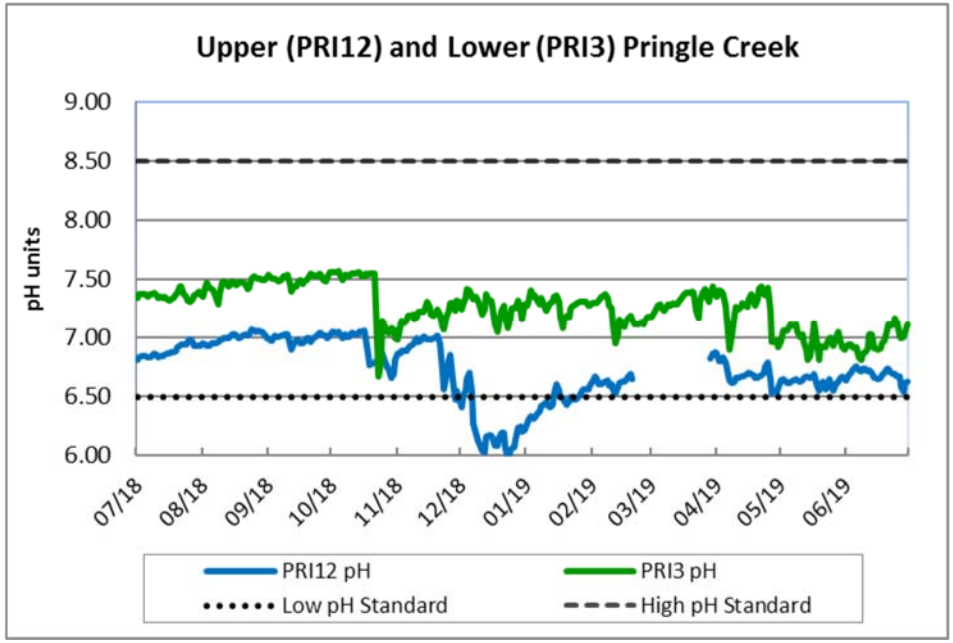






Presented pH data consist of A and B grade data with greater than or equal to 80% of data points collected per day.
As defined in OAR 341-041-0035 Water Quality Standards for the Willamette Basin, pH should not fall outside the ranges of 6.5 to 8.5 pH units.

Figure 6
Continuous Instream pH Daily Mean (Reporting Year 2018/2019)



Presented pH data consist 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 should not fall outside the ranges of 6.5 to 8.5 pH units.

Figure 7
Total Rainfall by Month Across Salem (Reporting Year 2018/2019)

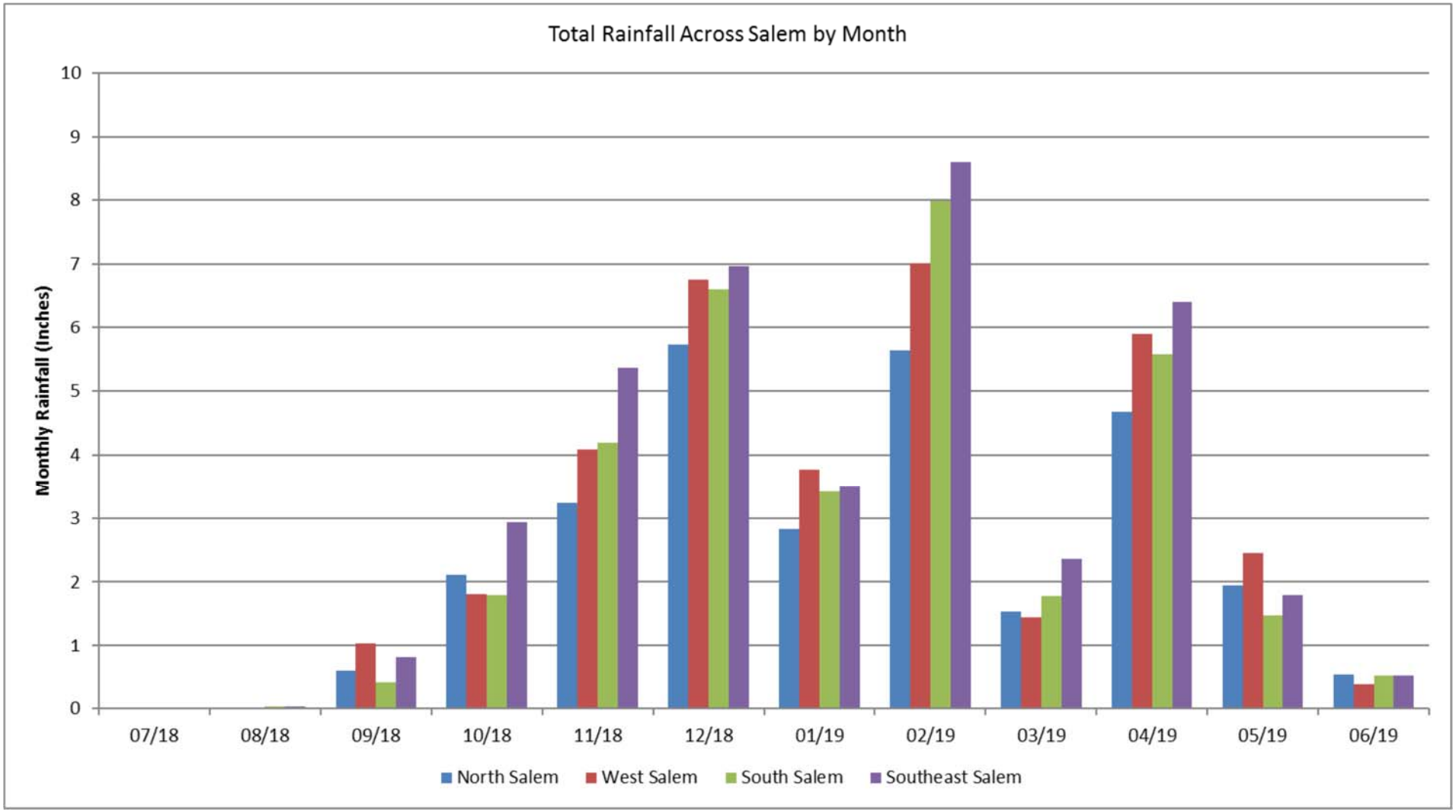


Table 1.
Completion of Table B-1 Environmental Monitoring Elements

Monitoring Type	# of sites	Total "Events" Needed	2011 / 2012	2012 / 2013	2013 / 2014	2014 / 2015	2015 / 2016	2016 / 2017	2017 / 2018	2018 / 2019
Monthly Instream	21	48 / site	12[1]	12[1]	12[1]	12[1]	12[1]	12[1]	12[1]	12[1]
Continuous Instream	10	On going	NA	NA	NA	NA	NA	NA	NA	NA
Instream Storm	3	25 / site	6	6	5	4	4	1	2	5
Stormwater (MS4)	3	15 / site	4	4	4	1	2	1	0	4
Pesticides	3	4 / site	1	2	0	1	0	0	1	0
Mercury	2	2 / site / year	2	1	1	COMPLETE[2]				
Macroinvertebrates	3	2 / site	1	1	0	0	0	0	1	0

[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] Following Table B-1 Special Condition #6 of the City's NPDES MS4 permit, the City requested and received approval 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[1]	Bush Park
CLK12	Ewald St SE
GLE3	Wallace Rd NW
GLE12	Hidden Valley Dr NW
LPW1[2]	Cordon Rd
MIC3	North Salem High School
MIC12	Turner Rd SE
PRI3[1]	Pringle Park
PRI4[2]	Salem Hospital Footbridge
PRI12[1]	Trelstad Ave SE
SHE3[2]	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] Instream Storm sampling done at these sites. [2] Stage-only gauging station. [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, WAL = Waln Creek

Table 3.
Parameters for Each Monitoring Element

Parameter	Units	Monitoring Element			
		Instream Storm	Stormwater	Monthly Instream	Continuous Instream
Alkalinity	mg/L			x[1]	
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[2]	
Dissolved Oxygen (DO)	mg/L	x	x	x	x
E. coli	MPN/100 mL	x	x	x	
Hardness	mg/L	x	x	x[2]	
Lead (Total Recoverable and Dissolved)	mg/L	x	x	x[2]	
Ammonia Nitrogen (NH_3-N)	mg/L	x	x	x[1]	
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[1]	
Temperature	˚C	x	x	x	x
Total Phosphorus (TP)	mg/L	x	x	x[1]	
Ortho Phosphorus	mg/L	x	x		
Total Solids (TS)	mg/L			x[1]	
Total Suspended Solids (TSS)	mg/L	x	x	x[1],[3]	
Turbidity	NTU			x	x
Zinc (Total Recoverable and Dissolved)	mg/L	x	x	x[2]	

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

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

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

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*□
	October 15 - May 15	Spawning: Not less than 11.0 mg/L or 95% saturation	Mill Creek*, Pringle Creek*[1], Shelton Ditch*, Willamette River*[5]
	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, Willamette River*[6]
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*[3], Croisan Creek*, Glenn Creek*, Pringle Creek Trib*, Willamette River*
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*, Willamette River*
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 2012 Integrated Report Section 303(d) listed.

□ Gibson Creek is referred as Gibson Gulch in Oregon's 2012 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.

[5] Applies to Willamette River from river mile 54.8 to 186.5

[6] Applies to Willamette River from river mile 50.6 to 186.5

Table 5.
Median Values for Monthly Instream Sites (RY 2018/19)

Site ID	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	10.1	9.9	52.5	7.9	7.0	115.5	0.57	0.87
BAT 12	12	8.8	10.9	46.8	5.9	7.2	101.0	0.48	0.99
CGT 1	12	13.7	9.1	237.0	6.4	7.3	186.0	0.16	1.77
CGT 5	10	12.5	9.4	170.7	10.8	7.4	668.0	0.37	1.44
CLA 1	12	11.2	10.7	93.9	3.2	7.4	366.0	1.02	0.94
CLA 10	12	12.1	9.9	72.6	2.7	7.1	280.5	1.63	0.65
CRO 1	12	9.0	10.6	80.4	6.2	7.1	178.0	0.43	1.06
CRO 10	12	9.5	9.9	58.8	6.6	7.0	31.5	0.37	1.08
GIB 1	12	10.9	10.0	96.7	7.1	7.4	94.5	0.81	0.94
GIB 15	12	10.0	10.0	96.9	8.4	7.3	345.0	1.25	0.90
GLE 1	12	10.0	10.3	107.3	6.8	7.4	176.5	0.77	0.92
GLE 10	11	8.3	11.2	63.5	7.0	7.2	46.0	0.66	0.77
LPW 1	6	9.7	11.7	197.0	8.1	7.1	474.0	1.87	1.36
MIC 1	12	10.8	10.9	67.6	4.0	7.3	198.5	0.42	0.91
MIC 10	12	10.7	11.2	63.4	5.4	7.2	91.0	0.45	1.04
MRA 1	12	10.4	11.2	60.2	4.1	7.5	182.0	0.38	0.99
MRA 10	12	10.2	10.8	60.6	4.3	7.3	131.5	0.39	0.92
PRI 1	12	10.3	11.1	63.5	4.1	7.5	130.0	0.38	1.03
PRI 5	12	10.9	10.8	85.1	3.9	7.5	122.5	0.62	1.11
SHE 1	12	10.2	11.2	60.9	4.6	7.5	76.0	0.40	0.96
SHE 10	12	10.1	11.2	59.2	5.3	7.3	84.5	0.40	0.83
WR1	12	12.4	11.4	70.2	3.8	7.8	11.0	0.19	1.01
WR5	12	10.6	10.8	66.4	4.4	7.5	12.0	0.19	0.96
WR10	12	10.8	11.1	66.4	3.7	7.6	7.0	0.21	1.16

Table 6.
Number of Water Quality Criteria Exceedances for Monthly Instream Sites (RY 2018/19)

Site ID	Number of Samples	Dissolved Oxygen	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	0	2	2	0						
BAT 12	12	3	0	2	2	0						
CGT 1	12	6	0	0	0	0						
CGT 5[4]	10	2	0	5	4	1						
CLA 1	12	1	0	6	5	1	0	0	0	0	0	0
CLA 10	12	0	0	5	5	0	0	0	0	0	0	0
CRO 1	12	2	0	3	3	0						
CRO 10	12	3	0	0	0	0						
GIB 1	12	4	0	0	0	0						
GIB 15	12	5	0	4	4	0						
GLE 1	12	1	0	4	3	1						
GLE 10[4]	11	2	0	3	3	0						
LPW 1[4]	6	1	0	3	1	2						
MIC 1	12	2	0	2	2	0						
MIC 10	12	1	0	1	1	0						
MRA 1	12	NA	0	3	3	0						
MRA 10	12	NA	0	0	0	0						
PRI 1	12	1	0	1	1	0	0	0	0	0	0	0
PRI 5	12	0	0	1	1	0	0	0	0	0	0	0
SHE 1	12	0	0	0	0	0						
SHE 10	12	0	0	0	0	0						
WR1	12	1	0	0	0	0						
WR5	12	1	0	0	0	0						
WR10	12	2	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 sample all 12 due to lack of flow/too high 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 - Battle Creek (RY 2018/19)

Site Name:	BAT1								
Site Description:	Commercial St								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 11:30	19.4	7.27	60.5	8.19	7.23	122	0.39	0.92	0.00
8/21/2018 12:55	19.4	7.41	62.8	13.3	7.18	461	0.35	1.25	0.00
9/18/2018 12:29	14.3	7.78	60.4	14.5	7.26	276	0.39	1.2	0.00
10/16/2018 11:30	10	9.06	59.5	16.7	7.37	548	0.36	1.35	0.00
11/20/2018 11:18	5.5	10.59	57.7	8.93	7.54	109	0.43	0.84	0.00
12/17/2018 11:05	8.9	10.1	48.8	5.79	6.81	69	1.03	0.9	0.47
1/15/2019 11:25	6	11.3	47.4	4.03	6.9	10	1.67	1.88	0.00
2/19/2019 11:38	7.5	11.33	49.7	7.77	6.6	20	2.051	0.56	0.00
3/20/2019 11:07	8.4	11.07	46.4	5.01	6.72	9	1.285	0.57	0.00
4/17/2019 10:55	10.1	10.79	46	6.28	6.72	23	1.292	0.33	0.02
5/22/2019 11:00	13	9.62	47.6	4.9	6.87	162	0.705	0.8	0.06
6/18/2019 12:10	17.5	8.51	55.2	8.1	7.25	178	0.383	0.68	0.00
Median	**10.05**	**9.86**	**52.45**	**7.94**	**7.04**	**116**	**0.57**	**0.87**	

Site Name:	BAT12								
Site Description:	Rees Hill Rd.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:49	20	7.9	55.5	9.25	7.45	548	0.29	0.87	0.00
8/21/2018 11:55	17	7.82	64.5	8.69	7.2	649	0.29	1.13	0.00
9/18/2018 11:03	9.6	10.07	61	9.62	7.3	313	0.29	1.26	0.00
10/16/2018 10:35	6.6	11.33	58.2	7.64	7.38	261	0.25	1.47	0.00
11/20/2018 11:02	3.8	12.5	48.2	6	7.65	48	0.26	1.17	0.00
12/17/2018 10:50	7.8	10.94	44.3	5.79	7.12	75	1.01	1.11	0.47
1/15/2019 10:55	5.5	11.68	46.2	2.39	7.34	11	2.022	1.82	0.00
2/19/2019 11:10	7	11.47	47.2	4.03	6.49	24	2.318	0.6	0.00
3/20/2019 10:45	8	11.35	44.8	2.77	6.85	13	1.641	0.81	0.00
4/17/2019 10:40	9.9	10.84	43.3	4.52	6.82	34	1.542	0.28	0.02
5/22/2019 10:45	12.7	10.21	42.6	3.3	6.99	238	0.673	0.5	0.06
6/18/2019 11:30	17.4	9.04	46.3	9.21	7.1	127	0.225	0.7	0.00
Median	**8.80**	**10.89**	**46.75**	**5.90**	**7.16**	**101**	**0.48**	**0.99**	

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 - Claggett Creek (RY 2018/19)

Site Name:	CGT1								
Site Description:	Mainline Dr S								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 12:28	24.7	6.04	269.5	3.79	7.5	216	< 0.05	1.04	0.00
8/21/2018 13:55	23.6	9.63	270.6	10.3	8.03	203	< 0.05	4.42	0.00
9/18/2018 13:47	17.5	5.94	242.7	6.29	7.3	120	< 0.05	3.1	0.00
10/16/2018 14:05	13.8	5.63	263.7	4.76	7.2	52	< 0.05	1.86	0.00
11/20/2018 13:25	6.7	4.01	261.2	6.87	7.2	63	< 0.05	1.73	0.00
12/17/2018 12:45	8.6	9.57	89.8	12.4	7.08	292	0.36	2.28	0.47
1/15/2019 13:15	5.6	8.61	207.1	8.03	7.32	187	0.759	1.62	0.00
2/19/2019 13:31	6.9	11.73	202.5	7.98	7.29	187	1.652	1.24	0.00
3/20/2019 13:02	12.5	13.17	232.4	6.56	7.94	185	0.177	2.21	0.00
4/17/2019 12:32	13.5	10.92	184.5	5.68	7.33	221	0.646	1.26	0.02
5/22/2019 12:35	17.6	8.52	204.3	2.7	7.23	85	0.191	1.81	0.06
6/18/2019 14:01	23.1	10.33	241.6	4.79	7.41	73	0.145	1.68	0.00
Median	**13.65**	**9.09**	**237.00**	**6.43**	**7.31**	**186**	**0.36**	**1.77**	

Site Name:	CGT5								
Site Description:	Hawthorne Ave								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 12:20	No Flow								0.00
8/21/2018 13:45	No Flow								0.00
9/18/2018 13:28	16.8	6.3	163.3	35.2	7.12	417	0.06	4.12	0.00
10/16/2018 13:45	15.3	4.9	99.4	14.9	7.22	63	< 0.05	2.78	0.00
11/20/2018 13:05	8.1	8.79	110.4	28.7	7.44	336	0.09	1.48	0.00
12/17/2018 12:15	8.5	10.06	70.7	29.3	7.09	717	0.54	1.51	0.47
1/15/2019 13:00	4.5	12.08	178.1	10.4	7.39	231	1.122	1.87	0.00
2/19/2019 13:20	7.2	11.71	189.6	9.43	7.26	62	2.344	0.72	0.00
3/20/2019 12:46	12.3	13.49	227.1	6.49	8.33	457	0.411	1.11	0.00
4/17/2019 12:20	12.7	12.95	179.5	5.47	7.57	75	0.98	0.71	0.02
5/22/2019 12:20	16	8.34	161.8	6.1	7.36	620	0.335	1.4	0.06
6/18/2019 13:50	18	8.36	267.6	11.1	7.38	2064	0.163	1.05	0.00
Median	**12.50**	**9.43**	**170.70**	**10.75**	**7.37**	**668**	**0.41**	**1.44**	

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 - Clark Creek (RY 2018/19)

Site Name:	CLA1								
Site Description:	Bush Park								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:15	17.4	9.19	92.7	3.79	7.47	96	0.75	0.68	0.00
8/21/2018 10:38	17.9	9.02	102.3	12.3	7.37	909	0.76	3.03	0.00
9/18/2018 10:30	14.1	9.51	95.4	3.18	7.38	408	0.65	1.2	0.00
10/16/2018 9:55	11.3	10.53	87.3	6.46	7.48	512	0.53	1.26	0.00
11/20/2018 9:30	7.4	11.19	88.4	2.46	7.45	135	0.57	1.06	0.00
12/17/2018 9:59	10.1	10.78	84.9	4.97	7.34	770	1.46	1.21	0.47
1/15/2019 9:55	7.4	11.68	92.7	2.22	7.53	41	1.559	1.87	0.00
2/19/2019 10:05	8.7	11.59	93	3.68	7.35	41	1.955	0.81	0.00
3/20/2019 10:15	9.4	11.15	96.3	3.14	7.43	31	1.283	0.82	0.00
4/17/2019 9:35	11	10.97	98.1	2.56	7.3	644	1.593	0.64	0.02
5/22/2019 11:00	13.7	10.16	94.7	2.6	7.38	336	1.175	0.74	0.06
6/18/2019 10:55	15.8	9.67	95.9	2.85	7.43	548	0.865	0.66	0.00
Median	**11.15**	**10.66**	**93.85**	**3.16**	**7.41**	**366**	**1.02**	**0.94**	

Site Name:	CLA1						
Site Description:	Bush Park						
Collection Date/Time	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
7/17/2018 10:15	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0044	0.0027	27
8/21/2018 10:38	0.0037	< 0.0025	0.0012	< 0.0005	0.0199	0.0136	31
9/18/2018 10:30	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0097	0.0082	31
10/16/2018 9:55	< 0.0025	< 0.0025	0.0005	< 0.0005	0.0104	0.0031	27
11/20/2018 9:30	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0043	0.0035	27
12/17/2018 9:59	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0212	0.02	28
1/15/2019 9:55	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0092	0.0088	29
2/19/2019 10:05	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0126	0.0117	28
3/20/2019 10:15	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0071	0.008	28
4/17/2019 9:35	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0131	0.014	32
5/22/2019 11:00	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0097	0.0085	31
6/18/2019 10:55	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0067	0.0053	32
Median	**NA**	**NA**	**NA**	**NA**	**0.0097**	**0.0084**	**29**

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

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

Table 7.
Monthly Instream Data - Clark Creek (RY 2018/19)

Site Name:	CLA10								
Site Description:	Ewald Ave								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:48	15.9	9.13	70.7	4.83	7.22	759	1.6	0.51	0.00
8/21/2018 10:17	17	9.01	72	4.47	7.18	6488	1.52	0.67	0.00
9/18/2018 9:35	14.3	9.36	75.5	3.65	7.14	1019	1.43	0.85	0.00
10/16/2018 9:32	12.4	9.87	68	8.14	7.29	>24196	1.33	1.39	0.00
11/20/2018 9:39	9.5	10.17	68.3	2.63	7.52	2330	1.44	0.68	0.00
12/17/2018 10:00	11.7	9.92	72	3.27	7.03	161	2.36	0.81	0.47
1/15/2019 9:55	10.1	10.3	72.2	2.48	7.32	256	2.242	1.72	0.00
2/19/2019 9:50	10.1	10.77	78.9	2.37	6.85	269	2.788	0.49	0.00
3/20/2019 9:45	10.3	10.59	74.6	2.79	7.15	226	1.906	0.55	0.00
4/17/2019 9:20	11.2	10.53	76.9	2.42	6.87	<10	1.062	0.34	0.02
5/22/2019 9:40	13	9.75	76.3	1.8	6.81	148	1.851	0.55	0.06
6/18/2019 10:00	14.6	9.64	73	2.1	6.82	292	1.667	0.63	0.00
Median	**12.05**	**9.90**	**72.60**	**2.71**	**7.15**	**281**	**1.63**	**0.65**	

Site Name:	CLA10						
Site Description:	Ewald Ave						
Collection Date/Time	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
7/17/2018 9:48	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0065	0.0037	20
8/21/2018 10:17	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0062	0.0038	22
9/18/2018 9:35	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0095	0.008	21
10/16/2018 9:32	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0073	0.0039	21
11/20/2018 9:39	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0057	0.0051	18
12/17/2018 10:00	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0295	0.0305	21
1/15/2019 9:55	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0107	0.0114	19
2/19/2019 9:50	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0084	0.0083	23
3/20/2019 9:45	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0074	0.0074	21
4/17/2019 9:20	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0082	0.0103	22
5/22/2019 9:40	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0093	0.0094	23
6/18/2019 10:00	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0056	0.0058	20
Median	**NA**	**NA**	**NA**	**NA**	**0.0078**	**0.0077**	**21.00**

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

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

Table 7.
Monthly Instream Data - Croisan Creek (RY 2018/19)

Site Name:	CRO1								
Site Description:	River Rd S								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:17	17.7	7.3	93	9.11	7.28	1046	0.42	0.85	0.00
8/21/2018 10:35	16.7	6.71	98.7	7.43	7.06	517	0.27	1.29	0.00
9/18/2018 10:05	11.1	8.5	95.8	8.41	7.14	1120	0.24	1.26	0.00
10/16/2018 9:53	7.7	9.77	90.6	11.2	7.22	178	0.18	1.28	0.00
11/20/2018 10:20	3.3	11.81	90.2	3.65	7.59	308	0.18	1.21	0.00
12/17/2018 10:15	7.8	11.19	76.5	7.76	7.13	91	1.15	1.13	0.47
1/15/2019 10:22	4.9	12.26	64.7	4.19	7.34	56	1.525	2.28	0.00
2/19/2019 10:23	7	11.99	61.2	7.07	6.91	10	1.825	0.64	0.00
3/20/2019 10:05	7.5	11.78	61.4	3.58	7.07	20	1.006	0.98	0.00
4/17/2019 9:55	10.1	11.29	58.6	5.29	7.08	40	0.878	0.65	0.02
5/22/2019 10:07	12.2	10.06	74.3	3	6.85	236	0.442	0.87	0.06
6/18/2019 10:30	15.4	8.87	84.3	3.8	6.93	178	0.389	0.86	0.00
Median	**8.95**	**10.63**	**80.40**	**6.18**	**7.11**	**178**	**0.43**	**1.06**	

Site Name:	CRO10								
Site Description:	Ballantyne Rd.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:36	17.9	6.98	70.6	8.07	6.97	53	0.23	0.82	0.00
8/21/2018 11:20	17.5	6.61	77.8	8.98	6.75	125	0.07	1.34	0.00
9/18/2018 10:22	12.8	8.57	78.1	8.67	7.03	41	0.18	1.2	0.00
10/16/2018 10:15	9.1	9.73	72	8.42	7.12	24	0.2	1.48	0.00
11/20/2018 10:40	6.2	9.93	69.8	5.53	7.21	8	0.16	1.17	0.00
12/17/2018 10:32	7.9	10.71	53.6	7.76	7.16	39	1.01	1.17	0.47
1/15/2019 10:27	5.7	11.4	49.4	3.31	7.32	9	1.59	1.93	0.00
2/19/2019 10:52	6.9	11.72	49.3	5.02	6.86	5	1.936	0.73	0.00
3/20/2019 10:22	7.6	11.27	47.2	3.38	7.06	2	1.094	0.98	0.00
4/17/2019 10:20	9.9	10.93	45	5.02	7.05	6	0.894	0.33	0.02
5/22/2019 10:20	11.7	9.81	51.9	4.4	7.01	76	0.42	0.58	0.06
6/18/2019 10:50	15.4	8.47	64	8.24	6.97	99	0.325	0.62	0.00
Median	**9.50**	**9.87**	**58.80**	**6.65**	**7.04**	**32**	**0.37**	**1.08**	

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 - Gibson Creek (RY 2018/19)

Site Name:	GIB1								
Site Description:	Wallace Rd.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 11:05	19.5	7	103	6.94	7.26	59	0.41	0.77	0.00
8/21/2018 11:33	19.4	7.11	105.6	8.1	7.32	291	0.32	1.06	0.00
9/18/2018 11:30	13.6	7.54	108.1	6.97	7.29	96	0.33	1.37	0.00
10/16/2018 11:00	11	7.88	105.5	9.88	7.35	105	0.32	1.32	0.00
11/20/2018 10:55	5	10.55	107.7	6.39	7.41	36	0.47	1.33	0.00
12/17/2018 11:02	8.1	10.9	95.8	13	7.18	114	1.44	1.05	0.47
1/15/2019 10:54	5.1	12.25	79.6	6.12	7.45	23	2.012	1.51	0.00
2/19/2019 11:00	6.9	11.91	75.8	11	7.29	26	2.227	0.74	0.00
3/20/2019 11:14	9.6	11.29	80.5	7.32	7.73	44	1.699	0.73	0.00
4/17/2019 10:30	10.7	11	75	11	7.4	129	1.91	0.63	0.02
5/22/2019 12:10	14.4	9.52	88.5	4.8	7.37	93	1.039	0.82	0.06
6/18/2019 12:39	16.5	8.15	97.6	5.84	7.35	130	0.586	0.76	0.00
Median	**10.85**	**10.04**	**96.70**	**7.15**	**7.35**	**94.5**	**0.81**	**0.94**	

Site Name:	GIB15								
Site Description:	Brush College Rd.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 11:20	18.8	8.05	107.1	8.02	7.45	214	0.51	0.56	0.00
8/21/2018 11:45	16.7	8.14	115.8	9.28	7.48	579	0.16	0.99	0.00
9/18/2018 11:40	11.3	9.08	122.2	20.2	7.57	2420	0.42	2.19	0.00
10/16/2018 11:15	7.7	9.72	118.3	11.8	7.41	488	0.94	1.73	0.00
11/20/2018 11:10	3.6	10.2	112.6	3.4	7.19	23	0.94	1.71	0.00
12/17/2018 11:30	6.9	10.67	99.1	9.28	7.07	34	1.56	1.26	0.47
1/15/2019 11:05	5.8	11.8	81.4	5.27	7.15	23	2.336	1.74	0.00
2/19/2019 11:20	7.5	11.66	77	8.73	7.16	15	2.437	0.51	0.00
3/20/2019 11:27	9.6	11.03	82.7	11.6	7.31	172	2.017	0.54	0.00
4/17/2019 10:40	10.4	10.95	74.9	8.09	7.05	31	1.771	0.39	0.02
5/22/2019 12:20	13.8	9.64	89.8	4.1	7.24	70	1.547	0.8	0.06
6/18/2019 13:03	18	8.43	94.7	5.53	7.39	435	0.958	0.68	0.00
Median	**10.00**	**9.96**	**96.90**	**8.41**	**7.28**	**345**	**1.25**	**0.90**	

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 - Glenn Creek (RY 2018/19)

Site Name:	GLE1								
Site Description:	River Bend Rd.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:50	18.1	7.73	123.7	8.94	7.41	187	0.63	0.71	0.00
8/21/2018 11:19	16.8	7.99	122.6	9.93	7.49	457	0.62	1.01	0.00
9/18/2018 11:15	12.3	9.17	116.4	6.7	7.47	980	0.68	1	0.00
10/16/2018 10:45	9.2	9.74	120.7	6.88	7.52	1203	0.44	1.65	0.00
11/20/2018 10:30	4.9	10.81	118.9	3.92	7.45	210	0.39	1.49	0.00
12/17/2018 10:50	8.6	10.79	82.4	7.54	7.21	166	0.9	1.16	0.47
1/15/2019 10:38	5.7	12.03	89.5	4.86	7.44	137	1.918	1.8	0.00
2/19/2019 10:50	7.4	11.85	84.3	6.61	7.33	26	2.339	0.66	0.00
3/20/2019 10:58	9.5	11.16	84.8	6.23	7.5	141	1.301	0.74	0.00
4/17/2019 10:20	10.4	10.98	82.6	8.06	7.33	50	1.623	0.44	0.02
5/22/2019 11:55	13.5	9.89	98.2	5.2	7.39	579	0.851	0.65	0.06
6/18/2019 12:05	16.1	8.68	117	7.05	7.48	126	0.648	0.83	0.00
Median	**9.95**	**10.34**	**107.30**	**6.79**	**7.45**	**177**	**0.77**	**0.92**	

Site Name:	GLE10								
Site Description:	Hidden Valley Dr.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 11:30	16.4	5.76	102	5.6	6.95	461	0.39	1.04	0.00
8/21/2018 12:00	16.1	5.54	116.7	19.1	6.94	1120	0.44	1.46	0.00
9/18/2018 12:05	11.4	8.68	103.9	3.73	7.24	105	0.06	1	0.00
10/16/2018 11:30	No Flow								0.00
11/20/2018 11:25	5	11.69	75.4	3.58	7.35	45	0.13	1.52	0.00
12/17/2018 11:43	7.4	11.2	68.1	5.96	7.23	14	1.29	0.77	0.47
1/15/2019 11:25	6.2	11.87	60.3	6.26	7.23	31	2.008	2.01	0.00
2/19/2019 11:30	6.9	11.94	57.4	10	7.03	8	2.167	0.5	0.00
3/20/2019 11:40	9.2	11.2	54.4	7.99	7.37	46	1.236	0.67	0.00
4/17/2019 10:55	9.8	11.19	54.2	12.3	7.1	26	1.395	0.36	0.02
5/22/2019 12:40	12.1	10.33	60.9	7	7.28	61	0.66	0.6	0.06
6/18/2019 13:18	14.8	9.73	63.5	7.78	7.6	2420	0.431	0.6	0.00
Median	**8.30**	**11.19**	**63.50**	**7.00**	**7.23**	**46**	**0.66**	**0.77**	

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 - West Fork Little Pudding River (RY 2018/19)

Site Name:	LPW1									
Site Description:	Cordon Rd.									
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs	TSS
7/17/2018 12:05	No Flow								0.00	
8/21/2018 13:20	No Flow								0.00	
9/18/2018 13:15	No Flow								0.00	
10/16/2018 13:03	No Flow								0.00	
11/20/2018 12:20	No Flow								0.00	
12/17/2018 12:00	7.8	8.77	62.6	15	7.1	649	0.3	1.53	0.47	7.80
1/15/2019 12:10	4.1	10.98	196.8	7.31	7.08	249	2.356	1.67	0.00	7.00
2/19/2019 12:25	6.9	12.36	202.2	11.9	7.03	66	3.959	0.9	0.00	12.40
3/20/2019 12:25	11.5	14.16	241.6	7.04	7.46	299	1.637	1.19	0.00	4.00
4/17/2019 12:06	12.5	13.56	197.2	4.16	7.11	649	2.103	0.72	0.02	3.40
5/22/2019 12:00	15.3	7.53	174.4	8.8	6.98	>2420	0.344	1.57	0.06	5.80
6/18/2019 13:00	No Flow								0.00	
Median	**9.65**	**11.67**	**197.00**	**8.06**	**7.09**	**299**	**1.87**	**1.36**		**6.4**

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

Table 7.
Monthly Instream Data - Mill Creek (RY 2018/19)

Site Name:	MIC1								
Site Description:	Front St.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:00	20.6	8.62	54.7	4.79	7.31	160	0.29	0.7	0.00
8/21/2018 9:15	18.6	9.16	51.6	3.48	7.41	210	0.13	0.75	0.00
9/18/2018 8:40	12.6	10.38	47.7	3.83	7.83	649	0.08	0.9	0.00
10/16/2018 8:30	10.1	11.11	54	2.48	6.97	411	0.12	1.31	0.00
11/20/2018 8:25	5.9	12.17	73.9	2	7.75	79	0.23	1.09	0.00
12/17/2018 9:10	7.8	11.54	131.8	16.3	6.92	228	4.94	1.95	0.47
1/15/2019 9:05	4.3	12.56	115.4	3.93	7.4	222	4.401	2.27	0.00
2/19/2019 8:50	6.5	12.32	95.9	8.54	7.02	88	3.784	0.66	0.00
3/20/2019 8:50	10.6	10.98	94.3	3.92	7.28	20	2.675	1.02	0.00
4/17/2019 8:33	11	10.89	93.4	6.89	7	51	2.668	0.56	0.02
5/22/2019 8:55	13.6	10.09	61.3	4	7.23	187	0.55	0.69	0.06
6/18/2019 8:46	18.9	9.05	56.8	5.02	7.28	219	0.273	0.92	0.00
Median	**10.80**	**10.94**	**67.60**	**3.97**	**7.28**	**198.5**	**0.42**	**0.91**	

Site Name:	MIC10								
Site Description:	Turner Rd								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 11:49	20.2	9.36	50.9	6.28	7.63	104	0.24	0.93	0.00
8/21/2018 13:10	18.8	10.19	47.9	4.2	7.96	84	0.13	0.97	0.00
9/18/2018 12:53	13.2	11.03	44.2	4.14	7.69	106	0.07	1.02	0.00
10/16/2018 12:16	10.5	11.66	48.7	3.59	7.64	34	0.1	1.2	0.00
11/20/2018 11:45	5.5	13.34	70.4	4.9	7.74	46	0.31	1.72	0.00
12/17/2018 11:25	7.8	11.39	133	10.1	7.06	120	5.42	1.15	0.47
1/15/2019 11:50	4.5	12.39	111.2	5.23	7.01	579	4.722	2.28	0.00
2/19/2019 11:58	6.6	11.91	90.9	10.9	6.82	84	4.012	0.76	0.00
3/20/2019 11:33	9.8	11.48	86	4.69	7.11	27	2.648	1.05	0.00
4/17/2019 11:48	10.9	10.92	87.2	7.17	7	55	2.944	0.71	0.02
5/22/2019 11:30	13.3	10.91	56.4	5.6	7.08	98	0.586	1.07	0.06
6/18/2019 12:45	18.3	10.11	51.5	6.26	7.34	99	0.241	0.87	0.00
Median	**10.70**	**11.21**	**63.40**	**5.42**	**7.23**	**91**	**0.45**	**1.04**	

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 - Mill Race (RY 2018/19)

Site Name:	MRA1								
Site Description:	High St.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:50	20.9	8.83	50.9	4.51	7.57	186	0.26	0.88	0.00
8/21/2018 10:10	18.5	9.35	48	6.09	7.55	613	0.1	1.11	0.00
9/18/2018 9:43	12.6	10.67	44.9	3.34	7.66	387	0.06	1	0.00
10/16/2018 9:25	9.8	11.18	51.4	2.49	7.53	649	0.1	1.3	0.00
11/20/2018 9:05	5.2	12.58	62.3	2.3	7.53	461	0.18	1.15	0.00
12/17/2018 9:38	7.5	11.85	129.9	16.2	7.27	260	4.83	1.29	0.47
1/15/2019 9:30	3.8	12.91	113.4	4.43	7.47	178	4.426	2.19	0.00
2/19/2019 9:35	5.7	12.35	95.3	7.19	7.31	135	3.866	0.81	0.00
3/20/2019 9:46	10.1	11.59	90.2	3.1	7.54	42	2.553	0.82	0.00
4/17/2019 9:15	10.7	11.2	91.2	19.8	7.34	119	2.806	0.97	0.02
5/22/2019 10:15	14.1	10.46	58.1	3.5	7.52	155	0.508	0.79	0.06
6/18/2019 10:26	19	9.44	53.1	3.81	7.58	147	0.258	0.91	0.00
Median	**10.40**	**11.19**	**60.20**	**4.12**	**7.53**	**182**	**0.38**	**0.99**	

Site Name:	MRA10								
Site Description:	19th St.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:10	20.6	8.08	51	4.83	7.34	99	0.25	0.78	0.00
8/21/2018 9:25	18.2	8.82	47.7	3.51	7.29	291	0.1	0.9	0.00
9/18/2018 9:08	12.3	10.17	44.8	4.05	7.29	111	0.06	0.99	0.00
10/16/2018 9:00	9.8	10.92	49.9	2.25	7.32	194	0.1	1.31	0.00
11/20/2018 8:30	5	11.84	62.9	1.97	7.44	272	0.18	1.2	0.00
12/17/2018 9:06	7.4	11.36	128.5	14.7	7.06	162	4.97	1.35	0.47
1/15/2019 9:05	3.9	12.61	114.4	4.08	7.4	184	4.628	2.21	0.00
2/19/2019 9:00	6.2	12.23	94.5	8.2	7.18	104	4.025	0.82	0.00
3/20/2019 9:02	9.7	10.77	90.7	3.45	7.21	11	2.549	0.91	0.00
4/17/2019 8:27	10.6	10.76	91.3	8.24	7.13	48	2.706	0.81	0.02
5/22/2019 9:20	13.4	10.24	58.3	4.7	7.17	98	0.52	0.93	0.06
6/18/2019 9:41	18.6	8.81	53.2	4.44	7.36	152	0.251	0.88	0.00
Median	**10.20**	**10.77**	**60.60**	**4.26**	**7.29**	**131.5**	**0.39**	**0.92**	

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 - Pringle Creek (RY 2018/19)

Site Name:	PRI1								
Site Description:	Waterfront Park								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:35	20.5	8.68	53.8	4.86	7.51	121	0.25	0.98	0.00
8/21/2018 9:39	18.4	9.32	50.1	5.5	7.58	488	0.09	1.03	0.00
9/18/2018 9:25	12.6	10.46	46.7	3.67	7.55	152	0.07	1.16	0.00
10/16/2018 9:15	9.9	11.19	52.1	2.73	7.44	199	0.11	1.4	0.00
11/20/2018 8:50	5.1	12.52	65.9	2.08	7.51	326	0.21	1.14	0.00
12/17/2018 9:21	7.4	11.68	122.6	13	7.18	131	4.5	1.56	0.47
1/15/2019 9:17	4	12.9	112.3	3.69	7.46	148	4.469	2.2	0.00
2/19/2019 9:20	6.4	12.3	93.5	8.27	7.25	111	3.782	0.85	0.00
3/20/2019 9:30	9.7	11.42	90.7	3.77	7.48	102	2.467	1.02	0.00
4/17/2019 8:45	10.6	10.99	90.8	9.11	7.2	59	2.581	0.71	0.02
5/22/2019 9:50	13.5	10.3	61.1	4.3	7.25	129	0.5	0.91	0.06
6/18/2019 10:03	18.5	9.38	56.3	3.99	7.44	129	0.248	0.75	0.00
Median	**10.25**	**11.09**	**63.50**	**4.15**	**7.45**	**130**	**0.38**	**1.03**	

Site Name:	PRI1						
Site Description:	Waterfront Park						
Collection Date/Time	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
7/17/2018 9:35	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	19
8/21/2018 9:39	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	16
9/18/2018 9:25	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	19
10/16/2018 9:15	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	22
11/20/2018 8:50	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0051	< 0.0025	22
12/17/2018 9:21	0.0026	< 0.0025	< 0.0005	< 0.0005	0.0049	0.0027	42
1/15/2019 9:17	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	37
2/19/2019 9:20	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0032	< 0.0025	32
3/20/2019 9:30	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	32
4/17/2019 8:45	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0031	0.0034	33
5/22/2019 9:50	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	22
6/18/2019 10:03	< 0.0025	< 0.0025	< 0.0005	< 0.0005	< 0.0025	< 0.0025	20
Median	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**22**

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

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

Table 7.
Monthly Instream Data - Pringle Creek (RY 2018/19)

Site Name:	PRI5								
Site Description:	Bush Park								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:20	21.2	8.09	80.2	3.32	7.51	387	0.27	0.75	0.00
8/21/2018 10:45	19.9	8.66	91.5	3.25	7.6	308	0.3	1.08	0.00
9/18/2018 10:35	14.5	9.67	79.6	4.1	7.56	548	0.23	1.32	0.00
10/16/2018 10:15	10.7	10.51	79.7	3.72	7.57	225	0.27	1.5	0.00
11/20/2018 9:40	4.6	12.21	83.4	5.8	7.46	201	0.51	1.19	0.00
12/17/2018 10:10	8.3	11.03	81.9	7.54	7.35	72	1.16	1.14	0.47
1/15/2019 10:00	5.6	12.23	92.4	4.54	7.55	28	1.782	1.98	0.00
2/19/2019 10:10	7.3	12	85.6	8.48	7.41	12	1.985	0.63	0.00
3/20/2019 10:20	9.9	11.86	89.4	3.36	7.7	93	1.293	0.93	0.00
4/17/2019 9:40	11	11.34	85.4	4.65	7.46	27	1.248	0.63	0.02
4/22/2019 11:05	15.4	9.78	84.8	3.1	7.5	91	0.724	1.13	0.06
6/18/2019 11:33	19.4	8.95	90.9	2.53	7.61	152	0.388	0.94	0.00
Median	**10.85**	**10.77**	**85.10**	**3.91**	**7.53**	**122.5**	**0.62**	**1.11**	

Site Name:	PRI5						
Site Description:	Bush Park						
Collection Date/Time	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
7/17/2018 10:20	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0027	< 0.0025	29
8/21/2018 10:45	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0027	< 0.0025	33
9/18/2018 10:35	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0031	< 0.0025	29
10/16/2018 10:15	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0025	< 0.0025	30
11/20/2018 9:40	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.004	< 0.0025	30
12/17/2018 10:10	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0115	0.0096	27
1/15/2019 10:00	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0055	0.0044	32
2/19/2019 10:10	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0089	0.0068	29
3/20/2019 10:20	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0036	0.0026	29
4/17/2019 9:40	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0066	0.0073	30
4/22/2019 11:05	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0066	0.0042	29
6/18/2019 11:33	< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0045	0.0029	16
Median	**NA**	**NA**	**NA**	**NA**	**0.0043**	**0.0044**	**29.00**

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

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

Table 7.
Monthly Instream Data - Shelton Ditch (RY 2018/19)

Site Name:	SHE1								
Site Description:	Church St.								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 10:00	20.5	8.88	52.5	6.02	7.57	56	0.28	0.91	0.00
8/21/2018 10:21	18.3	9.44	47.9	4.39	7.66	109	0.11	0.87	0.00
9/18/2018 10:04	12.4	10.58	45	4.55	7.54	105	0.07	0.97	0.00
10/16/2018 9:35	9.9	11.28	49.7	3.2	7.47	124	0.11	1.14	0.00
11/20/2018 9:15	5	12.65	63.5	2.58	7.54	42	0.19	1.45	0.00
12/17/2018 9:47	7.5	11.75	128.3	14.3	7.21	155	4.89	1.27	0.47
1/15/2019 9:41	4	12.95	113.9	4.96	7.47	308	4.35	2.42	0.00
2/19/2019 9:50	6.3	12.38	83.8	8.71	7.21	96	3.888	0.97	0.00
3/20/2019 9:57	9.5	11.6	89.3	3.71	7.5	28	2.608	0.95	0.00
4/17/2019 9:23	10.5	11.06	90.5	6.83	7.3	41	2.748	0.8	0.02
5/22/2019 10:33	13.4	10.49	58.2	4.4	7.5	55	0.523	0.91	0.06
6/18/2019 10:37	18.5	9.51	53.5	4.68	7.52	49	0.257	0.94	0.00
Median	**10.20**	**11.17**	**60.85**	**4.62**	**7.50**	**76**	**0.40**	**0.96**	

Site Name:	SHE10								
Site Description:	Airport Road								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:00	20.2	8.9	50.6	5.53	7.36	86	0.27	0.71	0.00
8/21/2018 9:00	18	9.43	47.3	4.08	7.6	81	0.12	0.69	0.00
9/18/2018 8:50	12.3	10.59	44.7	5.97	7.8	214	0.07	0.84	0.00
10/16/2018 8:45	9.8	11.35	48.7	3.45	7.49	70	0.11	1.19	0.00
11/20/2018 8:05	5.1	12.37	61.1	2.06	7.47	30	0.19	0.91	0.00
12/17/2018 8:55	7.4	11.7	128.6	13.6	7.15	158	5.01	1.1	0.47
1/15/2019 8:50	3.9	12.83	113.4	4.5	7.3	345	4.21	1.88	0.00
2/19/2019 8:50	6.2	12.34	93.4	8.92	7.17	111	4.101	0.68	0.00
3/20/2019 8:35	9.3	11.28	88.9	4.11	7.3	30	2.691	0.8	0.00
4/17/2019 8:15	10.4	11.06	90.1	7.89	7.1	44	2.76	0.64	0.02
5/22/2019 9:05	13	10.53	57.2	5.1	7.15	86	0.538	0.96	0.06
6/18/2019 9:25	18.3	9.44	52.8	5.43	7.16	83	0.265	0.82	0.00
Median	**10.10**	**11.17**	**59.15**	**5.27**	**7.30**	**84.5**	**0.40**	**0.83**	

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 - Willamette River (RY 2018/19)

Site Name:	WR1								
Site Description:	Sunset Park (Keizer)								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 12:50	23.6	9.95	71.5	1.3	7.67	2	0.11	0.71	0.00
8/21/2018 14:20	22.4	9.91	71.4	1.4	8.25	3	0.08	0.86	0.00
9/18/2018 14:10	16.1	11.27	66.7	2.1	7.95	14	0.11	1.09	0.00
10/16/2018 14:38	14.7	11.04	70.4	5.1	7.75	8	0.11	1.24	0.00
11/20/2018 14:05	8.1	12.11	78.2	1.39	7.96	6	0.19	0.79	0.00
12/17/2018 13:15	7.2	11.59	75.6	5.6	7.21	36	0.83	1.14	0.47
1/15/2019 13:40	5.8	12.15	69.9	4.81	7.7	18	0.709	1.97	0.00
2/19/2019 13:55	6.3	11.98	79.3	10.5	7.41	17	1.232	0.84	0.00
3/20/2019 13:29	10.1	11.49	61.4	6.06	7.77	4	0.417	0.92	0.00
4/17/2019 13:00	9.2	10.88	54.9	21.5	7.37	40	0.347	0.55	0.02
5/22/2019 13:00	15.1	12.2	65.7	2.7	7.93	16	0.197	1.12	0.06
6/18/2019 14:16	20.1	11.27	66.2	2.51	8.02	4	0.117	1.16	0.00
Median	**12.40**	**11.38**	**70.15**	**3.76**	**7.76**	**11**	**0.19**	**1.01**	

Site Name:	WR1				
Site Description:	Sunset Park (Keizer)				
Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
26	< 0.050	0.037	56	58	2
28	< 0.050	0.035	61	64	3.2
27	< 0.050	0.032	67	70	2.8
28	< 0.050	0.043	65	73	8.2
31	< 0.050	0.031	65	67	2.2
26	< 0.050	0.05	68	74	5.8
25	< 0.050	0.043	58	62	3.8
26	< 0.050	0.052	76	85	9
24	< 0.050	0.033	59	65	6.3
23	< 0.050	0.08	59	80	20.9
27	< 0.050	0.026	74	78	3.8
17	< 0.050	0.043	53	58	4.9
26	**NA**	**0.04**	**63**	**68.5**	**4.35**

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 - Willamette River (RY 2018/19)

Site Name:	WR5								
Site Description:	Union Street Railroad Bridge								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 9:13	21.7	8.31	68.7	2.97	7.46	10	0.11	0.84	0.00
8/21/2018 9:40	20	8.56	66.2	2.36	7.44	16	0.08	0.72	0.00
9/18/2018 9:00	14.2	9.88	66.4	4.35	7.72	12	0.09	0.86	0.00
10/16/2018 8:52	11.7	10.6	68.5	4.47	7.53	13	0.09	1.37	0.00
11/20/2018 8:49	6.9	11.83	76.6	1.9	7.68	9	0.19	1.18	0.00
12/17/2018 9:25	7	11.71	71.5	5.66	7.22	57	0.74	1.13	0.47
1/15/2019 9:35	5	12.1	66.3	5.41	7.59	12	0.584	2.38	0.00
2/19/2019 9:26	5.7	12.21	74.7	11.5	7.15	13	1.035	1.22	0.00
3/20/2019 9:10	9.5	11.21	62.6	4.92	7.52	7	0.383	0.97	0.00
4/17/2019 8:50	9.3	11.02	54.7	22.2	7.23	47	0.338	0.94	0.02
5/22/2019 9:23	13.6	10.38	63.2	2.3	7.24	9	0.184	0.88	0.06
6/18/2019 9:23	18.3	9.1	65.6	2.63	7.34	8	0.112	0.91	0.00
Median	**10.60**	**10.81**	**66.35**	**4.41**	**7.45**	**12**	**0.19**	**0.96**	

Site Name:	WR5				
Site Description:	Union Street Railroad Bridge				
Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
26	< 0.050	0.037	56	60	3.5
27	< 0.050	0.036	60	65	4.8
27	< 0.050	0.032	67	71	3.8
27	< 0.050	0.038	65	70	4.6
30	< 0.050	0.033	69	70	0.8
26	< 0.050	0.05	58	63	5.4
26	< 0.050	0.039	58	64	6.2
25	< 0.050	0.056	77	87	10.3
23	< 0.050	0.033	58	64	6.3
23	< 0.050	0.083	56	77	21.4
26	< 0.050	0.024	66	69	3.2
16	< 0.050	0.043	57	62	5
26	**NA**	**0.0375**	**59**	**67**	**4.9**

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 - Willamette River (RY 2018/19)

Site Name:	WR10								
Site Description:	Halls Ferry Road (Independence)								
Collection Date/Time	Temp (°C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTU)	pH (S.U.)	E-Coli (#/ 100 mL)	NO_3-NO_2 (mg/L)	BOD (mg/L)	Rainfall previous 24 hrs
7/17/2018 12:00	22.1	9.45	69.2	1.79	7.68	3	0.12	0.75	0.00
8/21/2018 12:24	19.7	9.35	66.5	2.62	7.71	3	0.08	0.98	0.00
9/18/2018 12:25	15.5	10.54	66.2	3.32	7.85	11	0.09	1.17	0.00
10/16/2018 11:50	12.2	10.93	68.6	4.1	7.7	4	0.12	1.37	0.00
11/20/2018 12:10	7.6	12.08	75.2	1.56	7.62	4	0.17	1.15	0.00
12/17/2018 12:14	6.7	11.67	68.3	5.73	7.35	22	0.4	1.21	0.47
1/15/2019 12:00	5	12.25	65.5	4.85	7.27	5	0.493	2.2	0.00
2/19/2019 12:00	5.8	12.17	73.4	13.1	7.26	13	0.927	0.83	0.00
3/20/2019 12:10	9.3	11.38	59.3	6.23	7.49	10	0.307	1.24	0.00
4/17/2019 11:20	9.1	10.73	59.5	19.9	7.23	36	0.459	0.71	0.02
5/22/2019 13:05	13.8	11.2	63.3	2.6	7.47	8	0.254	1.72	0.06
6/18/2019 13:40	19.3	10.5	65.6	2.4	7.86	6	0.12	1.07	0.00
Median	**10.75**	**11.07**	**66.35**	**3.71**	**7.56**	**7**	**0.21**	**1.16**	

Site Name:	WR10				
Site Description:	Halls Ferry Road (Independence)				
Alkalinity (mg/L)	Ammonia (mg/L)	TP (mg/L)	TDS (mg/L)	TS (mg/L)	TSS (mg/L)
25	< 0.050	0.035	58	61	3.2
27	< 0.050	0.034	53	57	4.4
27	< 0.050	0.03	71	75	3.6
27	< 0.050	0.042	68	73	5.4
29	< 0.050	0.032	61	73	12
25	< 0.050	0.043	73	78	4.8
25	< 0.050	0.04	57	61	4
26	< 0.050	0.054	75	85	10.2
23	< 0.050	0.035	59	66	6.8
24	< 0.050	0.103	60	82	21.6
26	< 0.050	0.028	62	68	5.8
17	< 0.050	0.053	61	67	6.2
25.5	**NA**	**0.0375**	**61**	**70.5**	**5.6**

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 2018/19)

Site ID	Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (#/ 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
MRA10	07/17/2018 09:17	20.6	8.08	51	4.91	7.31	119	0.25	0.79								
CLA10	07/17/2018 09:56	16	9.12	70.9	5.29	7.16	697	1.57	0.55		< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0074	0.0043	20
PRI1	08/21/2018 09:50	18.4	9.32	49.8	5.56	7.53	548	0.09	0.97		< 0.0025	< 0.0025	< 0.0005	< 0.0010	< 0.0025	< 0.0025	20
CRO1	08/21/2018 10:49	16.7	6.72	98.6	7.47	7.1	345	0.26	1.03								
CRO10	08/21/2018 11:23	17.5	6.63	77.8	9.15	6.74	172	0.08	1.02								
MRA1	09/18/2018 09:46	12.6	10.67	44.9	3.25	7.65	488	0.06	1.08								
SHE1	09/18/2018 10:06	12.4	10.58	45	5.11	7.53	124	0.07	1.04								
BAT12	09/18/2018 11:05	9.5	10	60.7	10	7.25	192	0.3	1.01								
CLA1	10/16/2018 10:00	11.3	10.53	87.4	6.4	7.48	428	0.53	1.34		< 0.0025	< 0.0025	0.0006	< 0.0005	0.0063	0.0033	29
BAT1	10/16/2018 10:39	9.9	8.97	59.3	15.6	7.06	517	0.36	1.27								
MIC10	10/16/2018 12:22	10.6	11.73	48.9	3.41	7.63	46	0.12	1.12								
PRI5	11/20/2018 09:45	4.6	12.2	83.4	5.43	7.45	99	0.51	1.37		< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0034	< 0.0025	29
GLE1	11/20/2018 10:35	4.9	10.79	118.8	3.66	7.43	308	0.39	1.35								
CGT1	11/20/2018 13:27	6.7	3.77	261.2	6.6	7.18	86	< 0.05	1.44								
GIB1	12/17/2018 11:14	8.1	10.85	95.9	13.1	7.13	79	1.38	1.12								
CGT5	12/17/2018 12:20	8.5	10.05	70.8	29.2	7.07	644	0.56	1.4								
MIC1	01/15/2019 09:10	4.3	12.58	115.5	4.13	7.42	210	4.526	2.33								
GIB15	01/15/2019 11:10	5.8	11.8	81.4	4.97	7.15	27	2.357	2.07								
GLE10	01/15/2019 11:30	6.2	11.87	60.3	6.09	7.22	24	2.045	2.07								
CLA10	02/19/2019 10:01	10.1	10.75	78.6	2.59	6.75	187	2.414	0.16		< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0091	0.0085	22
CRO1	02/19/2019 10:28	7	11.97	61.3	6.42	6.91	12	1.535	0.66								
SHE10	03/20/2019 08:38	9.3	11.28	88.9	3.93	7.3	24	2.632	0.93								
MRA10	03/20/2019 09:04	9.7	10.78	90.7	3.52	7.2	20	2.578	0.84								
PRI1	04/17/2019 08:50	10.6	10.99	90.7	6.46	7.2	58	2.656	0.67		< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0031	< 0.0025	33
CLA10	04/17/2019 09:29	11.3	10.54	76.9	2.3	6.83	43	2.25	0.3		< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.0082	0.0088	22
CRO1	04/17/2019 10:01	10.1	11.28	58.5	5.44	7.05	50	1.017	0.28								
MRA1	05/22/2019 10:20	14.1	10.46	58.1	3.6	7.52	138	0.501	0.93								
CRO10	05/22/2019 10:25	11.7	9.8	51.9	4.5	7.01	88	0.4	0.77								
SHE1	05/22/2019 10:37	13.4	10.49	58.2	4.5	7.48	58	0.555	0.89								
CLA1	06/18/2019 11:00	15.9	9.68	95.9	2.7	7.39	504	0.854	0.84		< 0.0025	< 0.0025	< 0.0005	< 0.0005	0.006	0.0058	32
BAT12	06/18/2019 11:34	17.3	9.03	46.4	8.8	7.1	172	0.237	0.69								
BAT1	06/18/2019 12:12	17.4	8.28	55	8.07	7.13	194	0.405	0.81								

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

Table 8.
Monthly Instream Data - Willamette River Duplicates (RY 2018/19)

Site ID	Collection Date/Time	Temp (C)	DO (mg/L)	Sp Cond (µS/cm)	Turb (NTUs)	pH (S.U.)	E-Coli (#/ 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)
WR1	12/17/2018 13:20	7.20	11.59	75.90	5.73	7.23	51	0.79	1.11	26	< 0.050	0.05	74	84	9.6
WR10	02/19/2019 12:05	5.8	12.17	73.4	14.6	7.25	23	0.897	0.74	26	< 0.050	0.054	72	82	10
WR5	07/17/2018 09:20	21.70	8.28	67.40	3.21	7.45	11	0.12	0.71	27	< 0.050	0.04	58	61	3.2
WR5	03/20/2019 09:10	9.50	11.21	62.60	4.92	7.52	7	0.349	0.97	24	< 0.050	0.032	60	66	6
WR10	02/19/2019 12:05	5.8	12.17	73.4	14.6	7.25	23	0.897	0.74	26	< 0.050	0.054	72	82	10

Note: Duplicate field measurements and duplicate grab samples are taken at a minimum of 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 Median Values for Continuous Instream Data (RY 2018/19)

Monthly Medians for **Turbidity** at Continuous Instream Sites												
	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
Station Name	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)
BAT3	8.76	9.19	9.99	10.36	11.04	NA	6.37	15.04	6.04	12.37	NA	8.61
BAT12	3.80	2.30	2.64	3.17	3.69	5.03	4.43	4.96	3.20	3.84	3.73	4.86
CLK1	3.28	3.36	3.15	3.61	NA	3.57	2.46	5.75	2.75	5.64	10.76	2.96
CLK12	5.16	5.19	2.62	2.85	2.51	2.94	2.23	3.04	1.84	2.18	1.81	1.99
GLE3	9.10	10.90	9.40	9.60	4.55	8.80	6.30	11.25	7.00	10.25	6.60	NA
GLE12	NA	NA	NA	NA	2.60	7.95	7.60	11.90	9.00	NA	8.40	7.99
MIC3	4.26	3.34	3.18	2.84	2.94	8.65	NA	23.92	5.02	5.05	3.93	3.87
MIC12	NA	NA	NA	NA	NA	NA	5.33	9.83	4.84	6.09	6.84	5.93
PRI3	2.03	NA	NA	5.12	NA	7.49	5.02	9.72	3.78	NA	NA	2.27
PRI12	3.19	2.90	2.58	2.57	3.69	6.51	4.12	12.51	3.49	7.02	4.36	5.26

Monthly Medians for **Specific Conductivity** at Continuous Instream Sites												
	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
Station Name	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Specific Conductivity (µS/cm)
BAT3	60.11	63.98	62.62	60.29	57.09	51.43	47.54	48.42	46.28	45.17	NA	51.71
BAT12	54.71	59.72	59.45	57.16	51.20	47.78	48.88	51.30	47.05	NA	46.06	46.29
CLK1	96.87	97.80	96.55	93.75	89.55	93.51	91.76	93.58	96.51	95.55	97.95	99.76
CLK12	74.30	75.14	74.24	70.37	71.87	73.47	73.14	76.46	77.31	76.18	75.96	74.87
GLE3	125.50	127.00	125.00	119.00	120.00	103.00	95.00	93.00	88.00	77.50	98.00	113.34
GLE12	NA	NA	NA	NA	81.00	NA	NA	NA	62.00	62.00	64.00	68.02
MIC3	53.25	NA	NA	52.93	63.34	117.67	111.21	96.78	94.67	90.62	59.99	57.15
MIC12	49.29	46.78	45.03	49.35	58.10	115.38	106.83	92.34	88.12	85.75	55.02	52.37
PRI3	96.22	96.64	97.28	96.87	103.79	97.23	NA	92.94	100.30	96.67	99.51	101.87
PRI12	66.94	62.04	60.50	63.71	125.98	105.17	93.77	83.26	86.68	82.28	78.01	73.58

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.

Table 10.
Monthly Median Values for Continuous Instream Data (RY 2018/19)

Monthly Medians for **Temperature** at Continuous Instream Sites												
	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
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	19.43	18.96	15.27	11.84	8.99	8.82	8.11	7.10	8.43	11.01	NA	16.36
BAT12	19.10	17.91	13.59	10.22	6.92	7.68	7.47	6.77	7.80	10.38	13.63	15.41
CLK1	18.39	18.52	16.08	13.74	10.67	10.32	9.49	8.58	9.64	11.57	13.96	15.75
CLK12	16.15	16.66	15.57	14.10	12.26	11.62	10.75	9.94	9.98	11.36	12.83	14.26
GLE3	18.65	18.14	15.10	12.30	9.00	9.04	8.17	7.28	9.32	11.79	14.42	15.52
GLE12	NA	NA	NA	NA	7.91	7.50	7.42	6.57	7.27	9.89	12.04	14.48
MIC3	21.96	20.42	15.48	12.64	8.51	8.13	7.43	6.63	9.16	12.99	14.62	18.71
MIC12	21.57	19.94	14.92	12.20	8.65	8.28	7.44	6.55	9.09	12.61	14.89	18.48
PRI3	21.50	20.47	16.98	13.59	9.26	8.89	8.23	7.46	9.70	12.65	16.03	18.20
PRI12	20.03	18.90	14.81	11.88	8.61	8.69	7.87	7.10	8.19	11.10	14.10	16.60

Monthly Medians for **pH** at Continuous Instream Sites												
	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
Station Name	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)	pH (S.U)
BAT3	6.63	6.64	6.71	6.72	6.26	NA	6.66	6.55	6.62	6.50	NA	6.74
BAT12	7.29	7.19	7.29	7.28	7.10	7.05	6.93	6.78	6.95	6.96	7.10	7.18
CLK1	7.30	7.40	7.36	7.34	NA	NA	7.30	7.06	7.18	7.07	7.04	NA
CLK12	7.12	7.17	7.09	NA	6.65	6.49	6.56	6.38	6.67	6.45	6.52	6.88
GLE3	7.51	7.56	7.52	7.39	7.05	6.91	6.97	6.89	7.06	6.87	6.93	7.35
GLE12	NA	NA	NA	NA	6.64	6.64	6.61	6.62	6.65	NA	6.80	7.34
MIC3	7.21	7.52	7.58	7.57	7.40	7.27	7.36	7.19	7.37	7.07	6.78	NA
MIC12	7.25	7.31	7.37	7.36	7.26	7.03	7.06	6.97	7.13	7.03	7.08	7.14
PRI3	7.36	7.47	7.51	7.54	7.21	7.27	7.29	7.18	7.32	7.29	6.99	6.94
PRI12	6.87	7.00	7.00	6.99	6.91	6.17	6.47	6.62	NA	6.68	6.64	6.70

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.

Table 10.
Monthly Median Values for Continuous Instream Data (RY 2018/19)

Monthly Medians for **Dissolved Oxygen** at Continuous Instream Sites												
	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
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	6.90	6.73	7.38	8.13	9.47	10.48	10.97	11.16	10.83	9.95	NA	7.88
BAT12	8.55	7.63	9.05	10.19	11.69	11.98	11.83	12.03	11.75	11.02	10.11	9.59
CLK1	9.11	9.03	9.21	9.69	10.62	10.69	10.90	11.22	10.90	10.45	9.71	9.27
CLK12	9.21	9.31	9.49	9.69	9.89	9.95	10.19	10.36	10.47	10.07	9.56	9.29
GLE3	8.29	8.50	8.81	9.54	10.24	11.20	11.48	11.66	11.19	10.42	9.46	9.13
GLE12	NA	NA	NA	NA	10.61	11.38	11.47	11.72	11.55	10.90	10.13	9.43
MIC3	8.00	8.33	9.48	10.32	11.45	11.95	11.88	11.90	11.25	10.23	9.68	8.72
MIC12	7.83	8.17	9.38	9.96	10.89	11.09	11.40	11.56	11.13	9.94	9.43	8.59
PRI3	7.63	7.76	8.31	8.99	9.56	10.85	11.16	11.38	10.67	9.88	8.74	8.15
PRI12	7.48	7.78	8.58	9.38	9.25	9.54	10.09	10.45	10.23	9.18	8.56	7.91

Monthly Medians for **Stage** at Continuous Instream Sites												
	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
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	3.96	3.97	3.94	4.02	4.83	4.80	5.55	4.79	4.95	4.36	4.09
BAT12	4.22	4.16	4.18	4.20	4.26	4.52	4.69	4.94	4.69	4.72	4.45	4.31
CLK1	3.81	3.76	3.86	3.83	3.95	4.16	4.12	4.32	4.05	4.10	3.98	3.77
CLK12	NA	NA	NA	NA	3.94	4.06	4.02	4.16	3.98	4.05	3.94	3.92
GLE3	4.00	3.98	3.97	4.00	4.11	4.42	4.40	4.61	4.37	NA	NA	NA
GLE12	0.52	0.47	0.50	0.54	0.75	0.97	1.07	1.18	1.04	1.13	0.92	0.80
LPW1	0.00	0.00	0.00	0.00	0.00	1.64	1.56	1.95	1.57	1.83	0.00	0.00
MIC3	5.42	5.34	5.43	5.37	5.24	6.03	5.83	6.62	5.85	6.05	5.56	5.41
MIC12	7.18	7.18	7.15	7.00	6.88	7.65	7.51	8.22	7.52	7.72	7.23	7.07
PRI3	4.28	4.29	4.29	4.33	4.35	4.73	4.64	4.98	4.46	4.59	4.28	4.17
PRI4	7.40	7.38	7.39	7.39	7.41	7.92	7.83	8.20	7.74	7.90	7.55	7.41
PRI12	4.25	4.24	4.21	4.13	3.99	4.43	4.40	4.74	4.38	4.46	4.30	4.26
SHE3	6.22	6.23	6.24	6.17	6.11	6.55	6.46	6.97	6.45	6.68	6.39	6.27

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.

Table 11.
Instream Storm Monitoring Data (RY 2018/19)

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
10/27/2018 23:30	11199	8.49	6.74	15.5	37.7														
10/29/2018 11:08						30.1	0.0632	0.0037	0.507	0.034	0.0613	< 0.0005	52	< 0.050	0.34	0.01	1.64	12.8	716
12/09/2018 12:15	1039	12.25	6.86	5.9	42.1														
12/10/2018 10:00						38.5	0.0072	< 0.0025	0.126	0.0749	0.0031	< 0.0005	16	< 0.050	0.57	0.033	0.17	3.7	55.7
01/08/2019 04:20	410	11.58	6.9	7.67	53														
01/08/2019 10:30						46.6	0.0034	< 0.0025	0.0345	0.0228	0.0008	< 0.0005	20	< 0.050	0.952	0.019	0.065	1.7	16.4
03/12/2019 03:15	100	11.53	6.91	7.3	84.8														
03/12/2019 03:20 - DUP	100	11.58	6.98	7.2	82.7														
03/12/2019 08:15						69.9	0.0069	< 0.0025	0.0752	0.0381	0.0029	< 0.0005	25	0.122	0.616	0.012	0.157	2.5	54.5
05/14/2019 09:02	1130	9.46	6.96	13.64	134.5														
05/14/2019 09:05 - DUP	987	9.46	6.96	13.64	133.7														
05/15/2019 09:05						92.7	0.0246	0.0184	0.509	0.453	0.0016	< 0.0005	65	0.371	1.262	0.063	0.211	21	31

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
10/27/2018 23:52	14136	8.47	6.78	15.3	33.3														
10/27/2018 11:55 - DUP	8664	8.84	6.83	15.2	34														
10/29/2018 11:25						31.9	0.0523	0.0033	0.427	0.0229	0.0532	< 0.0005	26	< 0.050	0.29	0.015	1.52	11.8	684
12/09/2018 12:40	1137	12.05	7.09	5.9	52.8														
12/10/2018 10:30						46.8	0.0068	< 0.0025	0.084	0.0317	0.0031	< 0.0005	19	< 0.050	0.48	0.02	0.175	3.2	62.3
01/08/2019 04:55	100	11.5	7.24	7.39	65.2														
01/08/2019 11:10						57.4	0.0032	< 0.0025	0.0259	0.0117	0.0009	< 0.0005	26	< 0.050	1.42	0.011	0.086	1.9	26.2
03/12/2019 03:40	100	11.27	7.06	7.4	86.1														
03/12/2019 08:40						77.8	0.0031	< 0.0025	0.031	0.0164	0.001	< 0.0005	26	< 0.050	1.064	< 0.010	0.073	1.9	22.4
05/14/2019 10:08	203	9.28	7.29	14.99	94.3														
05/15/2019 08:45						75.6	0.006	0.005	0.0386	0.0313	< 0.0005	< 0.0005	33	< 0.050	0.962	0.01	0.059	4.5	5.4

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

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

Table 11.
Instream Storm Monitoring Data (RY 2018/19)

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
10/28/2018 00:15	2420	7.54	6.71	14.7	115														
10/29/2018 10:00						12.5	0.0065	< 0.0025	0.0428	0.0085	0.0111	< 0.0005	34	< 0.050	0.85	0.027	0.25	5.8	63
12/09/2018 13:10	932	10.9	6.74	6.5	109														
12/09/2018 13:20 - DUP	1210	10.18	6.71	6.5	106.4														
12/10/2018 09:15						84.8	0.0038	< 0.0025	0.0132	0.0056	0.0005	< 0.0005	35	< 0.050	1.4	0.013	0.106	2.4	25
01/08/2019 05:20	< 100	9.8	7	7.5	88.9														
01/08/2019 05:25 - DUP	<100	9.41	6.94	7.5	88.7														
01/08/2019 12:15						70.8	< 0.0025	< 0.0025	0.0672	0.0304	< 0.0005	< 0.0005	31	< 0.050	2.621	< 0.010	0.059	1.4	15.4
03/12/2019 04:40	100	10.27	7.18	6.6	76.1														
03/12/2019 07:40						70.7	< 0.0025	< 0.0025	0.0087	0.0045	< 0.0005	< 0.0005	13	< 0.050	1.758	0.011	0.055	0.9	15.2
05/14/2019 10:35	173	9.88	7.04	13.54	75.3														
05/15/2019 09:35						69	< 0.0025	< 0.0025	0.106	0.028	< 0.0005	< 0.0005	27	< 0.050	1.059	< 0.010	0.04	1.6	6

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

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

Table 12.
Stormwater Monitoring Data (RY 2018/19)

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
10/27/2018 21:55	12997	9.69	6.72	15.9	37.8														
10/29/2018 10:30						22.5	0.0202	0.0056	0.183	0.0802	0.0077	< 0.0005	23	< 0.050	0.8	0.154	0.51	11.1	127
12/09/2018 10:50	1553	12.36	6.64	6.4	25.4														
12/10/2018 09:50						23	0.0082	0.0033	0.0566	0.0329	0.0024	< 0.0005	9	< 0.050	0.21	0.059	0.202	4.8	45.2
01/08/2019 02:40	520	11.7	7.56	8.02	49.5														
01/08/2019 10:51						37.5	0.0042	0.0026	0.0385	0.0271	0.0012	< 0.0005	16	< 0.050	0.835	0.085	0.152	4.7	16.8
03/12/2019 02:55	520	11.53	6.7	7.4	69.6														
03/12/2019 06:50						59.7	0.0043	< 0.0025	0.0355	0.0268	0.0008	< 0.0005	19	< 0.050	0.766	0.035	0.09	1.8	13.6

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
10/27/2018 21:23	1203	9.27	10.65	16.1	39.3														
10/29/2018 10:15						62.6	0.0194	0.0055	0.168	0.0662	0.008	< 0.0005	7	< 0.050	0.17	< 0.010	0.269	8.9	86
12/09/2018 10:30	408	11.48	6.22	7.8	44														
12/10/2018 09:30						24.3	0.0082	0.004	0.175	0.144	0.0018	< 0.0005	9	0.139	0.27	< 0.010	0.106	8.4	31.3
01/08/2019 03:05	200	12.35	6.97	5.62	17.3														
01/08/2019 11:25						14.6	0.0038	< 0.0025	0.0576	0.04	0.0006	< 0.0005	< 5	0.078	0.089	< 0.010	0.065	2.6	17.6
03/12/2019 02:30	806	11.4	6.53	6.5	42.9														
03/12/2019 06:30						43.9	0.0044	< 0.0025	0.0595	0.0449	0.0008	< 0.0005	13	0.113	0.231	< 0.010	0.059	< 1.5	17.6

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
10/27/2018 22:25	173290	8.43	6.74	15.6	31.4														
10/29/2018 11:45						30.2	0.0324	0.0034	0.387	0.053	0.0149	< 0.0005	24	< 0.050	0.35	0.06	0.924	5.1	375
12/09/2018 11:20	183	11.2	6.64	6.6	30.6														
12/09/2018 14:30						21.4	0.0081	0.0038	0.097	0.0602	0.0017	< 0.0005	9	< 0.050	0.19	0.068	0.239	4.1	50
01/08/2019 03:40	< 100	10.99	6.77	6.63	25.8														
01/08/2019 06:00						22.6	0.0054	< 0.0025	0.0905	0.0626	0.001	< 0.0005	12	< 0.050	0.887	0.03	0.149	3.4	33
03/12/2019 01:55	100	11.21	7.13	6.7	40.2														
03/12/2019 06:00						37.9	0.005	0.0036	0.0482	0.0366	0.0005	< 0.0005	15	< 0.050	0.169	0.059	0.145	4.6	18.8

[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; therefore a time paced sampling method is utilized.

Attachment A. Dry Weather Priority Outfall Screening Inspection Results (RY 2018/2019)

Dry Weather Priority Out Fall Screening Inspection Results - RY 2018/2019

Basin	Primary Outfall	Inspection Location	Type	Date	Time	Flow?	Est. Flow (GPM)	Temp °C Receiving Water	Temp °C	pH S.U.	Sp Cond µS/cm	Turbidity NTU	Total Cl mg/L	Fl mg/L	Detergents mg/L	NH3 mg/L	K mg/L	NA mg/L	E. coli MPN/100 mL	Outfall Notes	
Battle Creek	D45444224	D45444224	Outfall	8/27/2018	11:05	Yes	1-5	16.6	18.3	6.80	57.5		0.00							Past pipeshed investigations have indicated infiltration to stormline from nearby wetland.	
Claggett Creek	AmeriCold Outfall	AmeriCold Outfall	Outfall	8/22/2018	12:49	Yes	20-30	16.9	17.7	7.05	55.5	1.1	0.58		0.0					Reported to Environmental Services. Source is cooling water from Ameri Cold Logistics.	
Clark Creek	D42466417	D42466417	Outfall	9/20/2018	11:48	Yes	< 1	14.8	19.1		92.3	1.4	0.0	0.0					< 10	Pipeshed has been investigated, monitoring, and dye testing has failed to find a point source. Large section of failing pipe that shows infiltration has been placed on capital improvement project list.	
Clark Creek	D42468PVT	D42468PVT	Outfall	9/24/2018	11:02	Yes	< 1	13.7		7.69	143.1	3.9	0.06	0.4	0.0	0.04	1.038	10.2	31		First inspection after cross connection was discovered.
Croisan Creek	Unknown	Unknown	Outfall	8/27/2018	13:34	Yes	5-10	17.2	15.8	7.8	81.3		0.08							Outfall is outside of City limits. Marion County data does not identify this structure or contributing lines.	
East Bank Willamette	D42480215	D42480215	Outfall	9/24/2018	09:32	Yes	1-5	14.6	14.4	7.42	69.3	9.5	0.1	0.4	< 0.25	0.02				Leak Detection has been notified of location of leak, but is still working to isolate source due to its location under the railroad tracks.	

Basin	Primary Outfall	Inspection Location	Asset Type	Date	Time	Flow?	Est. Flow (GPM)	Temp °C Receiving Water	Temp °C	pH S.U.	Sp Cond µS/cm	Turbidity NTU	Total Cl mg/L	Fl mg/L	Detergents mg/L	NH3 mg/L	K mg/L	NA mg/L	E. coli MPN/100 mL	Outfall Notes	Inspection Comments
East Bank Willamette	D42482212	D42482212	Outfall	9/21/2018	11:13	Yes	20-30	16.9	17.2	7.71	58.8	0.8	0.45	0.0	0.0					Known drinking water leak that has been reported to Leak Detection. Leak Detection has been working to find source, but is still unable.	
East Bank Willamette	D42482213	D42482213	Outfall	9/21/2018	11:10	No															
East Bank Willamette	D42482223	D42482223	Outfall	9/21/2018	09:57	No															White flow line from paint spill according to Environmental services
East Bank Willamette	D42482230	D42482230	Outfall	9/21/2018	11:27	No															
East Bank Willamette River	D42476279	D42476279	Manhole	9/21/2018	09:18	No															First upstream manhole inspected
Lower Claggett Creek	D51488203	D51488203	Outfall	9/11/2018	11:21	Yes	< 1													Appears to be toilet paper caught in blackberry around outfall. Lots of homeless activity in area that may be the cause. Recommend TV Inspection for cross connect.	Not enough flow to sample. Pipeshed Investigation revealed no evidence of cross-connection or source of moisture.
Lower Claggett Creek	D51488236	D51488236	Outfall	9/11/2018	11:14	No															
Lower Claggett Creek	D54494201	D54494201	Outfall	9/11/2018	10:51	No															
Mill Creek	D42476203	D42476203	Outfall	9/19/2018	11:22	No															
Mill Creek	D42478237	D42478237	Outfall	9/19/2018	09:06	Yes	1-5	13.0	16.6	7.08	56.9	4.3	0.44	0.0	0.0	0.0				Outfall reported to Leak Detection in 2017. Leak Detection unable to find a source.	
Mill Creek	D45468241	D45468241	Outfall	9/25/2018	10:07	Yes	10-15	13.1	16.6	7.88	158.8	5.6	0.0	0.0						Source has been traced to surface water in ditch near the airport.	
Mill Creek	D45474225	D45474225	Outfall	9/20/2018	08:56	Yes	1-5	13.4	17.1	7.79	59.2	1.6	0.0	0.0							
Mill Creek	D45476207	D45476207	Outfall	9/19/2018	10:59	Yes	20-30	13.2	16.1	7.53	282.6	0.2	0.0	0.0					33	Source of flow has been determined to be wetland near state penitentiary.	

Basin	Primary Outfall	Inspection Location	Asset Type	Date	Time	Flow?	Est. Flow (GPM)	Temp °C Receiving Water	Temp °C	pH S.U.	Sp Cond µS/cm	Turbidity NTU	Total Cl mg/L	Fl mg/L	Detergents mg/L	NH3 mg/L	K mg/L	NA mg/L	E. coli MPN/100 mL	Outfall Notes	Inspection Comments
Mill Creek	D45476217	D45476217	Outfall	9/20/2018	08:30	Yes	1-5	13.4	17.7	7.46	224.3	0.6	0.0	0.0	0.0					Smoke testing has determined that the source of water is likely sump pumps and infiltration from well-water-irrigated landscaping at the capitol.	
Mill Creek	D51470205	D51470204	Manhole	9/20/2018	09:27	Yes		16.3	13.2	7.37	161.2	2.2	0.00	0.0						Flow is suspected to be from piped surface water off of Hawthorne Av SE. Pipes along State St have been TV inspected and has not found source.	
Mill Creek	D54470205	D54470205	Outfall	9/20/2018	09:54	No															Outfall is wet, but not flowing. Pipe outfalls to very low marsh. Moisture likely from the marsh. The two upstream manholes are bolted.
Pringle Creek	D39456229	D39456229	Outfall	9/20/2018	13:47	Yes	5-10		15.1	7.02	82.8	0.5	0.0	0.00						Source has been isolated to spring on Liberty St SE	
Pringle Creek	D42458217	D42458217	Outfall	8/27/2018	14:01	Yes	5-10	17.4	17.2	7.38	104.8	5.2	0.00								
Pringle Creek	D42468235	D42468235	Outfall	9/20/2018	11:24	No															
Pringle Creek	D45458210	D45458210	Outfall	8/27/2018	14:15	Yes	20-30	17.4	16.6	7.33	69.4	2	0.00								
Pringle Creek	D45458233	D45458233	Outfall	8/28/2018	14:23	Yes	1-5	17.2	19.2	6.73	109.3	3	0.00								
Pringle Creek	D45464207	D45464206	Manhole	9/25/2018	09:34	Yes	5-10		15.4		99.7	6.1	0.0	0.0						Pipeshed investigations have confirmed two sources of ground water.	Flow from both north and south stretches detected. Recommend further pipe shed investigation.
Pringle Creek	D45466212	D45466212	Outfall	9/20/2018	10:22	Yes	5-10	18.2	16.8	7.73	114.7	9.9	0.0	0.0							
Pringle Creek	D48460229	D48460231	Manhole	9/25/2018	08:59	No			16.2	7.55	254.2	1.8	0.00	0.0						Outfall in back water of wetland due to beaver dam. Inspection performed at second upstream manhole.	
Pringle Creek	D48464203	D48464203	Outfall	9/20/2018	10:47	Yes	1-5	14.1	17.8	6.90	226.4	1.3	0.0	0.00							
Pringle Creek	D48464249	D48464249	Outfall	9/20/2018	10:55	No															
Shelton Ditch	D48468246	D48468246	Outfall	8/30/2018	09:02	Yes	5-10	17.2				3.7	0.43		< 0.25	0.0				Water leak discovered blocks aways during pipeshed investigation. Reported to leak detection.	

Basin	Primary Outfall	Inspection Location	Asset Type	Date	Time	Flow?	Est. Flow (GPM)	Temp °C Receiving Water	Temp °C	pH S.U.	Sp Cond µS/cm	Turbidity NTU	Total Cl mg/L	Fl mg/L	Detergents mg/L	NH3 mg/L	K mg/L	NA mg/L	E. coli MPN/100 mL	Outfall Notes	Inspection Comments
Upper Claggett Creek	D51486201	D51486220	Manhole	9/21/2018	14:11	No															
Upper Claggett Creek	D51486216	D51486216	Outfall	9/21/2018	13:43	Yes	1-5	13.30	16.30	7.74	63.70	0.8	0.00	0.00							
Upper Claggett Creek	D54486217	D54486217	Outfall	9/21/2018	13:25	Yes	20-30		16.0	7.59	125.5	2.5	0.0	0.0						Day-lighting of piped stream	
Upper Claggett Creek	D57480PVT	D57480PVT	Outfall	8/17/2018	14:05	Yes	< 1						0.5		> 3.0					Receiving stream is dry in this location	Reported immediately to Environmental Services. Investigation traced source to dumping of mop water from school into storm drain at school loading dock.
Willamette Bank	D36472203	D36474226	Manhole	9/25/2018	11:08	No			16.6	7.57	157.7	34.2									Outfall not accessible. Water from first upstream manhole is stagnant. Second upstream manhole is dry. Sample taken from stagnant water at first upstream manhole. 2nd upstream manhole is dry
Willamette Slough	D39470220	D39470220	Outfall	9/25/2018	11:58	Yes	5-10		17.4	7.37	73.0	1.9	0.0	0.5						Water source discovered during TV inspection on Liberty St. Investigation ongoing.	
Willamette Slough	D39478271	D39478269	Manhole	9/21/2018	09:18	No															Upstream Manhole inspected due to backwater from stream.

Attachment B. Analytical Report for Pesticide Screening - Pacific Agricultural Laboratory (October 27, 2018)

Pacific Agricultural Laboratory
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City of Salem
1410 20th St. SE Building 2
Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Electric
Matrix: water

PAL Sample ID: P183212-01
Sample Date: 10/27/18

Method: Modified EPA 8081B (GC-ECD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/9/18	a-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Acetochlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Alachlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Aldrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	b-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Benfluralin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Bifenthrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Captafol	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Captan	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Chlordane	Not Detected	0.60 ug/L	
11/01/18	11/9/18	Chlorobenzilate	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Chloroneb	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Chlorothalonil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Chlorpyrifos	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Cyfluthrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Cyhalothrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Cypermethrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Dacthal	Not Detected	0.12 ug/L	
11/01/18	11/9/18	d-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Deltamethrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Dichlobenil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Dicloran	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Dicofol	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Dieldrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Dithiopyr	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endosulfan I	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endosulfan II	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endosulfan sulfate	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endrin aldehyde	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endrin ketone	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Esfenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Ethalfluralin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Etridiazole	Not Detected	0.12 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Electric
Matrix: water

PAL Sample ID: P183212-01
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/9/18	Fenarimol	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Fenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Flutolanil	Not Detected	1.2 ug/L	
11/01/18	11/9/18	Folpet	Not Detected	0.12 ug/L	
11/01/18	11/9/18	g-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Heptachlor	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Heptachlor epoxide	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Hexachlorobenzene	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Iprodione	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Methoxychlor	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Metolachlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Mirex	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Norflurazon	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Ovex	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Oxadiazon	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Oxyfluorfen	Not Detected	0.12 ug/L	
11/01/18	11/9/18	p,p'-DDD	Not Detected	0.12 ug/L	
11/01/18	11/9/18	p,p'-DDE	Not Detected	0.12 ug/L	
11/01/18	11/9/18	p,p'-DDT	Not Detected	0.12 ug/L	
11/01/18	11/9/18	PCNB	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Pendimethalin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Permethrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Prodiamine	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Pronamide	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Propachlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Propanil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Propiconazole	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Terbacil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Toxaphene	Not Detected	6.0 ug/L	
11/01/18	11/9/18	Trifloxystrobin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Triflumizole	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Trifluralin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Vinclozalin	Not Detected	0.12 ug/L	

Surrogate Recovery: 83 %
Surrogate Recovery Range: 38-143
(DCBP used as Surrogate)

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Electric
Matrix: water

PAL Sample ID: P183212-01
Sample Date: 10/27/18

Method: Modified EPA 8141B (GC-FPD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Aspon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Azinphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Carbofenothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorfenvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorpyrifos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Coumaphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Demeton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Diazinon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorofenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorvos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dicrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dimethoate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Disulfoton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	EPN	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethoprop	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Famphur	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenamiphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenitrothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fensulfothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Malathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Merphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Methidathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Mevinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Monocrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phorate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosmet	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosphamidon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Pirimiphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ronnel	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Sulprofos	Not Detected	0.30 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Electric
Matrix: water

PAL Sample ID: P183212-01
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Terbufos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tetrachlorvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tokuthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Trichloronate	Not Detected	0.30 ug/L	

Surrogate Recovery: 110 %
Surrogate Recovery Range: 56-143
(TPP-d15 used as Surrogate)

Method: Modified EPA 8151A (GC-MS/MS)

11/02/18	11/8/18	2,4,5-T	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4,5-TP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4-D	2.3 ug/L	0.080 ug/L	
11/02/18	11/8/18	2,4-DB	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Acifluorfen	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Bentazon	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Clopyralid	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dicamba	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dichlorprop	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dinoseb	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPA	0.49 ug/L	0.080 ug/L	
11/02/18	11/8/18	MCPP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Picloram	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Quinclorac	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Triclopyr	1.3 ug/L	0.080 ug/L	

Surrogate Recovery: 111 %
Surrogate Recovery Range: 64-139
(DCPAA used as Surrogate)

Method: Modified EPA 8270D (GC-MS/MS)

11/01/18	11/1/18	Ametryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Amitraz	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Atrazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Bromopropylate	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Cyanazine	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Diclofop-methyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Dimethenamid	Not Detected	0.060 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Electric
Matrix: water

PAL Sample ID: P183212-01
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/1/18	Diphenylamine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Ethofumesate	0.28 ug/L	0.060 ug/L	
11/01/18	11/1/18	Fenbuconazole	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fenoxaprop-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fipronil	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Fluazifop-p-butyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fludioxonil	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fluroxypyr-meptyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Hexazinone	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Mefenoxam	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Metalaxyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Metribuzin	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Myclobutanil	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Napropamide	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Pirimicarb	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Prometon	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Prometryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Propazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Pyridaben	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Simazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Simetryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Sulfentrazone	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Tebuconazole	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Tebuthiuron	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Triadimefon	Not Detected	0.12 ug/L	

Surrogate Recovery: 73 %
Surrogate Recovery Range: 29-130
(DCBP used as Surrogate)

Method: Modified EPA 8321B (LC-MS/MS)

11/01/18	11/2/18	3-Hydroxycarbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfone	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfoxide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Azoxystrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bendiocarb	Not Detected	0.060 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Electric
Matrix: water

PAL Sample ID: P183212-01
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Bensulide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Boscalid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bromacil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbaryl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carfentrazone-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Clothianidin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	DCPMU	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Diuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenobucarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Flumioxazin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fluometuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Imidacloprid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Isoxaben	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Linuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methiocarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methomyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Monuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Neburon	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Oxamyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Propargite	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Propoxur	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyraclostrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyrimethanil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Sethoxydim	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Siduron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiabendazole	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiobencarb	Not Detected	0.060 ug/L	

Surrogate Recovery: 82 %
Surrogate Recovery Range: 60-137
(TPP-d15 used as Surrogate)

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Hilfiker
Matrix: water

PAL Sample ID: P183212-02
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
Method: Modified EPA 8081B (GC-ECD)					
11/01/18	11/9/18	a-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Acetochlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Alachlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Aldrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	b-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Benfluralin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Bifenthrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Captafol	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Captan	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Chlordane	Not Detected	0.60 ug/L	
11/01/18	11/9/18	Chlorobenzilate	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Chloroneb	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Chlorothalonil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Chlorpyrifos	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Cyfluthrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Cyhalothrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Cypermethrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Dacthal	Not Detected	0.12 ug/L	
11/01/18	11/9/18	d-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Deltamethrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Dichlobenil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Dicloran	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Dicofol	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Dieldrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Dithiopyr	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endosulfan I	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endosulfan II	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endosulfan sulfate	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endrin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endrin aldehyde	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Endrin ketone	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Esfenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Ethalfluralin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Etridiazole	Not Detected	0.12 ug/L	

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City of Salem
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Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Hilfiker
Matrix: water

PAL Sample ID: P183212-02
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/9/18	Fenarimol	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Fenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Flutolanil	Not Detected	1.2 ug/L	
11/01/18	11/9/18	Folpet	Not Detected	0.12 ug/L	
11/01/18	11/9/18	g-BHC	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Heptachlor	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Heptachlor epoxide	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Hexachlorobenzene	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Iprodione	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Methoxychlor	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Metolachlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Mirex	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Norflurazon	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Ovex	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Oxadiazon	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Oxyfluorfen	Not Detected	0.12 ug/L	
11/01/18	11/9/18	p,p'-DDD	Not Detected	0.12 ug/L	
11/01/18	11/9/18	p,p'-DDE	Not Detected	0.12 ug/L	
11/01/18	11/9/18	p,p'-DDT	Not Detected	0.12 ug/L	
11/01/18	11/9/18	PCNB	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Pendimethalin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Permethrin	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Prodiamine	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Pronamide	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Propachlor	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Propanil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Propiconazole	Not Detected	0.30 ug/L	
11/01/18	11/9/18	Terbacil	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Toxaphene	Not Detected	6.0 ug/L	
11/01/18	11/9/18	Trifloxystrobin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Triflumizole	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Trifluralin	Not Detected	0.12 ug/L	
11/01/18	11/9/18	Vinclozalin	Not Detected	0.12 ug/L	

Surrogate Recovery: 72 %
Surrogate Recovery Range: 38-143
(DCBP used as Surrogate)

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Hilfiker
Matrix: water

PAL Sample ID: P183212-02
Sample Date: 10/27/18

Method: Modified EPA 8141B (GC-FPD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Aspon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Azinphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Carbofenothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorfenvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorpyrifos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Coumaphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Demeton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Diazinon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorofenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorvos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dicrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dimethoate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Disulfoton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	EPN	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethoprop	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Famphur	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenamiphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenitrothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fensulfothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Malathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Merphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Methidathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Mevinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Monocrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phorate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosmet	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosphamidon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Pirimiphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ronnel	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Sulprofos	Not Detected	0.30 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Hilfiker
Matrix: water

PAL Sample ID: P183212-02
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Terbufos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tetrachlorvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tokuthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Trichloronate	Not Detected	0.30 ug/L	

Surrogate Recovery: 108 %
Surrogate Recovery Range: 56-143
(TPP-d15 used as Surrogate)

Method: Modified EPA 8151A (GC-MS/MS)

11/02/18	11/8/18	2,4,5-T	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4,5-TP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4-D	0.71 ug/L	0.080 ug/L	
11/02/18	11/8/18	2,4-DB	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Acifluorfen	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Bentazon	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Clopyralid	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dicamba	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dichlorprop	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dinoseb	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPA	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Picloram	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Quinclorac	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Triclopyr	0.24 ug/L	0.080 ug/L	

Surrogate Recovery: 113 %
Surrogate Recovery Range: 64-139
(DCPAA used as Surrogate)

Method: Modified EPA 8270D (GC-MS/MS)

11/01/18	11/1/18	Ametryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Amitraz	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Atrazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Bromopropylate	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Cyanazine	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Diclofop-methyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Dimethenamid	Not Detected	0.060 ug/L	

Rick Jordan, Laboratory Manager

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Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Hilfiker
Matrix: water

PAL Sample ID: P183212-02
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/1/18	Diphenylamine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Ethofumesate	0.45 ug/L	0.060 ug/L	
11/01/18	11/1/18	Fenbuconazole	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fenoxaprop-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fipronil	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Fluazifop-p-butyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fludioxonil	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fluroxypyr-meptyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Hexazinone	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Mefenoxam	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Metalaxyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Metribuzin	0.071 ug/L	0.060 ug/L	
11/01/18	11/1/18	Myclobutanil	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Napropamide	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Pirimicarb	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Prometon	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Prometryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Propazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Pyridaben	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Simazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Simetryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Sulfentrazone	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Tebuconazole	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Tebuthiuron	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Triadimefon	Not Detected	0.12 ug/L	

Surrogate Recovery: 70 %
Surrogate Recovery Range: 29-130
(DCBP used as Surrogate)

Method: Modified EPA 8321B (LC-MS/MS)

11/01/18	11/2/18	3-Hydroxycarbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfone	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfoxide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Azoxystrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bendiocarb	Not Detected	0.060 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Hilfiker
Matrix: water

PAL Sample ID: P183212-02
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Bensulide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Boscalid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bromacil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbaryl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carfentrazone-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Clothianidin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	DCPMU	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Diuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenobucarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Flumioxazin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fluometuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Imidacloprid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Isoxaben	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Linuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methiocarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methomyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Monuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Neburon	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Oxamyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Propargite	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Propoxur	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyraclostrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyrimethanil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Sethoxydim	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Siduron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiabendazole	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiobencarb	Not Detected	0.060 ug/L	

Surrogate Recovery: 75 %
Surrogate Recovery Range: 60-137
(TPP-d15 used as Surrogate)

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Salem Industrial
Matrix: water

PAL Sample ID: P183212-03
Sample Date: 10/27/18

Method: Modified EPA 8081B (GC-ECD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/10/18	a-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Acetochlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Alachlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Aldrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	b-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Benfluralin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Bifenthrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Captafol	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Captan	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Chlordane	Not Detected	0.60 ug/L	
11/01/18	11/10/18	Chlorobenzilate	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Chloroneb	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Chlorothalonil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Chlorpyrifos	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Cyfluthrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Cyhalothrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Cypermethrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Dacthal	Not Detected	0.12 ug/L	
11/01/18	11/10/18	d-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Deltamethrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Dichlobenil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Dicloran	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Dicofol	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Dieldrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Dithiopyr	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endosulfan I	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endosulfan II	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endosulfan sulfate	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endrin aldehyde	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endrin ketone	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Esfenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Ethalfluralin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Etridiazole	Not Detected	0.12 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Salem Industrial
Matrix: water

PAL Sample ID: P183212-03
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/10/18	Fenarimol	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Fenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Flutolanil	Not Detected	1.2 ug/L	
11/01/18	11/10/18	Folpet	Not Detected	0.12 ug/L	
11/01/18	11/10/18	g-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Heptachlor	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Heptachlor epoxide	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Hexachlorobenzene	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Iprodione	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Methoxychlor	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Metolachlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Mirex	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Norflurazon	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Ovex	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Oxadiazon	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Oxyfluorfen	Not Detected	0.12 ug/L	
11/01/18	11/10/18	p,p'-DDD	Not Detected	0.12 ug/L	
11/01/18	11/10/18	p,p'-DDE	Not Detected	0.12 ug/L	
11/01/18	11/10/18	p,p'-DDT	Not Detected	0.12 ug/L	
11/01/18	11/10/18	PCNB	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Pendimethalin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Permethrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Prodiamine	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Pronamide	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Propachlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Propanil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Propiconazole	0.47 ug/L	0.30 ug/L	
11/01/18	11/10/18	Terbacil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Toxaphene	Not Detected	6.0 ug/L	
11/01/18	11/10/18	Trifloxystrobin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Triflumizole	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Trifluralin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Vinclozalin	Not Detected	0.12 ug/L	

Surrogate Recovery: 76 %
Surrogate Recovery Range: 38-143
(DCBP used as Surrogate)

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Salem Industrial
Matrix: water

PAL Sample ID: P183212-03
Sample Date: 10/27/18

Method: Modified EPA 8141B (GC-FPD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Aspon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Azinphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Carbofenothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorfenvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorpyrifos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Coumaphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Demeton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Diazinon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorofenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorvos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dicrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dimethoate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Disulfoton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	EPN	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethoprop	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Famphur	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenamiphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenitrothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fensulfothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Malathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Merphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Methidathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Mevinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Monocrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phorate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosmet	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosphamidon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Pirimiphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ronnel	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Sulprofos	Not Detected	0.30 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Salem Industrial
Matrix: water

PAL Sample ID: P183212-03
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Terbufos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tetrachlorvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tokuthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Trichloronate	Not Detected	0.30 ug/L	

Surrogate Recovery: 104 %
Surrogate Recovery Range: 56-143
(TPP-d15 used as Surrogate)

Method: Modified EPA 8151A (GC-MS/MS)

11/02/18	11/8/18	2,4,5-T	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4,5-TP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4-D	0.14 ug/L	0.080 ug/L	
11/02/18	11/8/18	2,4-DB	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Acifluorfen	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Bentazon	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Clopyralid	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dicamba	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dichlorprop	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dinoseb	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPA	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Picloram	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Quinclorac	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Triclopyr	0.32 ug/L	0.080 ug/L	

Surrogate Recovery: 76 %
Surrogate Recovery Range: 64-139
(DCPAA used as Surrogate)

Method: Modified EPA 8270D (GC-MS/MS)

11/01/18	11/1/18	Ametryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Amitraz	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Atrazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Bromopropylate	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Cyanazine	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Diclofop-methyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Dimethenamid	Not Detected	0.060 ug/L	

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Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Salem Industrial
Matrix: water

PAL Sample ID: P183212-03
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/1/18	Diphenylamine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Ethofumesate	0.22 ug/L	0.060 ug/L	
11/01/18	11/1/18	Fenbuconazole	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fenoxaprop-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fipronil	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Fluazifop-p-butyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fludioxonil	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Fluroxypyr-meptyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Hexazinone	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Mefenoxam	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Metalaxyl	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Metribuzin	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Myclobutanil	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Napropamide	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Pirimicarb	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Prometon	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Prometryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Propazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Pyridaben	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Simazine	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Simetryn	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Sulfentrazone	Not Detected	0.060 ug/L	
11/01/18	11/1/18	Tebuconazole	0.064 ug/L	0.060 ug/L	
11/01/18	11/1/18	Tebuthiuron	Not Detected	0.12 ug/L	
11/01/18	11/1/18	Triadimefon	Not Detected	0.12 ug/L	

Surrogate Recovery: 77 %
Surrogate Recovery Range: 29-130
(DCBP used as Surrogate)

Method: Modified EPA 8321B (LC-MS/MS)

11/01/18	11/2/18	3-Hydroxycarbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfone	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfoxide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Azoxystrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bendiocarb	Not Detected	0.060 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: Salem Industrial
Matrix: water

PAL Sample ID: P183212-03
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Bensulide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Boscalid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bromacil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbaryl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carfentrazone-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Clothianidin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	DCPMU	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Diuron	1.1 ug/L	0.060 ug/L	
11/01/18	11/2/18	Fenobucarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Flumioxazin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fluometuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Imidacloprid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Isoxaben	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Linuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methiocarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methomyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Monuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Neburon	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Oxamyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Propargite	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Propoxur	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyraclostrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyrimethanil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Sethoxydim	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Siduron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiabendazole	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiobencarb	Not Detected	0.060 ug/L	

Surrogate Recovery: 92 %
Surrogate Recovery Range: 60-137
(TPP-d15 used as Surrogate)

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: DUP
Matrix: water

PAL Sample ID: P183212-04
Sample Date: 10/27/18

Method: Modified EPA 8081B (GC-ECD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/10/18	a-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Acetochlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Alachlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Aldrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	b-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Benfluralin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Bifenthrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Captafol	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Captan	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Chlordane	Not Detected	0.60 ug/L	
11/01/18	11/10/18	Chlorobenzilate	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Chloroneb	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Chlorothalonil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Chlorpyrifos	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Cyfluthrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Cyhalothrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Cypermethrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Dacthal	Not Detected	0.12 ug/L	
11/01/18	11/10/18	d-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Deltamethrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Dichlobenil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Dicloran	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Dicofol	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Dieldrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Dithiopyr	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endosulfan I	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endosulfan II	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endosulfan sulfate	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endrin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endrin aldehyde	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Endrin ketone	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Esfenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Ethalfluralin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Etridiazole	Not Detected	0.12 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: DUP
Matrix: water

PAL Sample ID: P183212-04
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/10/18	Fenarimol	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Fenvalerate	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Flutolanil	Not Detected	1.2 ug/L	
11/01/18	11/10/18	Folpet	Not Detected	0.12 ug/L	
11/01/18	11/10/18	g-BHC	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Heptachlor	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Heptachlor epoxide	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Hexachlorobenzene	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Iprodione	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Methoxychlor	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Metolachlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Mirex	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Norflurazon	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Ovex	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Oxadiazon	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Oxyfluorfen	Not Detected	0.12 ug/L	
11/01/18	11/10/18	p,p'-DDD	Not Detected	0.12 ug/L	
11/01/18	11/10/18	p,p'-DDE	Not Detected	0.12 ug/L	
11/01/18	11/10/18	p,p'-DDT	Not Detected	0.12 ug/L	
11/01/18	11/10/18	PCNB	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Pendimethalin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Permethrin	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Prodiamine	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Pronamide	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Propachlor	Not Detected	0.30 ug/L	
11/01/18	11/10/18	Propanil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Propiconazole	0.52 ug/L	0.30 ug/L	
11/01/18	11/10/18	Terbacil	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Toxaphene	Not Detected	6.0 ug/L	
11/01/18	11/10/18	Trifloxystrobin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Triflumizole	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Trifluralin	Not Detected	0.12 ug/L	
11/01/18	11/10/18	Vinclozalin	Not Detected	0.12 ug/L	

Surrogate Recovery: 61 %
Surrogate Recovery Range: 38-143
(DCBP used as Surrogate)

Rick Jordan, Laboratory Manager

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: DUP
Matrix: water

PAL Sample ID: P183212-04
Sample Date: 10/27/18

Method: Modified EPA 8141B (GC-FPD)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Aspon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Azinphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Carbofenothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorfenvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Chlorpyrifos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Coumaphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Demeton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Diazinon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorofenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dichlorvos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dicrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Dimethoate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Disulfoton	Not Detected	0.30 ug/L	
11/01/18	11/2/18	EPN	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ethoprop	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Famphur	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenamiphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenitrothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fensulfothion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Fenthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Malathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Merphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Methidathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Mevinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Monocrotophos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Parathion methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phorate	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosmet	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Phosphamidon	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Pirimiphos-methyl	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Ronnel	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Sulprofos	Not Detected	0.30 ug/L	

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City of Salem
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Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: DUP
Matrix: water

PAL Sample ID: P183212-04
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Terbufos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tetrachlorvinphos	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Tokuthion	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Trichloronate	Not Detected	0.30 ug/L	

Surrogate Recovery: 105 %
Surrogate Recovery Range: 56-143
(TPP-d15 used as Surrogate)

Method: Modified EPA 8151A (GC-MS/MS)

11/02/18	11/8/18	2,4,5-T	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4,5-TP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	2,4-D	0.099 ug/L	0.080 ug/L	
11/02/18	11/8/18	2,4-DB	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Acifluorfen	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Bentazon	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Clopyralid	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dicamba	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dichlorprop	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Dinoseb	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPA	Not Detected	0.080 ug/L	
11/02/18	11/8/18	MCPP	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Picloram	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Quinclorac	Not Detected	0.080 ug/L	
11/02/18	11/8/18	Triclopyr	0.23 ug/L	0.080 ug/L	

Surrogate Recovery: 55 % S2
Surrogate Recovery Range: 64-139
(DCPAA used as Surrogate)

Method: Modified EPA 8270D (GC-MS/MS)

11/01/18	11/2/18	Ametryn	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Amitraz	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Atrazine	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bromopropylate	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Cyanazine	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Diclofop-methyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Dimethenamid	Not Detected	0.060 ug/L	

Rick Jordan, Laboratory Manager

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: DUP
Matrix: water

PAL Sample ID: P183212-04
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Diphenylamine	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Ethofumesate	0.26 ug/L	0.060 ug/L	
11/01/18	11/2/18	Fenbuconazole	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenoxaprop-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fipronil	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Fluazifop-p-butyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fludioxonil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fluroxypyr-meptyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Hexazinone	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Mefenoxam	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Metalaxyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Metribuzin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Myclobutanil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Napropamide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pirimicarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Prometon	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Prometryn	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Propazine	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyridaben	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Simazine	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Simetryn	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Sulfentrazone	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Tebuconazole	0.091 ug/L	0.060 ug/L	
11/01/18	11/2/18	Tebuthiuron	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Triadimefon	Not Detected	0.12 ug/L	

Surrogate Recovery: 70 %
Surrogate Recovery Range: 29-130
(DCBP used as Surrogate)

Method: Modified EPA 8321B (LC-MS/MS)

11/01/18	11/2/18	3-Hydroxycarbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfone	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Aldicarb Sulfoxide	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Azoxystrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bendiocarb	Not Detected	0.060 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Analytical Report

Client Sample ID: DUP
Matrix: water

PAL Sample ID: P183212-04
Sample Date: 10/27/18

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
11/01/18	11/2/18	Bensulide	0.063 ug/L	0.060 ug/L	
11/01/18	11/2/18	Boscalid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Bromacil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbaryl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carbofuran	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Carfentrazone-ethyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Clothianidin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	DCPMU	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Diuron	1.2 ug/L	0.060 ug/L	
11/01/18	11/2/18	Fenobucarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fenuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Flumioxazin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Fluometuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Imidacloprid	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Isoxaben	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Linuron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methiocarb	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Methomyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Monuron	0.16 ug/L	0.060 ug/L	
11/01/18	11/2/18	Neburon	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Oxamyl	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Propargite	Not Detected	0.12 ug/L	
11/01/18	11/2/18	Propoxur	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyraclostrobin	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Pyrimethanil	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Sethoxydim	Not Detected	0.30 ug/L	
11/01/18	11/2/18	Siduron	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiabendazole	Not Detected	0.060 ug/L	
11/01/18	11/2/18	Thiobencarb	Not Detected	0.060 ug/L	

Surrogate Recovery: 86 %
Surrogate Recovery Range: 60-137
(TPP-d15 used as Surrogate)

Rick Jordan, Laboratory Manager

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Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Quality Assurance

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/1/18	11/2/18	8110101-BLK1	3-Hydroxycarbofuran	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	a-BHC	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Acetochlor	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Alachlor	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Aldicarb	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Aldicarb Sulfone	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Aldicarb Sulfoxide	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Aldrin	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Ametryn	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Amitraz	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Aspon	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Atrazine	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Azinphos-methyl	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Azoxystrobin	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	b-BHC	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Bendiocarb	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Benfluralin	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Bensulide	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Bifenthrin	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Boscalid	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Bromacil	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Bromopropylate	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Captafol	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Captan	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Carbaryl	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Carbofenothion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Carbofuran	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Carfentrazone-ethyl	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Chlordane	Not Detected	< 0.60 ug/L	
11/1/18	11/2/18	8110101-BLK1	Chlorfenvinphos	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Chlorobenzilate	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Chloroneb	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Chlorothalonil	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Chlorpyrifos	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Chlorpyrifos-methyl	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Clothianidin	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Coumaphos	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Cyanazine	Not Detected	< 0.12 ug/L	

Rick Jordan, Laboratory Manager

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/1/18	11/9/18	8110101-BLK1	Cyfluthrin	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Cyhalothrin	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Cypermethrin	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Dacthal	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	d-BHC	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	DCPMU	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Deltamethrin	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Demeton	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Diazinon	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Dichlobenil	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Dichlorofenthion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Dichlorvos	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Diclofop-methyl	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Dicloran	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Dicofol	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Dicrotophos	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Dieldrin	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Dimethenamid	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Dimethoate	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Diphenylamine	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Disulfoton	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Dithiopyr	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Diuron	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Endosulfan I	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Endosulfan II	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Endosulfan sulfate	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Endrin	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Endrin aldehyde	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Endrin ketone	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	EPN	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Esfenvalerate	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Ethalfluralin	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Ethion	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Ethofumesate	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Ethoprop	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Etridiazole	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Famphur	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Fenamiphos	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Fenarimol	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Fenbuconazole	Not Detected	< 0.060 ug/L	

Rick Jordan, Laboratory Manager

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/1/18	11/2/18	8110101-BLK1	Fenitrothion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Fenobucarb	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Fenoxaprop-ethyl	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Fensulfothion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Fenthion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Fenuron	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Fenvalerate	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Fipronil	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Fluazifop-p-butyl	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Fludioxonil	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Flumioxazin	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Fluometuron	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Fluroxypyr-meptyl	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Flutolanil	Not Detected	< 1.2 ug/L	
11/1/18	11/9/18	8110101-BLK1	Folpet	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	g-BHC	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Heptachlor	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Heptachlor epoxide	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Hexachlorobenzene	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Hexazinone	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Imidacloprid	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Iprodione	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Isoxaben	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Linuron	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Malathion	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Mefenoxam	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Merphos	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Metalaxyl	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Methidathion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Methiocarb	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Methomyl	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Methoxychlor	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Metolachlor	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Metribuzin	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Mevinphos	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Mirex	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Monocrotophos	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Monuron	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Myclobutanil	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Napropamide	Not Detected	< 0.060 ug/L	

Rick Jordan, Laboratory Manager

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City of Salem
1410 20th St. SE Building 2
Salem, OR 97302

Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/1/18	11/2/18	8110101-BLK1	Neburon	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Norflurazon	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Ovex	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Oxadiazon	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Oxamyl	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Oxyfluorfen	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	p,p'-DDD	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	p,p'-DDE	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	p,p'-DDT	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Parathion	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Parathion methyl	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	PCNB	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Pendimethalin	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Permethrin	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Phorate	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Phosmet	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Phosphamidon	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Pirimicarb	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Pirimiphos-methyl	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Prodiamine	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Prometon	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Prometryn	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Pronamide	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Propachlor	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Propanil	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Propargite	Not Detected	< 0.12 ug/L	
11/1/18	11/1/18	8110101-BLK1	Propazine	Not Detected	< 0.060 ug/L	
11/1/18	11/9/18	8110101-BLK1	Propiconazole	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Propoxur	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Pyraclostrobin	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Pyridaben	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Pyrimethanil	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Ronnel	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Sethoxydim	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Siduron	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Simazine	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Simetryn	Not Detected	< 0.060 ug/L	
11/1/18	11/1/18	8110101-BLK1	Sulfentrazone	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Sulprofos	Not Detected	< 0.30 ug/L	
11/1/18	11/1/18	8110101-BLK1	Tebuconazole	Not Detected	< 0.060 ug/L	

Rick Jordan, Laboratory Manager

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City of Salem
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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/1/18	11/1/18	8110101-BLK1	Tebuthiuron	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Terbacil	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Terbufos	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Tetrachlorvinphos	Not Detected	< 0.30 ug/L	
11/1/18	11/2/18	8110101-BLK1	Thiabendazole	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Thiobencarb	Not Detected	< 0.060 ug/L	
11/1/18	11/2/18	8110101-BLK1	Tokuthion	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Toxaphene	Not Detected	< 6.0 ug/L	
11/1/18	11/1/18	8110101-BLK1	Triadimefon	Not Detected	< 0.12 ug/L	
11/1/18	11/2/18	8110101-BLK1	Trichloronate	Not Detected	< 0.30 ug/L	
11/1/18	11/9/18	8110101-BLK1	Trifloxystrobin	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Triflumizole	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Trifluralin	Not Detected	< 0.12 ug/L	
11/1/18	11/9/18	8110101-BLK1	Vinclozalin	Not Detected	< 0.12 ug/L	

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/2/18	11/8/18	8110104-BLK1	2,4,5-T	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	2,4,5-TP	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	2,4-D	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	2,4-DB	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Acifluorfen	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Bentazon	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Clopyralid	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Dicamba	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Dichlorprop	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Dinoseb	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	MCPA	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	MCPP	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Picloram	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Quinclorac	Not Detected	< 0.080 ug/L	
11/2/18	11/8/18	8110104-BLK1	Triclopyr	Not Detected	< 0.080 ug/L	

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Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Blank Spike Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/1/18	11/1/18	8110101-BS1	Atrazine	86	79-125	
11/1/18	11/1/18	8110101-BSD1	Atrazine	82	79-125	
11/1/18	11/9/18	8110101-BS1	Chlorpyrifos	89	74-142	
11/1/18	11/9/18	8110101-BSD1	Chlorpyrifos	81	74-142	
11/1/18	11/2/18	8110101-BS1	Diazinon	96	63-127	
11/1/18	11/2/18	8110101-BSD1	Diazinon	95	63-127	
11/1/18	11/9/18	8110101-BS1	Dieldrin	90	60-125	
11/1/18	11/9/18	8110101-BSD1	Dieldrin	86	60-125	
11/1/18	11/1/18	8110101-BS1	Ethofumesate	84	73-129	
11/1/18	11/1/18	8110101-BSD1	Ethofumesate	81	73-129	
11/1/18	11/1/18	8110101-BS1	Napropamide	88	64-112	
11/1/18	11/1/18	8110101-BSD1	Napropamide	85	64-112	
11/1/18	11/9/18	8110101-BS1	Oxadiazon	94	78-121	
11/1/18	11/9/18	8110101-BSD1	Oxadiazon	90	78-121	
11/1/18	11/2/18	8110101-BS1	Parathion methyl	83	70-131	
11/1/18	11/2/18	8110101-BSD1	Parathion methyl	81	70-131	

Blank Spike Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
11/2/18	11/8/18	8110104-BS1	2,4-D	126	22-136	
11/2/18	11/9/18	8110104-BSD1	2,4-D	139	22-136	R1
11/2/18	11/8/18	8110104-BS1	Dicamba	111	67-127	
11/2/18	11/9/18	8110104-BSD1	Dicamba	108	67-127	
11/2/18	11/8/18	8110104-BS1	Triclopyr	117	48-138	
11/2/18	11/9/18	8110104-BSD1	Triclopyr	123	48-138	

Analyte Information

Method: Modified EPA 8081B (GC-ECD)
Method: Modified EPA 8141B (GC-FPD)
Method: Modified EPA 8151A (GC-MS/MS)
Chlorinated acids were converted to free acids. Residues were quantitated as free acids.
Method: Modified EPA 8270D (GC-MS/MS)
Method: Modified EPA 8321B (LC-MS/MS)

Rick Jordan, Laboratory Manager

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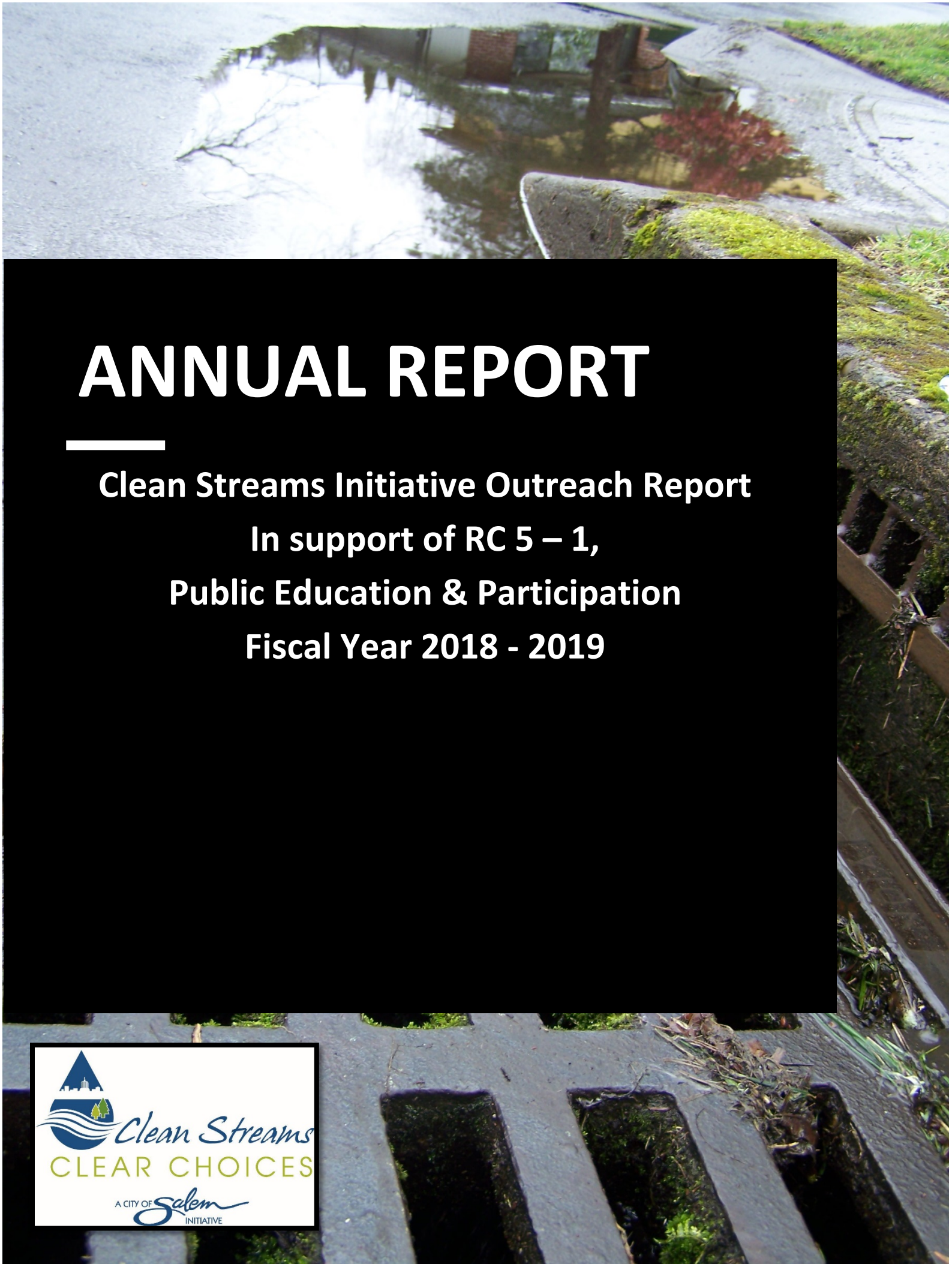
Report Number: P183212
Report Date: November 13, 2018
Client Project ID: [none]

Project Notes

Notes	Definition
S2	Surrogate recovery is outside of control limits.
R1	Spike recovery is outside of control limits.

Rick Jordan, Laboratory Manager

APPENDIX B. OUTREACH AND EDUCATION REPORT



ANNUAL REPORT

Clean Streams Initiative Outreach Report
In support of RC 5 – 1,
Public Education & Participation
Fiscal Year 2018 - 2019

Clean Streams
CLEAR CHOICES
A CITY OF Salem INITIATIVE

Table of Contents

Clean Streams Initiative Outreach Annual Report

Fiscal Year July 2018 – June 2019

Overview

The City of Salem operates under the Municipal Separate Storm Sewer System (MS4) Permit National Pollutant Discharge Elimination System (NPDES) program of the Clean Water Act. As a part of this permit the City targets specific pollutants of concern to local streams and waterbodies and is required to do outreach and education on these pollutants. To fulfill this requirement the City of Salem developed the *Clean Streams, Clear Choices* Initiative that encompasses campaigns seeking to educate and inform Salem residents on actions they can take to help keep pollution out of stormwater and local streams. The Clean Streams Initiative states: *Our everyday behaviors affect streams; our choices can make a difference.*

The major outreach campaigns within this initiative include, but are not limited to:

- Capital Canine Club
- Dump No Waste Storm Drain Marking
- Environmentally Friendly Car Wash Fundraising Tips and Car Maintenance
- Watershed Enhancement Team (WET) Pledge
- Watershed Protection and Preservation Grant
- Youth Environmental Education

This annual report outlines outreach, marketing, and social marketing efforts made within fiscal year 2018-19 to help promote the Clean Streams Initiative. This includes outreach events, proposals written, marketing materials created, advertising, and campaign progress.

Outreach Events

The primary method of outreach and marketing for the past fiscal year was attendance at community outreach events. The total number of outreach events attended was **37**, with a total attendance number of **25,825** attendees.

The following is a breakdown of outreach events.

Date	*Event*	*Notable Outcome/Attendance*
7/11/2018	SCAN Neighborhood Assoc. (NA)	
7/17/2018	CANDO NA Presentation	
7/26/2018	Thursday Market	4 People took the WET Pledge
8/4/2018	FBB Family Fest	Attendance = 3,804
8/11/2018	Englewood Forest Festival	12 People signed up for email list
8/16/2018	Summer Reading Club Party	Attendance = 3,000
8/20/2018	West Salem NA Presentation	
9/5/2018	Home School Days	Attendance = 720
9/6/2018	Grant NA Presentation	
9/8/2018	Walk n' Wag	Signed up 32 people for CCC Signed up 10 people for email list
9/18/2018	Urban Streams Symposium	
9/22/2018	Open Streets Salem	
9/23/2018	Rotary Multi-Sport Riverfest	
9/28/2018	East Salem Day of Play	Attendance = 500
10/3/2018	Claggett Creek Watershed Council	
10/25/2018	DEQ Lunch & Learn	
10/27/2018	Halloween Dress Rehearsal	Signed up 9 people for CCC 3 for email list
11/30/2018	Holiday Tree Lighting	
12/4/2018	NEN NA Presentation	
1/29/2019	EC Summit	
2/1/2019	Enviroscape Presentation	Delivered 60 WET Pledges
2/7/2019	S. Salem Pet Supply	Signed up 8 people for CCC 4 for email list
2/23 – 24/2019	Saltwater Sportsmen's Show	Attendance = 2,500 Distributed all 150 Phone Pouches

3/6/2019	Claggett Creek WS Council	
3/15-17/2019	HBA Yard & Garden Show	Attendance = 9,000 36 People took the WET Pledge 9 Signed up for email list
3/22/2019	World Water Day at Kerr Concentrates	
3/25/2019	Career Day at YMCA	
4/3/2019	Claggett Creek WS Council	
4/9/2019	Northgate NA Presentation	
4/20/2019	Soggy Day in the Park	Signed up 5 people for email list
4/22/2019	Earth Day ALBATROSS Showing	
6/15/2019	Super Saturday	
6/20/2019	Public Works Day	Attendance = 1,600
6/24/2019	Summer Block Party at Gilbert House	Signed up 4 people for email list
6/26/2019	City Health Fair	Signed up 10 people for more info
6/29/2019	Saturday Market	24 people took the WET Pledge Signed up 5 for email list

Educational Events

In addition to community outreach events, other events included participation in educational events falling within the Youth Environmental Education Program (YEEP) and Adopt-A-Stream Program. The total number of educational event days attended was **16**, with the total number of students reached equaling **1,212**.

The following is a breakdown of educational events including date, location or event, and participating school.

Date	*Location/Event*	*School*
9/17/2018	Salmon Watch	Early College Charter
10/4/2018	Willamette Mission State Park	Lamb Elementary
10/9/2018	Adopt-A-Stream	Livingstone Academy
10/16/2018	Adopt-A-Stream	Salem Christian
10/17/2018	Minto Brown Park	Sumpter Elementary
3/1/2019	Water World	Battle Creek Elementary
4/2/2019	Adopt-A-Stream	Brush College Elementary
4/23/2019	Drop in the Bucket	Kennedy Elementary
4/30/2019	Water Festival	Hallman Elementary
5/2/2019	Minto Brown Park	Lamb Elementary
5/9/2019	Minto Brown Park	Mary Eyre Elementary
5/14/2019	Minto Brown Park	Gubser Elementary
5/29-31/2019	Outdoor School	Scott Elementary
6/6/2019	Minto Brown Park	Auburn Elementary

Marketing

In an effort to improve marketing for the Clean Streams Initiative, and campaigns within it, several steps were taken, including updating marketing materials and creation of new marketing materials.

Clean Streams Marketing Materials

For this fiscal year we continued to update, create, and streamline materials. We also helped to create materials for other sections and other City staff.

The following is a list of materials that were created or updated:

- W.E.T. Pledge quarter sheet flyer
- Dump No Waste quarter sheet flyer
- Two versions of an Aquatic Invasive quarter sheet flyer
- #ORTrashTag quarter sheet flyer for participation in MWOG campaign
- Shops Complex Good Housekeeping poster

Other Marketing Materials

The following is a list of materials that were created for other staff or sections:

- Fats, Oils & Grease residential brochure for Environmental Services
- Fats, Oils & Grease food service brochure for Environmental Services
- Sustainable Brewery Practices brochure for Environmental Services
- Cigarette Butt Pollution brochure for targeted apartment complex for Natural Areas within the Stormwater section

Outreach & Marketing Materials

Other items were created or updated to be used as outreach and marketing materials for the Clean Streams Initiative. The following is a list detailing the items created or updated and their use.

- Storm Drain Model – updated current storm drain model by re-painting to display a clean stream on one side and a polluted stream on the other. To be used at outreach events to show how water flows into a storm drain and highlight the need for clean stormwater.
- Youth Activity Book – this activity book is a collection of activity and coloring sheets already created, and additional ones created for the book. The book contains information on streams, stormwater, and pollution. It is currently in progress.
- Coloring Bookmark – a coloring bookmark was created that is stormwater and stream themed. To be used as a promotional giveaway.

Clean Streams E-Newsletter

A list of email addresses was started last fiscal year to send updates on the Clean Streams Initiative. In January 2019, the Clean Streams e-newsletter, *Stream Currents*, was rolled out to this list. It is a monthly newsletter sent via email with water-related news and topics, upcoming Clean Streams events, spotlights on Clean Streams campaigns, and other campaigns to market and highlight. The list currently has **157** active subscribers.

Advertising

In addition to the e-newsletter, advertising was done through radio spots on four local stations, three digital billboards were run throughout Salem, and the City of Salem took part in the *Water Do Your Part* television campaign on KOIN6.

Radio Spots

A total of **62** radio spots about Clean Streams related topics was run throughout four different local radio stations during fiscal year 2018/2019. The four stations are KBZY, KWIP, KSLM, and KMUZ.

Topics covered in relation to the Clean Streams Initiative included 23 different topics, such as car maintenance and washing, Friends of Trees plantings, fall leaves and Fall Leaf Haul, storm drain marking, and more.

Digital Billboards

Three digital billboards were implemented throughout the fiscal year to advertise the Clean Streams Initiative and/or campaigns.

- Storm Drain/General Clean Streams Billboard – run dates: 3/25 – 3/31
    - Looking at a 2-week timeframe there were 17 webpage sessions and 168 page views.
- Car Wash Billboard – run dates: 6/17 – 6/23
    - Looking at a 2-week timeframe there were 8 webpage sessions and 66 page views.
- Facebook Billboard – run dates: 6/17 – 6/23
    - Looking at a 2-week timeframe Clean Streams Facebook *Likes* increased by 5 and *Followers* increased by 10.

TV Campaign – KOIN6

The City of Salem participated in the *Water Do Your Part* television and online campaign through KOIN6. Other funding partners include, City of Lake Oswego, Port of Portland, City of Tigard, City of Oregon City, City of Fairview, City of Gresham, Clean Water Services, and Metro.

Ads were run for a total of 9 months throughout the 2018/2019 fiscal year for a total of **369** ads and a total impression amount of 6,053,651. KOIN6 also included the campaign on their website with a total impression amount of 323,095, with the *Water Do Your Part* landing page receiving 4,348 page views. Impressions through KOIN6 Facebook posts total 621,747. Topics included - car fluids and washing, RV waste disposal, pool and hot tub water disposal, fall lawn care, being rain ready, native plants, and lawn care and pesticide use.

Clean Streams Website

During this fiscal year we achieved the creation and implementation of a new Clean Streams website with associated URL, www.cleanstreamssalem.org.
This new design provides the following benefits:

- An easy-to-remember URL on all marketing materials that enhances promotion of the initiative.
- Effective marketing of all Clean Streams campaigns.
- Promotion of all Clean Streams campaigns on a single front page in clear categories; finding any campaign is easy.
- Consolidated Clean Streams information allows people to learn about other related campaigns easily.

Proposals Targeting Pollutants of Concern

As a part of the NPDES MS4 permit education and outreach requirements, it is required to create or conduct two public education campaigns.

Toxins Social Marketing Proposal

Last fiscal year proposals were written targeting the toxins chromium and zinc and have since been updated to include the four main toxins outlined in the Salem's pollutant matrix – chromium, copper, lead, and zinc. The updated proposal, *Social Marketing Proposal Targeting Stormwater Pollutant: Toxins,* outlines the social marketing plan, which includes looking at what behaviors we will attempt to influence to reduce the amount of toxins entering into stormwater and local streams, a specific target audience, benefits to behavior changes, barriers to changes, marketing strategies we will use to affect behavior change, and evaluation of the plan's effectiveness. It also outlines the residential sources of all four toxins and target behaviors for residents to practice reducing toxin contribution to stormwater and local streams. The next steps of the campaign will begin in fiscal year 2019/20, and will include reviewing target market research, adjusting the social marketing plan as needed, and beginning campaign roll out.

Watershed Enhancement Team (WET) Pledge

The Watershed Enhancement Team (WET) Pledge campaign is the second campaign focus. Due to social marketing principles, an update of the current WET Pledge campaign was completed. To encourage people to take the pledge, the update included making it more online friendly and making it easier to use at outreach events. The pledge was also transitioned to one pledge only, instead of different versions for adults, youth, and online. A new quarter sheet flyer was created to drive people directly to the website to take the pledge. The new online pledge now has ten pledge actions and the actions were updated to include some that were not in the original, for example not dumping things down indoor drains and toilets and using reusable materials instead of single-use plastics. A StoryMap through Salem Maps Online was also created highlighting what different areas in Salem have pledged to do. Once completed and approved, it will serve as an outreach and marketing tool for the WET Pledge.

Plastics Social Marketing Proposal

A social marketing proposal targeting plastic pollution in streams and the larger effect of plastic entering the ocean was started this fiscal year. This proposal will look at how residents can cut down on their single-use plastic consumption, as reduction in use will lead to a reduction in the amount of plastic entering into waterways. This proposal is in draft form.

Campaign Progress

Capital Canine Club

The Capital Canine Club asks residents to pledge to pick up after their dog every time they go outside as pet waste adds *E.coli* bacteria to local streams. As an incentive for taking the pledge, residents receive a mutt mitt dispenser with bags. The Capital Canine Club was promoted at several outreach events and during this fiscal year **53** new pledges were acquired.

Watershed Enhancement Team (WET) Pledge

The Watershed Enhancement Team (WET) pledge is a pledge form that residents can fill out indicating what they pledge to do to help keep pollution out of stormwater and conserve water. Through promotion at outreach events there were **69** new pledges this fiscal year. The WET Pledge was also promoted in the February newsletter.

Environmentally Friendly Car Wash Fundraisers

The Clean Streams Initiative promotes tips on keeping pollution from vehicles out of stormwater and provides information for fundraising groups on how to host an environmentally friendly car wash. A letter about hosting environmentally friendly car washes and the new car wash brochure was mailed out to **13** schools within the Salem/Keizer School District. Car Wash Fundraising brochures were taken to **5** Les Schwab locations to be distributed to groups that contact them about hosting a car wash fundraiser.

Storm Drain Marking

The volunteer storm drain marking program is an awareness campaign that involves volunteers placing a “Dump No Waste, Drains to Creek” marker near storm drains to let people know that anything that flows down a storm drain goes to a local stream. A new rack card was created to promote this volunteer opportunity at events. It was listed as a volunteer opportunity on Willamette University’s Volunteer Program online database for students. It was also promoted in the May and June Clean Streams newsletter. Two groups have completed storm drain marking projects with a total of **81** storm drains marked.

Watershed Protection & Preservation Grant

The City of Salem offers a grant program for Salem residents looking to do projects that will enhance local watershed resources. The new brochure on the grant was taken to outreach events and the grant was promoted to **6** neighborhood association groups and the Claggett Creek Watershed Council. The Youth Environmental Education

Instructor took over promoting the grant to Salem schools. It was also promoted in the February newsletter.

Mayor's Monarch Pledge

The Mayor's Monarch Pledge is not specifically a Clean Streams campaign, but it is a collaboration between the Clean Streams Initiative, Parks Planning & Natural Resources, and Parks Operations. Therefore, the Clean Streams Team markets the campaign, which involves promoting that Salem is participating in the Mayor's Monarch Pledge, the steps the City of Salem is taking to increase Monarch butterfly populations, and what residents can do to help. The Mayor's Monarch Pledge and pollinators were specifically promoted at **4** outreach events, rack cards were distributed to **2** local plant sales, and the pledge was promoted in the February newsletter.