



# WATER ENVIRONMENT SERVICES

**MS4 NPDES Permit Compliance Annual Report**

**for**

**Clackamas County Service District No. 1**

**(including the City of Happy Valley) and the**

**Surface Water Management Agency of Clackamas County**

**(including the City of Rivergrove)**

**July 1, 2014 – June 30, 2015**

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**October 23, 2015**

**Clackamas County Service District No. 1  
Surface Water Management Agency of Clackamas County  
(Including the City of Happy Valley and the City of Rivergrove)**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)  
STORMWATER MANAGEMENT PLAN**

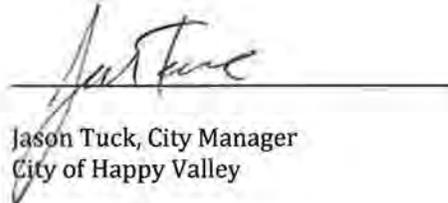
We, the undersigned, hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater System Annual Report in accordance with NPDES Permit Number 101348. We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our 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 our knowledge and belief, true, accurate and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Gregory L. Geist, Director  
Water Environment Services

10/23/15

Date



Jason Tuck, City Manager  
City of Happy Valley

10/26/15

Date

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## SECTION 1 INTRODUCTION

### 1.1 BACKGROUND

Clackamas County Service District No. 1 (CCSD#1), the Surface Water Management Agency of Clackamas County (SWMACC), the City of Happy Valley, and the City of Rivergrove are co-permittees on the same Phase I Municipal Separate Storm Sewer System (MS4) permit. The other Phase I co-permittees on this same MS4 permit include the Oak Lodge Sanitary District, Clackamas County Department of Transportation and Development (DTD), and the following cities: Oregon City, Lake Oswego, West Linn, Milwaukie, Gladstone, Wilsonville, and Johnson City. Phase I communities are generally those with a population of 100,000 or more. Clackamas County co-permittees are classified as Phase I communities because they meet this threshold collectively, though not separately. The Clackamas County MS4 permit was issued by DEQ on December 15, 1995, was renewed by DEQ on March 3, 2004, and was modified by DEQ on July 27, 2005. A renewal permit was issued on March 16, 2012.

A joint Stormwater Management Plan (SWMP) was developed in 1993 for CCSD#1 and SWMACC, pursuant to the (then pending) issuance of initial MS4 permits to Phase 1 communities in Oregon. The 1993 SWMP was updated in 2000. Further revisions were proposed in 2006 as part of the revised SWMPs for CCSD#1 (which includes the City of Happy Valley) and for SWMACC (which includes the City of Rivergrove). A revised SWMP was implemented for each District in May 1, 2012 (2012 SWMP).

This document serves as the annual report for the NPDES MS4 permit and associated SWMPs revised in 2012 for CCSD#1, SWMACC, and the cities of Happy Valley and Rivergrove. In years past we have combined the TMDL activities in the annual report for SWMACC's Tualatin River TMDL and Willamette River Implementation Plan. This year those will be reported under a separate report.

### 1.2 DISTRICT DEMOGRAPHICS

Both CCSD#1 and SWMACC are administered by Clackamas County Water Environment Services (WES) and together cover approximately 21,815 acres of land under the MS4 permit. Specific information for each District is below.

#### CCSD#1

CCSD#1 is comprised of four geographic subunits, including:

- Fischer's Forest Park - in the Redland area
- Hoodland - in and near Welches, Wemme, and Rhododendron
- Boring - in the hamlet of Boring
- Portland metropolitan area

Only the Portland metro area subunit of CCSD#1 is regulated by the MS4 permit. The remaining subunits serve rural areas or very small urban areas that are not within the Portland metro area's

Urban Growth Boundary (UGB). This Portland subunit is known as CCSD#1-UGB. The developed area of the City of Happy Valley lies within CCSD#1-UGB, and the remainder of Happy Valley will be annexed into CCSD#1 as it is developed.

**SWMACC**

SWMACC is a largely rural area with a small urban component in the City of Rivergrove. Some urbanized, unincorporated lands are also within SWMACC. While SWMACC includes the City of Rivergrove and all of the unincorporated lands in Clackamas County that drain to the Tualatin River and Lake Oswego, only a small portion of the District is within the Portland metro area’s UGB. This portion of SWMACC is regulated by the MS4 NPDES permit.

There is limited new development within the District, most of which occurs within the City of Rivergrove. Due to annexations to the cities of Lake Oswego and West Linn, the area under SWMACC’s jurisdiction is decreasing.

**1.3 DOCUMENT ORGANIZATION**

According to Schedule B(5) of the 2012 MS4 Permit, each co-permittee must submit an annual report, summarizing accomplishments and implementation of the MS4 SWMP. This annual report covers permit year 19 (or year 3 under the renewed permit of 2012) and it documents SWMP related activities that occurred from July 1, 2014 to June 30, 2015. Table 1 summarizes the annual report submittal requirements and provides the location in this document where each of the requirements is addressed.

**Table 1 NPDES MS4 Annual Report Submittal Requirement Locations in the Document**

<b>Annual Report Schedule B(5) Submittal Requirements:</b>	<b>Document Section Where the Annual Report Submittal Requirement is Met:</b>
<p><b>§a.</b> The status of implementing the stormwater management program and each SWMP program element, including progress in meeting the measurable goals identified in the SWMP.</p>	<p>Section 3.4</p>
<p><b>§b.</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.</p>	<p>Section 3.3</p>
<p><b>§c.</b> A summary of the adaptive management process implementation during the reporting year, including any proposed changes to the stormwater management program [e.g., new Best Management Practices (BMPs)] identified through implementation of the adaptive management process.</p>	<p>Section 3.0</p>
<p><b>§d.</b> Any proposed changes to SWMP program elements that are designed to reduce TMDL pollutants to the maximum extent practicable (MEP).</p>	<p>Section 3.1</p>

§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 5.0
§f. A summary of monitoring program results, including monitoring data that are accumulated throughout the reporting year and any assessments or evaluations conducted.	Section 4.1 and Appendix B and C
§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	Section 4.0
§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 3.4
§i. A summary, as it relates to MS4 discharges, describing land use changes, Urban Growth Boundary (UGB) expansion, land annexations, and new development activities that occurred within these areas during the reporting year. The number of new post-construction permits issued and an estimate of the total new and replaced impervious surface area related to development projects that commenced during the reporting year must also be included.	Section 3.4
§j. A summary, as related to MS4 discharges, describing concept planning or other activities conducted in preparation of UGB expansion or land annexation, if anticipated for the following year.	Section 7.0

## SECTION 2 WATERBODIES AND ASSOCIATED TMDLS

### CCSD#1

CCSD#1 falls entirely within the Willamette River basin, and thus is subject to the Willamette River Total Maximum Daily Load (TMDL) that was issued in September 2006. The pollutants covered under the Willamette TMDL include:

- DDT & dieldrin (for Johnson Creek only)
- Temperature
- Mercury
- Bacteria (E. coli)

The tributaries to the Willamette River receiving discharges from CCSD#1's MS4 permit area (including the City of Happy Valley) include, but are not limited to the following:

- Johnson Creek
  - Mitchell Creek

- Kellogg Creek
  - Mt. Scott Creek
    - Cedar Creek
      - Mel Brook Creek
    - Dean Creek
    - Phillips Creek
- Clackamas River
  - Cow Creek
  - Carli Creek
  - Sieben Creek
    - Rose Creek
    - Sunshine Creek
  - Rock Creek
    - Graham Creek
    - Trillium Creek

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### SWMACC

SWMACC falls within the Tualatin River basin. The Tualatin River, a major tributary to the Willamette River, was issued a TMDL in 2001. Subsequently the TMDL implementation plan was updated in 2006 to include the mercury TMDL associated with the Willamette River TMDL. The pollutants covered under the Tualatin TMDL include:

- Temperature
- Dissolved Oxygen
- pH and chlorophyll A (total phosphorus)
- Bacteria (E. coli)
- Mercury

There are no rivers or creeks within SWMACC's MS4 permit area. The following creeks are subject to the Tualatin TMDL:

- Tualatin River
  - Pecan Creek
  - Saum Creek
  - Wilson Creek
  - Carter Creek (tributary to Fanno Creek)
  - Rock Creek "South"
  - Tate Creek

Reporting on TMDL's for this reporting year will be in a separate report.

## SECTION 3 STORMWATER MANAGEMENT PLAN (SWMP 2012) OVERVIEW AND ACTIVITIES

With respect to MS4 annual reporting requirements, this section covers the following items per schedule B (5) of the MS4 permit:

- §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.
- §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.
- §d.** Any proposed changes to SWMP program elements that are designed to reduce TMDL pollutants to the maximum extent practicable (MEP).
- §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.

### 3.1 PROPOSED CHANGES TO SWMP ACTIVITIES

Both Districts submitted NPDES MS4 permit renewal applications to DEQ on September 2, 2008. As part of these applications, the districts evaluated and revised their SWMPs. SWMP changes are presented in this report, and became effective May 1, 2012. No further changes are anticipated to the 2012 SWMP.

### 3.2 STATUS OF THE IMPLEMENTATION OF SWMP COMPONENTS

BMP's summaries will include the tracking measures, measurable goals, and implementation activities outlined in the 2012 SWMP. A more complete listing of the Willamette and Tualatin TMDL activities can be found under a separate report.

<u>Permit Section</u>	<u>Requested</u>	<u>Date Provided or Due</u>
Schedule A.4.a.	Enforcement Procedures, Pollution Action Levels and Dry-weather Screening Priority Locations	November 2012

Schedule A.4.b.	Industrial and Commercial Facility Inspection and Stormwater Control Program	July 2013
Schedule A.4.d.	Education and Outreach Effective Evaluation	July 2015
Schedule A.4.f.	Post Construction Site Runoff	November 2014
Schedule A.4.g.	Operations Inventory and Assessment	July 2013
Schedule A.4.h.	Structural Stormwater Controls Operation and Maintenance Program	July 2013
Schedule A.5	Hydromodification Assessment	July 2015
Schedule A.6	Retrofit Strategy Development: 1. Identification of Stormwater Quality Improvement Project	July 2015
Schedule A.6	Retrofit Strategy Development: 2. Stormwater Retrofit Strategy and Plan	July 2014
Schedule A.6	Retrofit Strategy Development: 3. Construction of Stormwater Quality Improvement Project	Due permit expiration date, March 1, 2017

The Districts' SWMPs are organized into sections covering the required SWMP components per permit schedule A(4), shown below:

**Component #1**

**Illicit Discharge Detection and Elimination**

- Conduct Dry Weather Inspections
- Implement the Spill Response Program
- Respond to Reports Involving Illicit Discharges

**Component #2**

**Industrial and Commercial Facilities**

- Screen Existing and New Industrial Facilities
- Address Other Industrial Facilities

**Component #3**

**Construction Site Runoff**

- Conduct Procedures for Site Planning
- Implement Requirements for Structural and Non-Structural Best Management Practices
- Conduct Training for Construction Site Operators
- Identify Priorities for Inspecting Sites and Conducting Enforcement Actions

**Component #4**

**Education and Outreach**

- Public Education to Reduce Discharges of Pesticides, Herbicides and Fertilizers
- Proper Disposal Practices to Reduce Discharges of Pesticides, Herbicides and Fertilizers
- Facilitate Public Reporting of Illicit Discharges and Spills and Other Types of Improper Disposal of Materials
- Participate in a Public Education Effectiveness Evaluation
- Training for Employees

**Component #5**

**Public Involvement and Participation**

- Provide for Public Participation with SWMP and Benchmark Submittals

**Component #6**

**Post-Construction Site Runoff**

- Planning Procedures for New Development and Significant Redevelopment
- Updated Procedures for New Development and Significant Redevelopment
- BMP Sizing Tool Development to address Hydromodification (CCSD#1 and City of Happy Valley only)

**Component #7**

**Pollution Prevention for Municipal Operations BMPs**

- Street Sweeping
- Operations & Maintenance for Public Streets
- Proper Road Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers
- Landscape Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers
- Control Infiltration and Cross Connections to the District's Stormwater System
- Flood Management Projects and Water Quality (CCSD#1 and City of Happy Valley only)
- Detention Pond Retrofit Program (CCSD#1 and City of Happy Valley only)

**Component #8**

**Structural Stormwater Facility Operations and Maintenance**

- Maintenance of Conveyance System Components and Structural Controls
- Conduct Catch basin Cleaning and Maintenance
- Storm Drain Cleaning Assistance Program
- Private Water Quality Facility Maintenance Program

### 3.3 PUBLIC EDUCATION AND ADDITIONAL ACTIVITIES

The Districts perform a variety of stormwater related outreach and public involvement activities each year in addition to those outlined in the Districts' SWMPs. These activities include public education campaigns; presentations and course development; public engagement; intergovernmental coordination; and staff training. These strategies are implemented each year to increase citizen and stakeholder awareness and engagement in programs and services provided by the Districts to help strengthen the Districts' identity within the community and to expand information-sharing efforts.

Throughout the year, the Districts creates awareness for ratepayers (both residential and business) and the general public about the impact of stormwater pollution on public health and the health of the region's rivers and streams. Awareness messages and outreach activities are designed to educate area residents, students, and businesses about their personal link to protecting, restoring and enhancing water quality to maintain healthy watersheds. The goal of these communication efforts is to build public awareness, change daily behavior or business practices, and encourage stewardship that will improve stormwater quality and protect the health of our rivers.

Through citizen and stakeholder outreach, business workshops and public education programs, the Districts continue to engage the public and other jurisdictions in decision-making. The Districts continue to seek out opportunities to maintain an ongoing two-way dialogue with customers, citizens, other utilities, stewardship organizations, businesses, and schools to build partnerships in the region.

Outreach over the course of the 2014/2015 year is detailed in BMP#13

### 3.4 BEST MANAGEMENT PRACTICES REPORTING

#### BMP#1: CONDUCT DRY WEATHER INSPECTIONS

##### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** The purpose of dry-weather outfall inspections is to detect an illicit discharge at the outfall or confirm that they are not present. If flow is detected during dry weather, District staff track it upstream through the storm sewer system to the source, and then address, or if necessary, control the discharge. Illicit discharges are detected during dry-weather inspections through the use of hand-held water quality measuring equipment and through visual inspections by the inspector. When a visual inspection or a pollutant level measured at an outfall indicates that an illicit discharge may be present, an upstream investigation through the storm sewer system is performed. When the discharge's source is located, District staff work with the property owner and/or business owner to evaluate, and if necessary, control the discharge.

##### TRACKING MEASURES

1. Number of outfalls inspected during dry-weather
2. Number and type of illicit discharges encountered and controlled
3. Status of updating procedures to address new permit requirements

## CCSD#1 TRACKING MEASURE RESPONSES

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- Thirty-two outfalls were inspected during dry-weather.
- Zero spills were discovered during the dry-weather outfall inspection work in CCSD#1. One illicit discharge was detected; it was detected and controlled on September 11, 2014 at the SE Capps Road outfall (pavement washing water from Clackamas Compost Products LLC). One small non-stormwater discharge (excess lawn irrigation water) was detected.
- Activity was consistent with enforcement-response, priority-setting and field-screening procedures in place since October 2012. They include:
  - *Enforcement Response Plan* per MS4 Schedule A(4)(a)(ii)
  - *Rationale for the Pollutant Parameter Action Levels* for dry-weather storm sewer system field screening at priority locations per MS4 Schedule A(4)(a)(iii)
  - *Priority Locations* for conducting dry-weather storm sewer system field screening work per MS4 Schedule A(4)(a)(iv)

## SWMACC TRACKING MEASURE RESPONSES

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- Five outfalls were inspected during dry-weather.
- Zero illicit discharges, spills, and non-stormwater discharges were discovered during the dry-weather out-fall inspection work in SWMACC
- Activity was consistent with enforcement-response, priority-setting and field-screening procedures in place since October 2012. They include:
  - *Enforcement Response Plan* per MS4 Schedule A(4)(a)(ii)
  - *Rationale for the Pollutant Parameter Action Levels* for dry-weather storm sewer system field screening at priority locations per MS4 Schedule A(4)(a)(iii)
  - *Priority Locations* for conducting dry-weather storm sewer system field screening work per MS4 Schedule A(4)(a)(iv)

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## MEASURABLE GOALS

1. Inspect major or priority outfalls for the presence of illicit discharges at least once per year
2. Update maps of major outfalls on an annual basis
3. Update dry weather field screening program to address new permit requirements by November 1, 2012

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## PROGRESS ON MEASURABLE GOALS FOR BOTH DISTRICTS

- MG #1 was attained. All major and priority outfalls were inspected once for the presence of illicit discharges, spills, and non-stormwater discharges.
- MG #2 was attained. The maps weren't updated during the reporting period, but this was considered and it was deemed un-necessary, since no changes had occurred.
- MG #3 was attained. The dry weather field screening program was updated to address new permit requirements by November 1, 2012.

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## BMP#2: IMPLEMENT THE SPILL RESPONSE PROGRAM

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### DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND DTD

**BMP Description:** The Districts' Spill Response Program prevents, contains, and responds to spills of dangerous, hazardous and other materials in the MS4-permitted areas of CCSD#1 and SWMACC. The Districts' Spill response Program ensures that the actual or possible release of dangerous /hazardous materials to the MS4 is properly addressed. Except for minor incidents, the Districts' Spill Response Program personnel always coordinate closely with other agencies and departments, including Clackamas County Fire District No. 1 (and for certain incidents involving hazardous materials, the Gresham HazMat Team), DEQ, Oregon State Police, Clackamas County's Road Department (DTD), and Oregon's Department of Transportation (ODOT).

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### TRACKING MEASURES

1. Number of reported spills to the MS4 system
2. Number and type of response to the reported spills

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### CCSD#1 TRACKING MEASURE RESPONSE

- 3 reported spills to the MS4:
  - 1 spill of 55 gallons of hydraulic fluid to the collections system
  - 1 spill of 120 gallons of anti-freeze to a catch basin
  - 1 spill of vegetable oil to a swale
- WES responses
  - 1 spill of 55 gallons of hydraulic fluid to the collections system: WES staff made contact with the responsible party and a site visit, observed cleanup by company maintenance staff, and inspected for proper cleanup.
  - Response to 1 spill of 120 gallons of anti-freeze to a catch basin this incident: WES staff made contact with the responsible party and a site visit, observed cleanup by private cleanup company, and inspected for proper cleanup.
  - Response to 1 spill of vegetable oil to a swale: WES staff made contact with the responsible party and a site visit, observed cleanup by private cleanup company, and inspected for proper cleanup.

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### SWMACC TRACKING MEASURE RESPONSE

- No spills were reported in SWMACC
- Not applicable

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### DTD TRACKING MEASURE RESPONSE

- See DTD MS4 Annual Report response
- See DTD MS4 Annual Report response

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## MEASURABLE GOALS

1. Implement the spill response program and associated protocols

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## PROGRESS ON CCSD#1 AND SWMACC MEASURABLE GOALS

In 2014/2015, "SUMMARY OF SPILL RESPONSE & REPORTING PROCEDURES," which provides instructions on reporting procedures, was updated to streamline staff response time to spills *reported by the public* and to spills *reported by WES and County staff* during their inspections of detention ponds, catch basins, manholes, drywells and swales.

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## PROGRESS ON DTD MEASURABLE GOALS

See DTD MS4 Annual Report response.

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## BMP#3: RESPOND TO REPORTS INVOLVING ILLICIT DISCHARGES

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** Reports are often received from Oregon's DEQ, ODOT, Water Districts, Fire Districts, cities, citizens, CCSD#1 and SWMACC co-workers, DTD employees and others which allege that an illicit discharge has occurred or is occurring. When reports are received which allege that an illicit discharge has occurred or is occurring, the Districts will attempt to confirm the allegation in a timely manner. If it can be confirmed that an illicit discharge has occurred or is occurring, District staff will cooperate with the property owner and/or business owner to evaluate, and if necessary, control the discharge. Control options that may be applied or recommended by the District include, but are not limited to:

- The removal of certain pollutants from the wastewater prior to discharge to the storm sewer system (i.e. cease usage of soap when washing).
- Issuance of the property discharge permit from DEQ. A discharge that has been authorized and controlled by a DEQ water quality permit is not an illicit discharge.
- Application the wastewater to dry land with no discharge to surface waters or storm sewers. This option is inappropriate for certain types of wastewaters, discharge rates, and soil types and may require the issuance of a WPCF permit from DEQ.
- Wastewater reuse without any discharge.
- Hauling the wastewater off-site for property disposal.
- With the necessary permits, discharge the wastewater to CCSD#1's sanitary sewer.

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## TRACKING MEASURES

1. Number of alleged (a) illicit discharges and (b) non-stormwater (i.e., fire suppression flows and de-chlorinated flows from swimming pools) discharges which were reported each year
2. Number of illicit discharges that were controlled

## CCSD#1 TRACKING MEASURES RESPONSES

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- 7 illicit discharges and 2 non-storm water discharges reported
- All known illicit discharges were controlled

## SWMACC TRACKING MEASURES RESPONSES

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- No illicit discharges were reported within SWMACC

## MEASURABLE GOALS

1. Respond to reports involving alleged illicit discharges within two weeks.

## PROGRESS ON CCSD#1 MEASURABLE GOALS

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The response time is now down to a few hours. The “SOP: Spills and Dangerous or Hazardous Materials” was updated this year to focus on WES line staff responses to illicit discharges and spills. Staff responsibilities were evaluated, reassignments of responsibility were made, and the line crew was placed on an existing after-hours call-out list in an effort to streamline our response time and cleanup efforts. As a result, WES staff responds to incidents more efficiently and effectively.

## PROGRESS ON SWMACC MEASURABLE GOALS

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“SOP: Spills and Dangerous or Hazardous Materials” discussed above is in place for SWMACC and would be launched should SWMACC illicit discharges be reported.

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## BMP#4: SCREEN EXISTING AND NEW INDUSTRIAL FACILITIES

### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** Once during the permit term, CCSD#1 will review their new industrial development applications to determine whether any existing or new facilities would be subject to an industrial stormwater NPDES permit. This determination will occur based on a review of the facilities’ proposed activities and the applicable Standard Industrial Classification (SIC) codes related to the 1200-series NPDES permit. If a facility is identified that would be subject to an industrial stormwater NPDES permit, the facility and DEQ will be notified within 30 days.

### TRACKING MEASURE

1. Track the number of existing or new industrial facilities subject to a stormwater industrial NPDES permit during the permit term.

## CCSD#1 TRACKING MEASURE RESPONSE

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- Approximately twenty-eight (28) facilities in CCSD#1 are currently in possession of a 1200Z permit and an additional facility is in possession of a 1200A permit. During the 2014/2015 reporting period, WES notified one industrial facility, General Sheet Metal (16345 SE Evelyn St in Clackamas, OR), that they might be required to apply for a 1200Z permit, as required by the MS4 permit's schedule A(4)(b)(ii).

Letters were U.S. mailed to the following four industrial facilities in CCSD#1 on November 7, 2014: Larsen's Creamery (16940 SE 130th Ave., Clackamas, OR 97015), P & A Metal Fab, Inc. (16300 SE 130th Ave./Clackamas, OR 97015), Mutual Materials Co. (16800 SE 130th Ave./Clackamas, OR 97015), and Pacific Seafood (16797 SE 130th Ave./Clackamas, OR 97015). At this time, it is unclear if any of these facilities will ever be required to apply for a 1200Z Permit or 1200Z Permit waiver from DEQ, and as of June 30, 2015, WES was still in the process of providing technical assistance to these industries.

## SWMACC TRACKING MEASURES RESPONSES

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- Very little or no acreage in SWMACC's MS4-permitted area is zoned for industrial uses. During the 2014/2015 reporting period, WES did not notify any industries in SWMACC that they might need to apply for a 1200Z permit.

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## MEASURABLE GOALS

1. Review new industrial development applications once during the permit term to identify additional facilities who may need to obtain a 1200Z permit or a waiver from permit coverage.

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- A strategy for reviewing the *existing* industrial facilities in CCSD#1 for 1200Z permit eligibility was approved by WES management during the 2014/2015 permit year. This strategy involves the addition of two 1200Z permit eligibility-related questions to the WES Industrial Pretreatment Industrial User survey. The survey is expected to be mailed in August 2015. Completed surveys are expected to be reviewed in 2015 and 2016, and facilities which might be eligible for a 1200Z permit will then be contacted by WES.

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## PROGRESS ON SWMACC MEASURABLE GOALS

- There were no new industrial development applications to review.

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## BMP#5: ADDRESS OTHER INDUSTRIAL FACILITIES

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** The facilities that are addressed by the District for this BMP are those that are not required to obtain a 1200Z permit, and/or are anticipated to contribute a substantial load of pollutants to the MS4.

Facilities will primarily be inspected on a complaint-driven basis, but it is possible that some inspections will be conducted by the District during source tracking activities if the District's storm event monitoring work or routine monitoring work shows that excessive levels of one or more pollutants are present. All facilities that are the subject of a complaint will be inspected in a timely manner by District staff. The implementation of control measures for stormwater discharges from these facilities will be deemed necessary by the District if the presence of excess levels of stormwater pollution can be confirmed by the District. For instances where the presence of excess levels of pollution in stormwater has been confirmed by the District, and in the event that the discharger's initial attempts to improve stormwater quality do not produce the required improvement, then District personnel will continue to provide guidance and technical assistance until the facilities stormwater quality improves.

The presence of excess levels of pollution in stormwater can generally be confirmed by two general methods: visual and analytical. Analytical methodologies include hand-held meters, and those performed by an environmental laboratory. The District will use visual or analytical methods at the District's discretion.

Industrial users permitted under the pretreatment program 40CFR403 have an annual facility inspection which includes a review of storm water facilities. As of 2014, this includes 21 industries.

In addition, the District has implemented a Storm Drain Cleaning Assistance Program. See BMP #28 CCSD#1.

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### TRACKING MEASURES

1. The number of inspections performed, and where applicable, monitoring data collected
2. The number of letters, enforcement actions, or other contacts made
3. Number of pretreatment inspections performed (CCSD#1 - only)

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### CCSD#1 TRACKING MEASURES RESPONSES

- Twenty-five inspections were performed at industrial/commercial facilities in CCSD#1 during the reporting period. No stormwater quality monitoring data was collected by WES. Collier Arbor Care received an inspection on April 7, 2015; this was an EcoBiz Program re-certification inspection. See Tracking Measure #3 for information about the other 24 inspections, for they were pre-treatment inspections.
- No letters were sent and no enforcement actions were undertaken during the reporting period. One hundred ninety-three "other contacts" were made however. These 193 "other contacts" were face-to-face meetings at commercial and industrial facilities in CCSD#1. These other contacts were made by staff from Portland State University (PSU) and the

Pacific NW Pollution Prevention Resource Center (PPRC) as they administered the EcoBiz Automotive and Landscaping Programs in CCSD#1. CCSD#1 hired the PPRC to administer these two EcoBiz programs in CCSD#1 during the 2014/2015 MS4 Permit reporting period. PSU's funding for EcoBiz program administration in CCSD#1 in 2014/2015 was funded, in part, by a grant from US EPA. Some of these meetings were very brief. During some of these meetings, the only representative of the business who participated is the person who worked at the businesses' reception desk. Storm sewer system service to these facilities, including point source discharges of wastewater, spills, and stormwater runoff quality, were discussed during most of the EcoBiz conversations in which PPRC and PSU participated.

- Twenty-four pre-treatment inspections were performed at industrial facilities in CCSD#1 in 2014/2015. Nine facilities received two inspections each and an additional six facilities were inspected once.

### SWMACC TRACKING MEASURES RESPONSES

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- No inspections were performed in the MS4-permitted portion of SWMACC; this geographic area has no industrial facilities and a very small number of commercial facilities. No stormwater quality monitoring data was collected by WES from any facilities in SWMACC during the reporting period.
- No letters were sent and no enforcement actions were undertaken during the reporting period.

### MEASURABLE GOALS

1. Notify and work with industries to improve stormwater management if an inspection is conducted that indicates improvement is needed.

### PROGRESS ON CCSD#1 MEASURABLE GOALS

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- In the 25 inspections conducted, we observed nothing requiring follow-up work with the property owner.

### PROGRESS ON SWMACC MEASURABLE GOALS

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- No inspections were conducted

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## BMP#6: CONDUCT PROCEDURES FOR SITE PLANNING

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### DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

#### **BMP Description:**

##### **CCSD#1 and SWMACC Service Area Development Review**

The Districts review all development plans for new construction or redevelopment projects in the Districts' service areas (disturbing sites of 800 sq. ft. or greater) through the building permit process. All reviews are conducted in accordance with the Surface Water Management Rules and Regulations for CCSD#1 and SWMACC. These regulations require submittal of an erosion prevention and sediment control (EPSC) plan containing methods and/or interim facilities to be constructed or used concurrently with land development. Plan submittals are required to provide details of erosion control measures, schedules for construction, and a maintenance schedule for erosion control activities.

The Districts also administer the 1200C permitting program for the areas inside Clackamas County and outside the incorporated cities (with the exception of Gladstone as the District administers the program for that City).

##### **City of Happy Valley Service Area Development Review**

The city of Happy Valley reviews all development plans for new construction or redevelopment projects in the District's service area through the land use and building permit processes. The pertinent regulations are in Sections 8 and 15 of the Happy Valley Municipal Code. These regulations require submittal of an erosion prevention and sediment control plan, which contains methods and/or interim facilities to be constructed or used concurrently with land development. Plan submittals are required to provide details of erosion control measures, schedules for construction, and a maintenance schedule for erosion control activities. 1200C permits in the city of Happy Valley are administered by DEQ.

##### **CCSD#1, SWMACC & Happy Valley**

The Erosion Prevention and Sediment Control Planning and Design Manual is part of the EPSC requirements and is also offered as an educational resource to the development community for preparation of plans for erosion prevention and sediment control by both the city of Happy Valley and the districts. In addition to erosion prevention and sediment control, the document also includes measures related to good house-keeping and addressing non-stormwater related waste. A multi-jurisdictional team revised this manual in December 2009.

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### TRACKING MEASURES

1. Annual number of permitted active construction projects (i.e., those projects disturbing 800 sq. ft. or more)
2. Annual number of site plan reviews and approved plans

## TRACKING MEASURES RESPONSES

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	Annual number of permitted active construction projects	Annual number of site plan reviews and approved plans
CCSD#1	110	110
SWMACC	8	8
Happy Valley	298	296

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### MEASURABLE GOALS

1. Review all applicable erosion and sediment control plans submitted as part of the building permit

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### PROGRESS ON CCSD#1, SWMACC AND HAPPY VALLEY MEASURABLE GOALS

2. All applicable erosion and sediment control plans were reviewed approved and permitted

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### BMP# 7: IMPLEMENT REQUIREMENTS FOR STRUCTURAL AND NON-STRUCTURAL BEST MANAGEMENT PRACTICES

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#### DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

##### **BMP Description: CCSD#1 Service Area/SWMACC/City of Happy Valley Service Area**

Structural and non-structural BMPs are required for all construction disturbing 800 sq. ft. of land or more by the District's erosion prevention and sediment control regulations. Erosion control plans require specific descriptions of erosion prevention measures, and implementation of control measures for any erosion identified prior to and concurrent with construction activities. Maintenance of all erosion control measures pursuant to an approved plan is the applicant's responsibility.

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### TRACKING MEASURES

See tracking measures for BMP #6

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### TRACKING MEASURES RESPONSES

See tracking measure responses for BMP #6

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## MEASURABLE GOALS

1. District: CCSD#1 and SWMACC: Require structural and non-structural BMPs for erosion prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more
2. City of Happy Valley: Require structural and non-structural BMPs for erosion control prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more.

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## PROGRESS ON MEASURABLE GOALS

3. District: CCSD#1 and SWMACC: Required structural and non-structural BMPs for erosion prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more
4. City of Happy Valley: Required structural and non-structural BMPs for erosion control prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more

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## BMP#8: CONDUCT TRAINING FOR CONSTRUCTION SITE OPERATORS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

**BMP Description:** The Districts and the City of Happy Valley participate in the same activities regarding educational and training measures for construction site operators. These activities include the following:

5. The *Erosion Prevention and Sediment Control Planning and Design Manual* was developed in coordination with multiple regional jurisdictions. It is available for contractors, citizens, or others involved with construction activities within the permit area.
6. The Districts and the City of Happy Valley provide information to contractors during the permit review process, including pre-construction review meetings. District and city staff meet with developers and contractors to discuss requirements and to visit sites to review specific requirements.
7. The Districts and the City of Happy Valley have initiated a voluntary certification program for erosion control through Clackamas Community College. The certification process and procedure are coordinated with other jurisdictions in Clackamas County.
8. The Districts and the City of Happy Valley have partnered with regional jurisdictions, the Oregon Association of General Contractors and the Homebuilders Association of Metropolitan Regional Erosion Prevention Awards Program. Developed to provide recognition for contractors and developers with outstanding achievements in exceeding local erosion control requirements, the program provides recipients with media recognition, peer recognition and prizes donated by vendors of erosion prevention and sediment control products and services. The annual Regional Erosion Prevention Awards Program provides the development community with incentive to seek education regarding erosion prevention BMPs, improve BMP selection and installation and to better monitor and maintain the BMP's used in their projects. Additional benefits of the program include education for inspection

staff and help with the standardization of erosion prevention requirements and reductions in noncompliance with erosion control requirements. In 2007-2008, participants included over 28 jurisdictions from 5 counties within Oregon and southern Washington.

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## TRACKING MEASURES

1. Track the number and type of educational and training events the District conducts and/or participates in annually

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## TRACKING MEASURES RESPONSES

- WES offered the Erosion Prevention and Sediment Control Planning and Design Manual (available for download from the WES website) as well as the ACWA Construction Site Stormwater Guide (offered to contractors by WES staff as need arises). In light of a rise in the use of the incorrect type of sediment fencing (non-pocketed) and incorrect installation, staff developed and mailed to each new erosion permit applicant a flyer identifying the approved type of sediment fencing for within the Districts as well as reminders regarding proper installation. In regards to the training by Clackamas Community College and the certification program, there are no certified individuals at this time. This program is currently under review and revision. The former downturn in the building industry resulted in insufficient interest in the -program to warrant offering certification training or the awards program at this time. Once development increases to sufficient levels, the certification training and awards program will be revisited.

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## MEASURABLE GOALS

1. Conduct training for new employees as appropriate and whenever there is a significant update to the *Erosion Prevention and Sediment Control Planning and Design Manual*

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## PROGRESS ON CCSD#1, SWMACC AND HAPPY VALLEY MEASURABLE GOALS

- No applicable new employees have been hired and there have been no changes to the manual. Training will be provided as needed.

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## BMP# 9: IDENTIFY PRIORITIES FOR INSPECTING SITES AND CONDUCTING ENFORCEMENT ACTIONS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

#### **BMP Description:**

##### ***CCSD#1 Service Area***

The District inspects all construction project sites disturbing 800 sq. ft. of land or more for implementation of erosion prevention and sediment control BMPs within the district's service area. Additionally Water Environment Services is an agent of DEQ in the issuance and administration of NPDES 1200C permits for developments disturbing areas one acre or larger throughout unincorporated Clackamas County and, by agreement, within the Oak Lodge Sanitary District and the cities of Gladstone and Rivergrove. District staff inspects construction sites a minimum of three times (initial, unscheduled and final) during construction to verify proper implementation of required BMPs. Additional monitoring inspections are performed as necessary.

Priorities for monitoring inspections are based on site-specific characteristics (i.e., watershed, grade, percentage of soil cover to be removed, construction practices, season, and proximity to sensitive areas). Based on the recommendations from the WAPs, the prioritization process has been formally codified and inspection resources are allocated based on priority.

Note: CCSD#1 Asset Management and Stormwater staff have developed a protocol for identifying high priority erosion control sites based on a number of criteria related to: site location; stage of development; and adjacency to sensitive features and other factors. A preliminary ranking scheme was developed and several CCSD#1 staff were trained on the protocol and sent out into the field to perform an initial ranking of all existing erosion control sites. These data have been collected and compiled in the District's Permits database. This database will be used to refine the ranking process and track all future erosion control inspections. The prioritization ranking scheme and inspection records will be used to allocate future erosion control resources based on priority.

The Districts monitor compliance with the erosion prevention and sediment control regulations and has the authority to issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met.

Records of activities are maintained on file at the District. Erosion control plans are filed as well as inspection reports that describe non-compliance/enforcement actions.

##### ***City of Happy Valley Service Area***

The City inspects all construction project sites disturbing 800 sq. ft. of land or more for implementation of erosion prevention and sediment control BMPs within the District's disturbing areas one acre or larger inside the city limits. City staff inspects construction sites a minimum of twice during construction to verify proper implementation of required BMPs. Additional inspections are performed as necessary.

The City monitors compliance with the erosion control regulations and has the authority to issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met.

Records of activities are maintained on file at Happy Valley City Hall. Erosion control plans are filed as well as inspection reports that describe non-compliance-enforcement actions.

Enforcement procedures are documented in the District’s rules and regulations.

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## TRACKING MEASURES

1. Annual number of permitted sites and percentage of sites inspections
2. Annual number of erosion control inspections conducted
3. Annual number of enforcement actions

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## TRACKING MEASURES RESPONSES

Tracking Measure	CCSD#1	Happy Valley	SWMACC
(1) Annual number of permitted sites and percentage of sites inspected	139 100% site inspections	298 100% site inspections	43 100% site inspections
(2) Annual number of erosion control inspections conducted	523	1248	174
(3) Annual number of enforcement actions	1	4	0

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## MEASURABLE GOALS

1. Inspect construction sites disturbing 800s.f. of land or more a minimum of three times during construction to verify proper implementation of required BMPs
2. Monitor compliance with the erosion control regulations for sites disturbing 800s.f. or more of land and when necessary, issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met

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## PROGRESS ON CCSD#1 AND SWMACC MEASURABLE GOALS

- Attained. Measurable goals are being met by performing an initial visit and final visit and at least one unscheduled visit
- Attained. Measurable goals are being met as described in the tracking measures as listed above

## PROGRESS ON HAPPY VALLEY MEASURABLE GOALS

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- Measurable goals were met
- Measurable goals were met

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### BMP#10: PUBLIC EDUCATION TO REDUCE DISCHARGES OF PESTICIDES, HERBICIDES AND FERTILIZERS

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#### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** CCSD#1 administers a public education program which provides information that attempts to motivate workers and residents to reduce stormwater pollution that is caused by the application of pesticides, herbicides, and fertilizers in the Districts. Educational information is shared with the public through the use of:

- Articles in newsletters
- Districts' website
- U.S. Geological Survey publications
- Local public involvement campaigns
- Brochures

Common topics that are addressed by this program include:

- Less harmful alternatives to the use of pesticides, herbicides, and fertilizers are provided. For example, use of ladybugs to eat insect pests is encouraged as an alternative to pesticide application.
- Information about the potential hazards to water quality, public health, and aquatic life associated with the misuse of pesticides, herbicides, and fertilizers in the District.
- Users are reminded that pesticide and herbicide products need to be used in a manner consistent with the product's label.

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#### TRACKING MEASURES:

1. Track program messages delivered, type of communication piece, and where appropriate the number of people affected

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#### CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

WES RiverHealth Newsletter (Distribution: 19,000/month)

- Bill insert to all CCSD#1 customers containing information concerning potential hazards to water quality, public health, and aquatic life associated with the misuse of pesticides, herbicides, and fertilizers, February 2015

Happy Valley Newsletter (Distribution: 16,000/month)

- *"Love of lush lawn can come with a price"* Article about safe pesticide/fertilizer use, July 2014
- *"Splurge at commercial car wash to save rivers and streams"* Article about keeping pollution out of storm drains, August 2014

- *"Attention Pool/Spa Owners" Public notice about keeping chlorinated water out of storm drains*, September 2014
- *"EnviroGoats' are hoofin' it to CCSD#1" Article about alternative to pesticide/herbicide use*, September 2014
- *"Help clear storm drains to protect your property and our water" Article about storm drain maintenance and proper use*, October 2014
- *"Discover Rock Creek: Home of the Happy Fish of Happy Valley" Article about watershed education and stewardship learning event*, November 2014
- *"Only rain down the drain: Spills happen, help us find them!" Article about illicit discharges with public reporting contact information*, December 2014
- *"Begin 2015 by protecting watershed health" Article about protecting watershed health and water quality*, January 2015
- *"Down the drain: out-of-sight should NOT be out-of-mind" Article about wastewater vs. surfacewater drains with illicit discharge reporting information*, February 2015
- *"Improvements to neighborhood stream benefit water quality and habitat" Article about protecting stream from erosion*, April 2015
- *"RiverHealth Community Watershed Stewardship Program" Announcement of grant opportunities to improve water quality in CCSD#1*, May 2015
- *"Be a Doggydoo Right!" Public notice about protecting water quality by picking up dog waste*, June 2015

Happy Valley Radio 1700AM WQQK343 (Up to 3 miles radius includes 16,000+)

- *"Fertilizer/Pesticide Careful Use" Radio PSA*, broadcast between August-October 2014 and April-June 2015
- *"Chlorinated pool and hot tub water proper disposal" Radio PSA*, On air between September-October 20

Clackamas County Citizen News (Distribution: 177,000)

- *"Get EcoBiz Certified" Advertisement about certified businesses protecting water quality*, August 2014
- *"Students find amphibians in Clackamas wetlands" Article about watershed health on wildlife habitat and water quality*, Summer 2014
- *"More than 100 volunteers gather to support watershed health" Article about a watershed health and protection event to improve water quality*, Summer 2014
- *"Remove leaves from storm drains to protect property and water quality" Public notice about storm drain care and how to report illicit discharges*, Fall 2014
- *"Weed Eaters" Advertisement about utilizing goats to improve watershed health*, Fall 2014
- *"Rain gardens improve water quality and reduce flooding, teach valuable lessons" Article about how rain gardens and low impact development practices can improve water quality*, Spring 2015
- *"Help protect public health and the environment in Clackamas County" Article and Q&A about wastewater and surfacewater drain protection with illicit discharge reporting information*, Winter 2015
- *"Wanted: Folks big and small to celebrate and protect water quality" advertisement/invitation to watershed-wide events*, Winter 2015
- *"Volunteers needed to celebrate and 'green up' the Rock Creek Watershed" Article about watershed-wide stewardship event to protect wildlife habitat and water quality*, Winter 2015
- *"Free workshops on septic system care" Public notice about workshops to care for septic systems to protect water quality*, Winter 2015

Social Media

- Facebook - Likes: 2,482
- Twitter - Followers: 3,452
- RiverHealth.org - 12,804 total sessions; 1,272 "Watershed Health" page sessions

Videos

- *Smart Gardening*

- *Watershed Health Education Program*
- *Down the Drain*
- *Water Celebration*
- *Clackamas County Water Education Team*

#### Brochures

- *Protecting Our Watersheds*
- *Stream & wetland Enhancement Guide*
- *Stream-Friendly Home and Yard Care*
- *Rain Gardens: Gorgeous landscaping for your yard that also helps soak up runoff!*
- *Protecting Your Watershed*
- *What Have You Done for Your Watersheds Lately?*

#### Events

- Clackamas County Fair
- Down the River Clean up
- Johnson Creek Watershed Wide Event
- Rock Creek Watershed Wide Event Celebrating Water
- We All Live Upstream – Watershed Wide Event

#### Regional Coalition for Clean River and Streams

- *“Is your lawn chemical free?”* Advertisement about eliminating fertilizer/pesticide use

#### Watershed Health Education Program (WHEP)

- Hands-on lessons and activities in the classroom and in the field throughout the academic year to educate students on the effects of pesticides, herbicides and fertilizers on water quality, public health, and aquatic life (see BMP 13)

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### MEASURABLE GOALS

- Continue to maintain relevant public education materials on the County’s website.
- Prepare a minimum of one relevant article per year for inclusion with Clackamas County customer billing statements.
- Pursue additional relevant USGS studies if the opportunity presents itself.

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### PROGRESS ON CCSD#1 AND SWMACC MEASUREABLE GOALS

- Attained. Public Education materials are located on the Districts’ website: [www.clackamas.us/wes/](http://www.clackamas.us/wes/) and at [www.riverhealth.org](http://www.riverhealth.org)
- Attained. The February 2015 bill included *Use caution when using pesticides, herbicides and fertilizers*
- CCSD#1, the SWMACC, and the Cities of Rivergrove and Happy Valley have contributed funds towards a USGS pesticide monitoring study, which assessed pesticide concentrations in creek water, creek bed sediments, and discharges from MS4 outfalls, during this 2012-2017 MS4 permit term. Some work which supported this monitoring study was conducted by WES staff; the peer-review draft of the study’s scientific journal article was reviewed in February 2015. No additional USGS studies have been funded.

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## BMP#11: PROPER DISPOSAL PRACTICES TO REDUCE DISCHARGES OF PESTICIDES, HERBICIDES AND FERTILIZERS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** When the District receives inquiries from the public about the proper disposal method for empty containers that once held pesticides/herbicides or for disposal of unwanted quantities of these products, citizens are promptly forwarded to Metro’s informational phone number (503-234-3000).

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### TRACKING MEASURES

1. Number of calls received and referred to Metro annually

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### CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

- Six calls

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### MEASURABLE GOALS

1. Refer all pesticide/herbicide disposal related calls to METRO

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### PROGRESS ON MEASURABLE CCSD#1 AND SWMACC GOALS

- Goal achieved, as all pesticide/herbicide disposal related calls were referred to METRO

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## BMP#12: FACILITATE PUBLIC REPORTING OF ILLICIT DISCHARGES AND SPILLS AND OTHER TYPES OF IMPROPER DISPOSAL OF MATERIALS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND PUBLIC & GOVERNMENT RELATIONS

**BMP Description:** The District implements a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges and other types of improper disposal of materials into the MS4. After District staff has received a report which relates to one of these discharges, they investigate and, if appropriate, applies control measures. See BMP #3.

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### TRACKING MEASURES

1. Describe news articles reported per year when appropriate
2. Describe type of public complaints received. Resulting follow-up actions per year will be kept in a database

## CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

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- Published news articles included “*Help protect public health and the environment in Clackamas County*” featured in the Winter 2015 issue of Citizen News; “*Never dump anything into a storm drain. It’s against the law?*” featured in article in Fall 2014 issue of Citizen News; and, “*Use caution when using pesticides, herbicides and fertilizers*” featured in the February 2015 WES RiverHealth Newsletter bill insert.
- Complaints received from the public are placed in the following categories by WES: spills, illicit discharges, and non-stormwater discharges (which are not rain/snowmelt, yet are allowed to be discharged to the MS4). Follow-up actions in response to these requests were stored in WES’s Computerized Maintenance Management System (CMMS), Lucity. See the table on the next page for the number and type of complaints and reports received.

### Public complaints/reports by category

Illicit discharge	7
Spills	2
Non-stormwater discharge	3
<b>Total Complaints and Reports by Public</b>	<b>12</b>

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### MEASURABLE GOALS

1. Include a relevant article in The Citizen News (for the County) once a permit term
2. Continue to include area for public complaints on the county’s website, and track number of complaints reported

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### PROGRESS ON CCSD#1 & SWMACC MEASURABLE GOALS

- The Citizen News article: “*Help protect public health and the environment in Clackamas County*” Winter 2015
- Reporting of illicit discharges and other types of improper disposal of materials into the MS4 on WES’ websites was attained. The public can report illicit discharges and improper disposals on two web pages:
  - <http://web3.clackamas.us/up/forms/reportproblem.jsp>
  - <http://www.clackamas.us/wes/contact.html>

The websites track the number of reported spills, illicit discharges and improper disposal incidents. In addition, reporting is facilitated by email, telephone, and the media.

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### BMP#13: PARTICIPATE IN PUBLIC EDUCATION EFFECTIVENESS EVALUATION

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#### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** Over the permit term CCSD#1 will provide information related to an effectiveness evaluation. This may be conducted in coordination with other local Phase 1 jurisdictions. The effectiveness evaluation information will focus on assessing changes in targeted behaviors and will

allow for additional information that can be used in adaptive management of the CCSD#1 education and outreach strategy.

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## TRACKING MEASURES

1. Report on activities annually

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## CCSD#1 TRACKING MEASURES RESPONSES

Watershed Health Education Program (WHEP) students' pre and post knowledge assessments were used to evaluate effectiveness. WHEP partners with science educators to help CCSD#1 facilitate awareness and stewardship of local streams and watersheds. WHEP activities are directed toward science classes in the North Clackamas School District and align with the U.S. Environmental Protection Agency's (EPA) Environmental Education Continuum and focus on protecting America's Waters, as well as federal Science Technology Engineering and Math (STEM) goals and Next Generation Science Standards (NGSS):

- Surface Water, Low-Impact Development and Rain Gardens - Stamberger Outreach Consulting LLC: Students who received WHEP lessons completed educational assessments before and after lessons in order to gauge how well the lessons increased understanding of watershed concepts and threats to water quality.
- Macroinvertebrate Bioassessment to Indicate Water Quality - Patrick Edwards, PhD: Pre- and post-surveys were administered to assess the results of students' awareness and knowledge of water quality issues in the WES service district and the capacity stewardship.

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## SWMACC TRACKING MEASURES RESPONSES

Tualatin River Discover Day verbal "Cash Cab" style pre and post quiz delivered in a fun and engaging manner during van shuttle trips to evaluate effectiveness:

- Public was verbally pre and post quizzed on watershed health issues while riding in a shuttle van from the start and/or end of their non-motorized boat (canoe, kayak or raft) trip down a stretch of the Tualatin River. This event targets many families with school-age children who enjoy being quizzed about the importance of protecting water quality for public health and the environment as part of this fun river adventure.
- Questions included the following: "How do you properly dispose of pet waste?"; "Should you wash your car in a commercial car wash or on a driveway that drains to storm drains?"; "Why is it important to read the labels on pesticides and fertilizers that you use on your lawn or garden?"; "Where does a storm drain go?"
- Evaluation consisted of comparing tally of correct answers to wrong answers for each trip.

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## MEASURABLE GOALS

1. Provide/compile information regarding a public education effectiveness evaluation over the permit term

## PROGRESS ON CCSD#1 MEASURABLE GOALS

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Here are the highlights from WES' evaluation of its public education effectiveness which was submitted to the DEQ in June 2015:

### **Surface Water, Low-Impact Development and Rain Gardens**

The purpose of the program is to educate and engage District youth around local watershed health and protection in a way that aligns with federal STEM and NGSS teaching standards. Additional goals for this fiscal year were to implement on-the ground watershed improvement projects with a focus on on-site stormwater management, increase partnerships with local environmental organizations, and increase the number of students, teachers and schools participating in the program.

#### Participation

A total of 32 teachers, 54 classes and 1,406 students from ten schools (4 high schools, 2 middle schools, and 4 elementary schools) participated in WHEP in 2014-2015 (nearly double 2013-2014 with 16 teachers, 26 classes, and 716 students). Seventy (70) lessons were implemented, including 29 classroom visits (one an assembly to 415 students) and 41 hands-on outdoor activities implementing watershed improvement projects (three of which involved 300 students working together).

#### Lesson Development

To meet STEM and NGSS standards, Stamberger Outreach Consulting implemented a multi-lesson curriculum to provide background and understanding about watershed health and stormwater management and to also engage students in hands-on watershed improvement projects on or near their campuses. Lessons used by SOC were customized for each class and teacher participating in 2014-2015, depending on needs and interests. Twenty six of the 40 participating high school and middle school classes (665 students of the 1,406 total) received two WHEP lessons. Other classes and students were involved in hands-on projects, but did not receive an in-classroom lesson.

#### Hands-on Watershed Improvement Projects

Eleven hands-on watershed improvement projects were implemented at or near school campuses in 2014-2015 to apply lessons learned about stormwater management, engage students in protecting local water quality, engage local elementary and middle schools, and provide opportunities for high school students to mentor younger students working on watershed projects. FY 2014-2015 projects included two riparian restoration projects, one new rain garden installation, planting of new parking lot swales, two stormwater facility enhancement projects, one watershed friendly garden installation, one slope stabilization/erosion reduction project, and maintenance of three stormwater projects implemented in FY13-14 on school campuses. In addition to the 665 high school and middle school students that received in-class lessons, 741 additional elementary and middle school students helped install these projects, with high school students serving as project mentors.

#### Educational Assessments

Three hundred and fifty (350) students who received two WHEP lessons completed educational assessments before the first and after the second lesson in order to gauge how well the lessons increased understanding of watershed concepts and threats to water quality. Questions were the same for both the pre and post assessments and focused on sources of surface water pollution. Assessments were delivered online by Survey Monkey when classes had access to computers. Classes

without computer access completed paper copies of the survey. Data was compiled in Microsoft Excel and percent change in correct answers was calculated for the total group. Statistical significance of the changes was calculated using the GraphPad online program: <http://graphpad.com/quickcalcs/ttest1.cfm>.

Students showed highly statistically significant increases in percent correct answers on educational assessments. The most improved responses included that soap from washing cars and dog waste are pollutants of concern in local waterways (20% and 22% increase, respectively), and that picking up dog waste and building rain gardens or disconnecting downspouts are ways to improve local watershed health (20% and 25% increase, respectively).

### **Macroinvertebrate Bioassessment to Indicate Water Quality**

The purpose of the WHEP curriculum is to engage students in learning about water resources in the Clackamas basin. WHEP curriculum is aligned to Oregon's Next Generation Standards and meets fourteen Core Ideas and Crosscutting Concepts. The WHEP curriculum utilizes an inquiry-based approach to engage students in research of local streams and promote stewardship and awareness of regional surface water resources. To this end, WHEP teachers and students work with scientists to conduct stream experiments, implement stream restoration and monitoring activities and to conduct macroinvertebrate bioassessment of streams in the WES service district (Clear Creek, Rock Creek, Mt Scott Creek, Salmon River and Johnson Creek). After visiting streams and collecting environmental and biological data, students work with scientists to analyze the data and communicate findings (figure 2). WHEP programming during the AY 2014-15 was used for a wide-range classroom research projects including:

- Become aware of stream restoration efforts in the WES service area.
- Learn about stream habitat and biota to raise awareness of the impacts of stream degradation.
- Conduct in-stream experiments about stream food webs, pollution and disturbance.
- Student-led research of streams using bioassessment techniques and water quality measurements used by professional scientists.
- Raise awareness of efforts to restore, improve and maintain surface water quality and streams across the WES service district.
- Analyze student-collected data, interpret results and think critically about the findings of their investigations.

Students continue to show clear gains in knowledge and awareness of water quality issues in the Clackamas Basin (see Chart 1).

**Chart 1 - Results from student assessment**

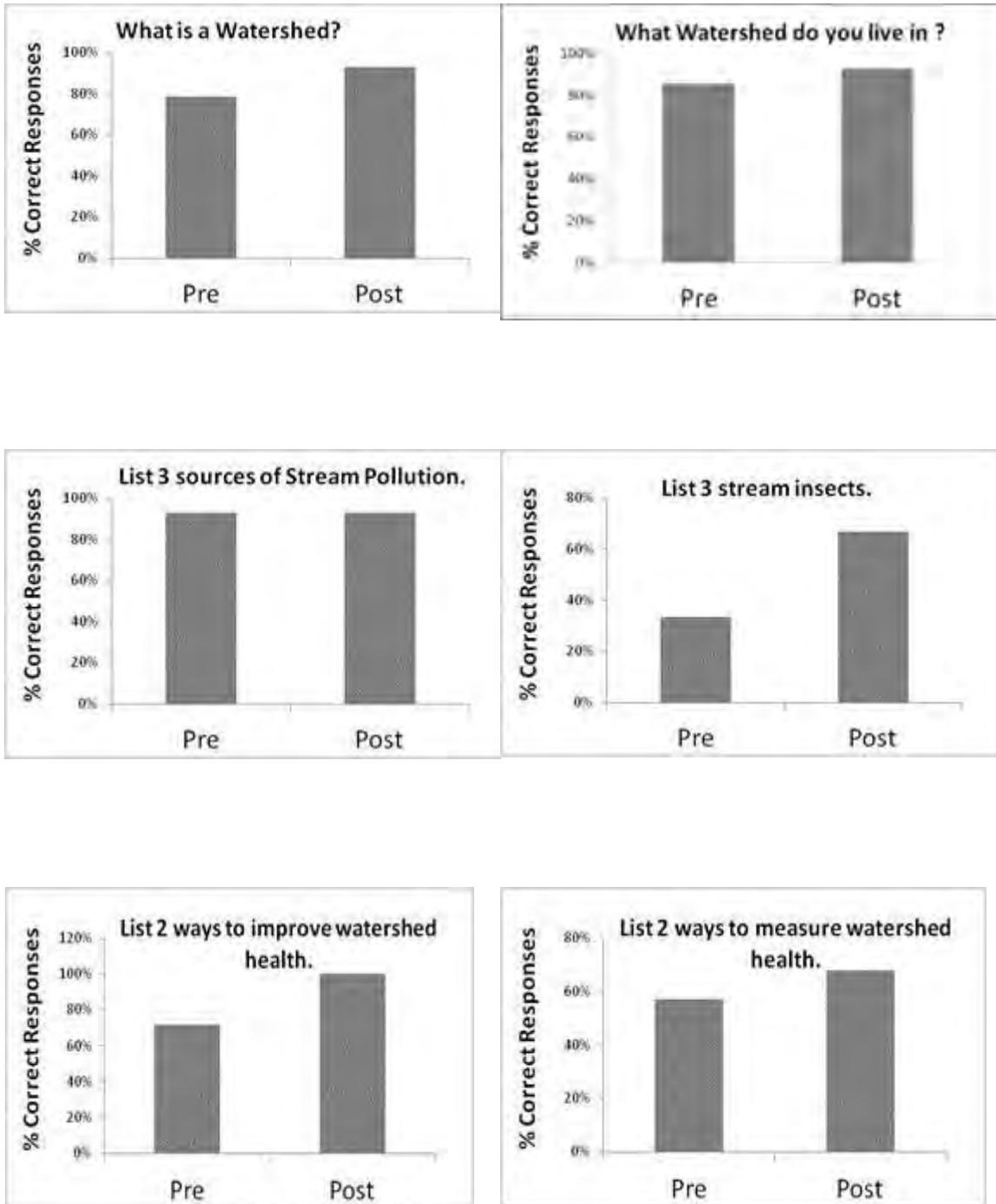


Chart 1 shows the summary results from the FY 2012-15 pre and post assessment. Data represents the mean total scores (% correct) from 30 randomly selected assessments.

## PROGRESS ON SWMACC MEASURABLE GOALS

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WES' evaluation of its SWMACC public education effectiveness was submitted to the DEQ in June 2015. An evaluation was conducted during the flag-ship event that makes up SWMACC's public education. We perform the evaluation every year, not just once during the permit cycle and improve upon the lessons provided. In 2014 / 2015, 64 participants took part in the hands-on *Tualatin River Discover Day* where they were shuttled by staff, who served as instructor and evaluator, to critical locations of vegetation, aquatic life and streams that make up the Tualatin River. Lessons about the steps necessary to protect and improve water quality were emphasized. When asked, parents deferred to their children to answer the questions, which opened up dialogue for discussing the correct answers so everyone (100%) riding learned the importance of protecting water quality.

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### BMP#14: TRAINING FOR EMPLOYEES

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#### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

##### **BMP Description: CCSD# 1 and SWMACC**

A variety of training is provided to CCSD#1 staff associated with stormwater management. Training and advisory committee opportunities are made available through local agencies and groups involved with a broad range of water quality issues including stormwater (e.g., Oregon Association of Clean Water Agencies conferences). Such training is provided based on need and availability. With respect to firefighting-related training activities, firefighting is conducted within the permit area by Clackamas County Fire District #1. They have a training center at SE 130<sup>th</sup> in Clackamas County. The training center includes a valve that is used to divert training flows into the sanitary system. CCSD#1 will check-in with the Fire District during the permit term to ensure they are using the valve. Check-ins will include discussion related to training and the potential for other waste waters to enter the system.

---

#### TRACKING MEASURES

- Track the number of employees receiving training in stormwater management annually.

---

#### CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

- |   |         |
|---|---------|
| • Water Environment School (March 2015) –   | 1 FTE   |
| • GIS Conference (July 2014) -  | 1 FTE   |
| • Short schools and trainings that WES staff have attended with a portion of the school related to stormwater infrastructure include: |         |
| ○ 39th Annual Water Environment School:   | 24 FTEs |
| ○ APWA Developing Leader:   | 2 FTEs  |
| ○ APWA Street Maintenance & Collections Systems:  | 10 FTEs |
| ○ WEF Cincinnati Collection Systems 2015:   | 2 FTEs  |
| ○ Ethics Training WQL:  | 1 FTE   |
| ○ Lucity Annual Conference & Training:  | 2 FTEs  |
| ○ NACWA 2014 Summer Conference:   | 4 FTEs  |

- PNCWA Annual Conference: 7 FTEs
- WEFTEC 2014: 3 FTEs

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## MEASURABLE GOALS

1. Attend relevant stormwater management related training based on need and availability.
2. Check-in with the Fire District regarding stormwater issues.

---

## PROGRESS ON CCSD#1 & SWMACC MEASURABLE GOALS

- Attained as employees attended relevant stormwater management related training based on need and availability
- The check-in meeting with Clackamas County Fire District No. 1 occurred on December 3, 2014. During this meeting, WES staff verified that CCFS#1 staff have been using the valve correctly.

---

## BMP# 15: PROVIDE FOR PUBLIC PARTICIPATION WITH SWMP AND BENCHMARK SUBMITTALS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** Schedule A(4)(e) of the District’s MS4 NPDES permit requires CCSD#1 to provide opportunity for public participation in the development, implementation, and modification of the CCSD#1 Stormwater Management Plan (SWMP) and pollutant load reduction benchmark development.

SWMP revisions and pollutant load reduction benchmarks are required for submittal to DEQ at the permit renewal submittal (180-days prior to permit expiration). Prior to submittal of these items, CCSD#1 will provide the public with an opportunity to comment on the revised draft SWMP and proposed pollutant load reduction benchmarks for a minimum of 30 days. Comments on the documents will be collected and considered and response to comments will be publically provided.

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### TRACKING MEASURES

N/A

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### CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

N/A

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## MEASURABLE GOALS

1. Provide for public participation with the SWMP and pollutant load reduction benchmarks prior to the permit renewal application deadline.
2. Provide for public participation with the monitoring plan due to the department by September 1, 2012.

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## PROGRESS ON CCSD#1 & SWMACC MEASURABLE GOALS

- This activity is on track to prior to permit renewal
- Done

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## BMP#16: PLANNING PROCEDURES FOR NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** This BMP covers the planning procedures for developing, implementing, and enforcing controls to reduce the discharge of pollutants from storm sewers collecting runoff from areas of significant development or redevelopment. These controls include county-funded capital improvement projects to provide new stormwater treatment facilities in previously developed areas and regulations requiring such facilities with all new land development or redevelopment projects. For residential subdivisions and partitions of parcels with the potential to create more than two additional lots as currently zoned, and for developments having more than 5,000 sq. ft. of impervious surface, on-site stormwater flow control, water quality treatment, and infiltration facilities are required. For 2 and 3 lot partitions that cannot be further partitioned under current zoning, flow control is not required if there are no downstream impacts. All subdivisions and partitions must include a storm water management plan. Infiltration facilities are required where soil conditions permit. With respect to maintenance of the private facilities that are constructed, the following applies:

#### **Private Residential Storm System Maintenance (e.g. subdivisions)**

Properties with private storm systems for new residential developments are required as part of the development approval process to inspect and maintain their storm systems themselves (e.g. through a Homeowners Association) or to sign an agreement that they will have the District staff maintain their systems on their behalf in exchange for a monthly on-site management fee.

#### **Private Non-Residential Storm System Maintenance (e.g. commercial, industrial, etc.)**

Private storm systems for new non-residential development and redevelopment are required as part of the development approval process to sign an agreement to inspect, maintain and, if needed, clean their storm systems annually. Further, they must report on these activities to the District annually. The District is compiling a database of these private facilities to allow for tracking of compliance with the terms of the agreements. In addition, the district has implemented a Storm Drain Cleaning Assistance Program. See CCSD#1 BMP #28

Maps are updated to include the location, type and drainage area of new facilities resulting from CCCSD#1's post construction standards.

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## TRACKING MEASURES

1. The number and type of flow control, water quality treatment or infiltration facilities installed in accordance with the requirements
2. Narrative to describe the status of the private facility database
3. Narrative to describe results of tracking compliance with private facility maintenance agreements

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## CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

- (1) Districts:
  - a. CCSD#1: 17 Water Quality, infiltration and flow control ponds
  - b. SWMACC: 0 Water Quality, infiltration and flow control ponds
- (2) The Districts have an ongoing and internal process to inventory new, existing or reconstructed stormwater facilities and incorporate specifications of the SW facilities into a GIS data layer. The GIS data layer is integrated into the maintenance software and is utilized to schedule and perform routine maintenance of the SW facilities. CCSD#1 and SWMACC record private water quality and flow control facilities in GIS. To date, over 2800 private facilities have been tracked. WES also tracks the "drainage area" of specific water quality facilities in order to determine overall BMP coverage for the Districts.

Maintenance Agreements for the private industrial/commercial facilities are tracked through a combination of databases and an excel spreadsheet.

- (3) Commercial/Industrial: In 2014/2015 the District implemented the sixth year of a Storm Drain Cleaning Assistance Program (SCAP) for private facilities. To help streamline the program, raise awareness and seek greater compliance, WES partnered with the cities of Milwaukie, Gresham, Fairview, Wood Village and the Oak Lodge Sanitary District on a joint program. The program implementation was easier through sharing of printing, postage and advertising but compliance did not significantly improve. Staff has been meeting since to determine how to improve participation. The results for sites with maintenance agreements are as follows:
  - CCSD#1: Approximately 140 agreements, 31 reported for a total of 389 structures inspected and/or cleaned
  - SWMACC: Approximately 10 agreements, 6 reported for a total of over 50 structures inspected and/or cleaned
  - Total of cleaning of private commercial/industrial facilities through SCAP and other methods: 111 businesses participating, 642 structures inspected and cleaned, and 59,682 gallons of material removed

Subdivisions: The District maintains cleans and inspects 751 detention pond facilities 1640 storm structures and 1152.4 feet of conduit for maintenance agreement areas. In 2014/2015 cleaning and inspections were performed on 9.9% of the private storm conveyance systems; vegetation control is conducted as needed throughout the year at all detention pond facilities. No pond restoration or retrofits were performed.

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## MEASURABLE GOALS

1. Continue to implement and enforce controls for stormwater quality treatment from new and redevelopment
2. Track the location, type and drainage area of new water quality facilities using GIS
3. Continue with work to compile a database of private facilities
4. Annually, check in on compliance with terms of private facility maintenance agreements

---

## PROGRESS ON CCSD#1 & SWMACC MEASURABLE GOALS

- WES continues to implement and enforce controls for stormwater quality treatment from new and redevelopment
- The location, type and drainage area of new water quality facilities are entered in to GIS
- Updating and refining the database of private facilities is ongoing
- WES staff met in late 2014 to check in on compliance with terms of industrial/commercial private facility maintenance agreements. It was determined that the program should be discussed with the new Surface Water Manager once hired. In December 2014, EPA conducted an audit of the MS4 program and expressed potential concerns regarding the industrial/commercial portion of the private facility program. The new manager was hired in February 2015 and we are awaiting the report of the EPA Audit. Possible changes to the program and to the SWMP will be evaluated at that time.

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## BMP#17: UPDATE PROCEDURES FOR NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

**BMP Description:** The County conducted watershed evaluations and developed watershed action plans for the Kellogg Creek and Rock Creek watersheds in 2009. Recommendations in the action plans included proposed changes to the District's stormwater standards for new and re-development. As a result, CCSD#1 embarked on a process to revise and update their standards in late 2009. Updated standards will include new thresholds for meeting standards and increased emphasis on infiltration, on-site retention, and the duration of peak flows in order to address impacts associated with hydro-modification. In addition, the design storm is being evaluated to ensure it will address the capture and treatment of 80% of average annual runoff. CCSD#1 anticipates adoption of the standards and development of a guidance manual to meet new permit requirements by June 30, 2013.

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## TRACKING MEASURES

### CCSD#1

1. Track status of adopting

## SWMACC

2. Track status of policy development

### CCSD#1 TRACKING MEASURES RESPONSES

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Completed July 1, 2013. Water Environments Services adopted new CCSD#1 stormwater standards which included the MS4 requirement to capture and treat the 80th percentile storm event. The new standard allows Low Impact Development Approach (LIDA) to mitigate stormwater runoff. The newly adopted stormwater standards are a guide for the development community to assist in the planning and design of a stormwater management plan.

The District is also in the process of conducting a public educational process to inform stakeholders within the development community on the value of implementing a low impact development approach to treat stormwater runoff. As part of the public process, the District is emphasizing the feasibility of a low impact development/green infrastructure approach to mitigating stormwater runoff.

### SWMACC TRACKING MEASURES RESPONSES

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With limited funding and resources, the District is not proposing to implement any substantial changes to the SWMACC Rules and Regulations or standards at this time. The District will continue to discuss the stormwater requirements within SWMACC with developers, customers and engineers to assure the MS4 permit requirements are being fully implemented. The MS4 area within the SWMACC boundary is a geographically small area within the City of Rivergrove and the District only receives a couple of new proposals for development each year.

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### MEASURABLE GOALS

#### CCSD#1:

1. Complete all updates to the standards in order to meet new permit requirements by June 30, 2013
2. Complete the guidance manual for developers to facilitate the implementation of the new standards by June 30, 2013

#### SWMACC:

1. Policy development and implementation by November 1, 2014

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### PROGRESS ON CCSD#1 MEASURABLE GOALS

- Completed. CCSD#1 completed the updates to the standards on July 1, 2013 by adopting new CCSD#1 stormwater standards. These standards included the MS4 requirement to capture and treat the 80th percentile storm event.

- Completed. The newly adopted stormwater standards combined with the BMP Sizing Tool and Planning Tool are guides to assist the development community with planning and design of SWM facilities to mitigate stormwater runoff.

## PROGRESS ON SWMACC MEASURABLE GOALS

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- With limited funding and resources, the District is not proposing to implement any substantial changes to the SWMACC Rules and Regulations or standards at this time.

## BMP#18: SIZING TOOL DEVELOPMENT TO ADDRESS HYDROMODIFICATION

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### DISTRICTS REQUIRED TO REPORT: CCSD#1

**BMP Description:** Develop a simplified tool for development engineers to easily size LID BMPs to address the duration of elevated flow levels in addition to addressing flow volumes and peaks. Use of the tool in designing LID BMPs is expected to ultimately address the long-term impacts of increased runoff from development. To address flow durations, a long-term continuous simulation of hydrology is required. As a result, designing and sizing BMPs becomes more complicated than traditional design practices focused on a single design event. In order to make the BMP design process easier for the development community, neighboring states have developed a sizing tool. Currently, there are no BMP design/sizing tools to address the impacts of hydromodification that are applicable to local conditions such as rainfall patterns and critical channel forming flows. This tool will provide a simple, consistent and defensible methodology for designing/sizing LID throughout Clackamas County and the region to address hydromodification impacts.

### TRACKING MEASURES

1. Net impervious area treated by LID
2. Number of applications submitted using tool
3. Customer Feedback/Community Relations

## CCSD#1 TRACKING MEASURES RESPONSES

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- Zero acres of impervious area were treated using the BMP Sizing Tool
- One applicant submitted a design review application using the BMP Sizing Tool
- Interviewed approximately 30 developers, engineers, and Clackamas County/WES/Happy Valley staff regarding WES' stormwater management design tools (design tools) and the use of low impact development approaches (LIDA) in the County. A report summarizing the responses and overall feedback was produced. WES will continue to educate the development community about the benefits of using LIDA and the design tools, and make the design tools more accessible for the engineers and developers.

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## MEASURABLE GOALS

1. The primary goal is to develop, by June 30, 2013, a tool to assist development engineers with the design/sizing of stormwater management facilities in order to reduce target pollutants and stream degradation impacts (i.e., hydromodification) associated with the development of impervious surfaces.

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- Attained. The sizing tool has been developed and is available to the public for use.

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## BMP# 19: STREET SWEEPING

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### DISTRICTS REQUIRED TO REPORT: DTD AND HAPPY VALLEY (#19) AND SWMACC (#18)

**BMP Description:** Major arterial curbed streets within the DTD service area (which includes CCSD#1) are swept on a regular basis by DTD. The frequency varies depending on a variety of factors (for example, traffic volumes). For information on their street sweeping activities, refer to DTD MS4 NPDES SWMP.

Major arterial curbed streets within the City of Happy Valley service area are swept on a regular basis by the City. The frequency varies depending on a variety of factors (for example, traffic volumes).

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## TRACKING MEASURES

1. Number of miles that were swept in Happy Valley, and
2. Mass or volume of material removed during sweeping in Happy Valley

For DTD, see tracking measures in the DTD MS4 NPDES SWMP.

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## DTD TRACKING MEASURES RESPONSES

- See DTD MS4 Annual Report response
- See DTD MS4 Annual Report response

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## HAPPY VALLEY TRACKING MEASURES RESPONSES

- 1000 miles (including miles swept in Happy Valley and miles swept under contract with CCSD#1)
- 497 yards removed

## SWMACC TRACKING MEASURES RESPONSES

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- See DTD MS4 Annual Report response
- See DTD MS4 Annual Report response

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### MEASURABLE GOALS

#### **DTD and Happy Valley**

1. DTD: See DTD's MS4 NPDES SWMP.
2. City of Happy Valley Roads: Sweep approximately 1000 lane miles of curbed streets per year on average.

#### **SWMACC**

1. See DTD's MS4 NPDES SWMP

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### PROGRESS ON DTD MEASURABLE GOALS

- See DTD's MS4 Annual Report response

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### PROGRESS ON HAPPY VALLEY MEASURABLE GOALS

- Measurable goals met in Happy Valley

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### PROGRESS ON SWMACC MEASURABLE GOALS

- See DTD's MS4 Annual Report response

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## BMP# 20: OPERATIONS & MAINTENANCE FOR PUBLIC STREETS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 (#20) AND SWMACC (#19)

**BMP Description:** Operations and maintenance of public streets within the DTD service area (which includes CCSD#1) is the responsibility of DTD. For information on their activities, refer to the DTD MS4 NPDES SWMP.

Public streets within the city of Happy Valley are carried out by the city as follows:

- Road repair activities: These are conducted by Happy Valley as needed in a manner that minimizes or prevents erosion. When possible, this work is scheduled during the dry season.
- Litter control: This involves 1) the removal of large dead animals from roadways, 2) preventing illegal solid waste dumping through signage and enforcement actions against offenders, 3) removal of illegal solid waste dumps, and 4) the District's "Adopt-a-Road"

program, which enlists the support for litter removal on specific road segments from individuals, families, community groups and businesses.

- Ice removal work: This is performed by Happy Valley on certain paved streets on an as-needed basis. The frequency varies depending on a range of factors, including personnel availability, air temperature, road surface temperature, humidity, and precipitation.
- Road sanding: This enhances traction during ice/snow events. After the ice/snow event when practical, the sand is removed from the roadway with mechanical sweeping machines.

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## TRACKING MEASURES

1. Mass or volume of material removed by the city of Happy Valley “Adopt-a-Road” program
2. Number of illegal solid waste dumps that are removed in the city of Happy Valley
3. Mass or volume of material that is removed by the elimination of illegal solid waste dumping sites in the City of Happy Valley
4. Amount of sand applied and then removed by Happy Valley as a result of a snow/ice event and time of removal after the event

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## CCSD#1 TRACKING MEASURES RESPONSES

Tracking measure responses refer only to the work performed by the City of Happy Valley.

- None
- 4 illegal dump sites were removed in Happy Valley – 3 on public land and one on private property
- The volume of material removed is not available. Illegal dumps on public lands are removed via a partnership between the City of Happy Valley, Metro and Multnomah County. The dump on private property was removed by the land owner.
- 8 yards of sand applied; 4 yards were picked up after storm events

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## SWMACC TRACKING MEASURES RESPONSES

For information on DTD activities, please refer to the DTD MS4 Annual Report.

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## MEASURABLE GOALS

1. DTD: See DTD’s MS4 NPDES SWMP
2. Remove illegal solid waste dumps as they are discovered
3. Collect sand applied for ice/snow events within 10 days of the end of the event

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- Illegal dump sites were removed as they were discovered
- The sand applied for ice/snow events were picked up within 10 days after the event

## SWMACC TRACKING MEASURES RESPONSES

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For information on DTD activities, please refer to the DTD MS4 NPDES SWMP

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### BMP# 21: PROPER ROAD MAINTENANCE PRACTICES TO REDUCE THE DISCHARGE OF PESTICIDES, HERBICIDES AND FERTILIZERS

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#### DISTRICTS REQUIRED TO REPORT: HAPPY VALLEY AND DTD (#21) AND SWMACC (#20)

**BMP Description:** Proper road maintenance practices to reduce the discharge of pesticides, herbicides, and fertilizers within the DTD service area (which includes CCSD#1, SWMACC, and County roads in Happy Valley) is the responsibility of DTD. For information on their activities, refer to the DTD MS4 NPDES SWMP.

Proper road maintenance practices within the city of Happy Valley are carried out by the city as follows:

Herbicides are occasionally but rarely used in road maintenance operations in the MS4-permitted area. In fact, in many years, no herbicides have been applied for roadside vegetation control in the district's area. This is due to the facts that: a) most roads in the MS4-permitted area are paved, have curbs, and are served by piped storm sewer systems, and b) any vegetation present in the road right-of-way is usually part of a landscape maintained by the property's owner. In most of the instances that involve Road Department roadside vegetation management activity within the MS4-permitted area, mowing is the preferred vegetation control system. When herbicides are used, these products are always used in a manner consistent with the product's label.

Happy Valley has adopted the Oregon Department of Transportation (ODOT) Routine Road Maintenance Manual which includes integrated pest management. The manual governs the manner in which maintenance crews proceed on a wide variety of routine maintenance activities. The ODOT manual received approval from the National Marine Fisheries Service (NOAA Fisheries) as being exempt from "takings" with respect to salmonids listed as endangered. In other words, the practices in the manual have been designed to eliminate the adverse impacts of road maintenance activities on salmonid habitat while preserving the ability to maintain the functional integrity of the road system.

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#### HAPPY VALLEY AND DTD TRACKING MEASURES

1. Happy Valley – The quantity of herbicide products used per zip code. This is the same data that will be reported to Oregon's Department of Agriculture per the Pesticide Use Reporting System.
2. For DTD, see tracking measures in the DTD MS4 NPDES SWMP.

## HAPPY VALLEY AND DTD TRACKING MEASURES RESPONSES

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- No herbicides were used by the City of Happy Valley in City of Happy Valley-maintained/owned roadways.
- For DTD, see tracking measures responses in the DTD MS4 NPDES SWMP.

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### SWMACC TRACKING MEASURES

1. See DTD's MS4 NPDES SWMP

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### SWMACC TRACKING MEASURE RESPONSE

- See tracking measure response in the DTD's MS4 Annual Report

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### HAPPY VALLEY AND DTD MEASURABLE GOALS

1. For City of Happy Valley: Continue to implement the integrated pest management portion of the ODOT Routine Road Maintenance Manual
2. For DTD, see Measurable Goals in the DTD MS4 NPDES SWMP.

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### PROGRESS ON HAPPY VALLEY AND DTD MEASURABLE GOALS

- The integrated pest management portion of the ODOT Routine Road Maintenance Manual was implemented by the City of Happy Valley in 2014/2015. The City of Happy Valley also continues to implement the December 2012 Integrated Pest Management Plan. This document's other co-owners are CCSD#1 and SWMACC. This IPM Plan and the "integrated pest management portion of the ODOT Routine Road Maintenance Manual" are two separate documents.
- See DTD's MS4 Annual Report.

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### PROGRESS ON SWMACC MEASURABLE GOALS

- See DTD's MS4 Annual Report.

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### BMP#22: LANDSCAPE MAINTENANCE PRACTICES TO REDUCE THE DISCHARGE OF PESTICIDES, HERBICIDES AND FERTILIZERS

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#### DISTRICTS REQUIRED TO REPORT: CCSD#1, HAPPY VALLEY AND DTD (#22), AND SWMACC (#21)

**BMP Description:** Herbicides, pesticides and fertilizers are used by Clackamas County and the City of Happy Valley in landscape maintenance applications around County and City owned buildings and facilities. When herbicides and pesticides are used, these products are used in a manner consistent with the product's label.

During the previous permit term (2004-2009), the county and city performed the following tasks in an attempt to reduce the discharge of pollutants associated with landscape maintenance activities:

- Assembled a list of all County and City of Happy Valley buildings and facilities in the districts' MS4 permit areas.
- Met with the proper County facilities and building maintenance personnel to inform them that herbicides, pesticides and fertilizers must be used with care in landscape maintenance applications around County-owned buildings and facilities in the District. These personnel were encouraged to:
  - Substitute the use of these products for other, less harmful ones,
  - Use less herbicide, pesticide and fertilizer, if possible, when they are used, and
  - Naturescape with native plants, which are likely to need less herbicides, pesticides and fertilizers, whenever possible.

For this permit term, this BMP will include:

- Going back to these personnel to check-in on progress and to continue to encourage activities which reduce landscape maintenance related discharges of pesticides/herbicides/fertilizers. Please note that lands and buildings which have been leased by the city of Happy Valley and Clackamas County (i.e., the library at Clackamas Town Center) are not included in this BMP, for lease terms do not, or tend to not, provide the city or County with the authority to make landscaping decisions.
- Assembling a list of lands in CCSD#1's MS4 permit area that are not owned by Clackamas County, CCSD#1, or the City of Happy Valley, but are owned by other local governments. These local governments have their own board of directors. Water Authority, Clackamas River Water, Clackamas County Fire District No. 1, and the North Clackamas School District, are not MS4 permit holders. After this list has been assembled, we will meet with each local government during this permit term to request that they consider taking the same steps that County and City employees were asked to take (i.e., use less toxic herbicides if herbicides must be used).

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## TRACKING MEASURES

1. The number of meetings conducted.
2. The results and follow-up activities conducted as a result of the meetings.

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## TRACKING MEASURES RESPONSES (ALL DISTRICTS)

- None of these meetings were held in 2014/2015
- Not applicable

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## MEASURABLE GOALS

1. Check back in with all County and City of Happy Valley buildings and facilities that were visited (during the last permit cycle) at least once during this permit cycle
2. Develop and implement an Integrated Pest Management (IPM) plan by December 31, 2012

## PROGRESS ON MEASURABLE GOALS

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- No progress was made in 2014/2015, as the work product is not due until 2017.
- This goal has already been achieved for the City Happy Valley, SWMACC and CCSD#1. The MS4 permit required these co-permittees to implement an IPM plan by December 31, 2012 and it continued to be implemented during the 2014/2015 reporting period.

## PROGRESS ON SWMACC MEASURABLE GOALS

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- No progress was made in 2014/2015, as the work product is not due until 2017.
- The City of Rivergrove was also bound by this same MS4 permit requirement, but they elected to create and submit their own separate IPM Plan to DEQ.

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### BMP# 23: CONTROL INFILTRATION AND CROSS CONNECTIONS TO THE DISTRICT'S STORMWATER SYSTEM

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#### DISTRICTS REQUIRED TO REPORT: CCSD#1 (#23) AND SWMACC (#22)

**BMP Description:** The District's prevent exfiltration of flows from municipal sanitary sewers in the following ways:

- Through ownership of a relatively new sanitary sewer system. Most of the infrastructure in CCSD#1-UGB's sanitary sewer system has been constructed since 1974 and its condition is generally sound and free of cracks and leaks.
- Through the presence of a rigorous maintenance program involving routine cleaning and inspection of lines to ensure that there are very few leaks. Lines are inspected with a television camera on a periodic basis. Tree roots, which could cause leakage, are removed whenever identified.

The Districts' rules prohibit cross-connections in new/redevelopments through the development building permit review and issuance process. This system, which features plan review in other office and field inspections by certified plumbing inspectors, ensures that fixtures that need to be plumbed into CCSD#1's and SWMACC's sanitary sewer system or a private septic system are actually plumbed into those systems, preventing hundreds of illicit discharges per year. The Districts are able to identify and control the exfiltration of flows from municipal sanitary sewers when it occurs by:

- Performing dry weather inspections at all major or priority outfalls on an annual basis to detect non-stormwater flows, and
- Receiving and promptly responding to reports from citizens of unusual colors, odors and solids.

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#### TRACKING MEASURES

1. Number of cross-connections/sanitary discharges identified
2. The number and type of inspections performed, abatement actions and enforcement actions taken

## CCSD#1 TRACKING MEASURES RESPONSES

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- No cross connections and sanitary system seepage into the storm system were found or reported
- 348 structures were inspected or cleaned, and no abatement and enforcement actions were taken

## SWMACC TRACKING MEASURES RESPONSES

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- No cross connections were found or reported.
- No customer requests, which drive cleaning and infiltration inspections, were received and, therefore, no inspections and cleanings were conducted, and no abatement and enforcement actions were taken.

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## MEASURABLE GOALS

1. Eliminate any identified sanitary discharges to the storm system

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## PROGRESS ON CCSD#1 AND SWMACC MEASURABLE GOALS

- No cross connections and no sanitary system seepage into the storm system were found or reported in 2014 / 2015. Had there been, sanitary sewer entering the MS4 would have been responded to immediately: Our goal is to respond within two hours during business hours and 4 hours from the time notified after business hours.

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## BMP# 24: FLOOD MANAGEMENT PROJECTS AND WATER QUALITY

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### DISTRICTS REQUIRED TO REPORT: CCSD#1(#24)

**BMP Description:** There are two components to this BMP. The first is to ensure that water quality is assessed and addressed when developing capital improvement projects (CIPs) for flooding. The second is to examine the existing system to determine whether water quality retrofits would be beneficial and feasible.

**CIPs:** The District hired a consultant for development of Watershed Action Plans which were completed in July 2009. These Action Plans were based on watershed assessments which identified prioritized and scheduled projects and actions necessary to address factors limiting watershed health. The Action Plans include recommendations for site specific and reach oriented solutions and management programs for the significant, and often, interrelated, problems related to flooding, erosion and deposition, water quality, and habitat. One of the main goals and outcomes of the Action Plans was to prioritize what stormwater management actions and activities should be conducted in specific sub-basin areas, such as where to assist the operations and maintenance program in targeting specific activities in various locals. Another main goal of the Watershed Action Plans is to

protect, restore, and enhance the health and function of a watershed. Action Plans are currently being utilized to:

- 1) Identify key problems and opportunities
- 2) Identify areas where efforts should be focused both in terms of protection and restoration efforts and asset management activities
- 3) Implement policies, programs, and standards in specific areas
- 4) Build support for implementation and serve as a tool for funding.

As a result, the stormwater CIP process includes consideration of water quality benefits.

Retrofits: As structural facility inspections occur under CCSD#1 BMP #26, sediment and debris from the facilities are removed. In the process of conducting this maintenance, facilities are sometimes found to be dysfunctional due to design flaws. As a result, facilities are sometimes retrofitted or reconstructed. In addition, projects resulting from the Watershed Action Plans described above include retrofits in addition to proposed new CIP facilities. A specific program to retro fit detection facilities is also described under CCSD#1 BMP#25.

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## TRACKING MEASURES

1. Number of retrofits constructed that address water quality treatment.
2. Number of flood management projects implemented or constructed and the percentage of those projects that include water quality components.
3. Number of riparian enhancement projects completed each year. Number of acres enhanced.

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## CCSD#1 TRACKING MEASURES RESPONSES

- 1 retrofit project constructed - Clackamas high school rain garden
- No flood management projects were constructed
- 94 riparian restoration sites for a total of 53.45 acres enhanced

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## MEASURABLE GOALS

1. Ensure all planned stormwater CIPs include consideration of water quality

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- All WES retrofit projects are planned and constructed using current industry standards for water quality treatment. Plans and specifications are developed for each specific project.

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## BMP# 25: DETENTION POND RETROFIT PROGRAM

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 (#25)

**BMP Description:** One recommendation from the Watershed Action Plans is to upgrade and change the performance of older detention facilities in the watershed. Since 1993, when the first stormwater

requirements were adopted, the stormwater management standards have been changed four times. Facilities constructed prior to 1995, are generally thought to be in the greatest need of updating to more current performance standards. A retrofit program has been initiated to design specific modifications for selected facilities (or collection of facilities). Facilities built before 1995 are targeted, but additional facilities constructed prior to using the current standards may also be considered. A test basin will be selected to focus initial retrofit activities and will consider a) the number of older facilities; b) the potential or need for protection or improvement in the sub-basin; c) the location of a monitoring station that could be used to evaluate before and after conditions (to show improvements and value); and d) the ease and opportunity to make immediate improvements.

The facility improvements will consider changes to outlet structures; expansion or optimization of available storage; increasing flow control for small storms in exchange for flood control; modifying flow paths or changing the water quality treatment method; improving the aesthetics, landscape, or access control; and major expansion (e.g. acquire additional land), consolidation or replacement. The evaluation will be conducted in two phases – Phase 1 was an assessment phase where existing systems were reviewed, a test sub-basin was selected, alternatives and preferences were identified, opportunities were considered. The remaining sub-basins were evaluated, and a plan was devised for consideration by CCSD#1. Phase 2, will be preparing the design documents to implement the proposed changes for CCSD#1 crews or contract bids.

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## TRACKING MEASURES

1. Track pilot testing activities.
2. Number, type and location of retrofits.

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## CCSD#1 TRACKING MEASURES RESPONSES

- No pilot testing activities were conducted
- Two retrofit projects were initiated during the reporting period. Design for those 2 projects is 50% complete. Final design and construction for those projects is anticipated in 2016 and will be included in the next annual reporting period.

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## MEASURABLE GOALS

1. The primary goal of the retrofit is to modify existing ponds to improve their function in support of watershed health goals. The BMP goal will be to conduct 2 to 5 retrofits per year.

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- 2 retrofit projects were identified and preliminary designs were developed during the reporting period. Due to the size of the retrofit projects, construction was unable to be accomplished by District staff so the projects will be bid. Construction is planned for Summer 2016.

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## BMP# 26: MAINTENANCE OF CONVEYANCE SYSTEM COMPONENTS AND STRUCTURAL CONTROLS

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 (#26) AND SWMACC (#23)

**BMP Description:** The District maintains conveyance and treatment components of the stormwater system that are located outside the right-of-way of publicly owned roads in maintenance agreement subdivisions or that are owned by the District. The conveyance components include, but are not limited to, manholes, storm sewer lines (8" or greater in diameter) and inlets. The stormwater treatment components of the system include, but are not limited to, vegetated above ground stormwater detention facilities, swales, and various types of underground proprietary pollution control systems.

The Districts and Clackamas County are working on an intergovernmental agreement to clarify and coordinate maintenance activities. Based on the growing needs of the District for stormwater maintenance, the District purchased a vehicle for conveyance system and structural controls maintenance. Additionally, there is one full time equivalent (FTE) dedicated to inspection of structures in a specified area prior to assigning a maintenance vehicle to that area. The District currently utilizes Clackamas County Corrections crews for maintenance of stormwater detention/water quality needs.

NOTE: CCSD#1 is currently updating Watershed Action Plans (WAPs) by the end of the permit term, which is currently anticipated to be 2017. The updated WAPs may identify high priority areas based on a watershed assessment, set and focus maintenance responsibilities and priorities, and develop performance metrics to assess overall effectiveness. The WAP outcomes may result in new or revised Measurable Goals related to frequency and prioritization of maintenance activities.

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### TRACKING MEASURES

1. Miles of ditches and storm lines maintained
2. Number and type of components inspected and/or cleaned, and
3. Mass or volume of material removed during cleaning.

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### CCSD#1 TRACKING MEASURES RESPONSE

- Storm line maintained: 1152.4 feet or 0.22 miles
- Components inspected or cleaned:
  - Detention Ponds: 751
  - Drywells: 52
  - Other structures: 1,640
- Cubic Yards of debris removed: 244.6

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### SWMACC TRACKING MEASURES RESPONSE

- 0 miles of storm lines maintained and, for ditch maintenance, see DTD's MS4 annual report
- 0 components inspected or cleaned
- For debris removed, see DTD's MS4 annual report

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## MEASURABLE GOALS

1. Clean storm lines and ditches on an as-needed basis, identify inspection frequency
2. Maintain structural water quality facilities on a 3-year cycle
3. Conduct conveyance system assessment by January 31, 2013

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- Cleaning of storm lines, structures, and ditches is being conducted in an organized and efficient manner based on a sub-division by sub-division basis. This is a logical process due to a clearly defined area and a start finish point for each area. Cleanings are based on age of the sub-division, recent inspections in the area, and represent activity in the area.
- All structures such as vortex separators and others with active separation methods are cleaned yearly. 171 Vortex Separators and 26 pollution control manholes were cleaned in 2014/2015. Ponds are inspected, have vegetation control, and structures are cleaned as needed.
- Our process is to establish an accurate location for each structure that we may need to locate in an emergency. Eighty-five percent of the District's conveyance system has been mapped using a GPS and the data collected from that process is uploaded onto a GIS mapping system to manage the cleaning of storm lines, structures and ditches within each subdivision. At the time the structure is mapped, a cursory inspection is done and any deficiencies are noted for repair.

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## PROGRESS ON SWMACC MEASURABLE GOALS

- Inspection and cleaning of storm lines and structures were not conducted. For ditch maintenance, see DTD's MS4 annual report.
  - There were no structural water quality facilities maintained in SWMACC
  - Conveyance system assessment was not conducted
- Note: WES on behalf of SWMACC will adjust the conveyance system and structural controls maintenance program to meet this BMP's goal during the next reporting year. Staff will work to properly identify and inventory the number of District owned/operated structural water quality facilities draining to MS4 permitted outfalls that are covered by the SWMP. Each of those MS4 permitted facilities will be inspected and cleaned. Conveyance systems within the MS4 permitted area will also be identified, inspected, and maintained as necessary. Quarterly progress on attaining the measurable goal will be reported to District Managers so that adjustments in necessary resources can be made.

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## BMP# 27: CONDUCT CATCH BASIN CLEANING AND MAINTENANCE

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### DISTRICTS REQUIRED TO REPORT: CCSD#1 (#27) AND SWMACC (#24)

**BMP Description:** CCSD#1 cleans all District owned or District operated/maintained catch basins once every two years; cleaning approximately 15% of the catch basins each year. Catch basin cleaning activities primarily occur during the dry weather season, but during the fall, certain catch

basins may be cleaned more frequently if needed. Utility crews utilize a database to document inspection and maintenance activities for the annual reports. Repair or replacement of public catch basins is scheduled following inspection.

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## TRACKING MEASURES

1. Track the percent of District owned or District operated/maintained catch basins cleaned per year
2. Track the volume of debris removed during cleaning activities

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## CCSD#1 TRACKING MEASURES RESPONSES

- 4.6 % of catch basins cleaned in maintenance agreement areas
- 148.83 cubic yards of material removed

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## SWMACC TRACKING MEASURES RESPONSES

- 0.0 % catch basins cleaned
- 0.0 cubic yards of material removed

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## MEASURABLE GOALS

1. Clean 15% of District owned or District operated maintained public catch basins each year (50% found in CCSD#1 and SWMACC Stormwater Management Plans dated April 27, 2012 is typo).
2. Schedule repair or replacement of catch basins based on inspection results

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## PROGRESS ON CCSD#1 MEASURABLE GOALS

- 4.6% of District owned and operated catch basins were cleaned and/or inspected

Note: WES on behalf of CCSD#1 will adjust the catch basin cleaning program to meet this BMP's 15% goal during the next reporting year. Staff will work to properly identify and inventory the number of District owned/operated catch basins that require cleaning. A subset of catch basins in high priority areas, including high traffic roads and commercial areas, will be targeted for cleaning. Quarterly progress on attaining the measurable goal will be reported to District Managers so that adjustments in necessary resources can be made.

- No catch basins were found to be in need of repair

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## PROGRESS ON SWMACC MEASURABLE GOALS

- 0.0 % of District owned and operated catch basins were cleaned and/or inspected

Note: WES on behalf of SWMACC will adjust the catch basin cleaning program to meet this BMP's 15% goal during the next reporting year. Staff will work to properly identify and inventory the number of District owned/operated catch basins that require cleaning. A subset of catch basins in high priority areas, including high traffic roads and commercial

areas, will be targeted for cleaning. Quarterly progress on attaining the measurable goal will be reported to District Managers so that adjustments in necessary resources can be made.

- No catch basins were repaired or replaced

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**BMP# 28: STORM DRAIN CLEANING ASSISTANCE PROGRAM**

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**DISTRICTS REQUIRED TO REPORT: CCSD#1 (#28) AND SWMACC (#25)**

**BMP Description:** Stormdrain Cleaning Assistance Program (SCAP) industrial, commercial, and multi-family residential subdivisions have signed stormwater facility maintenance agreements with the District that obligate the signee to inspect and maintain their stormwater facilities and to report on their activities annually to the district. To assist commercial and industrial facilities with maintaining their devices and reporting on their activities, the District implemented a Stormdrain Cleaning Assistance Program which consists of the following components:

- Obtaining the lowest price quote from vendors for the cleaning of stormwater devices.
- Send notification to agreement holder as well as other commercial and industrial facilities of their obligation to maintain their devices and to report on their activities. The notification also includes an invitation to participate in a program to have their stormwater devices inspected and cleaned for a low price.
- Providing a list of business that wish to have their stormwater devices cleaned to the vendor.
- Tracking the number of annual reports submitted.
- Obtaining a summary from the vendor, the number of facilities visited as well as the number and types of structures maintained.

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**TRACKING MEASURES**

1. Number of agreement holders compared with the number of annual reports received and the number devices being serviced by the vendor.
2. Total number of businesses serviced by the vendor with total number of devices maintained and volume of debris removed.

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**CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES**

(1)

District	# of Agreements	Annual Reports Received	# of Devices Serviced by Vendor & Others
CCSD#1	140	31	389
SWMACC	10	6	51

(2)

District	# of Businesses Serviced by Vendor	Total # of Devices Maintained by Vendor	Volume of Debris Removed
CCSD#1	35	116	Unknown*
SWMACC	0	0	Unknown*

This is the total # of businesses that reported cleaning their system (including those that used the vendor):

District	# of Businesses Serviced by Vendor or Other	Total # of Devices Maintained	Volume of Debris Removed
CCSD#1	72	Over 591	59,682 gals
SWMACC	7	51	Unknown*

\* *The vendor used under the joint program was already under a multiyear contract with Gresham and was not accustomed to tracking the volume per site so was unable to provide it this time. This will be required to be tracked for future activities.*

### MEASURABLE GOALS

1. Continue to provide assistance to commercial and industrial facilities to support their water quality facility maintenance.

### PROGRESS ON CCSD#1 AND SWMACC MEASURABLE GOALS

- In FY 2014/15 the District implemented the sixth year of a Storm Drain Cleaning Assistance Program (SCAP) for private facilities. To help streamline the program, raise awareness and seek greater compliance, WES partnered with the cities of Milwaukie, Gresham, Fairview, Wood Village and the Oak Lodge Sanitary District on a joint SCAP. The program implementation was easier through sharing of printing, postage and advertising but compliance did not significantly improve. Staff from each jurisdiction has been meeting to determine methods of improving participation for the 2015/16 program.

### BMP# 29: PRIVATE WATER QUALITY FACILITY MAINTENANCE PROGRAM

#### DISTRICTS REQUIRED TO REPORT: CCSD#1 (#29) AND SWMACC (#26)

**BMP Description:** This BMP includes maintenance agreements for stormwater quality and detention structures in residential areas. Since approximately 1996, developers of nearly all newly constructed single-family residential subdivisions have elected to voluntarily sign an agreement that requires, for a monthly fee, District staff to maintain, clean and/or repair their privately owned stormwater quality and/or detention infrastructure. This infrastructure varies from subdivision to subdivision, but may include two or more of the following: catch basins, below-ground stormwater detention tanks, above-ground storm water detention and/or water quality ponds, below-ground vortex separators, and swales. On a periodic basis, pollution is removed from these structures and properly disposed of.

### TRACKING MEASURES

1. Number of structures inspected and cleaned.

## CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

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District	# of Structures Inspected	# of Structures Cleaned
CCSD#1	861	900
SWMACC	0	0

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### MEASURABLE GOALS

1. Inspect 70% of our maintenance agreement subdivisions annually
2. Cleaning and repair schedules will be developed based on inspection outcomes
3. All non-maintenance agreement cleaning and repairs will be request or service driven
4. Emergency driven cleaning and maintenance will be addressed within 24 hours of the call being received
5. Non-emergency driven cleaning and maintenance will be addressed within 72 hours of the call being received

### PROGRESS ON CCSD#1 MEASURABLE GOALS

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- 11 % of maintenance agreement subdivision structures were inspected

Note: WES on behalf of CCSD#1 will adjust the private water quality facility maintenance program to meet this BMP's goal during the next reporting year. Staff will work to properly identify and inventory the number of District owned/operated private water quality facilities that require inspection, likely with a list of facilities with private maintenance agreements. A subset of private water quality facilities with private maintenance agreements will be targeted for inspection next year. Quarterly progress on attaining the measurable goal will be reported to District Managers so that adjustments in necessary resources can be made.

- Inspections drove vegetation control schedules while preventative maintenance drove inspection and pond-cleaning schedules
- Request for service calls and staff inspections initiated non-maintenance agreement cleaning and repairs
- All emergency-driven requests were addressed within 24 hours of call being received
- All non-emergency requests were addressed within 72 hours of call being received

### PROGRESS ON SWMACC MEASURABLE GOALS

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- 0.0 % of maintenance agreement subdivision structures were inspected

Note: WES on behalf of SWMACC will adjust the private water quality facility maintenance program to meet this BMP's goal during the next reporting year. Staff will work to properly

identify and inventory the number of District owned/operated private water quality facilities that require inspection, likely with a list of facilities with private maintenance agreements. A subset of private water quality facilities with private maintenance agreements will be targeted for inspection next year. Quarterly progress on attaining the measurable goal will be reported to District Managers so that adjustments in necessary resources can be made.

- No cleaning and repair was performed
- No non-maintenance agreement cleaning and repairs were performed
- All emergency-driven requests were addressed within 24 hours of call being received
- All non-emergency requests were addressed within 72 hours of call being received

## SECTION 4 STORMWATER MONITORING PROGRAM

### 4.1 STORMWATER MONITORING

During this permit year WES operated under the Surface/Stormwater Monitoring Plan submitted to DEQ on September 30, 2012, effective October 1, 2012. DEQ requested additional rationale to be submitted by June 30, 2013. This monitoring plan, entitled “Comprehensive Clackamas County Stormwater Monitoring Plan” was a joint effort by several co-permittees and applies to Clackamas County, CCSD#1, SWMACC, and the Cities of Gladstone, Milwaukie, Oregon City, Happy Valley, Rivergrove, and West Linn. The monitoring reports for both CCSD#1 and SWMACC, including the data accumulated over the reporting period, are included as Appendices B and C of this report.

WES is not proposing to make any modifications to our monitoring plan.

### 4.2 WATERSHED ACTION PLANS AND OTHER MONITORING SURVEYS

CCSD#1 completed Watershed Action Plans (WAPs) for the two largest watersheds in the District (Kellogg-Mt. Scott Creeks and Rock Creek) in June 2010.

The top 11 high priority recommendations included:

- 1) Stakeholder Communication Plan
- 2) Update Erosion Prevention and Sediment Control Protocols
- 3) Regional Detention Pond Property Acquisition
- 4) Development of an integrated monitoring program (benthics, geomorphology, water quality)
- 5) Additional Benthic Macroinvertebrate Sampling
- 6) Development of a Channel Morphology Monitoring Program
- 7) Microbial Source Study
- 8) Updating the Surface Water Management Technical Design Standards
- 9) Improving Riparian Buffers

- 10) Priority Retrofit Program for Surface Water Detention Facilities
- 11) Enhanced Street Sweeping Program

During the current reporting cycle, WES has implemented or is in the process of implementing all of the top 11 recommendations listed above.

- (1) A Stakeholder Communications Plan has been developed and is being incrementally implemented. (Please see Public Participation/Intergovernmental Cooperation sections above.)
- (2) Erosion Control Protocols have been updated to facilitate the prioritization of erosion control sites based on a number of criteria.
- (3) WES purchased property that will be used to construct a regional stormwater treatment facility. This facility will serve a 500+ acre industrial area that is currently under-served in terms of water quality treatment. Final design for this facility is expected in fall 2015 and construction will begin in 2016.
- (4) WES developed an integrated monitoring program that “clustered” monitoring sites for both the SWMACC and CCSD#1 Districts. WES sampling is conducted using this integrated program.
- (5) Benthic Macroinvertebrate/Geomorphology sampling sites have been integrated into the overall integrated monitoring program.
- (6) Channel Morphology Monitoring
- (7) Microbial Source Study was not performed. Instead a strategy that leveraged sanitary sewer activities to meet E.coli load reduction requirements was implemented.
- (8) Macroinvertebrate and Geomorphic surveys were conducted in the fall of 2011 and 2014 in both the CCSD#1 and SWMACC service districts and are scheduled to be completed again in the fall of 2017.
- (9) Surface Water Technical Design Standards include new provisions that encourage the use of low impact development techniques, address hydromodification, and require enhancements to riparian buffer areas as part of development process. Use of the updated standards and BMP sizing tool is being promoted and encouraged.
- (10) District detention pond facilities have been evaluated for retrofit. Retrofits are focusing on addressing hydromodification impacts where feasible; improving water quality or both. The District intends to retrofit 2-5 detention facilities per year.
- (11) CCSD#1 and Happy Valley have an Intergovernmental Agreement (IGA) to establish an enhanced street sweeping program for streets within the CCSD#1 service district. The IGA is evaluated on a yearly basis and has been renewed for 2015.
- (12) WES partners have conducted 61 projects to improve riparian buffers within approximately 42 acres of riparian area along 18,975 linear feet of stream corridor during the 2012-13 fiscal year. These projects included planting over 7,500 trees and 17,130 shrubs by over 1,320 volunteers.

Recommendations from the WAPs for other monitoring surveys including additional benthic macroinvertebrate sampling and channel morphology were conducted October-December 2011; the reports are available on the Districts website at <http://www.riverhealth.org/watershed-health>.

## SECTION 5 FUNDING, STAFF AND EQUIPMENT

### 5.1 FUNDING – CCSD#1 & SWMACC

The Stormwater Management Program for CCSD#1 is funded through four primary sources: monthly stormwater utility fees, onsite stormwater maintenance fees, systems development charges (SDCs), and permit fees.

#### CCSD#1

In Fiscal Year 2014-15 the main funding for the Stormwater Management Program for CCSD#1 came from four sources (preliminary):

Monthly Stormwater Utility Fees	\$ 3,810,368.75
Maintenance Fees	\$ 287,662.70
Systems Development Charges (SDCs)	\$ 92,045.00
Stormwater and Erosion Control Permit Fees	\$ 182,334.20

All CCSD#1 customers pay the monthly program fee of \$6.35 per Equivalent Service Unit (ESU) which is defined as one single-family residence or 2500 square feet of impervious surface for nonresidential customers. New single-family residential customers, since 1998, also pay a monthly maintenance agreement fee of \$3 per ESU which is dedicated for maintenance of local subdivision stormwater conveyance, detention, treatment, and infiltration facilities.

SDCs are collected from new development and dedicated to planning, design, and construction of additional stormwater infrastructure capacity needed to accommodate growth. The current SDC rate is \$205 per ESU.

#### SWMACC

In Fiscal Year 2014-15 the main funding for the Stormwater Management Program for SWMACC came from two sources:

Monthly Stormwater Utility Fees	\$ 172,847.40
Miscellaneous Income	\$ 4,886.84

All SWMACC customers pay the monthly program fee of \$4 per Equivalent Service Unit (ESU), which is defined as one single-family residence. Only a small portion of this revenue was collected within the MS4-permitted area. Permit fees for stormwater and erosion control plan review and inspection are collected with every new development application. The current stormwater plan review fee is \$400 or 4% of the installed cost of the surface water management system (whichever is greater) per subdivision or commercial/industrial development and \$55 per single-family residential building permit. The erosion control review and inspection fee is \$460 for the first acre, plus \$80 per additional acre for subdivisions and commercial/industrial developments, while new single family residences are charged a flat rate of \$310.

## 5.2 EXPENDITURES & BUDGET – CCSD#1 & SWMACC

The following tables display actual expenditures for permit activities for both districts for the previous two reporting periods, the actual expenditures for the 2013 and 2014 periods, the budgeted and estimated expenditures for the 2014/2015 reporting period, and the adopted 2015/16 budget.

**Table 2 Stormwater Program Funding and Expenditures for CCSD#1**

CCSD#1	12/13 Actual	13/14 Actual	14/15 Budget	14/15	15/16
				Estimate	Adopted
<b>Resources</b>	<b>13,743,718</b>	<b>13,559,815</b>	<b>13,953,009</b>	<b>14,647,496</b>	<b>15,130,356</b>
Materials & Services	3,762,305	3,014,505	3,484,889	3,403,312	4,037,046
Capital Outlay	408,574	446,808	1,600,000	397,183	1,620,000
Transfers	379,728	379,633	378,742	378,742	0
Contingency	0	0	980,815	0	1,077,841
Ending Fund Balance	9,193,111	9,718,869	7,508,563	10,468,259	8,395,469
<b>Total Requirements</b>	<b>13,743,718</b>	<b>13,559,815</b>	<b>13,953,009</b>	<b>14,647,496</b>	<b>15,130,356</b>

**Table 3 Stormwater Program Funding and Expenditures for SWMACC**

SWMACC	12/13 Actual	13/14 Actual	14/15 Budget	14/15 Estimate	15/16 Adopted
<b>Resources</b>	<b>327,452</b>	<b>406,006</b>	<b>508,112</b>	<b>502,850</b>	<b>575,234</b>
Materials & Services	109,855	93,622	162,883	118,442	130,439
Contingency	0	0	16,288	0	13,044
Ending Fund Balance	217,597	312,384	328,941	384,408	431,751
<b>Total Requirements</b>	<b>327,452</b>	<b>406,006</b>	<b>508,112</b>	<b>502,850</b>	<b>575,234</b>
Capital Outlay	0	0	0	0	0

### 5.3 STAFF – CCSD#1 & SWMACC

Staffing for surface water program management activities are integrated throughout WES. Staff is provided from the various divisions of WES and is dedicated both to CCSD#1 and SWMACC. In 2014/2015, 13,052 hours were dedicated to Surface Water service.

<b>Surface Water Activity</b>	<b>FTEs</b>
<b>Administration</b>	<b>1.9</b>
50430 Watershed Planning	
50900 Surface Water Admin	
<b>Customer Service</b>	<b>0.7</b>
50555 Service Requests	
<b>Erosion Control</b>	<b>0.3</b>
50100 Erosion Control	
50110 Inspections	
<b>Maintenance</b>	<b>1.4</b>
50500 On-site Maintenance Program	
<b>Program Effectiveness</b>	<b>0.6</b>
50200 Sampling/WQ Monitoring/Flow	
50810 Intergovernmental Coordination	
50450 Data Analysis / Modeling	
<b>Public Education</b>	<b>0.2</b>
50820 Public Education	
50830 Citizen Involvement	
<b>Regulatory Compliance</b>	<b>1.1</b>
50150 1200C Out of District	
50300 Spills / Illicit Discharges	
50600 Regulatory/Compliance	
<b>Riparian Restoration</b>	<b>0.4</b>
50420 Habitat Restoration Projects	
50425 River Health Stewardship Prg	
	<b>6.5</b>

## 5.4 TRAINING – CCSD#1 & SWMACC

Staff attended the following conferences and events:

<u>Surface Water Training</u>	<u>Date</u>
NACWA 2014 Summer Conference, Executive Utility Leadership Today & Tomorrow	7/2014
Oregon Operators Conference (Surface Water Track)	8/2014
39th Annual Water Environment School	9/2014
2014 WEFTEC	9/2014
Lucity Annual Conference & Training 2014	9/2014
OSHA Accident Investigation	9/2014
OSHA Root Cause Analysis	9/2014
Fall Protection	10/2014
PNCWA 2014 Annual Conference	10/2014
Construction Mgr/General Contractor Alternative Contracting Method	10/2014
Paracetic Acid Maintenance & Safety	10/2014
Confined Space Entry	10/2014
PNCWA ANNUAL CONFERENCE	10/2014
APWA Street Maintenance & Collections Systems	10/2014
2014 National Clean Water Law Seminar	11/2014
APWA Leadership Workshop	11/2014
2015 Special Districts Assoc of Oregon Conference	2/2015
Commercial Drivers License	2/2015
Strategic Communications for Water Quality Issues	3/2015
APWA Developing Leader	3/2015
Heartsaver First Aid Program	3/2015
Cross Connection Control Backflow Tester Course	3/2015
Water Environment School	3/2015
FEMA Integrated Emergency Management Course	4/2015
2015 Intertwine Alliance Spring Summit	4/2015
Collection Systems 2015	4/2015
5th Bi-Annual Fats, Oil and Grease Conference & Training	4/2015
ACWA Stormwater Summit	5/2015
NACWA 2015 National Pretreatment & Pollution Prevention Workshop	5/2015
Defensive Driving	5/2015
OELA/ORELAP Annual Environmental Laboratory Workshop	5/2015
Managing Change in Our Community Forests	6/2015

## 5.5 EQUIPMENT – CCSD#1 & SWMACC

Stormwater management activities require a range of equipment. This equipment is owned by the County Road Department or by WES. Additional equipment is rented or contracted out. A partial list of equipment used for stormwater management activities includes:

- Combination Vacuum/Hydrocleaner trucks
- Regenerative air sweepers
- 1-ton utility vehicles
- 3-yard and 5-yard dump trucks
- 16-foot Felling trailer
- Skid steer front end loader
- Mini excavator
- Dye testing and smoke testing equipment
- Sampling stations and sampling gear
- Volunteer stream restoration tool trailer
- 6-inch trailer mounted dry prime pump
- Additional larger excavation equipment as needed
- Private conveyor material placement equipment

## 5.6 FUNDING FOR DEVELOPMENT REVIEW, EROSION CONTROL & STREET SWEEPING - CITY OF HAPPY VALLEY

For the City of Happy Valley, the permit fees for development plan review and inspection is based upon the construction value of the project. The erosion control plan review and inspection fees is \$500 base fee up to 1 acre plus \$100 per acre or fraction thereof for sites greater than 1 acre. In the July 2014 through June 2015 fiscal year, the City collected approximately \$336,447 in development review and erosion control permit fees.

Funds for Street Sweeping are budgeted through General Funds.

## 5.7 STAFF - CITY OF HAPPY VALLEY

### Public Works Department

Street Sweeping, stormwater related issues and topics in Happy Valley

- 1.0 FTE Program Manager
- 4.0 FTE Street Maintenance Employees
- 0.5 FTE Administrative Assistant
- Additional staff as needed

### Engineering Services

Engineering development review, capital projects, and erosion control, and stormwater related issues and topics in Happy Valley.

- 1.0 FTE Program Manager
- 1.0 FTE Engineer
- Additional staff as needed.

## 5.8 TRAINING - CITY OF HAPPY VALLEY

City staff attended the following conferences and events:

- APWA Street Maintenance & Collection Systems School – October 2014
- Erosion Control & Stormwater Management Summit – January 2015
- ORWEF Water Environment School – March 2015
- AWWA Water Works School – June 2015
- Erosion & Sediment Control Training – June 2015

## 5.9 EQUIPMENT - CITY OF HAPPY VALLEY

Street Sweeping and erosion control activities require a range of equipment. This equipment is owned by the City. Additional equipment is rented or contracted out. A partial list of equipment used for these activities includes:

- (2) Regenerative air sweepers
- (1) Mechanical sweeper
- (1) 35 HP tractor
- (4) utility trucks
- (2) 2-yard dump trucks
- (1) 5-yard dump truck
- (1) Rubber tired backhoe

## SECTION 6 LEGAL AUTHORITY

### SWMACC and CCSD#1

The NPDES Permit in Schedule D.1. requires the Districts to maintain adequate legal authority through ordinances, interagency agreements or other means to implement and enforce the provisions of the permit, and to control discharges to and from the municipal separate storm sewer systems (MS4).

Through County Board Order No. 92-289, SWMACC was granted the authority to construct capital improvements to address surface water quality and quantity and to provide nonpoint source pollution controls to meet state and federal regulations. County Board Order No. 93-196 provided CCSD#1 with this same authority within its jurisdiction.

Both SWMACC and CCSD#1 have locally-adopted Rules and Regulations that prohibit illicit discharges and spills into the county's MS4 and require the control of industrial/commercial site runoff. The Rules and Regulations also authorize the Districts to enforce any provisions through inspection, surveillance, monitoring, and enforcement actions.

The Districts' Rules and Regulations contain a suite of requirements regulating the design, construction, and operation of stormwater controls on development and re-development sites that

will discharge to the MS4 or to waters of the state. Both SWMACC and CCSD#1 Rules and Regulations require erosion control plans in accordance with the WES's Erosion Control Manual. For CCSD#1 specifically, additional stormwater and erosion control measures for development projects are outlined in a Stormwater Standards manual.

Through the legislative authority of the Board of County Commissioners (BOCC), the Districts have the ability to enter into contracts and intergovernmental agreements with other permittees for the purpose of controlling pollutants entering or leaving the Districts' MS4s.

*References SWMACC and CCSD#1 Documents:*

- Water Environment Services, December 2002, Surface Water Management Agency of Clackamas County Rules and Regulations.
- Water Environment Services, December 2008. Erosion Prevention and Sediment Control Planning and Design Manual.
- Water Environment Services, January 2013. Clackamas County Service District No. 1 Rules and Regulations for Sanitary Sewer and Surface Water Management.
- Water Environment Services, July 2013. Stormwater Standards, Clackamas County Service District No. 1.

*City of Happy Valley*

Most SWMP related activities are conducted by CCSD#1 using the legal authority to conduct those activities is described above. However, the City does conduct some of these activities, such as plan review, and construction inspection for erosion control measures within City limits through Municipal Code Title 15 Building and Construction, and Title 16 Land Development. Water pollution and drainage nuisances are prohibited in Municipal Code Title 8 Health and Safety, including erosion entering the MS4 or surface water.

**SECTION 7 OVERVIEW OF PLANNING, LAND USE CHANGES AND DEVELOPMENT ACTIVITIES WITHIN THE UGB**

Land use did not significantly change within the Service Districts and the adjacent UGB expansion areas over the course of the 2014/2015 reporting period.

Within Clackamas County Service District No.1 ("CCSD#1") 55 acres was annexed to CCSD#1 during this reporting period. Approximately 115 acres were developed in CCSD#1 in accordance with the District Standards, Stormwater Management Plan ("SWMP") and Willamette River TMDL Implementation Plan.

The Surface Water Management Agency of Clackamas County ("SWMACC") boundary currently is the portion Tualatin River Drainage Basin within the County of Clackamas. The SWMACC District is slowly decreasing in size due to the adjacent cities are expanding into this service area. No land was developed within the SWMACC District.

Both Districts require development projects to mitigate stormwater form impervious areas. The District, through the regulations and standards, requires development to address water quality,

quantity and infiltration. Seventeen non-single family post-construction permits were finalized, enveloping 33 acres with an estimated total impervious area of 860,000 square feet. The development which occurred during this reporting period in both Districts was constructed in compliance with the MS4 Permit and TMDL Plans.

The District is forecasting similar growth in this reporting year to occur over the next reporting period. The development activities occurring in 2015-2016 will be reported in next year's annual report.

## **SECTION 8 PROPOSED CHANGES TO SWMP AND/OR TMDL IMPLEMENTATION PLAN**

No changes are anticipated.

## **SECTION 9 PUBLIC COMMENT – ANNUAL REPORTS**

Schedule A (4) (e) Public Involvement and Participation requires a public participation approach that provides opportunities for the public to effectively participate in the development, implementation and modification of the co-permittee's stormwater management program. The approach must include provisions for receiving and considering public comments on the monitoring plan due to the Department by September 1, 2012, annual reports, SWMP revisions, and the TMDL pollutant load reduction benchmark development.

The 2014/2015 Annual Report was noticed in the Oregonian on DATE and was made available to the public on the District's website and available by hard copy. Public comment was opened September 18, 2015 and ended noon October 2, 2015. No comments were received.

## **SECTION 10 ADAPTIVE MANAGEMENT**

Schedule B(5)(c) of the MS4 Permit requires that a summary of the implementation of our adaptive management process be provided in each annual report. Permit Schedule D(10)(a) defines adaptive management as a structured, iterative process designed to refine and improve stormwater programs over time by evaluating results and adjusting actions on the basis of what has been learned. Our October 2012 document titled "Outline for Adaptive Management Approach" was used to guide our 2014-2015 adaptive management process.

BMP implementation and environmental monitoring data analysis has been performed by Clackamas County's WES on behalf of the SWMACC, CCSD#1, and the Cities of Rivergrove and Happy Valley throughout the 2014-2015 reporting period. The effort to adaptively manage BMP implementation in light of measurable goals in the two SWMPs is on track. At this point no revisions to our two SWMPs (SWMACC-City of Rivergrove and City of Happy Valley-CCSD#1) are deemed necessary, and adjustments to ensure attainment of the measurable goals in the current SWMPs, if needed, will be made.

One programmatic change that had been identified during our 2014-2015 adaptive management process was implemented during the 2014-2015 year. This change, which went into effect in August 2014, did not require modifying either SWMP. The change relates to the WES personnel who administer portions of SWMP BMPs #2 ("Implement the Spill Response Program") and #3 ("Respond to Reports Involving Illicit Discharges"). For many years prior to August 2014, when reports of illicit discharges, spills, and non-stormwater discharges were received during daytime hours on regular work days, personnel from WES' Environmental Monitoring Division (EMD) would typically respond. As of August 2014, personnel from WES' Field Operations (FO) Section are now responding to all reports, if a response is appropriate, without regard for the time of day or day of the week when the report was received. This change was made because FO personnel are often already in the field when these reports are received, which greatly improves WES' response time. When FO personnel aren't already in the field, they can typically mobilize more rapidly than EMD personnel could. Faster response times typically yield positive results; it is more likely that the responsible party can be identified, and more spilled material can be captured with absorbent materials, when WES arrives on the scene earlier. WES' EMD continues to provide enforcement and follow-education services, in partnership with the FO Section, for illicit discharges, spills, and non-stormwater discharges incidents when these additional services are appropriate.

Three potential programmatic changes that are expected to be made in the future were also identified during the 2014 / 2015 year:

- Upon reviewing SWMP BMP's, we recognized the need to provide additional stormwater services in the following subject area: Permit Schedule A(4)(h)'s "Stormwater Management Facilities Operation and Maintenance Activities. The portion of our program which pertains to the inspection and maintenance of privately owned storm sewer systems which serve churches, industrial facilities, apartment complexes, shopping malls, etc. has relied heavily upon education and technical assistance in the past. We expect to expand some related service categories, such as inspections and enforcement, in the future.
- Upon reviewing SWMP BMP's, we recognized the need to re-categorize the way that MS4-permitted storm sewer system outfalls are organized in our GIS system. Other structures, such as pipes which discharge into man-made stormwater quality ponds, had been categorized together with storm sewer system outfalls, making it difficult to list or map only the storm sewer system outfalls which discharge to Waters of the State. This re-categorization process is underway and we expect to complete it soon.
- An extensive amount of environmental monitoring data has been collected from creeks and/or storm sewer outfalls by WES in the SWMACC, the City of Rivergrove, the City of Happy Valley, and CCSD#1 since 1994. The current MS4 permit requires us to continue to collect a large amount of new environmental monitoring data every year. For example, no less than 9 monitoring events must be conducted per year at 8 creeks in CCSD#1. As another example, even though the MS4-permitted portion of SWMACC does not contain any creeks, SWMACC is required to monitor a creek during 9 events/year even though this creek does not receive any drainage from SWMACC's MS4-permitted area. And finally, SWMACC's exceedingly small MS4-permitted area (only a few hundred acres) is required to be monitored for pesticides and mercury, which are exceptionally expensive types of analysis, while much larger MS4-permitted communities, such as the City of Springfield, Oregon, are not required to perform any environmental monitoring whatsoever. We have already done a thorough job of categorizing water pollution levels in our service areas and the water pollution situation overall has been extensively studied.

We would like to reduce the required amount of environmental monitoring during the next MS4 permit cycle (2017-2022), and the saved money would then be invested in the portions of our program which actually reduce stormwater runoff volumes and stormwater pollution.

## SECTION 11 APPENDICES

### APPENDIX A GUIDE TO ACRONYMS

<b>Abbreviation</b>	<b>Definition</b>
BMP	Best Management Practice
CCSD#1	Clackamas County Service District #1
CCCSMP	Comprehensive Clackamas County Stormwater Monitoring Plan
CIP	Capital Improvement Project
DEQ	Department of Environmental Quality
DTD	Clackamas County Department of Transportation and Development
EPSC	Erosion Prevention and Sediment Control
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
ODOT	Oregon Department of Transportation
PSU	Portland State University
SCAP	Stormdrain Cleaning Assistance Program
SIC	Standard Industrial Classification
SWMACC	Surface Water Management Agency of Clackamas County
SWRP	Student Watershed Research Program
TBPAC	Tualatin Basin Public Awareness Committee
TMDL	Total Maximum Daily Load
UGB	Urban Growth Boundary
WAP	Watershed Action Plan
WPCF	Water Pollution Control Facility

## APPENDIX B ENVIRONMENTAL MONITORING REPORT

*JULY 1, 2014 – JUNE 30, 2015 MONITORING YEAR*

As part of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirement, Clackamas County Water Environment Services (WES), on behalf of Clackamas County, Clackamas County Service District #1 (CCSD#1), the Surface Water Management Agency of Clackamas County (SWMACC), the City of Rivergrove, and the City of Happy Valley implements a stormwater and creek water monitoring program. Specific monitoring requirements and objectives are defined in Schedule B of the March 2012 Clackamas County MS4 NPDES permit (number 101348). Note that these five co-permittees are also regulated by either the Willamette TMDL or the Tualatin TMDL.

Given the effort associated with implementing an effective environmental monitoring program that adequately meets all permit requirements and objectives, nine Clackamas County co-permittees (including Clackamas County, CCSD#1, SWMACC, and the Cities of Rivergrove and Happy Valley) agreed to consolidate efforts and prepare one comprehensive stormwater monitoring plan several years ago. This plan is called the Comprehensive Clackamas County NPDES MS4 Stormwater Monitoring Plan (CCCSMP). An updated version of the CCCSMP went into effect on June 30, 2013 and is now being implemented.

### **Environmental Monitoring Program Description**

As described in the CCCSMP, the MS4 NPDES stormwater monitoring program requires two components. The first component is program monitoring, which involves the tracking and assessment of programmatic activities, as described in the individual permittee's SWMP, through the use of performance indicators or metrics. Results of the program monitoring are reported in a separate section of this MS4 NPDES/TMDL Annual Report. The second component is environmental monitoring, which includes actual collection and analysis of water quality samples. Environmental monitoring efforts reported for compliance with MS4 NPDES permit conditions consist of instream sample collection and stormwater outfall sample collection.

### **Monitoring Data: Summary**

Instream monitoring was conducted at eight locations on seven tributaries to the Willamette River within the CCSD#1 service boundary and at one location on one tributary to the Tualatin River within the SWMACC service area. Note that the SWMACC creek monitoring location, Pecan Creek, is not located in the geographic area which is regulated by SWMACC's MS4 permit, and no runoff from any MS4-permitted area in SWMACC flows into this creek. Although SWMACC requested relief from this requirement as the MS4 permit was being written, the final MS4 permit which was issued to SWMACC included a requirement to monitor the creek.

**MONITORING CREEKS DURING STORM EVENTS:** For parameters which can be composited (total lead, for example) time-weighted grab samples were collected and composited during each storm in CCSD#1 and SWMACC. Three grab samples were collected for compositing from every storm, except for the rare Summer-season storm which was captured on July 22, 2014. The rain stopped before the 3rd grab sample could be collected, so only two grab samples were collected from creeks during this storm.

**ROUTINE CREEK MONITORING:** An additional seven routinely scheduled monitoring events were conducted at all nine creek monitoring locations in CCSD#1 and SWMACC during the July 1st-June 30th monitoring year. Although the MS4 permit requires that only nine monitoring events be conducted during the monitoring year, we elected to voluntarily conduct a tenth monitoring event on June 24, 2015. In accordance with MS4 Permit Schedule F's Section C(4), the water quality and flow data from the June 24, 2015 Routine monitoring has also been included in this monitoring report, even though we elected to voluntarily exercise our option to monitor more frequently than was required. MS4 Permit Schedule B(3)(a)(i) specifies that a minimum of 50% of the

instream water quality sample events must be collected during the wet season, which is defined as October 1st to April 30th. We have complied with this requirement because 50.6% (41 of 81) of the samples which were collected during the nine **required** monitoring events were collected during the wet season.

"Routine" monitoring events are scheduled in advance, and thus occur with varying weather conditions. Creeks are occasionally monitored during storms when Routine monitoring events are conducted, although this did not occur during 2014-2015. Only one grab sample is collected from the creek during Routine monitoring events.

MS4 OUTFALLS: Storm sewer system outfall monitoring was conducted at four locations which discharge to tributaries of the Willamette and Clackamas Rivers in CCSD#1. A storm sewer system outfall in SWMACC was also monitored; this outfall discharges to the Tualatin River in the City of Rivergrove. Time-weighted composite samples were taken during three visits to these five outfall locations during the year.

WATER QUALITY & FLOW DATA: Complete results of the instream and MS4 outfall sample collection efforts conducted by WES for the 2014-2015 monitoring year are provided in Table 3 (for monitoring conducted within CCSD#1) and Table 4 (for monitoring conducted within SWMACC).

MERCURY: Monitoring for total mercury and some related pollutants began in 2013-2014, and continued in 2014-2015, at an outfall in SWMACC and at an outfall in CCSD#1. This monitoring was required by the MS4 Permit's Schedule B (see Table B-1s). Data that has been collected to date is in Table 1:

**Table 1**

	Date	Total Mercury (ng/L)	Dissolved Mercury (ng/L)	Total Methyl Mercury (ng/L)	Dissolved Methyl Mercury (ng/L)	Total Suspended Solids (mg/L)	Dissolved Oxygen (mg/L)	pH (std units)	Water Temp (C)	Conductivity (uS)	Rain-fall (in) ***
Outfall in SWMACC*	4-9-2014	9.88	NA	0.706	NA	NA	NA	NA	NA	NA	0.28
Outfall in CCSD#1**	4-9-2014	3.46	NA	0.121	NA	NA	NA	NA	NA	NA	0.45
Outfall in SWMACC*	7-23-2014	11.3	5.4	0.25	0.08	12.0	7.1	6.3	20.0	75.9	0.14
Outfall in CCSD#1**	9-23-2014	5.5	3.5	0.183	<0.05	8.0	8.3	6.8	19.7	190	0.11
Outfall in CCSD#1**	3-11-2015	9.8	7.3	0.40	0.12	23.0	8.6	6.5	12.8	67.8	0.16
Outfall in SWMACC*	3-20-2015	2.0	1.0	<0.05	<0.05	1.0	8.35	6.3	12.3	218	0.06

\* = The Rivergrove Boat Ramp Outfall in the City of Rivergrove and SWMACC

\*\* = The SE Oregon Trail Drive Outfall in the City of Happy Valley and CCSD#1

- \*\*\* = Rainfall in the 24 hours prior to the collection of the sample. This is from the nearest rain gage or it is an average of the nearest 2 or 3 rain gages.
- NA = The MS4 permit specified that the following data should have been obtained from this storm: 1) total mercury, 2) total methyl mercury, 3) dissolved total mercury, 4) dissolved methyl mercury, 5) dissolved oxygen, 6) pH, 7) stormwater temperature, 8) conductivity, 9) TSS, and 10) flow rate or rainfall amount. Unfortunately, an error was made, and the data for parameters #3 through #9 were not obtained from the April 9, 2014 storm. As soon as this situation was discovered, it was promptly self-disclosed to DEQ in a May 23, 2014 email. To rectify the situation, an additional storm was caught at each monitored outfall during the period from Oct. 1, 2014 to April 30, 2015 and all of the required parameters were analyzed for.

## **Monitoring Data: Discussion**

The benefit of participation in a coordinated monitoring effort with other co-permittees is that resources may be more widely distributed and the data produced will provide comprehensive information for the County as a whole. Monitoring data continues to be collected with the expectation that some analyses would be conducted annually and submitted with the annual compliance reports, while other analyses would be conducted after several years of data have been collected (e.g., the 5-year permit period) so that the data are more statistically robust in terms of providing information.

**BASELINE STATISTICS:** Monitoring data compiled into Tables 3 and 4 include baseline statistics (mean, maximum, and minimum) at each sampling location. This annual monitoring report summary addresses requirements identified in the CCCSMP (see Chapter 7, "Data Analysis and Interpretation").

**WATER QUALITY INDEX:** In conjunction with the monitoring data summary included in Tables 3 and 4, a generalized Water Quality Index is also provided in Attachment 1 to assist the reader with drawing conclusions and making informed decisions based on the monitoring results.

**FACT SHEETS:** Individual Fact Sheets for each instream and storm sewer outfall monitoring location have been prepared which summarize the monitoring site's location and associated monitoring results. The Fact Sheets can be found in Attachment 2.

**RAINY WEATHER AND DRY WEATHER:** For instream monitoring sites, data have been segregated according to whether samples were collected during Storm Event weather conditions or not. One benefit of this comparison is that it more readily identifies the impact of stormwater runoff on instream water quality. Unfortunately, some of the Routine monitoring events which were not conducted during Storm Events were conducted soon after a storm had moved through (the May 6, 2015 Routine monitoring event, for example). This complicates the interpretation of the data, for the water quality from these events is clearly influenced by the runoff from the recent storm.

**STORM EVENT SIZE:** Review of the Storm Event monitoring data should be conducted while considering the rainfall depth associated with the storm event. Precipitation amounts for monitored Storm Events are listed below in Table 2. Rainfall for storms that were caught in SWMACC was recorded at the Portland Community College's Sylvania Campus and rainfall for storms which were caught in CCSD#1 was recorded at the Pleasant Valley School near the City of Happy Valley.

**Table 2**

Storm Event Monitoring Date	Sites Monitored	Rain Prior to Event	Rain During Sample Collection Period	Total Rainfall (prior to & during event)
7/22/2014	All 8 CCSD#1 Creeks	No rain fell in the 7 days prior to the arrival of this rare Summer-season storm. And only 0.05 inch fell in the preceding 23 days. 0.63 inch fell in the 6 hours prior to collecting samples.	0.02	0.65 inches
9/24/2014	4 CCSD#1 Creeks	No rain fell in the 4 days prior to the arrival of this storm. And only 0.08 inch fell in the preceding 23 days. 0.62 inch fell in the 11 hours prior to collecting samples.	0.06	0.68 inches
10/14/2014	All 4 CCSD#1 outfalls	0.23 inch fell in the 3 hours before sampling began at 1am*.	0.13 inch	0.36 inch
10/31/2014	Pecan Creek in SWMACC	1.32 inches fell during the preceding 20 hours	0.01	1.33 inch
11/6/2014	All 4 CCSD#1 outfalls	0.03 inch fell in the 24 hours before sampling began at 8:45am	0.11 inch	0.14 inch
1/15/2015	All 4 CCSD#1 outfalls and the SWMACC outfall	0.06 in the preceding 24 hours in SWMACC and in CCSD#1	0.16 inch in SWMACC and 0.14 inch in CCSD#1	0.22 inch in SWMACC and 0.20 in CCSD#1
2/6/2015	4 CCSD#1 Creeks	0.41 inch in the 9 hours which preceded the initiation of sample collection (note that 1.06 inch fell in the 48 hrs before sampling began)	0.14	0.55 inch
3/14/2015	SWMACC outfall	0.38 inch in the 6 hours which preceded the initiation of sample collection*. Note that prior to the arrival of this storm, only 0.13 inch fell in the preceding 14 days.	0.02 inch	0.40
3/20/2015	SWMACC outfall	0.05 inch in the 24 hours which preceded the initiation of sample collection (and only 0.06 inch fell in the 73 hours which preceded the initiation of sample collection)	0.36 inch	0.41
3/23/2015	4 CCSD#1 Creeks	0.34 inch in the 5 hours which preceded the initiation of sample collection, and 0.78 inch fell in the 24 hrs before sampling began	none	0.78 inch in 24 hours prior to sampling
4/14/2015	4 creeks in CCSD#1 and the creek in SWMACC	0.42 inch in the preceding 24 hours in SWMACC and in 0.62 inch in CCSD#1	zero in SWMACC & CCSD#1	0.42 inch in SWMACC & 0.62 inch in CCSD#1
5/12/2015	Pecan Creek in SWMACC	0.28 inch fell in preceding 24 hours	0.02	0.30 inch

\* = This monitoring event at outfalls was conducted during a storm which had an Antecedent Dry Period, as defined by the MS4 permit, that separated the monitoring storm from the preceding storm. However, it was not possible to perform sample collection during the initial runoff-producing phase of the monitored storm (aka. first flush).

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**Kellogg Ck at SE Rusk Rd**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Water Quality Standard Comparison													Additional Parameters of Concern							Supporting Parameters										
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)
#14 Kellogg Creek at SE Rusk Rd	7/22/14	Y	Storm	16.4	18	4.5	6.5	1.57	10	> 2420	406	3.5	5.37	7.65	0.15	1.31	33.49	25	71.19	70.61	190	34	6.9	160	0.08	0.18	0.08	7.4	2.31	46	55	7.97	6.5	130
#14 Kellogg Creek at SE Rusk Rd	2/6/15	Y	Storm	10.9	18	9	6.5	1.19	10	866	406	1.8	3.74	5.13	0.13	0.81	20.90	23	49.71	49.31	140	23	1.4	110	< 0.05	0.12	0.06	3.5	1.36	39	36	13.7	6.7	87.2
#14 Kellogg Creek at SE Rusk Rd	4/14/15	Y	Storm	9.8	18	9.5	6.5	1.40	10	548	406	1.2	5.54	7.91	0.09	1.36	34.84	22	73.37	72.78	140	5	0.9	130	< 0.05	0.05	0.06	1.6	0.48	27	57	4.27	6.5	135.7
<b>Mean</b>				12.4		7.7		1.39		1047		2.2			0.12			23.3			157	21	3.1	133	0.04	0.12	0.07	4.2	1.38	37	49	8.65	6.6	117.6
<b>Maximum</b>				16.4		9.5		1.57		> 2420		3.50			0.15			25			190	34	6.9	160	0.08	0.18	0.08	7.4	2.31	46	57	13.7	6.7	135.7
<b>Minimum</b>				9.8		4.5		1.19		548		1.20			0.09			22			140	5	0.9	110	< 0.05	0.05	0.06	1.6	0.48	27	36	4.27	6.5	87.2
<b>Water Quality Exceedance (number of samples)</b>				0		1		0		3		0	0	0	0	0	0	0	0	0	140	5	0.9	110	< 0.05	0.05	0.06	1.6	0.48	27	36	4.27	6.5	87.2
#14 Kellogg Creek at SE Rusk Rd	1/7/15	N	Routine	9.2	18	7.7	6.5	2.50	10	109	406	0.6	7.00	10.25	0.09	1.84	47.15	8	92.58	91.83	195	8	0.5	128	< 0.05	0.08	0.08	1.2	0.35	16	75	2.60	6.4	192.2
#14 Kellogg Creek at SE Rusk Rd	1/23/15	N	Routine	9.7	18	5.7	6.5	2.30	10	78	406	0.8	6.28	9.09	0.1	1.60	40.97	12	83.08	82.41	160	11	1.1	160	< 0.05	0.1	0.08	1.4	0.51	16	66	2.90	6.4	169.8
#14 Kellogg Creek at SE Rusk Rd	3/9/15	N	Routine	11.3	18	7.4	6.5	2.34	10	79	406	0.5	7.16	10.51	0.06	1.89	48.53	11	94.67	93.90	200	6	0.7	150	< 0.05	0.1	0.07	1.1	0.44	14	77	1.90	6.3	194.4
#14 Kellogg Creek at SE Rusk Rd	5/6/15	N	Routine	12.8	18	8.4	6.5	2.40	10	770	406	0.8	7.24	10.63	0.03	1.92	49.22	5	95.71	94.94	200	11	0.8	172	< 0.05	0.06	0.06	1.5	0.37	11	78	2.30	7.1	275
#14 Kellogg Creek at SE Rusk Rd	5/26/15	N	Routine	15.1	18	7	6.5	2.20	10	219	406	0.4	8.34	12.42	0.05	2.30	58.97	6	110.08	109.19	237	6	0.9	158	< 0.05	0.1	0.07	1.2	0.44	9	92	2.30	7.0	197.5
#14 Kellogg Creek at SE Rusk Rd	6/10/15	N	Routine	16.7	18	6.8	6.5	1.90	10	291	406	0.5	7.24	10.63	0.1	1.92	49.22	5	95.71	94.94	240	9	0.9	182	< 0.05	0.14	0.08	1.1	0.37	10	78	2.40	7.0	249
#14 Kellogg Creek at SE Rusk Rd	6/24/15	N	Routine	17.0	18	7.9	6.5	2.00	10	78	406	0.3	7.40	10.89	0.04	1.97	50.61	4	97.79	96.99	172	14	0.6	159	< 0.05	< 0.04	0.07	0.9	0.59	8	80	1.70	7.1	209
<b>Mean</b>				13.1		7.3		2.23		232		0.56			0.07			7			201	9.3	0.8	158	0.03	0.09	0.07	1.2	0.44	12.0	78	2.30	6.8	212
<b>Maximum</b>				17.0		8.4		2.50		770		0.80			0.10			12			240	14.0	1.1	182	< 0.05	0.14	0.08	1.5	0.59	16.0	92	2.90	7.1	275
<b>Minimum</b>				9.2		5.7		1.90		78		0.30			0.03			4			160	6.0	0.5	128	< 0.05	< 0.04	0.06	0.9	0.35	8.0	66	1.70	6.3	170
<b>Water Quality Exceedance (number of samples)</b>				0		1		0		1		0	0	0	0	0	0	0	0	0	160	6.0	0.5	128	< 0.05	< 0.04	0.06	0.9	0.35	8.0	66	1.70	6.3	170

**Cow Creek at SE Last Road**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Water Quality Standard Comparison													Additional Parameters of Concern							Supporting Parameters										
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)
#24 Cow Creek at SE Last Road	7/22/14	Y	Storm	18.7	18	7.65	6.5	0.58	10	> 2420	406	7.2	2.26	2.95	0.19	0.42	10.79	48	30.21	29.97	82	16	8.8	76	1.44	0.14	0.08	11.4	1.74	82	20	2.08	7.2	50
#24 Cow Creek at SE Last Road	9/24/14	Y	Storm	18.4	18	5.6	6.5	0.37	10	> 2420	406	6.6	11.50	17.71	0.2	3.46	88.68	64	151.39	150.16	79	9	4.4	52	0.114	0.11	0.06	8.6	1.47	83	134	0.16	6.0	48.6
#24 Cow Creek at SE Last Road	3/23/15	Y	Storm	9.2	18	9.2	6.5	0.17	10	649	406	2	2.46	3.23	0.09	0.47	12.02	42	32.75	32.49	77	26	2.0	74	0.09	< 0.08	< 0.04	5.8	1.9	77	22	5.92	6.6	46.6
<b>Mean</b>				15.4		7.5		0.37		1561		5.3			0.16			51.3			79	17	5.1	67	0.55	0.10	0.05	8.6	1.70	81	59	2.72	6.6	48.4
<b>Maximum</b>				18.7		9.2		0.58		> 2420		7.20			0.20			64			82	26	8.8	76	1.44	0.14	0.08	11.4	1.90	83	134	5.92	7.2	50.0
<b>Minimum</b>				9.2		5.6		0.17		649		2.00			0.09			42			77	9	2.0	52	0.09	< 0.08	< 0.04	5.8	1.47	77	20	0.16	6.0	46.6
<b>Water Quality Exceedance (number of samples)</b>				2		1		0		3		1	1	1	0	0	0	2	2	2	77	9	2.0	52	0.09	< 0.08	< 0.04	5.8	1.47	77	20	0.16	6.0	46.6
#24 Cow Creek at SE Last Road	1/7/15	N	Routine	7.4	18	8.8	6.5	0.20	10	3	406	0.8	7.87	11.66	0.03	2.13	54.78	22	103.97	103.12	134	3	0.2	126	< 0.05	< 0.04	< 0.04	1.7	0.23	33	86	0.01	6.7	203
#24 Cow Creek at SE Last Road	1/23/15	N	Routine	8.9	18	7.6	6.5	0.60	10	42	406	1.2	7.16	10.51	0.04	1.89	48.53	35	94.67	93.90	140	12	0.3	150	< 0.05	< 0.08	0.03	2.3	0.67	51	77	0.07	6.6	185.4
#24 Cow Creek at SE Last Road	3/9/15	N	Routine	7.5	18	9	6.5	0.32	10	1050	406	1	7.56	11.15	0.01	2.03	52.00	15	99.85	99.04	140	< 1	0.5	130	< 0.05	< 0.04	< 0.04	1.4	0.15	20	82	< 0.01	6.5	191.9
#24 Cow Creek at SE Last Road	5/6/15	N	Routine	11.5	18	9.6	6.5	0.37	10	184	406	1.1	7.56	11.15	0.02	2.03	52.00	7	99.85	99.04	150	4	0.7	142	< 0.05	< 0.04	0.04	2.8	0.61	41	82	0.01	7.6	194.2
Cow Creek at SE Fish Hatchery Road	5/26/15	N	Routine	15.1	18	6.6	6.5	0.69	10	96	406	0.6	6.60	9.60	0.14	1.70	43.71	5	87.33	86.62	189	6	1.0	83	< 0.05	0.05	0.07	1.2	0.4	12	70	NA	7.4	175.7
Cow Creek at SE Fish Hatchery Road	6/10/15	N	Routine	15.6	18	8.2	6.5	0.76	10	649	406	0.7	6.92	10.12	0.05	1.81	46.46	4	91.54	90.79	230	14	0.7	165	< 0.05	0.12	0.07	1.5	0.38	14	74	NA	7.4	181.8
Cow Creek at SE Fish Hatchery Road	6/24/15	N	Routine	16.5	18	8.4	6.5	0.70	10	980	406	0.9	7.48	11.02	0.05	2.00	51.30	6	98.82	98.02	158	7	< 0.4	145	< 0.05	0.04	0.07	1.4	0.34	13	81	NA	7.4	206
<b>Mean</b>				11.8		8.3		0.52		429		0.90			0.05			13.43			163	6.59	0.51	134.43	0.03	0.04	0.05	1.76	0.40	26.29	79	0.02	7.1	191
<b>Maximum</b>				16.5		9.6		0.76		1050		1.20			0.14			35			230	14.0	1.0	165	< 0.05	0.12	0.07	2.8	0.67	51.0	86	0.07	7.6	206
<b>Minimum</b>				7.4		6.6		0.20		3		0.60			0.01			4			134	< 1.0	0.2	83	< 0.05	< 0.04	0.03	1.2	0.15	12.0	70	0.01	6.5	176
<b>Water Quality Exceedance (number of samples)</b>				0		0		0		3		0	0	0	0	0	0	0	0	0	134	< 1.0	0.2	83	< 0.05	< 0.04	0.03	1.2	0.15	12.0	7			

#104 SE Tolbert Street Outfall

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Water Quality Standard Comparison														Additional Parameters of Concern										Supporting Parameters							
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)	
#104 SE Tolbert Street Outfall	10/14/14	Y	Storm	17.2	18	7.2	6.5	0.14	10	1046	406	6.2	1.87	2.39	0.17	0.33	8.38	51	25.01	24.80	100	40	9.6	68	0.31	0.15	0.07	9.8	2.52	75	16	0.80	6.10	56	
#104 SE Tolbert Street Outfall	11/6/14	Y	Storm	14.5	18	6.5	6.5	0.16	10	> 2420	406	3.2	4.61	6.47	0.55	1.07	27.47	21	61.19	60.69	330	230	17.0	98	0.1	0.74	0.15	24.0	16.83	127	46	0.77	6.20	45.3	
#104 SE Tolbert Street Outfall	1/15/15	Y	Storm	8.5	18	9.5	6.5	0.25	10	238	406	3	1.97	2.53	0.23	0.35	8.98	42	26.32	26.11	130	76	4.8	69	0.14	0.2	< 0.04	11.5	9.55	126	17	0.19	6.47	48.5	
<b>Mean</b>				13.4		7.7		0.18		845		4.1			0.32			38.0			187	115	10.5	78	0.18	0.36	0.08	15.1	9.63	109	26	0.59	6.3	49.9	
<b>Maximum</b>				17.2		9.5		0.25		> 2420		6.20			0.55			51			330	230	17.0	98	0.31	0.74	0.15	24.0	16.83	127	46	0.80	6.5	56.0	
<b>Minimum</b>				8.5		6.5		0.14		238		3.00			0.17			21			100	40	4.8	68	0.10	0.15	< 0.04	9.8	2.52	75	16	0.19	6.1	45.3	
<b>Water Quality Exceedance (number of samples)</b>				0		0		0		2			2	2		0	0		2	2															

#103 SE Oregon Trail Dr. Outfall

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Water Quality Standard Comparison														Additional Parameters of Concern										Supporting Parameters							
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)	
#103 SE Oregon Trail Dr. Outfall	10/14/14	Y	Storm	15.8	18	8.1	6.5	0.12	10	> 2420	406	3.8	1.57	1.97	0.19	0.26	6.62	109	20.97	20.80	110	20	26.0	78	0.29	0.31	0.16	5.6	1.1	134	13	0.32	6.0	61.8	
#103 SE Oregon Trail Dr. Outfall	11/6/14	Y	Storm	15.2	18	6.8	6.5	< 0.09	10	1733	406	2.5	2.36	3.09	0.12	0.44	11.40	56	31.49	31.23	98	40	19.0	56	0.15	0.18	0.07	6.6	2.02	133	21	0.39	6.0	101.1	
#103 SE Oregon Trail Dr. Outfall	1/15/15	Y	Storm	9.2	18	6.6	6.5	0.18	10	17	406	1.6	4.27	5.93	0.02	0.97	24.82	44	56.65	56.19	190	100	25.0	99	0.44	0.76	< 0.04	6.5	1.86	114	42	0.07	6.3	95.1	
<b>Mean</b>				13.4		7.2		0.11		415		2.6			0.11			69.7			133	53	23.3	78	0.29	0.42	0.08	6.2	1.66	127	25	0.26	6.1	86.0	
<b>Maximum</b>				15.8		8.1		0.18		> 2420		3.80			0.19			109			190	100	26.0	99	0.44	0.76	0.16	6.6	2.02	134	42	0.39	6.3	101.1	
<b>Minimum</b>				9.2		6.6		< 0.09		17		1.60			0.02			44			98	20	19.0	56	0.15	0.18	< 0.04	5.6	1.10	114	13	0.07	6.0	61.8	
<b>Water Quality Exceedance (number of samples)</b>				0		0		0		2			2	1		0	0		2	2															

#102 SE Webster Road Outfall

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Water Quality Standard Comparison														Additional Parameters of Concern										Supporting Parameters							
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)	
#102 SE Webster Road Outfall	10/14/14	Y	Storm	16.6	18	8.8	6.5	0.22	10	> 2420	406	14	1.36	1.68	0.37	0.21	5.47	130	18.20	18.06	79	6	6.9	63	0.14	0.15	< 0.12	18.1	0.82	156	11	0.25	5.8	32.8	
#102 SE Webster Road Outfall	11/6/14	Y	Storm	14.9	18	9	6.5	< 0.09	10	1733	406	4.9	2.36	3.09	0.25	0.44	11.40	130	31.49	31.23	82	16	6.4	72	< 0.05	0.15	< 0.12	8.4	1.41	180	21	0.25	6.5	82.2	
#102 SE Webster Road Outfall	1/15/15	Y	Storm	7.8	18	10.6	6.5	0.22	10	365	406	2.7	1.57	1.97	0.06	0.26	6.62	50	20.97	20.80	100	53	3.6	50	< 0.05	0.16	< 0.04	10.3	2.9	126	13	1.09	6.1	25	
<b>Mean</b>				13.1		9.5		0.16		1152		7.20			0.23			103.3			87	25	5.6	62	0.06	0.15	0.05	12.3	1.71	154	15	0.53	6.1	46.7	
<b>Maximum</b>				16.6		10.6		0.22		> 2420		14.00			0.37			130			100	53	6.9	72	0.14	0.16	< 0.12	18.1	2.90	180	21	1.09	6.5	82.2	
<b>Minimum</b>				7.8		8.8		< 0.09		365		2.70			0.06			50			79	6	3.6	50	< 0.05	0.15	< 0.04	8.4	0.82	126	11	0.25	5.8	25.0	
<b>Water Quality Exceedance (number of samples)</b>				0		0		0		2			3	3		1	0		3	3															

Notes:

General: Red font indicates that the dissolved values are higher than the total. QC

Green font indicates that orthophosphate value is higher than total phosphorus. QC

N/A = Data is not available

- 1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration
- 2) 6.5 mg/L selected as target minimum DO concentration for cool water habitat also corresponds to the Ecology "good" criteria and the Chlorophyll a TMDL in the Tualatin for mainstem Tualatin R
- 3) Geometric means were calculated for E. coli and entered in the row titled "mean"
- 4) Volatile Solids data (mg/L), which was collected at a few sites on a few dates, is available upon request

**Table 4 SWMACC's Water Quality and Flow Monitoring Results**

**Pecan Creek**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Water Quality Standard Comparison												Additional Parameters of Concern												Supporting Parameters										
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Total Volatile Solids (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	BOD (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Lead, Total (ug/L)	Guidance Concentration (Chronic) (ug/L)	Zinc, Total (ug/L)	Guidance Concentration (Chronic) (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)
#11 Pecan Creek at SW Mossy Brae Rd	10/31/14	Y	Storm	13.7	18	9.3	6.5	1.01	10	1410	406	2.7	3.02	4.05	0.18	0.61	15.77	5	40.18	39.85	160	35	75	99	< 0.05	0.10	1.1	0.06	4.70	3.98	1.27	0.64	14	36.0	28	8.11	6.3	79.1
#11 Pecan Creek at SW Mossy Brae Rd	4/14/15	Y	Storm	9.3	18	11.05	6.5	0.89	10	172	406	1	3.74	5.13	0.07	0.81	20.90	6	49.71	49.31	110	6	61	99	< 0.05	< 0.04	0.8	0.04	1.50	4.94	0.35	0.88	6	44.6	36	1.83	6.7	103
#11 Pecan Creek at SW Mossy Brae Rd	5/12/15	Y	Storm	11.0	18	9.9	6.5	0.81	10	921	406	2.4	3.56	4.86	0.08	0.76	19.61	2	47.36	46.98	101	11	38	101	< 0.05	0.08	1.2	0.06	3.30	4.70	0.39	0.82	9	42.5	34	1.74	7.4	96
<b>Mean</b>				11.3		10.1		0.90		607		2.0			0.1			4.3			124	17.3	58.0	99.7	0.0	0.1	1.0	0.1	3.2		0.67		10		33	3.89	6.8	92.7
<b>Maximum</b>				13.7		11.05		1.01		1410		2.70			0.18			6			160	35	75	101	< 0	0	1.2	0	5		1.27		14		36	8.11	7.4	103.0
<b>Minimum</b>				9.3		9.3		0.81		172		1.00			0.07			2			101	6	38	99	< 0	< 0	0.8	0	2		0.35		6		28	1.74	6.3	79.1
<b>Water Quality Exceedance (number of samples)</b>				0.0		0		0.00		2			0	0		0	0		0	0								1		1		0						
#11 Pecan Creek at SW Mossy Brae Rd	1/7/15	N	Routine	6.0	18	10.5	6.5	1.30	10	20	406	0.5	3.65	5.00	0.03	0.79	20.25	2	48.54	48.14	110	7	45	53	< 0.05	< 0.04	0.1	0.04	1.00	4.82	0.33	0.85	13	43.5	35	1.64	6.8	115.4
#11 Pecan Creek at SW Mossy Brae Rd	1/23/15	N	Routine	8.3	18	9	6.5	1.40	10	30	406	0.6	3.38	4.59	0.05	0.71	18.32	2	44.99	44.62	87	5	25	84	< 0.05	0.05	0.1	0.04	1.10	4.47	0.28	0.76	4	40.4	32	NA	6.8	98.4
#11 Pecan Creek at SW Mossy Brae Rd	3/9/15	N	Routine	6.8	18	10	6.5	1.35	10	69	406	0.6	3.74	5.13	0.02	0.81	20.90	4	49.71	49.31	110	4	39	97	< 0.05	0.05	0.2	0.05	1.00	4.94	0.19	0.88	6.0	44.6	36	1.03	6.1	116.1
#11 Pecan Creek at SW Mossy Brae Rd	5/6/15	N	Routine	9.8	18	10.6	6.5	1.10	10	461	406	0.5	4.09	5.67	0.02	0.92	23.51	2	54.35	53.91	120	12	36	106	< 0.05	< 0.04	0.5	0.05	0.80	5.40	0.19	1.01	5	48.8	40	0.66	7.4	118.5
#11 Pecan Creek at SW Mossy Brae Rd	5/26/15	N	Routine	12.9	18	9.8	6.5	1.20	10	980	406	0.5	4.35	6.07	0.02	0.99	25.48	< 1	57.79	57.32	144	4	66	105	< 0.05	< 0.05	0.5	0.06	1.30	5.75	0.43	1.11	6	51.8	43	0.35	7.5	124.1
#11 Pecan Creek at SW Mossy Brae Rd	6/10/15	N	Routine	13.9	18	9.2	6.5	2.60	10	1990	406	0.5	4.87	6.86	0.02	1.15	29.47	< 1	64.55	64.03	163	8	71	137	< 0.05	< 0.04	0.7	0.06	0.80	6.43	0.14	1.30	4	57.9	49	0.32	7.4	197.8
#11 Pecan Creek at SW Mossy Brae Rd	6/24/15	N	Routine	15.3	18	9.6	6.5	1.50	10	816	406	0.5	6.84	9.99	0.02	1.78	45.77	< 1	90.49	89.75	111	3	41	110	< 0.05	< 0.04	0.5	0.07	1.00	9.04	0.13	2.16	4	81.2	73	0.22	7.5	204
<b>Mean</b>				10.4		9.8		1.49		624		0.53			0.03			2			121	6.1	46.1	98.9	0.03	0.03	0.4	0.05	1.00		0.24		6.0		44	0.70	7.07	139.2
<b>Maximum</b>				15.3		10.6		2.60		1990		0.60			0.05			4			163	11.6	71.0	137.0	< 0.05	0.05	0.7	0.07	1.30		0.43		13		73	1.64	7.5	204.0
<b>Minimum</b>				6.0		9		1.10		20		0.50			0.02			< 1			87	3.0	25.0	53.0	< 0.05	< 0.04	0.1	0.04	0.80		0.13		4		32	0.22	6.1	98.4
<b>Water Quality Exceedance (number of samples)</b>				0.0		0		0.00		4			0	0		0	0		0	0								0		0		0						

**River Grove Boat Ramp Outfall**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Water Quality Standard Comparison												Additional Parameters of Concern												Supporting Parameters										
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate (mg/L)	WQ Std <sup>3</sup> (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Dissolved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Dissolved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Total Volatile Solids (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	BOD (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Lead, Total (ug/L)	Guidance Concentration (Chronic) (ug/L)	Zinc, Total (ug/L)	Guidance Concentration (Chronic) (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conductivity (uS/cm)
#203 River Grove Boat Ramp Outfall	1/15/15	Y	Storm	8.5	18	8.2	6.5	2.40	10	7	406	2	6.28	9.09	0.02	1.60	40.97	10	83.08	82.41	170	32	60	130	< 0.05	0.24	2.5	0.05	5.50	8.29	1.54	1.90	29	74.5	66	NA	6.1	233
#203 River Grove Boat Ramp Outfall	3/14/15	Y	Storm	12.0	18	8.2	6.5	1.50	10	> 2420	406	2.6	4.78	6.73	0.04	1.12	28.80	101	63.43	62.92	120	8	47	100	< 0.05	0.07	1.0	0.05	3.80	6.32	0.67	1.27	130	56.9	48	NA	6.4	143.8
#203 River Grove Boat Ramp Outfall	3/20/15	Y	Storm	12.3	18	8.4	6.5	4.10	10	179	406	1.7	7.72	11.40	0.02	2.08	53.39	6	101.91	101.09	170	1	64	180	< 0.05	< 0.08	0.3	0.08	2.20	10.19	0.23	2.58	9	91.4	84	NA	6.3	218
<b>Mean</b>				10.9		8.3		2.45		145		2.1			0.0			39.0			170	14	57	137	0.03	0.12	1.3	0.06	3.83		0.81		56		66	NA	6.27	198.3
<b>Maximum</b>				12.3		8.35		4.10		> 2420		2.60			0.04			101			170	32	64	180	< 0.05	0.24	2.5	0.08	5.50		1.54		130		84	NA	6.4	233.0
<b>Minimum</b>				8.5		8.2		1.50		7		1.70			0.02			6			120	1	47	100	< 0.05	0.07	0.3	0.05	2.20		0.23		9		48	NA	6.1	143.8
<b>Water Quality Exceedance (number of samples)</b>				0		0		0		1			0	0		0	0		1	1								0		0		1						

**Notes:**

General: Red font indicates that the dissolved values are higher than the total. QC

#N/A = Data is not available

\* = creek flow backed up due to high Tualatin River flows, so actual flow not known

- 1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration
- 2) No instream monitoring locations specifically referenced in the Tualatin River TMDL - 6.5 mg/L selected as target minimum DO concentration for cool water habitat also corresponds to the Ecology "good" criteria and the Chlorophyll a TMDL in the tualatin for mainstem Tualatin R
- 3) Table 20 - Protection of human health for water and fish ingestion
- 4) Geometric means were calculated for E. coli and entered in the row titled "mean"

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## WATER ENVIRONMENT SERVICES

### WATER QUALITY INDEX

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Clackamas County Water Environment Services (WES) conducts water quality and flow monitoring of water in streams and from discharges from storm sewer outfalls. Monitoring is conducted so that WES can make informed decisions and establish priorities to improve water quality and watershed health through CCSD#1 and SWMACC. Monitoring results collected in the field and analyzed in laboratories are documented, tracked, and reported to the Oregon Department of Environmental Quality (DEQ) in accordance with terms of WES' municipal NPDES MS4 permit.

Selected pollutant parameters that have the potential to impact the beneficial uses (i.e., water contact recreation, fishing, etc.) of surface water bodies, sources of pollutant discharges, and potential management practices to address these sources are identified in some instances. To assist WES in making informed decisions related to the monitoring data collected, an indication of appropriate pollutant concentration levels is provided as well.

### TEMPERATURE

---

#### Why is it a problem?

Fish species including salmonids and trout require water temperatures lower than 61 degrees Fahrenheit to survive and reproduce. Warm temperatures also reduce the amount of dissolved oxygen in water, which is also essential for survival.

#### What are the potential sources?

The most typical and significant sources include the following:

- Removal of streamside vegetation results in decreased shade and increased thermal heat load.
- Decreased flow as a result of flow diversions results in lower instream depths and flow velocities and hence greater susceptibility to increased temperatures.
- Channel erosion can contribute to elevated instream temperatures as it can cause sedimentation and reduced flow depths.
- Impoundments such as dams and ponds result in longer residence times for solar heating of the water.
- Point sources can also contribute to increased temperatures. Sources include non-contact cooling wastewater from some industrial processes.

#### What are some potential solutions?

Riparian planting and increased shade; maintain stormwater runoff flows and volumes consistent with pre-developed conditions; and encourage infiltration of runoff (groundwater discharges to streams typically have lower temperatures than surface discharges).

#### What temperature levels are appropriate?

Temperature ranges are based on documented temperatures required for salmon and trout rearing and migration (18 C) and salmon and steelhead spawning (13 C).

- Temperatures exceeding 18 degrees Celsius..... Poor
- Temperatures ranging from to 13 to 18 degrees Celsius..... Fair
- Temperatures lower than 13 degrees Celsius..... Good

## CONDUCTIVITY

---

### Why is it a problem?

Conductivity is a measure of the ability of the water to pass an electrical current. Instream conductivity is typically constant. Therefore, changes in conductivity can be an indicator of the presence of illicit or wastewater discharges entering a waterbody, as conductivity is affected by the presence of inorganic, dissolved solids including chloride, nitrate, phosphate, and sulfate.

### What are the potential sources?

The most typical and significant sources of changing conductivity include the following:

- Increasing temperature
- Illicit discharges including process waters and wastewaters

### What are some potential solutions?

- Riparian plantings and increased shade (to minimize fluctuations in stream temperatures)
- Implementation of an illicit discharge detection and elimination program

### What conductivity levels are appropriate?

Conductivity ranges are based on the suitability of the water to support various fish and macroinvertebrate species. Conductivity outside of the optimum range could indicate that the water may be unsuitable to support various species. The identified range is based on EPA's guidelines.

- Conductivity greater than 500 umhos/cm or less than 150 umhos/cm..... Poor
- Conductivity between 150 umhos/cm and 500 umhos/cm..... Good

## PH

---

### Why is it a problem?

pH is a measure of the acidity of the waterbody. Aquatic organisms are sensitive to deviations from a normal range of pH.

### What are the potential sources?

The most typical and significant sources include the following:

- Lime soil additives and fertilizers.
- Acid rain created by fossil fuel combustion.
- Illicit discharges including process waters and wastewaters.

### What are some potential solutions?

Implementation of an integrated pest management program; public education related to the use of pesticides and fertilizers; implementation of an illicit discharge detection and elimination program.

### What pH levels are appropriate?

pH ranges are based on the suitability of the water to support of various fish and macroinvertebrate species. Instream pH outside of the optimum range could indicate that the water may be unsuitable to support various species. The following identified range is based on DEQ's OAR 340-041-0021:

- pH lower than 6.5 and higher than 8.5..... Poor
- pH ranging from 6.5 to 8.5..... Good

## DISSOLVED OXYGEN

---

### Why is it a problem?

Fish and other aquatic organisms require dissolved oxygen for survival. Adequate dissolved oxygen concentrations are required to ensure that oxygen can be transferred from the water to the organism's blood stream efficiently. Dissolved oxygen is also necessary for various biological and chemical processes and to facilitate decomposition of organic matter in water and bed sediment. Low dissolved oxygen concentrations can lead to a buildup of organic matter and limit fish and other aquatic organisms' survival.

### What are the potential sources?

The most typical and significant sources include the following:

- Dissolved oxygen concentrations are reduced with elevated temperatures resulting from the removal of streamside vegetation and decreased or stagnant flow.
- Discharge of oxygen-demanding wastes (wastewater and stormwater runoff) that carry pollutants (sediments, nutrients, and organic matter) that require oxygen for decomposition or chemical reactions.

### What are the solutions?

Plant riparian vegetation to lower instream temperatures; filter pollutants prior to discharge; reduce fertilizer and pesticide usage and discharge; prevent erosion and control sediment; implement setbacks for livestock and animals; implement practices that reduce impediments to flow (e.g., reduce use of impoundments, promote infiltration to support groundwater recharge and summer flows).

### What Dissolved Oxygen levels are appropriate?

Dissolved oxygen ranges are based on DEQ's documented dissolved oxygen concentrations required for maintenance of cold-water aquatic life.

- Dissolved oxygen concentrations less than 6.5 mg/L..... Poor
- Dissolved oxygen concentrations ranging from 6.5 mg/L to 8 mg/L..... Fair
- Dissolved oxygen concentrations higher than 8 mg/L..... Good

## NUTRIENTS (NITROGEN AND PHOSPHORUS)

---

### Why are they a problem?

High levels of nutrients (most commonly in the form of nitrogen and/or phosphorus) can over-stimulate biological growth (i.e., algal production). When plants die and decompose, they reduce the dissolved oxygen concentrations in a water body. Some forms of nutrients (e.g., ammonia and nitrate) may be toxic to organisms. High nutrient levels may also contribute to odor problems and aesthetic concerns related to algal blooms.

### What are the potential sources?

The most typical and significant sources (of nitrogen and phosphorus specifically) include the following:

- Agricultural activities and urban landscaping practices that use fertilizers;
- Human waste products, commonly from septic systems and impaired sanitary sewers;
- Animal waste products; and
- Vehicle exhaust.

### What are some of the potential solutions?

Land cultivation management practices and landscaping with native plants that limit the discharge of nutrient-rich fertilizers into surface waters; implementation of pet waste programs; riparian plantings and implementation of setback requirements to limit livestock and animals from accessing stream channels and allow for filtration of nutrient-rich runoff; implementation of an illicit discharge program and/ or plan review activities to identify and remove potential human nutrient sources; stormwater runoff treatment utilizing filtration or infiltration unit processes (to address the various chemical forms of nutrients); public education related to proper disposal practices for household chemicals.

### What nutrient concentrations are appropriate?

Nutrient water quality criteria are temperature and pH dependent. Some states (not Oregon) have identified state-wide water quality criteria for nutrients.

In the absence of nutrient water quality criteria, nutrient concentrations ranges are provided for nitrate (given its effect on human health) and total phosphorus (based on EPA's 1986 water quality criteria for freshwater aesthetics).

- Nitrate concentrations greater than 10 mg/L ..... Poor
- Nitrate concentrations less than 10 mg/L..... Good
- Total phosphorus concentrations greater than 0.14 mg/L..... Poor or Fair
- Total phosphorus concentrations equal to or less than 0.14 mg/L ..... Good

*Note: The total phosphorus concentration of 0.14 mg/L is the Load Allocation and Waste Load Allocation which was specified in the Tualatin TMDL for Pecan Creek and the Tualatin River in SWMACC. This concentration is also used for comparative purposes for creeks and storm sewer outfalls in CCSD#1, for a watershed-specific total phosphorus concentration has not been established yet by DEQ for any of the watersheds in CCSD#1.*

### BACTERIA (FECAL COLIFORM AND E COLI)

---

### Why is it a problem?

Fecal coliform and *E coli* (a subset of fecal coliform bacteria) are found in the intestines of warm blooded animals. Presence indicates fecal matter in the water and is used as an indicator of pathogens that may cause a potential human health risk. Human exposure to high bacteria concentrations could potentially lead to skin irritation and gastrointestinal ailments if consumed.

### What are the potential sources?

Animal feces (either wild or domestic) and human waste, which may be attributed to impaired sanitary sewer or septic systems and illicit discharges

### What are some of the potential solutions?

Implementation of pet waste disposal programs; riparian plantings and implementation of setback requirements to limit livestock and animals from accessing stream channels and to allow for filtration of bacteria from runoff; implementation of an illicit discharge program and/or plan review activities to identify and remove any human bacteria sources such as sewer system cross-connections; public education related to proper disposal practices for animal waste; ensure that septic systems are in a properly functioning condition; and stormwater runoff treatment utilizing infiltration unit processes.

### What bacteria levels are appropriate?

*E coli* is currently monitored both instream and in runoff by the County. *E coli* concentration ranges are based on DEQ's documented bacteria water quality standards applicable for recreational beneficial uses.

- *E coli* concentrations exceeding 406 Counts/100 mL ..... Poor
- *E coli* concentrations ranging from 126 Counts/100 mL to 406 Counts/100 mL ..... Fair
- *E coli* concentrations less than 126 Counts/100 mL ..... Good

*Note: The E coli water quality standards are as follows: a 30-day log mean of 126 Counts/100 mL, based on a minimum of five samples, and no single sample shall exceed 406 Counts/100 mL.*

## SOLIDS AND SEDIMENT

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### Why are they a problem?

Excessive levels of solids and sediment can lead to high turbidity levels, loss of aquatic habitat, elevated sediment deposition on stream beds and other stream channel modification. Suspended sediment can reduce plant photosynthesis, which in turn can lower instream dissolved oxygen levels and affect the food chain for fish. Finally, solids and sediment can result in elevated instream temperatures through modification of the stream channel depth to width ratio, which facilitates heat exchange, and the addition of dark colored, fine sediment which store more solar radiation and increase temperatures. Suspended solids are also typically used as a surrogate for other contaminants that bind to or absorb onto fine particles (e.g., heavy metals).

### What are the potential sources?

Construction site runoff from sites with ineffective erosion and sediment control practices/programs; agricultural, landscaping and logging activities; pavement, tire, and vehicular abrasion; litter and garbage accumulation; increased runoff flows from impervious surfaces that cause channel erosion.

### What are some of the potential solutions?

Riparian plantings and implementation of setback requirements to allow for settling and filtration of solids and sediment from runoff; implementation of an erosion and sediment control program including provisions for enforcement of active construction sites with ineffective controls; roadway maintenance including catchbasin cleaning and regular street sweeping; stormwater runoff treatment utilizing sedimentation, filtration, and infiltration unit processes.

### What sediment levels are appropriate?

Total suspended solids (TSS) instream and in runoff are currently monitored by WES. Instream water quality standards do not exist for sediments. In general, instream levels of TSS in creeks in CCSD#1 and SWMACC on rain-free days is expected to be below 25 mg/L. Concentrations of TSS on rainy days can often be in the hundreds due to erosion of upland soils, etc.

## METALS (COPPER, LEAD, AND ZINC)

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### Why are they a problem?

Metals at elevated concentrations are toxic to aquatic ecosystems and some metals can bioaccumulate in aquatic organisms (mercury in fish tissue, for example). Metals are relatively soluble (tendency to exist in the dissolved form instead of being combined with sediment) in natural waters and partition based on the pH and hardness of the discharge, which limits the effectiveness of many treatment methods/technologies.

### What are the potential sources?

Vehicular traffic through the combustion of fossil fuels and the wear and tear of tires and brake pads; metal corrosion from gutters, roofs, etc; improper disposal of paints, vehicle components (tires, wheel weights, batteries, etc); wood preservatives; pesticides usage.

### What are some of the potential solutions?

Management of solids and sediment in stormwater runoff, specifically utilizing sedimentation, filtration, and infiltration unit processes; roadway maintenance including catchbasin cleaning and regular street sweeping; integrated pest management practices that limit the discharge of pesticides and fertilizers into surface waters; residential pick-up and recycling programs; implementation of an erosion and sediment control program including provisions for enforcement of active construction sites with ineffective controls; public education related to proper disposal practices for household chemicals.

### What metals levels are appropriate?

The toxicity of metals to aquatic life is dependent on water pH and hardness. Guidance values and water quality standards for acute and chronic exposure are established based on the water's hardness. Acute toxicity implies that the stimulus is severe enough to rapidly induce an effect. Chronic toxicity implies that the stimulus would induce an effect if it continues for a relatively long period of time.

- Dissolved metal concentrations which exceed the guidance value..... Poor
- Dissolved metal concentrations which are equal to the guidance value ..... Fair
- Dissolved metal concentrations which are less than the guidance value..... Good

*Note: Using a hardness concentration range between 25 mg/L and 100 mg/L, the following ranges of acute and chronic dissolved metal concentrations are provided:*

- Dissolved copper conc. (guidance value: **chronic** exposure) .....2.8 – 9.0 ug/L
- Dissolved copper conc. (guidance value: **acute** exposure) ..... 3.7 – 14.0 ug/L
- Dissolved lead conc. (WQ Standard value: **chronic** exposure) .....0.6 - 2.6 ug/L
- Dissolved lead conc. (WQ Standard value: **acute** exposure).....14 – 65 ug/L
- Dissolved zinc conc. (WQ Standard values: **acute & chronic** exposure).....37 – 119 ug/L

As of January 31, 2013, the total amount of copper in discharges to surface waters is regulated by the State of Oregon, but only the dissolved amount of lead and zinc in these discharges is regulated. The appropriate Freshwater Chronic and Acute Criteria, which are also hardness-dependent, have been calculated and compared to our copper, lead, and zinc data. See the Fact Sheets for more information.

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ENVIRONMENTAL MONITORING REPORT ATTACHMENT 2

MONITORING SITE FACT SHEETS

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## CARLI CREEK FACT SHEET

### Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Use = Industrial (Clackamas Industrial Area)

### Monitoring Location

Carli Creek begins where a 54" diameter Clackamas County-owned storm sewer system ends. The creek then flows for ~ 1/2 mile before it meets the Clackamas River. Due to the lack of access to the creek itself, the monitoring location is located at the 1st manhole upgradient from the outfall. This manhole is in the intersection of SE 120th Avenue and Carpenter Drive in Clackamas.

### 2014/2015 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2014-2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 7 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

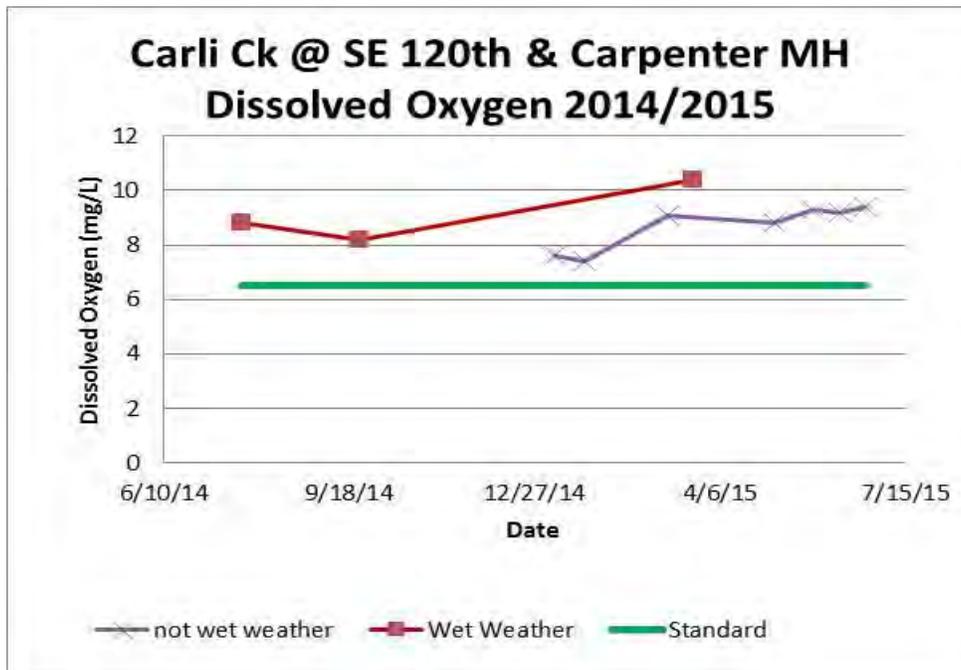
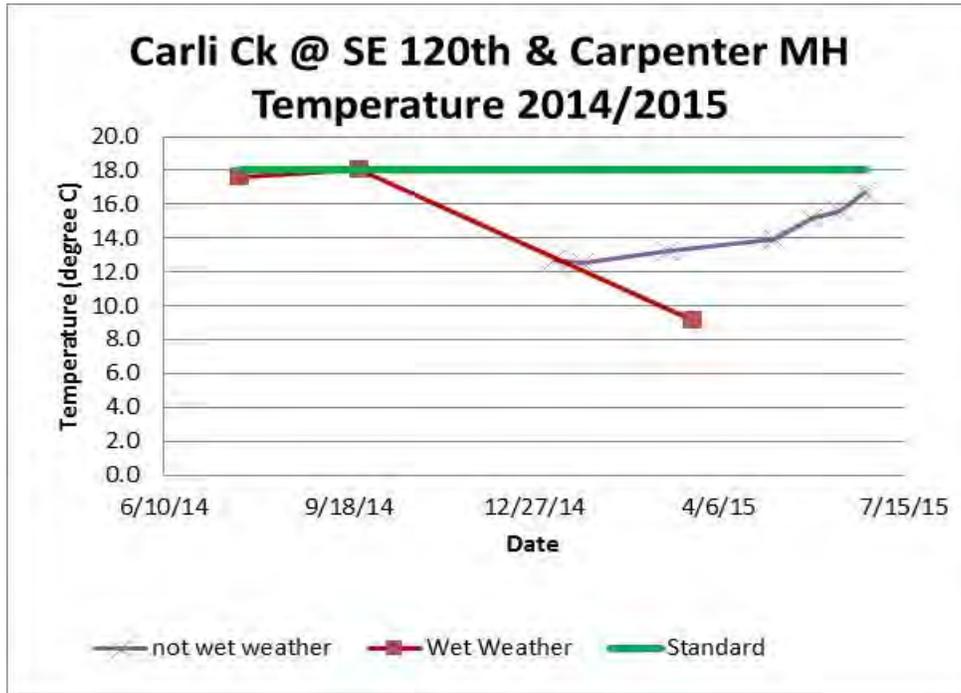
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E.coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	14.9	9.1	0.37	625	5.20	2.9	1.62	0.15	64.0	42.3	96	7	4.0	0.21	0.06	0.04	68	6.4
Maximum	18.0	10.4	0.48	2420	7.10	4.3	2.61	0.29	88.0	54.0	110	14	6.0	0.59	0.09	0.05	156	6.9
Minimum	9.1	8.2	0.28	131	2.40	1.2	0.85	0.05	39.0	26.0	78	2	1.6	<0.05	0.04	0.04	21	5.9
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	1/3	1/3	2/3	0/3	2/3	1/3	NA	NA	NA	0/3	0/3	NA	NA	2/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	14.3	8.7	1.29	17	1.41	0.8	0.28	0.03	21.7	12.7	214	5	0.4	0.04	0.05	0.07	101	7.4
Maximum	16.7	9.4	2.10	30	3.80	2.2	0.65	0.15	45.0	30.0	276	21	2.6	0.10	0.07	0.09	125	7.8
Minimum	12.5	7.4	0.95	4	0.70	0.4	0.10	0.01	15.0	7.0	160	2	0.0	<0.05	<0.04	0.06	85	6.7
Exceedance of guidance value or criteria (# exceed/total)	0/7	0/7	0/7	0/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	0/7

*Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.*

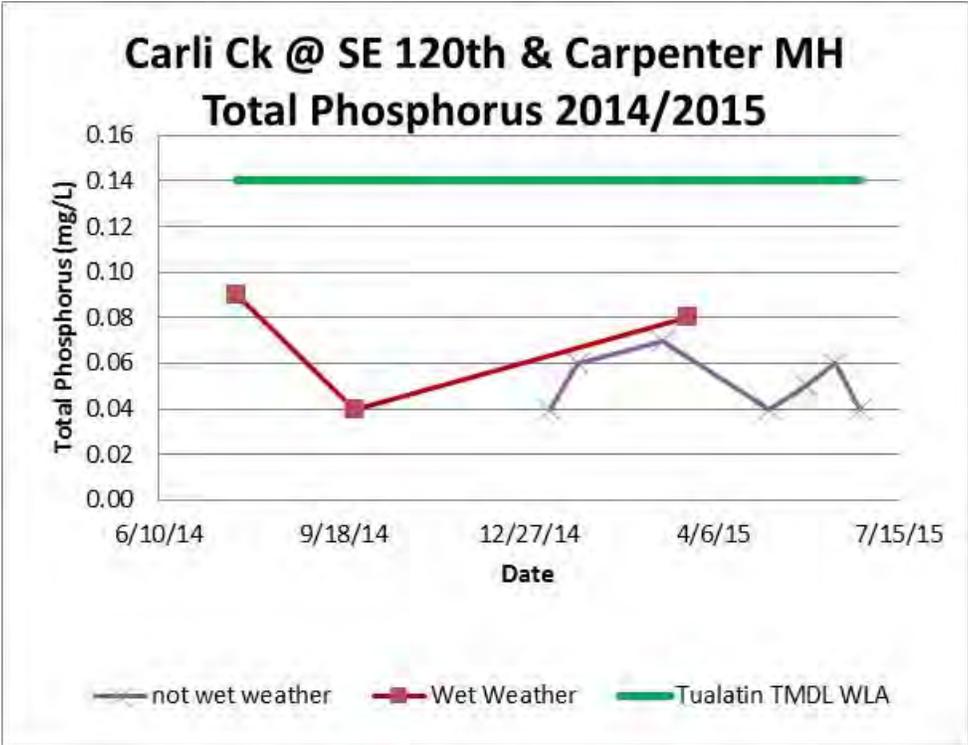
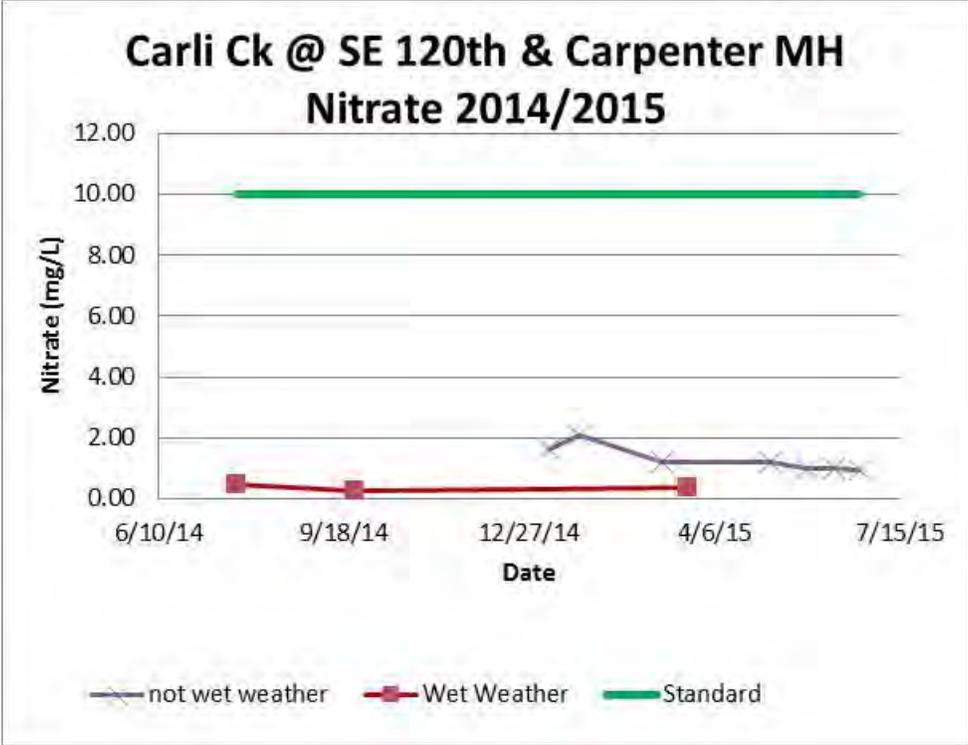
*Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"*

## 2014/2015 Monitoring Results (provided in graphical format)

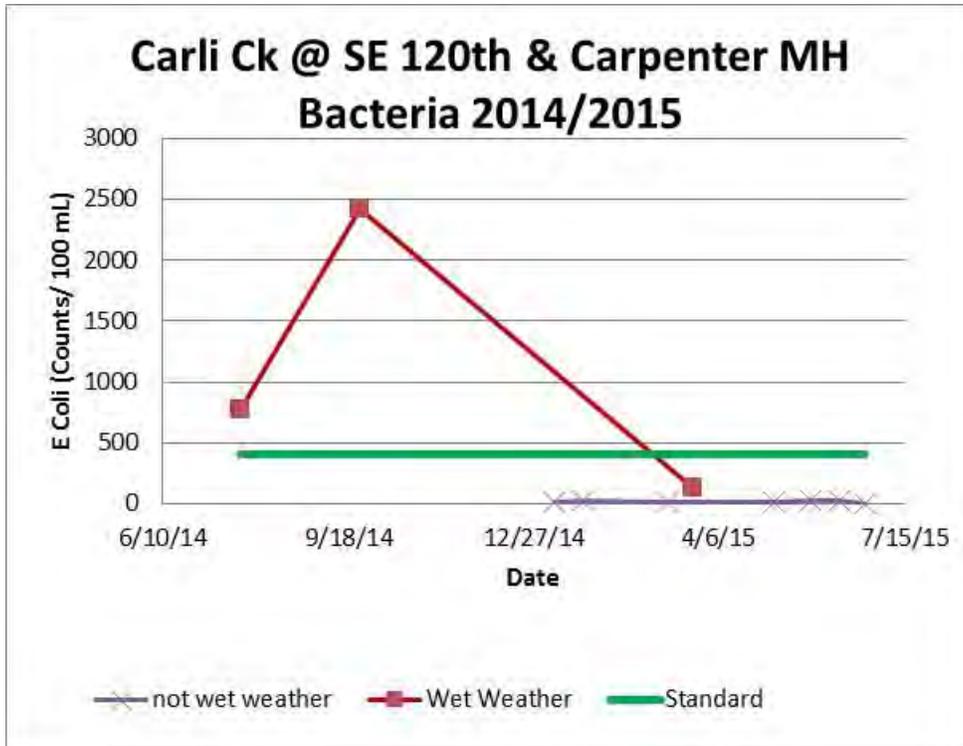
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method’s detection limit, the plotted value is the laboratory method’s detection limit.



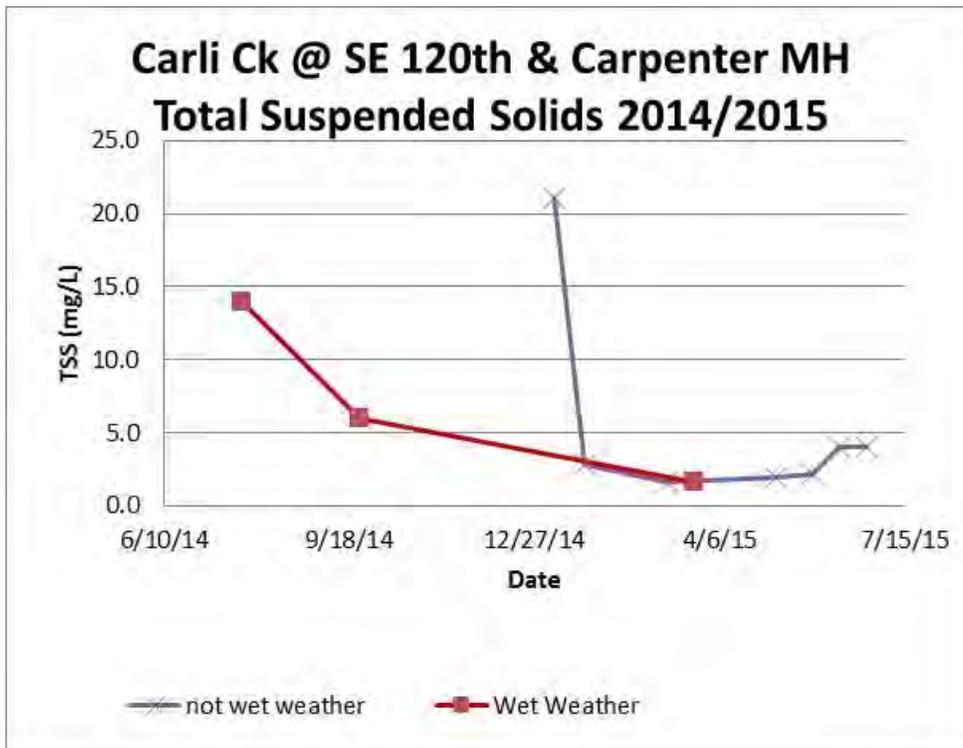
Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*Note: The comparison is made here to the Waste Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus*



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



## **2014/2015 Monitoring Results Discussion**

The 406 colonies/100 ml standard for E. coli was exceeded during 2 of the 3 monitoring events which were conducted during storms; levels were very low during all 7 of the events which weren't conducted during storms. Total phosphorus concentrations were below the 0.14 mg/L guidance value during all 10 monitoring events. Reviewing data from all 10 monitoring events, the highest total suspended solids value was only 21 mg/L. Measured pH values were protective of watershed health during 8 monitoring events, but they were below 6.5 units during 2 of the 3 storms. The State of Oregon's instream criteria for total copper and dissolved zinc were exceeded during one of the storms. Guidance values for the following parameters were also exceeded:

- dissolved copper (one storm)
- total lead (2 of 3 storms)
- total zinc (2 of 3 storms)

## SIEBEN CREEK FACT SHEET

### Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Uses = Primarily single-family and multi-family residential, commercial, open space, and government-owned (a portion of Clackamas High School's campus, Oregon Trail Elementary School, Sunnyside Elementary School, the Happy Valley library, and numerous park sites are in the watershed). A modest amount of rural residential lands are also present.

### Monitoring Location

Sieben Creek is monitored at the point where Highway 212/224 crosses the creek (in the 13600 block of Hwy 212/224).

### 2014/2015 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 7 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

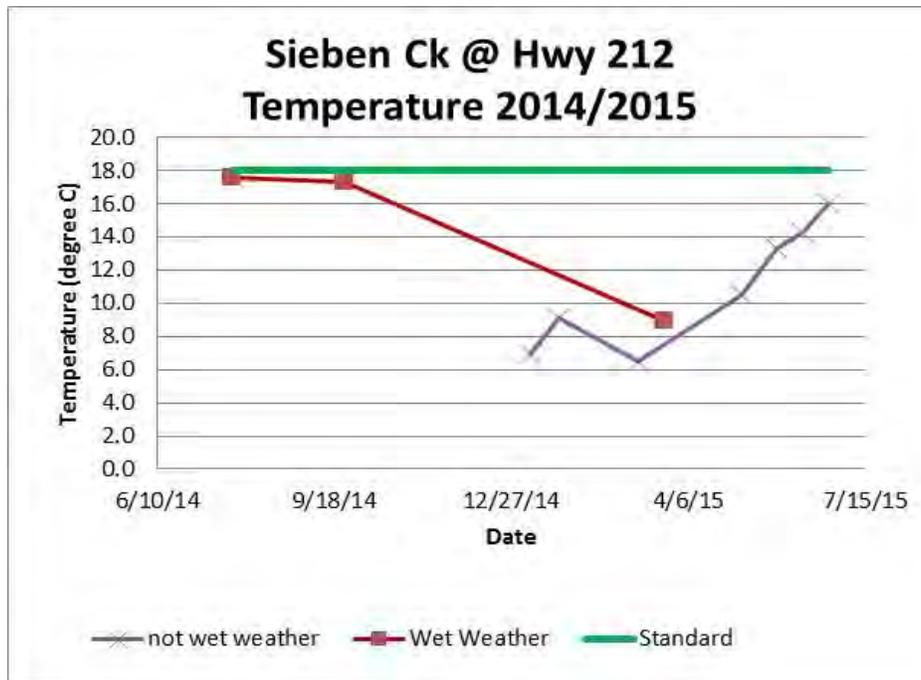
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E. coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	14.6	8.8	0.44	2165	8.13	3.7	1.85	0.09	59.3	21.0	146	75	3.5	0.04	0.14	0.04	101	6.4
Maximum	17.6	9.7	0.50	>2420	12.00	5.8	3.40	0.12	98.0	29.0	240	170	5.5	0.07	0.30	0.06	264	6.7
Minimum	8.9	8.1	0.35	1733	5.00	1.8	0.74	0.06	35.0	14.0	97	14	1.6	<0.05	0.04	<0.04	19	6.0
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	3/3	2/3	1/3	2/3	0/3	2/3	1/3	NA	NA	NA	0/3	1/3	NA	NA	1/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	10.9	9.3	1.74	220	0.96	0.6	0.14	0.03	13.6	7.4	155	5	0.3	0.03	0.04	0.06	59	7.2
Maximum	16.0	10.2	2.30	866	1.20	0.7	0.18	0.12	22.0	12.0	207	9	0.5	<0.05	0.09	0.10	63	7.8
Minimum	6.5	8.2	1.00	28	0.70	0.5	0.08	<0.01	8.0	4.0	120	3	<0.0	<0.05	<0.04	<0.04	50	6.4
Exceedance of guidance value or criteria (# exceed/total)	0/7	0/7	0/7	1/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	1/7

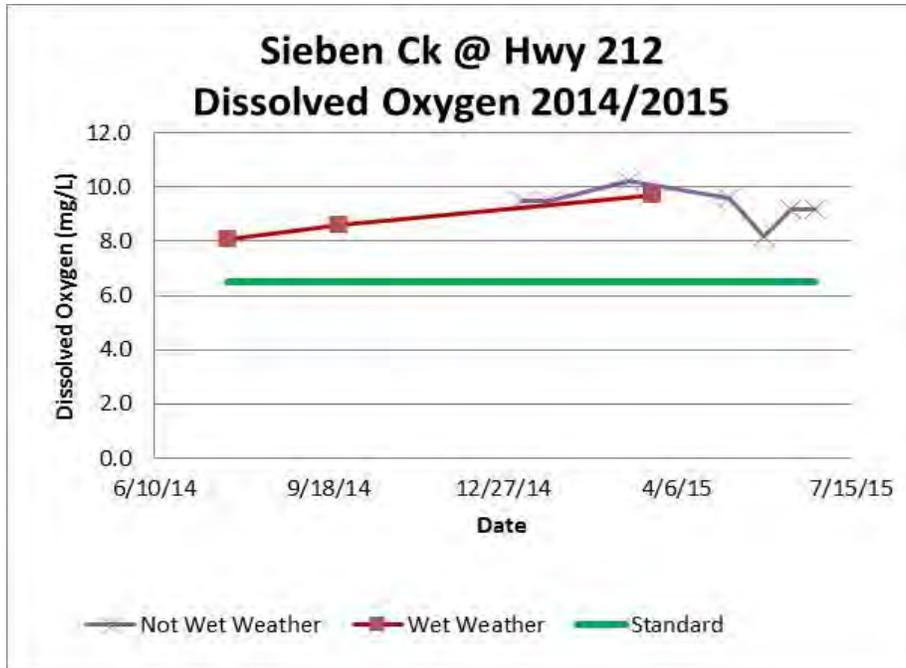
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

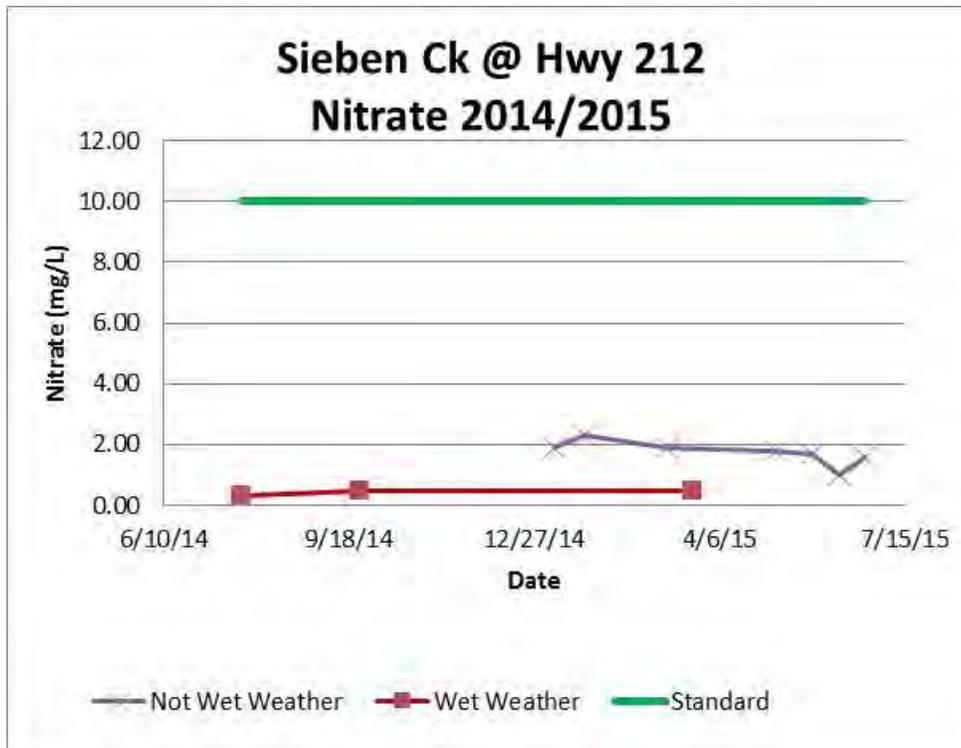
## 2014/2015 Monitoring Results (provided in graphical format)

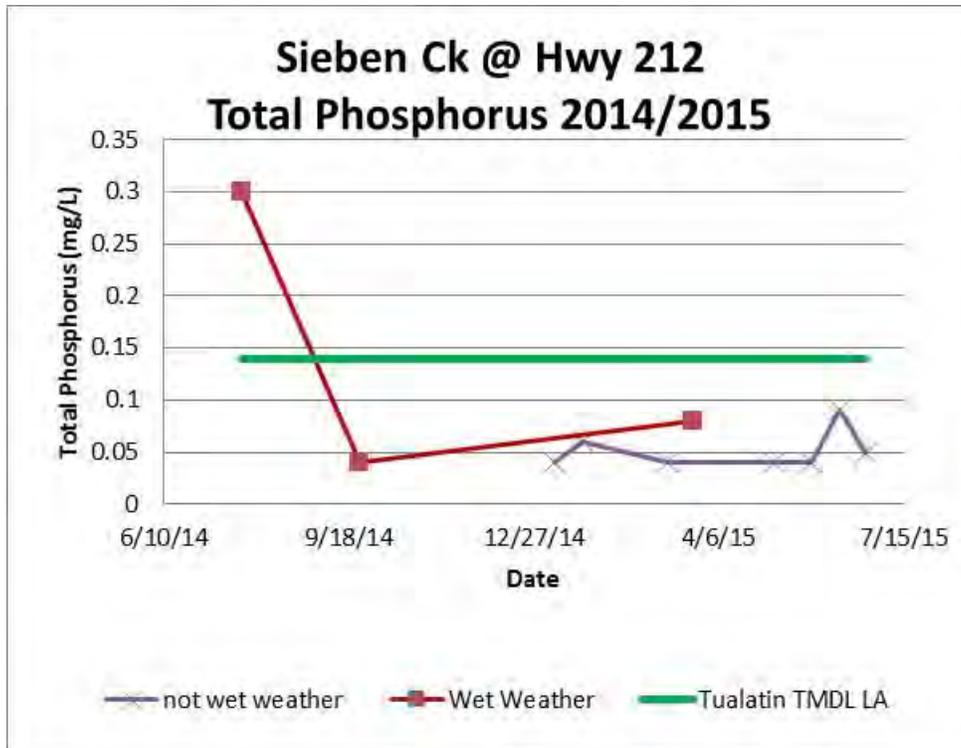
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



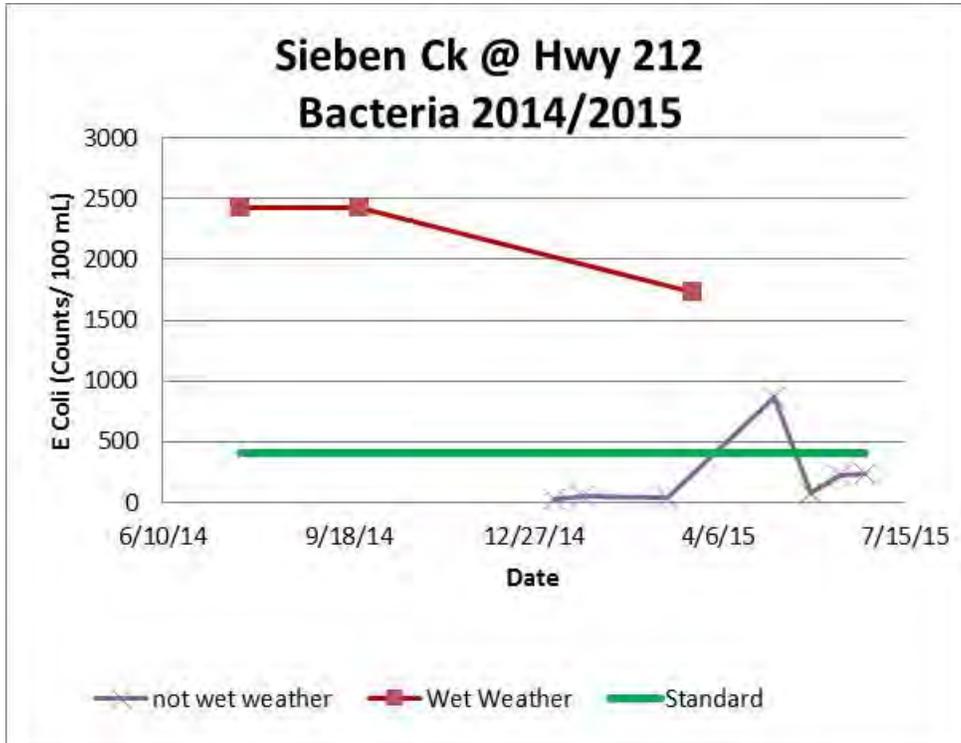


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

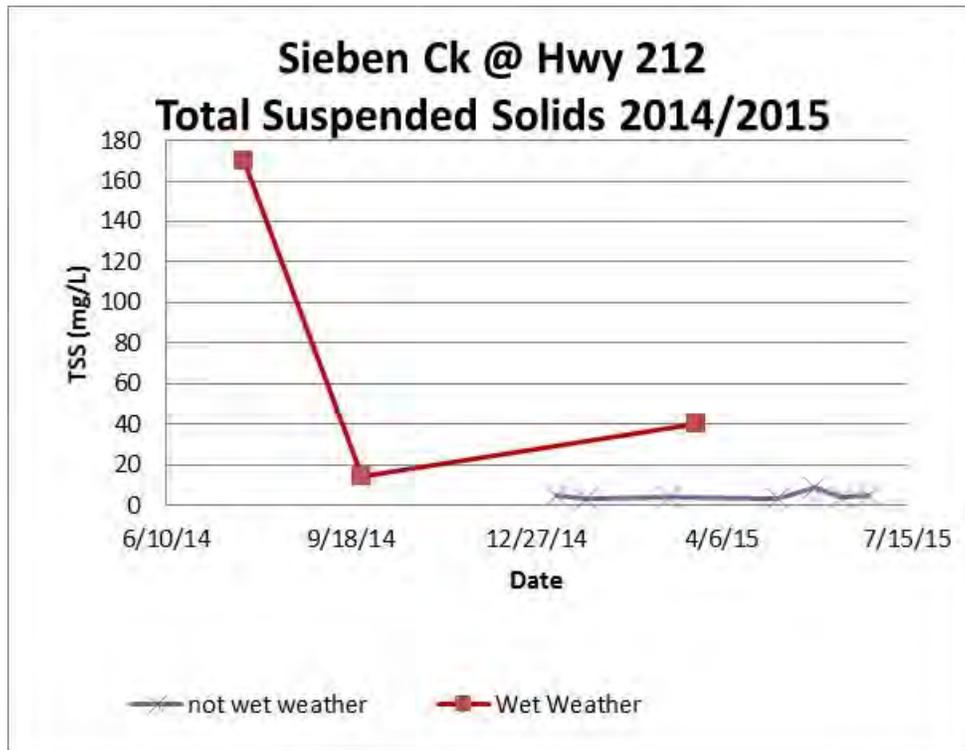




*Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus*



*Note: The two >2420 bacteria values are charted as 2420 colonies/100ml*



### 2014/2015 Monitoring Results Discussion

The 406 colonies/100 ml standard for *E. coli* was exceeded on 4 occasions, including all 3 monitored storms. Total phosphorus exceeded the 0.14 mg/L guidance value during the storm on July 22, 2014; the total suspended solids value for this same storm was 170 mg/L. Dissolved oxygen levels were above 8.0 mg/L, which is protective of watershed health, during all 10 monitoring events. Measured pH values were protective of watershed health during 8 monitoring events, but they were below 6.5 units during 2 of the monitoring events.

The chronic guidance values and chronic criteria for *dissolved copper*, *total copper*, *total lead*, *dissolved zinc*, and *total zinc* were exceeded during the storm on July 22, 2014. The chronic guidance values and chronic criteria for *total copper*, *total lead*, and *total zinc* were exceeded during the storm on March 23, 2015.

PHILLIPS CREEK FACT SHEET

**Drainage Characteristics**

- Tributary to Mt. Scott Creek in the Kellogg-Mt. Scott Watershed
- Dominant Land Uses = Over half of the watershed is zoned for commercial or transportation purposes (roads, highways, light rail, etc.). A significant portion of the rest of the watershed is high and moderate density residential.

**Monitoring Location**

The water quality monitoring site is the place where SE 84th Avenue crosses the creek (near the Costco store in Clackamas). Water flow rate data is collected in an upstream reach of the creek between SE Sunnyside Road and Sunnybrook Blvd.

**2014/2015 Monitoring Results (provided in tabular format)**

Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 7 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flowrate, and conductivity were also measured.

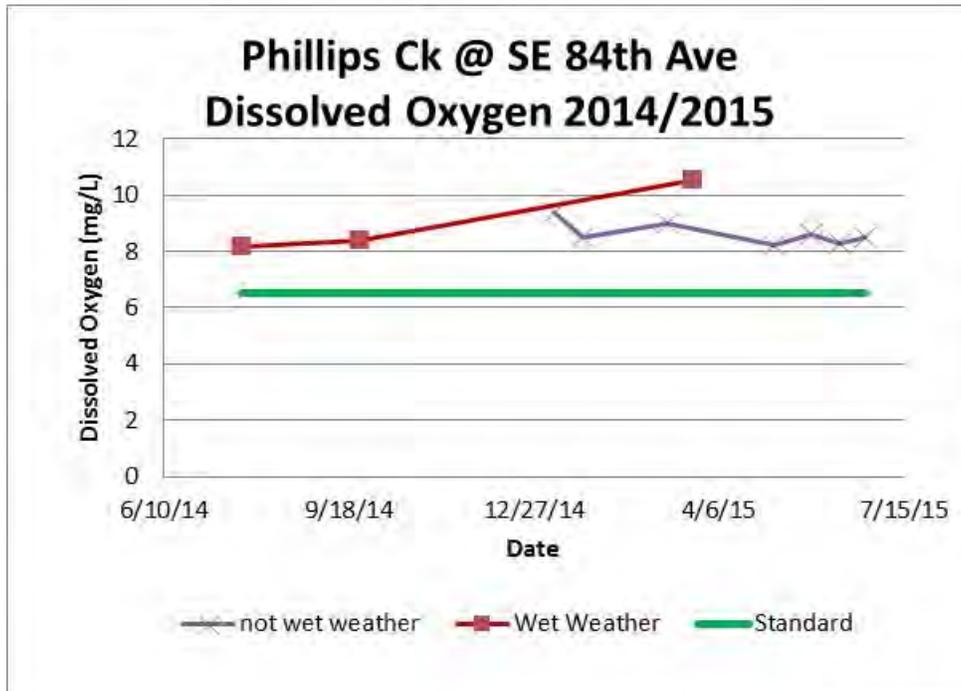
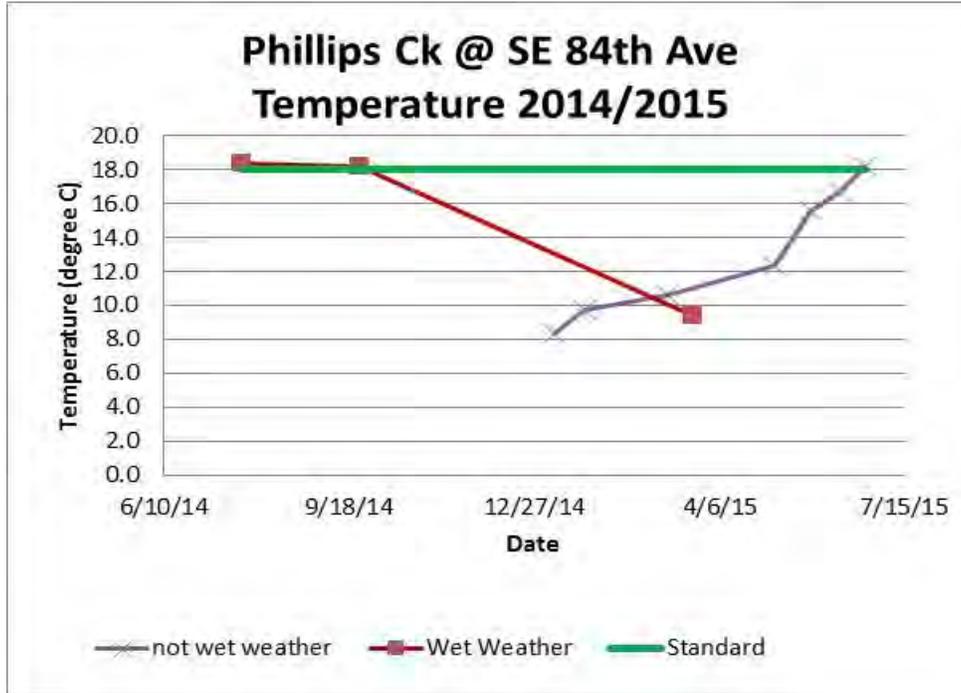
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E. coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	15.3	9.0	0.47	1917	7.70	3.9	2.80	1.63	68.3	32.7	109	31	4.9	0.12	0.09	0.03	90	6.6
Maximum	18.4	10.6	0.49	>2420	11.50	5.0	5.55	2.60	97.0	36.0	140	72	8.9	0.22	0.19	0.05	218	7.0
Minimum	9.4	8.2	0.43	1203	4.60	2.0	1.32	0.09	53.0	28.0	93	10	1.9	<0.05	<0.04	<0.04	21	6.1
Exceedance of guidance value or criteria (# exceed/total)	2/3	0/3	0/3	3/3	2/3	1/3	2/3	1/3	2/3	1/3	NA	NA	NA	0/3	1/3	NA	NA	1/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	13.1	8.6	0.90	181	0.87	0.9	2.22	0.05	16.3	8.9	168	3	0.5	0.03	0.03	0.04	72	7.3
Maximum	18.2	9.4	1.40	461	1.50	1.1	3.40	0.08	20.0	11.0	212	6	0.8	<0.05	0.07	0.06	80	7.8
Minimum	8.3	8.2	0.72	17	0.09	0.6	0.23	0.02	13.0	7.0	130	1	0.0	<0.05	<0.04	0.03	61	6.7
Exceedance of guidance value or criteria (# exceed/total)	1/7	0/7	0/7	1/7	0/7	0/7	5/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	0/7

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

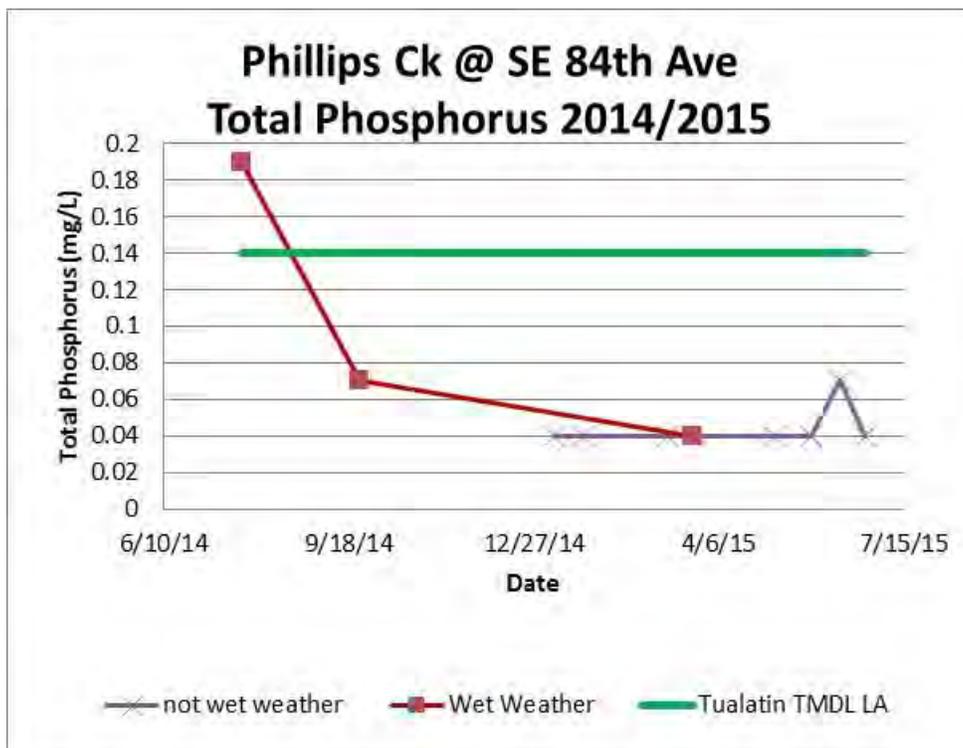
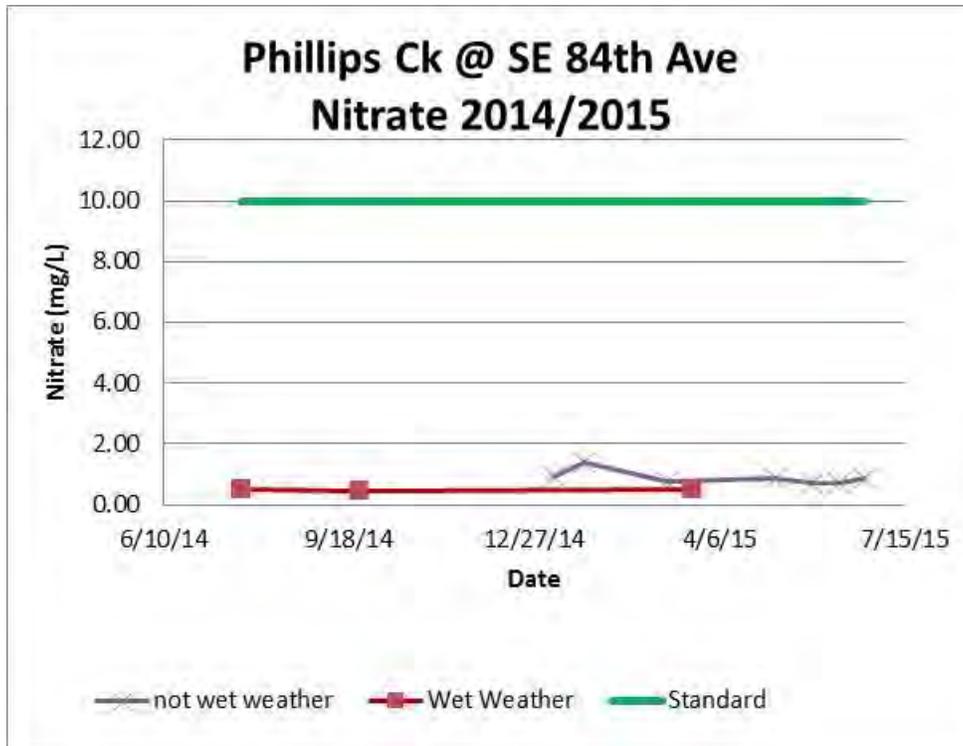
Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

## 2014/2015 Monitoring Results (provided in graphical format)

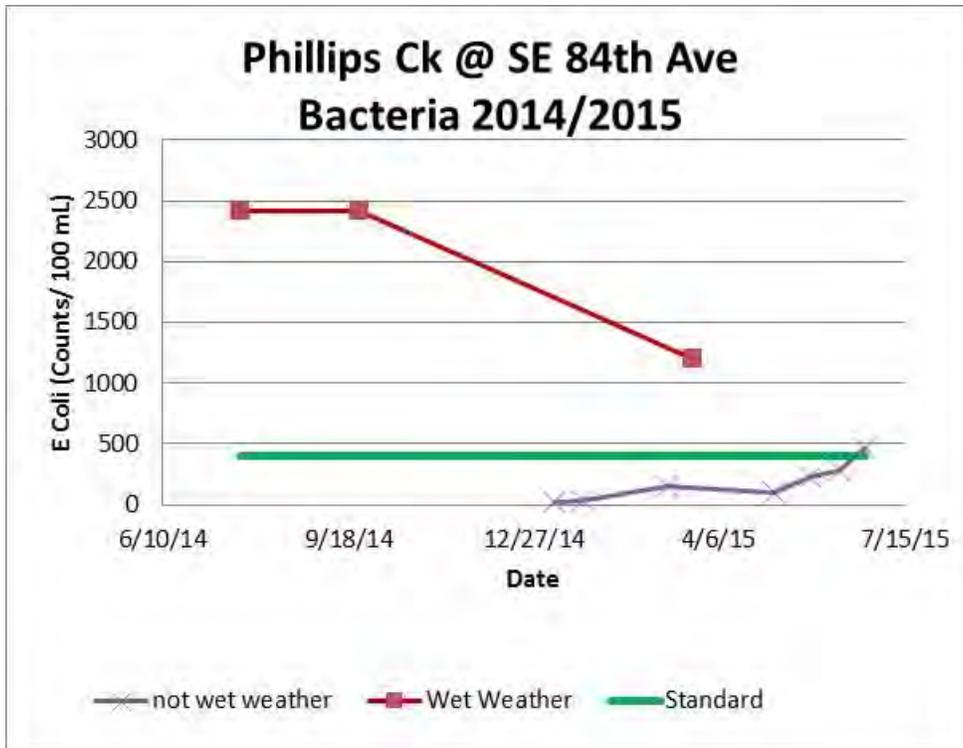
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



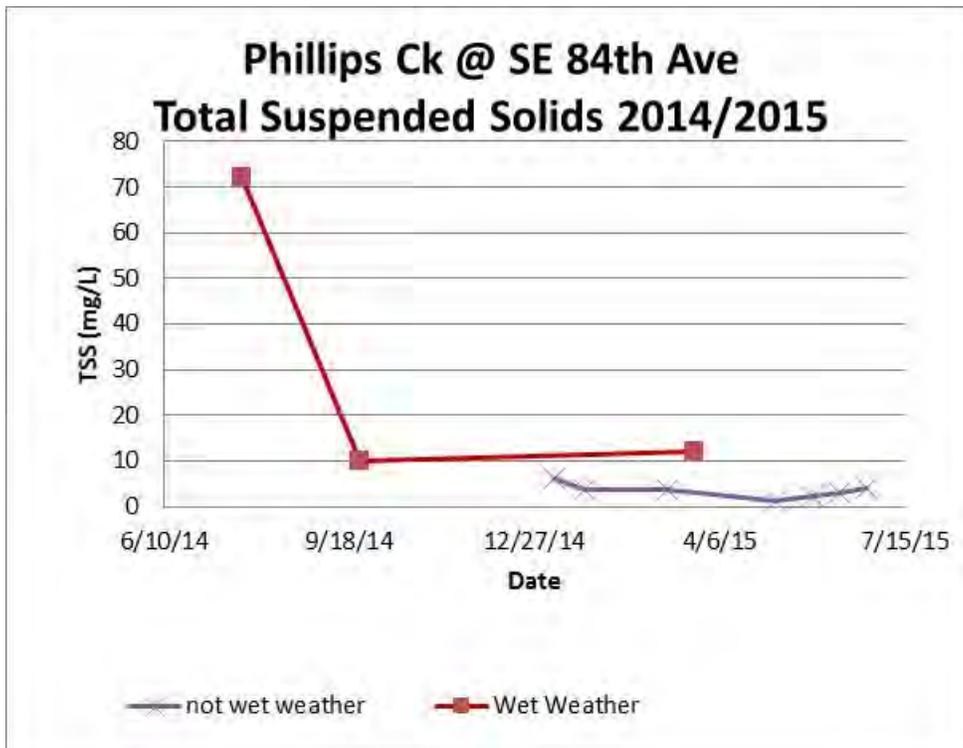
Note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg-Mt. Scott Creek watershed does not have a specific guidance value for instream total phosphorus*



Note: The two >2420 bacteria values are charted as 2420 colonies/100ml



## 2014/2015 Monitoring Results Discussion

During 9 monitoring events, pH levels were between 6.5 and 8.5, which is protective of watershed health; the level was below 6.5 during the storm monitoring event on March 24, 2014. The 406 colonies/100 ml standard for *E. coli* was exceeded on 4 occasions, including all 3 monitored storms. Total phosphorus exceeded the 0.14 mg/L guidance value during the storm on July 22, 2014, but was at lower levels during the other 9 monitoring events. The total suspended solids concentration was 72 mg/L during the July 22, 2014 storm. Dissolved oxygen levels were above 8.0 mg/L, which is protective of watershed health, during all 10 monitoring events. Water temperature was slightly above 18 C during three monitoring events, including two of the storms.

The regulated criterion for total copper was exceeded during two storms. The guidance values for *total* zinc and *total* lead were also exceeded during 2 storms. The regulated criterion for *dissolved* lead and *dissolved* zinc, and the guidance value for *dissolved* copper, were all exceeded during the July 22, 2014 storm.

## KELLOGG CREEK MONITORING SITES FACT SHEET

### Drainage Characteristics

- Tributary to the Willamette River
- Dominant Land Uses = Various

### Monitoring Locations

Upstream instream location = Water Quality is monitored at SE Rusk Road and Flow is monitored a short distance upstream near SE Parmenter Court.

Downstream instream location = Rowe Middle School at 3606 SE Lake Road in the City of Milwaukie

### 2014/2015 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 7 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

Kellogg Ck at SE Rusk Rd	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Co units/ 100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	12.4	7.7	1.39	1047	4.17	2.2	1.38	0.12	37.3	23.3	157	21	3.1	0.04	0.12	0.07	49	6.6
Maximum	16.4	9.5	1.57	>2420	7.40	3.5	2.31	0.15	46.0	25.0	190	34	6.9	0.08	0.18	0.08	57	6.7
Minimum	9.8	4.5	1.19	548	1.60	1.2	0.48	0.09	27.0	22.0	140	5	0.9	<0.05	0.05	0.06	36	6.5
Exceedance of guidance value or criteria (# exceed/total)	0/3	1/3	0/3	3/3	1/3	0/3	2/3	0/3	0/3	0/3	NA	NA	NA	0/3	1/3	NA	NA	0/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	13.1	7.3	2.23	232	1.20	0.6	0.44	0.07	12.0	7.3	201	9	0.8	0.03	0.09	0.07	78	6.8
Maximum	17.0	8.4	2.50	770	1.50	0.8	0.59	0.10	16.0	12.0	240	14	1.1	<0.05	0.14	0.08	92	7.1
Minimum	9.2	5.7	1.90	78	0.90	0.3	0.35	0.03	8.0	4.0	160	6	0.5	<0.05	<0.04	0.06	66	6.3
Exceedance of guidance value or criteria (# exceed/total)	0/7	1/7	0/7	1/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	3/7

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

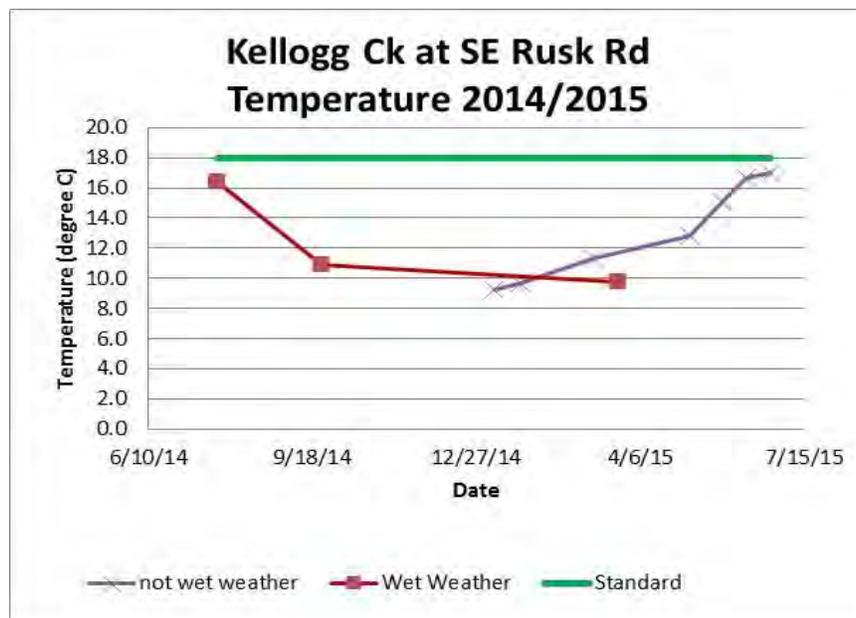
Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

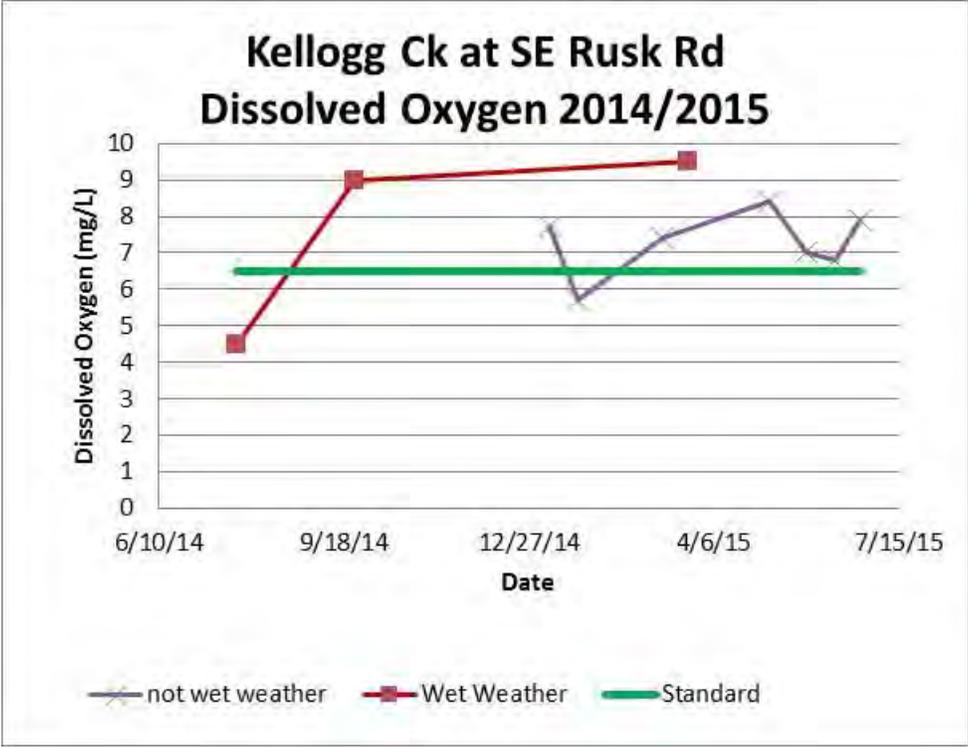
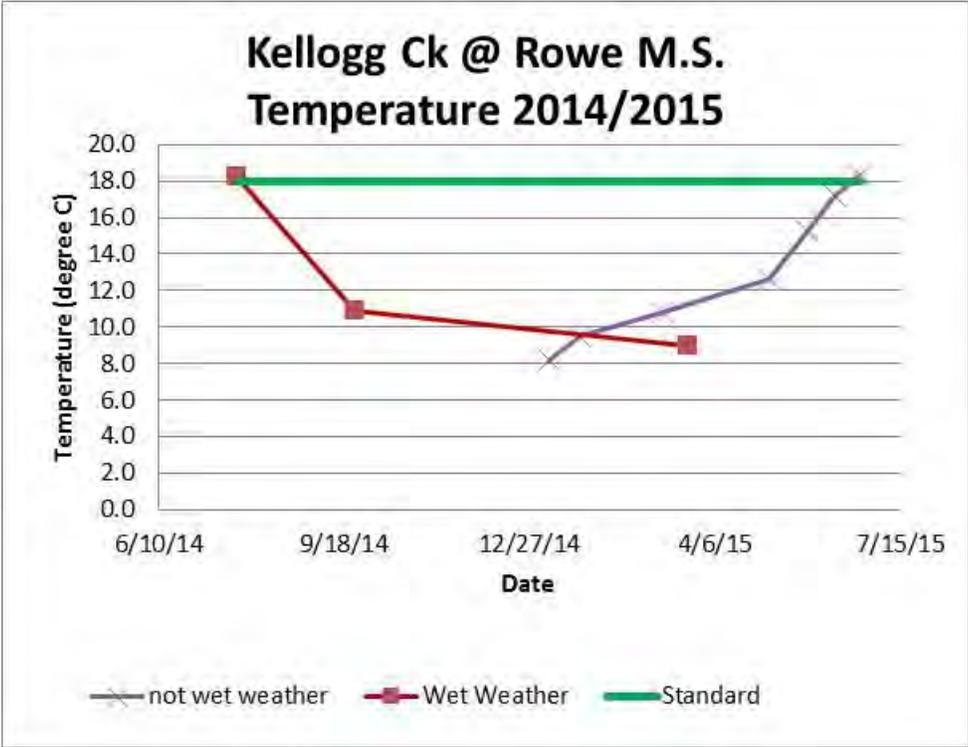
Kellogg Ck at Rowe Middle School	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	12.7	8.6	0.72	1203	7.83	2.7	5.67	0.17	60.3	18.0	177	75	6.0	0.06	0.17	0.03	42	6.7
Maximum	18.2	10.3	0.77	>2420	15.20	4.4	7.62	0.21	109.0	21.0	290	170	15.0	0.12	0.34	0.06	46	6.9
Minimum	9.0	6.2	0.63	687	3.40	1.8	2.10	0.11	24.0	13.0	110	11	1.4	<0.05	<0.04	<0.04	34	6.6
Exceedance of guidance value or criteria (# exceed/total)	1/3	1/3	0/3	3/3	2/3	0/3	3/3	0/3	2/3	0/3	NA	NA	NA	0/3	2/3	NA	NA	0/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	13.1	9.1	1.36	225	1.45	0.8	3.65	0.05	17.0	5.5	188	6	0.7	0.03	0.06	0.07	83	7.2
Maximum	18.3	10.3	1.60	579	1.90	1.3	6.40	0.07	34.0	9.0	238	9	1.1	0.09	0.14	0.10	89	7.7
Minimum	8.2	7.6	1.20	36	1.00	0.6	2.10	0.04	10.0	2.0	140	4	0.2	<0.05	<0.04	0.05	70	6.5
Exceedance of guidance value or criteria (# exceed/total)	1/7	0/7	0/7	2/7	0/7	0/7	6/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	0/7

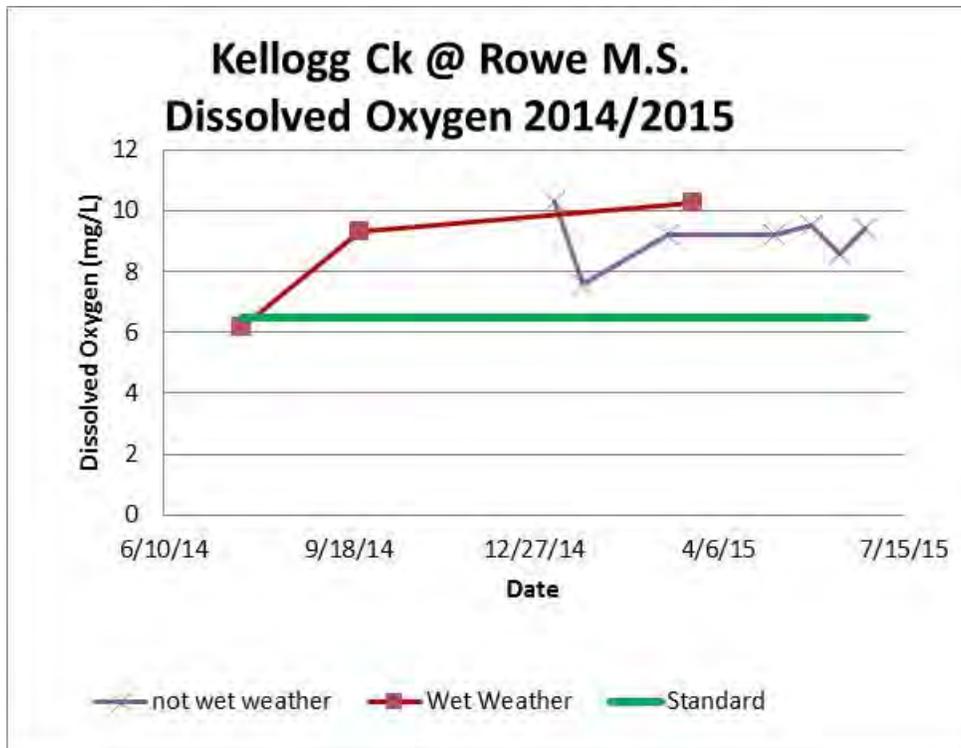
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.  
 Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

## 2014/2015 Monitoring Results (provided in graphical format)

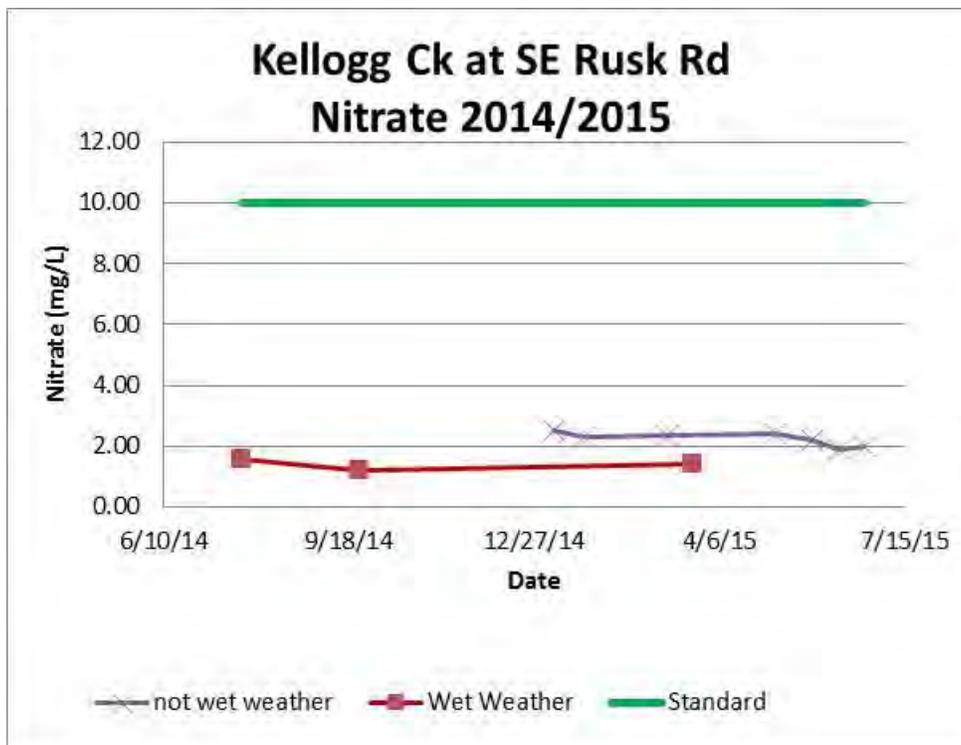
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.

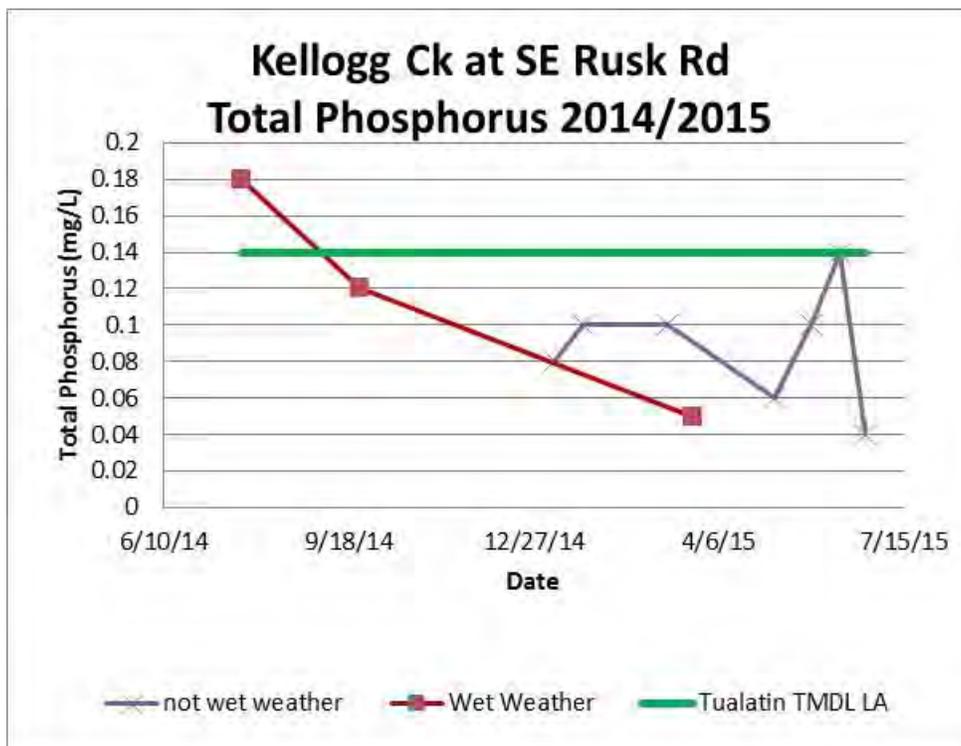
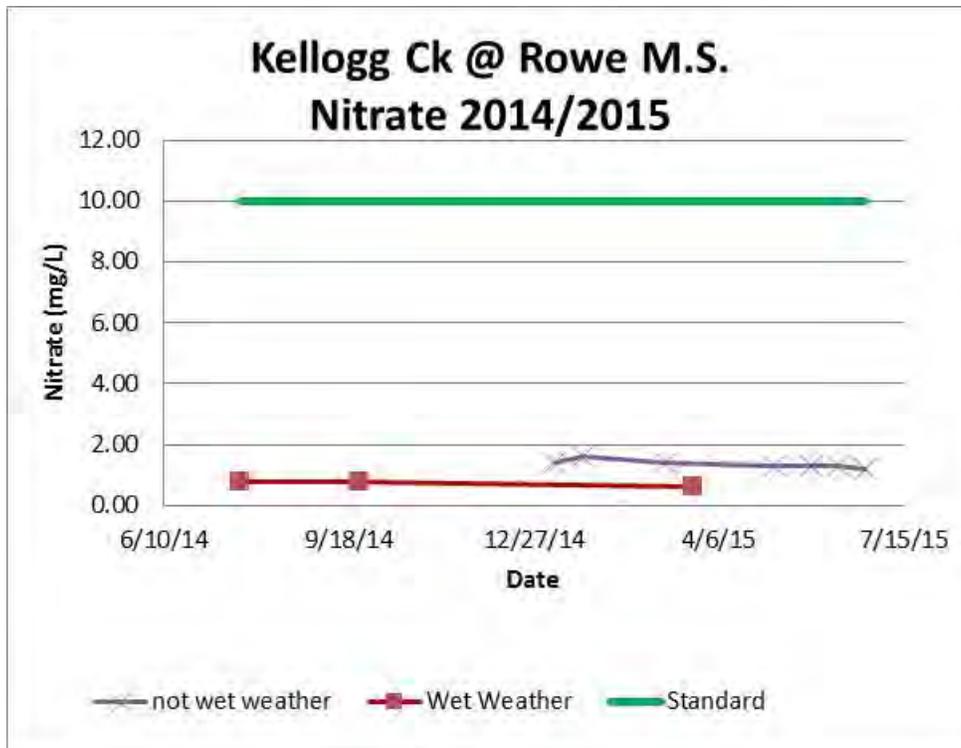


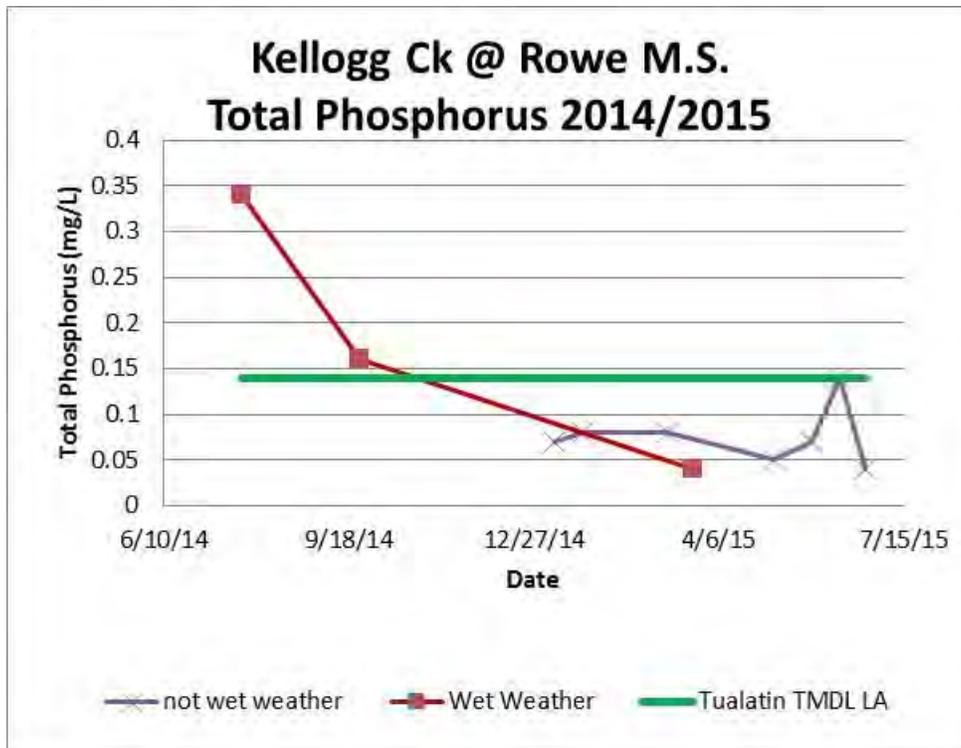




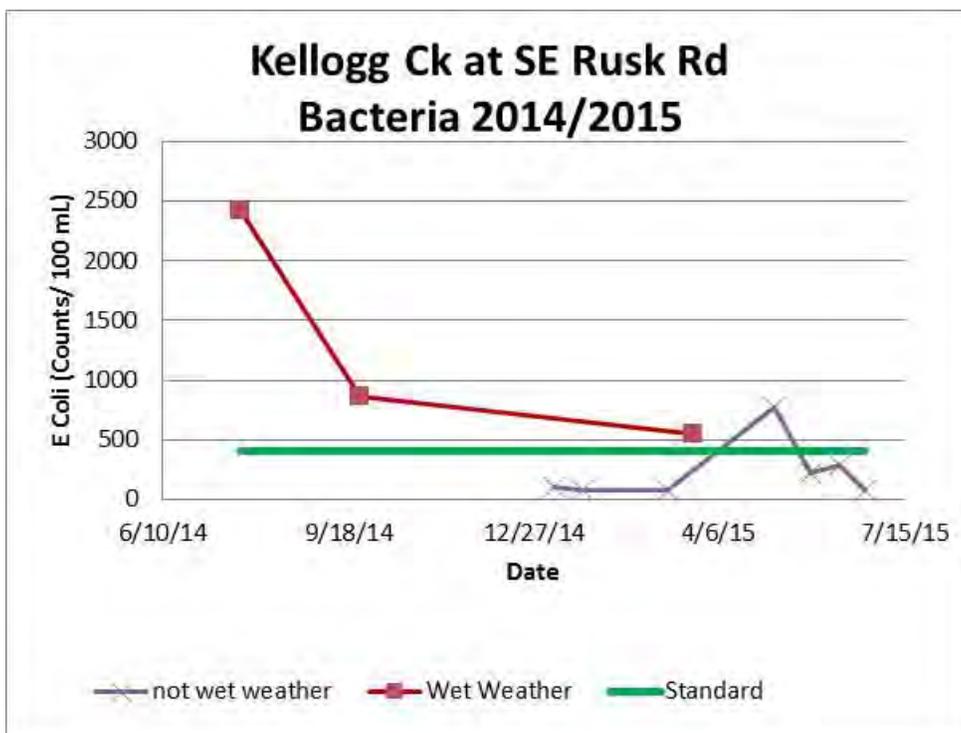
Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



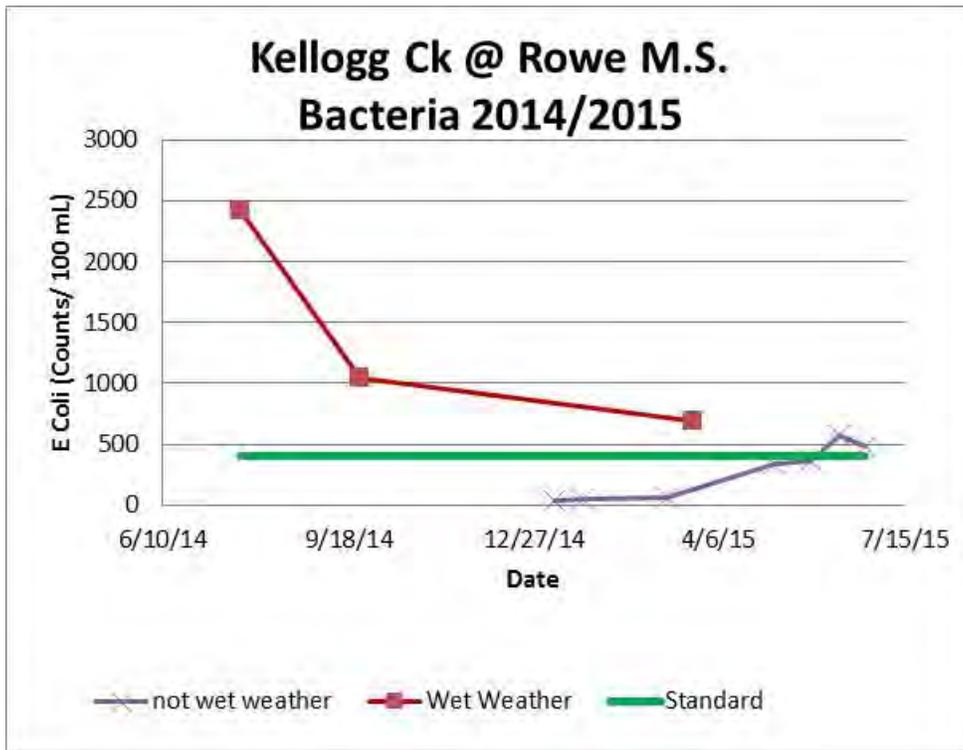




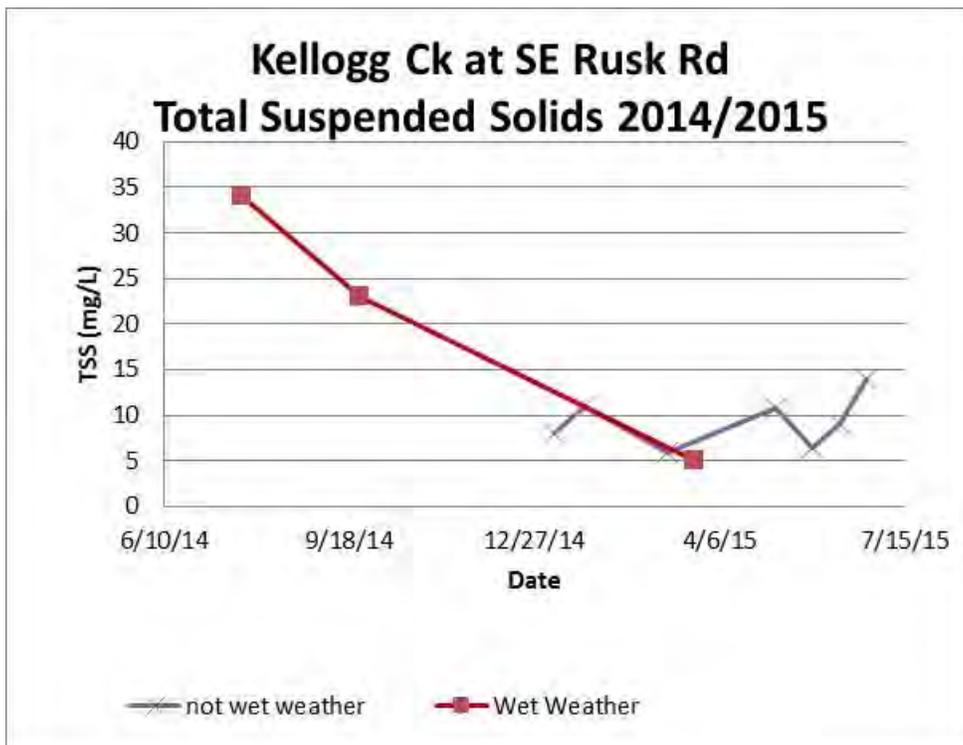
*Note: The comparison is made here in these two charts to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg Creek watershed does not have a specific guidance or regulated value for instream total phosphorus*

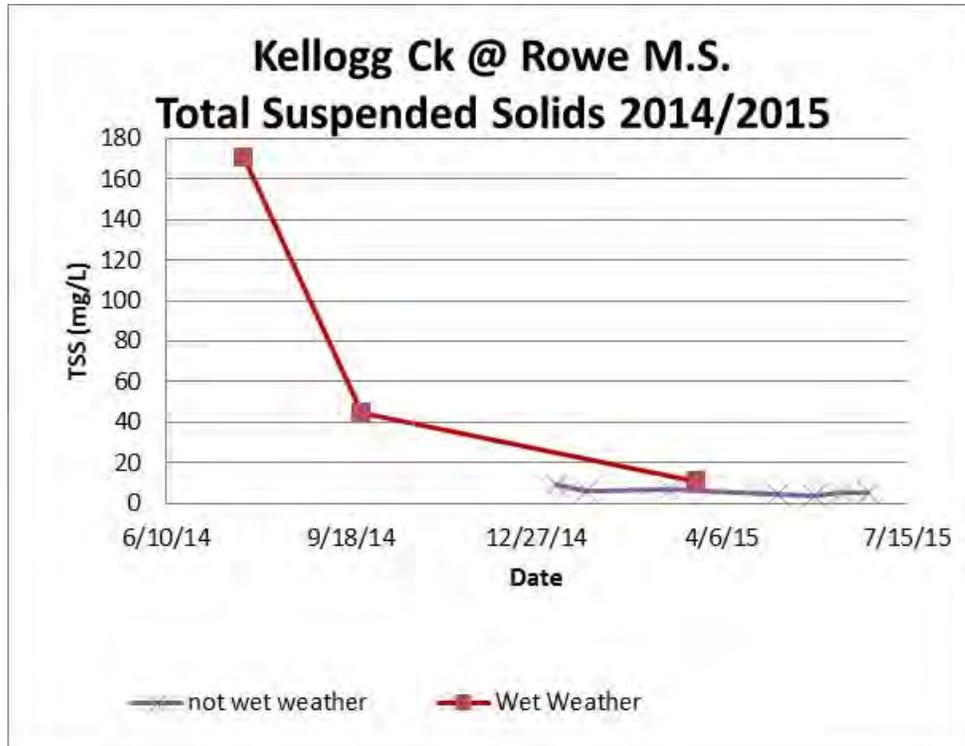


Note: The >2420 bacteria value is charted as 2420 colonies/100ml



Note: The >2420 bacteria value is charted as 2420 colonies/100ml





## 2014/2015 Monitoring Results Discussion

All pH levels in Kellogg Creek at Rowe M.S. were between 6.5 and 8.5, which is protective of watershed health, during all monitoring events. The creek's pH levels were slightly below 6.5 during three of the Routine monitoring events at SE Rusk Road, however. The 406 colonies/100 ml standard for E. coli was exceeded during all 3 monitored storms at both monitoring sites. In addition, the E. coli standard was also exceeded during a Routinely scheduled monitoring event at the Rusk Road site, and during two additional Routinely scheduled events at the Middle School site. Total phosphorus exceeded the 0.14 mg/L guidance value during the July 22, 2014 storm at the SE Rusk Road site, and during two storms at the Middle School site. Water temperature was slightly above 18 C during two monitoring events at the Middle School site. The total suspended solids concentration was 170 mg/L, and the dissolved oxygen level was below 6.5 mg/L, at the Middle School site during the July 22, 2014 storm. Dissolved oxygen levels were low (4.5 mg/L and 5.7 mg/L) during two monitoring events at the SE Rusk Road site. The regulated criterion for total copper was exceeded during two storms at the Middle School site and during one storm at the SE Rusk Road site. The guidance values for *total* lead were exceeded during all three storms at the middle school monitoring site, and during two storms at the SE Rusk Road site. The guidance values for *total* zinc were exceeded during 2 storms at the middle school monitoring site. The regulated criterion for *dissolved* lead and *dissolved* zinc, and the guidance value for *dissolved* copper, were not exceeded at either site during any of the 10 monitoring events.

## MT. SCOTT CREEK FACT SHEET

### Drainage Characteristics

- Largest tributary in the Kellogg Creek Watershed
- Dominant Land Uses = Mixed. Large portions of the watershed are used for urban single-family and multi-family housing, commercial, transportation (i.e. I-205), open space, and industry.

### Monitoring Location

The quality of Mt. Scott Creek is monitored in the North Clackamas Parks & Recreation District park near the intersection of SE Rusk Road and Highway 224. The precise location of the water quality monitoring location is near the Southern end of SE Casa Del Rey Dr., and flow is measured near the Hwy 224 bridge.

### 2014/2015 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 7 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

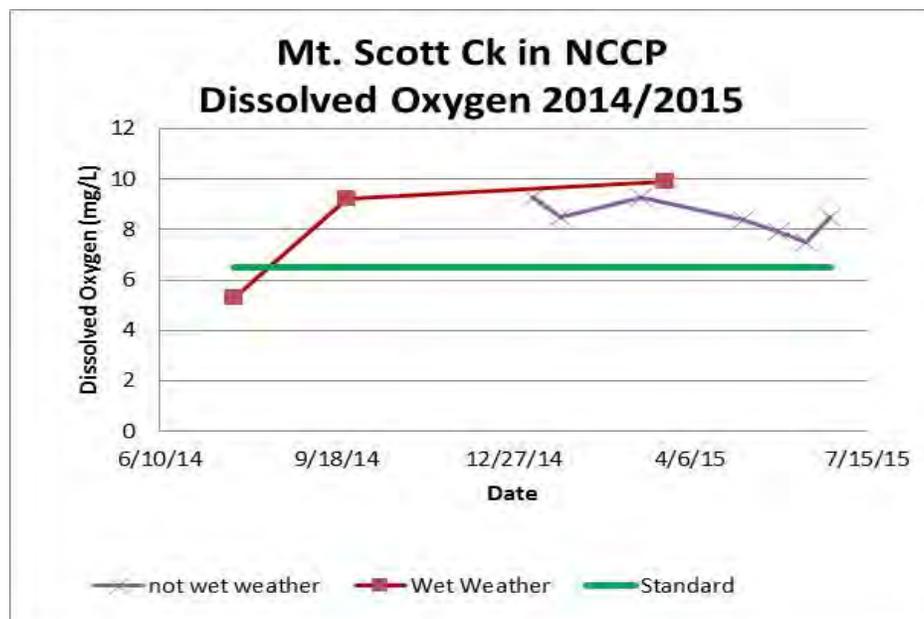
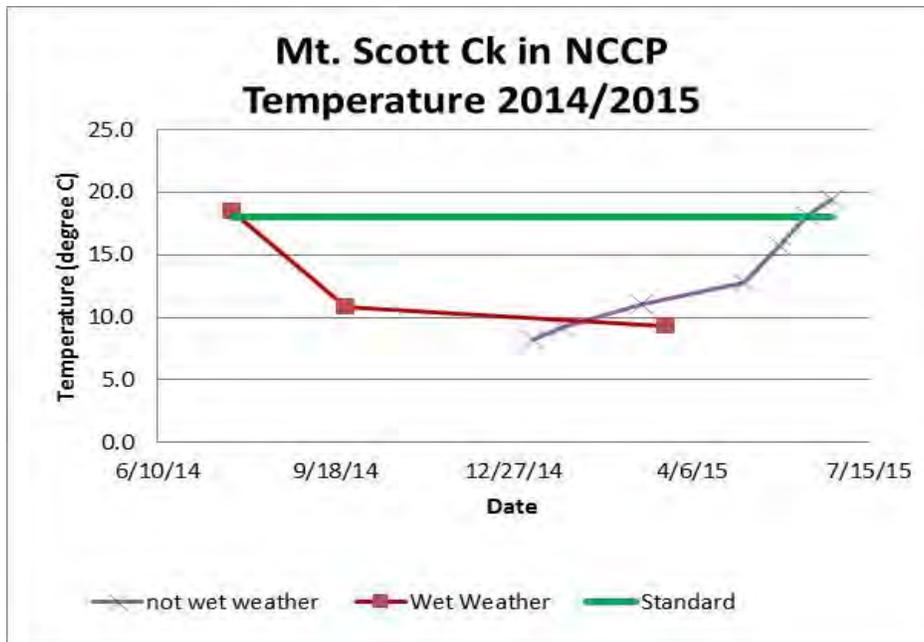
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 ml)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	12.9	8.1	0.56	699	7.90	2.8	3.47	0.17	62.3	18.0	177	76	5.4	0.07	0.16	0.03	34	6.8
Maximum	18.5	9.9	0.68	>2420	15.60	4.7	7.44	0.21	113.0	22.0	270	170	13.0	0.15	0.34	0.06	42	7.1
Minimum	9.3	5.3	0.44	205	3.10	1.9	0.88	0.12	27.0	15.0	120	13	1.4	<0.05	<0.04	<0.04	33	6.5
Exceedance of guidance value or criteria (# exceed/total)	1/3	1/3	0/3	2/3	2/3	1/3	2/3	0/3	2/3	0/3	NA	NA	NA	0/3	1/3	NA	NA	0/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	13.5	8.5	1.08	204	1.44	0.8	0.30	0.05	10.9	5.7	187	5	0.7	0.03	0.06	0.07	86	7.1
Maximum	19.5	9.3	2.88	488	1.60	0.9	0.46	0.07	15.0	7.0	252	8	1.2	<0.05	0.15	0.11	93	7.6
Minimum	8.2	7.5	0.48	24	1.20	0.7	0.22	0.02	8.0	4.0	140	3	0.2	<0.05	<0.04	0.04	69	6.5
Exceedance of guidance value or criteria (# exceed/total)	2/7	0/7	0/7	1/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	1/7	NA	NA	0/7

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

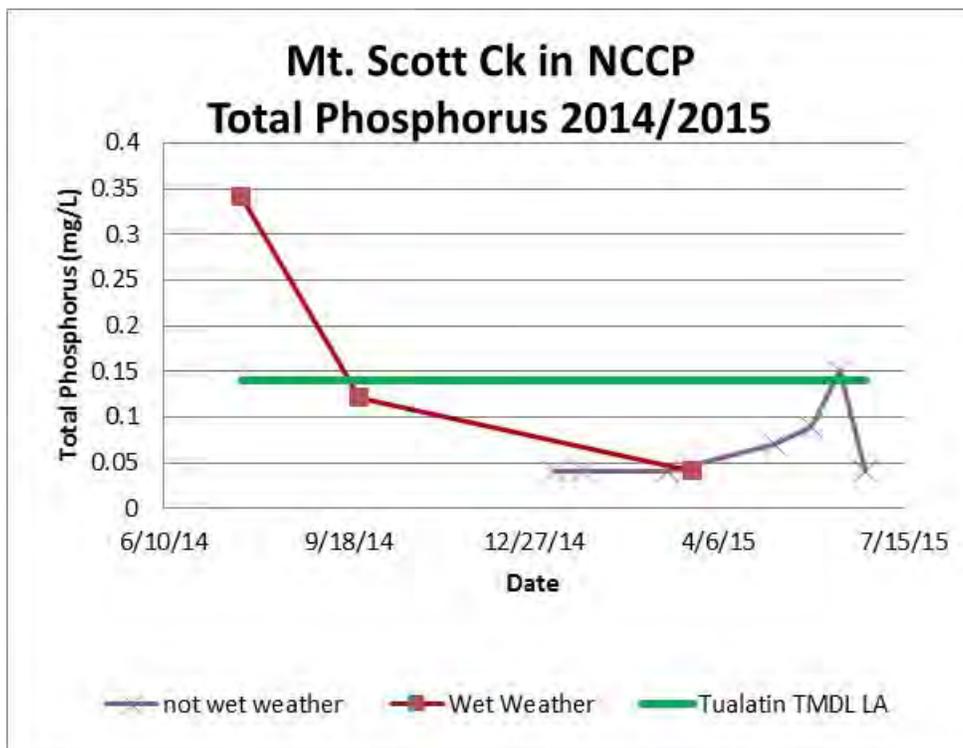
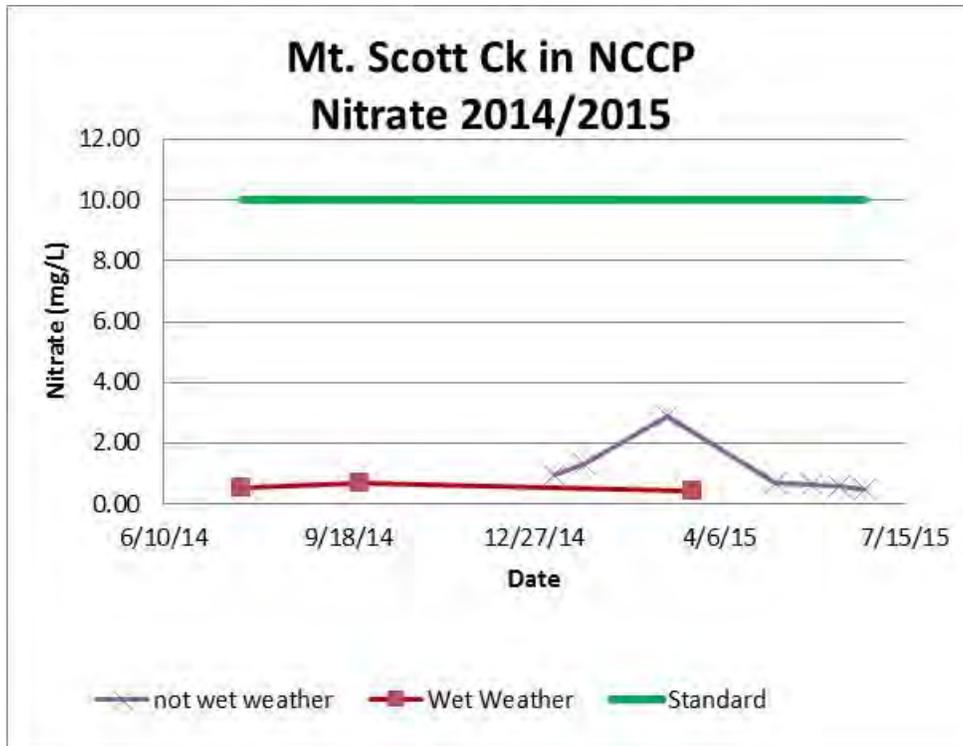
Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

## 2014/2015 Monitoring Results (provided in graphical format)

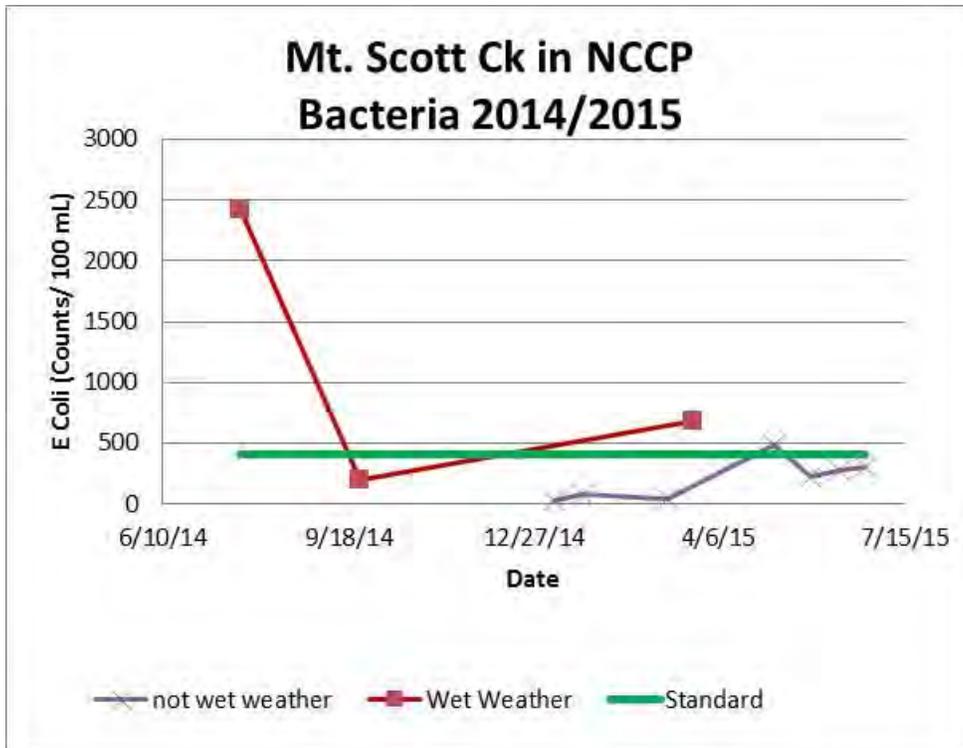
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



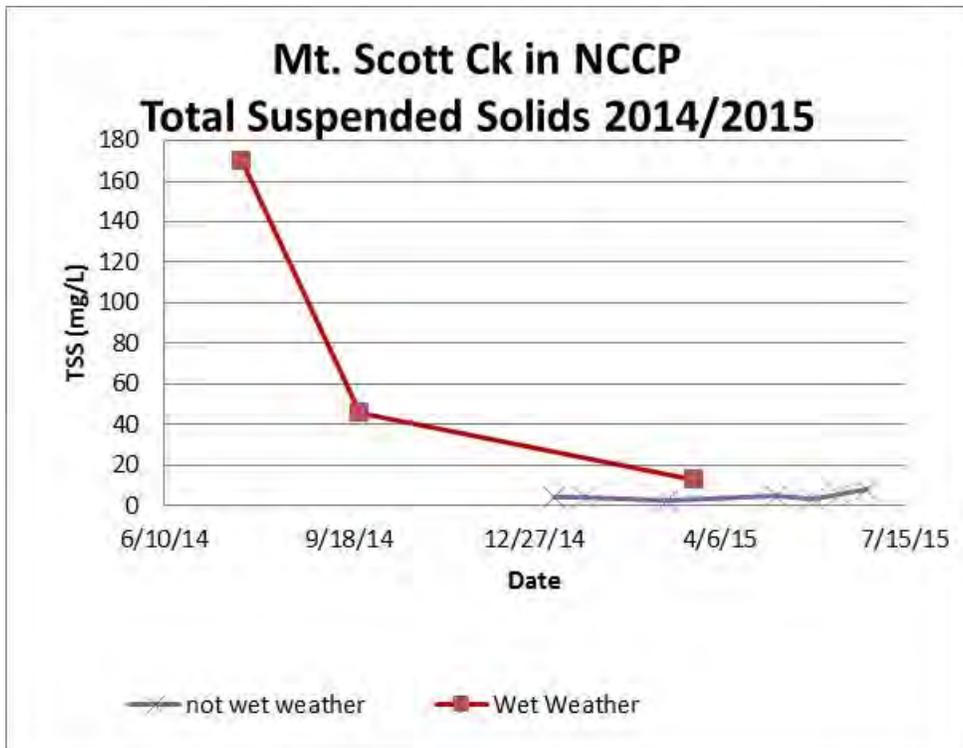
Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg-Mt. Scott Creek watershed does not have a specific guidance value for instream total phosphorus*



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



## 2014/2015 Monitoring Results Discussion

Measured pH levels were between 6.5 and 8.5, which is protective of watershed health, during all monitoring events. Total phosphorus exceeded the 0.14 mg/L guidance value during the storm on July 22, 2014, and during a routinely scheduled monitoring event when creek flows were low during a long stretch of dry weather. The 406 colonies/100 ml standard for E. coli was exceeded during three of the 10 monitoring events; two of these events were during storms. The total suspended solids concentration was 170 mg/L during the July 22, 2014 storm. Dissolved oxygen levels were at or above 7.5 mg/L during nine of the monitoring events; the dissolved oxygen level was only 5.3 mg/L during the July 22, 2014 storm. Water temperature was above 18 C during three monitoring events. The regulated criterion for total copper was exceeded during two storms. The guidance values for *total* zinc and *total* lead were also exceeded during 2 storms. The guidance value for *dissolved* copper was exceeded during the July 22, 2014 storm.

## ROCK CREEK FACT SHEET

### Drainage Characteristics

- Tributary to the Clackamas River. Less than half of the watershed's area is in CCSD#1/Happy Valley.
- Dominant Land Uses = Rural residential, agriculture, and urban single-family residential. Some open space, multi-family urban residential, and commercial lands are also present.

### Monitoring Location

Water quality in Rock Creek is monitored downstream from the Hwy 212/224 bridge; The location is ~650 feet upstream from the Creek's confluence with the Clackamas River. The creek's flow is measured at a point which is several hundred feet upstream from the Hwy 212/224 bridge.

### 2014/2015 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other seven monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

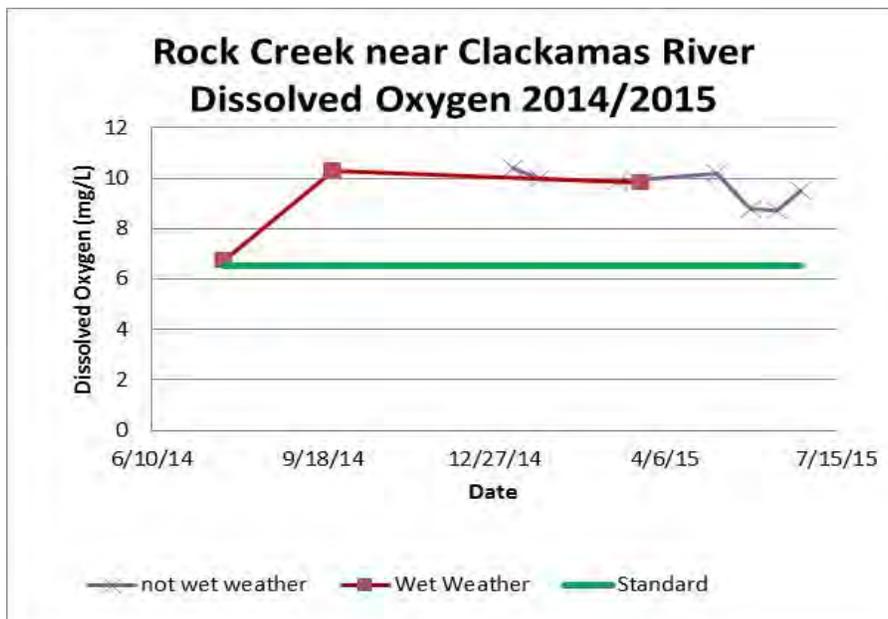
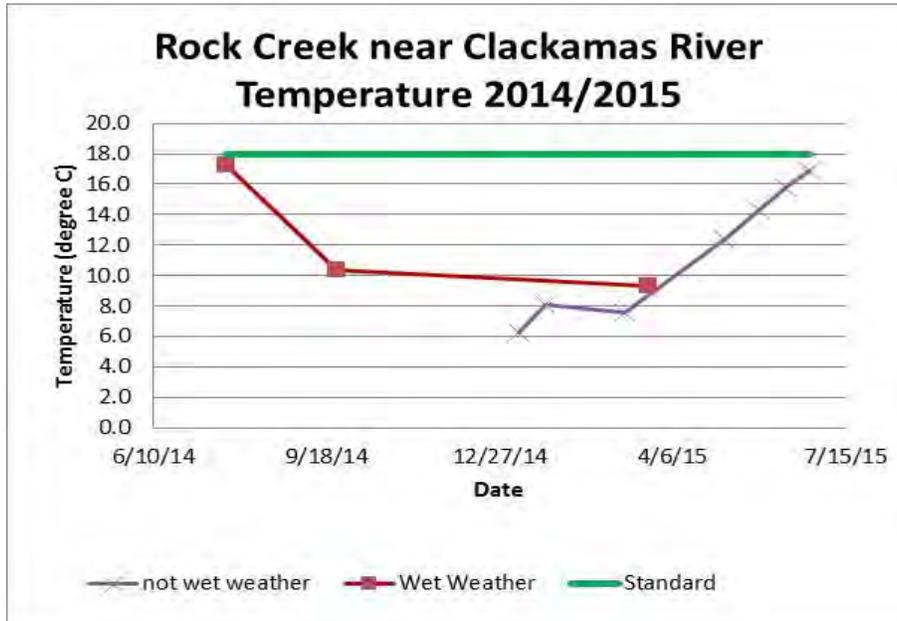
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	12.3	9.0	1.09	1599	4.53	1.5	1.81	0.10	20.3	7.7	160	60	2.8	0.03	0.16	0.07	34	7.0
Maximum	17.3	10.3	1.52	>2420	6.40	2.4	2.10	0.13	26.0	10.0	200	71	5.8	<0.05	0.23	0.10	47	7.2
Minimum	9.3	6.8	0.54	1300	3.40	1.1	1.50	0.05	16.0	6.0	140	51	1.2	<0.05	0.10	0.04	28	6.6
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	3/3	1/3	0/3	3/3	0/3	0/3	0/3	NA	NA	NA	0/3	2/3	NA	NA	0/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	11.6	9.6	1.26	133	0.81	0.5	0.14	0.03	6.1	2.7	129	3	0.3	0.03	0.03	0.06	54	7.3
Maximum	16.9	10.4	2.40	461	1.00	0.6	0.23	0.05	8.0	4.0	194	6	0.5	<0.05	0.08	0.09	75	7.9
Minimum	6.3	8.7	0.63	17	0.60	0.4	0.06	0.01	5.0	1.0	92	<1	0.0	<0.05	<0.04	0.03	37	6.4
Exceedance of guidance value or criteria (# exceed/total)	0/7	0/7	0/7	1/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	1/7

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

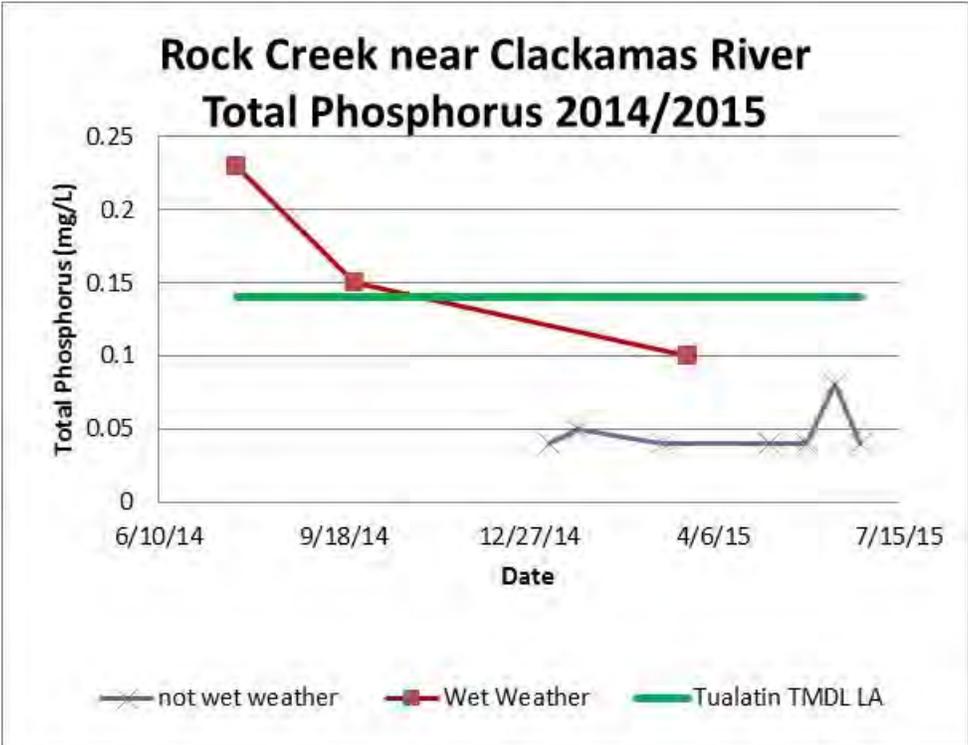
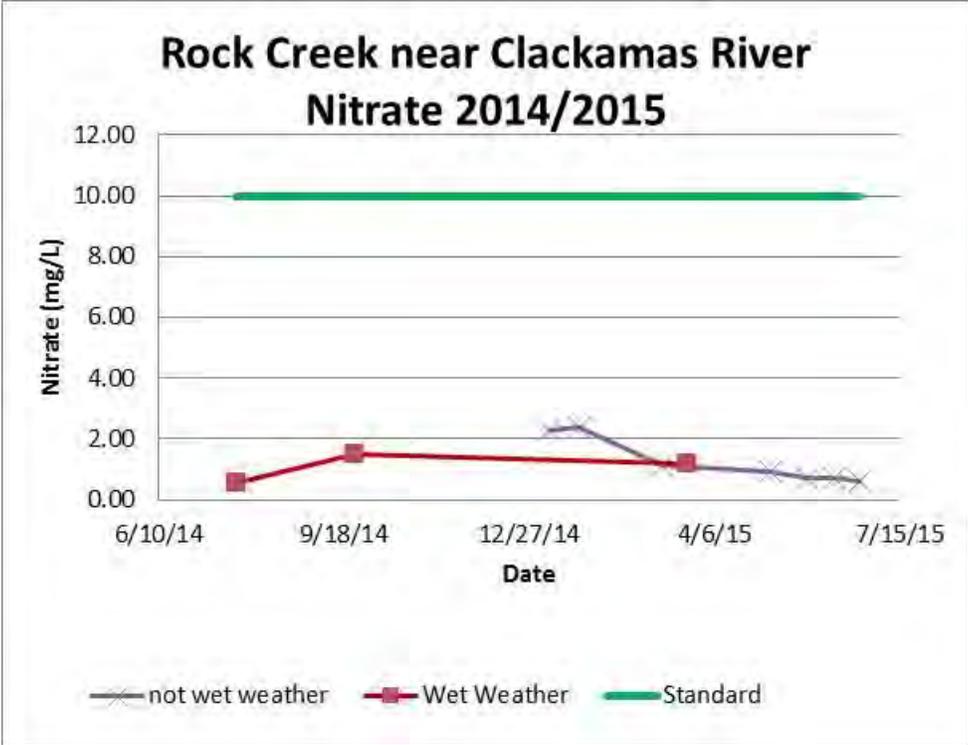
Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

## 2014/2015 Monitoring Results (provided in graphical format)

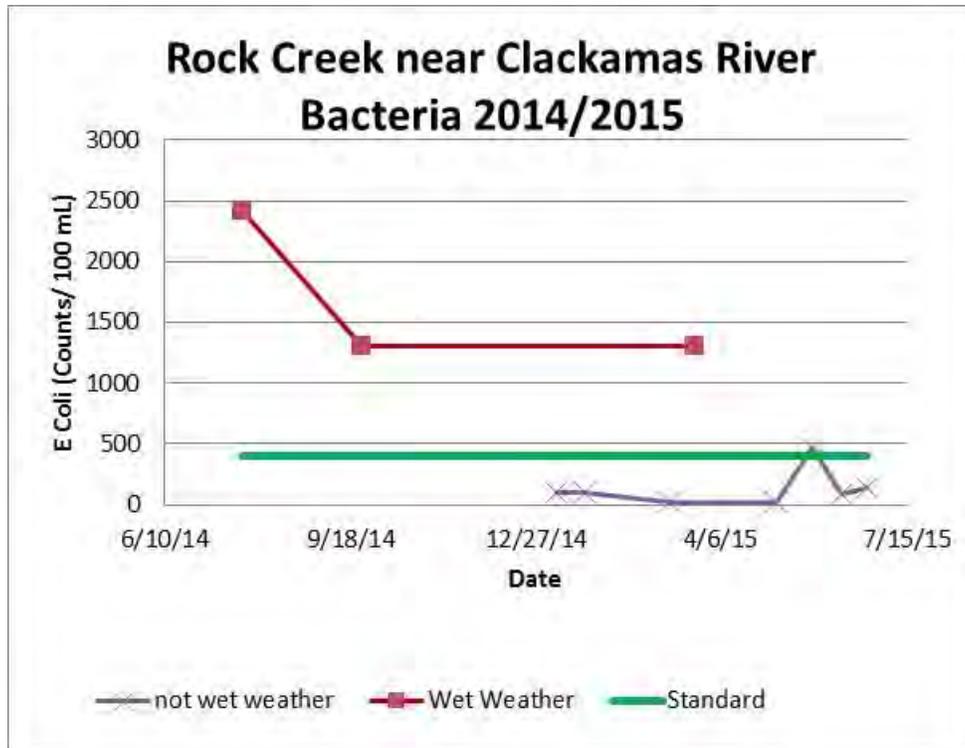
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



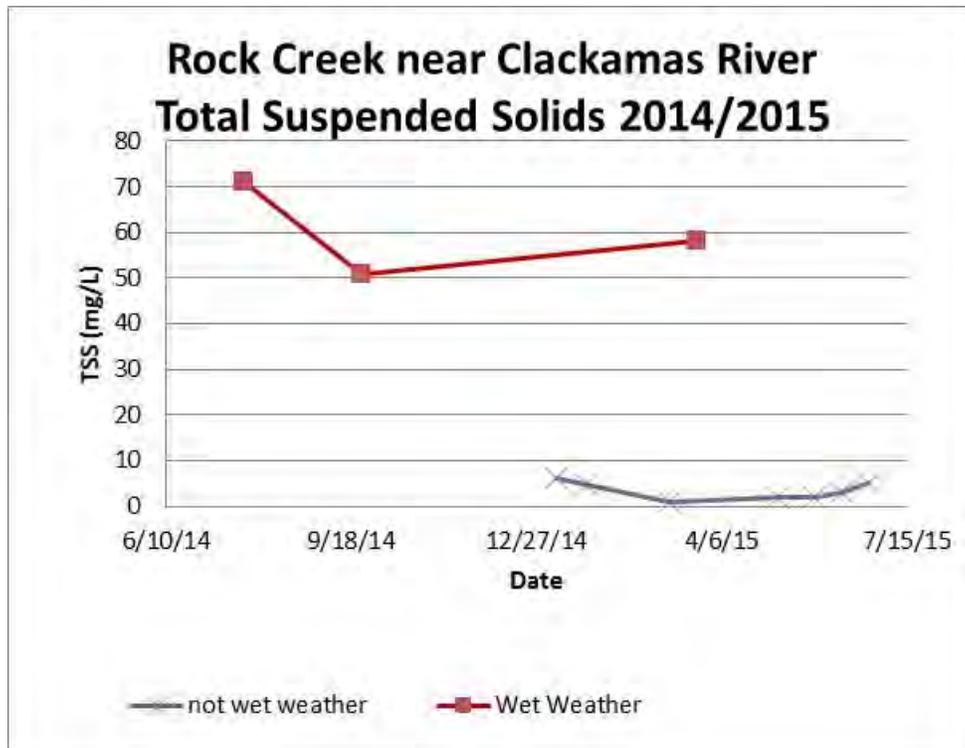
Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus*



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



## 2014/2015 Monitoring Results Discussion

The 406 colonies/100 ml standard for *E. coli* was exceeded during all 3 storms and during 1 of the Routinely scheduled monitoring events. The creek's pH levels were between 6.5 and 8.5, which is protective of watershed health, during nine of the 10 monitoring events; it was slightly outside this range (6.4 units) during the January 23, 2015 Routinely scheduled monitoring event. Ammonia was not detected during any of the 10 monitoring events. Total phosphorus exceeded the 0.14 mg/L guidance value during the storms on July 22, 2014 and February 6, 2015. Dissolved oxygen levels were above 6.5 mg/L during all 10 monitoring events, which is protective of watershed health. The total suspended solids concentration was 71 mg/L during the July 22, 2014 storm. The guidance values for *total* lead were exceeded during all three storms. The regulated criterion for total copper was exceeded during the storm on July 22, 2014. Reviewing the data from all 10 monitoring events, there were no exceedances of the guidance values and regulated criteria for *dissolved* copper, *dissolved* lead, *dissolved* zinc, and *total* zinc.

## COW CREEK FACT SHEET

### Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Use = Industrial (Clackamas Industrial Area)

### Monitoring Location

Cow Creek is typically monitored at the point where it flows under the Western end of SE Last Road in Clackamas. However, due to the unusually warm and dry weather in the Winter and Spring, the final three monitoring events (May 26th, June 10th and June 24th) were conducted at SE Fish Hatchery Road in Clackamas, which is roughly 2/3rds of a mile downstream, since flow was present there.

### 2014/2015 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other seven monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

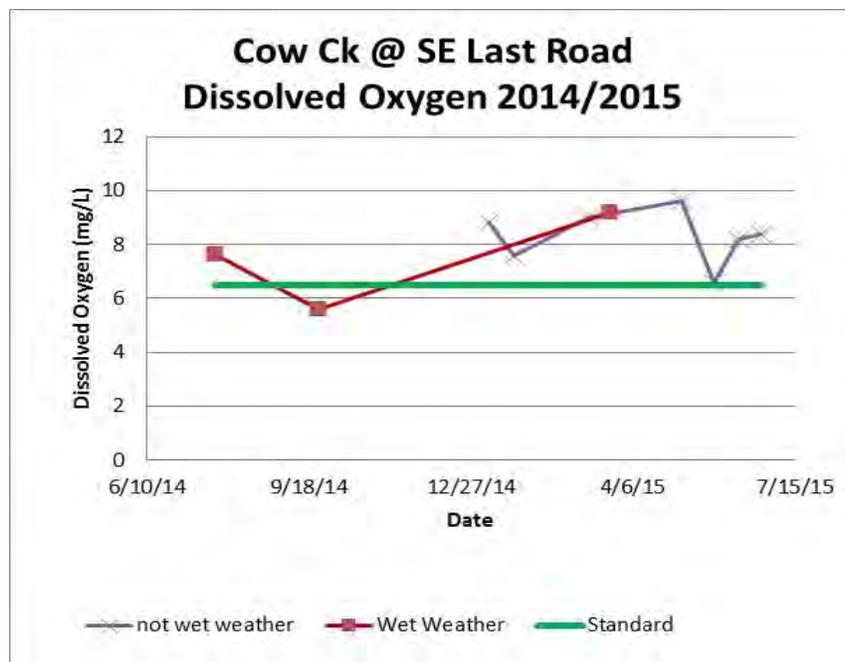
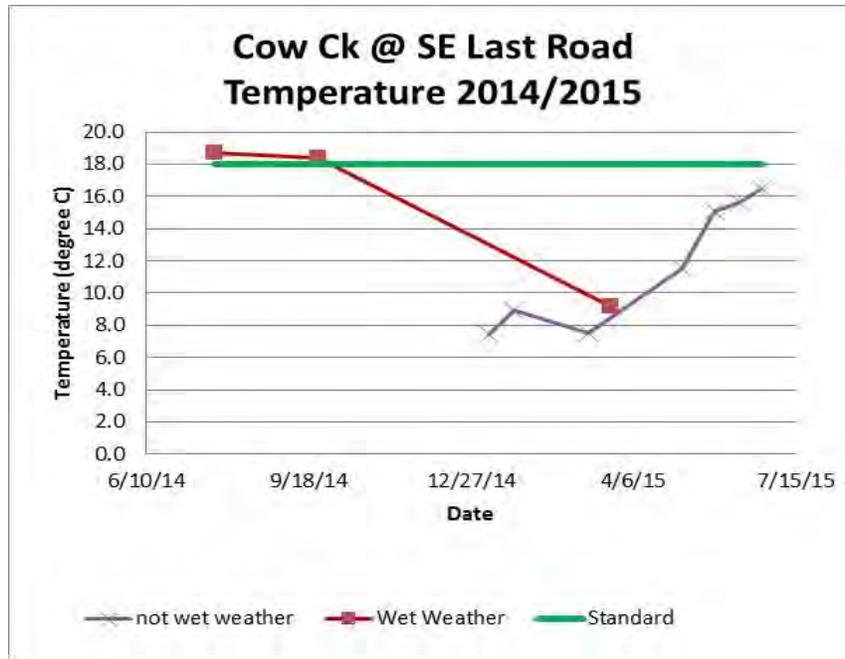
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	15.4	7.5	0.37	1561	8.60	5.3	1.70	0.16	80.7	51.3	79	17	5.1	0.55	0.10	0.05	59	6.6
Maximum	18.7	9.2	0.58	>2420	11.40	7.2	1.90	0.20	83.0	64.0	82	26	8.8	1.44	0.14	0.08	134	7.2
Minimum	9.2	5.6	0.17	649	5.80	2.0	1.47	0.09	77.0	42.0	77	9	2.0	0.09	<0.08	<0.04	20	6.0
Exceedance of guidance value or criteria (# exceed/total)	2/3	1/3	0/3	3/3	2/3	1/3	2/3	0/3	2/3	2/3	NA	NA	NA	0/3	0/3	NA	NA	1/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	11.8	8.3	0.52	429	1.76	0.9	0.40	0.05	26.3	13.4	163	7	0.5	0.03	0.04	0.05	79	7.1
Maximum	16.5	9.6	0.76	1050	2.80	1.2	0.67	0.14	51.0	35.0	230	14	1.0	<0.05	0.12	0.07	86	7.6
Minimum	7.4	6.6	0.20	3	1.20	0.6	0.15	0.01	12.0	4.0	134	<1	0.2	<0.05	<0.04	0.03	70	6.5
Exceedance of guidance value or criteria (# exceed/total)	0/7	0/7	0/7	3/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	0/7

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

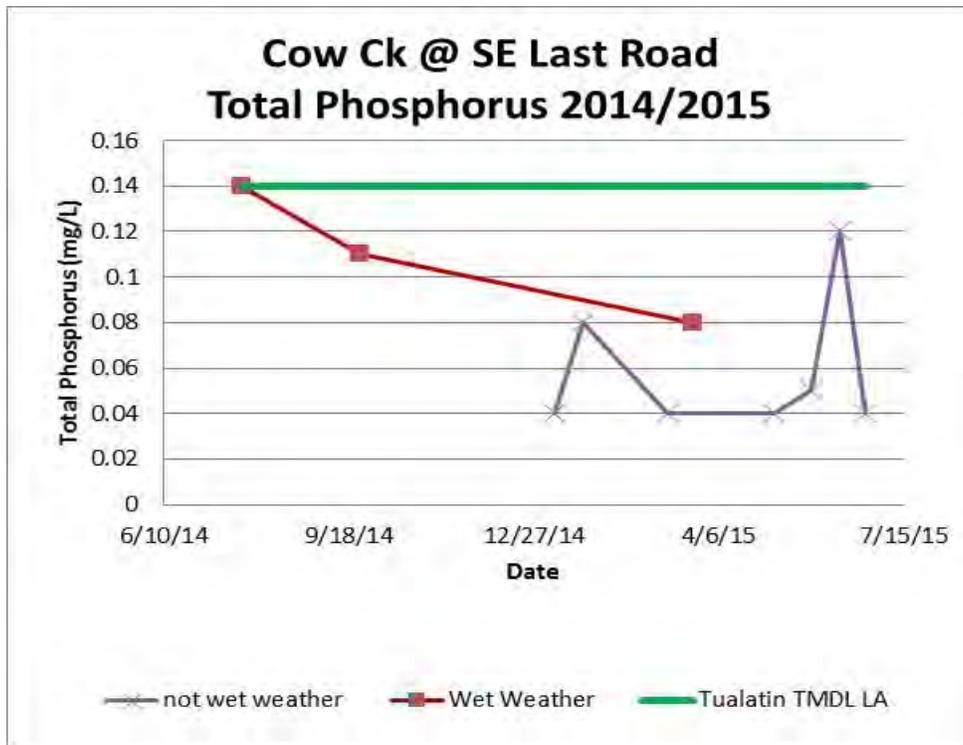
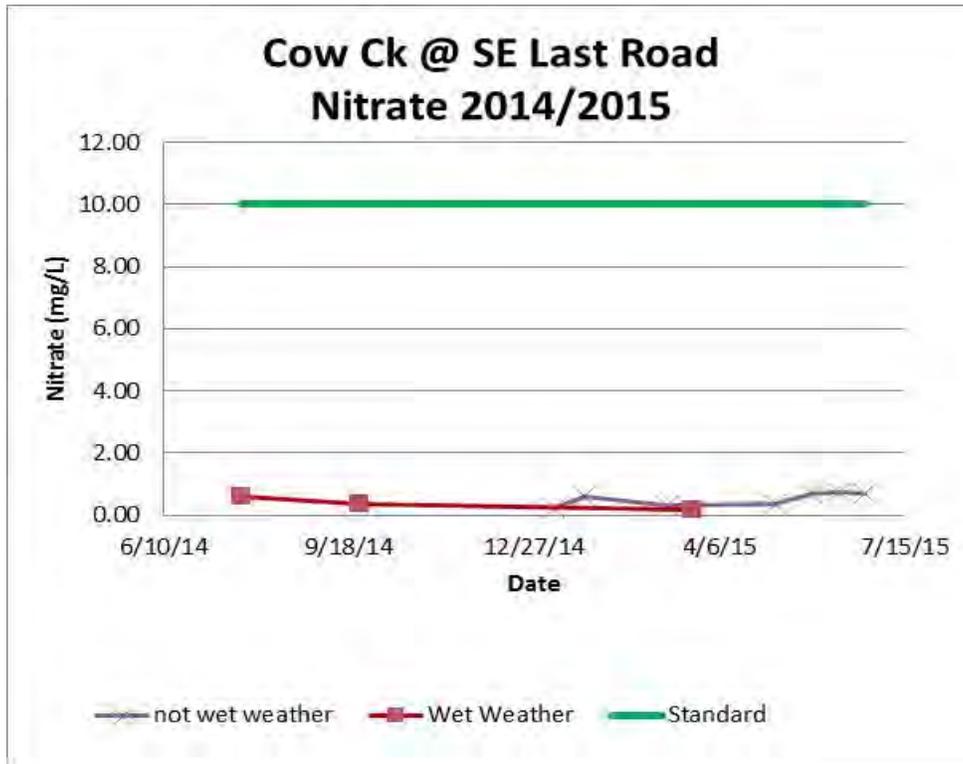
Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

## 2014/2015 Monitoring Results (provided in graphical format)

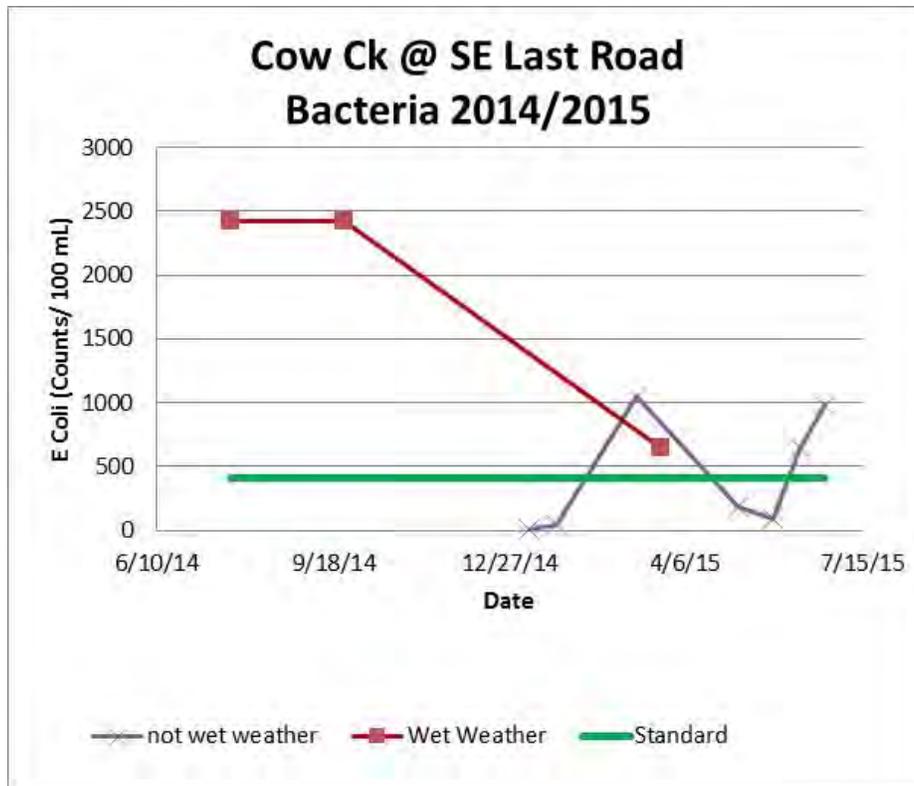
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where applicable) or to indicate whether data are in a “healthy” range as referenced in the Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit. **Note that the final 3 monitoring events (shown in the "not wet weather" lines on the following six charts) are from Cow Creek at SE Fish Hatchery Road in Clackamas, OR).**



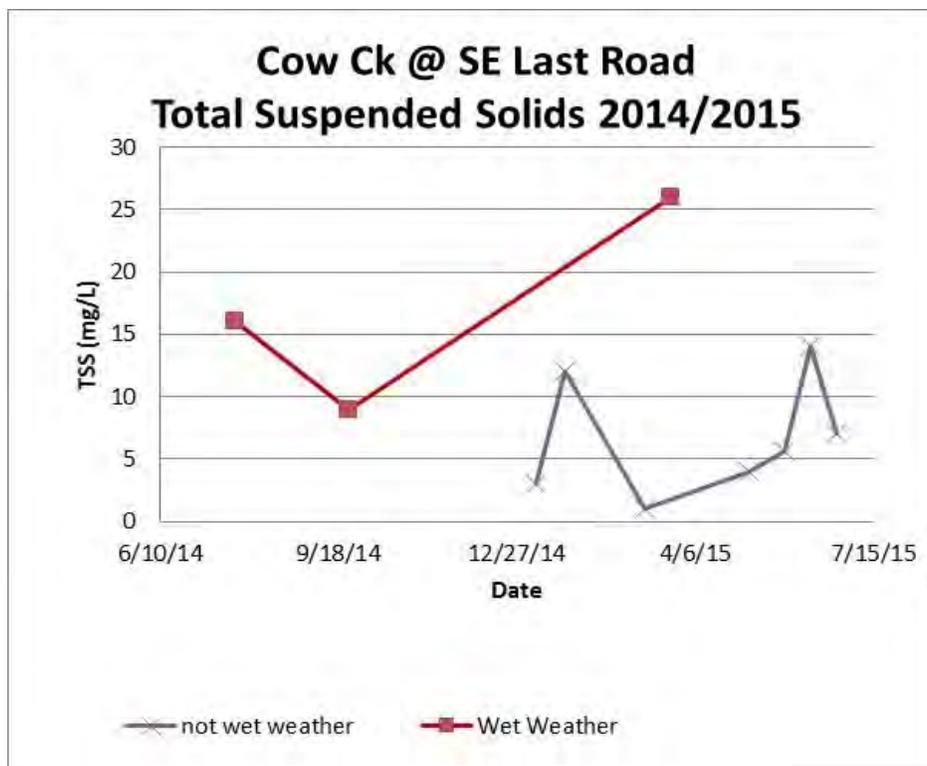
Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus*



Note: The two >2420 bacteria values are charted as 2420 colonies/100ml



Note: The single <1.0 TSS value was charted as 1 mg/L

## 2014/2015 Monitoring Results Discussion

During the storm on September 24, 2014, the dissolved oxygen (DO) concentration and the pH value were both below the water quality standard. During the other nine monitoring events, measured DO concentrations and the pH values were protective of watershed health. At the SE Last Road monitoring site, the 406 colonies/100 ml standard for *E. coli* was exceeded on 4 occasions, including all three monitored storms. The *E. coli* standard was also exceeded during two of the three monitoring events which were conducted at the SE Fish Hatchery Road site. Water temperatures were slightly above 18 C during the Summer and early Autumn storm monitoring events (July 22nd and September 24th). Total phosphorus concentrations were at or below the 0.14 mg/L guidance value during all ten monitoring events. The highest total suspended solids concentration which was recorded during the monitoring year was only 26 mg/L (during the March 23, 2015 storm). Comparing this peak TSS concentration with the peak TSS concentrations recorded during the year at the other creek monitoring sites in CCSD#1, only the storm sewer system manhole upstream from the Carli Creek outfall had a lower peak TSS concentration.

Ammonia concentrations in monitored creeks in CCSD#1 are typically very low or undetectable. The highest concentration of ammonia that was measured in any creek in CCSD#1 during the monitoring year (1.44 mg/L) was documented in Cow Creek at SE Last Road during the storm on July 22, 2014. Although this is the peak concentration which was recorded during the monitoring year, the concentration of ammonia was low enough to still be protective of watershed health.

The regulated criterion for total copper was exceeded during two storms. The guidance values for *total* zinc and *total* lead were also exceeded during two storms. The guidance value for *dissolved* copper was exceeded during one storm. The regulated criteria for *dissolved* zinc was exceeded during two storms.

## Temporary Modification Made to the Monitoring Plan

As was mentioned on the first page of the Cow Creek Fact Sheet, although Cow Creek is typically monitored at the point where it flows under the Western end of SE Last Road in Clackamas, we elected to modify our monitoring plan for the year's two final required monitoring events (May 26th and June 10th), and collect samples from Cow Creek at SE Fish Hatchery Road. This is due to the fact that unusually warm and dry weather in the Winter and Spring had caused Cow Creek's bed to be unexpectedly dry at SE Last Road on those dates. Flow was present in Cow Creek at SE Fish Hatchery Road on those dates, however. The year's optional 10th instream monitoring event that we voluntarily chose to have on June 24th was also conducted in Cow Creek at SE Fish Hatchery Road. The SE Fish Hatchery Road site in Clackamas is roughly 2/3rds of a mile downstream from the SE Last Road monitoring site. Since two of the year's nine required monitoring events weren't conducted at the monitoring location which is specified in the Comprehensive Clackamas County NPDES MS4 Stormwater Monitoring Plan (Plan), updated on June 30, 2013, we were thus obligated to notify the Department of Environmental Quality in this annual report, in accordance with MS4 Permit Schedule B(2)(e) and B(2)(f), that our Plan was temporarily modified due to abnormal climatic conditions. This temporary Plan modification did not reduce the minimum number of data points which was collected during the year, and it did not eliminate any pollutant parameters identified in the applicable Table B-1.



## MT. SCOTT CREEK WATERSHED'S OUTFALLS FACT SHEET

### Drainage Characteristics (Two Outfalls in the Mt Scott Creek Watershed)

- Dominant Land Uses = Mixed use, including industrial, highway/arterial, and commercial.

### NPDES Monitoring Locations:

- The SE Pheasant Ct. outfall discharges to a railroad-owned ditch at SE Pheasant Court. This ditch drains into Mt. Scott Creek.
- The SE Tolbert St. outfall's monitoring location is the 1st catch basin upgradient from the outfall at a railroad-owned ditch. This flow-through catch basin is in the intersection of SE Tolbert St. and 94<sup>th</sup> Ave. This ditch drains into Dean Creek. Dean Ck is a tributary to Mt. Scott Creek.

### 2014/2015 Monitoring Results (provided in tabular format)

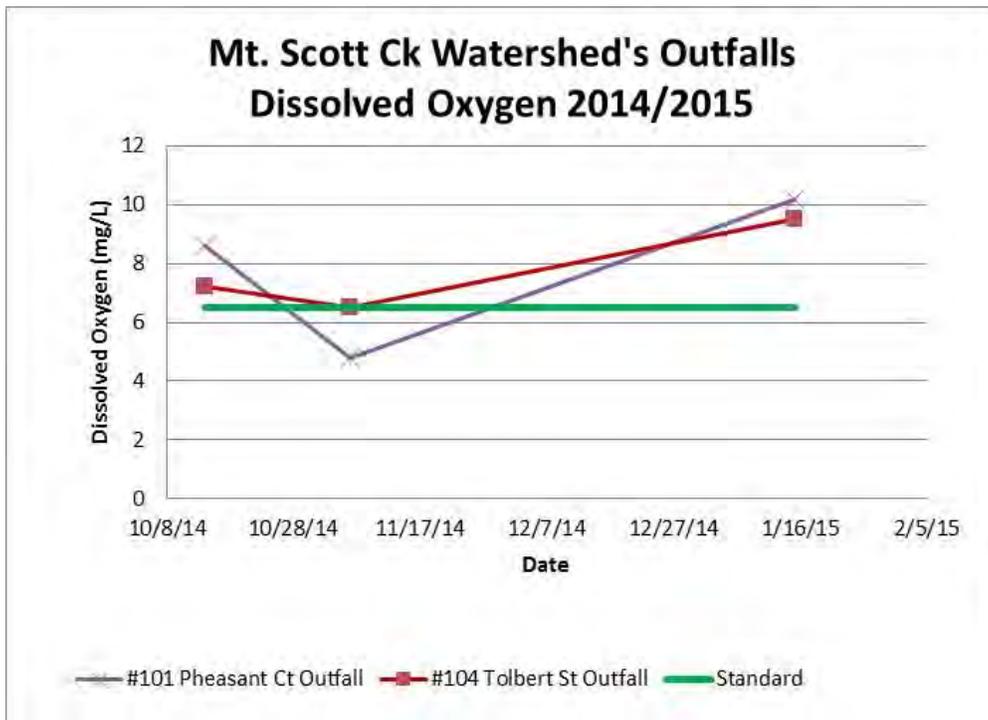
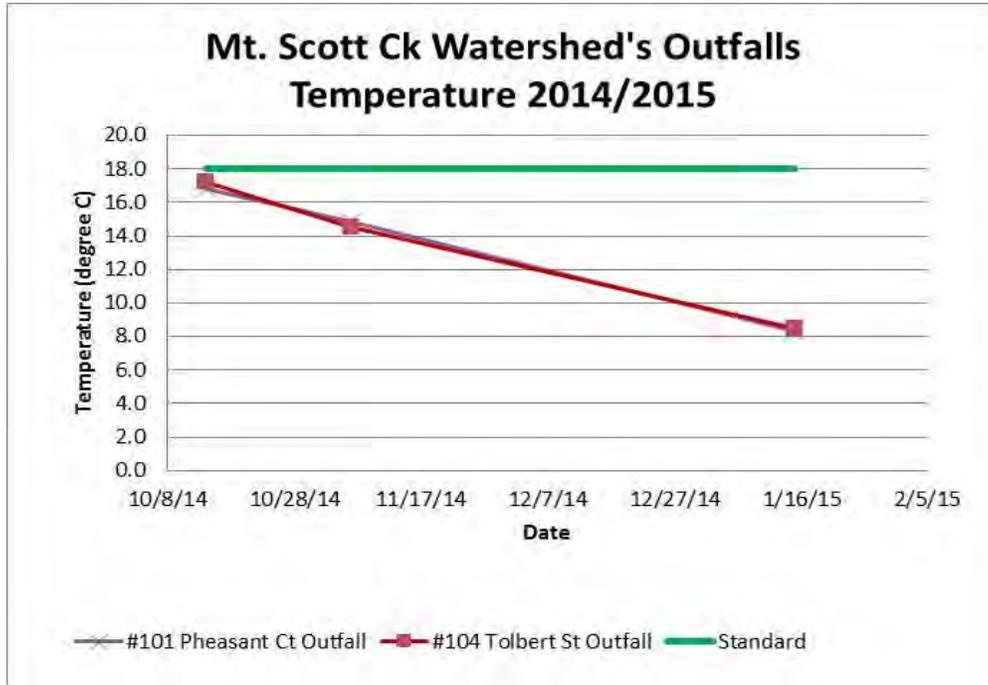
Outfall monitoring data collected during the 2014/2015 MS4 permit reporting year are provided in the following table. A total of three runoff sampling events were conducted at each location during storm event conditions. Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured at both locations.

	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E. coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>SE Pheasant Court Outfall (site #101): 3 storms</b>																		
Mean	13.3	7.9	0.36	319	8.03	6.0	1.41	0.27	162.7	136.0	60	11	3.8	0.10	0.08	0.05	12	6.3
Maximum	16.8	10.2	0.48	>2420	10.20	8.7	1.81	0.38	278.0	248.0	74	15	5.0	0.21	0.09	0.07	14	6.5
Minimum	8.3	4.8	0.22	99	6.10	3.6	1.21	0.10	87.0	63.0	50	6	2.1	<0.05	0.07	<0.04	10	6.0
Exceedance of guidance value or criteria (# exceed/total)	0/3	1/3	0/3	1/3	3/3	3/3	3/3	2/3	3/3	3/3	NA	NA	NA	0/3	0/3	NA	NA	2/3
<b>SE Tolbert Outfall (site#104): 3 storms</b>																		
Mean	13.4	7.7	0.18	845	15.10	4.1	9.63	0.32	109.3	38.0	187	115	10.5	0.18	0.36	0.08	26	6.3
Maximum	17.2	9.5	0.25	>2420	24.00	6.2	16.83	0.55	127.0	51.0	330	230	17.0	0.31	0.74	0.15	46	6.5
Minimum	8.5	6.5	0.14	238	9.80	3.0	2.52	0.17	75.0	21.0	100	40	4.8	0.10	0.15	<0.04	16	6.1
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	3/3	2/3	3/3	0/3	3/3	2/3	NA	NA	NA	0/3	3/3	NA	NA	3/3

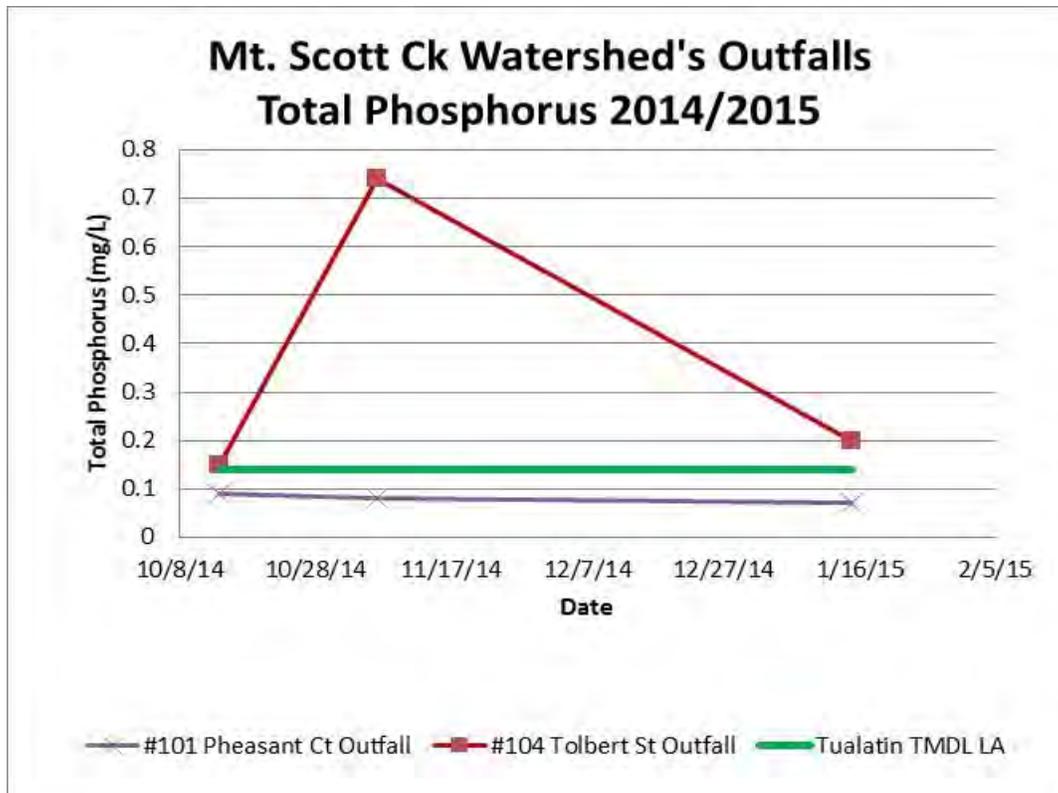
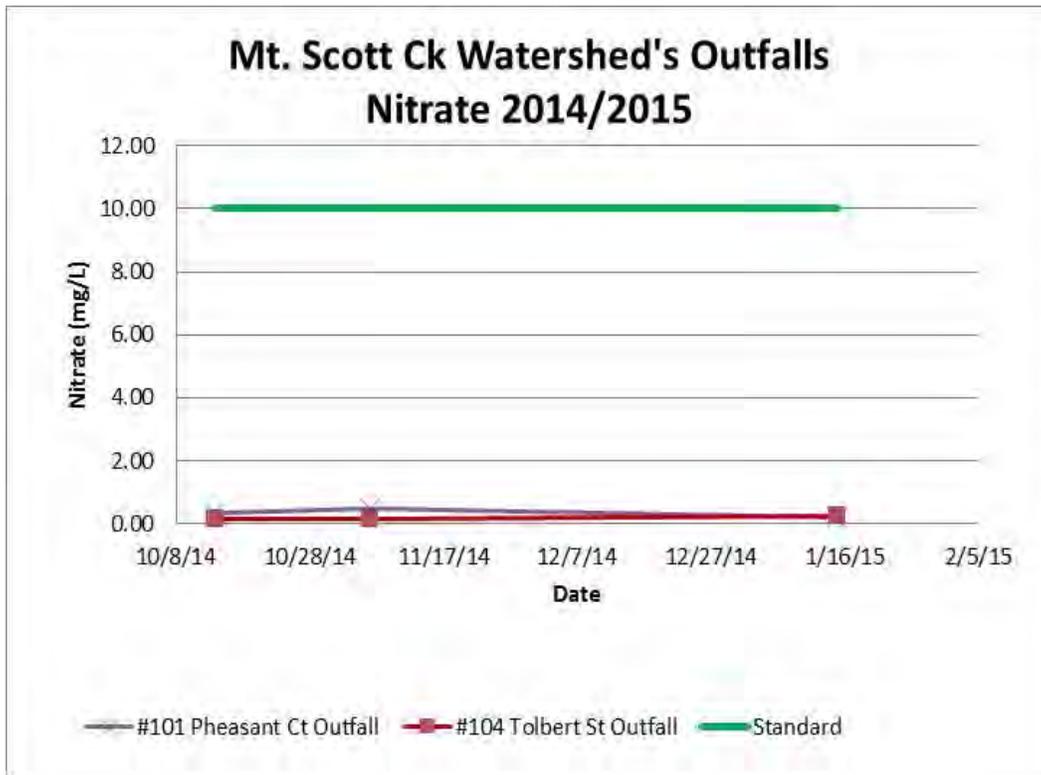
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria. Also note: The geometric mean value is shown for E. coli in the row titled "Mean"

### 2014/2015 Monitoring Results (provided in graphical format)

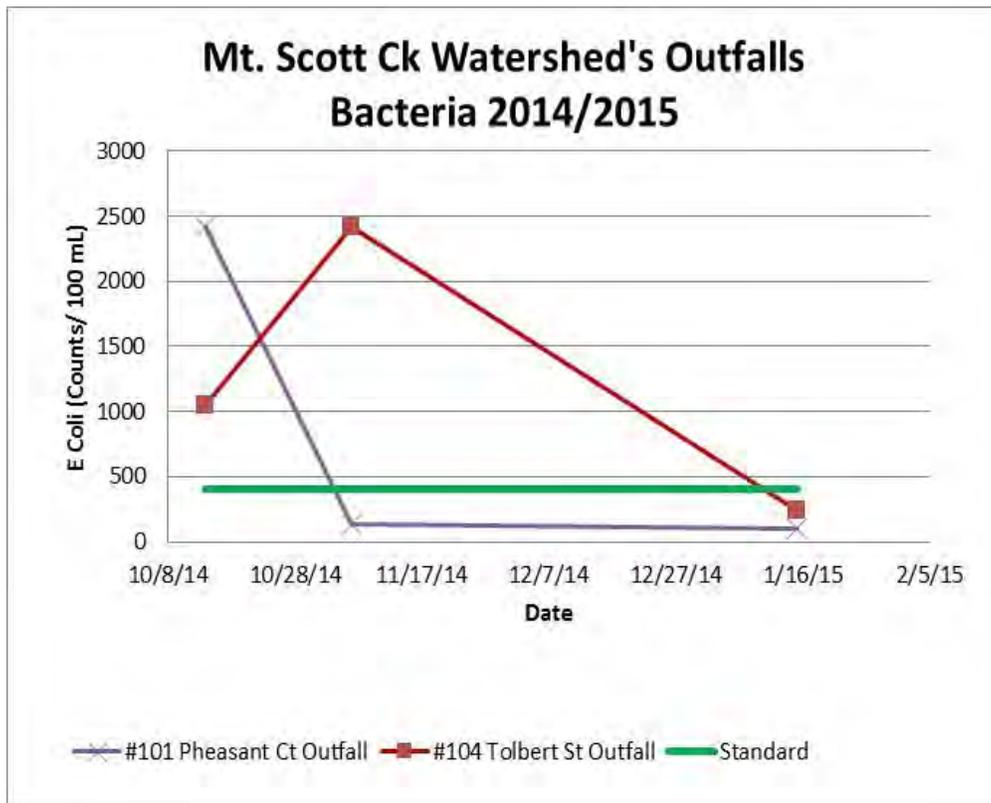
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than a laboratory method’s detection limit, the plotted value is the laboratory method’s detection limit.



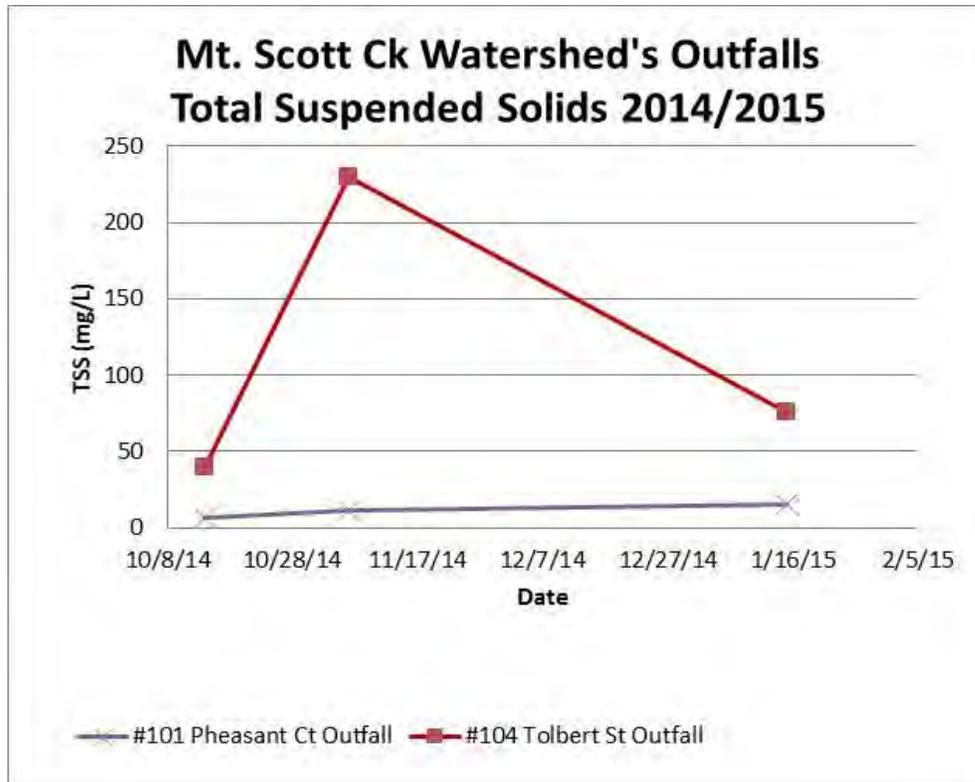
Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg-Mt. Scott watershed does not have a specific guidance value for instream total phosphorus



Note: The two >2420 bacteria values are charted as 2420 colonies/100ml



## 2014/2015 Monitoring Results Discussion

The chronic guidance values and regulated criteria for *total copper*, *total zinc*, and *total lead* were exceeded during all three storms at both sites. The regulated criterion for *dissolved lead* was exceeded at the Pheasant Ct. outfall during two storms. The guidance values for *dissolved copper*, and the regulated criterion for *dissolved zinc*, were exceeded during all 3 storms at the SE Pheasant Ct. outfall, but they were only exceeded during two of the three monitored storms at the SE Tolbert St. outfall. Both outfalls discharge directly to vegetated railroad-owned ditches. These ditches are expected to remove a portion of some pollutants, such as *total copper*, before the flows reach the nearest creek.

The pH levels during all three storms at the Tolbert St. outfall, and during two of the storms at the SE Pheasant Ct. outfall, were below 6.5, which is not protective of watershed health. The 406 colonies/100 ml standard for *E. coli* was exceeded during one storm at the SE Pheasant Ct. outfall and during two storms at the SE Tolbert St. outfall.

Average Total Suspended Solids (TSS) values were substantially higher at the SE Tolbert St. outfall (115 mg/L) compared to the average value at the SE Pheasant Ct. outfall (11 mg/L).

The highest measured concentration of two pollutants, *total copper* (24 ug/L) and *total lead* (16.83 ug/L), which were recorded during the entire monitoring year at any creek or outfall monitoring site in CCSD#1 were recorded at the SE Tolbert St. outfall during the November 6, 2014 storm. The total phosphorus concentration was above the 0.14 mg/L guidance value during all three storms at the SE Tolbert St. outfall; the second-highest total phosphorus value recorded during the monitoring year at any creek or outfall monitoring site in CCSD#1 (0.74 mg/L) was recorded at the SE Tolbert St. outfall on November 6, 2014.

A new stormwater swale that is expected to be constructed in 2016 or 2017, as a component of the SE Tolbert Street Overcrossing project, will probably reduce the levels of pollutants such as total phosphorus, *total* copper, TSS, and *total* lead which will be discharged by this storm sewer system in future years (see below in the section titled SE Tolbert Street Overcrossing Project for more information about this project).

The October 14, 2014 monitoring event at these two outfalls did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); roughly 0.23 of an inch of rain had fallen in the three hours before the first samples were collected from this storm at the first outfall at 1am. In this instance, it was not possible to have an Antecedent Dry Period.

### **SE Tolbert Street Overcrossing Construction Project**

The SE Tolbert Street outfall's monitoring location (the 1st catch basin upgradient from the outfall to a railroad-owned ditch) is expected to be demolished during the July 1, 2015 to June 30, 2016 MS4 permit monitoring year. For this reason, a different MS4 outfall will be monitored in CCSD#1 during the 2015-2016 monitoring year. A major construction project known as the Tolbert Street Overcrossing is the reason for this storm sewer system demolition. The new overpass will connect SE 82nd Drive with the SE Lawnfield/Mather Road industrial area by bridging the Union Pacific railroad tracks.

## SE OREGON TRAIL DRIVE OUTFALL FACT SHEET

### Drainage Characteristics (Located in the Sieben Creek Watershed)

Dominant Land Use = Commercial

### NPDES Monitoring Locations:

The SE Oregon Trail Drive outfall discharges into an un-named tributary of Rose Creek. Rose Creek is Sieben Creek's largest tributary. Sieben Creek is in the Clackamas River watershed. The outfall is located between the Happy Valley Public Library at 13793 SE Sieben Park Way and the Sunnyside Village Apartment complex at 14480 SE Sunnyside Road.

### 2014/2015 Results (provided in tabular format)

Outfall monitoring data collected during the 2014/2015 MS4 permit reporting year are provided in the following table. A total of three monitoring events were conducted during storm event conditions. Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

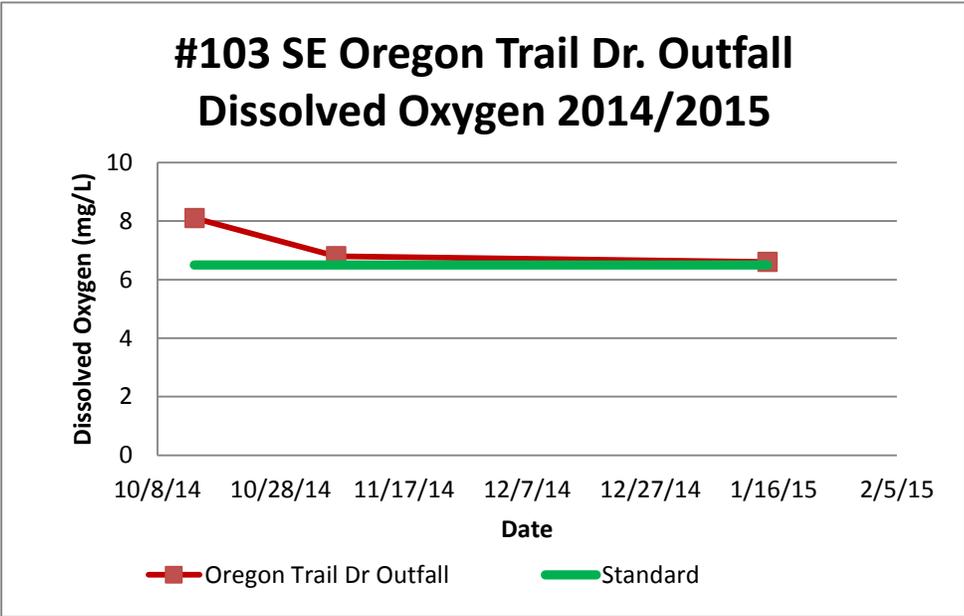
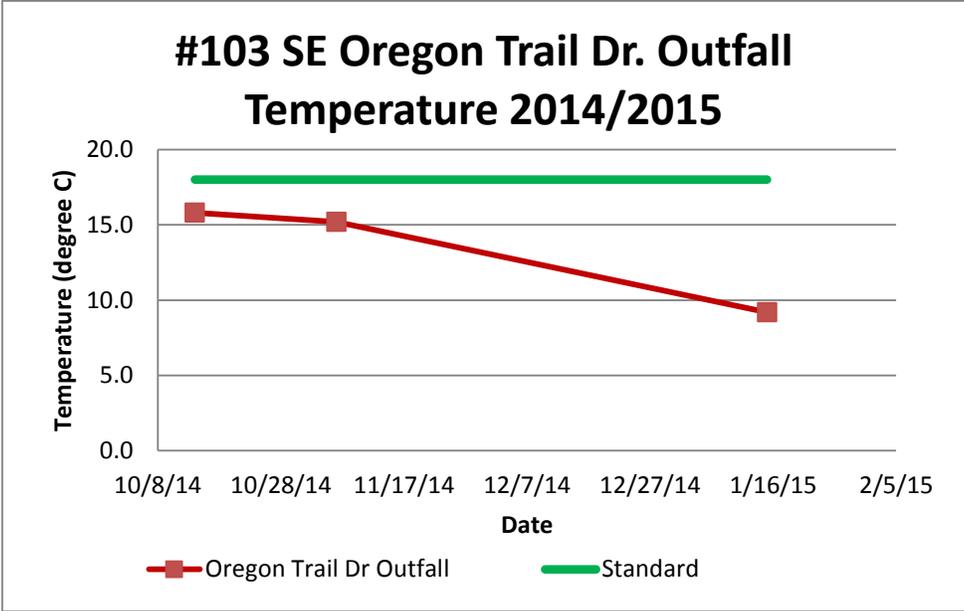
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>SE Oregon Trail Drive Outfall (site #103): 3 storms</b>																		
Mean	13.4	7.2	0.11	415	6.23	2.6	1.66	0.11	127.0	69.7	133	53	23.3	0.29	0.42	0.08	25	6.1
Maximum	15.8	8.1	0.18	>2420	6.60	3.8	2.02	0.19	134.0	109.0	190	100	26.0	0.44	0.76	0.16	42	6.3
Minimum	9.2	6.6	<0.09	17	5.60	1.6	1.10	0.02	114.0	44.0	98	20	19.0	0.15	0.18	<0.04	13	6.0
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	3/3	2/3	3/3	0/3	3/3	2/3	NA	NA	NA	0/3	3/3	NA	NA	3/3

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

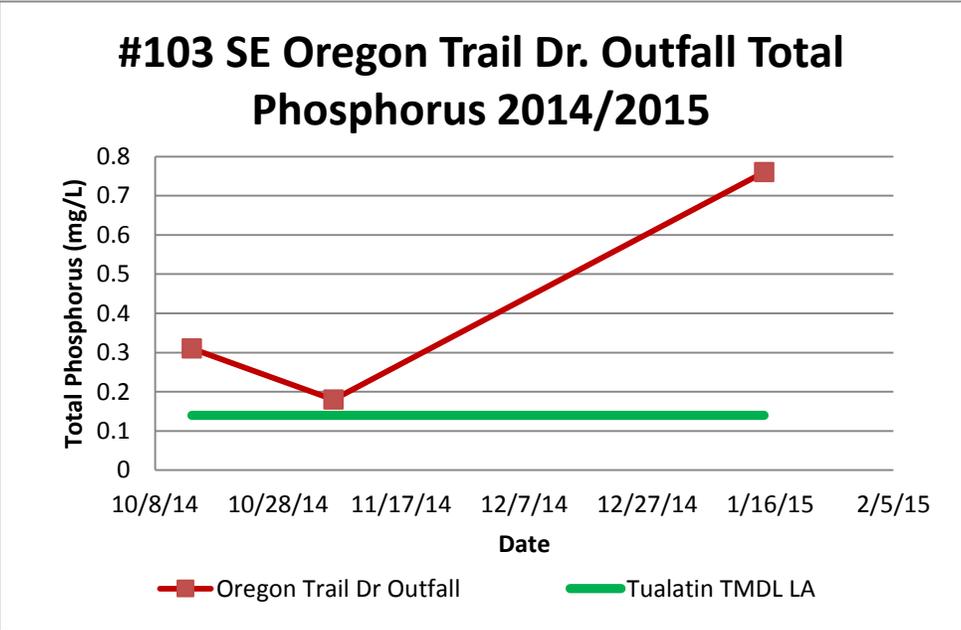
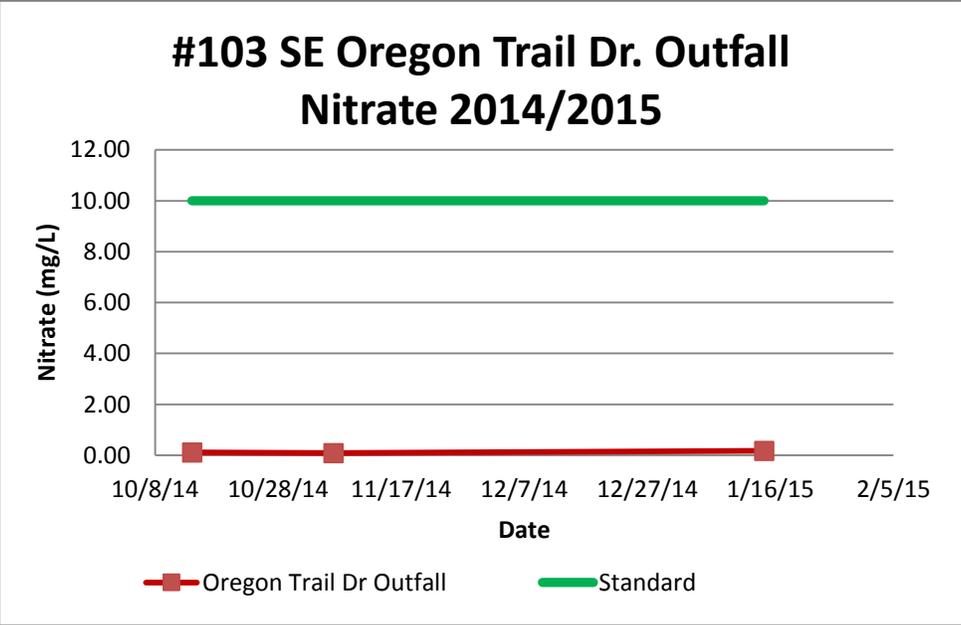
Also note: The geometric mean value is shown for E. coli in the row titled "Mean"

### 2014/2015 Monitoring Results (provided in graphical format)

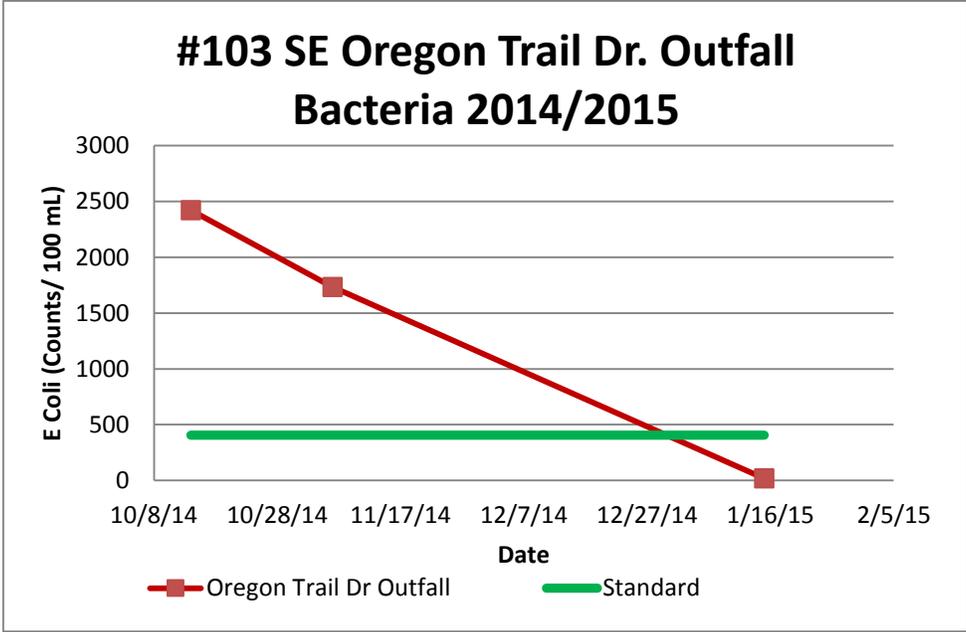
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than a laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



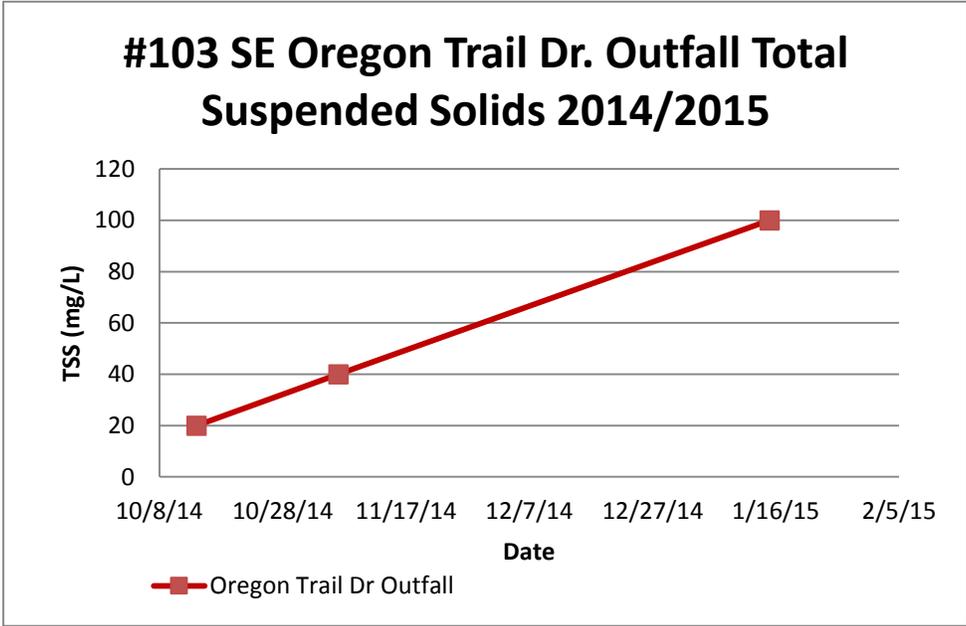
Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*Note: The comparison is made here to the Waste Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus*



*Note: The >2420 bacteria value is charted as 2420 colonies/100ml*



**2014/2015 Monitoring Results Discussion**

The total phosphorus concentration was above the 0.14 mg/L guidance value during all three storms at the SE Oregon Trail Drive outfall; the highest total phosphorus value recorded during the entire monitoring year at any creek or outfall monitoring site in CCSD#1 (0.76 mg/L) was recorded at this outfall on January 15, 2015. The total suspended solids concentration during the January 15, 2015

storm was 100 mg/L and the biochemical oxygen demand (BOD) level during this storm was 25 mg/L; both of these concentrations are at levels which are somewhat elevated.

The pH level during all three storms was below 6.5, which is not protective of watershed health. The 406 colonies/100 ml standard for *E. coli* was exceeded during two storms. The chronic guidance values and regulated chronic criteria for *total* copper, *total* lead, and *total* zinc were exceeded during all 3 storms. The regulated chronic criteria for *dissolved* zinc and the guidance values for *dissolved* copper were exceeded during 2 storms.

The October 14, 2014 monitoring event at this outfall did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); over 0.23 of an inch of rain had fallen in the three or four hours before the first samples were collected from this storm at this outfall at 1:41am. In this instance, it was not possible to have an Antecedent Dry Period.

SE WEBSTER ROAD OUTFALL FACT SHEET

**Drainage Characteristics (Located in the Kellogg Creek Watershed)**

Dominant Land Use = Single-family urban residential

**NPDES Monitoring Locations:**

The SE Webster Road outfall discharges into Kellogg Creek at the place where SE Webster Road crosses the creek.

**Results (provided in tabular format)**

Outfall monitoring data collected during the 2014/2015 MS4 permit reporting year are provided in the following table. A total of three monitoring events were conducted during storm event conditions. Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

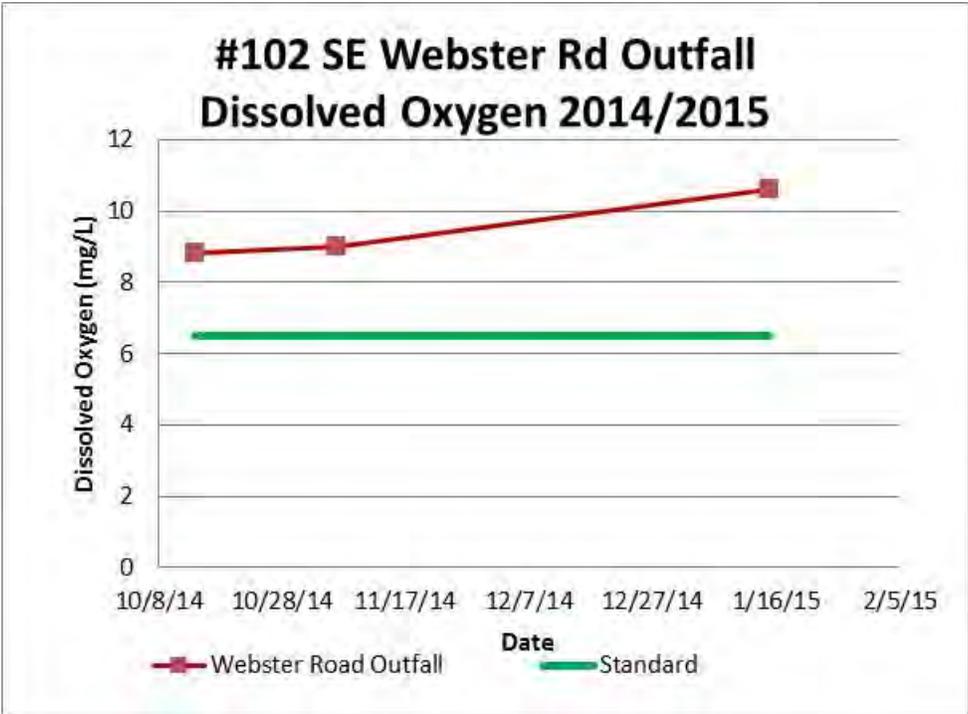
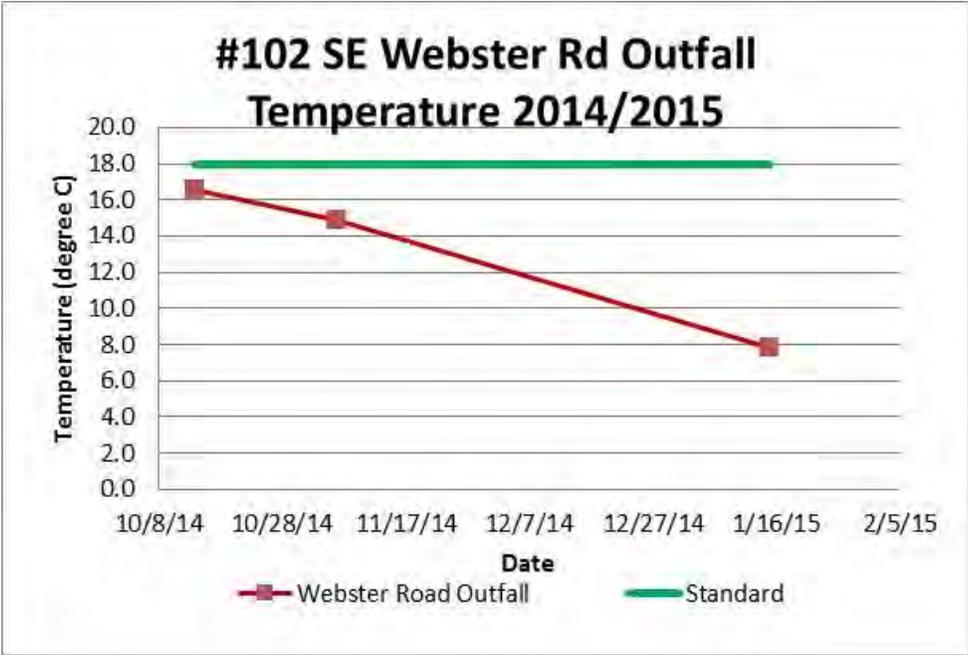
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E.coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>SE Webster Road Outfall (site #102): 3 storms</b>																		
Mean	13.1	9.5	0.16	1152	12.27	7.2	1.71	0.23	154.0	103.3	87	25	5.6	0.06	0.15	0.05	15	6.1
Maximum	16.6	10.6	0.22	>2420	18.10	14.0	2.90	0.37	180.0	130.0	100	53	6.9	0.14	0.16	<0.12	21	6.5
Minimum	7.8	8.8	<0.09	365	8.40	2.7	0.82	0.06	126.0	50.0	79	6	3.6	<0.05	0.15	<0.04	11	5.8
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	3/3	3/3	3/3	1/3	3/3	3/3	NA	NA	NA	0/3	3/3	NA	NA	2/3

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

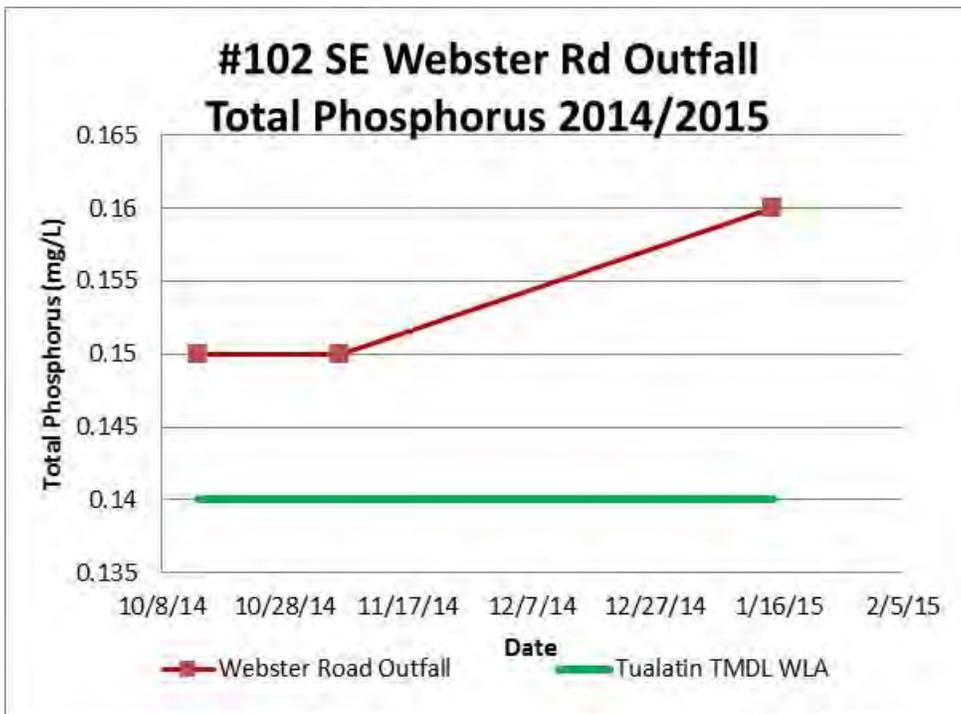
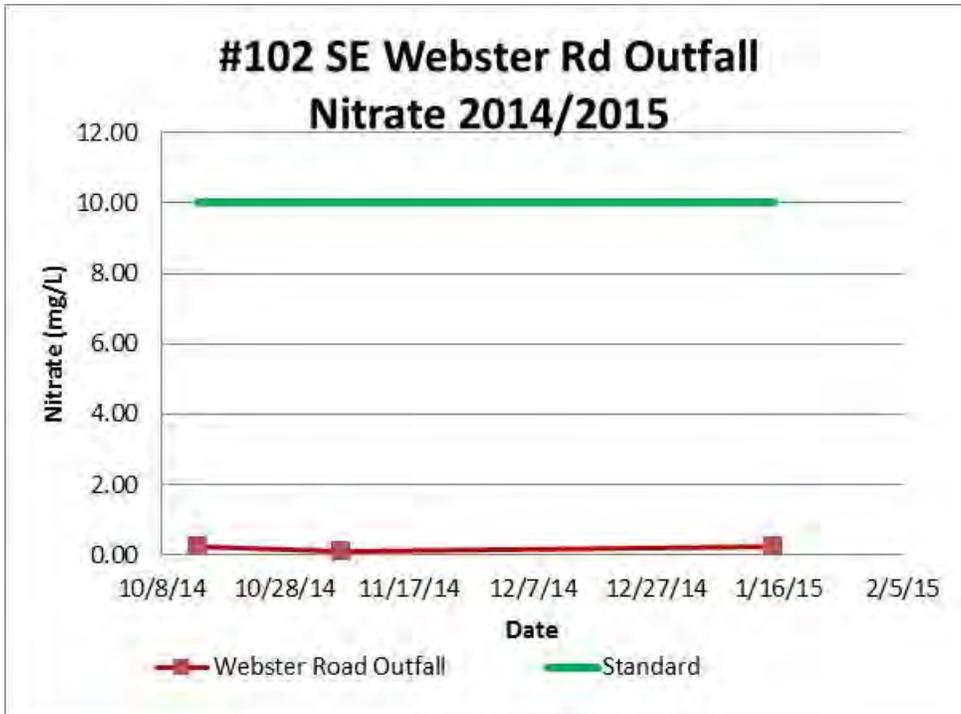
Also note: The geometric mean value is shown for E. coli in the row titled "Mean"

**2014/2015 Monitoring Results (provided in graphical format)**

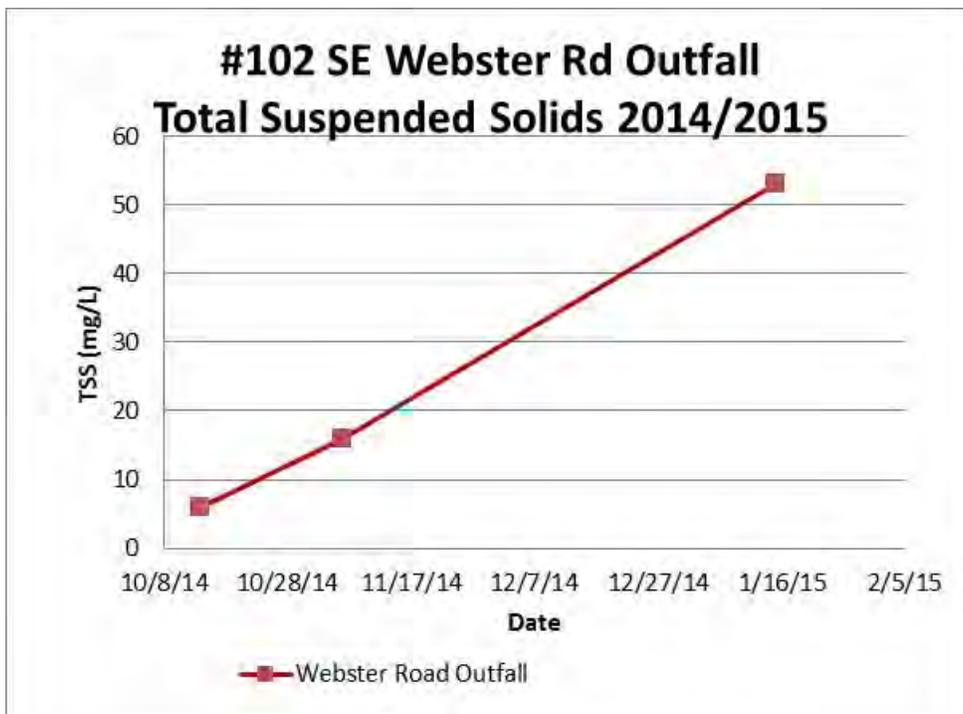
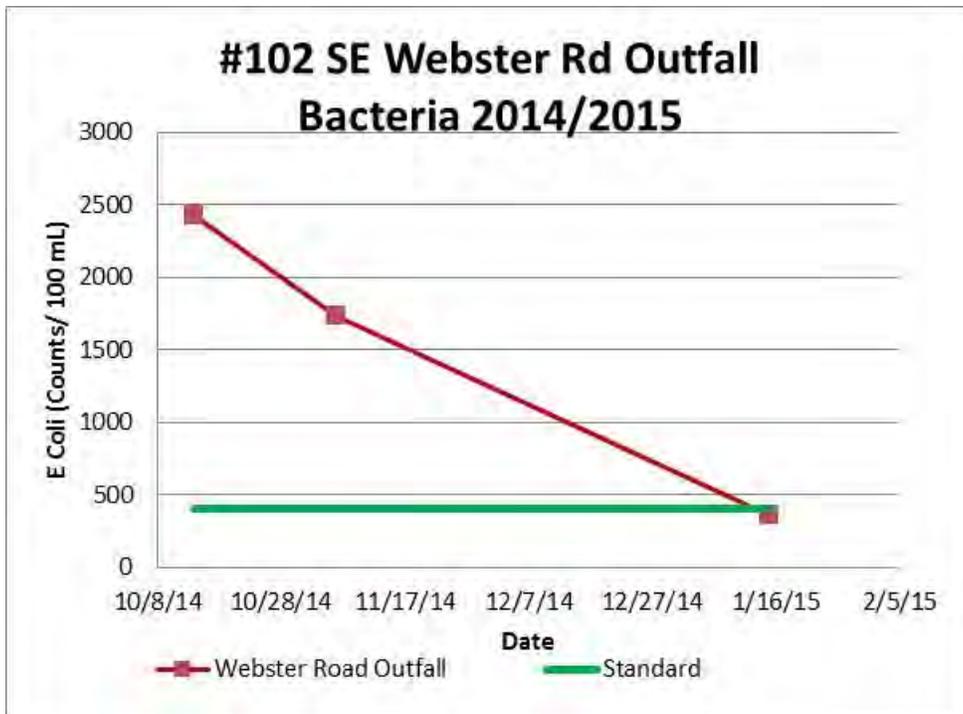
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than a laboratory method’s detection limit, the plotted value is the laboratory method’s detection limit.



*Note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.*



*Note: The comparison is made here to the Waste Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg Creek watershed does not have a specific guidance value for instream total phosphorus*



## 2014/2015 Monitoring Results Discussion

The total phosphorus concentration was slightly above the 0.14 mg/L guidance value during all three storms at the SE Webster Road outfall. The pH level was below 6.5, which is not protective of watershed health, during two of the storms. The 406 colonies/100 ml standard for *E. coli* was exceeded by a wide margin during two storms and it was nearly exceeded during the third storm.

The chronic guidance values and regulated chronic criteria for *total* copper, *dissolved* copper, *total* lead, *dissolved* zinc, and *total* zinc were exceeded during all 3 storms. In addition, the regulated chronic criteria for *dissolved* lead was exceeded during one storm.

Note that exceptionally high levels of *total* zinc and *dissolved* zinc had been recorded at the SE Webster Road outfall during the 2013-2014 monitoring year. The *total* zinc concentration was 1,358 ug/L (equivalent to 1.358 mg/L) and the *dissolved* zinc concentration was 1,207 ug/L (equivalent to 1.207 mg/L) during the storm on January 28, 2014. These levels are ~11.6 times higher than the level which is potentially harmful to aquatic life in Kellogg Creek. This had been the first monitored storm of the 2013-2014 monitoring year at this outfall. Levels of *total* zinc and *dissolved* zinc were much lower during the storms which were monitored on February 27, 2014 and May 8, 2014. In an effort to trace the zinc to a smaller geographic area, several additional places within the storm sewer system were also sampled during the May 8, 2014 storm. The zinc levels at these other places and at the outfall were much lower during the storm on May 8, 2014; the zinc could not be traced to a subsection of the outfall's watershed during this storm. This trend of lower *total* zinc and *dissolved* zinc concentrations continued for the three monitored storms of the 2014-2015 monitoring year. During 2014-2015's three storms, *total* zinc concentrations ranged from 126 ug/L to 180 ug/L, and *dissolved* zinc concentrations ranged from 50 ug/L to 130 ug/L. Although these concentrations are much lower than those which had been recorded on January 28, 2014, the chronic guidance values and regulated chronic criteria for *dissolved* zinc and *total* zinc were exceeded during all three of the monitored storms in 2014-2015, as had been previously noted in this Fact Sheet.

The October 14, 2014 monitoring event at this outfall did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); over 0.23 of an inch of rain had fallen in the three or four hours before the first samples were collected from this storm at this outfall at 1:25am. In this instance, it was not possible to have an Antecedent Dry Period.

## PECAN CREEK FACT SHEET

### Drainage Characteristics

- Tributary to the Tualatin River
- Dominant Land Uses = Rural residential, agriculture, and open space. A small amount of urban area is also present, but 100% of these urbanized lands are located in the City of Lake Oswego, however.

### Monitoring Location

This instream monitoring location is at SW Mossy Brae Road in SWMACC. This location is not within the Portland metro area's urban growth boundary, so it is not within the geographic area that is regulated by SWMACC's MS4 permit.

### 2014/2015 Monitoring Results (provided in tabular format)

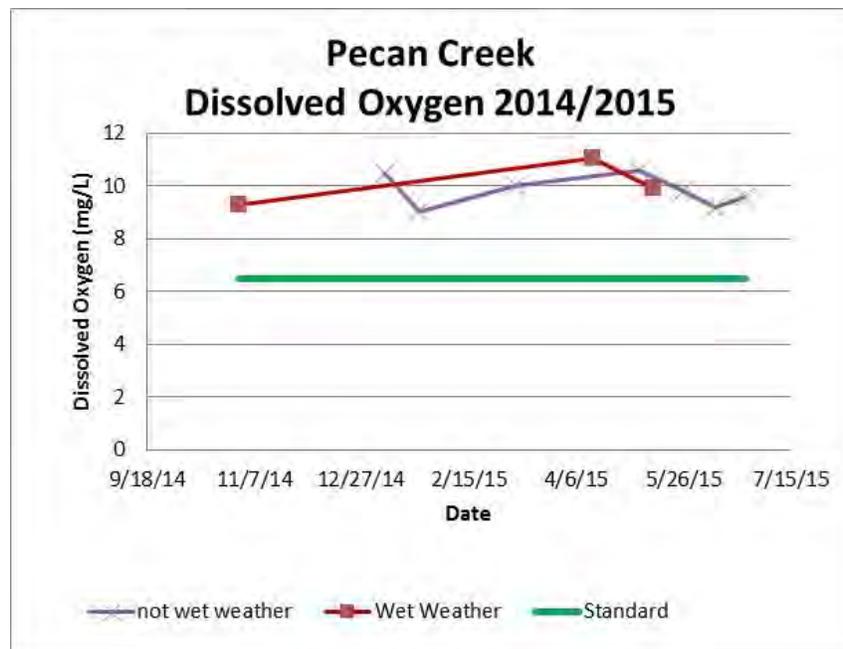
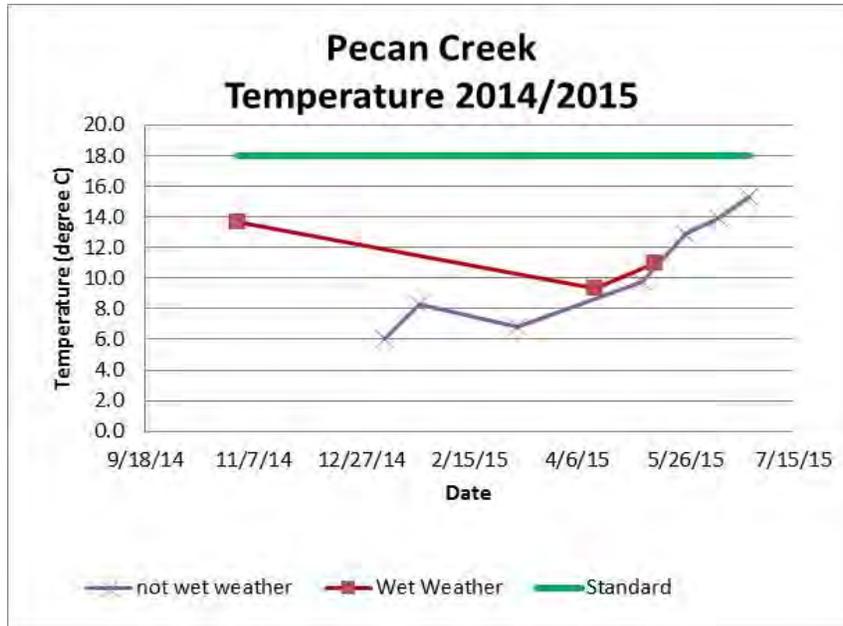
Instream monitoring data collected during the 2014/2015 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other seven monitoring events were not. Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, total volatile solids, and conductivity were also measured.

	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E. coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	11.3	10.1	0.90	607	3.17	2.0	0.7	0.11	10	4.3	124	17	1.0	0.03	0.07	0.05	33	6.8
Maximum	13.7	11.1	1.01	1410	4.70	2.7	1.3	0.18	14	6.0	160	160	1.2	<0.05	0.10	0.06	36	7.4
Minimum	9.3	9.3	0.81	172	1.50	1.0	0.4	0.07	6	2.0	101	101	0.8	<0.05	<0.04	0.04	28	6.3
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	1/3	0/3	1/3	0/3	0/3	0/3	NA	NA	NA	0/3	0/3	NA	NA	1/3
<b>Other Weather Conditions (7 monitoring events)</b>																		
Mean	10.4	9.8	1.49	624	1.00	0.5	0.2	0.03	6	1.6	121	6	0.4	0.03	0.03	0.05	44	7.1
Maximum	15.3	10.6	2.60	1990	1.30	0.6	0.4	0.05	13	4.0	163	12	0.7	<0.05	0.05	0.07	73	7.5
Minimum	6.0	9.0	1.10	20	0.80	0.5	0.1	0.02	4	<1.0	87	3	0.1	<0.05	<0.04	0.04	32	6.1
Exceedance of guidance value or criteria (# exceed/total)	0/7	0/7	0/7	4/7	0/7	0/7	0/7	0/7	0/7	0/7	NA	NA	NA	0/7	0/7	NA	NA	1/7

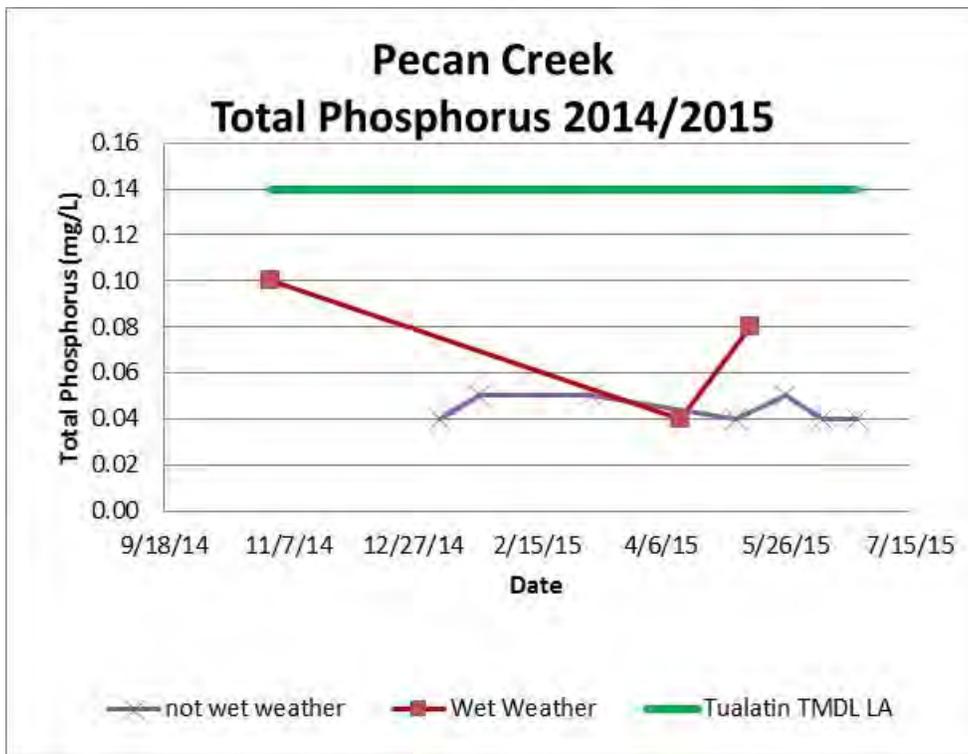
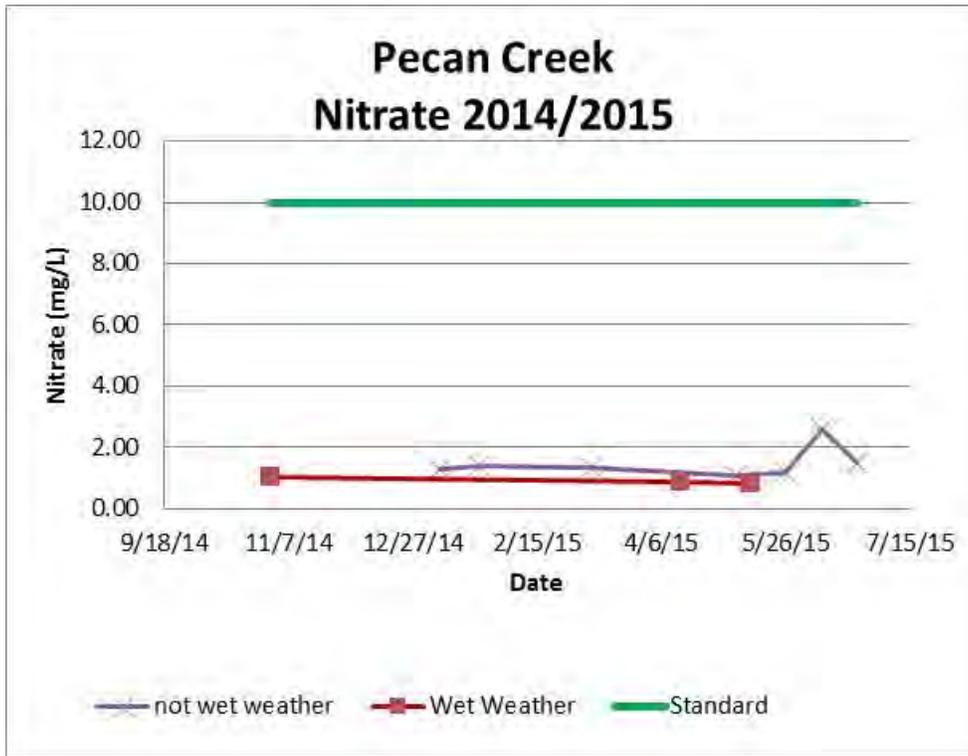
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria. Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

## 2014/2015 Monitoring Results (provided in graphical format)

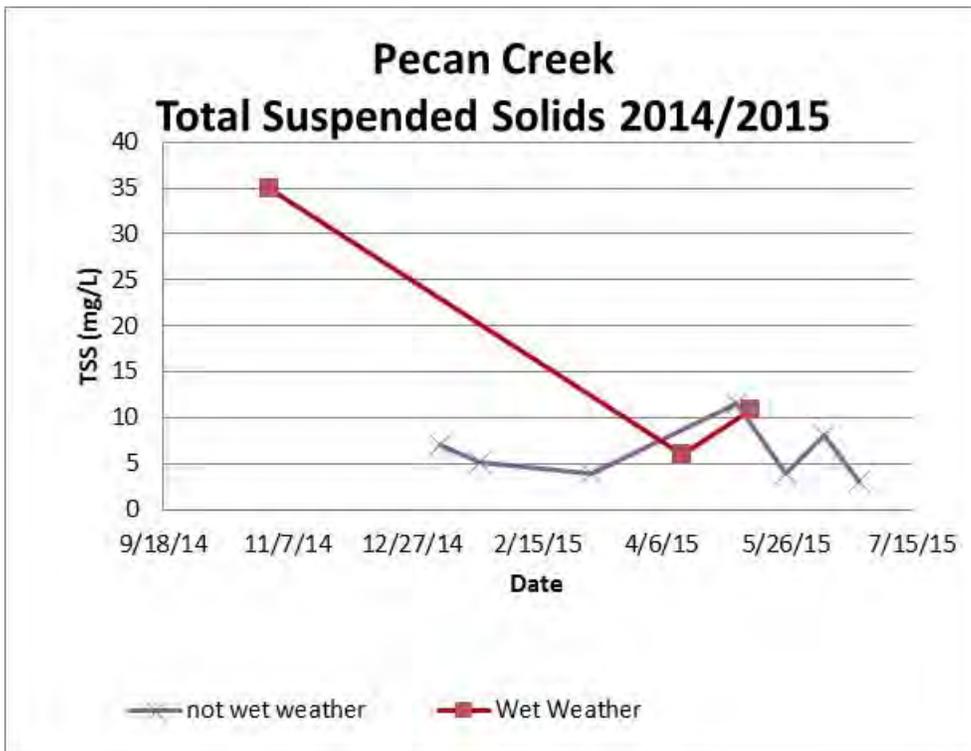
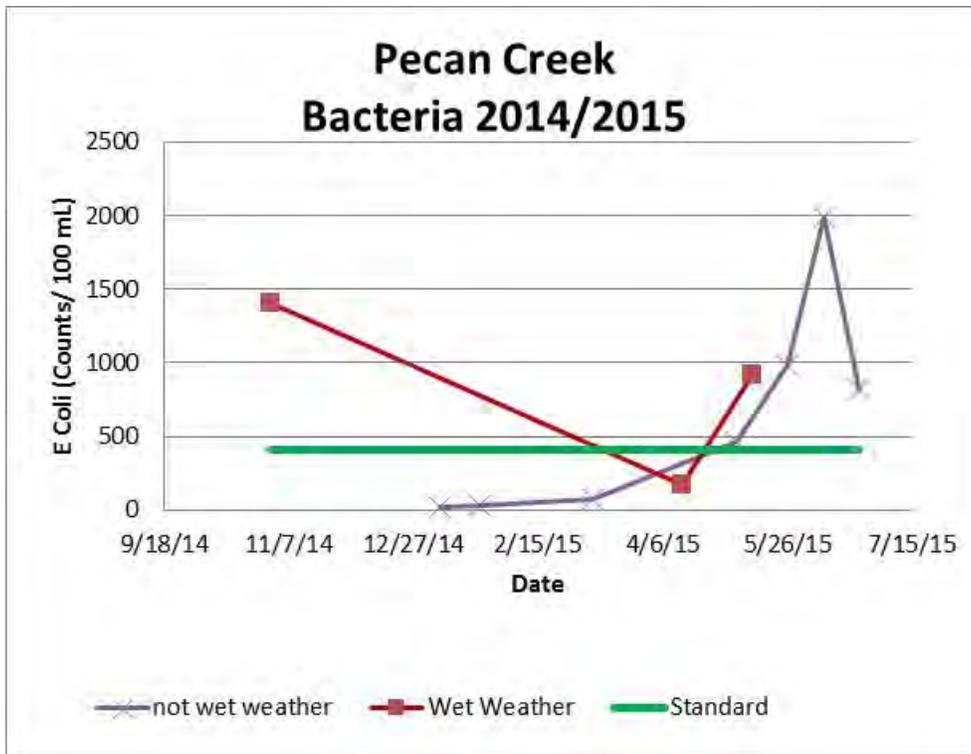
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



Note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*TMDL LA = Total Maximum Daily Load's Load Allocation*



## 2014/2015 Monitoring Results Discussion

The 406 colonies/100 ml standard for *E. coli* was exceeded during six of the ten monitoring events in Pecan Creek (exceedances occurred during two of the three monitored storms and during four of the seven Routinely monitored events). Measured pH values were below 6.5 units, which is not protective of watershed health, during two monitoring events. During the storm on October 31, 2014, the water quality standard for *total* copper and the guidance value for *total* lead were both exceeded.

Dissolved oxygen levels were no less than 9.0 mg/L during the ten monitoring events. The total phosphorus concentration was below 0.14 mg/L, the TMDL Load Allocation for this portion of the Tualatin River watershed, during all ten monitoring events. Ammonia was not detected during any of the 10 monitoring events. The highest nitrate level which was recorded during the year was only 2.6 mg/L. The low levels of total phosphorus and ammonia, the modest levels of nitrate, and the higher levels of dissolved oxygen, are all indicators of good water quality.

## RIVERGROVE BOAT RAMP STORM SEWER SYSTEM OUTFALL FACT SHEET

### Drainage Characteristics

- Dominant Land Use = Single-family urban residential

### NPDES Monitoring Location

This storm sewer system outfall to the Tualatin River is located between the houses at 5638 SW Dogwood Dr. and 5600 SW Dogwood Dr. in the City of Rivergrove (also located in the SWMACC). This site was monitored for the first time by WES in the July 1, 2013 to June 30, 2014 monitoring year.

### 2014/2015 Monitoring Results (provided in tabular format)

Outfall monitoring data collected during the 2014/2015 NPDES MS4 reporting year are provided in the following table. A total of three runoff sampling events were conducted during wet weather conditions.

Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, total volatile solids, and conductivity were also measured.

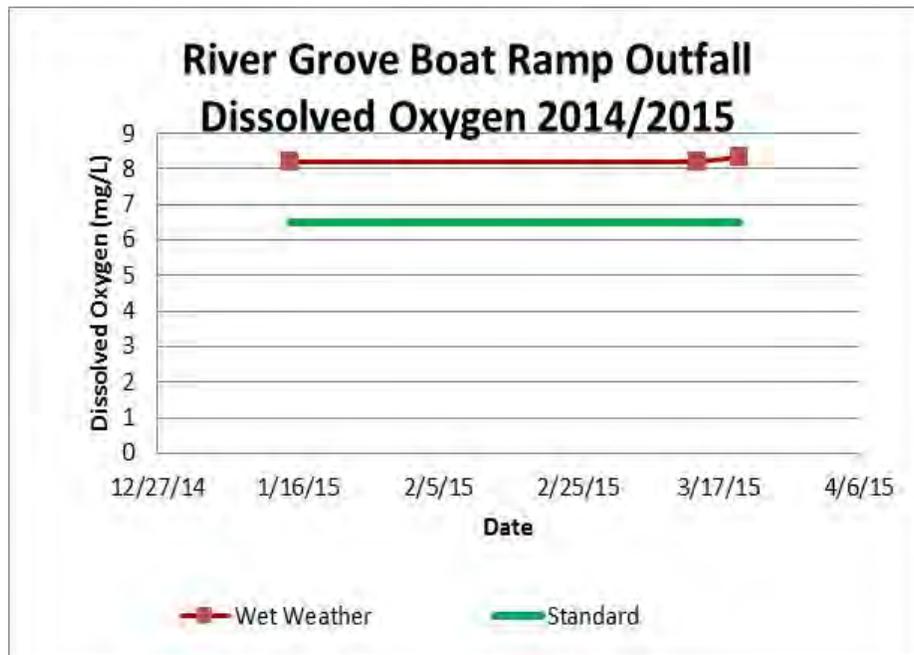
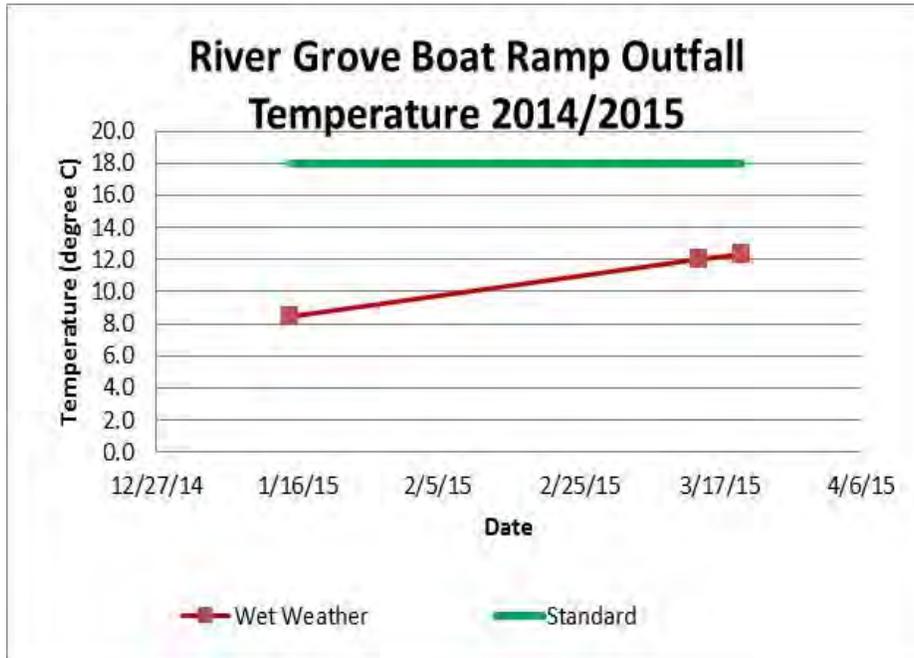
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/ 100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
<b>Monitored Storms (3 events)</b>																		
Mean	10.9	8.3	2.45	145	3.83	2.1	0.8	0.03	56	39.0	170	14	1.3	0.03	0.12	0.06	66	6.3
Maximum	12.3	8.4	4.10	>2420	5.50	2.6	1.5	0.04	130	101.0	170	170	2.5	<0.05	0.24	0.08	84	6.4
Minimum	8.5	8.2	1.50	7	2.20	1.7	0.2	0.02	9	6.0	120	120	0.3	<0.05	0.07	0.05	48	6.1
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	0/3	0/3	0/3	0/3	1/3	0/3	NA	NA	NA	0/3	1/3	NA	NA	3/3

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

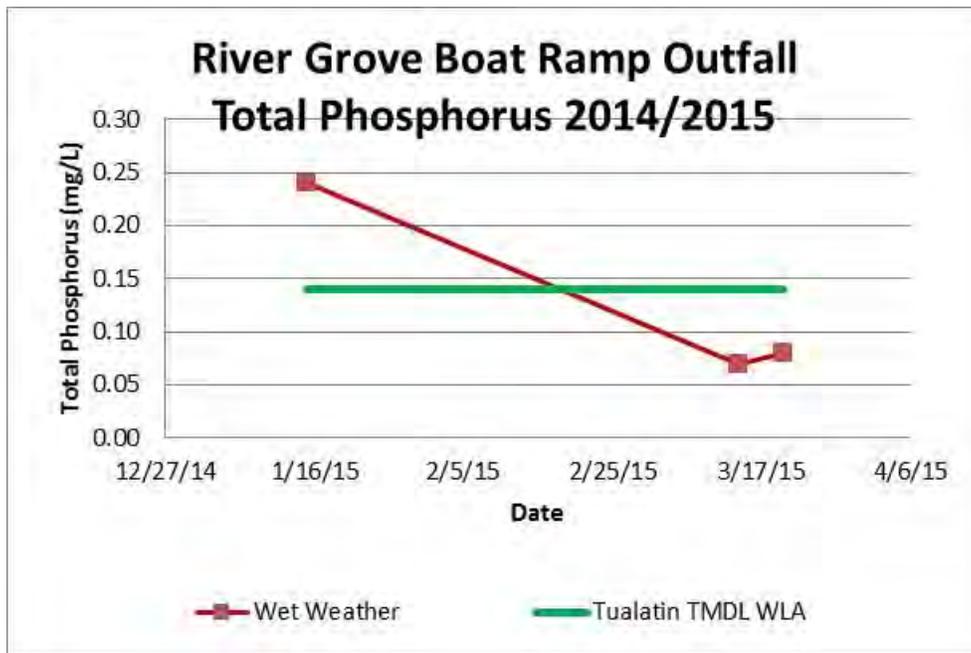
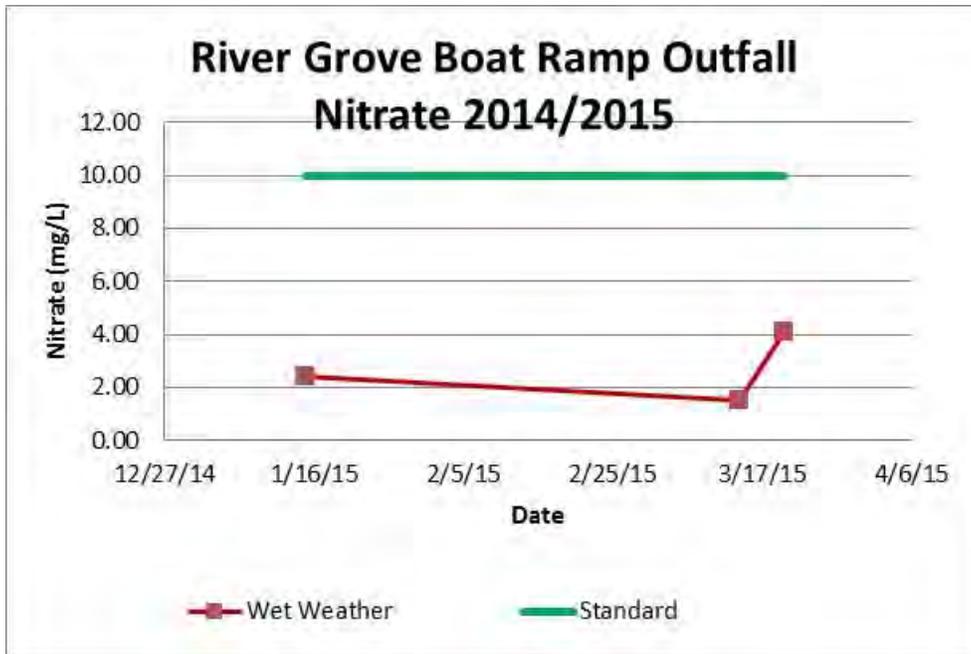
Also note: The geometric mean value is shown for E. coli in the row titled "Mean".

## 2014/2015 Monitoring Results (provided in graphical format)

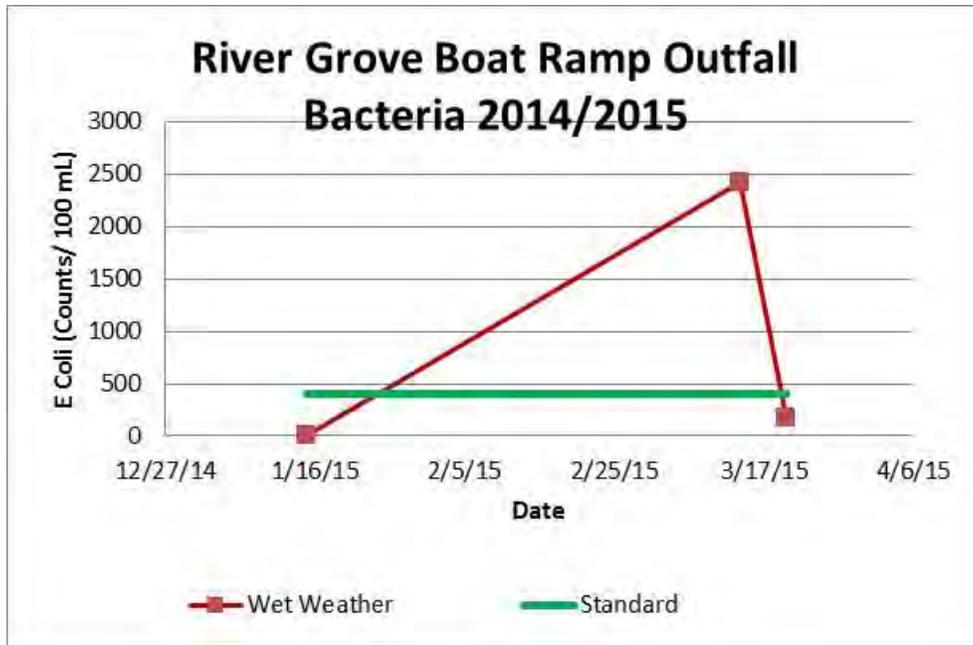
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



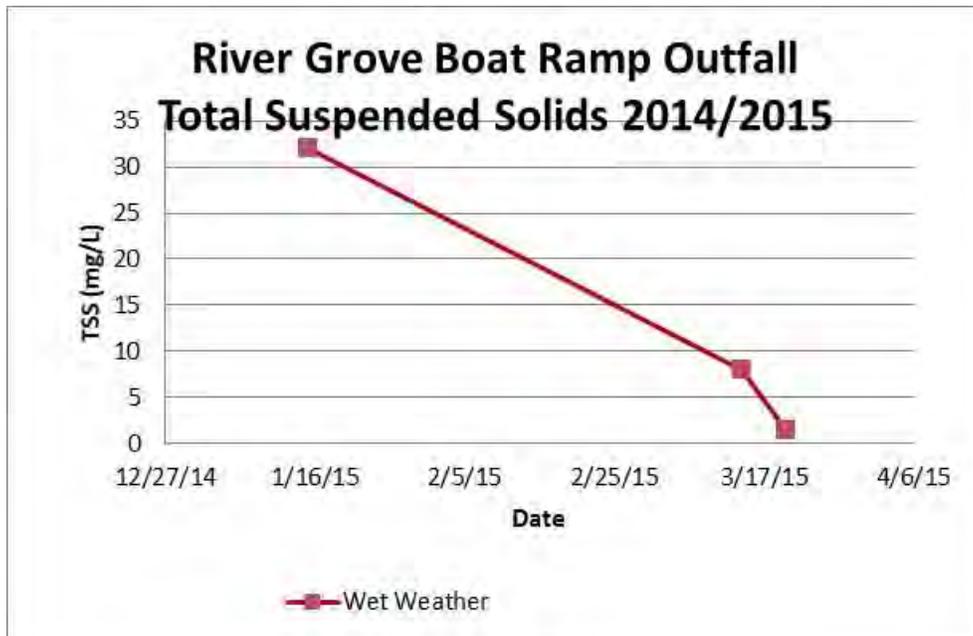
Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.



*TMDL WLA = Total Maximum Daily Load's Waste Load Allocation*



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



## 2014/2015 Monitoring Results Discussion

The 406 colonies/100 ml water quality standard for E. coli bacteria was exceeded during one storm. The total phosphorus concentration was above 0.14 mg/L, the TMDL Waste Load Allocation for the Lower Tualatin River, during one of the monitoring events. Measured pH values were below 6.5 units, which is not protective of watershed health, during all three monitoring events.

The guidance value for *total* zinc was exceeded during one storm. When stormwater enters the River from this outfall, it mixes in the waters of the River, so any toxicity which might be present quickly drops, because the Tualatin River is large and typically has much higher hardness values than stormwater discharges from this outfall; higher hardness values yield lower predicted toxicity for any given concentration of zinc. Concentrations of *total & dissolved* copper, and *total & dissolved* lead, and *dissolved* zinc were at levels which are protective of watershed health during the three storms.

Dissolved oxygen levels were no less than 8.2 mg/L during the monitored storms. Ammonia was not detected during any of the monitoring events. The low levels of ammonia and the elevated levels of dissolved oxygen are indicators of good water quality.

The March 14, 2015 monitoring event at this outfall did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); roughly 0.38 inch of rain had fallen in the six hours before the first samples were collected from this storm at 5:40am. In this instance, it was not possible to have an Antecedent Dry Period.

## APPENDIX C PARTNER REPORTS

### SUMMARY OF RIPARIAN RESTORATION PROJECTS FOR MS4 REPORT

**River Health Stewardship Program grants funded a total of:**

# projects or sites	94
# students or volunteers participated	7,628
# volunteer stewardship or student learning hours	12,420
length of stream worked on, lf	27,557
acres of project area	44.17
acres invasives removed	17.57
# trees planted	1,701
# shrubs planted	7,139

(6 Ed & outreach focus 88 Restoration focus)

**WES projects, separate from RHSP:**

# projects or sites	4
# students or volunteers participated	0
# volunteer stewardship or student learning hours	0
length of stream worked on, lf	2,400
acres of project area	9.28
acres invasives removed	9
# trees planted	7,068
# shrubs planted	19,523

**Totals, WES + RHSP:**

# projects or sites	98
# students or volunteers participated	7628
# volunteer stewardship or student learning hours	12,420
length of stream worked on, lf	29,957
acres of project area	53.45
acres invasives removed	26.57
# trees planted	8,769
# shrubs planted	26,662

## NARRATIVE SUMMARY OF PROJECTS

#	Project Name	Organization	Project description
1	Rock Creek Partnership Property Maintenance ( <a href="#">MS4 requirement A6.c</a> )	Clackamas River Basin Council	Maintenance on 7 sites totalling 6.85 acres and nearly one mile of streamside. Funding for activities necessary to establish trees and shrubs in a "free to grow" state (plants large and healthy enough to out-compete invasive weeds), including weed control, mulching and infill planting by volunteers. Specific methods include mechanical (cutting and trimming) and chemical (herbicide) treatments performed by licensed professional restoration contractors, supervised by CRBC staff. Staff will engage the community in this project by hosting volunteer work events. Funds will also be used to continue to monitor project sites. Over \$6,100 match provided.
2	MacMillan new restoration site ( <a href="#">MS4 requirement A6.c</a> )	Clackamas River Basin Council	The .42-acre McMillan project includes approximately 415 linear feet of riparian habitat along Rock Creek. The riparian area is dominated by reed canary grass, Himalayan blackberry, and Japanese knotweed. The project is to manage invasive species and plant native vegetation. This project addresses high priority invasives high up in the watershed, where treatment is most effective, and builds upon an existing project located directly across Rock Creek. Over \$4,600 match provided.
3	Rock Creek Partnership Watershed Wide Event & Landowner Outreach ( <a href="#">MS4 requirement A6.c</a> )	CRBC, FOT, SOLVE	Partial funding toward Rock Creek Partnership Watershed Wide Planting event, held each year based at Pendarvis Farm. Funds will be used for event planning, volunteer coordination, planting at three sites on the day of the event and outreach to recruit new landowners. Over \$9,200 match provided.
4	Clackamas Co. Watershed Stewardship (maintenance) ( <a href="#">MS4 requirement A6.c</a> )	Friends of Trees	Maintenance of existing project sites ensuring establishment of plants installed during the past 5 years, infill plantings within existing project sites to attain desired species diversity and plant densities, and limited maintenance support of key FOT historic sites. Includes one infill planting event; one tree care event with mulching; using sub-contractors to complete weed control: mowing and spot spraying at 6 sites; and very limited maintenance visits to 4 historic planting sites. Covers 21.5 ac, 4,500 lf streamside and over \$5,800 match.

5	Rock Creek Headwaters Native Revegetation (MS4 requirement A6.c)	Friends of Trees	Site preparation and initial planting of native trees and shrubs along Rock Creek and three upper tributaries on four private properties. Builds on work previously done on an adjacent site; locations ranked 'High Priority' in the WAP, and addresses the upper Rock Creek watershed, where restoration is most effective. Includes sub-contractors for initial invasive species removal, two volunteer planting events installing approximately 1,600 native plants, and complete spring and early summer maintenance to help establish the newly planted natives. Covers 3 ac, 1,700 lf streamside and provides over \$12,000 match.
6	Rose Creek-Oregon Trail Elementary (SWMP BMP 10; MS4 requirement A4.d.ii)	Friends of Trees	Conduct classroom lesson on native vs invasive plants to the 5th grade classes at Oregon Trail Elementary (OTE); infill planting along Rose Creek with 5th graders, tentatively in conjunction with Sabin-Schellenberg High School forestry class; and lead students in monitoring previously planted areas within the Rose Creek natural area and asses their success. Covers 2.2 ac, 720 lf streamside and provides over \$300 match.
7	Streamside Stewards Program—maintenance (MS4 requirement A6.c)	North Clackamas Urban Watersheds Council	Maintain 50 existing sites in the Streamside Stewards Program (SSP). The goal of the SSP is to improve riparian conditions by enhancing streamside wildlife habitat and improving water quality, while fostering an ethic of stewardship and empowerment in property owners. Funding includes the tasks, tools, and time of the NCUWC restoration contractor and the NCUWC Coordinator. Includes discussions and agreements with property owners. Tasks include weed removal using a variety of methods; plant native plants; mulch, water, and weed installed plants; and provide information. Covers 14 ac and 1.8 mi streamside.
8	Streamside Stewards Program-new sites (MS4 requirement A6.c)	North Clackamas Urban Watersheds Council	Fund 10 new, strategically located riparian restoration project sites. Property owners will receive a site assessment with a restoration expert, a site plan, a packet of educational print resources, and no-cost weed control and riparian vegetation. These sites will be selected in high priority reaches and as connections to existing sites in the SSP. Includes SSP yard signs with WES logo. Provides \$24,700 match.
9	Johnson Creek Watershed Assessment (MS4 requirement A6.c)	Johnson Creek Watershed Council	Analyze currently available monitoring data and prepare a watershed-wide condition assessment report, which could be compared to watershed assessments completed in 1994 and 2001. This is the top recommendation of the 2015-25 Johnson Creek Watershed Restoration Action Plan. The Monitoring Strategy completed so far includes data from 22 organizations, a summary of 30 fixed stations where 2,300 cumulative samples per year are taken for water quality, hydrology, aquatic habitat, and biota (with continuous sampling counted only once). Results will help prioritize future restoration work. Funds 9% of entire project, provides \$75,800 match.

10	Johnson Creek Riparian Reforestation (MS4 requirement A6.c)	Johnson Creek Watershed Council	This project will enhance riparian vegetation on several properties along Johnson Creek within CCSD#1. The Johnson Creek Watershed Council will work with jurisdictional partners, private landowners, contract crews and volunteers to remove invasive vegetation (such as English ivy, Armenian blackberry, clematis, etc.) and replace it with native trees, shrubs and ground cover to provide better riparian habitat. Covers 1.58 ac, 520 lf streamside and provides over \$7,100 match.
11	SOLVE Clackamas County Maintenance-Phillips & Rock Creek sites (MS4 requirement A6.c)	SOLVE	Maintenance activities needed to control invasive species and install in-fill plantings on 6 sites, covering 9 ac and 2,250 lf of streamside property along Mt. Scott, Phillips and Rock Creeks. Invasives include Japanese knotweed, purple nightshade, English ivy, Himalayan blackberry and others. Much of the work will incorporate students and one Community tree planting event is planned. Work includes extensive communication with property owners and service learning for high school students. Over \$14,600 match provided.
12	SOLVE Clackamas County Restoration-Mt Scott & Troge (MS4 requirement A6.c)	SOLVE	Control of invasive species and new plantings on 6 sites, covering 9 ac and 2,250 lf of streamside property along Mt. Scott, Phillips and Rock Creeks. The main project extends previous work on property adjacent to the Pleasant Valley Nursery, on a stream reach that is very incised and low gradient in this section. Work includes communication with property owners and service learning for high school students. Over \$56,800 match provided.
13	NCUWC Outreach and Education Programs (SWMP BMP 10; MS4 requirement A4.d.ii)	North Clackamas Urban Watersheds Council	Outreach and education programs include activities aimed at educating the residents of the Kellogg - Mt Scott watersheds about watershed health, enrolling participants in the Streamside Stewards Program, and engaging people in volunteer actions. Activities include outreach to enroll property owners in the Streamside Stewards Program, website updates, a community education event to be designed in cooperation with partners, participation in Celebrating Water-CWET-and Water Resource Program Guide, restoration planting with students at Rowe Middle School on Kellogg Creek and conducting volunteer planting-mulching-and cleanup events. \$4,200 match.
14	Outreach and Education (SWMP BMP 10; MS4 requirement A4.d.ii)	Clackamas River Basin Council	Outreach and education programs aimed at educating the residents of the Clackamas River watershed about watershed health.

15	Ecology in Classrooms and Outdoors Project  (SWMP BMP 10; MS4 requirement A4.d.ii)	Bilquist Elementary School Parent Teachers Association	Provide a science enrichment program at Bilquist Elementary for grades K through 5 during the 2014-2015 school year. Two Scientists in Residence will deliver hands-on, ecology-based science lessons to align with Oregon educational standards and provide students the opportunity to study local watersheds, wildlife, geology, and botany. Lessons are structured to connect students to the natural world, within the context of the Kellogg Creek watershed. Program will build science literacy and environmental awareness. Provides over \$10,700 match.
16	Volunteer & Community Engagement  (SWMP BMP 10; MS4 requirement A4.d.ii)	Johnson Creek Watershed Council	Outreach and education programs include activities aimed at educating the residents of the Johnson Creek watershed about watershed health. Activities include Watershed Wide Event, Johnson Creek Clean Up and a Johnson Creek Science talk held within CCSD#1. Pays for a portion of work within CCSD#1, providing over \$17,300 match.
17	WES-CCSD1 Rock Creek Confluence Restoration Project (MS4 requirement A6.c)	WES	Improve fish & wildlife habitat and water quality in the lower 1,800 linear feet of Rock Creek by 1) installing LWD, 2) floodplain reconnection and 3) replacing invasive vegetation with native plants. Leverage existing partnerships and programs to control weeds, plant veg and conduct monitoring. Continue use of site for environmental study by local schools in Watershed Health Ed Program.
18	WES-CCSD1 Cedar Way Stream Stabilization Project (MS4 requirement A6.c)	WES	This steep reach of the Cedar Way tributary to Mt. Scott Creek has been significantly impacted by urbanization and hydromodification. An increase in flow, compared to historic, pre-development conditions, combined with a lack of coarse sediment supply to the channel due to upstream and downstream culverts, has resulted in channel incision, widening, and overall instability. This project stabilizes the channel by laying back banks and installing boulder weirs, along with placing new bed material in key areas.
19	Verne Duncan Elementary (detention basin & outdoor classroom plantings)  (SWMP BMP 10; MS4 requirement A4.d.ii)	WES	Worked with students and educators to install plants in a new outdoor classroom/garden and an existing detention pond adjacent to school. Incorporated into the WES Watershed Health Education Program.
20	Clackamas High School (rain garden) (MS4 requirement A6.c)	WES	Coordinated with North Clackamas School District Facilities staff and CHS principal and staff. Constructed rain garden to capture flow from driveway area at school. Worked with students and educators to install plants after contractor work completed. Incorporated into the WES Watershed Health Education Program.



## Students enter safe driving media contest

Ninety-eight high school students in Clackamas County entered the *Posters and Coasters Safe Driving Media Contest* sponsored by Clackamas County Safe Communities. The goal of the contest was for students to create art work or written messages that promote safe driving.

First place winner Melody Xu, a junior at Lake Oswego High School, combined exceptional artwork and messaging in her piece, "Keep Your Eyes on the Road." Program Director, Joseph Marek, presented Melody her award, a \$300 gift card from the Clackamas Town Center, at a school presentation attended by Principal Cindy Schubert and several members of the Lake Oswego Police Department.

Katie Brink, art instructor at the school, made the contest part of her classroom activities. "We took the artist's talents and experience and turned it into thought provoking posters," Katie said during the ceremony, "This is an awesome accomplishment."

Melody said she based her work on the importance of safe driving. "I thought this was a very important message to everyone. We are likely to be distracted by things around us when we are driving. I came up with the idea of drawing the reflection of the road in the eyes in order to show that the driver is paying attention to the road. I hope my message would help to promote safe driving," she said.

Second place winner Karlee Edwards attends

Sandy High School. Her artwork, "Life is a Gift - Wrap it in Safety," provides a positive message reminding drivers and occupants to buckle up and stay safe. Third place winner, Ellen Scharff from Rex Putnam High School, sketched a hand holding a drivers license with the message, "With Great Power, Comes Great Responsibility - Drive Safe," reminding drivers to be dutiful and dependable. Six other students won an "honorable mention" for posters covering issues such as speed, texting and the importance of driver education.

This is the third and most successful contest sponsored by Clackamas Safe Communities, whose mission is to reduce severe and fatal injury crashes. Patty McMillan, program coordinator, stated, "We were overwhelmed by the number and quality of submissions. Our judges had a difficult job."

The contest was supported by Clackamas Town Center, which provided gift cards for the top three winners and will display posters inside the mall during August and September. State Farm Insurance also partnered on the project, with \$50 checks for students who won an honorable mention and funding outreach of the posters into local communities. Interested parties should contact Safe Communities staff at 503-742-4661 or [SafeCommunities@Clackamas.us](mailto:SafeCommunities@Clackamas.us).

The winners will be recognized by the Board of County Commissioners in September.



The posters can be viewed at [www.ClackamasSafeCommunities.org](http://www.ClackamasSafeCommunities.org)

## Vector Control wants you to "Fight the Bites"

Say the words "Clackamas County Vector Control District" and blank faces often follow. Flash a photo of a larger-than-life mosquito with its proboscis ready to plunge, then things register!

That is the goal of the new media campaign Vector Control rolled out just in time for mosquito season. They hope to create more visibility and better comprehension of the services they offer in addition to educating the public about how they can protect themselves from mosquito-borne illnesses.

"It was really a matter of expanding our reach and using methods of messaging that resonated with residents," said Betsy Knight, Clackamas County Vector Control District Director.

They kicked off the campaign in May with a new logo that puts the pesky mosquito front and center



on banners, fleet trucks and billboards. They also designed a new website ([fightthebites.com](http://fightthebites.com)), added a Facebook page and created a catchy animated video.

"The response from the public has been encouraging," according to Knight. "Our function as

a special district seems to be clicking with people we were not formerly reaching."

The Clackamas County Vector Control District is a special district within Clackamas County responsible for control of flies and mosquitoes within the county, not just because they are annoying, but also to reduce the likelihood of vector-borne diseases such as West Nile virus, Chikungunya and Dengue fever.

West Nile virus has been found early this season in neighboring states and the warm, dry summer forecast may raise the potential for mosquito-borne diseases locally as well.

The catchy lyrics in the new Clackamas County Vector Control District public service announcement (PSA) will have viewers singing along to tips on how to "hit mosquitoes where they live," such as birdbaths, bilges, boats and covers. The PSA's will be used in Clackamas County Vector Control District educational programs and on local media outlets.

### CONTROLLING MOSQUITOES

To prevent mosquitoes from breeding, remove sources of standing water. Change water in bird baths, wading pools and animal troughs twice a week. Clean clogged gutters and cover trash containers so they don't accumulate water. Check for containers or trash in places that may be hard to see.

### PROTECTING YOURSELF

Be sure windows and door screens are free of holes. Wear long sleeve shirts and pants in outdoor areas with mosquitoes and use mosquito repellent on skin and clothes. Mosquitoes are poor fliers so two oscillating fans on the patio are an effective way to keep them away.

### MORE INFORMATION AND TO REPORT A MOSQUITO PROBLEM AREA

An extensive collection of brochures, information sheets and articles on pests found in Clackamas County is available for public use at Clackamas County Vector Control District, 1102 Abernethy Road, Oregon City, 503-655-8394 or visit [www.fightthebites.com](http://www.fightthebites.com).

Be sure to stop by the district office for a new Clackamas County Vector Control Calendar.

Protect your customers, employees & the environment

# GET ECOBIZ CERTIFIED

Find a certified shop or landscaper at [EcoBiz.org](http://EcoBiz.org)

WATER ENVIRONMENTAL SERVICES

## Development Agency projects improve travel

The county's Development Agency, which oversees urban renewal districts in urban, unincorporated areas of Clackamas County, has a number of transportation projects in design and/or construction to improve safety and reduce congestion for travelers.

Listed below are key projects in the Clackamas Town Center (CTC) district (which stopped collecting money June 30, 2013) and the North Clackamas Revitalization Area (NCRA) district. All projects were selected by community groups.

### NORTH CLACKAMAS REVITALIZATION AREA (NCRA)

- **Bell Avenue** - Phase 1, King and Sandview, already underway, and Phase 2, Sandview to Brehaut, scheduled to begin this fall or next spring, both include an improved stormwater collection system; new, improved accessible ramps on sidewalks, and restriping to provide dedicated bicycle lanes. Phase 1 also includes a sidewalk and retaining wall on the west side and a new traffic signal at King Rd; Phase 2 also includes sidewalks on both sides of Bell.
- **SE 70th Avenue** - Reconstruction from King Rd to Monroe Ave, beginning this year, includes sidewalk and storm sewer improvements, and paving unimproved road sections.
- **Otty St. Realignment** - To relieve congestion and eliminate unsafe turns, Otty St on the

west side of 82nd Ave will be realigned with Otty Rd on the east side. Construction is planned for 2016.

### CLACKAMAS TOWN CENTER AREA

- **Monterey Ave Extension** - Monterey is being extended from 82nd Ave to Fuller Road. The new two-lane roadway will include bike lanes, sidewalks, street lighting, a small bridge over Phillips Creek and signal modifications at 82nd Ave. Construction is planned in 2015.
- **Sunnyside Rd / Stevens Rd Intersection** - Improvements being planned to relieve congestion could include additional turn lanes, turn lane extensions and/or modifying signal timing. Construction is planned in 2015.
- **Fuller Rd/King Rd and King Rd/82nd Ave Intersections** - There are a number of safety concerns related to these intersections, which are only about 100 feet apart. Improvements will restrict turning movements at the Fuller/King intersection to right-in/right-out. Construction is planned for 2016.
- **Boyer Drive Extension** - This project, likely to be done in conjunction with the Fuller Rd/King Rd/ 82nd Ave project above, will add a two-lane extension of Boyer, with sidewalks, from 82nd Ave to Fuller Rd. Construction is planned for 2016.

For more information, go to [www.clackamas.us/development/](http://www.clackamas.us/development/).

## Businesses highlight financial benefits of sustainable practices

Sixty business leaders representing many of the largest businesses in Clackamas County attended a North Clackamas Chamber of Commerce forum in May to talk about the financial benefits of adopting sustainable practices. Staff from the county's Office of Sustainability Recycle at Work program, which supported the event, also attended.

The Recycle at Work program helps county businesses adopt and improve practices to prevent waste, conserve resources and recycle - all of which can also lead to bottom-line savings.

The May forum included reports from two companies that partner with Recycle at Work on the success of their sustainability programs:

- **The Safeway Distribution Center** in North Clackamas, which manages food and goods headed to and from Safeway grocery stores around the region, saved nearly \$3.7 million in 2013 by reducing waste and recycling. The company collects cardboard, food scraps, plastic bags and wood pallets for reuse and recycling, and grease for biodiesel. They also support farmers' use of reusable plastic totes, which helps reduce purchasing and disposal costs for waxed cardboard.
- **Providence Health and Services** hospitals saved more than \$420,000 in 2013 by recycling 3,240 tons of material. The company's own recycling center sells or returns materials to offset its costs of operation. Many plastic materials go to a local

plastics processor in Gresham. In addition, environmentally-preferred purchasing reduces costs while supporting local manufacturers and reducing waste.

The Recycle at Work program helps workplaces identify and meet sustainability goals, whether just getting started, or helping a business take it to the next level. Contact Recycle at Work to help your workplace, large or small, evaluate use of materials and wastes, prioritize strategies and opportunities around waste reduction and, perhaps, increase your bottom line. Call 503-557-6363 or visit [www.clackamas.us/recycling/business](http://www.clackamas.us/recycling/business) for more information.

### SAFEWAY'S 2013 SAVINGS

- **Bio Diesel** - collected grease fat, then converted to 200,000 gallons of biodiesel: earning \$165,000
  - **Cardboard** - recycled almost 30,195,700 lbs. of cardboard: earning \$2,486,000
  - **Compost** - reduced compost by 755,780 lbs.: saving \$29,900
  - **Plastic** - recycled 1,245,140 lbs. of plastic: earning \$224,125
  - **Wood pallets** - recycled and sold 180,500 pallets: earning \$785,180
- Total savings + income for 2013 = \$3,690,000**

## 2014 is Canby Ferry Centennial Celebration Year!



The Canby Ferry is 100 years old this year. Join the County Commission at 2 p.m., September 17, for a special celebration at the Ferry landing in Canby.

**Canby Ferry Trivia Quiz #3**  
(answers are at the bottom of this box)

1. The Canby Ferry crosses the Willamette River between Canby and Wilsonville. How many other ferries cross the Willamette River?  
A. None  
B. 1  
C. 2  
D. 5  
E. 11
2. In what year was the Canby Ferry swept downstream, with parts going over Willamette Falls?  
A. 1914  
B. 1937  
C. 1946  
D. 1986  
E. 2004
3. Oregon is one of three states to have more than two cable ferries still in operation. What are the other two states?  
A. Maryland and Virginia  
B. Minnesota and Virginia  
C. Maryland and Tennessee  
D. Texas and Alaska  
E. Colorado and Minnesota

Answers: 1.C, 2.A, 3.A

## Get outdoors!

Summer is in full swing and there's plenty of time to safely enjoy County Parks and river recreation. Watch a short video about the County Parks Ordinance and the Clackamas River by visiting [www.clackamas.us](http://www.clackamas.us).



**Is your lawn chemical free?**

Maybe it should be.

[www.CleanRiversAndStreams.org](http://www.CleanRiversAndStreams.org)

## Students find amphibians in Clackamas wetlands

The "oohs," "aahs" and shouts of excitement coming from the rain-sprinkled Happy Valley Middle School students had nothing to do with cell phones or technology, but everything to do with water and frogs.

Just behind Happy Valley Elementary and Middle schools lie 24 acres of wetlands within Happy Valley Park. Most visitors know about the long boardwalk amidst the beauty and peacefulness of the park, but what most overlook in the spring are the numerous amphibian egg masses dotting the waters' edges just below the surface wriggling with new life.

The sixth-grade students in Michelle Arko's science class were enthralled when Jim Holley, a herpetologist helping to conduct a county-wide survey for the Oregon Department of Fish and Wildlife (ODFW), pointed out grapefruit-sized Northern red-legged frog (*Rana aurora*) egg masses. As the students peered into the algae-covered jellied masses to watch the apple seed-sized tadpoles prepare to hatch, Holley explained to them that by summer the hatchlings will have grown up and hopped to the uplands.

When asked how the students who joined him in the field responded a week after the school was notified of this rare educational opportunity that was organized by Clackamas County Water Environment Services' (WES) Watershed Health Education Program, Holley said, "The children were great! Everybody's excited and curious about frogs and to learn more about salamanders and see where they all come from."

The red-legged frog is on Oregon's sensitive species list and a priority species in the Oregon Conservation Strategy,



**CLACKAMAS WEB ACADEMY STUDENT JACOB OCON, 18, HOLDS A PACIFIC TREE FROG** Native frogs are important because they eat insects and slugs and are a source of food for other wildlife, plus indicate water quality.

explained Susan Barnes, regional conservation biologist with the Oregon Department of Fish and Wildlife, who is leading the survey.

WES environmental policy specialist Gail Shaloun worked with ODFW biologists to identify sites where the amphibians would be expected and sites where WES wanted to know whether or not they were present.

"Knowing if they are present within properties we own or manage will affect the way we manage those sites," Shaloun said.

"The importance to WES is that these frogs are an indicator of watershed health — both water quality and habitat attributes must be there for the frogs to be present and to survive well enough that they can reproduce. Since red-legged frogs are more sensitive than Pacific tree frogs, finding them is a sign of a healthy watershed," Shaloun said.

In addition to the Happy Valley schools, Clackamas Web Academy participated in the ODFW amphibian egg mass search at the Three Creeks Natural Area, a mitigation site within the WES service district and within walking distance from their school for these students as well.

"We were also interested to know whether our mitigation wetland was functioning as amphibian habitat, and thrilled to find out that it is!" Shaloun said. WES staff work together to protect water quality for both public and environmental health, explained Shaloun and added, "There are things we do to protect or enhance water quality that can also enhance habitat for the species that are present and help them survive."

At the conclusion of her students' outdoor amphibian lesson behind Happy Valley Middle School, Arko said, "My students learned the difference between red-legged frogs and Pacific tree frogs and got to see them and see how water quality affects them. It's really special that we have the wetlands right behind us and that we actually get to use them to learn."

For more information about the ODFW amphibian survey and the Watershed Health Education Program, visit [www.RiverHealth.org](http://www.RiverHealth.org) or contact Gari Johnson at 503-742-4631 or [gjohnson2@co.clackamas.or.us](mailto:gjohnson2@co.clackamas.or.us)

## County parks alcohol ban in place for summer 2014

The Clackamas County Board of Commissioners (BOC) passed amendments to the County Parks Ordinance last summer banning use of alcohol in county parks except in designated areas — and allowing for visual inspections of coolers, backpacks and other personal property by Clackamas County Sheriff's deputies. Park rules prohibit the possession and use of alcohol on park property except by permit and only within designated picnic, event and camping areas.

Under the amended ordinance, anyone possessing alcohol on county park property without a permit will be issued a citation and excluded from the park. The ordinance also prohibits glass or glass bottles on county park property.

These changes were prompted by increased recreational use of the Clackamas River resulting in public safety issues, complaints from property owners and environmental concerns related to drunkenness, littering and trespassing.

Staff from different county departments have been working together to help inform the community going into the 2014 summer season, but also want to help address other issues emerging from some of the problems that existed in county parks — specifically Barton and Carver boat ramp — and on the Clackamas River.

Tiffany Hicks, a drug and alcohol prevention planner for the county's Health, Housing and Human Services Department, says that educating river users about the effects of alcohol on the river — either rafting, tubing, swimming or boating — will help deter drinking and encourage visits from families and other groups who avoided the river on very hot days because of the "party-like" atmosphere.

"Drinking alcohol on a hot day speeds up its effects and can disorient drinkers even faster than normal," said Hicks. "It's not a good mix in a situation where it's really important to stay alert and aware." Hicks plans to coordinate alcohol awareness messages near the parks as reminders.

For the Clackamas County Sheriff's Office, the past few summers on the river and in the parks has been busy. Lieutenant Adam Phillips has worked for the CCSO since 1996 and knows well the problems that come from consuming alcohol on the river, including fights, littering and drownings.

"When a person is in distress on the river, it's not just us that respond," said Phillips. "It's the Marine Unit, the fire department and ambulance companies. All these resources are committed now to one person who may be drunk, in an inner tube, and not wearing a life jacket."

Phillips encourages responsibility. "Enjoy the parks and the river safely," said Phillips. "Have fun, but follow the rules, respect people's property and don't be a problem."

County Parks, the Safe Communities program and the Office of Sustainability will promote river safety and keeping the parks and river clean. On the summer weekends, there will be extra staff and volunteers to assist river users and help provide loaner day-use life vests — free of charge — for anyone who doesn't have one.

County Parks and Forest Manager Rick Gruen said departments and partner agencies are collaborating to make the parks and river a safe place for all its users.

"While there have been issues in the past," said Gruen, "it's been seen mainly as a parks problem. But so many of us have a stake in the health of the river and enjoyment of the

parks."

The Clackamas River Basin Council (CRBC) is partnering with the county to provide "Stash the Trash" bags at designated spots along the river, where people can store their garbage for easy take out later. Coupled with this program is a river clean up event at the end of the summer season.

Cheryl McGinnis, CRBC Executive Director, said the agency's relationship with the county goes back a long time.

"The First Down the River Cleanup was in 2003," McGinnis said. "It takes partnering agencies and a lot of volunteers to make that event a success."

Stash the Trash bags were first funded through a variety of sponsors in 2006, and have been popular among river and parks users.

"People who love the river want to help," McGinnis said. "We always get positive comments about the bags. They are conversation starters and reinforce good behavior and stewardship for the Clackamas River."

To help promote river health and safety on the river, Clackamas County Government Channel created a new video: "A Cleaner Clackamas River," currently airing on the channel and on YouTube: [www.youtube.com/clackamascounty](http://www.youtube.com/clackamascounty).

"The parks and the Clackamas River have diverse users and partners. Everyone is stepping up to make this work," Gruen said.

To learn more about new initiatives or the county parks alcohol ban, go to: [www.clackamas.us](http://www.clackamas.us)

For more about CRBC and upcoming guided watershed hikes, go to: <http://clackamasriver.org/>

**We're reducing the waste in wastewater treatment.**

Biosolids are the nutrient-rich organic material that results from the wastewater treatment process. Biosolids are applied as fertilizer to select sites in Clackamas County.

**DRINKING AND BOATING?**

THAT'S MORE THAN A LITTLE DINGHY.

Blow .08 while operating a boat and you could lose your boating privileges and pay \$6,250 fine. So be smart. Boat safe. Boat sober.

# More than 100 volunteers gather to support watershed health

The third annual Rock Creek Watershed Wide Event drew volunteers from across the region to sunny Pendarvis Farm in Happy Valley, site of the Pickathon Music Festival.

While the March 15 event did include celebratory opening music, performed by four teens in the bluegrass band Wild Rose Trail, the event was all about Rock Creek, a tributary of the Clackamas River. More than 100 volunteers attended.

Volunteers of all ages loaded buses from Pendarvis Farm to three separate locations on Rock Creek, planting and caring for native trees and shrubs.

"This provides a vegetative buffer, which helps filter out pollutants and provides shade over the stream, because salmon need cold, clean water," said Gail Shaloun, environmental policy specialist with Water Environment Services, the Clackamas County department that sponsored the event through its RiverHealth Stewardship Program.

"The Clackamas River is an important resource for many reasons, but notably it provides drinking water to 300,000 people and habitat for a variety of fish, including threatened and endangered Chinook and coho salmon, steelhead, cutthroat trout and a myriad of other aquatic species," said Shaloun, "what happens to Rock Creek ultimately impacts the Clackamas River."

The Watershed Wide Event is organized by the Rock Creek Partnership, whose members include SOLVE, Clackamas River Basin Council, and Friends of Trees, who work together to identify water quality enhancement projects in the Rock Creek Basin.

Water Environment Services, on behalf of Clackamas County Service District No. 1, conducts watershed restoration, monitoring and maintenance projects in the watershed. Find out more at [rockcreekpartnership.org](http://rockcreekpartnership.org) and [riverhealth.org](http://riverhealth.org).



**FOR THE HEALTH OF THE RIVER** Rock Creek Watershed Wide Event volunteers plant streamside shrubs along the creek in Damascus.

# Summer transportation projects focus on safety, connectivity

Road construction and improvement projects planned for this summer by the Clackamas County Transportation Engineering Division will help people travel more safely and smoothly, and reduce the risk of damage from future storms. The projects below are listed in alphabetical order. More information about these and other construction projects is available at Transportation Engineering Construction Projects (<http://www.clackamas.us/engineering/construction.html>).

## Barlow Road - Zimmerman Road Intersection Improvements

**When:** Spring-summer 2014

**What:** Reconstruct and realign 1,400 feet of Barlow Road and some minor reconstruction of Zimmerman Road, shoulder widening and laying back of cut slopes to increase sight distance, and striping

**Why:** Improve sight distance and safety

**Traffic impact:** Road closure from June 10 - Sept. 1, 2014. All area residents and businesses have been notified and an open house was held in December 2012.

**Funding:** Federal High Risk Rural Roads Program (HRRRP) with matching funds from Clackamas County's Road Fund.

## SE Bell Avenue Improvements

**When:** Construction has begun on improvements to SE Bell Avenue between SE King Road and SE Brehaut Street in the North Clackamas Revitalization Area (NCRA).

**What:** Construction along the stretch of Bell from King to Sandview will add a sidewalk on the west side of the street, improve the stormwater collection system, stripe the street to provide dedicated bike lanes, add and improve accessible sidewalk ramps and replace the temporary traffic signal at King and Bell. In 2015 similar improvements will be made on Bell Avenue between Sandview and Brehaut.

**Why:** As requested by the public, to provide safer travel through the area for vehicles, walkers and bicyclists.

**Traffic impact:** Limited traffic delays and possible intermittent lane closures

**Funding:** NCRA urban renewal district.

## Carver Bridge Replacement

**When:** This three-year project is scheduled for completion by the end of 2014.

**What:** Construct a new Springwater Road Bridge over the Clackamas River (also known as the Carver Bridge) with wider traffic lanes as well as sidewalks and bike lanes.

**Why:** The old bridge was approaching the end of its useful life, and it also had narrow travel lanes and no



sidewalks or bike lanes.

**Traffic impact:** Traffic was moved onto the new bridge Feb. 13 and workers are now removing the adjacent detour bridge.

**Funding:** Money from the state bridge fund, with matching funds from Clackamas County System Development Charges.

## Henric Road Storm Water Improvements

**When:** Construction began in April and will last through mid-summer.

**What:** A new storm water collection, detention and conveyance system to reduce the chance of a future landslide.

**Why:** This section of Henric Rd was damaged by a storm and subsequent landslide in March 2009. At that time, the county implemented emergency repairs so the road could be used, and studied and monitored slide conditions. The study showed that the chances of a similar slide can be reduced significantly by collecting and detaining storm water.

**Traffic impact:** Two-week road closure of Henric between South Ferguson Road and Athens Drive, scheduled for the last half of June.

**Funding:** Federal Emergency Management Agency (FEMA) with matching funds from Clackamas County's Road Fund.

## Highway 212-Lawnfield Road Connection

**When:** Nearly completed, with final paving delayed because of unusually cold temperatures. The new roadway is open with temporary striping and traffic controls; it will be closed again for a few days for paving this spring.

**What:** Major infrastructure improvements to Lawnfield Road from 98th Court to 97th Avenue, including sidewalks, bike lanes, roadway reconstruction and storm water drainage.

**Why:** Improve safety and connectivity in the industrial area to support economic growth.

**Traffic impact:** The road will be closed for a few days for paving.

**Funding:** Clackamas Industrial Area urban renewal district and the State of Oregon.

## Minuteman Way (formerly Industrial Way) Extension

**When:** Underway

**What:** Provide a connection along the east side of the Union Pacific Railroad right-of-way between the existing Minuteman Way and Lawnfield Road. Plans call for roadway improvements, lighting improvements, sidewalk and curb improvements and a reconfiguration of existing intersections.

**Why:** Improve safety and connectivity in the industrial area to support economic growth.

**Traffic impact:** No closures or detours are planned.

**Funding:** This is a Sunrise-related project, the Oregon Department of Transportation is the lead agency and is funding the project.

## Wilhoit Road at Rock Creek Reconstruction

**When:** Work will begin in June and be completed by the end of September 2014.

**What:** Reconstruct the road with a bioengineering bank stabilization system.

**Why:** The southbound shoulder and travel lane of Wilhoit were damaged during a spring storm in 2013 and have been closed since then.

**Traffic impact:** The southbound lane will remain closed until construction is complete.

**Funding:** Money from the Federal Highway Administration Emergency Relief Fund with matching funds from Clackamas County's Road Fund.

## PROTECTING OUR RIVERS AND STREAMS

### Remove leaves from storm drains to protect property and water quality

Storm drains are the metal grates on streets connecting to underground pipes that carry rain and snowmelt to nearby rivers, streams or groundwater.

The Oregon Environmental Council and Water Environment Services offer the following tips for keeping the drains free-flowing:

- Look at storm drain grates in front of your home or business before and right after a rain or snow storm, to make sure they're free of leaves and debris.
- Use a rake or pitch fork to clear leaves and debris from the storm drain. Do not try to remove the grate, only the debris on top of the grate. Dispose of leaves in your yard waste container or compost bin. If possible, spread the leaves on your garden to protect and nourish perennials.
- When leaves fall into the street, rake them one foot away from the curb so they won't block the path of rain water.
- Never dump anything into a storm drain. It's against the law! If you see an illicit discharge, please call 503-742-4567.

#### ATTENTION BUSINESS OWNERS!

For a discounted rate on commercial storm drain cleaning requirements, contact Water Environment Services at [info@RiverHealth.org](mailto:info@RiverHealth.org).

Thank you for helping to protect public health and the environment. For more information visit [www.RiverHealth.org](http://www.RiverHealth.org).



## WEED EATERS



Students at Verne A. Duncan Elementary School in Happy Valley greet 40 goats and a llama next to their campus and learn about watershed health. The weed-munching herd is part of a pilot project conducted by Water Environment Services to control invasive vegetation within stormwater ponds in Clackamas County Service District No. 1.

[www.RiverHealth.org](http://www.RiverHealth.org)

## Protecting Our Rivers and Streams

### Rain gardens improve water quality and reduce flooding, teach valuable lessons

Rain gardens and variations of them have recently popped up or, more accurately, popped into neighborhoods throughout the urban areas of Clackamas County thanks to the efforts of Clackamas County Water Environment Services (WES). These inverted gardens are improving water quality at seven new sites within Clackamas County Service District No. 1 (CCSD#1) as a result of partnerships with community organizations, such as North Clackamas School District.

Recently, students involved with the WES Watershed Health Education Program helped install a new rain garden on the Clackamas High School campus diverting nearly 700,000 gallons of surface water runoff from nearby streams per year. Rain gardens are a form of Low Impact Development (LID), a method of preserving natural resources by collecting and cleaning stormwater runoff on-site to protect and improve water quality.

Runoff collects everything in its path, including pollutants and chemicals from our driveways, sidewalks and lawns, before entering our waterways. Runoff is also responsible for erosion of streambanks and negative impacts to wildlife habitat in urban areas. The campus rain gardens are collectively reducing millions of gallons of runoff contributed annually to local streams from roofs, parking lots and playgrounds.

"The students gained an understanding of watershed and stormwater management. They saw how simple actions can have cumulative effects, both positive and negative, and what steps they can take to improve the health of our local creeks," said Bethany Wray, a WES consultant for the Watershed Health Education Program, which provides water quality-focused lessons, activities, and hands-on stewardship learning opportunities for teachers and their students within the WES service area. "By getting their hands dirty in the planting and mulching projects, the students got to make a practical, tangible difference in their community," explained Wray.

In addition, the rain gardens are being used to teach valuable lessons in hydrology and stewardship to neighbors and the greater community by way of interpretive signs located at the sites. Gail Shaloum, WES Community Watershed Program Manager and landscape architect, encourages anyone with property living in an urban area to create a rain garden.

"In the right location, any of us can build a rain garden by carving out a landscaped area and providing a compost-enriched soil mix with plants to absorb water," Shaloum said. Installing rain gardens of all shapes and sizes throughout established, as well as growing neighborhoods, can help slow down the rain runoff, allowing it to soak into the ground and remove pollutants.

"The community benefits from cleaner water, and if enough rain gardens are used they can reduce flooding as well as pollution," Shaloum said.

"Rain gardens can also reduce future costs for stormwater infrastructure and extend capacity by minimizing the runoff entering our existing storm pipes," she said, as she described in more technical terms the important work of a rain garden. Then, summing up what is evident to the observer from sidewalk or street level, she said, "The plants in a rain garden also beautify our surroundings!"

As Clackamas County continues to develop, the WES Development Review staff suggests stormwater be considered early in the planning. "In order to maximize the benefits of Low Impact Development technology, it is important to

integrate the stormwater management into the design of a site at the earliest stages of planning in order to gain the highest potential for natural resource protection and avoidance of conflicts with other design elements," said Don Kemp, WES Development Review Supervisor.

"Each rain garden is one small step toward restoring the natural balance in our communities," Shaloum said.

If you enjoy gardening or want to make a difference in your community with a rain garden, please visit [RiverHealth.org](http://RiverHealth.org).

For more information about the WES Watershed Health Education Program, please contact Gari Johnson, WES Community Relations Specialist, at [gjohnson2@co.clackamas.or.us](mailto:gjohnson2@co.clackamas.or.us).



### Regional Wastewater Advisory Committee explores all options for district residents

Over 30 years ago, the citizens of Gladstone, Oregon City and West Linn voted in the spirit of partnership to collectively build the Tri-City wastewater treatment facility to affordably serve the needs of the community into the future. That future is now.

As Clackamas County continues to grow and thrive, the same spirit of partnership is at work today to help as we continue to develop as a region. Today, the Regional Wastewater Advisory Committee, made up of representatives from the cities of Damascus, Gladstone, Happy Valley, Milwaukie, Oregon City, West Linn, the unincorporated areas of Clackamas County Service District No. 1, and the Clackamas County Board of Commissioners, was formed to identify efficient strategies and co-investment opportunities for the mutual benefit of both the Tri-City Service District and Clackamas County Service District No. 1.

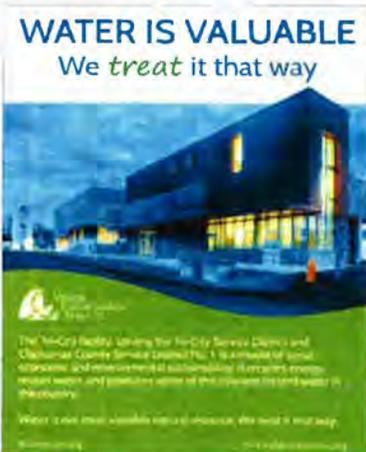
In 2009, the Regional Wastewater Advisory Committee was first convened to give the communities of north Clackamas County a

forum for regional decision-making about the management of the two districts' joint investments in interrelated conveyance and wastewater treatment assets at the Tri-City facility.

The Tri-City Service District and Clackamas County Service District No. 1 are separate legal and financial entities. These districts were created by votes of the people they serve and are governed by the Board of Commissioners.

As more stringent water quality regulations and technological needs arise, expenses must be addressed through efficiencies in operations and innovations. Thirty years ago and today, the same challenges raise complex questions and sometimes controversies. The important thing to remember is that we are a growing, supportive community with options and voting power.

The Board of County Commissioners, who act on behalf of all district partners, is committed to supporting the Regional Wastewater Advisory Committee and to discussing the important decisions that affect our community.



## Protecting Our Rivers and Streams

### Hoodland master planning effort underway

A comprehensive Hoodland Master Plan is being developed to address infrastructure challenges and provide reliable wastewater services to the Hoodland service area.

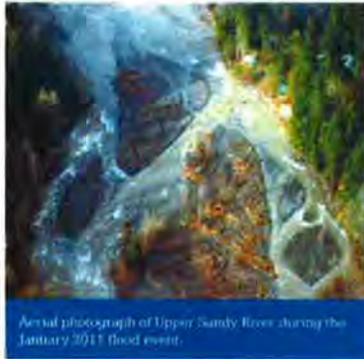
Water Environment Services is working with an experienced team from CH2MHILL and began work in mid-December. The goal of the master planning project is to develop cost-effective service options while continuing to protect water quality and public health.

#### HOODLAND MASTER PLAN FACT SHEET

To request a copy of the Hoodland Master Plan Fact Sheet, please send your request to [mkenney@clackamas.us](mailto:mkenney@clackamas.us). For questions about this project, please contact the WES project manager, Matt House, at 503-742-4601 or [mattbou@clackamas.us](mailto:mattbou@clackamas.us).

#### INFORMATION AND NEWS

To sign up for GovDelivery to receive ongoing, timely information and news about this project, as well as other county information, please visit [clackamas.us/govdoc.html](http://clackamas.us/govdoc.html).



Aerial photograph of Upper Sandy River during the January 2011 flood event.



WES crews work to save Timberline Run Pump Station from Sandy River Flood, January 2011.

### Help protect public health and the environment in Clackamas County

Did you know that flushing items such as baby wipes can cause damage to the sewer system? Many things that are routinely flushed down the toilet, including those marketed as "flushable," can cause sewer back-ups and expensive repair issues.

"Please be wary of products marketed as 'flushable,'" urged Andy Robins, Field Operations Supervisor for Clackamas County Water Environment Services. "Just because something can be flushed down the toilet does not mean that it should be. Many of these items cause clogs and reduce pumping capabilities requiring costly service calls and repairs."



A clogged well at Kollipoti Creek Water Pollution Control Plant.  
Photo by Larry Lancaster

The following are examples of what should not be flushed down the toilet or drain:

- Automotive fluids
- Baby wipes
- Chemicals
- Cleaning wipes
- Cotton balls, swabs and pads
- Disposable diapers
- Facial tissues
- Fats, oils and grease
- Feminine hygiene products
- Medications and prescription drugs
- Paint and paint thinners
- Paper towels
- Sealants and solvents

Utilities across the country are spending millions of dollars to clean these products out of their systems and replace equipment that otherwise would have had many more useful years of service.

#### FREQUENTLY ASKED QUESTIONS

**Q:** Can I pour hot water and detergent or degreasers into the drain to dissolve oil or grease?

**A:** It is best not to temporarily melt grease so it flows into the sewer pipe where it cools and coats the inside of the pipe. Eventually, the pipe may clog and could cause raw sewage to back up into a home or business.

**Q:** If the sewers back up, will Clackamas County Water Environment Services (WES) fix it?

**A:** Property owners are responsible for the sewer pipes on their property. Sewer pipes within homes and businesses carry wastewater to a sanitary sewer treatment facility. If damage or back up of the public sanitary sewer or drainage systems is caused by a property owner, he or she must pay for cleanup and repair.

**Q:** Can I use storm drains and catch basins for disposal of dirty water, debris, etc?

**A:** No! Only clean water should be discharged into storm drains and catch basins. In Clackamas County Service District No. 1, outside drains are built to direct stormwater runoff (rain, melted ice and snow), not wastewater, to the nearest creek or wetland. Dumping debris or waste in them pollutes the water where they discharge and may harm fish and wildlife.



#### YOU CAN HELP!

Use the "dry clean up" method to protect sewer pipes in your home:

1. Scrape or wipe food waste from pots, pans, plates and utensils directly into the trash.
2. Use a paper towel to remove residual grease from cookware and serving surfaces.
3. Dispose of greasy paper towels and any surface cleaning wipes into trash bins with plastic liners. Never flush wipes or other items such as those listed previously.

Report spills and other inappropriate discharges into storm drains in your neighborhood.

Call WES immediately at 503-742-4567 from 7:30 a.m. - 5:30 p.m. Monday through Thursday. After hours and during holidays, please call 503-655-8211.

Thank you for doing your part to help protect public health and the environment in Clackamas County.

#### FOR MORE INFORMATION

Watch Down the Drain, a fun and educational video about what should not go down the drain. For more information about our sanitary sewer system, please visit [riverhealth.org](http://riverhealth.org).

## Protecting Our Rivers and Streams

# WANTED

**Folks big and small to celebrate and protect water quality at festive watershed wide events!**



**March 7th**  
Johnson Creek  
Watershed Wide Event  
[www.jcwc.org](http://www.jcwc.org)



**March 14th**  
Rock Creek  
Watershed Wide Event  
[www.rockcreekpartnership.org](http://www.rockcreekpartnership.org)

Tools and tasty treats supplied | No experience necessary | Wear boots

### MAR 14 **Volunteers needed to celebrate and 'green up' the Rock Creek Watershed**

Registration is now open for the Rock Creek Partnership's popular annual Rock Creek Watershed Wide Event and work party scheduled for Saturday, March 14, 8:45 a.m. to 1 p.m. at the Galaxy Barn at Pendarvis Farm, the site of the renowned Pickathon Music Festival.

This fun, family-friendly event features live music by bluegrass band Wild Rose Trail, breakfast, lunch, and raffle prizes. Volunteers are requested to wear sturdy shoes, dress for the weather, and arrive by 8:45 am to complete registration and be assigned to a crew. Tools, plants, gloves, and know-how will be provided.

The Rock Creek Partnership is a collaborative effort between Clackamas River Basin Council, Friends of Trees, and SOLVE and is supported with funding from Clackamas County Water Environment Services, on behalf of Clackamas County Service District No. 1. The partners work with landowners to revitalize streamside habitats by removing invasive species, such as Himalayan blackberry and English ivy, and replanting the areas with native trees and shrubs. Restoring native plant communities grows a canopy over creeks, which filters and cools the water, provides wildlife habitat and increases property value. Stream flow from Rock Creek eventually enters into the Clackamas River, which provides drinking water to nearly 400,000 people and a home to many sensitive species of fish and wildlife.

Pendarvis Farm is located at 16581 SE Hagen Road in Happy Valley. Learn more about the Rock Creek Partnership and preregister for the event at [RockCreekPartnership.org](http://RockCreekPartnership.org).

### HELP REVITALIZE STREAMSIDE HABITATS IN YOUR COMMUNITY

Clackamas County Water Environment Services (WES), on behalf of Clackamas County Service District No. 1, and partners need volunteers to help improve local streamside habitat and water quality. Tools, plants, gloves, and know-how will be provided. Simply show up in the morning dressed for the weather. Please register today for one or all of the exciting and rewarding half-day events listed below.

#### SOLVE

**MAR 14** Rock Creek Watershed Wide Event

visit [jcwc.org/watershed-wide-volunteer-registration-form/](http://jcwc.org/watershed-wide-volunteer-registration-form/)

**APR 4** Rock Creek Troge Planting

**North Clackamas Parks and Recreation District**

**MAR 28** Hull & Swanson open space

For more information and to register for the events visit [solveoregon.org/get-involved/events](http://solveoregon.org/get-involved/events)

**MAR 7** 3-Creeks Natural Area (next to Aquatic Park)

#### Friends of Trees

**MAR 21** Happy Valley Park

**MAR 14** Risley Park

For more information contact Zev Levine at 971-313-2031 or [zlevine@co.clackamas.or.us](mailto:zlevine@co.clackamas.or.us)

**APR 4** Rock Creek Headwaters

For more information and to register visit [friendsoftrees.org](http://friendsoftrees.org)

#### North Clackamas Urban Watersheds Council

**APR 18** Hull & Swanson open space

**MAR 7** Johnson Creek Watershed Council

Johnson Creek Watershed Wide event along Springwater Trail at Linwood. For more information and to register

For more information contact Terry Gibson at [tgibson1@comcast.net](mailto:tgibson1@comcast.net)



## Give back to **YUR** community!

### UPCOMING VOLUNTEER OPPORTUNITIES WITH NORTH CLACKAMAS PARKS AND REC

Sat. February 28th  
9:30 a.m. - noon  
Hull & Swanson Open Space Restoration Project

Saturday, March 7th  
9:00 a.m. - 12:30 p.m.  
Three-Creeks Planting

Saturday, March 14th  
9:30 a.m. - noon  
Risley Park Planting

[ncprd.com](http://ncprd.com)

For more info call 971-313-2031

Thank you to our partners:



## Protecting Our Rivers and Streams

### Beautifying the Landscape at Kellogg Creek Water Pollution Control Plant

1000 Shrubs / 250 Trees

[www.milwaukeoregon.gov](http://www.milwaukeoregon.gov)

The Kellogg Good Neighbor Committee (a citizen-led committee), City of Milwaukie and Clackamas County Water Environment Services (WES) are working together on a landscaping project designed to beautify the environment and help control odor around the Kellogg Creek Water Pollution Control Plant.

Approximately 60 trees, most of which were in poor health or dying, and many of the shrubs that once lined the McLoughlin Boulevard-facing fence were removed to make way for the new plantings.

In the coming weeks, in advance of the spring bird nesting season, 1,000 new shrubs and 250 new trees will be planted around the Kellogg Creek facility. Until the new shrubs and trees are planted and have time to grow, a fabric lining along the fence will help to screen views of the plant.

"In addition to dense plantings along the fence, sparsely planted tree groupings near the river will provide dappled shade in the summer while allowing views to be maintained through the trees year-round," says Gail Shaloun, Environmental Policy Specialist, Clackamas County Water Environment Services.

The vast majority of the plantings will be native to Oregon and the non-native ornamental plants are non-invasive species.

#### PUBLIC CONSIDERATION AND COMMUNITY INPUT

Last year, the Kellogg Good Neighbor Committee and WES hired a professional landscape architecture firm, PLACE Studio, to help design the new landscape. PLACE participated in several committee meetings and led a public open house, attended by more than 30 local residents, where they gained valuable input from the community.

"When designing this landscape plan, we considered the priorities that we heard from the community such as maintaining views of the river and screening views of the plant," says Shaloun. "Community input led to designing sparsely planted tree groupings along the river as well as selecting both broadleaved and coniferous evergreens along the fence."

In looking forward, the landscape architects reserved some space to potentially add an overlook and slightly realign the pathway at some point in the future.

For more information about the Kellogg Good Neighbor Committee and the landscaping project, please visit [milwaukeoregon.gov](http://milwaukeoregon.gov).



### TALE OF THE WAYWARD WARBLER

Tree removal for the Kellogg landscaping project had been slated to begin the week of Jan. 17. However, due to the arrival of an unexpected migratory bird, the Black-and-White Warbler, that was postponed.

"The away warbler, from northern and eastern North America, was off track and has garnered much public attention and interest," said Bob Sallinger, Conservation Director, Audubon Society of Portland. "It is commendable that WES initiated contact with Audubon to learn more about this bird and the impact of the landscaping project as well as consider the interests of the birding community and the public," says Sallinger.

To allow time for bird enthusiasts to view the bird, the project partners delayed tree removal and sequenced it in a way to offer the bird a chance to move in.

Photo by Jack Williamson.

Audubon Society of Portland promotes the understanding, enjoyment, and preservation of nature, both, other wildlife, and their habitats. For more information, please visit [audubonportland.org](http://audubonportland.org).



Areas near Kellogg Creek Water Pollution Control Plant where landscaping will take place.

Photos by Larry Lancaster.



As part of the Clackamas County Water Environment Services Watershed Health Education Program, students in science teacher Phil Gwin's classroom at Clackamas High School were asked to use information from films, readings, lectures, and field experiences to produce an aesthetically pleasing poster that showed multiple ecological relationships between organisms in an intact Northwest temperate rain forest. Visit [RiverHealth.org](http://RiverHealth.org) to see more student artwork.

## Free workshops on septic system care

Residents who live within the Clackamas River watershed have the opportunity to learn more about how their septic systems work at two free workshops being offered in April.

The workshop will offer explanations on how septic systems work, how to properly operate and maintain them, and how to look for signs of failure. Attendees will also learn about codes, permits, where to get technical information and help, and may bring in a sample of their home well water for nitrate screening. The Financial Assistance Program for septic system owners offered by the Clackamas River Water Providers and the Clackamas County Homeowner's Guide to Septic Systems and other informational materials will be available.

**APR 7** 6 - 8 p.m.  
City of Damascus Council Chambers  
19920 SE Highway 212  
Damascus, OR 97089

**APR 30** 6 - 8 p.m.  
Estacada Public Library  
825 NW Wade St.  
Estacada, OR 97023

Class size is limited. To register, call 503-723-3510 or email [kims@clackamasproviders.org](mailto:kims@clackamasproviders.org).

The workshop is sponsored by the Clackamas River Water Providers, Clackamas County Soil and Water Conservation District, Clackamas County Water Environment Services, and DEQ.





## The CRWP Website has a NEW Look!

The Clackamas River Water Providers website has a new look. Our old website was built on an out dated platform not allowing some customers to visit the site. The new updated website has fixed that problem and now everyone can successfully log on to the site. Though the site has a whole new look it still has all of the same information and some new things such as a resource and documents page. Go to [www.clackamasproviders.org](http://www.clackamasproviders.org) to visit our site.

## Winterizing your Water Pipes Inside and Out

Initiating an annual winterization program in the Fall is a good step toward preventative pipe maintenance. We suggest your water pipes be winterized before the first freeze.

### Winterizing your irrigation system:

- Turn off the water to the irrigation system at the main shut-off valve.
- Open all drain valves. Drain valves are usually located at low points of the system. If they are not opened water can collect and freeze. Remove water from system. Opening the drain valves is not usually enough. The best method to fully ensure that your system will not suffer freeze damage is to blow out the system with air. **It is NOT recommended that the average homeowner attempt to do this, it is recommended that a professional is hired.** Check your local yellow pages for listing of landscape professionals that offer winterization services.

- Wrap above ground valves and backflow prevention devices with insulating material to prevent freezing.

- Shut down the automatic controller by either putting it on "rain mode" which will keep all of the programming



information (start times, valve run times, etc.) or simply shut the power off to the controller (if you do this, you will have to reprogram your start time and settings in the spring).

### Winterizing the rest of your water pipes:

- Disconnect and drain all outdoor hoses, and protect outside pipes and faucets. In some homes, the outside faucet has a separate "shut-off" in the basement or crawl space. If you have a separate valve for outside faucets, **SHUT IT OFF.** Then go outside, disconnect the garden hose and turn **ON** the faucets to drain water from the line. Even if you do not have a separate "shut valve" for outside faucets, wrap

## CRWP Winter 2015

### Inside this issue:

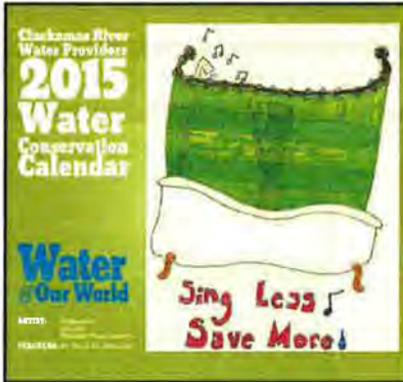
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### For more information Contact us:

- CHRISTINE HOLLENBECK  
PUBLIC EDUCATION AND CONSERVATION PROGRAM COORDINATOR  
(503) 723-3511  
CHRISTINE@CLACKAMASPROVIDERS.ORG
- KIM SWAN  
WATER RESOURCE MANAGER  
(503) 723-3510  
KIMS@CLACKAMASPROVIDERS.ORG

**2015 CRWP Water Calendars are Available!**

**2015 CRWP Water Calendar**



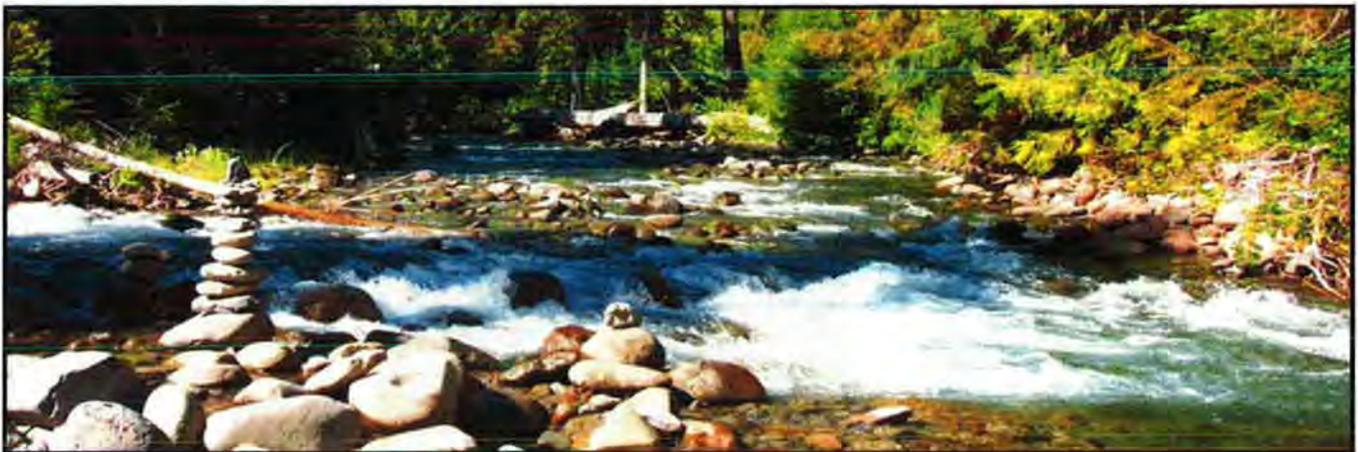
Each year the Clackamas River Water Providers holds a coloring contest with local elementary schools in our service areas to create our annual Water Calendar. This year we had 18 classes at 14 different schools participate in the contest with close to 540 entries for our 2015 Calendar.

Thirteen pictures were chosen from all the entries submitted

and were used to create the calendar. Students were encouraged to create pictures depicting what they had learned about water. The theme for the 2015 calendar was "Water and Our World"

Each school that participated in the contest received a box of calendars (about 125) to give away to students and families or to use as school fundraisers.

Calendars are also available at CRWP member's offices, libraries and city halls, or by calling us at (503) 723-3511.



**Protecting Our Watershed, Protecting Our Drinking Water**

Unlike the City of Portland's protected Bull Run watershed, the Clackamas is a multi-use watershed with various users and ownership throughout the watershed. Each time it rains or snows, pollutants wash off the land and flow untreated into nearby surface and groundwater sources. Because all water in a watershed is connected, activities in one part of the watershed often affect other areas. A healthy watershed stores and filters water, stabilizes banks, provides shade and habitat for fish and other aquatic life. Human activities such as construction, timber harvesting, live stock management, fertilizer and pesticide use, if not performed responsibly can degrade

water quality. In addition impervious surfaces such as parking lots, roads, and roofs carry pollutants directly to our streams and natural water ways. Therefore, the combination of cars, homes, people, and animals in the watershed makes pollution from storm-water a serious threat to our river's water quality. While good water quality may be difficult to see, a rich variety of plants and animals, from aquatic insects to cutthroat trout, indicate a healthy watershed and clean water. We all play a role in preserving our vital drinking water resource. Whether you're a resident, business

## Protecting Our Watershed, (Cont.)

owner, employee or farmer, you can make a difference. Protecting and conserving our drinking water plays a key role in making the best overall use of the precious resource we share.

**Key concerns in the Clackamas Basin are:**

**Naturally spawning anadromous salmonids** – the Clackamas River supports spring and fall Chinook salmon, Coho salmon, Cutthroat trout, and summer and winter Steelhead.

**Land use** – (agricultural, timber harvesting and urban uses) practices such as removing woody debris from stream channels, clearcutting, removing streamside vegetation, withdrawing water for irrigation, and road building can increase sediment loads and water temperatures.

**Urban Growth** – Increased growth in the watershed can have negative water quality impacts due to increase impervious surfaces and increase stormwater runoff.

**Water Quality** – Significant portions of the Clackamas River and its tributaries currently do not meet state water quality standards for temperature and bacteria

**Water Supply** – Water withdrawals for people must be balanced with maintaining sufficient in-stream flows to support fish.

**Protecting the Clackamas River is one of the top priorities of the Clackamas River Water Providers.**

As Clackamas County continues to grow, so does the demand for high quality water. Conserving and protecting the Clackamas River will play a key role in making the best use of this precious resource we share.

**What Can You Do?**

- Practice water efficient landscaping and/or naturescaping and install a raingarden to allow water from your property to filter into the ground.
- Prevent stormwater runoff by decreasing impervious surfaces.
- Restore streamside and riparian areas by planting native trees and shrubs.
- Properly dispose of, or recycle, motor oil, antifreeze, paint, solvents and other toxic materials.
- Wash your car on the lawn and prevent car wash water from entering storm drains.



Reduce or eliminate your pesticide and fertilizer use to prevent chemical runoff. For more information [click here](#).

- Clean up after your pet. Fence livestock away from water areas to protect stream banks, reduce erosion and protect water quality. For more information [click here](#).

- Inspect and properly maintain septic systems. For more information [click here](#).

- [Conserve water](#), especially in the summer months when river flows are at their lowest. The more water we save, the more water we can keep in the river for fish.

- Get involved! Attend a Clackamas River Water Providers, [city council](#), or [water board meeting](#).

- Call your [water provider](#) for more information. Join our local watershed council, the Clackamas River Basin Council.

For more information on how to protect our watershed, contact the CRWP [Water Resource Manager](#).

**Did You Know?**

- *The Clackamas River watershed covers 940 square miles and the river itself is 82.7 miles long.*
- *On your drinking water bill you are billed per unit. One unit = 100 cubic feet = 748 gallons.*
- *It takes less than one part per million of chlorine in your drinking water to keep it free of unwanted germs and bacteria.*
- *CRWP member Oak Lodge Water District was founded in the year 1922.*

and/or cover **ALL** the outside faucets or hose bibs. Remember to disconnect garden hoses from the faucets. Otherwise, a single hard overnight freeze can burst either the faucet or the pipe it is connected to.

•If you have water pipes in unheated areas such as the garage or a crawl space under the house, wrap the water pipes before temperatures plummet. Visit your local hardware or building supply stores for pipe insulation and wrapping materials.



•Locate the master water shut-off valve to your home. It may be near the water heater or the washing machine. More likely it's where the water line comes into your house from the street. If a pipe bursts anywhere in the house – kitchen, bath, basement, or crawl space – this valve turns it **OFF**. So find it now and paint it a bright color or hang a tag on it. Be sure everyone in the family knows where it is and what it does.

•Seal off access doors, vents and cracks. Repair broken basement windows. Winter winds whistling through overlooked openings can quickly freeze exposed water pipes. But don't plug air vents your furnace or water heater needs for good combustion.

•When winter weather is especially cold, open the cupboard doors beneath your sinks. This will allow warm air to circulate around the pipes. Allow water to trickle from faucets with pipes underneath your home or near outside walls that may be exposed to extreme weather conditions. Over a 24 hour period this will cost less than 15 cents per faucet – much less than it costs to repair broken pipes!

•And last, but not least, **HAVE YOUR PLUMBER'S TELEPHONE NUMBER HANDY**. During an extended cold spell, your pipes might freeze despite the best precautions.

For more information and tips on how to use water wisely contact Clackamas River Water Providers at 503-723-3511 or e-mail [christine@clackamasproviders.org](mailto:christine@clackamasproviders.org).

## **6 Water Saving Tips**

1. Done with your holiday baking? Use your leftover food coloring to check your toilet for leaks.
2. Let your dishwasher do the work. The average dishwasher uses about 10 gallons per load. Many kitchen faucets use the same amount of water by running for just four minutes.
3. Thawing food? Use the microwave, a bowl of water, or place it in fridge overnight instead of running the tap. You'll save about two gallons of water for each minute the faucet does not run.
4. Freeze the grease instead pouring it down the drain and letting the water run. Keep your kitchen sink draining well this holiday season by pouring all cooking grease into a can, freezing it, and then tossing the frozen contents into the trash.
5. Using one glass all day will mean fewer dishes to do. Especially if everyone joins in!
6. Scrape instead of pre-rinsing. Save yourself up to 20 gallons of water by scraping food off your dishes instead of pre-rinsing them. **ENERGYSTAR qualified dishwashers** and today's detergents are designed to do the cleaning so you don't have to. If your dirty dishes sit overnight, use your dishwasher's rinse feature. It uses a fraction of the water needed to hand rinse.



# newsletter



## Habitat restoration project provides legacy for water quality and community

The Discover Rock Creek event brought neighbors, families and friends together to the site of a recently completed habitat restoration project undertaken by Clackamas County Water Environment Services (WES) and partners Clackamas River Basin Council (CRBC) and SOLVE, where visitors of all ages marveled at exhibits of giant stoneflies, stages of salmon development, and evidence of abounding wildlife.

The partners installed ecological enhancements along approximately 2,000 linear feet of stream in Rock Creek near its confluence with the Clackamas River followed by the planting of 20,000 native trees and shrubs to improve water quality and fish habitat. Please visit [RiverHealth.org](http://RiverHealth.org) to watch the Discover Rock Creek video and learn how to get involved.



Salmon Forest poster created by Watershed Health Education Program student Diana Kim of Clackamas High School. See more student artwork at [RiverHealth.org](http://RiverHealth.org).

## 1,000 shrubs and 250 trees to be planted at Kellogg Creek Facility

The Kellogg Good Neighbor Committee (a citizen-led committee), City of Milwaukie and Clackamas County Water Environment Services (WES) are working together on a landscaping project designed to beautify the environment and help control odor around the Kellogg Creek Water Pollution Control Plant.



In the coming weeks, 1,000 new shrubs and 250 new trees will be planted around the Kellogg Creek facility. Until the new shrubs and trees are planted and have time to grow, a fabric lining along the fence will help to screen views of the plant.

"In addition to dense plantings along the fence, sparsely planted tree groupings near the river will provide dappled shade in the summer while allowing views to be maintained through the trees year-round," says Gail Shaloum, WES Environmental Policy Specialist. The vast majority of the plantings will be native to Oregon and the non-native ornamental plants are non-invasive species. For more information please visit [milwaukieoregon.gov](http://milwaukieoregon.gov)

## Use caution when using pesticides, herbicides and fertilizers

Pesticides can help control pesky weeds and insects, but every pesticide (including organic pesticides) has some level of toxicity to non-targeted, beneficial organisms, such as honey bees, earthworms, aquatic bugs, fish and people. Pesticides sprayed on a windy day can drift onto neighboring property or into a creek. Pesticides applied before it rains can wash into a storm drain that connects to a local waterway.

### Spills happen. Help us find them

Please report spills and other inappropriate discharges into storm drains in your neighborhood. Call WES immediately at (503) 742-4567 from 7:30 a.m. - 5:30 p.m. Monday through Thursday. After hours and during holidays, please call (503) 655-8211.



## Flushing items such as baby wipes can cause costly sewer damage

"Please be wary of products marketed as 'flushable,'" urged Andy Robins, WES Field Operations Supervisor. "Just because something can be flushed down the toilet does not mean that it should be." Many of these items cause clogs and reduce pumping capabilities that can require costly service calls and repairs. The following are examples of what should NOT be flushed or go down the drain:

- Automotive fluids
- Baby wipes
- Chemicals
- Cleaning wipes
- Cotton balls, swabs and pads
- Disposable diapers
- Facial tissues
- Fats, oils and grease
- Feminine hygiene products
- Medications and prescription drugs
- Paint and paint thinners
- Paper towels
- Sealants and solvents



### Use "dry clean up" method to protect sewer pipes in your home

1. Scrape or wipe food waste from pots, pans, plates and utensils directly into the trash.

2. Use a paper towel

to remove residual grease from cookware and serving surfaces.

3. Dispose of greasy paper towels and any surface cleaning wipes into trash bins with plastic liners. Never flush wipes or other items such as those listed previously.

**Thank you for helping to protect public health and the environment**



The next RiverHealth Advisory Board meeting is scheduled for April 8, 2015

## Sign up to "green up" the watershed

No experience necessary. All you have to do is show up in the morning and dress for the weather. Please register today for one or all of the exciting and rewarding half-day streamside revitalization events with our partners listed below:

### SOLVE

#### Saturday, March 14

Rock Creek Watershed Wide Event

#### Saturday, April 4

Rock Creek Troge Planting

For more information and to register for the events visit

[solveoregon.org/get-involved/events](http://solveoregon.org/get-involved/events)

### Friends of Trees

#### Saturday, March 21

Happy Valley Park

#### Saturday, April 4

Rock Creek Headwaters

For more information and to register visit

[friendsoftrees.org](http://friendsoftrees.org)

### Johnson Creek Watershed Council

#### Saturday, March 7

Johnson Creek Watershed Wide event along Springwater Trail at Linwood. For more information and to register visit [jwcw.org/watershed-wide-volunteer-registration-form/](http://jwcw.org/watershed-wide-volunteer-registration-form/)



### North Clackamas Parks and Recreation District

#### Saturday, February 28

Hull & Swanson open space

#### Saturday, March 7 - 3

Creeks Natural Area (next to Aquatic Park)

#### Saturday, March 14

Risley Park

For more information contact Zev Levine at 971-313-2031 or [zlevine@co.clackamas.or.us](mailto:zlevine@co.clackamas.or.us)

### North Clackamas Urban Watersheds Council

#### Saturday, April 18

Hull & Swanson open space

For more information contact Terry Gibson at [tgibson1@comcast.net](mailto:tgibson1@comcast.net)



preserving and enhancing safety,  
livability and character  
of our community

# PUBLIC SAFETY

## The art of being a good neighbor

by Steve Campbell, Director of Community Services & Public Safety

What kind of neighborhood do you live in? I've lived in a variety of neighborhoods in my life, and from those experiences, I have recognized that each neighborhood has its own different character. Some neighborhoods tend to be quite social, planning street parties and encouraging get-togethers, while others are made up of people who may prefer to keep to themselves. Neither group is an example of a 'good' or 'bad' neighborhood. They just reflect how different lifestyles, locations and personalities build different neighborhood traits.

Our mission in life is to live in peace and harmony, and while that is not always possible, hostilities and hurt feelings can usually be prevented with a little patience, courtesy and living by the golden rule. Whatever a neighborhood's vibe might be, everyone hopes to have good neighbors. The old saying that "good fences make good neighbors" still has some merit, but in today's urban environment, fences don't resolve all the issues. Neighborhood hot buttons generally concern noise, property maintenance, parking or pets. Let's review a few.

**NOISE** - Life is noisy, and no one can expect total serenity. However, you should respect your general neighborhood atmosphere, and follow some basic rules when it comes to making too much noise. Take note of your neighborhood's activity patterns, and try to follow what seems to be the general tolerance level. A lot can be told observing your neighbors' noise habits. For example, do they mow the yard at 7:00 am, or play loud music while washing the family car? Noise acceptability on a street filled with young families is often different from a more maturely-populated neighborhood.

**Noise Etiquette:**

- Mowing the lawn at 7:00 on a Saturday morning will not endear you to your

neighbors. Wait until at least 10:00.

- Don't honk your horn every time you pull into your driveway. Your family will find out you are home soon enough. Share that tip with your visitors and car pools, too!

- Sitting outside on a warm summer night with your spouse or friend is wonderful, but noise carries. If your back porch is in proximity to the neighbor's bedroom window, it's rude to carry on conversation past 10:00 PM. Take it inside so your neighbor can sleep.

- Avoid all unnecessary noise from any source from 9:00 PM to 9:00 AM. This includes revving car engines, children riding scooters, voices, and whatever else may wake someone from a sound sleep.

**PROPERTY MAINTENANCE** - For most of us, our homes represent a large investment and our biggest asset. How you maintain your property has a financial impact on everyone around you. A good neighbor is one who maintains the exterior of their house and landscaping to meet or exceed neighborhood standards. You don't want your house to be the one on the street that drags down property values. If you can't mow your own lawn, hire a neighborhood youth who'd like the opportunity to earn a few extra dollars.

Many neighborhoods have homeowners' associations with established rules and guidelines regarding property maintenance and livability issues. They might include exterior painting, mold removal, tree & shrub pruning, weed control or bikes, skateboards and toys left in the front yard at the end of the day. Abide by them and you can be certain to earn a 'good neighbor' rating!

**PARTIES** - An occasional late-night blast might be forgiven, but if you are the neighborhood "party house" where all-night parties are regular weekend occurrences, you will also become the neighborhood bad guy. Party

on, but be respectful of how your functions may intrude or impose on your neighbors.

**Party Etiquette:**

- Obey noise ordinance laws. If a neighbor calls or comes over and asks you to pipe down, be friendly and apologize. Then quiet down.

- If you are having a big party, you might as well invite the neighbors. This does several things. It shows that you are a friendly person, it allows you to get to know your neighbors better, and you are much less likely to have complaints.

**PARKING** - Today's average family has multiple vehicles. Be courteous as you share right-of-way parking. Most homes have an adequate driveway and garage to park vehicles. Organize your space and storage to allow for parking on your property whenever possible. Ask your guests to park in the driveway or in front of your house. Make sure they don't block someone else's driveway or use their designated spot in an apartment complex lot.

**PETS** - Not everyone is a dog or cat lover, so show responsibility for your pets. That includes keeping them off the neighbor's lawn and picking up after them. If your dog spends time outside in a kennel or is otherwise confined outdoors, excessive barking can be a major problem. Training and bark devices could spare you, your pet and your neighbors from an adversarial relationship.

And finally, I mentioned the golden rule. It's a simple concept, but here are a few final thoughts on how that might be accomplished.

- Observe and respect your neighbor's personal space
- It's best not to borrow anything, but if you do, return it quickly and in the same shape it was loaned to you. If you break the item, pay to fix it or replace it.
- Don't be the neighborhood gossip. It's

rude, unkind and generally comes back to bite you.

- If you have a problem with a neighbor, go directly to that person and discuss it in an adult manner. Don't call the cops unless you are threatened.

- Remember your neighbors during the holidays with a card or small homemade gift.

- If you and a neighbor have a misunderstanding, make an extra effort to make things right. Try to leave with a hand shake and stay on friendly terms. You don't have to hang out. A simple wave from the driveway, or a friendly hello at the mailbox is sufficient to be 'neighborly'.

- If your neighborhood has a homeowners association, know the rules and follow them.

- Welcome new neighbors. One of the things that made me feel warm and welcome when my family moved to a new home more than twenty years ago was when the neighbors showed up on our doorstep with platters of sandwiches and cookies. Another neighbor brought a thermos of hot coffee. The next time someone moved to our street, I was honored to be one of the people delivering food. This type of thing enriches everyone's lives, and builds good neighbor relationships. Try it, you'll like it!

Make the effort to be a good neighbor. You will be repaid ten-fold. I can promise you. Your neighborhood will be more appealing, and you'll be more content in your home. An extra benefit is the security of knowing that you and your neighbors have each other's backs. Next month is the perfect opportunity to be a good neighbor by signing up for **National Night Out**. Find more information about this important community event in this edition of Happy Valley Monthly.



## Love of lush lawn can come with a price



Whether it's mowing the lawn or reclining in a lawn chair, each of us notices when our yards and gardens need tending and vow to take action. Taking action shouldn't always mean heading to the store for pesticides and fertilizers. If used improperly, chemicals in these products can easily reach local streams and can harm wildlife and public drinking water.

Pesticides can help control pesky weeds and insects, but every pesticide (including organic pesticides) has some level of toxicity to non-targeted, beneficial organisms, such as honey bees, earthworms, aquatic bugs, fish and people. Pesticides which are sprayed on a windy day can drift onto neighboring property or into a creek. Pesticides applied before it rains can wash into a storm drain that connects to a local waterway.

**Please carefully read pesticide labels to understand their environmental hazards:**

- Potential risk to waterways
- Precautions and requirements to protect water. (i.e. "Do not apply directly to water, to areas where surface water is present.")

• At-risk sensitive species, such as fish, amphibians and/or birds

If a spill or over distribution of a product occurs on a sidewalk or driveway, please remove it. Sweeping up the product prior to watering or a downpour is a small practice that can make a big difference to protect public health and the environment.

For more information concerning the use of fertilizers and pesticides, please consider the following resources:

**Healthy Lawn Healthy Environment**  
<http://www.epa.gov/oppfdad1/Publications/lawcare.pdf>

**National Pesticide Information Center**  
<http://npic.orst.edu/>

For more information, visit [RiverHealth.org](http://RiverHealth.org)



## COMMUNITY EVENTS



### Dumpster Day - A non-stop drop-off of trash and treasures

Vehicles line the parking lot of HV Park to unload donations and discards.

By 7:00 am, vehicles lined Ridgecrest Road as far as the eye could see. Truck beds were piled high, SUV's were jam-packed and utility trailers groaned under the weight of old TV consoles and appliances. These folks were on a mission to clear out garages, basements and reclaim crowded family rooms at the City's annual dumpster day event, provided free to city residents. Grateful citizens were happy to donate a few dollars to the fireworks collection box, and the \$1,900 collected will add some impressive bursts to the city's big 4th of July display exploding over Happy Valley Park.

The event received generous assistance from local disposal and recycling companies that shared time and equipment. Kahut/Hoodview Disposal shredded paper files and accepted recyclable metal. Les Schwab Tires collected old passenger & light truck tires and batteries for recycling. Hoodview Disposal & Recycling, Sunset Garbage and Waste Management all contributed drop services for the event, and support was also provided by Metro grant funds. Goodwill Industries collected reusable household and e-cyclable items.

The collection numbers proved the

event's popularity. Over 15 tons of reusable household goods were collected by Goodwill Industries. 11,770 pounds of scrap metal, 4,300 pounds of shredding, 200 passenger tires and 27.5 tons of garbage were hauled away after the gates closed. The City appreciates the opportunity to assist our community as we continue to reduce and recycle in an environmentally-friendly way.



Even the Fire Chief joined volunteer efforts at Dumpster Day. (l to r) Fire Chief Fred Charbon, Clackamas Fire District #1; Isaac Charbon; Darn Jones; Catherine Albrecht, resident and member of Traffic & Public Safety Committee.



preserving and enhancing safety,  
livability and character  
of our community

# PUBLIC SAFETY

## Living with wildlife

by Steve Campbell, Director of Community Services & Public Safety

Those of us who live and work in Happy Valley understand that our abundant green spaces and trails are the perfect forested habitats for the wildlife that co-exists with us in our community. Deer and coyotes are common daily visitors. Raccoons make nocturnal appearances in our backyards, raiding ponds and pet food dishes. Even a cougar sighting was recently reported on local news reports. This month's safety message addresses how we can best live in safety and harmony with the wildlife around us.

For some, wildlife is a pleasant reminder of the rural/urban blend we enjoy here in Happy Valley. For others, wildlife is considered a nuisance or a danger as prized gardens and landscaping are foraged, and loose pets could become targeted prey. Whatever your outlook, it is always important to remember that these wild animals are best left alone, and never encouraged through feeding or human contact.

Raccoons are certainly one of the top nuisance animals in suburban neighborhoods. Agile and intelligent, they can cause major damage to attics, decks, lawns and outbuildings while searching for food and shelter. Despite their cuteness factor, they can attack if cornered, and if



Wildlife is common in urban settings.

you or your pet is bitten or scratched, you could be exposed to the possibility of rabies or salmonella. Always use caution in their presence and when handling any materials

they've contacted or droppings left behind. The biggest safety concern posed by deer in the city is if it crosses a path with your vehicle. Drive with caution and an alert eye

when you pass through likely deer crossings such as the golf course, parks or wooded hills. Idleman Road is a good example. Keep in mind that deer can kick or charge if they feel threatened by a chasing dog or see their young in danger, so appreciate their beauty from a distance.

Coyotes are all too common of a sight here and in most cities today. They primarily prey on small rodents and rabbits, but humans have made it all too easy to hunt through garbage, compost, outdoor pet food and free-roaming pets. They are most active between dusk and dawn, but can be seen at any time of day.

Although rare, cougars and mountain lions can prowl the suburbs. There have been no reported attacks on humans in the state of Oregon. They remain fairly elusive and captures after reported sightings are also rare.

In a shrinking natural habitat, all species adapt to survive. They are not a threat to our lifestyles, but always remember to take pro-active measures to discourage their encroachment. If you ever have a sighting or a situation that causes you concern, call 911. Contact the City for non-emergency assistance at (503) 783-3800.



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## Splurge at commercial car wash to save rivers and streams

Sunny warm weather brings out the car-washers in all of us, but we all should put on the brakes when it comes to washing our vehicles on driveways, streets and parking lots!

If you wash your car in your driveway or in the street, the wastewater contaminated by grime, dirt, metals, detergent, motor oil and other pollutants will probably flow into the nearest creek, wetland or river via the storm drain pipes. Diverting filthy car washing water away from the storm drain system will improve our community's water quality and protect public health and the environment.

All of the commercial car wash facilities in Happy Valley, Clackamas, Milwaukie, and Gladstone discharge their wastewater into the sanitary sewer system. The sanitary sewer system is piped to a water pollution control plant, which removes the pollution from the wastewater and then discharges the treated and cleaned water into the Willamette River.

### How you can help

1. Treat yourself and enjoy the convenience of a commercial car wash!
2. If you sponsor or lead a charitable car washing event in the future, please consider partnering with a commercial car wash facility. The owner of the car wash will probably agree to donate a dollar or two per vehicle during the hours that the fundraising event is held. During this event,



volunteers can do the following:

- Hold signs on sidewalks encouraging motorists to pull in for a wash
- Vacuum car interiors
- Dry and polish car exteriors
- 3. If your vehicle isn't washed at a commercial car wash, please consider the following:
  - Please wash cars on grassy or other landscaped areas to ensure that all of the dirty water soaks into the ground to filter grit and grime
  - Use the smallest possible amount of soap
  - Do not wash engines, transmissions or undercarriages
  - Use a shut-off valve on your hose to conserve water

To learn more about protecting our rivers and streams, please visit [www.riverhealth.org](http://www.riverhealth.org)



HAPPY VALLEY MONTHLY



PHOTO BY CINDY FREE-FETTY

From left to right: Dr. Robert Stafford, Heidi Watts, Casey McCarthy and Sarah Brainard stand in front of professional photographs of patients of Stafford Smiles in Happy Valley.

## Get a better smile at Stafford Smiles

by CINDY FREE-FETTY

"A lot of people don't realize how much their teeth and smile affect how they feel," said Dr. Robert Stafford, discussing the positive changes that cosmetic dentistry can add to one's overall self-confidence.

At Stafford Smiles, located in the Happy Valley Town Center for the last eight years, Stafford and his team not only perform routine dental exams, but also cosmetic dentistry.

There are many dentists who perform cosmetic dentistry, but Stafford is one of only five Oregon dentists accredited by the American Academy of Cosmetic Dentistry, spending years developing the skills it takes to make this passion a reality.

Stafford Smiles specializes in dental procedures including teeth whitening, implants and veneers, as well as one-day crowns and oral-cancer detection.

For those who have ever wondered what they might look like with better teeth and smiles, Stafford Smiles offers the Trial Smile.

"It's a chance to try out a new look with no commitment," said Stafford.

"In just about 15 minutes we take an impression, create the optimal smile mold and insert it over the existing teeth. Within minutes our client walks out the door with a new look.

This non-permanent procedure gives the client an opportunity to see the difference, show friends and family and decide if a permanent procedure is for them. Stafford is the only local dentist that offers this service.

For more information about services offered by Stafford Smiles visit [staffordsmiles.net](http://staffordsmiles.net), Stafford Smiles Dentist on Facebook or Stafford Smiles on YouTube.

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## COMMUNITYEVENTS

### History in the making – a Happy Valley timeline

The City of Happy Valley hits its mid-century mark in 2015. Happy Valley became a city on November 17, 1965, as local residents raced to avoid annexation to the City of Portland through incorporation.

Happy Valley is a community that sprouted from the sturdy roots of homesteading pioneers and their farming community to eventually evolve into the popular suburban city it is today. Rich with history, the City is still home to numerous descendants of those original homesteaders. Landmarks like Deardorff Road and Rebeck Park are

namesake reminders of earlier times.

To commemorate this 50 year milestone and his ongoing historical archiving, Happy Valley historian Mark Hurburt is compiling a timeline chronology of Happy Valley history. Mark is a lifelong Happy Valley resident and the Volunteer Coordinator for the Clackamas County Historical Society. He would be very interested in hearing from citizens who may have interesting photos, documents or items of interest for this project. Mark can be reached at [volunteers@clackamushistory.org](mailto:volunteers@clackamushistory.org), or by phone at (503) 653-5574.



Archival art is an important part of the permanent art collection at City Hall. Visitors are immediately greeted by a historic display depicting the homesteading days of the late 1800's through the mid-century 1900's and the arrival of the modern conveniences of the era. Throughout the building, other photographs of historical interest are on display.



### "EnviroGoats" are hoofin' it to Clackamas County Service District No. 1

For the very first time, vegetation-munching goats plus a llama will assist Water Environment Services (WES) this fall by clearing weeds from hard-to-mow stormwater treatment ponds within CCSD#1. Goats provide a natural solution to using pesticides and power tools that won't cause erosion and are suited for sensitive areas, as well as steep terrain.

"Instead of using mechanical processes that can be tough on our facilities, Goats have small but sturdy hooves, amazing appetites and digestive systems that will take care of the mowing and the debris on-site," said Greg Geist, WES Water Quality Manager.

Stormwater treatment ponds hold and filter surface water runoff during the rainy season so that the water can be captured and absorbed slowly to improve its quality before entering groundwater and eventually a nearby river or stream.

"We are extremely excited about the goats, not only for their hard work and environmental-friendliness, but also for the educational opportunity they will provide for North Clackamas students," explained Tim Kay, WES Sanitary and Stormwater Technician, and an alumnus of North Clackamas' Owen Sabin Skills Center, which is now the Sabin-Schellenberg Professional Technical Center.

Students attending schools nearby district treatment ponds are being invited by the Watershed Health Education Program (WHEP) to visit the goats with their teachers to learn about the water cycle or hydrologic cycle and how they can help protect their watershed. For more information on WHEP or to get involved, please visit <http://www.riverhealth.org/> get-involved.



Mowing with Goats features Blue, a 3-year old Spanish goat who is sweet, affectionate and polite.

#### ATTENTION POOL/SPA OWNERS!

Water from swimming pools and hot tubs can contain high levels of chlorine and will kill fish and other aquatic life if released into storm drains or nearby waterways.

Please discharge chlorinated water into the sanitary sewer system where it will be treated at the water pollution control plant.

Go to [www.RiverHealth.org](http://www.RiverHealth.org) for more information or call 503-742-4667.



HAPPY VALLEY MONTHLY

# School PTA makes a difference in children's lives

by CINDY FREE-FETTY

According to the national Parent Teacher Association, it is the mission of the PTA to "make every child's potential a reality by engaging and empowering families and communities to advocate for all children."

It is a network of millions of families, students, teachers, administrators, and business and community leaders, and, according to oregonpta.org, "It is the largest network of parents in Oregon to support and improve schools."

"Our generous PTA helps make Spring Mountain even more of a special place," said Principal Curtis Long.

"Everything from comforting kindergarten parents after the first-day drop-off, to raising funds for additional technology, comes through the caring hands of our PTA moms, dads and community members. I don't know what we'd do without them," he said.

Long is not alone in his attitude. At the national, state and local level, PTA groups work hard toward improving the lives of children in education, health and safety.

"There is an extremely important advocacy

component with PTA, and many important education issues are directly impacted by the single voice created by the input of all PTA members," said Nicole Bailey, PTA president at Spring Mountain elementary.

"There is a lot of joy too, for volunteers, in knowing that they have directly connected in one way or another to creating a better learning environment for their children," Bailey added.

Since the school year began in September, local PTA groups in Happy Valley have been working hard, organizing back-to-school events and barbecues, jog-a-thon fundraisers, and acclimating children and families back into the schools.

The monies received from these fundraisers often go toward underfunded needs in the schools such as computers, study areas, and to pay for family friendly events throughout the year like movie nights, carnivals and end of the year celebrations.

Most PTA groups meet once per month. If you are interested in attending the PTA meetings or joining your local school PTA, go to [clark.k12.or.us](http://clark.k12.or.us), find your school and click on the parent tab.



PHOTO BY RENEE BENDER

Jog-a-thons are one of the huge fundraisers of the year. Kids jog around the track and gather pledges to help support their schools. There are prizes for top fundraising students and classes.



PHOTO BY CARMEN GERLACH

It's back to school night -- an annual fundraiser sponsored by the Verne Duncan PTA.



PHOTO BY CARMEN GERLACH

Principal Mason Branstetter greets students at Verne Duncan and performs the annual first day of school flag raising ceremony.



## Help clear storm drains to protect your property and our water

Heavy rains combined with fall foliage bring the potential for high water and pollutants reaching our waterways. It's now time to pay attention to your storm drains.

**Q:** What is a storm drain?

**A:** The metal grates on streets connecting to underground pipes that carry rain and snowmelt to nearby rivers, streams or groundwater.

Regularly clearing your storm drains of leaves and debris helps reduce flooding and possible property damage while protecting the health of our rivers and streams - our valuable shared sources of drinking water. The Oregon Environmental Council and Water Environment Services offer the following tips:

- Look at the storm drain grates in front of your home or business before and right after a rain or snow storm then make sure they're free of leaves and debris.
- Use a rake or pitch fork to clear leaves and debris from the storm drain. Do not try to remove the grate, only the debris on top of the grate. Dispose of leaves in your yard waste container or compost bin. If possible, spread

the leaves on your garden to protect and nourish your perennials.

- When leaves fall into the street, rake them one foot away from the curb so they won't block the path of rain water.
- If you can't clean a clogged storm drain yourself, call the Happy Valley Public Works Department at (503) 783-3800.
- Please never dump anything into a storm drain. It's against the law!

Thank you for helping to protect public health and the environment. For more information visit [www.RiverHealth.org](http://www.RiverHealth.org)

### ATTENTION BUSINESS OWNERS!

Sign up today for discounted rates on commercial storm drain cleaning requirements at [Info@RiverHealth.org](mailto:Info@RiverHealth.org) or call 503-742-4616



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# PUBLIC SAFETY

## Keeping Our Kids and Community Safe

by Steve Campbell, Director of Community Services & Public Safety

Community watch can be organized meetings, signs posted on neighborhood streets, and residents with a common goal of keeping an eye out for one another's safety. The City strongly encourages neighborhood watch programs, and will help you and your neighbors establish one, but even if you are just one individual who walks, jogs or regularly drives throughout town, you can be a community watch champion on your own.

A very real threat occurred on the morning of October 15th. A HV middle school student walking to school was approached by an adult male who attempted to lure her into his truck. Upon learning of the incident, the school placed over 1,500 recorded calls to parents, teachers reinforced personal safety messages and sent letters home with students. The media reported the incident and released a partial sketch of the suspect. The community quickly spread the word, talking to friends and neighbors, and even patrolled the neighborhood. Social media was a huge help. The City's Facebook page received over 8,000 views and 100 shares in less than 5 hours.

Although social media and word-of-mouth are great tools, I can't stress enough how important our physical presence is, out in the community. So this month, let's focus

on our children, their safety and the power of a community watching over them. Think of them as 3 basic "S" tips:

### Stranger Danger

It's a phrase most of us have used when teaching our kids how to stay safe. But remember, your goal is to instill confidence in your child, not fear. They must be ready to react, not panic. On a level they can understand, explain the difference between 'good' and 'bad' strangers. It's important that children understand where to turn if they are ever lost, feel scared or think someone is following them. Police officers, security guards, salesclerks, teachers—even a Mom or Dad with kids in tow—should be used as examples of people to reach out to in a threatening situation. On the other hand, they must always question the safety of a random

person approaching them at the park, on the street or anywhere they are out of your sight. Explain the logic to them that most adults would not approach a child for directions, for help finding a lost pet or any other excuses to lure them from a safe spot.

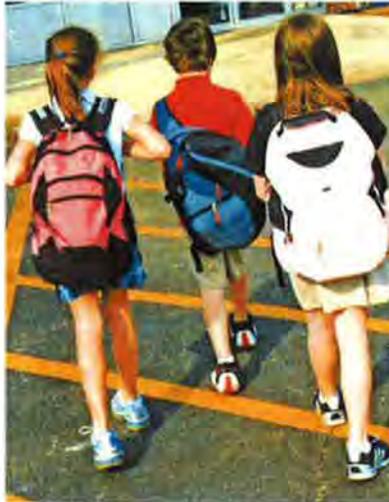
### Safety in Numbers

Walk together! Younger children should always walk with an adult. Aside from the safety aspect, it's great exercise and a nice way to spend some extra time together. If you feel your child is old enough to walk to school on his/her own, determine the safest and most direct route and insist they stick to it—no shortcuts! Don't allow them to accept rides from people that aren't arranged by you, and have them walk with a friend whenever possible.

### Speak Up!

Make sure your child knows how important it is to tell you, a teacher or a trusted adult as soon as possible if someone approaches them. Details will be more clear in their memory, and those details about the person, the vehicle and the encounter will be what catches the suspect. If your child reports an incident to you, it's important that you speak up, too! Any immediate threat warrants a call to 9-1-1, particularly if the suspect could still be in the area. If time has lapsed, your report should go to the non-emergency call line at (503) 655-8211.

Give your kids the tools they need to stay safe. Instill safety into their daily routines and do your part as a visible and watchful safety partner in the community.



## Discover Rock Creek: Home of the Happy Fish of Happy Valley

Public is welcome to Discover Rock Creek – a work party and project tour Dec. 6 from 9 a.m. - 12 p.m. at 14974 SE Hwy 212.

The Rock Creek Confluence natural area will be open to the public for the first time since recent habitat construction was completed. Rock Creek is home to federally listed threatened and endangered Chinook salmon, Coho salmon and steelhead, as well as resident cutthroat trout.

Clackamas County Water Environment Services, Clackamas River Basin Council, SOLVE Oregon Department of Fish and Wildlife, and the City of Happy Valley partnered to improve water quality and fish habitat in Rock Creek at this key juncture where it flows into the Clackamas River.

Fish habitat was improved at the confluence by placing over 20 large wood structures and numerous boulders into the creek to increase stream complexity, reconnect the stream to its floodplain, and reduce stream erosion. These structures provide protective cover and create deep pools for juvenile salmon to feed and grow strong before migrating to the ocean. Initial phase of the project removed over 12 acres of blackberry, English ivy, butterfly bush, Japanese knotweed and reed canary grass from the floodplain site.

At Discover Rock Creek, volunteers can learn about salmon habitat, water quality sampling



and get a firsthand look at an area that is home to diverse wildlife. Volunteers are needed to plant 500 native trees and shrubs, contributing to over 18,000 plants that will ultimately be installed along the banks over the next year. To volunteer, please RSVP to SOLVE on their website at <http://www.solve.org/get-involved/events/discover-rock-creek>.

This project is supported with funding from Clackamas County Water Environment Services, Metro's 2006 Natural Areas bond measure, Oregon Watershed Enhancement Board, The Nature Conservancy's PGE Habitat Fund, and the Clackamas River Basin Council's PGE-funded Shade Our Streams program.



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### Michael Wilson, DO Family Medicine

Continuing my family's tradition of military service, I started my medical career as a U.S. Air Force medic. My favorite assignment was Wiesbaden, Germany where I provided critical services to U.S. military forces in Europe and State Dept. officials as well as civilians. I also participated in the care of the 52 hostages taken captive in Tehran, Iran as well as dignitaries wounded in the assassination of Egypt's President, Anwar Sadat, in 1981. Eventually, I was promoted to flight medic and for 5 years worked in the transport of the sick and injured as well as critically ill infants.

After leaving the military, I graduated from college where I studied biology and pre-medicine, ultimately graduated from medical school and completed a 3 year residency in Family Medicine in Portland in 1996.

Our convenience culture has resulted in a great deal of disease in our society. Setting goals for a healthier lifestyle can improve and extend your quality of life and keep you motivated. I encourage my patients to get moving!

I recommend 6 basic guidelines for optimal health and share these with my patients.

1. Eat well-balanced diet
2. No tobacco use
3. Regular exercise—the more active you are, the healthier you stay.
4. Daily prayer or meditation
5. Moderate or no alcohol consumption
6. Healthy sleep habits

Our two daughters keep my wife, who is a kindergarten teacher, and I, very busy. In my spare time I enjoy cycling, tennis, sailing, skiing, flying and reading. We also enjoy traveling and church activities.

Questions or concerns? Call me today for your appointment! 503.659.4988

We care about your family's health!



PHOTO: JEFFREY BROWN



## BUSINESS SPOTLIGHT

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mildew, and rotting. All of those things compromise the air quality as well as the structure of your home.

• **Rats, Mice and other Pests** - Not only do they eat and destroy your insulation, they leave fecal droppings and urination everywhere, which enters the air and is transferred into your home.



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### Only rain down the drain: Spills happen, help us find them!

Water Environment Services (WES) protects public health and the environment within Clackamas County Service District No. 1 and the City of Happy Valley by preventing certain sources of pollution from entering storm drains, such as paint waste, chlorinated pool/hot tub wastewater, and automotive fluids.

Storm sewer systems typically provide little or no treatment for spills which can pass directly into a local waterway. If you become aware of a significant spill or an inappropriate discharge of wastewater into a storm sewer system, please contact WES immediately at (503) 742-4567 7:30 a.m. - 5:30 p.m. Monday through Thursday. To report spills after hours and during holidays, please call Clackamas County's dispatch center (503) 655-8211 (non-emergency number) or 911

(hazard/emergency) and ask the dispatcher to notify WES.

Visit [RiverHealth.org](http://RiverHealth.org) to learn more about protecting water quality.



Clackamas County Service District No. 1 has vacancies on two citizen advisory boards:

**RiverHealth Advisory Board** provides feedback on programs to improve water quality as well as sanitary sewer service.

**CCSD #1 Budget Committee** reviews proposed fiscal year and supplemental budgets and recommends revisions to the Board of County Commissioners.

Interested citizens residing within CCSD #1 may apply through Dec. 11. For more information, please visit [www.clackamas.us/citizen/abc.html](http://www.clackamas.us/citizen/abc.html).



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# BUSINESS SPOTLIGHT



**HAPPY VALLEY BUSINESS ALLIANCE**

[www.hvba.biz](http://www.hvba.biz)

## COMMUNITY IS OUR BUSINESS

Sharing ideas, resources and experiences, the Happy Valley Business Alliance (HVBA) helps connect Happy Valley business owners with each other and their community.

The HVBA has formed a strong partnership with the City of Happy Valley. The City of Happy Valley is growing and so is the HVBA. The HVBA works to increase awareness of Happy Valley's area businesses, attractions, and special events, to promote a healthy business climate, and to encourage high ethics and professional standards.

The HVBA has over 100 current members. We meet the 4th Wednesday of every month at 7:30am at New Seasons Market in the Happy Valley Town Center at 157th and Sunnyside Road. We skip the month of December. Meeting once a month gives our members the opportunity to network, get updates from community leaders, the City of Happy Valley, public service providers and other businesses. Through our unique meeting model, we share, learn and have fun at the same time! We provide our businesses with empowering information & opportunities.

In addition to our monthly meetings, the HVBA and its businesses work closely to support our local City and surrounding schools to make the Happy Valley and Clackamas area a wonderful place to live. We take pride in the difference the HVBA and its members make in this community.

We know that diverse businesses and leaders make a significant difference in the local and regional economy. Our Board of Directors is a great example of the very diversity that makes the HVBA thrive.

If you would like to find out more about membership or to see and support your local businesses please look us up on our website at [www.hvba.biz](http://www.hvba.biz). No matter what, come visit one of our monthly meetings.



## Begin 2015 by protecting watershed health

Clackamas County Water Environment Services (WES), on behalf of Clackamas County Service District No. 1, invites you to join us and our partners in planting trees and removing invasive species to improve local streamside habitat and water quality. Tools, plants, gloves, and know-how will be provided. All you have to do is show up wearing sturdy shoes and dress for the weather. Please register today for one or all of the exciting and rewarding opportunities listed below:



Friends of Trees and the Clackamas River Basin Council, sponsored by WES. This is a popular event and space is limited so PLEASE PRE-REGISTER.

For more information and to register for these events, go to <http://www.solveoregon.org/get-involved/events>

### SOLVE

Saturday, February 14 and April 4, 2015

Rock Creek Troge Planting

Saturday, February 28, 2015

Mt. Scott Creek Planting

Saturday, March 14, 2015

Rock Creek Watershed Wide Event sponsored by The Rock Creek Partnership, a partnership between SOLVE,

### FRIENDS OF TREES

Saturday, March 21, 2015

Happy Valley Park

Saturday, January 10 and April 4, 2015

Rock Creek Headwaters

For more information and to register for these events, go to <http://www.friendsoftrees.org>

**To avoid messy sewage overflows and costly plumbing bills in your home. DO NOT FLUSH WIPES.** Used baby wipes and cleaning wipes should be thrown away in the trash, not in the toilet.

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## Down the drain: out-of-sight should NOT be out-of-mind

**Q:** Can I pour hot water and detergent or degreasers into the drain to dissolve oil or grease?

**A:** It is best not to temporarily melt grease so it flows into the sewer pipe where it cools and coats the inside of the pipe. Eventually, the pipe may clog and could cause raw sewage to back up into a home or business.

**Q:** If the sewers back up, will Clackamas County Water Environment Services (WES) fix it?

**A:** Property owners are responsible for the sewer pipes on their property. Sewer pipes within homes and businesses carry wastewater to a sanitary sewer treatment facility. If damage or back up of the public sanitary sewer or drainage systems is caused by a property owner, he or she must pay for cleanup and repair.

**Q:** Are storm drains and catch basins for disposal of dirty water, debris, etc?

**A:** Not Only clean water should be discharged into storm drains and catch basins. In Clackamas County Service District No. 1, outside drains are built to direct stormwater runoff (rain, melted ice and snow), not wastewater, to the nearest creek or wetland. Dumping debris or waste in them pollutes the water where they discharge and may harm fish and wildlife.



**You can help!**  
Use the "dry clean up" method to protect sewer pipes in your home:  
1. Scrape or wipe food waste from pots, pans, plates and utensils directly into the trash.  
2. Use a paper towel to remove residual grease from cookware and serving surfaces.  
3. Dispose of greasy paper towels and any surface cleaning wipes into trash bins with plastic liners. **NEVER FLUSH WIPES!**

Report spills and other inappropriate discharges into storm drains in your neighborhood: Call WES immediately at (503) 742-4567 from 7:30 a.m. - 5:30 p.m. Monday through Thursday. After hours and during holidays, call (503) 655-8211 for non-emergency or 911.

**Please join us at festive watershed event!**  
3/7 Johnson Creek Watershed Wide Event [www.jcwc.org](http://www.jcwc.org)  
3/14 Rock Creek Watershed Wide Event [www.rockcreekpartnership.org](http://www.rockcreekpartnership.org)  
For more information, please visit [RiverHealth.org](http://RiverHealth.org)

Thank you for helping to protect public health and the environment!



## 11 Critical Inspection Traps to be Aware of Weeks Before Listing Your Home for Sale

Happy Valley According to industry experts, there are over 33 physical problems that will come under scrutiny during a home inspection when your home is for sale. A new report has been prepared which identifies the eleven most common of these problems, and what you should know about them before you list your home for sale.

Whether you own an old home or a brand new one, there are a number of things that can fall short of requirements during a home inspection. If not identified and dealt with, any of these 11 items could cost you dearly in terms of repair.

That's why it's critical that you read this report before you list your home. If you wait until the building inspector flags these

issues for you, you will almost certainly experience costly delays in the close of your home sale or, worse, turn prospective buyers away altogether.

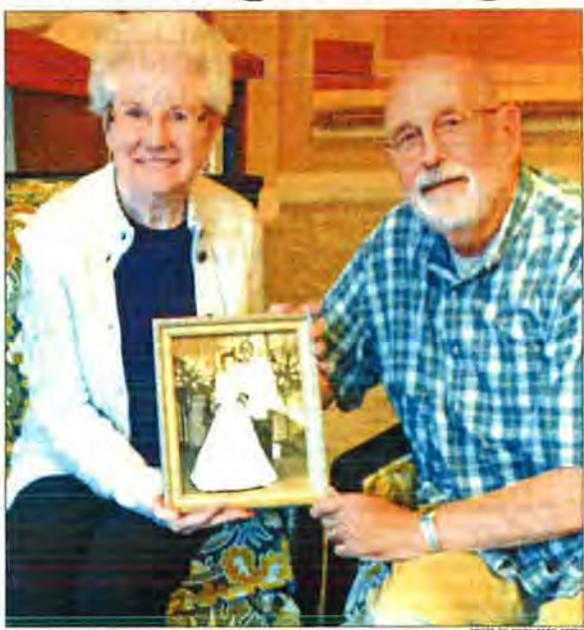
In most cases, you can make a reasonable pre-inspection yourself if you know what you're looking for, and knowing what you're looking for can help you prevent little problems from growing into costly and unmanageable ones.

To help home sellers deal with this issue before their homes are listed, a free report entitled "11 Things You Need to Know to Pass Your Home Inspection" has been compiled which explains the issues involved.

To hear a brief recorded message about how to order your FREE copy of this report call toll free 1-800-900-5280 and enter ID 1003. You can call any time, 24 hours a day, 7 days a week.

Get your free special report NOW to learn how to ensure a home inspection doesn't cost you the sale of your home.

# Couple reflects on a life-long marriage



"I have placed our wedding photo on every desk I've had for the past 55 years," said Larry Ayers. "It reminds me of my love and commitment to this marriage."

by CINDY FREE-FETTY

In 1955, Larry Ayers was a young 22 year old working in the Alaska Territory on communications for the military. Judith was a lovely 17 year old who was working at a local drive-in restaurant when she caught Larry's eye.

"I started hanging out there just before they would close up so I could talk her into giving me a last piece of pie and offer her a ride home," Ayers said.

Soon after, the two became an item. The dating continued until Judith left for college and began dating other boys.

"She wrote me a 'Dear John' letter, but when she returned, we gave it another go," he explained.

Two years later, Larry proposed and swept Judith off to South Carolina to continue college.

"Oh boy, her mom wasn't too happy about that quick engagement," Ayers said. But eventually they had the support of their family and were married.

Over the years, Larry, now 80, and Judith, 75, both became highly educated teachers and administrators who lived in South Carolina, Tennessee and eventually after having their daughters, moved to Oregon, where Larry worked on his doctorate at Oregon State University, and where their parents could be involved with the grandchildren.

"We've always enjoyed our life together,"

Ayers said, adding, "Even when stress of careers presented itself, we just decided that we would always persevere."

The pair raised their girls with faith, and the family enjoyed nice family vacations, but the couple also took time for themselves traveling and enjoying the outdoors.

"Our marriage has always been based on friendship and enjoying each other," said Judith. "That was the draw from the very beginning, when we were young and dating, and it is still that way today."

For their 50th wedding anniversary, the couple went back to Alaska and look an identical photo to one that was captured when they first met.

Ayers reflected on growing old together in a life-long marriage.

"You collect things together in life, but as you age and retire, you also have to let go of those things and that can be hard."

Last November, the couple moved out of their Damascus farm home, sold their favorite truck and with the help of their daughters, moved into Miramonte Pointe.

"We've always had a foundation of love and respect, and we've always looked out for each other. Due to her family history, I knew the time would come when I would be Judith's caretaker," Ayers said.

He added, "It's not really about where you live or what you collect. It's about who you have, and we have each other."

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Clackamas County Water Environment Services announces Ronald E. Wierenga as its new Surface Water Program Manager

The Surface Water Program Manager provides leadership for maintaining regulatory compliance and improving water quality in streams throughout Clackamas County Service District No. 1 and the Surface Water Management Agency of Clackamas County.

"We are thrilled to welcome Mr. Wierenga who brings a wealth of knowledge and a history of innovative ideas to this important role at WES, and especially to our community," said Clackamas County Water Environment Services (WES) Interim Director Greg Geist.

To receive information about WES and its programs, sign up for GovDelivery today at [clackamas.us/govdoc.html](http://clackamas.us/govdoc.html)

**Thank you, volunteer RiverHealth Advisory Board members!**

**Kevin Bailey, Markley Drake, Eric Hofeld, Steve Kennett, James Knapp, Karin Power and Ron Welgel**

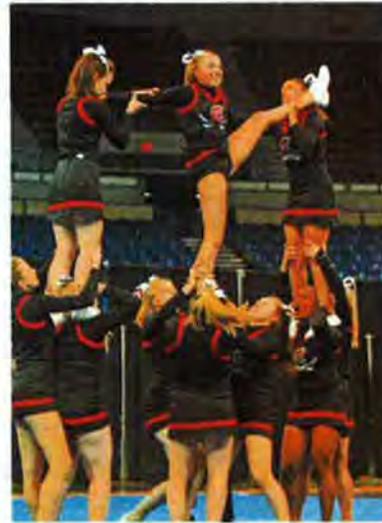
The Clackamas County Service District No. 1 (CCSD#1) RiverHealth Advisory Board is a ratepayer represented board that provides comment and recommendations to Clackamas County Water Environment Services (WES) staff and the Board of County Commissioners regarding district projects and programs.

CCSD#1 is a county service district that provides wastewater and surface water management services to the areas of unincorporated north Clackamas County, the City of Happy Valley, and a small portion of the City of Damascus. The district also provides wastewater services to the communities of Boring, Hoodland, and the City of Milwaukie and Johnson City.

The Clackamas County Board of Commissioners is the governing body of CCSD#1, however daily operations are managed by WES. The RiverHealth Advisory Board meets bi-monthly at 6:30 p.m. at the Development Services Building, 150 Beaver Creek Road, Suite 430, Room 432. Citizens are welcome to attend and provide feedback. The next meeting will be held on April 8, 2015. For more information, including meeting agendas and packets, please visit [riverhealth.org/advisory-boards](http://riverhealth.org/advisory-boards)



# CHS cheerleaders compete at Oregon State competition



Down one team mate at the last minute, the Clackamas High School cheerleading team didn't walk away with a title. They did persevere in the 6A competition, which is the hardest division in the state. The team rallied together and hit a solid, clean routine, fulfilling their goal of simply being competitive.

# Daddy Daughter Dance



Dancing daughters sign up for song requests at the DJ booth.



Mike Dronnan and his daughter Ashlye, a second grader at Sunnyside Elementary, pose at the professional photo booth.

For the fourth year in a row the Clackamas High School boys LaCrosse team hosted the Daddy Daughter Dance for fathers and their school-aged daughters in grades K-8. Over 300 dads and daughters attended the event, held at the high school on Feb. 7; it is the largest single fundraising event for the team each year. Funds go to support the LaCrosse team and a portion of the funds are donated to the GCA by the team. "The greatest thing about this event is that it provides the community with a special night for dads to spend with their daughters," said Dave Lowelty, who founded the event. "It is an experience that daughters and fathers look forward to every year."

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COMMUNITY NEWS  
CITY OF HAPPY VALLEY

## Streamside Steward Program

**N**CUWC's service area includes the watersheds of Boardman Creek, Rinearson Creek, River Forest Creek, and Kellogg - Mt. Scott Creeks. NCUWC has a Streamside Stewards Program (SSP) which offers land owners with streams on their property the opportunity to join this free program. The goal of the SSP is to improve riparian conditions by enhancing streamside wildlife habitat and improving water quality, while fostering an ethic of stewardship and empowerment in property owners.

Participation in the Streamside Stewards Program is 100% voluntary. Services and materials are provided to landowners for free. The first step is to contact us. We will schedule a site assessment visit with the landowner. Our restoration expert will meet with the property owner to learn more about the site and to discuss the potential restoration activities that could help achieve watershed goals. Potential restoration activities include weed control, planting native trees and shrubs, and implement-



ing additional stormwater management techniques.

Currently we have 94 existing sites in our Streamside Stewards Program.

We invite you to contact us about the Streamside Stewards Program. You can reach the NCUWC Coordinator, Tricia Sears, by phone 503-984-7654 and by email at [tricia@ncuwc.org](mailto:tricia@ncuwc.org). Check out our website at [www.ncurbanwatershed.wordpress.com](http://www.ncurbanwatershed.wordpress.com).



## Have an 'eggs-traordinary' Easter in Happy Valley



Easter festivities are in full bloom at the Aerie and Eagle Landing from 1 to 3:30 p.m. on Saturday, April 4.

By CINDY FREE FETTY

**T**he word Easter comes from the name Eostre or Ostara, which means "spring" or "movement towards the rising sun."

The custom of hiding eggs comes from a belief where children thought the Easter hare had laid eggs in the grass.

In southern Germany, they added an element of challenge to the hiding by placing eggs in thistles and nettles.

Holding true to tradition, the Easter Bunny will be hopping around Happy Valley, strategically hiding eggs and visiting children and families in fun, local activities.

The Aerie at Eagle Landing hosts an EGG-Stravaganza from 1 to 3:30 p.m. on Saturday, April 4, offering egg hunting, mini-golf, soccer golf, face painting, crafts, raffle prizes and, of course, meeting the Easter Bunny.

Egg hunts start at 2 p.m. by age. The fun is only \$3 and all proceeds benefit Christian Family Adoptions (CFA).

Join the fun at 10220 S.E. Causey Ave. and register at [eaglelandingsite.com](http://eaglelandingsite.com).

Take your little ones to Clackamas Town Center for photos with the Easter Bunny through April 4, with special hours from 10 a.m. to 9 p.m. on April 3 and 4.

Capture your children with a special spring memory photo, perfect for sharing with family and friends.

This event is sponsored by the Children's Center.

Hunt eggs indoors at the Clackamas Learning Palace. This annual event starts at 9:30 a.m. on Saturday, April 4, at 9995 SE Sunnyside Road, Suite E (across from Kaiser Hospital).

Kids bring their own basket and hunt for pre-filled Easter eggs hidden throughout the store. Visit [shop.learningplanecatalog.com](http://shop.learningplanecatalog.com) for more information.

For delicious Easter Brunch, don't forget about local restaurants such as Stanford's, Monarch Hotel and Stone Cliff Inn, offering special menus for the day.

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## BUSINESS SPOTLIGHT

**Amy Cheung**  
Real Estate Development Specialist  
CCIM #13482  
COPE, CPS, SIALABR, CREA  
Work: 503-344-4554  
Cell: 503-999-7878  
amycheung@ccim.net



Amy Cheung (Shum) has been in real estate for the past 17 years as a private investor, commercial broker and realtor. Licensed in Oregon and Washington. She was born in Hong Kong and has lived in Oregon for over 30 years. Amy was an Insurance Agent for Allstate for ten years before she went into the real estate field. She was with RE/MAX Equity Group for ten years before joining Columbia Pacific Commercial Properties in Vancouver. Waah Amy holds a Bachelors Degree in Finance

from Oregon State University, a Graduate Certificate of Real Estate Development from Portland State University.

Being a CCIM designee, Certified Commercial Investment Member, she sold and bought numerous restaurants, strip malls and apartments. She also negotiates leasing for office, retail and warehouses.

Some of Amy's personal interests include ballroom and Latin dancing and Chinese painting.



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### Gregory Geist is appointed as director of WES

Gregory Geist was named director of Clackamas County Water Environment Services (WES) on March 23 following a nationwide recruitment. He had served as acting director since December.

"Greg brings extensive experience and leadership to this important position. He was clearly at the top of a strong and competitive field of candidates. I have every confidence he will do an incredible job leading WES," said County Administrator Donald Krupp.

Geist started at WES as Water Quality Manager in 2013. His previous experience includes 15 years at the Oregon Department of Environmental Quality and before then at the City of Salem. He holds a master's degree in environmental science and a bachelor's degree in physical sciences from Washington State University.



### Improvements to neighborhood stream benefit water quality and habitat

Water Environment Services, on behalf of Clackamas County Service District No. 1, recently partnered with the City of Happy Valley to improve stream stability of a tributary of Mt. Scott Creek nestled within a neighborhood just north of Cedar Way.

As neighborhoods develop, waterways and surrounding wildlife habitat are impacted by runoff in a number of ways. This particular stream's severely eroded banks became steep and unstable. The solution involved stabilizing the banks and planting native vegetation to reduce future erosion and improve streamside habitat.

"Streams in urban areas are forced to adjust to increased rates and volumes of runoff when watersheds change from vegetated to paved," said WES Project Manager Gail Shaloun. "These are the same issues for many streams throughout the District and in fact, many urban areas. The Cedar Way tributary is very steep, magnifying this effect. The cycle continues as development continues," emphasized Shaloun.

City of Happy Valley Public Works Director Chris Randall said, "We were able to use a more natural approach to protect the creek and surrounding properties, as well as a critical pedestrian connection owned by the City. Just piping the drainage way wasn't something anyone wanted to do."

John Nagy, WES's erosion control expert, further explained, "This project transformed a severely degraded stream corridor to a more natural state and helped prevent future damage to the stream and downstream properties."

Visit [RiverHealth.org](http://RiverHealth.org) to learn about more projects to improve watershed health.



Thank you for helping to protect public health and the environment!



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RiverHealth Community Watershed Stewardship Program  
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**Who can apply?**

Eligible applicants include partner groups who want to improve the health of Clackamas County Service District No. 1 (CCSD #1) watersheds, such as citizen groups, businesses, schools, nonprofits, student groups, faith organizations, neighborhood or business associations, and service groups within the Portland Metropolitan area and Clackamas County.

**What kind of projects qualify?**

Preferred projects improve watershed health, are visible to the general public, show a clear community benefit, and include one or more of the following features:

- Rainwater Infiltration - Install rain gardens, stormwater planters, pervious paving, and eco-roofs.
- Restoration - Remove invasive plants, plant native vegetation, and maintain restoration sites.
- Habitat Improvement - Support native wildlife within riparian areas, such as enhancements to bird and bat habitat.
- Pavement Removal - Remove pavement and replace it with permeable surfaces to restore natural hydrology and reduce stormwater runoff.

For more information and to apply, please visit [RiverHealth.org](http://RiverHealth.org) or contact WES Environmental Policy Specialist Gail Shaloum at 503-742-4597.

Thank you for helping to protect public health and the environment!



# LOCAL SOCCER CLUBS

## to host observations and tryouts for competitive level players

by CINDY FREE-FETTY



PHOTO SUBMITTED BY CASC

It's that burning question that many parents face as their children begin focusing more heavily on one sport over another. There are so many options for youth sports, and when players begin favoring a sport at a young age, the question about encouraging sole sport participation or placing your child at a more competitive, and often a more expensive level, can weigh heavily.

In early May, local boys and girls, ages 7-18, will be offered the opportunity to be observed for Developmental programs and try out for the Classic Competitive levels of soccer, rather than the recreational level offered to youth beginning at age 4.

Three experts from local soccer programs offer input on how and when to place your young child athlete into a competitive program, no matter what the sport, but in this case, soccer. They are: Brian Butler, head boys soccer coach at Clackamas High School; Peter Showler, sporting director, Eastside Timbers; and Mark Jorgenson, PDP director, Clackamas United Soccer Club.

All three experts agree that youth sports are important not only for the social and physical needs, but in the promotion of life lessons for young kids.

According to Showler, "Be it the recreational or competitive level, the understanding of both the individual and team aspects are encompassed in so many ways within a sporting arena."

While many kids are perfectly happy playing at the recreational level, Butler explained that there are kids who show an extra interest in playing at a higher level, and in these cases, he encourages parents to find a club to help them develop their skills and experience.

"Where it goes wrong is when the parents become the driving force behind that decision instead of the child, and they force the athlete to have a more narrow focus," he said.

"Don't take away that natural opportunity for the child to explore," insisted Butler. "Steer away from coaches that demand so much attention from kids for one thing. Every new sport is a new learning situation, and if the child isn't driving it, they should be trying a lot of different things."

However, if the young athlete does show that

### Summer Tournament

For the first time, Clackamas United will be hosting a summer tournament in Happy Valley. The tournament will be held throughout the area from June 26 to 28 for US-U11 only. Teams must register by June 12. Visit [www.clackamasunited.com](http://www.clackamasunited.com) and Tournaments for more information and to register your team.

At the competitive level of soccer, clubs make a statement on the field, not only with skills, but with a more professional appearance.

"If all they want to do in their free time is play soccer for example," explained Butler, then a competitive program should be considered.

"At the development program level, the approach is based on the individual and we encourage them to be challenged," explained Jorgenson.

"We ask more of them at practice and games from a technical aspect, and this tells them that we believe in what they can do. Showing the belief in the individual is an important part of coaching in this program," he said.

Both Eastside and Clackamas clubs offer a long-term developmental philosophy, in which they can provide the framework to develop the player to the best of his or her ability and help launch them to premier opportunities in their sport.

"One of the greatest things I've seen in a developmental program is that young athlete that has so much confidence to gain," said Jorgenson.

"It's not always about the athleticism they bring to the team, but through a lot of hard work and training, by the time they are heading into the competitive level, they have also built self-confidence in their abilities."

"Every day I watch training," said Showler. "I see a player put the 'pieces together' on what the coach has been working on and they have success. That is one of my favorite things."

He continued, "The main objective is to instill a love for the game and hope those experiences mean the player will want to continue. Competitive soccer can be the avenue to allow kids with the extra special drive to reach their goals of playing at a higher level, and this starts with developing the player who shows that enthusiasm."

For more information on these clubs, visit Clackamas United Soccer Club at [www.clackamasunited.com](http://www.clackamasunited.com) or Eastside Timbers at [www.eastside.com](http://www.eastside.com).

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# Sabin-Schellenberg Center Annual Cruise-In

June 6, 2015 • 7 a.m. to 2 p.m.

The 8th Annual Sabin Schellenberg Center cruise in will be held June 6th from 7 a.m. to 2 p.m. The cruise-in features a pancake feed, BBQ, tool trade-in and sale, raffle, an awards ceremony and more. The cosmetology students will also have the salon open for spa services.

Registration is between 8-11 a.m. and is \$20 per car and judging will begin at 11:30.

All proceeds will go to the Sabin-Schellenberg Center, which provides career and technical education programs to high school students in the North Clackamas school district. Proceeds also fund the Skills USA students who are heading to nationals.

For more information contact Robbie Christner at 971-273-1040.

## Event Details

**LOCATION:** Sabin-Schellenberg Center  
14211 SE Johnson Rd.  
Milwaukie, OR 97267

**PANCAKE FEED:** 7-9 am

**BBQ:** 11-1:30 pm

**SALON OPENS:** 10 AM



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Did you know?

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- Decaying pet waste consumes oxygen, releases ammonia, and carries harmful bacteria, viruses and parasites, such as E. coli, that can threaten the health of humans and wildlife
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## Protecting Our Rivers and Streams

### Hoodland master planning effort underway

A comprehensive Hoodland Master Plan is being developed to address infrastructure challenges and provide reliable wastewater services to the Hoodland service area.

Water Environment Services is working with an experienced team from CH2MHILL and began work in mid-December. The goal of the master planning project is to develop cost-effective service options while continuing to protect water quality and public health.

#### HOODLAND MASTER PLAN FACT SHEET

To request a copy of the Hoodland Master Plan Fact Sheet, please send your request to [mkenney@clackamas.us](mailto:mkenney@clackamas.us). For questions about this project, please contact the WES project manager, Matt House, at 503-742-4601 or [matthou@clackamas.us](mailto:matthou@clackamas.us).

#### INFORMATION AND NEWS

To sign up for GovDelivery to receive ongoing, timely information and news about this project, as well as other county information, please visit [clackamas.us/govdoc.html](http://clackamas.us/govdoc.html).



Aerial photograph of Upper Sandy River during the January 2011 flood event.



WES crews work to raise Lamberton Kim Pump Station from Sandy River Flood, January 2011.

### Help protect public health and the environment in Clackamas County

Did you know that flushing items such as baby wipes can cause damage to the sewer system? Many things that are routinely flushed down the toilet, including those marketed as "flushable," can cause sewer back-ups and expensive repair issues.

"Please be wary of products marketed as 'flushable,'" urged Andy Robins, Field Operations Supervisor for Clackamas County Water Environment Services. "Just because something can be flushed down the toilet does not mean that it should be. Many of these items cause clogs and reduce pumping capabilities requiring costly service calls and repairs."



The following are examples of what should not be flushed down the toilet or drain:

- Automotive fluids
- Baby wipes
- Chemicals
- Cleaning wipes
- Cotton balls, swabs and pads
- Disposable diapers
- Facial tissues
- Fats, oils and grease
- Feminine hygiene products
- Medications and prescription drugs
- Paint and paint thinners
- Paper towels
- Sealants and solvents

Utilities across the country are spending millions of dollars to clean these products out of their systems and replace equipment that otherwise would have had many more useful years of service.

#### FREQUENTLY ASKED QUESTIONS

**Q:** Can I pour hot water and detergent or degreasers into the drain to dissolve oil or grease?

**A:** It is best not to temporarily melt grease so it flows into the sewer pipe where it cools and coats the inside of the pipe. Eventually, the pipe may clog and could cause raw sewage to back up into a home or business.

**Q:** If the sewers back up, will Clackamas County Water Environment Services (WES) fix it?

**A:** Property owners are responsible for the sewer pipes on their property. Sewer pipes within homes and businesses carry wastewater to a sanitary sewer treatment facility. If damage or back up of the public sanitary sewer or drainage systems is caused by a property owner, he or she must pay for cleanup and repair.

**Q:** Can I use storm drains and catch basins for disposal of dirty water, debris, etc?

**A:** No! Only clean water should be discharged into storm drains and catch basins. In Clackamas County Service District No. 1, outside drains are built to direct stormwater runoff (rain, melted ice and snow), not wastewater, to the nearest creek or wetland. Dumping debris or waste in them pollutes the water where they discharge and may harm fish and wildlife.



#### YOU CAN HELP!

Use the "dry clean up" method to protect sewer pipes in your home:

1. Scrape or wipe food waste from pots, pans, plates and utensils directly into the trash.
2. Use a paper towel to remove residual grease from cookware and serving surfaces.
3. Dispose of greasy paper towels and any surface cleaning wipes into trash bins with plastic liners. Never flush wipes or other items such as those listed previously.

Report spills and other inappropriate discharges into storm drains in your neighborhood.

Call WES immediately at 503-742-4567 from 7:30 a.m. - 5:30 p.m. Monday through Thursday. After hours and during holidays, please call 503-655-8211.

Thank you for doing your part to help protect public health and the environment in Clackamas County.

#### FOR MORE INFORMATION

Watch Down the Drain, a fun and educational video about what should not go down the drain. For more information about our sanitary sewer system, please visit [riverhealth.org](http://riverhealth.org).

## PROTECTING OUR RIVERS AND STREAMS

### Remove leaves from storm drains to protect property and water quality

Storm drains are the metal grates on streets connecting to underground pipes that carry rain and snowmelt to nearby rivers, streams or groundwater.

The Oregon Environmental Council and Water Environment Services offer the following tips for keeping the drains free-flowing:

- Look at storm drain grates in front of your home or business before and right after a rain or snow storm, to make sure they're free of leaves and debris.
- Use a rake or pitch fork to clear leaves and debris from the storm drain. Do not try to remove the grate, only the debris on top of the grate. Dispose of leaves in your yard waste container or compost bin. If possible, spread the leaves on your garden to protect and nourish perennials.
- When leaves fall into the street, rake them one foot away from the curb so they won't block the path of rain water.
- Never dump anything into a storm drain. It's against the law! If you see an illicit discharge, please call 503-742-4567.

#### ATTENTION BUSINESS OWNERS!

For a discounted rate on commercial storm drain cleaning requirements, contact Water Environment Services at [info@RiverHealth.org](mailto:info@RiverHealth.org).

Thank you for helping to protect public health and the environment. For more information visit [www.RiverHealth.org](http://www.RiverHealth.org).



## WEED EATERS



Students at Verne A. Duncan Elementary School in Happy Valley greet 40 goats and a llama next to their campus and learn about watershed health. The weed-munching herd is part of a pilot project conducted by Water Environment Services to control invasive vegetation within stormwater ponds in Clackamas County Service District No. 1.

[www.RiverHealth.org](http://www.RiverHealth.org)



# newsletter



## Habitat restoration project provides legacy for water quality and community

The Discover Rock Creek event brought neighbors, families and friends together to the site of a recently completed habitat restoration project undertaken by Clackamas County Water Environment Services (WES) and partners Clackamas River Basin Council (CRBC) and SOLVE, where visitors of all ages marveled at exhibits of giant stoneflies, stages of salmon development, and evidence of abounding wildlife.

The partners installed ecological enhancements along approximately 2,000 linear feet of stream in Rock Creek near its confluence with the Clackamas River followed by the planting of 20,000 native trees and shrubs to improve water quality and fish habitat. Please visit [RiverHealth.org](http://RiverHealth.org) to watch the Discover Rock Creek video and learn how to get involved.



Salmon Forest poster created by Watershed Health Education Program student Diana Kim of Clackamas High School. See more student artwork at [RiverHealth.org](http://RiverHealth.org).

## 1,000 shrubs and 250 trees to be planted at Kellogg Creek Facility

The Kellogg Good Neighbor Committee (a citizen-led committee), City of Milwaukie and Clackamas County Water Environment Services (WES) are working together on a landscaping project designed to beautify the environment and help control odor around the Kellogg Creek Water Pollution Control Plant.



In the coming weeks, 1,000 new shrubs and 250 new trees will be planted around the Kellogg Creek facility. Until the new shrubs and trees are planted and have time to grow, a fabric lining along the fence will help to screen views of the plant.

"In addition to dense plantings along the fence, sparsely planted tree groupings near the river will provide dappled shade in the summer while allowing views to be maintained through the trees year-round," says Gail Shaloum, WES Environmental Policy Specialist. The vast majority of the plantings will be native to Oregon and the non-native ornamental plants are non-invasive species. For more information please visit [milwaukieoregon.gov](http://milwaukieoregon.gov)

## Use caution when using pesticides, herbicides and fertilizers

Pesticides can help control pesky weeds and insects, but every pesticide (including organic pesticides) has some level of toxicity to non-targeted, beneficial organisms, such as honey bees, earthworms, aquatic bugs, fish and people. Pesticides sprayed on a windy day can drift onto neighboring property or into a creek. Pesticides applied before it rains can wash into a storm drain that connects to a local waterway.

### Spills happen. Help us find them

Please report spills and other inappropriate discharges into storm drains in your neighborhood. Call WES immediately at (503) 742-4567 from 7:30 a.m. - 5:30 p.m. Monday through Thursday. After hours and during holidays, please call (503) 655-8211.

