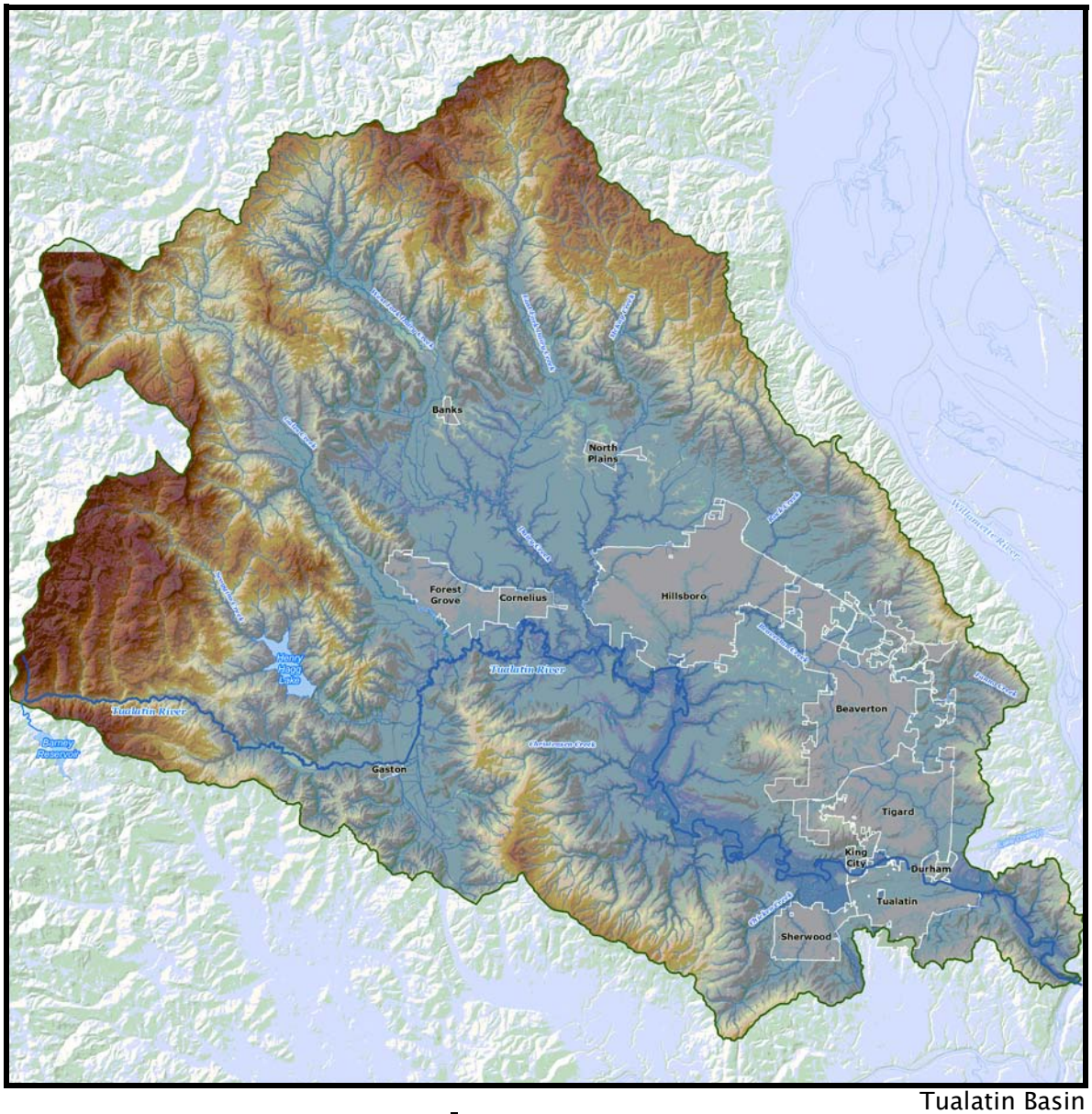
TUALATIN RIVER
FLOW MANAGEMENT
TECHNICAL COMMITTEE



Tualatin Basin

2013 Annual Report

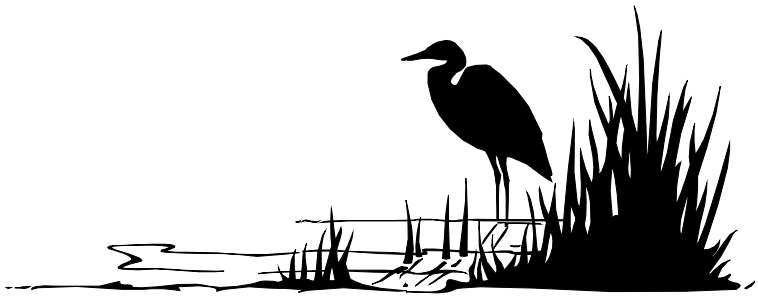
prepared by
Bernie Bonn for

CleanWater Services

Cover Map Credit:
Brian Shepard, Clean Water Services

TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE

2013 Annual Report



Prepared by:

Bernie Bonn

For:

Clean Water Services

In cooperation with:

Oregon Water Resources Department, District 18 Watermaster

FLOW MANAGEMENT TECHNICAL COMMITTEE MEMBERS

Kristel Fesler, Chair	*City of Hillsboro Water Department*
John Goans	*Tualatin Valley Irrigation District*
Jake Constans	*Oregon Water Resources Department*
Raj Kapur	*Clean Water Services*
Laura Porter	*Clean Water Services*
Scott Porter	*Washington County — Emergency Management System*
Mark Rosenkranz	*Lake Oswego Corporation*
Randy Smith	*City of Forest Grove*
Todd Winter	*Washington County Parks — Hagg Lake*
Jean Woll	*Joint Water Commission*

ACRONYMS USED IN THIS REPORT

FULL NAME	ACRONYM
Facilities	
Spring Hill Pumping Plant	SHPP
Wastewater Treatment Facility	WWTF
Organization	
Barney Reservoir Joint Ownership Commission	BRJOC
Clean Water Services	CWS
Joint Water Commission	JWC
Lake Oswego Corporation	LOC
Oregon Department of Environmental Quality	ODEQ
Oregon Department of Transportation	ODOT
Oregon Water Resources Department	OWRD
Tualatin Valley Irrigation District	TVID
Tualatin Valley Water District	TVWD
Bureau of Reclamation	BOR
U.S. Geological Survey	USGS
Other	
Total Maximum Daily Load	TMDL
Wasteload Allocation	WLA

FULL NAME	ACRONYM
Units of Measurement	
Acre-Feet	ac-ft
Cubic Feet per Second	cfs
Micrograms per liter	µg/L
Milligrams per Liter	mg/L
Million Gallons per Day	MGD
Pounds	lbs
River Mile	RM
Water Year	WY
Water Quality Parameters	
Biochemical Oxygen Demand	BOD
Dissolved Oxygen	DO
Sediment Oxygen Demand	SOD

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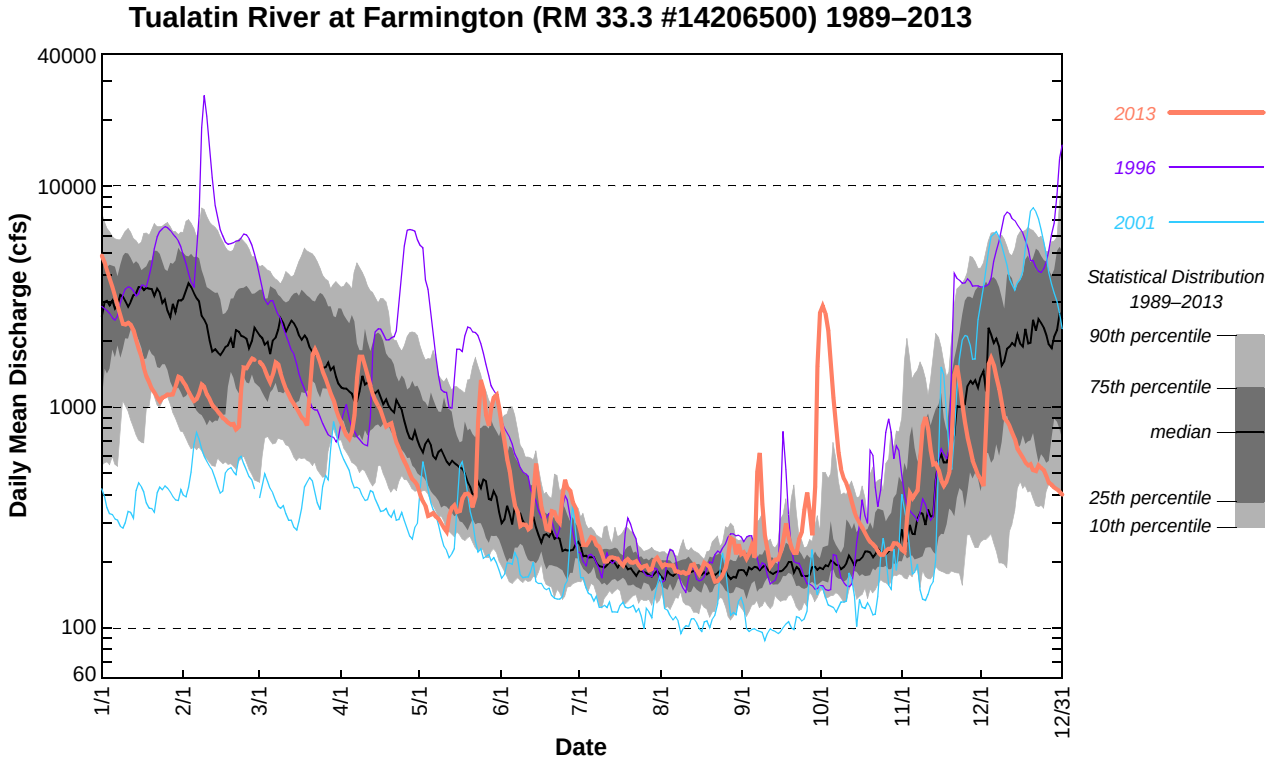
Appendices

2013 SUMMARY

This is the twenty-fifth year that the Tualatin River Flow Management Technical Committee has prepared an annual report documenting the flow management of the Tualatin River. Members of the committee include Clean Water Services (CWS), Tualatin Valley Irrigation District (TVID), Joint Water Commission (JWC), Lake Oswego Corporation (LOC) and Oregon Water Resources Department (OWRD).

Highlights for 2013 include:

- January through early May were particularly dry, having only about a third of normal average rainfall.
- Barney Reservoir filled. Scoggins Reservoir almost filled at 98% full-pool.
- Due to the dry conditions during the first quarter of 2013, regulation off natural flow began earlier than any time in recent history, on May 3, 2013. Use of natural flow resumed for 10 days in late May to early June due to a big rain storm.
- Dissolved oxygen levels in the Tualatin River were below water quality standards at the end of August and beginning of September. The low levels of dissolved oxygen were caused by biochemical oxygen demand that was contributed to the river by several storms in late August and early September.
- September 2013 had historic rainfall, including events on the 5-6th (1–2 in.) and 27th-Oct 2nd (4–5 in.). Dilley has the longest record for rainfall in the basin—to 1944. Before 2013, the maximum rainfall at Dilley for the month of September was 3.83 in. in 1981; in 2013, Dilley had 7.57 in. of rain.
- Due to the record-setting rainfall at the end of September, flows in the Tualatin River spiked to their highest levels ever for the late-September/early-October time period. All entities were back on natural flow by September 30th and dissolved oxygen levels in the river rebounded well above standards.
- November and December of 2013 were dry, resulting in very low flows by the end of 2013.



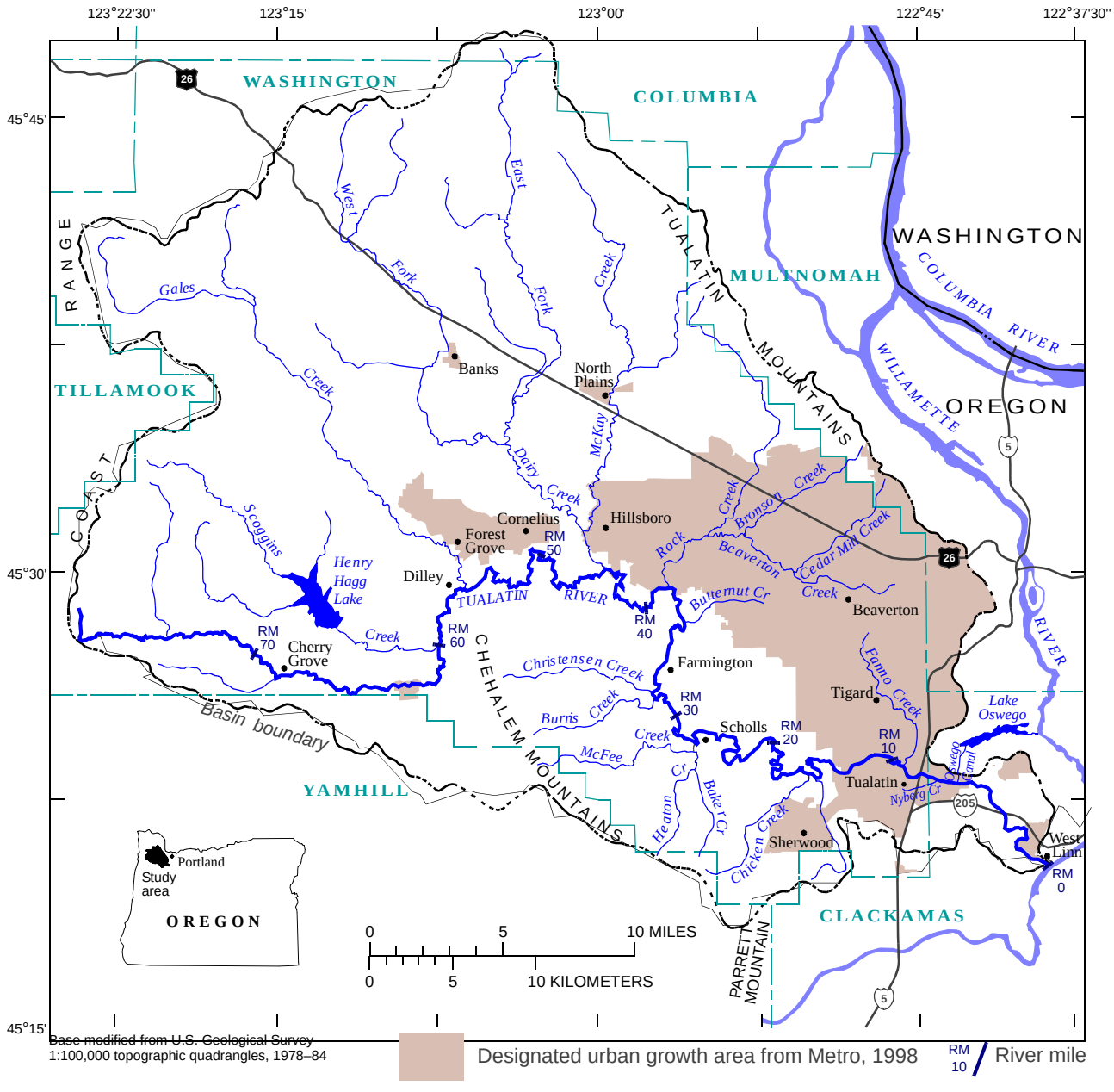
BACKGROUND

Basin Description

The Tualatin River Basin comprises an area of 712 square miles situated in the northwest corner of Oregon and is a subbasin of the Willamette River. The headwaters are in the Coast Range and flow in a generally easterly direction to the confluence with the Willamette River. The basin lies almost entirely in Washington County. (See map below)

The Tualatin River is about 80 miles long and changes dramatically from its headwaters to its mouth. The mountain or headwater reach (upstream of RM 55) is narrow (about 15 ft) and steep with an average slope of about 74 ft/mi. The meander reach (RM 55–33) is wider with an average slope of about 1.3 ft/mi. The reservoir reach (RM 33–3.4) is very wide (up to 150 ft) and has an estimated slope of only 0.08 ft/mi. It includes several deep pools. Travel times through this reach are very long. The slow movement of the water causes this reach to act much like a lake. In the riffle reach (RM 3.4–0), the Tualatin River flows through a short reservoir section and then drops into a narrow gorge near the City of West Linn before it enters the Willamette River just upstream of Willamette Falls. The average slope in this reach is 10 ft/mi.

Tualatin River Basin



Water sources to the Tualatin River

Precipitation: Seasonal rainfall accounts for most of the natural flow in the Tualatin Basin; streamflow from snowmelt is minimal. The amount of rainfall ranges from 110 inches on the eastern slopes of the Coast Range to 37 inches in the southeastern area of the drainage basin. Peak months for rainfall are November through February while the driest months are normally June through October. The peak streamflow month is usually February and the lowest streamflow month is August.

Barney Reservoir: Barney Reservoir is located behind Eldon Mills Dam on the Middle Fork of the North Fork of the Trask River (outside of the Tualatin Basin). A trans-basin aqueduct carries water over a low Coast Range divide to a pipeline that discharges into the Tualatin River at RM 78. Barney Reservoir has a capacity of 20,000 acre-feet and stores water for the Joint Water Commission (Cities of Beaverton, Hillsboro and Forest Grove and the Tualatin Valley Water District) and Clean Water Services. The Barney Reservoir Joint Ownership Commission owns, operates and manages Barney Reservoir. Reservoir content is monitored through calibrated reservoir elevations; water releases are monitored using a stream gage located in the outlet flume. Water is released during the summer low-flow season to supplement shortages in natural flow. The water is used for municipal supply and for instream water quality. Storage in Barney Reservoir is also allocated to the Oregon Department of Fish and Wildlife. Those flows, to the Trask River, are measured using an instream weir.

Scoggins Reservoir: In the early 1970s the Bureau of Reclamation built an earthen dam on Scoggins Creek (RM 5.1). Releases from Scoggins Reservoir (Henry Hagg Lake) flow down Scoggins Creek and enter the Tualatin River at RM 60.0. Scoggins Reservoir has an active storage capacity of 53,640 acre-feet. It is a multipurpose facility with contracted water for irrigation, municipal and industrial, and water quality uses.

Scoggins Reservoir is operated and maintained by the Tualatin Valley Irrigation District under contract with the Bureau of Reclamation. Flow into Scoggins Creek (RM 4.8) is monitored by a Bureau of Reclamation stream gage; Oregon Water Resources Department maintains the rating curve for this site.

Clean Water Services: Clean Water Services provides sanitary and stormwater services to the urban areas of Washington County. A watershed-based NPDES permit allows Clean Water Services to discharge treated wastewater into the Tualatin River from four wastewater treatment facilities (WWTFs). The Rock Creek WWTF discharges an average of 50 cfs (33 MGD) at RM 38.1; the Durham WWTF discharges an average of 31 cfs (20 MGD) at RM 9.3. The Forest Grove and Hillsboro WWTFs (RM 55.2 and 43.8, respectively) are much smaller and do not discharge during the summer. (River mile locations given here are based on USGS topographic maps and may be slightly different from those used in Clean Water Services watershed-based NPDES permit which were obtained from a different source.) WWTF flow rates are continuously monitored at each WWTF. Clean Water Services also releases storage water from Scoggins and Barney Reservoirs for flow augmentation during the seasonal low flow periods to improve water quality in the Tualatin River, to offset a portion of the thermal load from the Rock Creek and Durham WWTFs, and to provide operational flexibility for their WWTFs.

Water sources to the tributaries

Clean Water Services: Clean Water Services has been using Tualatin Valley Irrigation District transmission lines to deliver water to several tributaries for flow restoration in the summer. About 1 to 2.5 cfs of water was added to McKay Creek since 2005. Similar programs were implemented for Gales Creek (2009), East Fork Dairy Creek (2010) and two sites on West Fork Dairy Creek (2011). The goal is to improve water quality, specifically increasing the dissolved oxygen concentration and decreasing the temperature.The flow augmentation water is from Clean Water Services' allocation in Scoggins Reservoir.

Water diversions from the Tualatin River

Cherry Grove Intake (RM 73.2): The City of Hillsboro diverts water for municipal and industrial uses at the Cherry Grove Intake. This water is delivered to the rural residents of the Dilley and Cherry Grove areas (served by the City of Hillsboro), as well as the City of Gaston and the LA Water Cooperative (as Hillsboro wholesale customers). The diversion is less than 3 cfs and is monitored via metered flows.

Spring Hill Pumping Plant (RM 56.3): The Spring Hill Pumping Plant is the largest diversion facility on the river. It is owned by the US Bureau of Reclamation (BOR) and operated jointly by the Tualatin Valley Irrigation District (TVID) and the Joint Water Commission (JWC). TVID, with a pumping capacity of approximately 90 MGD (140 cfs), delivers water to about 12,000 acres of irrigated cropland via a pressure pipeline. JWC, with a pumping capacity of approximately 60 MGD (90 cfs), delivers water to the Cities of Hillsboro, Forest Grove and Beaverton, to the Tualatin Valley Water District, and to the wholesale customers of these entities. Both TVID and JWC have natural flow water rights that are used when natural flow is adequate; they release contracted stored water from Scoggins and Barney Reservoirs to augment low natural flow in the summer. Pumping rates are monitored by TVID and JWC using telemetry-equipped flow meters. Additional monitoring is provided by real-time stream gages on the Tualatin River located above and below the pumping plant and on Gales Creek.

Wapato Canal Diversion: The US Fish and Wildlife Service (USFWS) has assumed functions of the Wapato Improvement District (now defunct). TVID can divert water from the Tualatin River at the Wapato Canal Diversion, near RM 62 as needed for irrigation. The USGS began monitoring discharge in Wapato Creek in October 2011 and gage height in Wapato Canal in September 2011.

Irrigation Withdrawals: Water is obtained directly from the Tualatin River for irrigation purposes by members of the TVID and by irrigators with natural flow water rights. About 5,000 acres of cropland served by TVID is irrigated with water obtained directly from the Tualatin River. Some of the discharge from the Rock Creek WWTF (RM 38.1) is contracted to TVID to be used by downstream irrigators.

Patton Valley Pump Plant: Tualatin Valley Irrigation District pumps water from Scoggins Creek (RM 1.71) into a low-pressure pipeline that serves customers along Patton Valley Road. Historically, this pipeline also diverted water into the upper Tualatin River (at RM 63.1 and RM 64.3) to supplement low flows in this reach, but this has not been needed in recent years due to releases from Barney Reservoir.

Lake Oswego Canal Diversion: The Lake Oswego Corporation (LOC) diverts a portion of the Tualatin flow into the Lake Oswego Canal at RM 6.7. A headwork structure regulates the flow into this mile long canal that feeds into Lake Oswego. The Lake Oswego Corporation has several natural flow water rights, including water rights for hydropower generation, irrigation, and lake level maintenance. At RM 3.4, a combination diversion dam/fish ladder structure is used during low flow periods to elevate the Tualatin River enough to divert the flow into the canal. During most of the year, river elevation is adequate to allow diversion of the LOC water right; in the summer, however, flash boards may be installed to increase the water level. LOC has not installed flashboards since 2003. The dam plus several natural basalt sills cause the water to pool in the reservoir reach. Flow in Lake Oswego Canal has been monitored during the summer by a gaging station operated by the Oregon Water Resources Department, but that site was discontinued partway through 2011.

Water diversions from the tributaries

Irrigation withdrawals: Water is obtained directly from some tributaries for irrigation by irrigators with natural flow water rights.

Tualatin River Water Management

Tualatin River Flow Management Technical Committee

The Tualatin River Flow Management Technical Committee provides a mechanism for the coordination and management of flow in the Tualatin River. The members of the committee are technical staff with detailed knowledge of the specific characteristics of flow in this river. The committee meets monthly from February through November. Meetings focus on the current status of the reservoirs. In addition, a variety of other water issues and any problems are discussed. Each member updates the committee on changes that could impact the flow management of the Tualatin. The communication, coordination and cooperation among the partner agencies has proven invaluable in managing the resource.

Data collection system

Water in the Tualatin Basin is monitored by gages on streams and flow meters on diversions and wastewater treatment facility discharges. Stream gages are present along the mainstem Tualatin and all major tributaries that affect water distribution. Many of these monitors have telemetry, making the data available in real-time. Throughout the season, daily operations can be monitored by Clean Water Services (CWS), Joint Water Commission (JWC), Tualatin Valley Irrigation District (TVID), and the Lake Oswego Corporation (LOC).

A coordinated information system was developed to provide flow information to all members of the committee. Flow conditions and a summary of daily releases are reported via daily email by the superintendent of Scoggins Dam. The JWC provides a daily email containing information about the rate of intake at the Spring Hill Pump Plant, releases from Scoggins and Barney Reservoirs, and available natural flow. Because use or release of water by any one of the entities can impact the other users, coordination of flow information is an important aspect of the committee's work. The data are collected by field staff from the cooperating entities or from the Corps of Engineers via telemetry.

The monitoring effort makes it possible to proactively manage storage, instream flows, and diversions so that minimum instream flow requirements and general compliance with water rights and storage agreements are met. It also makes the calculation of pollutant loads possible, when it is necessary for the Total Maximum Daily Load (TMDL) program. Monitoring includes temperature as well as flow at some sites. As water quality issues have come to the forefront, the monitoring system has provided information vital to understanding the Tualatin Basin, helped guide basin management, and been an excellent example of interagency cooperation. The members of the Flow Management Committee appreciate the efforts of the Oregon Water Resources Department (District 18 Watermaster), the US Geological Survey and others who provide data.

Some of the monitoring data for the Tualatin Basin can be accessed at the following web sites:

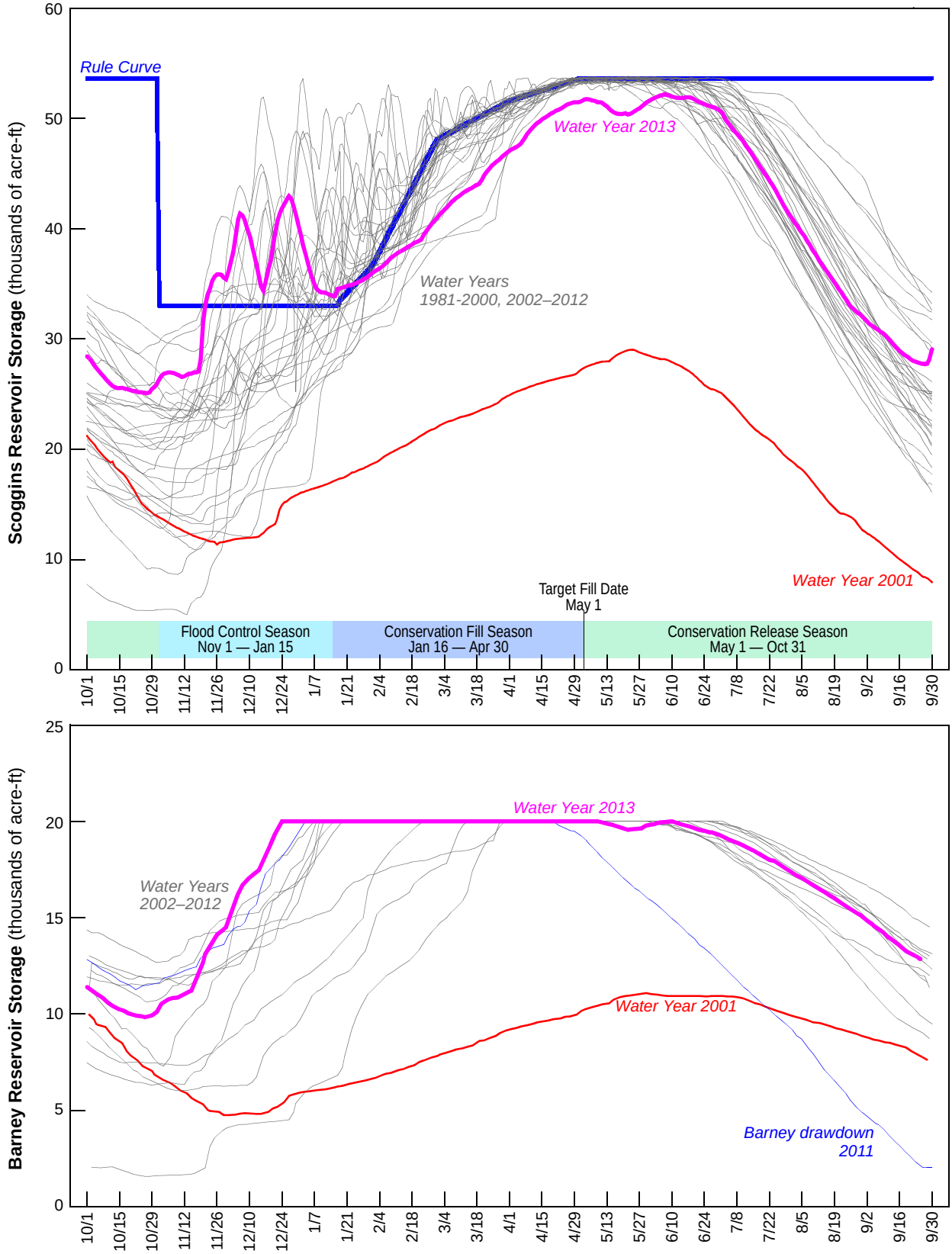
- Bureau of Reclamation data:
  http://www.usbr.gov/pn/hydromet/tuatea.html
- Jackson Bottom Wetlands Center data:
  http://www.jacksonbottom.org/monitoring-restoration/water-quality-tualatin-river-data/
- Oregon Water Resources Department data:
  http://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/
- USGS data:
  http://or.water.usgs.gov/tualatin/

Annual Tualatin Basin Flow Management Report

This report is published annually and describes water management, accounting, storage, stream gaging, diversions, and effluent discharge for the Tualatin Basin. Annual reports dating from 1992 are available at: http://www.co.washington.or.us/Watermaster/SurfaceWater/tualatin-river-flow-technical-committee-annual-report.cfm

RESERVOIR STATUS

Barney Reservoir filled during heavy rains in the fall of 2012. Excess water is not stored at Scoggins Reservoir at that time because the management goal is flood control. Abnormally low rainfall from January through March 2013 was not enough to fill Scoggins Reservoir in 2013, although it reached 98% of full pool. The reservoir levels for 2013 and the reservoir filling histories are shown below.



CLEAN WATER SERVICES

BY RAJ KAPUR, CLEAN WATER SERVICES

Water is released by Clean Water Services (CWS) from Scoggins and Barney Reservoirs to improve water quality in the Tualatin River. The Department of Environmental Quality issued a watershed-based NPDES Permit to Clean Water Services on February 26, 2004. In response to a petition for reconsideration filed in 2004, the stormwater requirements of the permit were modified and the permit was reissued on July 27, 2005. The watershed-based permit provides Clean Water Services with a mechanism to offset a portion of the thermal load from its WWTFs with releases of stored water from the reservoirs. Stored water releases also provide operational flexibility to the WWTFs.

The reservoir releases during July and August are used to mitigate part of the thermal load from the wastewater treatment facilities. Clean Water Services offsets the remainder of its thermal load by planting riparian areas along the tributaries either directly within its service area or through a partnership with the Tualatin Soil and Water Conservation District on rural lands. During the rest of the summer, the water is released to offset the effect of sediment oxygen demand on the dissolved oxygen levels in the river. The dissolved oxygen levels in the river downstream of the wastewater treatment facilities determine the ammonia limits for the wastewater treatment facilities. When dissolved oxygen levels are well above the water quality standards, the wastewater treatment facilities have more operational flexibility.

Low dissolved oxygen levels can be a water quality issue in the lower Tualatin River. During the low flow season, photosynthetic production of oxygen by algae often offsets the consumption of oxygen by decaying substances in the sediment of the river (sediment oxygen demand). Low levels of dissolved oxygen can result if oxygen production by algae is less than the oxygen consumption by sediment oxygen demand. Although low dissolved oxygen can occur during any season it is more likely in the fall because photosynthetic oxygen production decreases as the days become shorter and low flows maximize the effect of sediment oxygen demand. Increasing streamflow reduces oxygen consumption by sediment oxygen demand because it shortens the contact time between the river water and the river sediments. Clean Water Services flow augmentation and treatment plant flow accounts for a significant fraction of flow in the lower Tualatin River, especially during the late summer and early fall period (see graphs on page 12).

2013 Water Releases

Since 2004, Clean Water Services released water from Scoggins Reservoir for three primary reasons: thermal load trading in July and August, maintaining minimum river flows for the WWTFs, and mitigation of sediment oxygen demand after algal populations decline in late summer and early fall. Clean Water Services generally starts releasing stored water on July 1 for thermal trading. In 2013, flow augmentation releases began on July 2. Flow augmentation was discontinued at the beginning of October when a large storm increased river flows, but resumed on October 11 as streamflow dropped to more normal low-flow fall conditions. Flow augmentation ended for the season on November 7 when Tualatin River flow at Farmington exceeded 500 cfs and winter flow conditions started.

In 2013, Clean Water Services began release of Scoggins Reservoir water on July 2; the last release day was November 4. The average release was 41.4 cfs during the July/August period and 36.2 cfs during September. Clean Water Services suspended releases from Scoggins Reservoir for 23 days in October due to unseasonably heavy rain. From October 25 through November 4 a constant release of 20 cfs was maintained. Clean Water Services released a total 6,884 acre-feet from Scoggins Reservoir for 2013. This was only 55% of its allocation, the smallest amount since 1997 (except for 2001 when allocations were severely decreased due to drought conditions).

Clean Water Services released water from Barney Reservoir at a constant rate of 14 cfs beginning on August 30, 2013. Releases were suspended on September 30. A constant release of 14 cfs was resumed on October 10 and continued through November 5. Clean Water Services used a total of 1,611 acre-feet from Barney Reservoir which was 97% of its allocation.

Clean Water Services released flow augmentation water for a total of 119 days in 2013. The combined average daily release (for days with releases) was 36.0 cfs. The amount of water available to and released by Clean Water Services during 2013 and monthly details of the water releases are summarized below.

CLEAN WATER SERVICES WATER AVAILABILITY AND USE — 2013

Reservoir		Maximum Available (acre-ft)	Available (acre-ft)	Total CWS Release (acre-ft)
Scoggins Reservoir	Storage	12,618	12,618	6,884
	Natural flow credit	4,282	0	
Barney Reservoir	Storage	2,000	1,654	1,611
	Summer storage	—	0	
Total		**18,900**	**14,285**	**8,495**
Percent of available				**59.5%**

CLEAN WATER SERVICES WATER RELEASE SUMMARY 2013

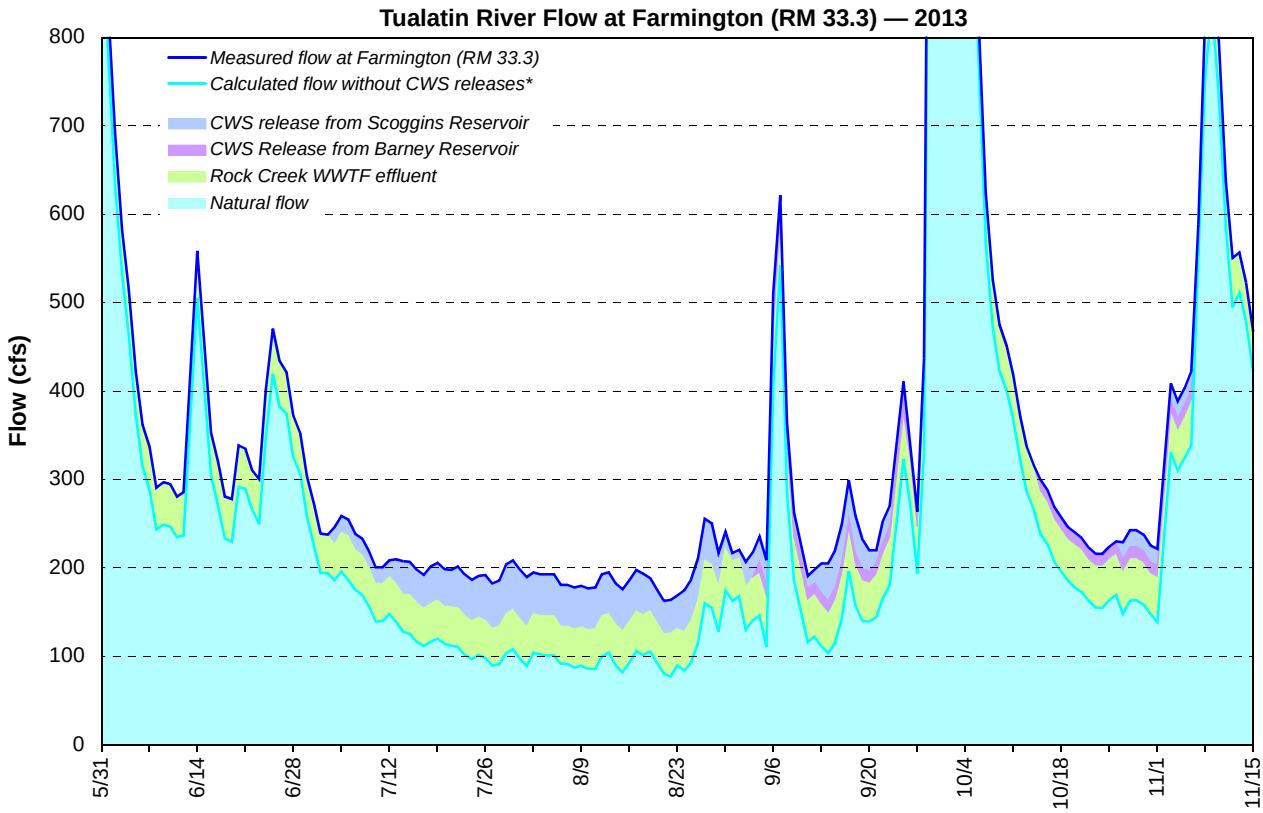
	Units	May	June	July	Aug	Sept	Oct	Nov 1-18	Total
Scoggins Release	acre-ft	0	0	2,391	2,698	1,349	288	159	6,884
	days	0	0	30	31	30	8	4	103
Barney Release	acre-ft	0	0	0	56	806	611	139	1,611
	days	0	0	0	2	29	22	5	58
Total Release	acre-ft	0	0	2,391	2,754	2,155	899	298	8,495
Daily Average Release (for days with releases)	cfs	0	0	40	45	36	20	30	36
Measured Flows for Tualatin River at Farmington (RM 33.3) – based on daily average									
Measured minimum	cfs	274	278	183	163	191	216	222	—
Measured mean	cfs	551	396	212	193	404	612	334	—
Measured maximum	cfs	1,330	832	272	256	2,670	2,880	409	—

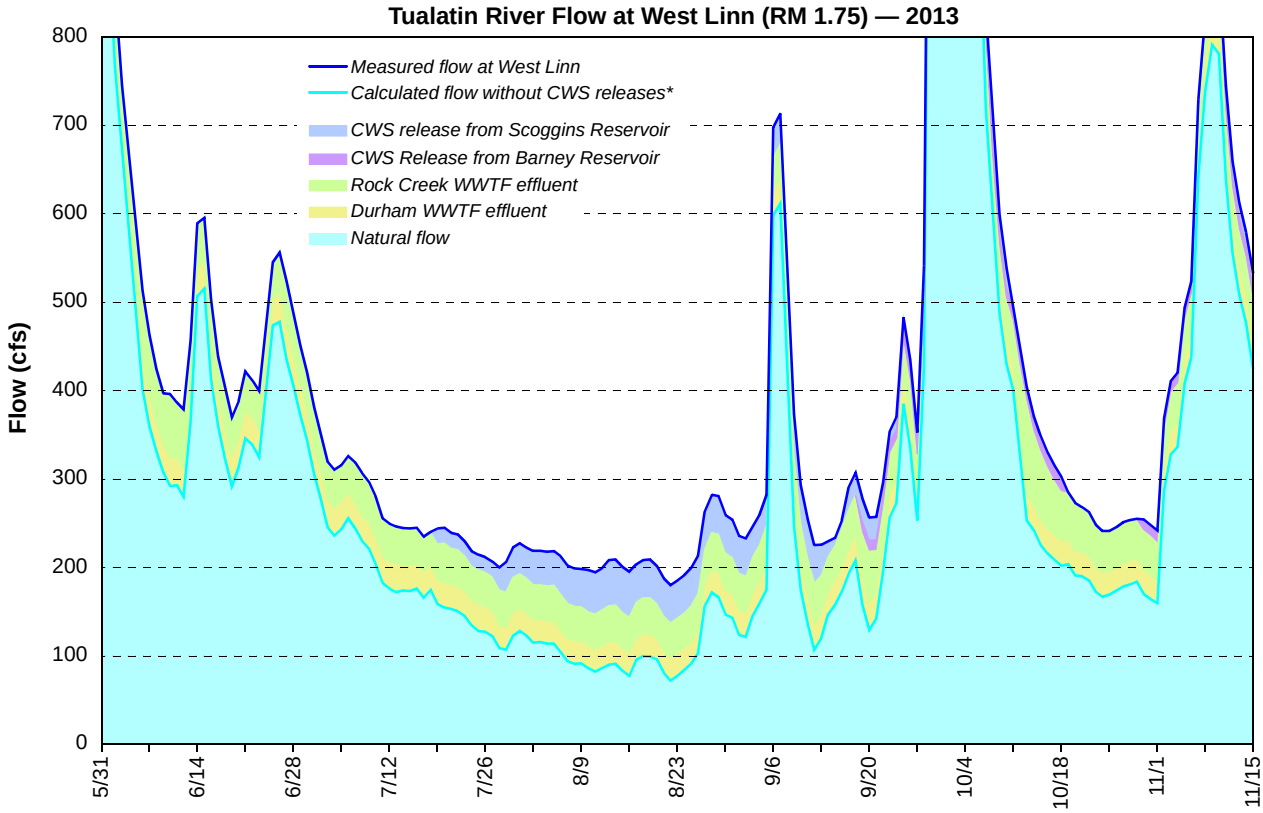
Natural flow credit

If the natural flow in the Tualatin River measured at West Linn is less than the flow target for the months of May, June, October and November, then Clean Water Services receives a natural flow credit of up to 4,282 acre-ft. Natural flow is calculated as the actual measured flow minus Clean Water Services released flow. The table below shows that the natural flow at West Linn exceeded the flow targets for these four months, and therefore, Clean Water Services was not entitled to a natural flow credit in 2013.

BUREAU OF RECLAMATION NATURAL FLOW CREDIT 2013

Month	Mean Daily Measured Flow at West Linn (cfs)	Mean Daily CWS Release (cfs)	Calculated Natural Flow at West Linn (cfs)	Target Natural Flow at West Linn (cfs)	Maximum Possible CWS Natural Flow Credit (cfs)	*[acre-ft]*	CWS Natural Flow Credit (cfs)
May	633	0	633	85	13	*[798]*	0
June	508	0	508	140	21	*[1250]*	0
October	708	20	688	95	16	*[984]*	0
November	706	27	679	110	21	*[1250]*	0





*Flows without CWS releases were calculated as follows. (Constant travel times and a uniform evaporative loss of 0.25% per mile were assumed.)

Flow at Farmington without CWS releases =
+ Measured flow at Farmington
– 0.988 x Rock Ck WWTF flow from the same day
– 0.933 x CWS Scoggins Release from 2 days before
– 0.888 x CWS Barney Release from 4 days before

Flow at West Linn without CWS releases =
+ Measured flow at West Linn
– 0.981 x Durham WWTF flow from 3 days before
– 0.909 x Rock Ck WWTF flow from 14 days before
– 0.854 x CWS Scoggins Release from 17 days before
– 0.809 x CWS Barney Release from 19 days before

Historical perspective

In 1987, Clean Water Services began managing the release of its water with the goal of maintaining a monthly average of 150 cfs at the Tualatin River at Farmington. Work by the United States Geological Survey in the early 1990s indicated that it was more important to have higher flows in the fall to maintain dissolved oxygen levels than in the early summer to prevent algal blooms. The flow goals were changed to maintaining 120 cfs in the early summer, 150 cfs in August and then 180–200 cfs from September until the winter flows start. Winter flows are defined as flows that exceed a 7-day median of at least 350 cfs. In 2004, an additional goal of releasing water in July and August for temperature trading was added. In 2008, as a result of the Rock Creek WWTF mixing zone study, the goal was increased to 150 cfs through August. The following table shows the history of Clean Water Services releases from Scoggins Reservoir.

CLEAN WATER SERVICES — SCOGGINS RESERVOIR RELEASES

Year	Start Date	End Date	Total Release Days	Total Release (acre-ft)	Average per Release Day (cfs)	Minimum Daily Flow at Farmington (RM 33.3) (cfs)
1987	6/9	11/30	175	*16,722	48.2	63
1988	7/2	11/4	126	*15,071	60.3	106
1989	6/27	11/15	141	*16,586	59.3	112
1990	7/12	11/1	113	11,889	53.0	124
1991	7/12	11/4	116	13,024	56.6	125
1992	6/5	11/19	168	12,730	38.2	73
1993	7/3	12/1	150	11,486	38.6	98
1994	6/21	10/27	129	10,917	42.7	105
1995	6/24	11/8	138	9,824	35.9	118
1996	7/27	11/10	114	10,952	48.4	146
1997	7/4	10/2	91	6,716	37.2	154
1998	8/12	11/7	87	9,407	54.5	146
1999	7/27	11/12	109	12,001	55.5	156
2000	7/21	11/27	130	**15,275	59.2	152
2001	9/25	11/14	50	**2,403	24.0	88
2002	6/12	11/9	151	12,618	42.0	103
2003	7/11	11/17	130	11,765	52.4	107
2004	7/1	11/2	125	8,650	34.9	130
2005	7/8	10/31	116	9,918	43.1	153
2006	7/1	11/3	126	9,634	38.5	148
2007	7/3	11/13	119	10,134	42.9	148
2008	7/1	11/4	127	11,896	47.2	162
2009	7/1	10/27	119	10,614	45.0	147
2010	7/24	10/25	94	8,392	45.0	187
2011	7/23	11/18	119	10,464	44.3	173
2012	7/7	10/22	106	10,950	52.1	178
2013	7/2	11/4	103	6,884	33.7	163

*During these years, Bureau of Reclamation allowed Clean Water Services to release its entire allocation (stored and natural flow).

**Clean Water Services purchased additional water for flow augmentation in 2000 because low flow conditions persisted until the end of November that year. Because the Scoggins Reservoir did not fill in 2001, all allocations were severely decreased.

Water is released from Barney Reservoir at a constant rate during the late summer to supplement the water released from Scoggins Reservoir. The following table shows the historic use of Barney Reservoir releases. Clean Water Services owns 10% of the 20,000 acre-foot reservoir. Accounting for dead pool volume and the 15% allocation to Oregon Department of Fish and Wildlife, Clean Water Services has 1,654 ac-ft available at full pool.

CLEAN WATER SERVICES — BARNEY RESERVOIR RELEASES

Year	Start Date	End Date	Total Release (acre-ft)	Daily Release Rate (cfs)	Comment
1998	7/12	8/27	2,779	24.6	extra water released to draw down reservoir
1999	9/1	10/19	1,025	10	10 cfs also released 6/4–6/10
2000	9/8	10/23	1,461	18	—
2001	9/18	10/29	1,416	17	1000 acre-ft purchased in addition to allocation; reservoir did not fill; 4,000 acre-ft held in reserve
2002	8/26	10/24	1,667	14	—
2003	8/15	10/14	1,742	14	—
2004	9/1	11/2	1,777	14	—
2005	9/1	11/8	1,874	14	miscommunication about end date; extra water released
2006	9/1	11/3	1,638	14	—
2007	9/1	10/30	1,667	14	—
2008	9/4	10/31	1,611	14	—
2009	9/1	10/30	1,667	14	—
2010	9/1	10/30	1,653	14	7 cfs on 9/1/2010 only, all other days 14 cfs
2011	7/1	8/30	1,089	9	Barney Reservoir was drawn down for maintenance which resulted in a reduced allocation
2012	8/31	10/29	1,667	14	—
2013	8/30	11/5	1,611	14	release suspended 9/30/2013 – 10/9/2013

JOINT WATER COMMISSION

BY KRISTEL FESLER, WATER RESOURCES PROGRAM COORDINATOR,
JOINT WATER COMMISSION/CITY OF HILLSBORO

Introduction

Over 300,000 people in Washington County receive at least a portion of their water from the Joint Water Commission (JWC). JWC provides water to its member agencies: the Cities of Hillsboro (the managing and operating agency), Forest Grove, Beaverton, and the Tualatin Valley Water District. JWC also provides wholesale service directly to the City of North Plains, and to Cornelius, Gaston, and the LA Water Cooperative as wholesale customers of Hillsboro.

JWC's water treatment plant is supplied with water from the nearby Tualatin River. An intake facility at Spring Hill constructed by the Bureau of Reclamation, and shared with the Tualatin Valley Irrigation District (TVID), pumps river water to the JWC water treatment plant.

Flows in the Tualatin River are supplemented during the summer with water from two impoundments—Hagg Lake and Barney Reservoir. Hagg Lake is located on Scoggins Creek behind Scoggins Dam. Scoggins Dan is owned by the Bureau of Reclamation (BOR) and operated by TVID under contract to the BOR. Barney Reservoir is located on the upper Trask River behind the Eldon S. Mills Dam. The reservoir and dam are owned and operated by the Barney Reservoir Joint Ownership Commission (BRJOC). The BRJOC includes the cities of Hillsboro (the managing and operating agency), Forest Grove, and Beaverton, the Tualatin Valley Water District, and Clean Water Services.

The JWC water treatment plant uses conventional dual media filtration plus disinfection to produce high quality potable water. Treated water is pumped from the plant to the member agencies either directly from the plant through finished water pipelines or via the Fern Hill Reservoirs. The Fern Hill Reservoirs are located about one-third mile to the east of the treatment plant and can store up to 40 million gallons of finished water (in two 20 million gallon covered concrete tanks). The JWC finished water pipelines include master meters and pressure reducing stations at the connection points to the member agencies.

Each Fern Hill Reservoir stores 20 million gallons of drinking water for the Joint Water Commission.

2013 Operations Summary

The average water production rate for 2013 was 28.6 MGD and the maximum produced in one day was 58.3 MGD on July 26. These values are similar to 2012, but were not as high as historic levels in which average daily production was in the low 30 MGDs. The 2013 maximum daily production was 8.5 MGD less than the highest ever recorded of 66.8 MGD in 2008. During the highest production months of July and August about 26% of the total 10,431 MG was produced and delivered.

Efficiency: JWC continued its emphasis on maximizing the capture of released waters through improved coordination of finished water storage at Fern Hill Reservoirs and careful tracking of individual JWC member use of their stored water and system demands. During the peak season, the JWC and Cherry Grove pump stations recovered an average of 96% of the water available for municipal use from natural flow rights and releases from impounded supplies.

ESTIMATED WATER CAPTURE RATES – 2013

Loss Rate and Natural Flow

	Amount Released (acre-ft)	Loss		Natural Flow (acre-ft)	Total Water Available (acre-ft)
		Rate (percent)	**Total** (acre-ft)		
Scoggins	7,489.70	2.2%	164.77		
Barney	6,386.87	5.5%	351.28		
Total	**13,876.57**		**516.05**	**3,290.63**	**16,651.14**

Raw Water Pumping and Finished Water Production

	Raw Water Pumped (acre-ft)	Capture Rate (pumped/available)	Finished Water Produced (acre-ft)	Production Rate (produced/available)	Average Daily Production (acre-ft)	Peak Day Production (acre-ft)
JWC Treatment Plant (Springhill)	16,059.42	96.4%	16,336.19	100.4%	108.04	178.85
Slow Sand Filter Plant (Cherry Grove)	374.01	2.2%	374.01	2.2%	2.48	3.69
Total	**16,433.42**	**98.7%**	**16,710.19**	**100.4%**	**110.52**	**182.54**

Water Rights: Instream leases were submitted to and approved by Oregon Water Resources Department (OWRD) for water rights appurtenant to two properties. The Haworth property, owned by the JWC has an instream flow rate of 0.15 cfs. The Hutchinson property, which is owned by the JWC and Clean Water Services and under permanent conservation easement with the Natural Resources Conservation Service, has an instream flow rate of 1.98 cfs. These five-year leases expire in 2017.

Maintenance: At the Spring Hill intake, the sprockets on the lower section of the traveling screens were replaced. Replacement of the sprockets in the upper section is scheduled for 2014. As recommended in a 2011 electrical assessment, several critical electrical assets were upgraded or replaced in 2013. Two new finished water pumps were installed and the motors were rebuilt. Within the water treatment plant, several valves were replaced to reduce leakage within the treatment process.

2013 Stored Water Releases

The time-frame for release of stored water was shifted to earlier in the year for 2013. Due to a dry early spring, regulation off of natural flow began on May 4, 2013, one of the earliest dates on record. Regulation was suspended on May 29th when heavy rain increased streamflows. Use of stored water resumed on June 8th. Unseasonably heavy rain in September and October ended the use of stored water on October 1st, far earlier than usual. The number of days of regulated use was slightly more than average. The total stored water released and average daily release in 2013 were both less than average.

COMPARISON OF STORED WATER RELEASES— 10-YEAR RECORD

Year	Regulated Use			Stored Water Release (acre-ft)			Average Release (acre-ft/day)
	Start	End	Days*	Barney	Scoggins	Total	
2013	5/4	10/1	141	6,386.87	7,489.70	13,876.57	98.42
2012	6/23	10/30	129	6,557.45	7,015.64	13,573.09	105.22
2011	6/28	11/7	132	8,848.39	3,945.18	12,793.58	96.92
2010	6/30	10/22	114	5,647.02	5,170.98	10,818.01	94.89
2009	6/14	10/26	134	4,722.71	9,203.44	13,926.15	103.93
2008	6/18	10/31	135	4,407.34	10,163.45	14,570.79	107.93
2007	5/25	11/13	155	5,543.88	10,371.72	15,915.60	102.68
2006	5/18	11/3	160	8,100.61	11,331.74	19,432.35	121.45
2005	6/20	10/27	130	5,966.37	10,550.24	16,516.60	127.05
2004	5/26	10/26	140	6,311.50	9,772.70	16,084.20	114.89
10-yr average	**6/8**	**10/27**	**137**	**6,249.21**	**8,501.48**	**14,750.69**	**107.34**

*Days of Regulated Use does not equal the elapsed days between the start and end dates for regulation when regulation was temporarily suspended during that time.

The amount of stored water released by JWC for 2013 is summarized in the tables below. Slightly less than half of the total allocation was released (55% for Scoggins Reservoir and 43% for Barney Reservoir).

STORED WATER RELEASE FROM EACH RESERVOIR —2013

Description	Beginning Balance (acre-ft)	Amount Released (acre-ft)	Ending Balance (acre-ft)	Average Release (acre-ft/day)
Scoggins	13,500.00	7,489.70	6,010.30	53.12
Barney (M&I)	14,886.00	6,386.87	9,800.53*	45.31
Total	**28,386.00**	**13,876.57**	**15,810.83**	**98.42**

STORED WATER RELEASE TO EACH AGENCY (AFTER REALLOCATION FOR LEASES)**— 2013**

Description	Beginning Storage (acre-ft)	Amount Released (acre-ft)			Ending Balance* (acre-ft)	Average Release (acre-ft/day)
		from Scoggins	from Barney	Total		
Hillsboro	10,127.40	4,237.21	1,666.19	5,903.40	4,672.26	41.87
Forest Grove	4,913.50	694.51	290.46	984.97	3,964.68	6.99
Beaverton	7,556.10	2,557.98	1,061.70	3,619.68	4,247.31	25.67
TVWD	5,789.00	—	3,368.52	3,368.52	2,926.58	23.89
Total	**28,386.00**	**7,489.70**	**6,386.87**	**13,876.57**	**15,810.83**	**98.42**

*During an unregulated period from May 29 to June 7, 2013, Barney Reservoir gained 1,301.4 acre-ft of additional storage due to inflows which was reallocated to the JWC partners. Therefore, the beginning storage minus the release does not equal the ending storage.

Future Water Supply

Since 2002, water supply partners in the Tualatin River Basin have been evaluating future supply options through the Tualatin Basin Water Supply Project (TBWSP). Clean Water Services is the managing agency for the TBWSP. In 2005, TBWSP identified increasing the height of Scoggins Dam as the preferred alternative (25-40-ft raise). In 2009, new science about the Cascadia Subduction Zone showed that a major earthquake of a magnitude 9 or greater could occur in the region. In 2012, the Bureau of Reclamation completed a Corrective Action Study that identified the options and costs for strengthening the dam to meet this seismic threat.

Based on the new information, the City of Hillsboro and the Tualatin Valley Water District re-evaluated their options for future water sources. After completing a two-and-a-half year study, both agencies decided that the most reliable and cost-effective approach is to use water from the Willamette River at Wilsonville. On a limited basis and primarily for information purposes, the Cities of Beaverton, Tigard and Tualatin are participating on the Technical Advisory Committee regarding the preliminary design of the project. Development of the Willamette River as a drinking water source in the Tualatin Basin is anticipated to be online in approximately 2026.

The JWC will continue to utilize the Tualatin River, Hagg Lake and Barney Reservoir as its major water sources. In 2014, the JWC's participation in the TBWSP will focus on supporting the seismic upgrades of Scoggins Dam and reallocation of assets acquired to accommodate raising the height of Scoggins Dam and develop the associated infrastructure.

To meet increasing demands before a long-term supply could be developed, the JWC began pursuing a joint aquifer storage and recovery (ASR) project. A feasibility study was completed identifying potential for development of multiple ASR wells on Cooper Mountain. The JWC secured a limited license from the Oregon Water Resources Department. The City of Hillsboro and TVWD as members of JWC proceeded with development of the first ASR well. In 2013, Hillsboro elected not to participate in the ASR project and all assets were transferred from the JWC to the Tualatin Valley Water District. TVWD remains committed to the project and intends to complete it independently. Hillsboro decided to focus on investing in expanded JWC water treatment plant capacity rather than in development of ASR capacity.

Increasing the capacity of the JWC water treatment plant could be achieved either by building new filter beds or by increasing loading on the existing filters. Pilot testing began in fall of 2011 to determine if a higher production rate could be reached using the existing filters. Testing was completed in 2013 and the maximum capacity of the filter beds has now been increased from 75 MGD to 81 MGD.

Acknowledgements

The Joint Water Commission appreciates the efforts of the Watermaster and our partners on the Flow Management Committee, and we extend our thanks for all of their involvement and cooperation. JWC remains a committed participant in the Tualatin Flow Management Committee. The communication and coordination that comes from this committee among the various Tualatin River users is invaluable.

MILLS DAM/BARNEY RESERVOIR

BY KRISTEL FESLER, WATER RESOURCES PROGRAM COORDINATOR,
JOINT WATER COMMISSION/CITY OF HILLSBORO

Overview

Mills Dam/Barney Reservoir is a rock and earth impoundment on the upper Trask River. When Trask Dam was built in 1970 by the Cities of Hillsboro and Forest Grove, the reservoir held 4,000 ac-ft of water. In 1999, dam height was raised to accommodate 20,000 ac-ft of storage and was renamed the Mills Dam. Barney Reservoir is named for J.W. Barney and Mills Dam is named for Eldon S. Mills, both former Hillsboro City Managers and key leaders in the original dam construction and its later expansion.

Water stored in Barney Reservoir is released to both the Trask and Tualatin Rivers. Flows to the Trask River include all storage overflows and 15% of the stored water, which is allocated to Oregon Department of Fish and Wildlife (ODFW). A gravity flow diversion pipeline conveys flows to the headwaters of the Tualatin River where it is used for municipal purposes and flow augmentation.

The current owners of Barney Reservoir are the Cities of Hillsboro, Forest Grove, Beaverton, the Tualatin Valley Water District (the same entities that form the Joint Water Commission) and Clean Water Services. Collectively they form the Barney Reservoir Joint Ownership Commission (BRJOC). As with the Joint Water Commission, the City of Hillsboro serves as the managing and operating agency for the BRJOC.

RESERVOIR OWNERSHIP AND WATER ALLOCATION FOR BARNEY RESERVOIR

		Water Allocation (percent)	**Storage at Full Capacity** (acre-ft)	**Reservoir Ownership** (percent)
Reserved	Dead pool	2.3%	460	—
	Oregon Department of Fish and Wildlife (ODFW)	15.0%	3,000	0.0%
BRJOC Partners	Clean Water Services	8.3%	1,654	10.0%
	JWC Partners	74.4%	14,886	90.0%
	City of Hillsboro	*25.6%*	*5,127*	*31.0%*
	City of Forest Grove	*2.1%*	*414*	*2.5%*
	City of Beaverton	*17.8%*	*3,556*	*21.5%*
	Tualatin Valley Water District (TVWD)	*28.9%*	*5,789*	*35.0%*
	TOTAL	100.0%	20,000	100.0%

2013 Operations

The storage season began in 2012, with Barney Reservoir filling at the earliest date ever: December 24, 2012. The majority of the JWC's natural flow rights were regulated off on May 3, 2013 and releases from Barney Reservoir began on May 6. On May 28, Tualatin River flows increased enough to allow JWC access to natural flow again and releases temporarily ceased. Over the next 13 days, inflow was enough to re-fill the reservoir and the resulting 1,446 ac-ft of additional storage was reallocated to the BRJOC partners. Releases to the Tualatin River began again on June 10 and continued until November 4, bringing the total release days to 161. Releases to the Trask River for ODFW began on May 8 and continued until November 26 for a total of 203 release days.

By the end of the release season, 54% of the total allocated water was released. All the stored water for ODFW was released to the Trask River. For releases to the Tualatin River, Clean Water Services used 90% of their allotment and the JWC partners used 39%.

STORED WATER ALLOCATION AND RELEASES FOR BARNEY RESERVOIR — 2013

		BRJOC Partners					
				JWC Partners			
	Oregon Dept of Fish and Wildlife	Clean Water Services	*JWC Total*	*City of Hillsboro*	*City of Forest Grove*	*City of Beaverton*	*TVWD*
Water Allocation (acre-ft)	3,000	1,799	16,187	5,576	450	3,867	6,295
original allocation	*3,000*	*1,654*	*14,886*	*5,127*	*414*	*3,556*	*5,789*
*additional allocation**	*—*	*145*	*1,301*	*448*	*36*	*311*	*506*
Water Released (acre-ft)	3,346	1,611	6,387	1,666	290	1,062	3,369
Percent Allocation Used	112%	90%	39%	30%	65%	27%	54%

*Dry spring conditions resulted in the use of stored water in early May. During late May and early June, flow in the Tualatin River increased and the use of stored water was temporarily suspended. During that time Barney Reservoir re-filled and the BRJOC partners received an additional allocation.

LAKE OSWEGO CORPORATION

BY MARK ROSENKRANZ, WATER RESOURCE SPECIALIST

Introduction

The Lake Oswego Corporation (LOC), a non-profit organization, owns and manages Oswego Lake, a 163-hectare (403 acre) reservoir located 10 miles south of Portland, Oregon. LOC was formed in 1942 when the Oregon Iron and Steel Company, then owner of the land around the Lake, deeded to LOC the land, three dam structures, and all water rights. The original dam was constructed in 1871 and later upgraded in 1921. Oswego Lake is a private water body whose primary water right is hydropower generation. Secondary uses include irrigation, aesthetic viewing, contact recreation, fishing, and boating.

Oswego Lake and Watershed Morphology

The original natural lake, called Waluga, was formed 10,000 years ago by the Missoula glacial floods which altered the old Tualatin River channel. Today, the Lake has three basins: West Bay, the Main Lake, and Lakewood Bay. There are also two shallow, man-made canals, Blue Heron Canal and Oswego Canal. Oswego Canal is the 2.4-km conduit from the Tualatin River (RM 6.7). Total lake surface area and volume is 1.63 km^2 (403 acres) and 12.7 x 10^6 m^3 (10,300 acre-feet). Shoreline length, including bays and canals, is 18.62 km (11.56 mi). Oswego Lake has a 5.08-km (3.15-mi) fetch and a narrow 0.56-km width (0.34-mi). The hydraulic residence time is 390 days.

Oswego Lake's two watersheds include the natural, 7.5-mi^2 urban basin around the Lake (10:1 watershed to lake-area ratio) and the larger 700-mi^2 Tualatin River basin (1,000:1 ratio) when the LOC Headgate is opened. Major inflows from the watershed include Springbrook Creek, Lostdog Creek, Blue Heron Creek, and 70-plus storm drains from the City of Lake Oswego.

Aerial view of the West Bay of Lake Oswego looking to the East

LOC Water Rights and Contracts

Hydropower Generation: The primary hydropower water right is 57.5 cubic feet per second (cfs) obtained in 1906 that allows year around diversion. To guarantee this flow during the dry season, LOC owns and operates a diversion dam located downstream of the Oswego Canal (RM 3.4). Flaps are erected on an “as needed” basis. In 2013, no flaps were used.

Irrigation: A contract between LOC and the Bureau of Reclamation (Oct 20, 1972) provides for up to 500 acre-feet from Scoggins Reservoir for irrigation use during March through November. The largest irrigator on the Lake is the Lake Oswego Country Club (approximately 175 acre-feet).

Maintenance/Evaporation: LOC also has a maintenance/evaporation water right of 3.36 cfs dating from 1985. This water can be diverted between September 16th and July 30th.

Long term water quality data analysis

In 2012, our intern, Lillian Gehres, ended her research on the lake and completed her thesis* for a Masters degree in Environmental Management at PSU. Lillian analyzed our lake data to answer two questions:

• *What are the trends in water temperature, dissolved nutrients, and cyanobacteria biomass in Oswego Lake since 2000?*

The time series at the right illustrate the trends. Most notable are the reduction in phosphorus and cyanobacteria biomass since alum introduction in 2005.

• *What environmental parameters are most influential in determining percent contribution of cyanobacteria to the Oswego Lake algal community?*

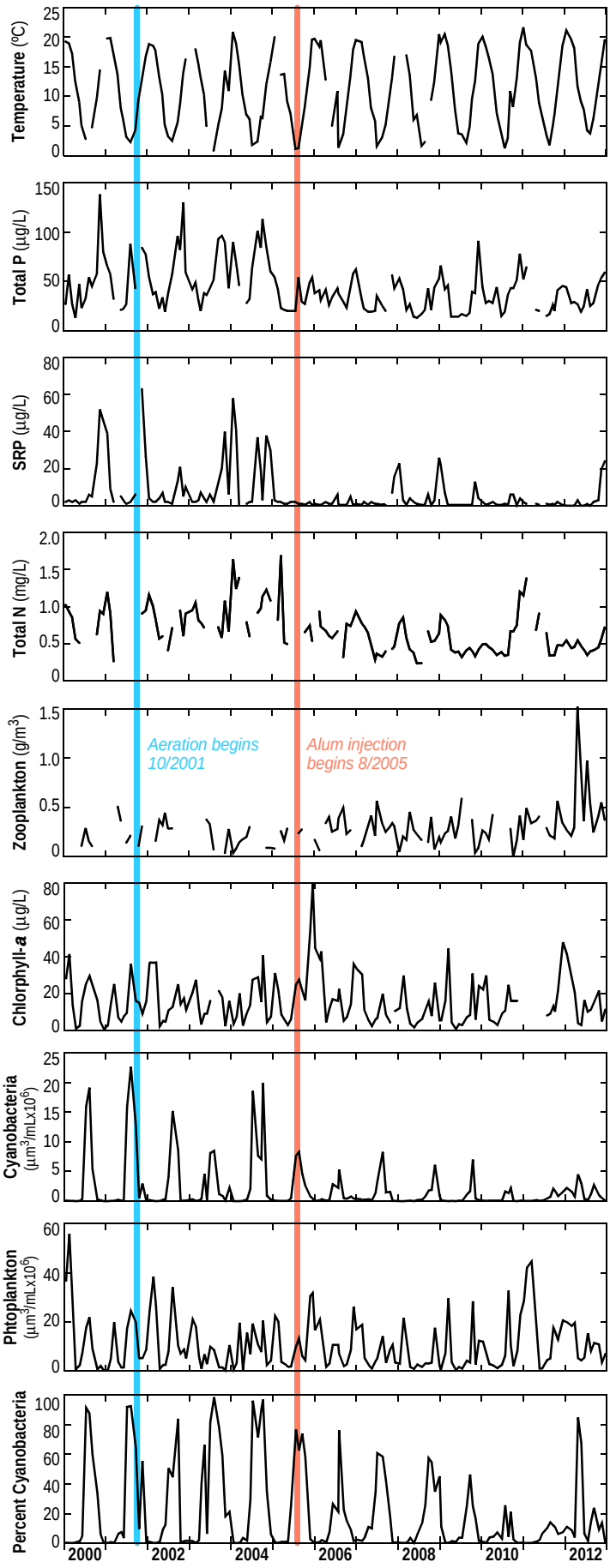
The data analysis showed water temperatures above 18.3°C and total phosphorus concentrations greater than 44 µg/L were correlated with higher percentages of cyanobacteria.

These results seem obvious—higher temperatures and nutrient levels lead to cyanobacteria blooms. The phosphorus threshold, however, was less than those in previously published studies which ranged from 70 to 215 µg/L. Oswego Lake is likely different than other sites, making direct comparisons difficult. However in 2013, a significant late season cyanobacteria population occurred on Oswego Late with an average total phosphorus concentration of only 11 µg/L.

The low phosphorus threshold to limit cyanobacteria growth in Oswego Lake has important implications for water quality management. In 2013 the average phosphorus concentration in the Tualatin River was 95 µg/L, well above what might trigger cyanobacteria blooms in Oswego Lake. When that water is brought into the lake it provides ample nutrients for feeding algae growth.

Further study is needed to determine if cyanobacteria in Oswego Lake have adapted to low nutrient conditions, or if a stratified layer of high nutrient water exists in the lake that is not sampled with our current protocol.

*Gehres, L. (2013) Cyanobacteria biomass dynamics and trends within Oswego Lake, Oregon from 2000 through 2012. Unpublished Master's Thesis, Portland State University.



2013 Oswego Lake Watershed Management

Water quality improvements and safety are the top priorities for LOC. The goal for the annual LOC Water Quality Management Plan is to reduce cyanobacteria productivity and maximize the aesthetic value of the Lake. To provide long-term water quality solutions and to be proactive in preserving the quality of the Lake, watershed activities are a major part of the LOC management plan.

Tualatin River Flows: Minimal Tualatin River flows were used to keep the lake full. Limiting river flow into the lake is desirable because river water contains high concentrations of phosphorus and sediment.

2013 Lake Water Quality

2013 OSWEGO LAKE WATER QUALITY SUMMARY AVERAGES

Location	Season	Chlorophyll-a (µg/L)	Total P (µg/L)	SRP (µg/L)	Total N (µg/L)	Secchi (m)	Turbidity (NTU)
Lakewood Bay	Annual	10	31	1	358	2.1	3.4
	Summer	10	36	1	424	1.4	5.3
Main Lake	Annual	15	27	2	414	3.2	3.0
	Summer	11	19	ND	322	**3.1**	3.6
West Bay	Annual	27	69	8	1123	0.8	15
	Summer	17	60	1	702	0.7	**11**
Oswego Canal	Annual	18	134	57	3757	1.1	6.2
	Summer	**34**	**134**	**26**	**3943**	1.0	11
Blue Heron Canal	Annual	13	51	6	644	1.2	5.3
	Summer	10	51	2	569	1.2	4.9
Outlet	Annual	17	30	8	610	3.0	2.7
	Summer	15	17	ND	337	3.1	3.1

Bold = highest average during the summer; Underline = lowest average during the summer; Summer=June–September

Abbreviations: Total P = Total Phosphorus, SRP = Soluble Reactive Phosphorus, Total N = Total Nitrogen, Secchi = Secchi depth, ug/L = micrograms per liter, m = meters, NTU = nephelometric turbidity units, ND = not detected

Staff Changes at the City of Lake Oswego

Dave Gilbey, the Water Resources Specialist at the City of Lake Oswego left to take a position with Aquatic Informatics in Vancouver BC. Aquatic Informatics developed Aquarius, a water quality database that has been adopted by the USGS for their stream data network. Dave will be assisting USGS and other organizations worldwide with implementing Aquarius. Dave has been replaced by Ann MacDonald, a Geomorphologist and project manager with many years of private sector experience.

OREGON WATER RESOURCES DEPARTMENT

BY JAKE CONSTANS, WATERMASTER, DISTRICT 18

Introduction

The District 18 Watermaster's Office is a field office of the Oregon Water Resources Department (OWRD) (www.wrd.state.or.us) in cooperation with Washington County (www.co.washington.or.us/index.htm), and is responsible for water supply management within the Tualatin, Lake Oswego, and Lower Willamette Drainage Basins. The Watermaster's Office is part of the Field Services Division of OWRD.

WATERMASTER DISTRICT 18 GAGING STATIONS FOR 2013

Station Number	Stream	Stream Mile	Latitude	Longitude	Type
14206200	Dairy Creek at Hwy 8 near Hillsboro, OR	2.06	45°30'38"N	123°06'56"W	*Logger
14205480	E. Fk. Dairy Creek at Dairy Creek Rd near Mountaindale, OR	12.33	45°40'32"N	123°03'54"W	Staff
14205000	W. Fk. Dairy Creek @ Banks, OR	7.7	45°37'26"N	123°06'59"W	Staff
14205160	W. Fk. Dairy Creek @ Evers Rd near Roy, OR	1.96	45°34'34"N	123°05'34"W	Staff
14204530	Gales Creek @ Old Hwy 47 near Forest Grove, OR	2.36	45°30'39"N	123°06'56"W	*Logger
14204540	Gales Creek @ Clapshaw Hill Rd near Gales Creek, OR	12.36	45°35'39"N	123°12'38"W	Staff
14202920	Sain Creek above Hagg Lake near Gaston, OR	1.6	45°28'50"N	123°14'40"W	*Logger
14202850	Scoggins Creek above Hagg Lake near Gaston, OR	8.0	45°30'06"N	123°15'06"W	Logger
14202980	Scoggins Creek below Hagg Lake near Gaston, OR	4.8	45°28'10"N	123°11'56"W	*Logger
14202860	Tanner Creek above Hagg Lake near Gaston, OR	1.6	45°30'21"N	123°13'10"W	Staff
14206500	Tualatin River @ Farmington, OR	33.3	45°26'58"N	122°57'02"W	*Logger
14202510	Tualatin River @ Gaston, OR	62.3	45°26'21"N	123°07'85"W	*Logger
14204800	Tualatin River @ Golf Course Rd near Cornelius, OR	51.5	45°30'08"N	123°03'22"W	*Logger
14202450	Tualatin River below Lee Falls near Cherry Grove, OR	70.7	45°30'21"N	123°13'06"W	*Logger
14206295	Tualatin River @ Rood Bridge Rd near Hillsboro, OR	38.4	45°29'24"N	122°57'06"W	*Logger
14206956	Tualatin River @ Tualatin (station number formerly 14206960) (stage only)	8.9	45°23'14"N	122°45'46"W	*Logger
WAPO	Wapato Canal near Gaston, OR (from Tualatin River)	61.9	45°26'29"N	123°07'17"W	Staff

*Telemetry

2013 WATER RIGHTS REGULATION SUMMARY

Date	On/Off	Regulatory Activity	River Mile	Priority Date
5/3	Off	City of Beaverton (P-45455, 7/15/1980) – Tualatin River City of Forest Grove (P-40615, 4/28/1976) – Tualatin River City of Hillsboro (P-46423,2/6/1974) – Tualatin River *(Hillsboro still has 14 cfs available from the Tualatin River)* City of Hillsboro (P-50879, 6/9/1988) – Scoggins Creek		2/6/1974
5/3	Off	TVID (P-35792, 2/20/2963) – Scoggins Creek (partial regulation—20 cfs)		2/20/1963
5/10	Off	TVID (P-35792, 2/20/2963) – Scoggins Creek		2/20/1963
5/17	On	TVID (P-35792, 2/20/2963) – Scoggins Creek (partial regulation—20 cfs)		2/20/1963
5/23	On	TVID (P-35792, 2/20/2963) – Scoggins Creek		2/20/1963
5/28	On	City of Beaverton (P-45455, 7/15/1980) – Tualatin River City of Forest Grove (P-40615, 4/28/1976) – Tualatin River City of Hillsboro (P-46423,2/6/1974) – Tualatin River *(Hillsboro still has 14 cfs available from the Tualatin River)* City of Hillsboro (P-50879, 6/9/1988) – Scoggins Creek		2/6/1974
6/7	Off	City of Beaverton (P-45455, 7/15/1980) – Tualatin River City of Forest Grove (P-40615, 4/28/1976) – Tualatin River City of Hillsboro (P-46423,2/6/1974) – Tualatin River *(Hillsboro still has 14 cfs available from the Tualatin River)* City of Hillsboro (P-50879, 6/9/1988) – Scoggins Creek		2/6/1974
6/7	Off	TVID (P-35792, 2/20/2963) – Scoggins Creek (partial regulation—20 cfs)		2/20/1963
6/18	Off	TVID (P-35792, 2/20/2963) – Scoggins Creek		2/20/1963
7/2	Off	City of Hillsboro (P-2443, 5/1/1915) – Sain Creek (2 cfs)		5/1/1915
7/11	Off	Tualatin River & tributaries above Spring Hill Pump Plant Tualatin River — 11, 2/20/1963 Gales Creek — 62, 9/24/1963 Carpenter Creek — 4, 7/10/1967 Scoggins Creek — 3, 7/28/1975	> 56.09	2/20/1963
8/7	Off	City of Hillsboro (P-1136, 1/22/19125) – Sain Creek (3 cfs)		1/22/1912
8/9	Off	Tualatin River & tributaries above Spring Hill Pump Plant Tualatin River — 40, 3/18/1936 Gales Creek — 71, 9/6/1932 Carpenter Creek — 12. 3/25/1935 Scoggins Creek — 13, 4/1/1932	> 56.09	4/14/1949
8/22	Off	*EF Dairy Creek and tributaries above RM 13–EF Dairy Creek		3/6/1967
8/22	Off	*McKay Creek and tributaries above Northrup Rd McKay Creek—6 EF McKay Creek—2		8/8/1966
9/25	On	City of Hillsboro (P-2443, 5/15/1915) – Sain Creek City of Hillsboro (P-1136, 1/22/1912) – Sain Creek *(for a total of 5 cfs)*		5/1/1915 1/22/1912
9/25	On	TVID (P-35792, 2/20/1963) – Scoggins Creek		2/20/1963
9/30	On	City of Beaverton (P-45455, 7/15/1980) – Tualatin River City of Forest Grove (P-40615, 4/28/1976) – Tualatin River City of Hillsboro (P-46423,2/6/1974) – Tualatin River City of Hillsboro (P-50879, 6/9/1988) – Scoggins Creek	>56.09	2/6/1974

*Instream Senior Water Right; all others Senior Water Rights

SCOGGINS DAM/HENRY HAGG LAKE

BY WALLY OTTO, BERNIE BONN, TOM VANDERPLAAT AND JOHN GOANS

Scoggins Dam/Henry Hagg Lake is located on Scoggins Creek in the upper part of the Tualatin Basin. Scoggins Dam is an earthfill dam constructed during 1972–75 to store water during the winter for summer and fall use. The Dam is owned by the Bureau of Reclamation (BOR) and managed by the Tualatin Valley Irrigation District (TVID). Stored water from Hagg Lake is used for irrigation, municipal and industrial use, and flow augmentation in the Tualatin Basin to support water quality and protect fish and wildlife.

Three tributaries flow into Hagg Lake—Sain, Scoggins and Tanner Creeks. Flows in Sain and Scoggins Creeks are monitored by Oregon Water Resources Department gages; flow in Tanner Creek is monitored by daily readings of a staff plate by TVID personnel. Outflow is measured by a BOR stream gage in Scoggins Creek at RM 4.8. Oregon Water Resources Department maintains the rating curves for Tanner Creek and for Scoggins Creek at RM 4.8.

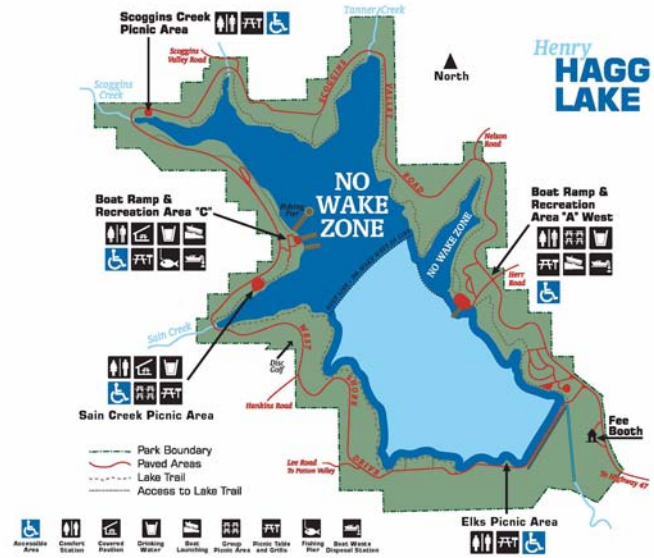
ALLOCATION OF WATER FROM SCOGGINS RESERVOIR

Contracted To	Water Use	Available Volume	
		ac-ft	as percent
Tualatin Valley Irrigation District	Irrigation (up to 17,000 acres)	27,022	50%
Joint Water Commission	Municipal and industrial	13,500	25%
City of Beaverton		*4,000*	
City of Forest Grove		*4,500*	
City of Hillsboro		*5,000*	
Clean Water Services	Instream water quality	12,618	24%
Lake Oswego Corporation	Irrigation	500	1%
Total		**53,640**	**100%**

Scoggins Dam stores 53,640 acre-feet of water in Henry Hagg Lake as active storage—the amount of water that can be moved in or out of the reservoir between the intake structure and the top of the spillway gates. Another 7,000 acre-feet of stored water that is not engineered to be removed exists below the intake structure. It is for the protection of fish if the lake were to be drafted down completely to the intake structure.

Scoggins Dam is authorized by the U.S. Congress to provide flood control for communities located downstream, including Gaston, Cornelius and Forest Grove. The dam controls runoff from a 39 square mile watershed (about 5% of the Tualatin Basin). From November to April, 20,000 acre-feet are designated for flood control storage. The dam does not generate electricity.

During the summer months, recreation is a major activity at Hagg Lake and the surrounding area. Washington County maintains and operates the 2,851 acre Scoggins Valley Park/Henry Hagg Lake recreational facility. In addition to the 1,100 acre lake, the park includes picnic areas, hiking trails, two boat launching facilities, and observation decks for bird and wildlife watching. The lake is stocked for fishing. Most of the park's facilities were designed to be accessible for disabled visitors. The park is open from the first Saturday in March through the last Sunday before Thanksgiving and is for day-use only.



http://www.co.washington.or.us/Support_Services/Facilities/Parks/Hagglake/index.cfm

2013 Water Use

Water year 2013 marks 39 years since Scoggins Dam began storing and releasing water for downstream beneficial use. A total of 34,640 acre-feet were delivered in 2013 bringing the total delivery from the Project to more than 1,219,275 acre-feet.

2013 flow regulation began on May 3rd for the Joint Water Commission and TVID. Due to dry weather conditions in the Spring, this is the earliest that they have been regulated onto stored water. On May 23rd, Scoggins Valley received 1.03 inches of rain and the Watermaster's office lifted all regulations. On June 7th, the Joint Water Commission and TVID were regulated off of natural flow. With the exception of TVID extended season irrigators, all users were permitted to return to natural flow use in the Tualatin River on September 30, 2013. As usual, TVID continued to deliver a small amount of storage water primarily to nurseries and greenhouses beginning in March and continuing until the end of November as permitted by the Oregon Water Resources Department.

2013 WATER DELIVERIES FROM SCOGGINS RESERVOIR

Delivered to	Volume (ac-ft)
Tualatin Valley Irrigation District	18,802
Clean Water Services	6,884
Municipal Use (Cities of Beaverton, Forest Grove and Hillsboro)	7,510
Lake Oswego Corporation	500
Other (includes two golf courses, from TVID allocation)	944
Total	**34,033**

Events in 2013

Recreation: In 2013, there were 850,000 user-days recorded at Scoggins Valley Park/Henry Hagg Lake. The park and lake opened on March 2nd and closed November 24th. In addition to the usual recreational uses, numerous races were held throughout the year including triathlons.

Coho Salmon: Eight Coho were spotted in Scoggins Creek below the dam between October 30th and November 20th.

Lake Fish Habitat: Over the previous years, the Oregon Panfish Club anchored a total of 183 fish habitat structures (8' diameter) in the upper reaches of Henry Hagg Lake. These have caused no problems in terms of operation and maintenance of Scoggins Dam. They have remained in place weighted down with concrete anchors.

Elk Mitigation: Most of the fir trees planted in February 2012 remain standing and continue to form a visual barrier for the elk along the side of the Control House entry road. The field remains off limits to all trespassers including dogs. On January 2, 2013, it was recorded that forty elk were bedded down in the protected field. Additionally, on numerous occasions, they've been observed grazing in the elk pasture.

Scoggins Dam Security

Department of Homeland Security Alert Levels: The Project follows the Department of Homeland Security (DHS) alert levels as required by BOR. No incidences of heightened security level occurred at Scoggins Dam in 2013 due to any specific terrorist alerts.

Scoggins Dam Safety

At Scoggins Dam, earthquake activity, weather including temperature and precipitation, river stage levels, and water surface elevation are reported and recorded electronically. In addition, key dam behavioral instruments report electronically over BOR's Hydromet system. The data is collected, stored and transmitted via satellite to BOR's Pacific Northwest Regional office in Boise. It is available on the Internet through both secure and non-secure channels. Many of these electronic reporting stations have alarms to alert operators if sudden or unusual conditions develop including earthquakes and flooding. While operators are not on site 24/7, the Project is monitored 24/7, both by BOR and TVID personnel.

Operator Training: The primary operator, John Goans, and the back-up operator, Chad Peterson, attended the Oregon Water Resources Conference on February 26, 2013.

Spills and Water Quality: No spills or accidents that jeopardized the water quality in Henry Hagg Lake occurred in 2013 and the BOR on-site Response Trailer was not needed for emergency response. No containment booms were deployed to contain any contaminant spills during 2013.

Drownings: Thankfully, no drownings were reported in Henry Hagg Lake in 2013.

Earthquakes in 2013: On January 30, 2013, there was a 3.7 magnitude earthquake 50 miles northeast of the Scoggins Valley Dam (near Amboy, Washington). A complete inspection of the facility and adjacent areas were done and no damage was reported.

Future of the Project

Tualatin Basin Water Supply Partnership: In 2001, the water resource agencies in the Tualatin Basin formed a partnership to explore and compare alternatives for providing the additional water needed to meet future needs. The Partnership includes Clean Water Services, the Cities of Hillsboro and Beaverton, and the Tualatin Valley Water District, as well as the U.S. Bureau of Reclamation, the owner of Scoggins Dam. Tualatin Valley Irrigation District (TVID), which manages the dam, is an active participant in the proceedings because protecting its interest in the current stored water supply is critical. TVID is not a member of the Partnership because it is limited to serving 17,000 acres of irrigated land and the current supply is enough to serve its patrons in all but possibly a severe drought.

After studying many different options, in 2006 the Partners selected two alternatives for further study: 1) raising Scoggins Dam by 40 ft with a new raw water pipeline and pumpback, and 2) raising Scoggins Dam by 25 ft with a new raw water pipeline and pumpback plus expansion of the Willamette River Water Treatment Plant. More than 7 years of analysis have provided a wealth of technical information about raising Scoggins Dam.

In 2007, the Partners began studying the possibility of a title transfer of Scoggins Dam and related facilities from federal ownership to local ownership.

Current Status: Progress on a decision concerning the title transfer currently is delayed pending the outcome of an additional Scoggins Dam Seismic Corrective Action Alternatives Study. Clean Water Services is collaborating with Reclamation to develop alternatives that strengthen the dam to reduce risk from a Cascadia Subduction Zone earthquake and to raise it by only 12 feet to meet future water supply needs for the maintenance and improvement of water quality in the Tualatin River. The municipal and industrial water providers have decided to focus on the Willamette River for future water supply.

Recently, the partnership has been working with the Oregon Congressional Delegation to address legislative issues that would provide for the efficient implementation of Safety of Dams modifications with increasing of the water supply.

TUALATIN VALLEY IRRIGATION DISTRICT

BY WALLY OTTO
UPDATED BY JOHN GOANS, RESERVOIR SUPERINTENDENT

Tualatin Valley Irrigation District Overview

The Tualatin Valley Irrigation District (TVID), located in Forest Grove, Oregon, is the agricultural water service agency in the Tualatin Basin. In the early twentieth century, relatively little agricultural land was irrigated in Washington County: about 15 acres in 1915 and about 130 acres in 1933. By 1951, however, 18,455 acres had water rights registered in the county. When the TVID was formed in 1962, the total had grown to 33,885 acres. TVID was formed to assist in the delivery of irrigation water to about half of those acres (17,000) in the Tualatin Basin. The water was supplied from natural flow and return flows, and was extremely limited due to early summer withdrawals from the Tualatin River and increasing demands for water for irrigation and municipal use and for maintaining instream water quality and fish. The only storage at this time was Barney Reservoir which stored 4000 acre-feet for municipal use. Beginning in 1975, additional stored water became available behind the newly completed Bureau of Reclamation Project, Scoggins Dam. Approximately half of the water stored in Scoggins Reservoir (Henry Hagg Lake) is allocated to TVID.

Most of the water supplied by TVID is pumped from the Tualatin River at the Spring Hill Pump Plant and delivered to TVID patrons via approximately 120 miles of pressurized pipeline. Additionally, water in both Scoggins Creek and the Tualatin River is withdrawn by irrigators for use on land abutting the river. They are known as “river users” and pay for their own pumping costs because they are not associated with the pressure pipeline or the Spring Hill Pumping Plant. When natural flow no longer meets demand, the District 18 Watermaster begins regulating water users with “junior” (or more recent) water rights off, starting with users with the most recent water right. The TVID storage right is dated 1963, so TVID patrons with water rights after that date must stop withdrawing natural and return flow water, and all water withdrawals must be supplied from storage. Storage water is discharged from Scoggins Reservoir to either augment the river flow or supply the entire need of the TVID patrons, both the pump plant/pressure pipeline users and the river users. Water for some of the TVID members on the lower Tualatin River is supplied by water discharged from Clean Water Services’ Rock Creek Wastewater Treatment Facility. Crops irrigated with District water range from row crops including blueberries, blackcaps, corn, pumpkins and other vegetables to nursery stock.

TVID is allowed to use storage water early and late in the year because of an extended season for irrigation made possible by an agreement with the Oregon Water Resources Department. The early season begins March 1 and the extended season ends November 30. All water used outside the normal irrigation season (May through September) must come from TVID's annual contracted storage allotment of 27,022 acre-feet. TVID's total contracted amount with Reclamation is 37,000 acre-feet with the additional coming from natural and return flows in the Tualatin River and its tributaries.

The extension of the irrigation season for the Tualatin Valley Irrigation District has made growing specialty crops within the District much more appealing. During the extended spring season, the water is used primarily for berries and nurseries; during the extended fall season, water is primarily used for the nurseries. A more diverse nursery stock is now possible, including flowers which are raised well into November when protected by greenhouses. Water availability and moderate temperatures make the Tualatin Valley Irrigation District home to many small specialty nurseries along with several large operations.

2013 TVID Water Use

For the 2013 irrigation season (March through the end of November), TVID took delivery of 18,802 acre-feet of water from storage in Henry Hagg Lake—up 3,352 ac-ft from 2012. The least amount was 8,333 ac-ft in 1993 and the largest was 22,188 ac-ft in 2007. TVID 2013 peak use from storage was 112 cfs on August 7th.

WEATHER STATISTICS AT SCOGGINS DAM 2013

Month	Description	Precipitation		Average Temperature		Other
		2013	[average 1970-2013]	Low	High	
January	very dry	1.2”	[8.03”]	30 ºF	42 ºF	
February	very dry	2.4”	[6.04”]	36 ºF	49 ºF	
March	dry	2.6”	[5.56”]	37 ºF	55ºF	
April	dry	1.9”	[3.46”]	40 ºF	60 ºF	
May	wet	3.8”	[2.25”]	47 ºF	67 ºF	
June	dry	0.9”	[1.52”]	50 ºF	72 ºF	5 days 80 ºF or higher
July	dry, warm	0.0”	[0.44”]	50 ºF	83 ºF	4 days 90 ºF or higher;
August	average	0.8	[0.68”]	55 ºF	80 ºF	3 days 90 ºF or higher
September	record rainfall	7.1	[1.54”]	53 ºF	73 ºF	10 days 80 ºF or higher
October	dry after 10/2	1.0	[3.42]	39 ºF	64 ºF	

2013 TVID Operation and Maintenance

The year was uneventful from an operations standpoint. A “moratorium” remains in place regarding new turn-out deliveries. No new deliveries were added to the delivery system during 2013.

Pipeline Maintenance: TVID delivers irrigation water by high pressure pipeline to customers from Gaston to North Plains and from west of Forest Grove to Highway 219 south of Hillsboro. The water is withdrawn from the Tualatin River at the Spring Hill Pump Plant and lifted by pumps to a water regulating tank off Winter’s Road. From there it flows under gravity pressure to all points of delivery through 120 miles of pipeline. Preventative maintenance continues to keep service delivery as dependable as possible. Several minor disruptions of service occurred during the year, but were quickly isolated and repaired. Service was restored in minutes in some cases or in up to a day if conditions did not allow quick access. There were no long term disruptions of service to District patrons.

Tributary Flow Restoration Projects: TVID and Clean Water Services continue their cooperative effort using the TVID water distribution network to supply water to West Fork Dairy Creek, Gales Creek, East Fork Dairy Creek, Blackjack Creek and two locations on McKay Creek. Each site consists of a metered pipeline with a diffuser at the outlet. All sites are located near delivery lines for the Irrigation District. Flow augmentation occurs during the summer and fall. The water not only adds to streamflow, but it cools the stream as well. The partnership between the Tualatin Valley Irrigation District and Clean Water Services is a novel way to improve the water quality of these streams at minimal cost.

WATER QUALITY

BY BERNIE BONN

Concern about water quality in the Tualatin River is longstanding. Until the formation of Clean Water Services (formerly the Unified Sewerage Agency of Washington County), numerous small towns and cities discharged minimally treated sewage into the river and its tributaries. Water use by agricultural activities in the basin depleted river flow in the summer and contributed nutrients and sediment. By the 1960s, the local newspaper documented the poor water quality in the Tualatin River. In 1984, the Oregon Department of Environmental Quality (ODEQ) included sections of the Tualatin River on the 303d list as being water quality limited. Water quality issues in the Tualatin Basin have included elevated pH and nuisance algae, low dissolved oxygen, high temperatures, and excess bacteria. Many groups have worked to improve water quality in the Tualatin Basin, including Clean Water Services, the Tualatin River Watershed Council, the Tualatin Riverkeepers and others. Part of the reason for the formation of the Flow Committee is to manage river flow to improve and preserve water quality.

Algal growth and pH

In the reservoir section (about RM 3.4-30), the Tualatin River is wide and slow moving. Because the river is so broad, streamside vegetation cannot adequately shade the full width and consequently much of the water surface is in sun. Nutrients, both naturally occurring and anthropogenic, are ample. These conditions—slow movement, sunlight, and ample nutrients— are ideal for algal growth during summer. Most of the algae in the Tualatin River are phytoplankton that float in the upper few feet of the water. During the day, photosynthesis by algae converts carbon dioxide dissolved in the water into biomass. As the concentration of dissolved carbon dioxide decreases, the pH of the water increases. High pH values can negatively affect aquatic resources.

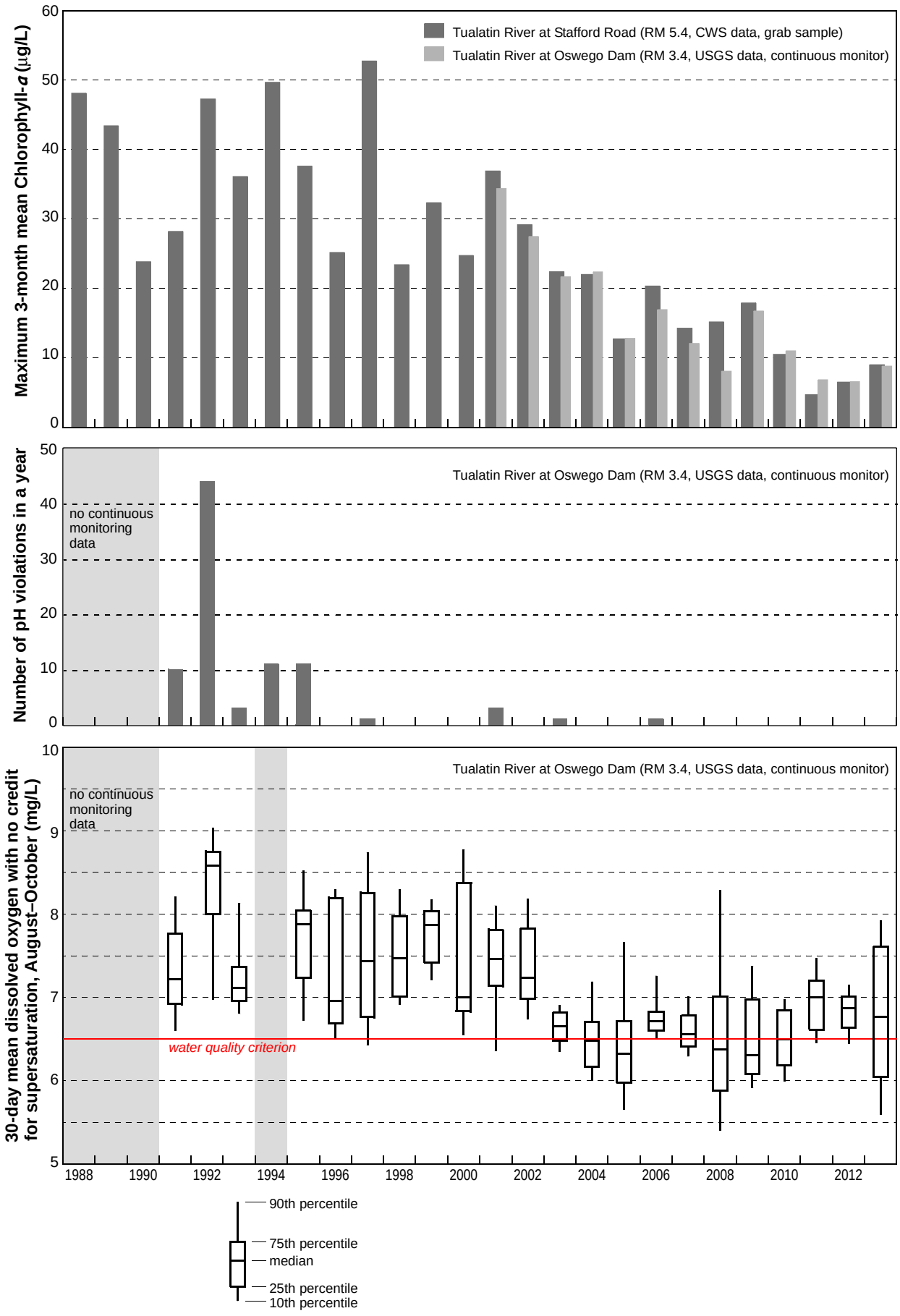
In the 1980s the lower section of the Tualatin River was listed by the ODEQ for elevated pH (>8.5) and degraded aesthetics due to nuisance algal growth. To address these water quality problems, the ODEQ developed a TMDL for phosphorus to limit nutrient availability. Since then, advanced wastewater treatment by Clean Water Services has dramatically decreased phosphorus concentrations in the river. In addition, summertime flows in the Tualatin River have increased due to Clean Water Services' releases from Hagg Lake as well as increased discharge from the wastewater treatment facilities.

Chlorophyll-*a* concentrations are an indicator of the amount of algae in the river. Clean Water Services measures chlorophyll-*a* in water samples at several sites and since 2001, chlorophyll-*a* is measured hourly at the Oswego Dam (RM 3.4) by the USGS as part of a cooperative agreement with Clean Water Services. Chlorophyll-*a* levels have decreased substantially since the 1990s (see the figure on the following page). Chlorophyll-*a* levels continued to be low in 2013; during the past 3 years, the maximum 3-month average chlorophyll-a concentration was less than 10 µg/L.

Because the algal population has declined, high pH values have become rare. The pH is monitored hourly at RM 3.4 (Oswego Dam, year-round) and RM 24.5 (summer only). In 2012, no pH values at either site exceeded 8.5. In addition to pH data from continuous monitors, weekly pH measurements are taken at a number of sites during the summer by Clean Water Services. None of these data showed values greater than 8.5. Low pH values (<6.5) are not a problem in the Tualatin River system.

Dissolved oxygen

The amount of oxygen dissolved in water is the net result of processes that contribute oxygen and processes that consume oxygen. In the lower Tualatin River the primary sources of oxygen are photosynthesis by algae in the daytime and inflow of oxygen rich water. The processes that consume oxygen are biochemical oxygen demand and sediment oxygen demand (from substances that decompose in the water and at the sediment water interface, respectively) and respiration by algae at night. Because the lower section of the river moves slowly and is not turbulent, oxygen exchange with the atmosphere is slow. Consequently, if dissolved oxygen becomes depleted, it cannot be quickly replenished from the air. Similarly, if dissolved oxygen is in excess, the river water stays supersaturated for a prolonged period of time.


Maximum 3-month mean Chlorophyll-a (µg/L)
Tualatin River at Stafford Road (RM 5.4, CWS data, grab sample)
Tualatin River at Oswego Dam (RM 3.4, USGS data, continuous monitor)
Number of pH violations in a year
Tualatin River at Oswego Dam (RM 3.4, USGS data, continuous monitor)
no continuous monitoring data
30-day mean dissolved oxygen with no credit for supersaturation, August–October (mg/L)
Tualatin River at Oswego Dam (RM 3.4, USGS data, continuous monitor)
no continuous monitoring data
water quality criterion
90th percentile
75th percentile
median
25th percentile
10th percentile

In the 1980s the lower section of the Tualatin River was listed by the ODEQ for low dissolved oxygen that could impair fish health. The water quality criteria for this section of the river, which is considered 'Cool Water Habitat,' are:

- Grab samples: dissolved oxygen > 6.5 mg/L
- Continuous Monitoring:
  - 30-day average of daily mean dissolved oxygen > 6.5 mg/L (no credit for supersaturation)
  - 7-day average of daily minimum dissolved oxygen > 5.0 mg/L (no credit for supersaturation)
  - Daily minimum dissolved oxygen > 4.0 mg/L

ODEQ also developed a TMDL for ammonia which consumes oxygen as it decomposes to nitrate. Since then, Clean Water Services has dramatically decreased the amount of ammonia discharged to the river.

Streamflow during summer generally has increased since the TMDLs were instituted in 1988. Increased river flow affects two different processes with opposite effects on oxygen. Faster river flow decreases the amount of time water is in contact with sediment, thereby decreasing the extent to which sediment oxygen demand can be exerted and the resultant amount of oxygen depleted. Faster river flow also decreases the time available for algal populations to grow, which in turn decreases photosynthetic oxygen production. The net effect of decreased oxygen production plus decreased oxygen consumption is not well predicted. In general, low dissolved oxygen is still an issue in the lower Tualatin River periodically during the late summer through fall (see the figure on the previous page).

Dissolved oxygen conditions in the Tualatin River in 2013 were good through the first half of the summer. In mid-August a series of cloudy days decreased photosynthesis and thereby oxygen production. Then several small rain storms contributed biochemical oxygen demand from stormwater runoff and suspended sediment. The decrease in oxygen production coupled with additional consumption caused dissolved oxygen concentrations to decrease toward the end of August and into September. By September 1st, the 30-day dissolved oxygen criterion was not met. A heavy rainstorm at the beginning of September contributed a large plume of BOD from Fanno Creek which resulted in 7-day minimum criterion not being met in mid-September. At the end of September additional heavy rain increased flows enough to offset oxygen demands and the dissolved oxygen concentration rebounded to typical fall levels, well above the criteria.

Continuous monitors are deployed at two locations in the reservoir section of the river. The following table shows the river conditions relative to dissolved oxygen criteria at these locations. Graphs of the dissolved oxygen concentrations at these two locations are shown on the following page.

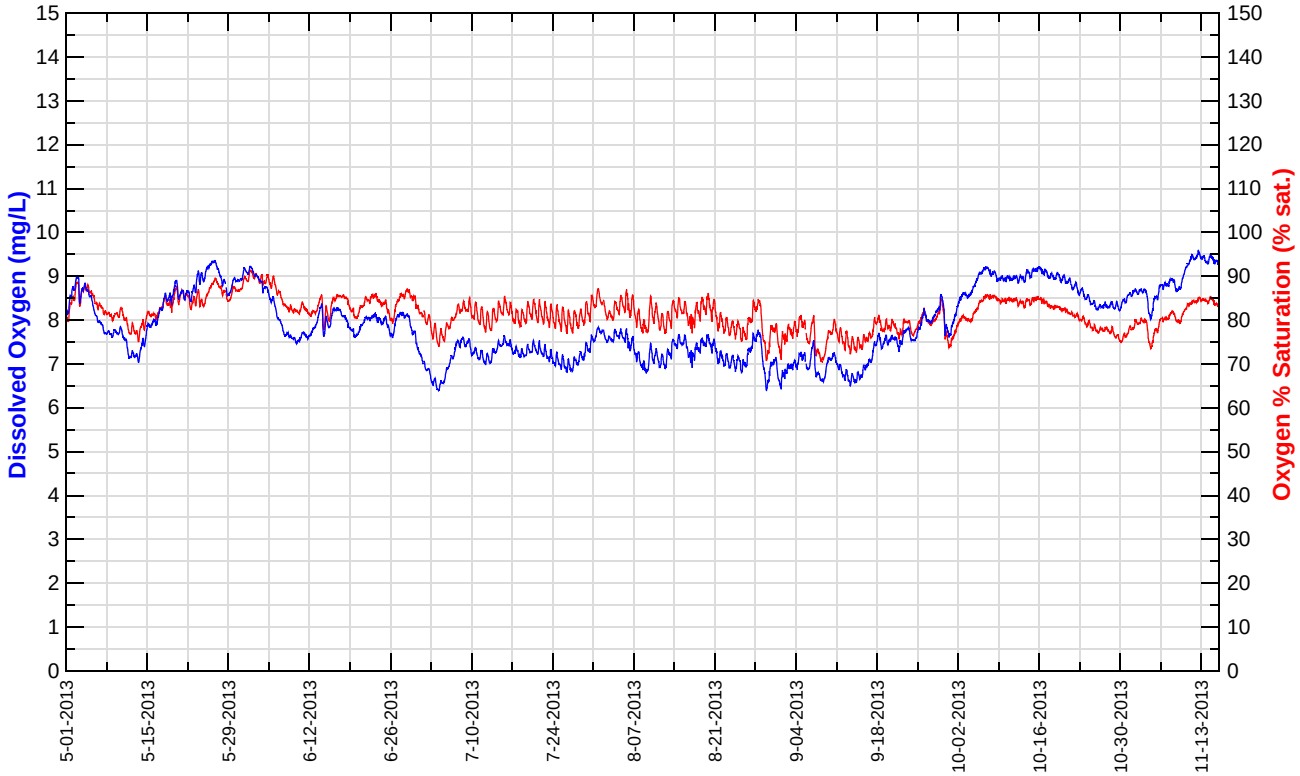
NUMBER OF DAYS THAT DID NOT MEET DISSOLVED OXYGEN CRITERIA IN 2013

Criterion	May	June	July	Aug	Sept	Oct	May–October Percentage
Tualatin River at RM 24.5							
30 day	0	0	0	0	0	0	0%
7 day	0	0	0	0	0	0	0%
Daily	0	0	0	0	0	0	0%
Tualatin River at Oswego Dam (RM 3.4)							
30 day	0	0	0	0	30	6	21%
7 day	0	0	0	0	7	0	4%
Daily	0	0	0	0	0	0	0%

Data are available at:
http://or.water.usgs.gov/cgi-bin/grapher/table_setup.pl?basin_id=tualatin

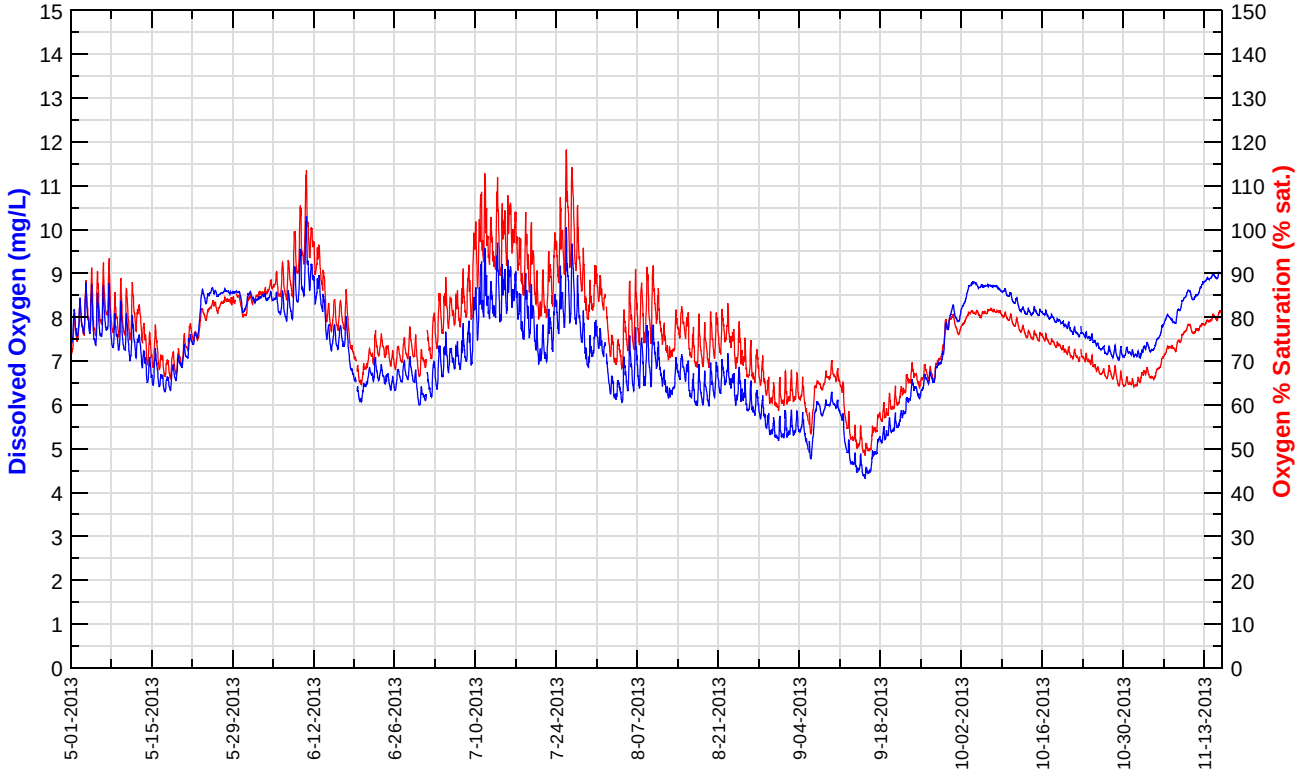
Tualatin River at River Mile 24.5 (14206694)

Data from U.S. Geological Survey



Tualatin River at Oswego Diversion Dam (14207200)

Data from U.S. Geological Survey



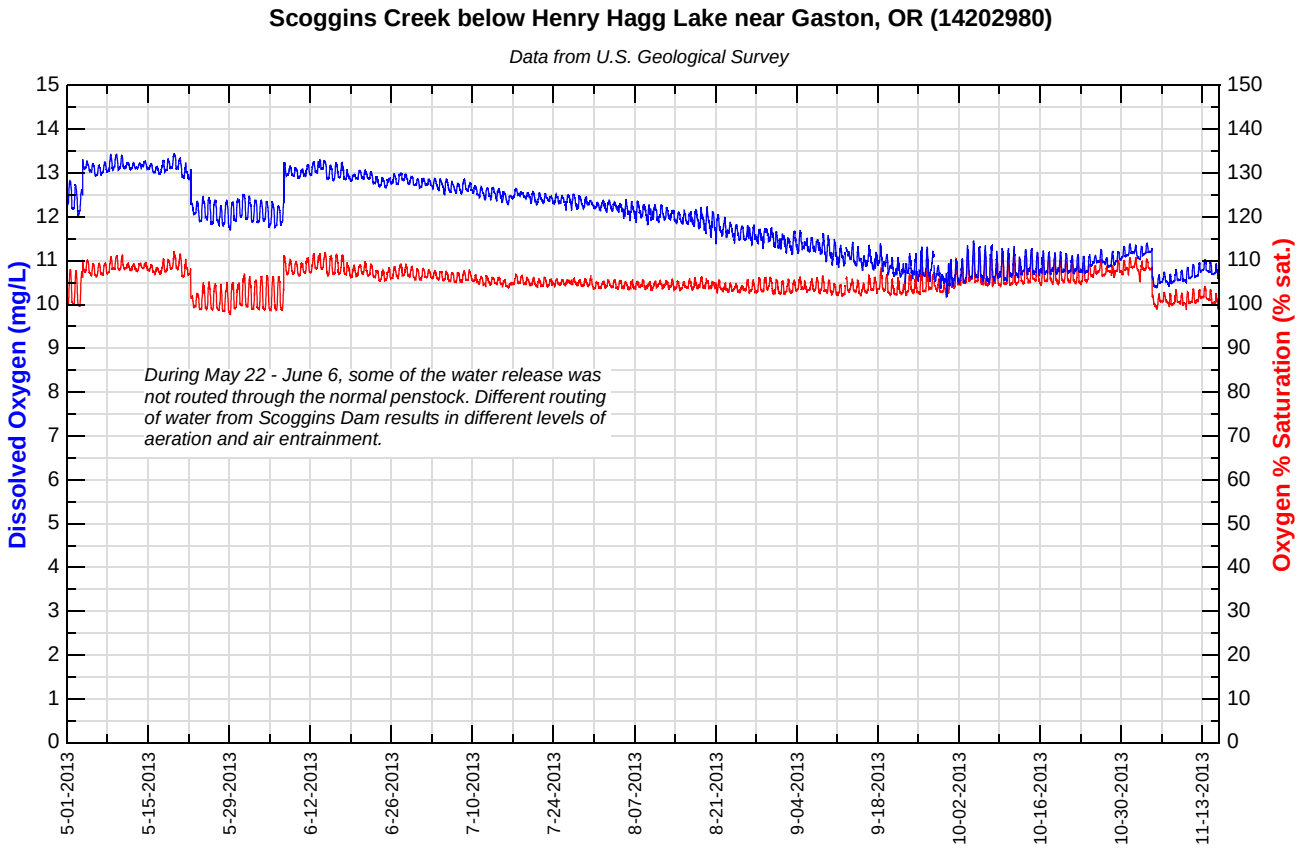
Dissolved Oxygen Status in Tributaries

Some of the tributaries in the Tualatin Basin have also had low dissolved oxygen levels. In general, the slow moving, valley bottom streams are more likely to have low dissolved oxygen than faster moving headwaters streams. It is thought that sediment oxygen demand is largely responsible for the low oxygen levels in the tributaries. The following graphs show the dissolved oxygen levels at several tributaries during the summer period as measured by the USGS using continuous monitors. These data are available at http://or.water.usgs.gov/cgi-bin/grapher/graph_setup.pl?basin_id=tualatin.

Note that continuous monitoring was discontinued at two sites in 2012:

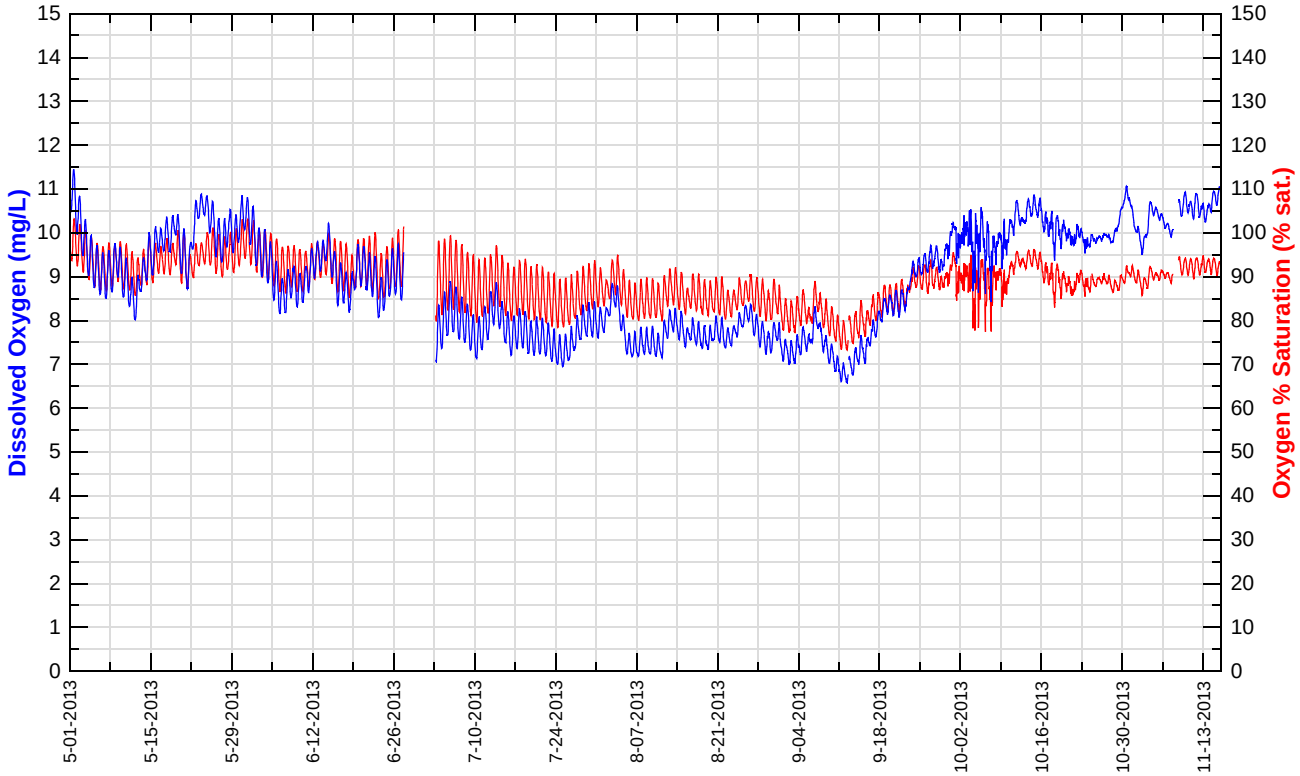
Dairy Creek at Hwy 8 (site ID=453113123003501), and

Chicken Creek at Roy Rogers Road (site ID=452230122512201)



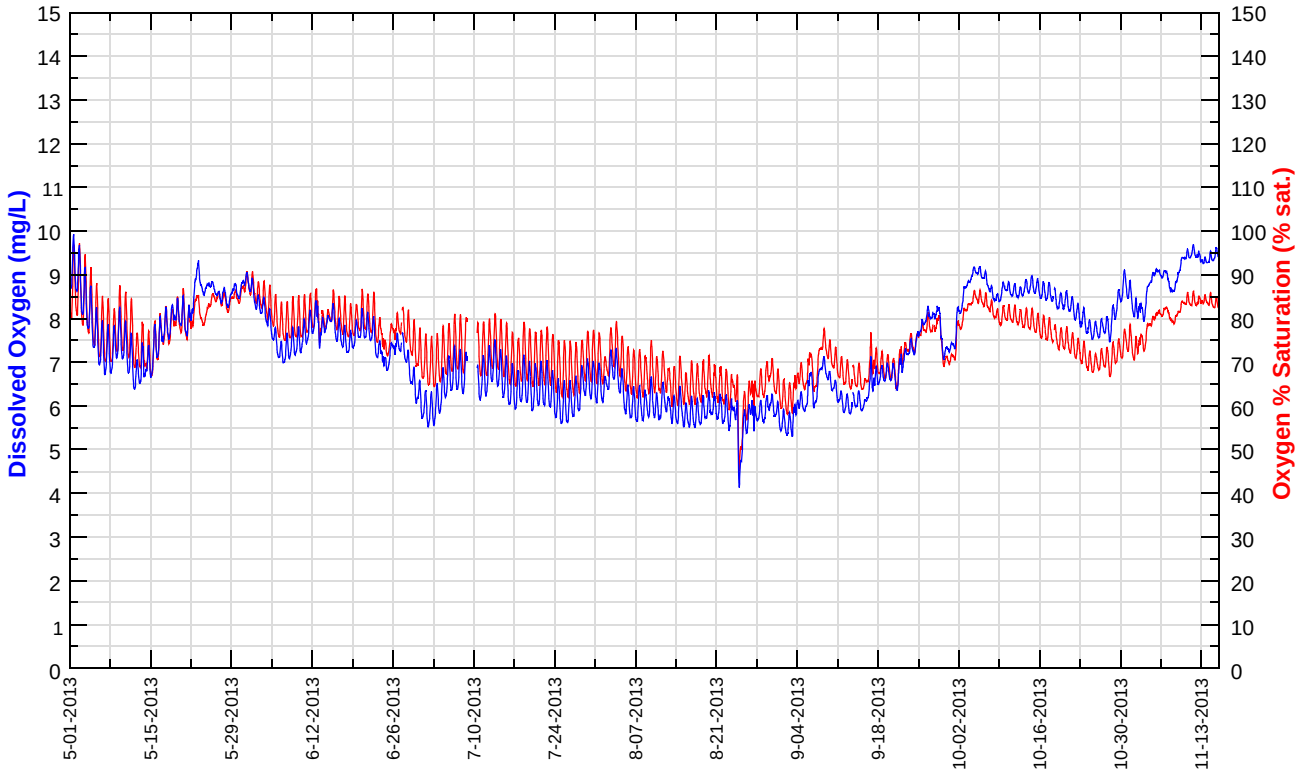
Gales Creek at Old Hwy 47, Forest Grove, OR (453040123065201)

Data from U.S. Geological Survey



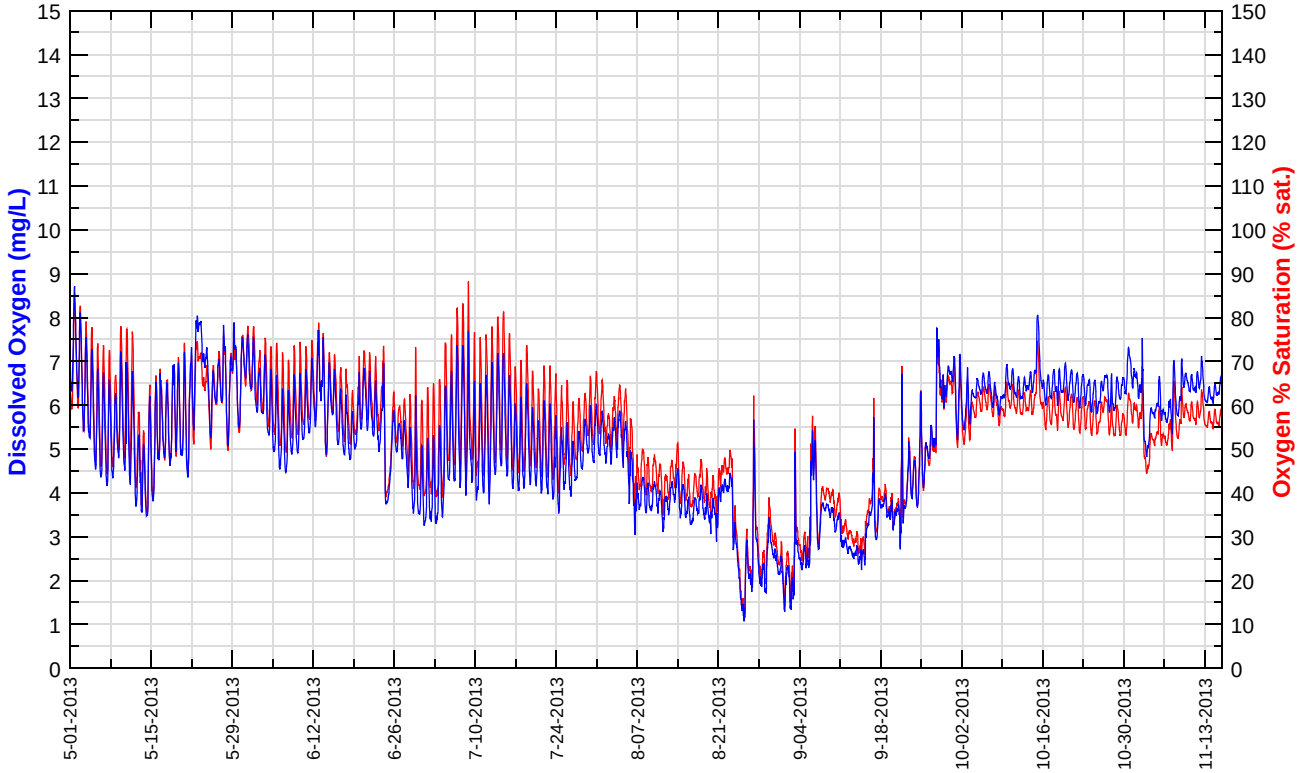
Rock Creek at Brookwood Ave, Hillsboro, OR (453030122560101)

Data from U.S. Geological Survey



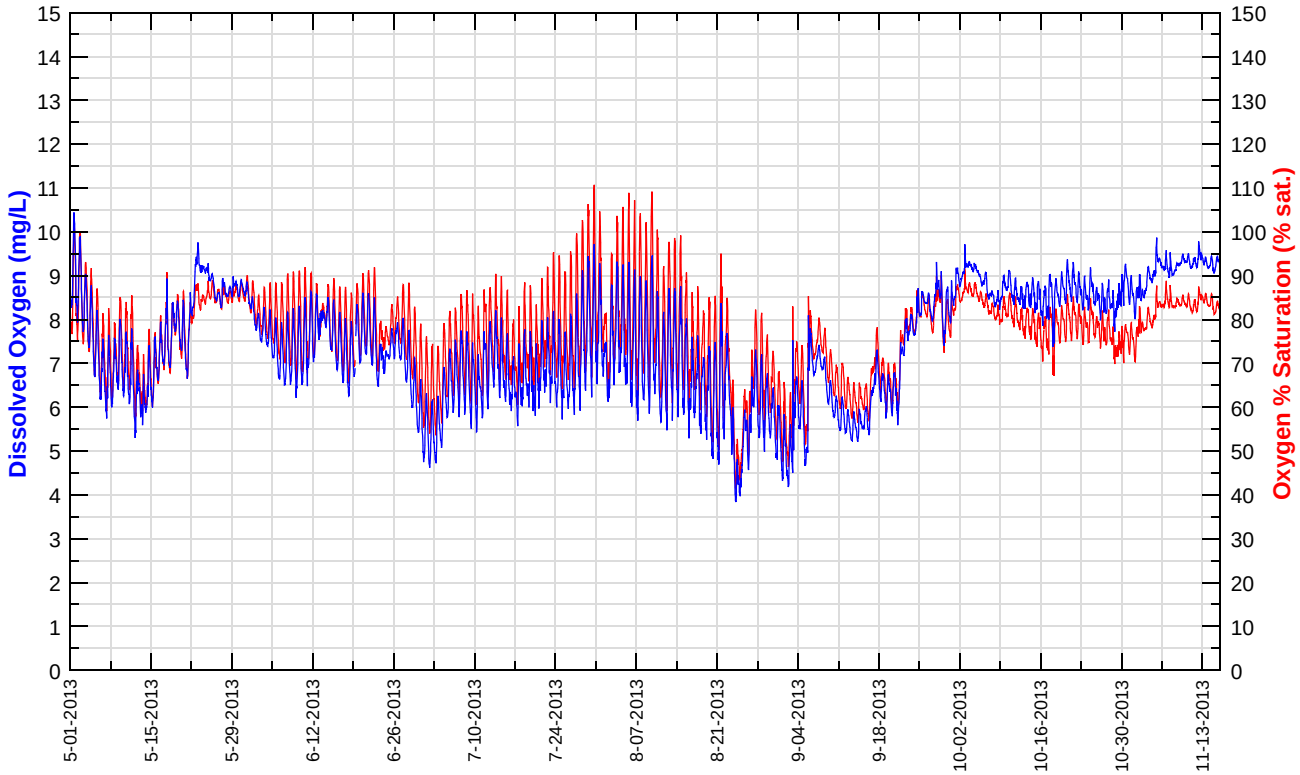
Beaverton Creek at 170th Ave, Beaverton, OR (453004122510301)

Data from U.S. Geological Survey



Fanno Creek at Durham Road (14206950)

Data from U.S. Geological Survey



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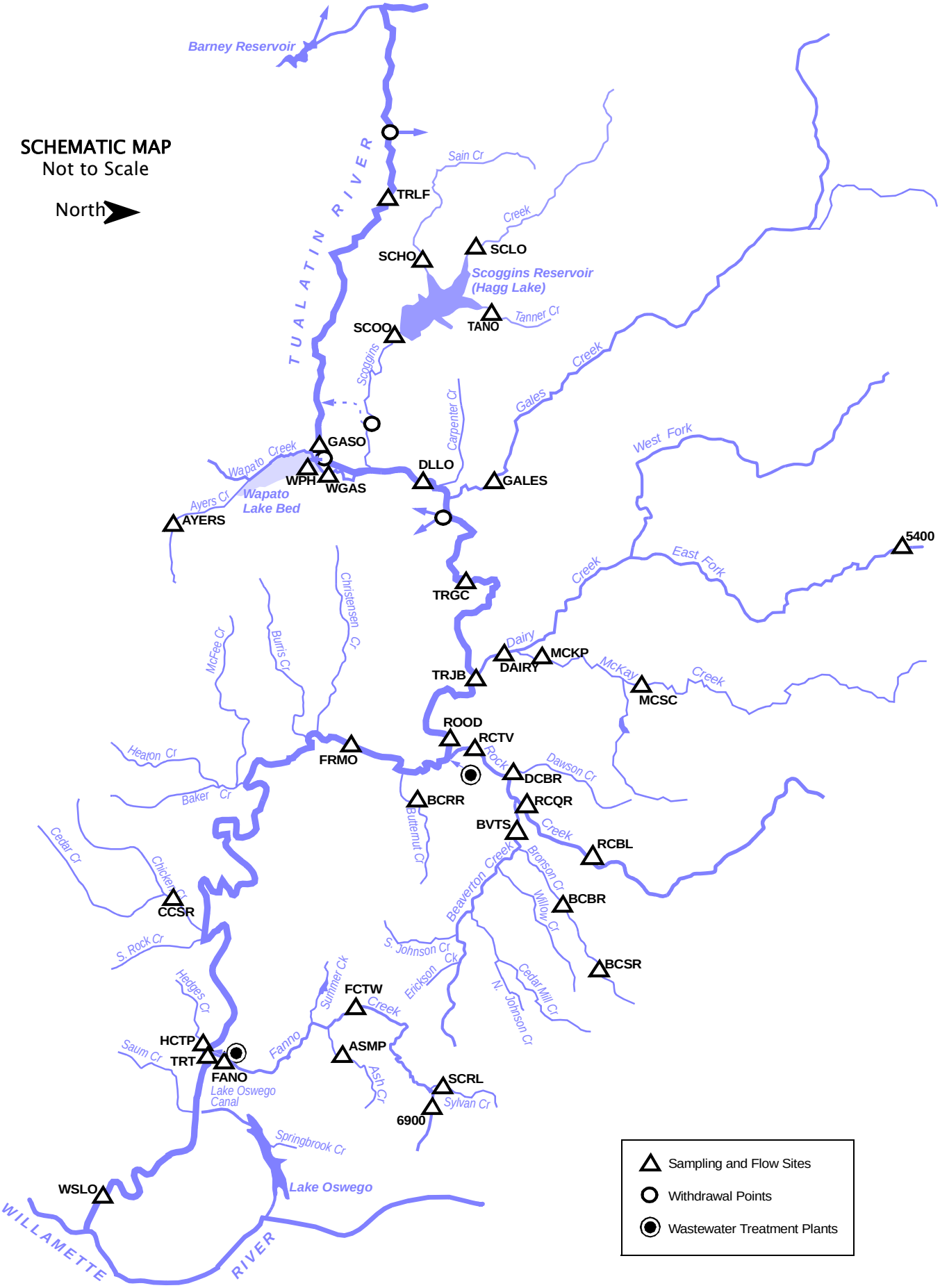
Appendix A

Stream Gage Records

STREAM GAGE SITES — LOCATIONS



STREAM GAGE SITES — ALPHABETICAL LISTING BY SITE CODE

SITE CODE	SITE NAME	RIVER MILE	STATION ID	PAGE
5400	East Fork Dairy Creek near Meacham Corner, OR	12.4	14205400	A-16
6900	Fanno Creek at 56th Avenue	11.9	14206900	A-31
ASMP	Ash Creek at Metzger Park at Metzger, Oregon	1.25	14206933	A-34
AYERS	Ayers Creek at NE North Valley Road near Gaston, Oregon	—	14202550	A-6
BCBR	Bronson Creek at Bronson Road near Orenco, Oregon	2.1	14206423	A-24
BCRR	Butternut Creek at Rosa Road	1.0	14206483	A-27
BCSR	Bronson Creek at Saltzman Road	5.1	14206419	A-23
BVTS	Beaverton Creek at NE Guston Court near Orenco, Oregon	1.2	14206435	A-25
CCSR	Chicken Creek at Roy Rogers Road near Sherwood, Oregon	2.3	14206750	A-30
DAIRY	Dairy Creek at Hwy 8 near Hillsboro, Oregon	2.06	14206200	A-19
DCBR	Dawson Creek at Brookwood Road near Hillsboro, Oregon	0.7	14206443	A-26
DLLO	Tualatin River at Dilley, Oregon	58.8	14203500	A-13
FANO	Fanno Creek at Durham Road near Tigard, Oregon	1.2	14206950	A-35
FCTW	Fanno Creek at Tuckerwood	7.3	14206927	A-33
FRMO	Tualatin River at Farmington, Oregon	33.3	14206500	A-29
GALES	Gales Creek at Old Hwy 47 near Forest Grove, Oregon	2.36	14204530	A-14
GASO	Tualatin River at Gaston, Oregon	62.3	14202510	A-5
HCTP	Hedges Creek at Tualatin Park at Tualatin, Oregon	0.3	14206958	A-36
MCKP	McKay Creek at Padgett Road near Hillsboro, Oregon	1.31	14206190	A-18
MCSC	McKay Creek at Scotch Church Rd above Waible Ck near North Plains, Oregon	6.3	14206070	A-17
RCBL	Rock Creek below Bethany Lake	8.9	14206340	A-22
RCTV	Rock Creek at Hwy 8 near Hillsboro, Oregon	1.2	14206450	A-28
ROOD	Tualatin River at Rood Bridge Road near Hillsboro, Oregon	38.4	14206295	A-21
SCHO	Sain Creek above Henry Hagg Lake near Gaston, Oregon	1.6	14202920	A-10
SCLO	Scoggins Creek above Henry Hagg Lake near Gaston, Oregon	9.3	14202850	A-9
SCOO	Scoggins Creek below Henry Hagg Lake near Gaston, Oregon	4.80	14202980	A-12
SCRL	Sylvan Creek at Raleighwood Lane near West Slope, Oregon	1.0	14206905	A-32
TANO	Tanner Creek above Henry Hagg Lake near Gaston, Oregon	1.6	14202860	A-11
TRGC	Tualatin River at Golf Course Road near Cornelius, Oregon	51.5	14204800	A-15
TRJB	Tualatin River at Hwy 219 Bridge	44.4	14206241	A-20
TRLF	Tualatin River below Lee Falls near Cherry Grove, Oregon	70.7	14202450	A-4
TRT	Tualatin River at Tualatin, Oregon	8.9	14206956	A-37
WGAS	Wapato Creek at Gaston Road at Gaston, Oregon	—	14202650	A-8
WPH	Wapato Canal at Pumphouse at Gaston, Oregon	—	14202630	A-7
WSLO	Tualatin River at West Linn	1.75	14207500	A-38

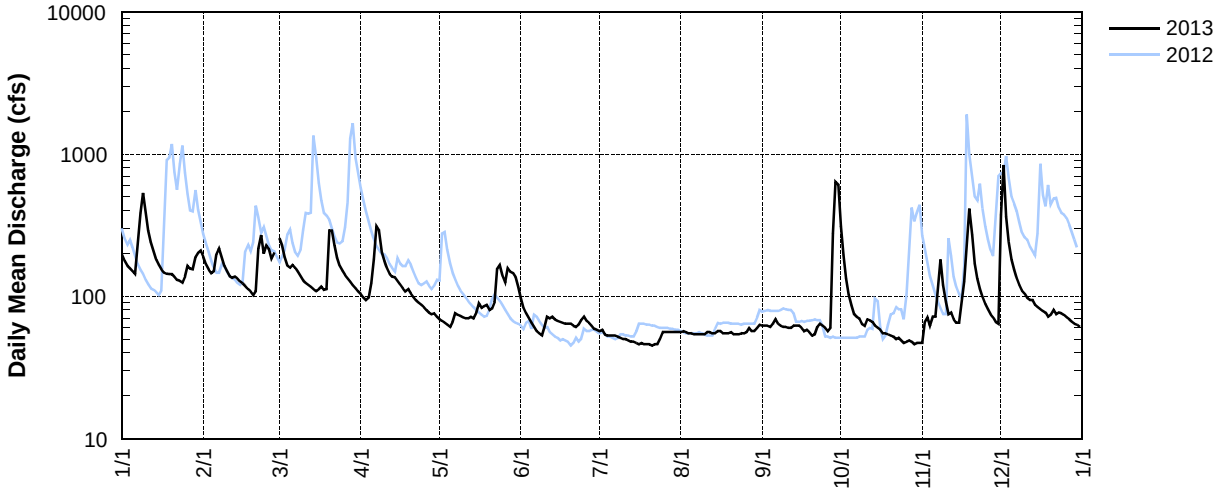
TRLF – 14202450 – TUALATIN RIVER BELOW LEE FALLS NEAR CHERRY GROVE, OREGON [RM 70.7]

Latitude: 45 30 21 Longitude: 123 13 06 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second†											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	196	189	257	104	69	97	57	56	62	311	47	373
2	178	168	229	98	67	83	58	57	62	195	66	837
3	164	154	189	94	65	76	54	56	62	134	71	363
4	157	145	164	98	63	70	53	55	61	103	62	242
5	151	150	159	124	61	65	53	55	64	86	72	181
6	144	198	166	183	66	61	53	54	69	75	72	154
7	225	218	159	309	76	57	53	54	64	72	117	134
8	385	186	149	289	74	55	52	54	62	70	182	120
9	533	163	138	204	73	53	51	54	61	64	120	110
10	387	150	129	177	71	61	50	54	61	62	91	105
11	289	139	124	157	70	72	50	56	60	69	75	97
12	240	135	120	144	70	70	49	56	60	68	77	94
13	207	137	116	137	72	72	48	55	62	66	69	94
14	181	133	112	136	70	69	48	55	62	62	65	87
15	166	127	109	128	77	67	47	57	62	60	65	84
16	155	123	112	121	89	66	46	57	60	58	93	81
17	147	118	117	114	83	65	47	55	57	55	127	79
18	144	112	111	108	85	64	46	55	58	55	228	77
19	143	108	112	112	87	64	46	55	56	54	413	72
20	143	102	290	105	80	64	46	56	53	53	270	74
21	137	109	289	99	82	62	45	54	54	52	170	80
22	130	215	228	94	91	61	46	54	61	50	133	75
23	128	269	186	90	156	63	46	54	64	51	113	77
24	125	199	164	87	166	68	50	55	62	49	99	76
25	138	228	151	84	139	72	56	55	60	47	88	74
26	164	215	141	80	125	67	56	56	57	48	81	71
27	156	184	134	77	158	65	56	60	60	49	75	69
28	155	203	127	75	149	62	56	57	276	48	71	66
29	189	—	120	76	146	59	56	57	637	46	66	64
30	202	—	114	72	136	58	56	60	608	47	64	63
31	210	—	108	—	116	—	56	63	—	47	—	61
TOTAL	6069	4577	4824	3776	2932	1988	1586	1731	3157	2306	3342	4234
MEAN	195.8	163.5	155.6	125.9	94.6	66.3	51.2	55.8	105.2	74.4	111.4	136.6
MAX	533	269	290	309	166	97	58	63	637	311	413	837
MIN	0	102	108	72	61	53	45	54	53	46	47	61
AC-FT	12040	9080	9570	7490	5820	3940	3150	3430	6260	4570	6630	8400

† Provisional data–subject to revision

TRLF — 14202450 — Tualatin River below Lee Falls near Cherry Grove, Oregon [RM 70.7]



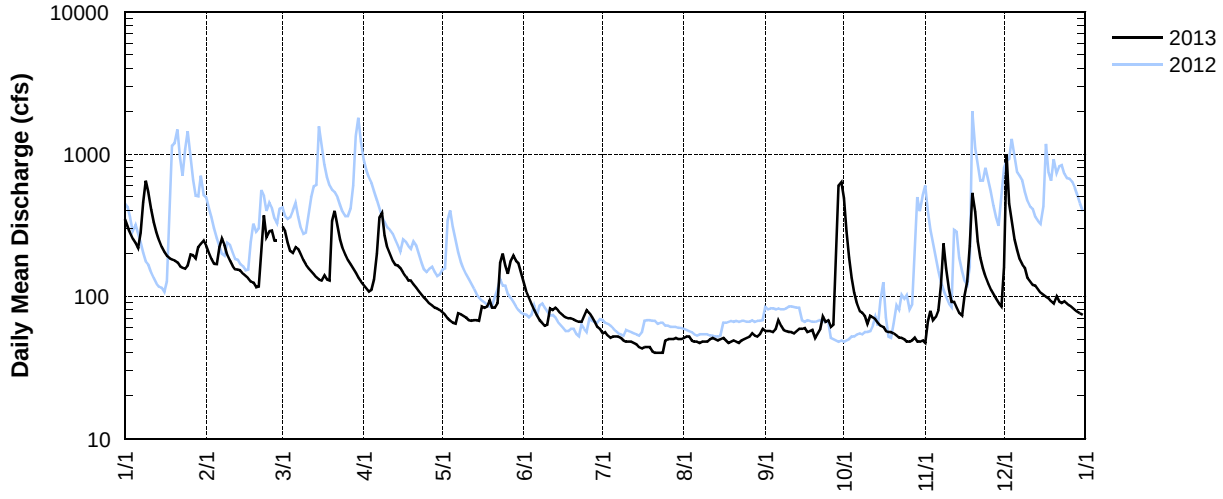
GASO – 14202510 – TUALATIN RIVER AT GASTON, OREGON [RM 62.3]

Latitude: 45 26 21 Longitude: 123 07 85 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second[†]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	349	226	309	120	77	124	55	51	57	491	47	e160
2	311	201	286	114	74	107	56	52	57	286	66	e1000
3	278	183	239	108	70	97	53	52	57	188	79	e450
4	254	169	208	111	67	88	51	49	56	135	68	343
5	236	168	201	131	65	80	52	48	59	106	72	250
6	218	221	221	199	64	73	52	48	68	88	80	211
7	279	254	214	360	76	68	52	47	62	79	120	182
8	459	228	197	387	75	65	51	48	58	77	235	167
9	e650	196	180	268	73	62	49	48	57	73	158	159
10	540	178	167	221	71	63	48	48	56	64	112	135
11	408	164	157	197	68	82	48	50	56	73	91	127
12	331	155	150	178	67	80	48	51	55	71	91	120
13	282	154	143	166	68	83	47	50	57	69	83	119
14	248	152	136	165	68	80	46	49	59	65	76	112
15	224	144	131	158	67	76	44	50	59	62	73	106
16	205	139	129	146	85	73	43	51	60	61	102	102
17	192	134	140	138	83	71	44	49	56	57	127	99
18	185	127	131	129	85	70	44	47	57	56	227	97
19	182	125	129	129	94	70	44	48	58	56	534	92
20	179	116	338	122	83	69	41	49	51	55	393	89
21	173	117	399	115	83	67	40	48	55	53	243	100
22	163	207	309	109	90	66	40	47	59	51	186	92
23	159	371	251	103	172	66	40	49	72	51	157	90
24	156	261	217	98	199	73	40	50	66	50	137	92
25	165	286	196	94	165	80	49	51	68	48	122	89
26	196	289	180	89	144	76	50	52	61	48	111	86
27	194	247	167	86	178	71	50	55	63	49	103	83
28	184	247	156	83	193	66	50	53	251	51	96	80
29	222	—	146	82	178	61	51	52	e600	48	90	78
30	234	—	135	80	171	59	50	54	e635	48	85	76
31	247	—	127	—	147	—	50	59	—	49	—	74
TOTAL	8103	5459	6089	4486	3200	2266	1478	1555	3085	2758	4164	5060
MEAN	261.4	195.0	196.4	149.5	103.2	75.5	47.7	50.2	102.8	89.0	138.8	163.2
MAX	650	371	399	387	199	124	56	59	635	491	534	1000
MIN	0	116	127	80	64	59	40	47	51	48	47	74
AC-FT	16070	10830	12080	8900	6350	4500	2930	3080	6120	5470	8260	10040

[†] Provisional data–subject to revision; e=estimated value

GASO — 14202510 — Tualatin River at Gaston, Oregon [RM 62.3]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

STATION NUMBER: 14202550 AYERS CREEK AT NE NORTH VALLEY ROAD NEAR GASTON, OREG.

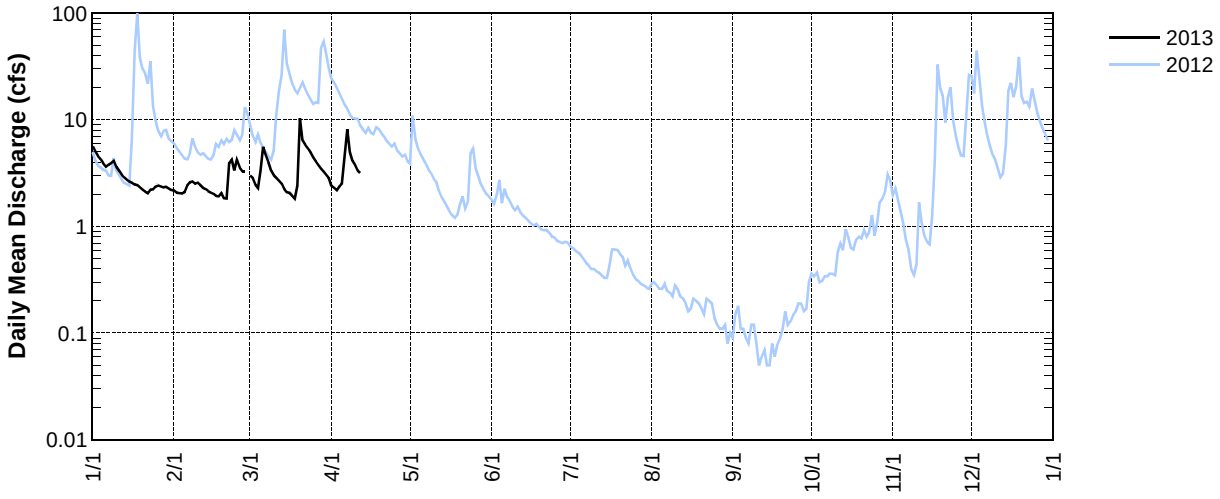
LATITUDE: 452245 LONGITUDE: 1230546

Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.7	2.2	3.0	2.4								
2	5.1	2.1	2.9	2.3								
3	4.6	2.0	2.5	2.2								
4	4.3	2.0	2.3	2.4								
5	3.9	2.1	3.3	2.5								
6	3.6	2.4	5.6	4.2								
7	3.8	2.6	4.7	8.2								
8	3.9	2.6	4.0	5.0								
9	4.1	2.5	3.3	4.1								
10	3.6	2.6	3.0	3.8								
11	3.3	2.4	2.9	3.3								
12	3.1	2.3	2.7	3.2								
13	2.9	2.2	2.5									
14	2.7	2.2	2.2									
15	2.7	2.1	2.1									
16	2.6	2.0	2.1									
17	2.5	1.9	1.9									
18	2.4	1.9	1.8									
19	2.3	2.0	2.4									
20	2.2	1.8	10									
21	2.1	1.8	6.5									
22	2.1	3.9	5.8									
23	2.2	4.2	5.4									
24	2.2	3.3	4.9									
25	2.4	4.2	4.4									
26	2.4	3.6	4.1									
27	2.4	3.3	3.8									
28	2.3	3.3	3.5									
29	2.4	—	3.3									
30	2.3	—	3.1									
31	2.2	—	2.9	—		—			—		—	
TOTAL	94.3	71.5	112.9									
MEAN	3.04	2.55	3.64									
MAX	5.7	4.2	10									
MIN	2.1	1.8	1.8									
AC-FT	187	142	224									

Station discontinued 4/12/2013

14202550 — Ayers Creek at NE North Valley Road near Gaston, Oregon



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

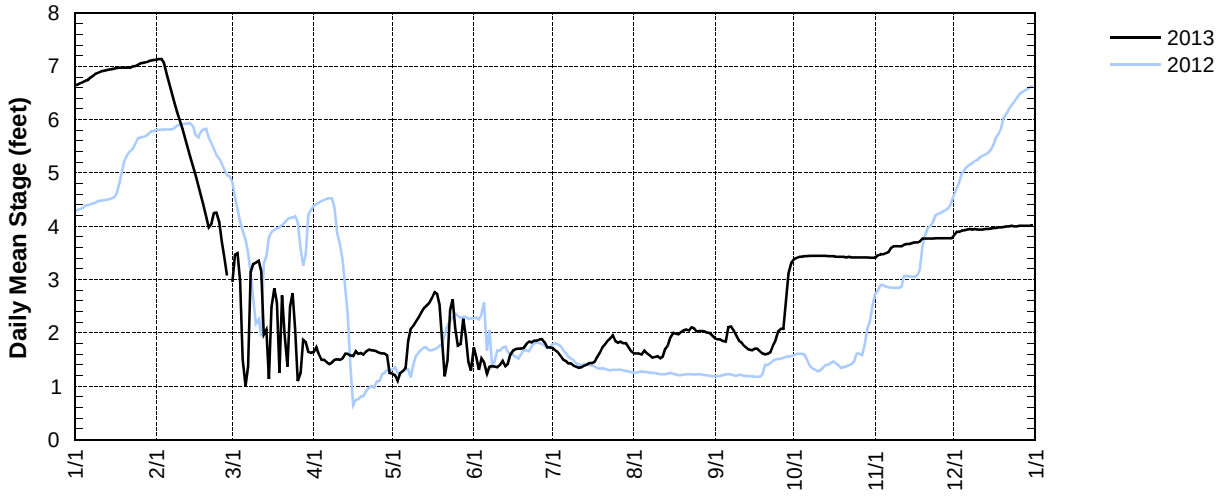
STATION NUMBER: 14202630 WAPATO CANAL AT PUMPHOUSE AT GASTON, OREG.

LATITUDE: 452625 LONGITUDE: 1230731

Stage, in feet, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6.65	7.13	2.95	1.65	1.23	1.73	1.72	1.62	1.90	3.39	3.41	3.83
2	6.66	7.14	3.47	1.74	1.22	1.54	1.68	1.62	1.88	3.41	3.46	3.90
3	6.69	7.14	3.50	1.61	1.10	1.31	1.65	1.62	1.88	3.43	3.48	3.90
4	6.71	7.07	2.99	1.50	1.25	1.52	1.58	1.60	1.85	3.43	3.48	3.92
5	6.73	6.86	1.51	1.50	1.29	1.45	1.51	1.67	1.84	3.44	3.50	3.93
6	6.75	6.68	1.01	1.46	1.35	1.24	1.48	1.62	2.11	3.44	3.52	3.94
7	6.80	6.50	1.37	1.42	1.85	1.37	1.43	1.58	2.12	3.45	3.60	3.95
8	6.83	6.32	3.14	1.45	2.08	1.38	1.43	1.54	2.05	3.45	3.63	3.94
9	6.87	6.15	3.30	1.50	2.14	1.37	1.39	1.54	1.96	3.45	3.63	3.95
10	6.89	5.99	3.32	1.51	2.22	1.36	1.37	1.57	1.86	3.45	3.63	3.94
11	6.91	5.83	3.35	1.50	2.30	1.41	1.35	1.53	1.83	3.45	3.63	3.94
12	6.92	5.66	3.16	1.53	2.39	1.48	1.36	1.56	1.76	3.45	3.66	3.94
13	6.93	5.49	1.98	1.61	2.47	1.38	1.39	1.71	1.72	3.45	3.67	3.95
14	6.94	5.31	2.08	1.61	2.51	1.41	1.41	1.77	1.69	3.44	3.67	3.95
15	6.95	5.13	1.14	1.58	2.56	1.60	1.44	1.92	1.68	3.44	3.69	3.96
16	6.96	4.96	2.48	1.57	2.66	1.68	1.44	2.01	1.71	3.44	3.70	3.97
17	6.97	4.77	2.84	1.66	2.77	1.70	1.46	1.99	1.71	3.43	3.70	3.97
18	6.98	4.58	2.58	1.61	2.74	1.71	1.55	1.98	1.66	3.43	3.72	3.97
19	6.98	4.41	1.25	1.63	2.53	1.71	1.63	2.02	1.62	3.43	3.77	3.98
20	6.98	4.18	2.71	1.60	1.85	1.72	1.73	2.05	1.60	3.43	3.77	3.99
21	6.98	3.98	1.99	1.66	1.19	1.80	1.78	2.07	1.61	3.42	3.77	4.00
22	6.98	4.04	1.36	1.69	1.49	1.84	1.86	2.05	1.64	3.43	3.77	4.00
23	7.00	4.25	2.50	1.68	2.43	1.83	1.90	2.11	1.77	3.42	3.77	4.01
24	7.01	4.26	2.75	1.67	2.63	1.86	1.96	2.09	1.85	3.42	3.78	4.00
25	7.03	4.08	2.08	1.66	2.09	1.86	1.85	2.03	2.04	3.42	3.78	4.00
26	7.06	3.71	1.10	1.63	1.77	1.88	1.82	2.04	2.08	3.42	3.78	4.01
27	7.07	3.41	1.26	1.62	1.80	1.89	1.84	2.04	2.08	3.42	3.78	4.01
28	7.08	3.08	1.87	1.62	2.27	1.83	1.81	2.03	2.56	3.42	3.78	4.01
29	7.10	—	1.83	1.59	1.95	1.73	1.81	2.01	3.12	3.42	3.78	4.01
30	7.11	—	1.65	1.26	1.47	1.73	1.73	2.00	3.32	3.41	3.78	4.01
31	7.12	—	1.63	—	1.30	—	1.66	1.95	—	3.41	—	4.01
MEAN	6.92	5.29	2.26	1.58	1.96	1.61	1.61	1.84	1.95	3.43	3.67	3.96
MAX	7.12	7.14	3.50	1.74	2.77	1.89	1.96	2.11	3.32	3.45	3.78	4.01
MIN	6.65	3.08	1.01	1.26	1.10	1.24	1.35	1.53	1.60	3.39	3.41	3.83

14202630 — Wapato Canal Pumphouse at Gaston, Oregon



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

STATION NUMBER: 14202650 WAPATO CREEK AT GASTON ROAD AT GASTON, OREG.

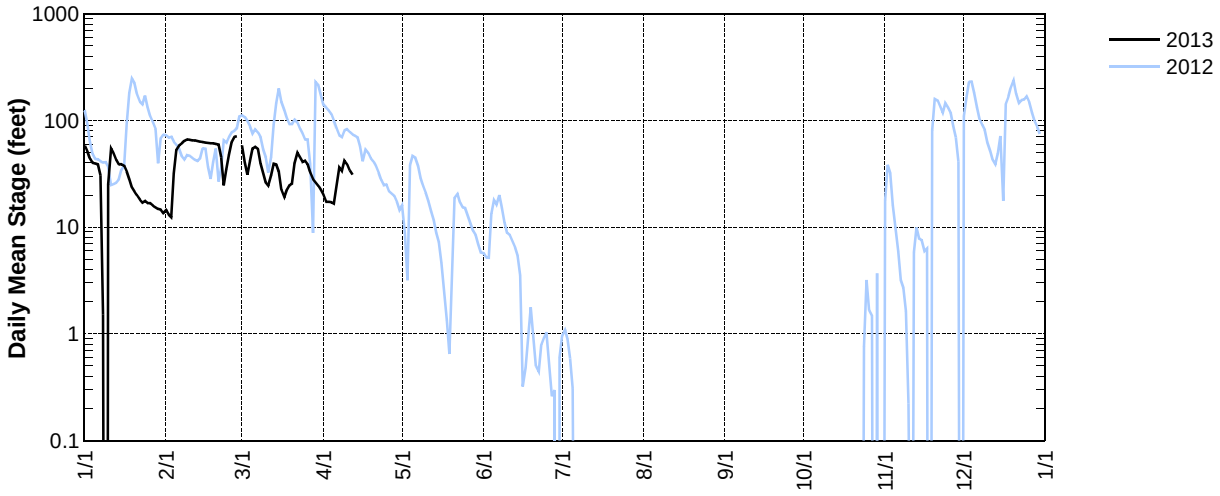
LATITUDE: 452626 LONGITUDE: 1230730

Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	59	14	59	20								
2	51	13	40	17								
3	44	12	31	17								
4	40	31	42	17								
5	40	53	54	17								
6	39	59	57	24								
7	31	61	54	36								
8	1.8	64	40	34								
9	-26	66	32	42								
10	25	66	26	39								
11	54	65	24	34								
12	49	65	31	31								
13	43	64	39									
14	38	63	39									
15	39	63	34									
16	38	62	22									
17	33	62	19									
18	28	61	22									
19	23	61	25									
20	22	60	26									
21	20	59	39									
22	18	46	50									
23	17	24	45									
24	17	35	41									
25	17	47	43									
26	17	63	40									
27	16	70	33									
28	15	71	28									
29	15	—	26									
30	15	—	24									
31	14	—	22	—		—			—		—	
TOTAL	852.8	1480	1107	297								
MEAN	27.5	52.9	35.7	27.0								
MAX	59	71	59	42								
MIN	-26	12	19	17								
AC-FT	1690	2940	2200	589								

Station discontinued 4/12/2013

14202650 — Wapato Creek at Gaston Road at Gaston, Oregon



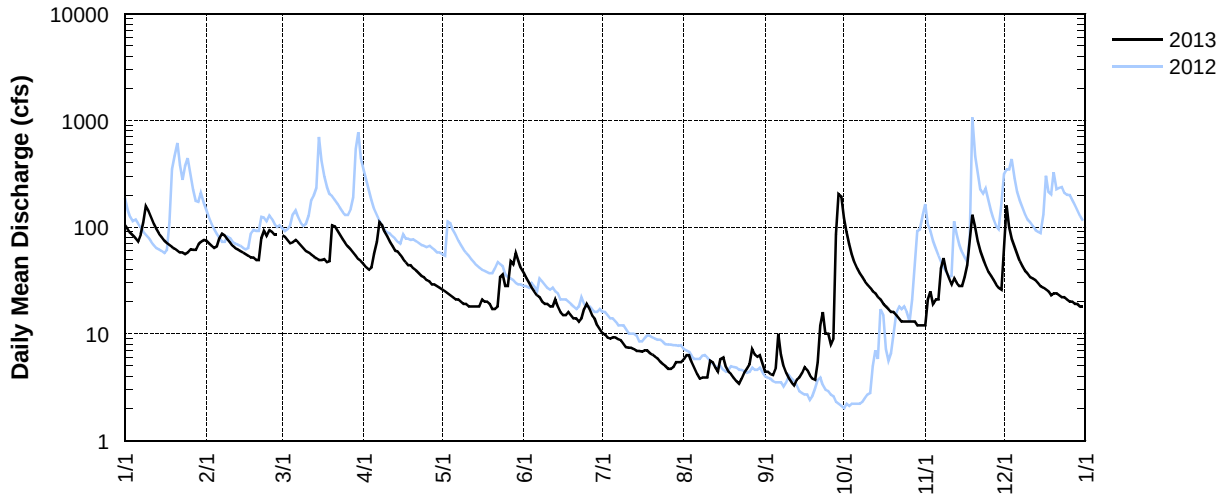
SCLO – 14202850 – SCOGGINS CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 9.3]

Latitude: 45 30 06 Longitude: 123 15 06 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second[†]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	104	75	84	45	26	37	10	5.8	4.4	122.0	12	68
2	96	71	81	42	25	33	10	6.3	4.4	90.0	21	160
3	89	67	76	40	24	30	9	6.3	4.2	70.0	25	100
4	84	64	71	42	23	27	9	5.4	4.1	56.0	19	78
5	79	66	72	56	22	25	9	4.8	4.8	47.0	21	65
6	74	79	76	73	21	23	9	4.2	10.0	41.0	21	56
7	85	87	72	112	21	22	9	3.8	6.4	37.0	41	48
8	110	84	68	105	20	20	9	3.9	5.0	34.0	51	43
9	157	78	64	90	19	19	8	3.9	4.3	31.0	39	39
10	142	72	60	82	19	19	8	3.9	3.8	29.0	33	37
11	122	67	58	72	18	18	7	5.6	3.5	27.0	29	34
12	107	64	55	66	18	18	7	5.4	3.3	25.0	33	33
13	96	62	53	60	18	21	7	4.8	3.7	24.0	30	32
14	87	60	51	59	18	18	6.9	4.4	3.9	22.0	28	30
15	81	58	49	55	18	16	6.9	5.8	4.3	21	28	28
16	75	56	49	50	21	15	6.8	6.0	4.9	19	34	27
17	71	54	50	47	20	15	7.0	4.9	4.6	18.0	44	26
18	68	52	47	44	20	16	7.0	4.4	4.1	17.0	76	25
19	65	52	48	44	19	15	6.6	4.2	3.8	16.0	131	23
20	63	49	104	41	17	14	6.4	3.9	3.7	16	99	24
21	60	49	102	39	17	14	6.1	3.6	5.4	15	74	24
22	58	79	92	37	18	13	5.9	3.4	12.0	14	60	23
23	58	92	84	35	34	14	5.5	3.8	16.0	13	51	22
24	56	83	77	34	36	17	5.2	4.3	10.0	13	44	22
25	58	94	71	32	28	19	5.0	4.7	10.0	13	38	21
26	62	91	66	31	28	17	4.7	5.2	8.0	13	35	20
27	61	85	62	29	48	15	4.7	7.2	9.0	13	32	20
28	61	85	58	29	45	14	4.9	6.4	86.0	13	29	19
29	69	—	54	28	57	12	5.4	6.1	203.0	12	27	19
30	73	—	50	27	48	11	5.4	6.3	193.0	12	26	18
31	76	—	48	—	41	—	5.4	5.2	—	12	—	18
TOTAL	2547	1975	2052	1546	807	567	217.6	153.9	643.6	905	1231	1202
MEAN	82.2	70.5	66.2	51.5	26.0	18.9	7.0	5.0	21.5	29.2	41.0	38.8
MAX	157	94	104	112	57	37	10	7.2	203.0	122	131	160
MIN	0	49	47	27	17	11	4.7	3.4	3.3	12.0	12	18
AC-FT	5050	3920	4070	3070	1600	1120	430	310	1280	1800	2440	2380

[†] Provisional data–subject to revision

SCLO — 14202850 — Scoggins Creek above Henry Hagg Lake near Gaston, Oregon [RM 9.3]



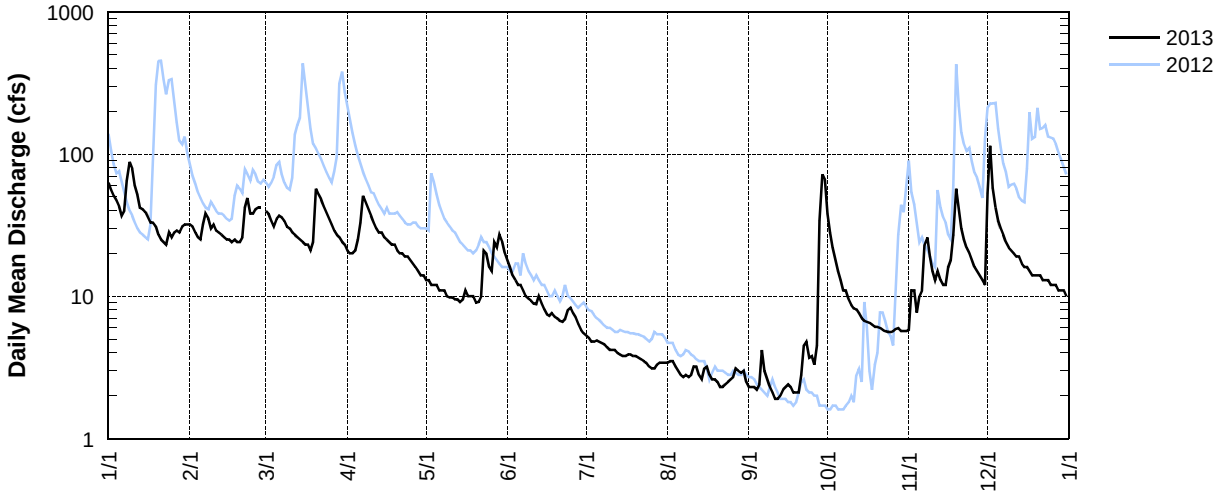
SCHO – 14202920 – SAIN CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 1.6]

Latitude: 45 28 50 Longitude: 123 14 40 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second[†]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	63	32	e40	e21	e13	18	5.3	3	2.3	38.0	6	53
2	56	31	e38	e20	e13	16	5.1	4	2.3	28.0	11	114
3	51	28	e34	e20	e12	14	4.8	4	2.3	22.0	11	58
4	47	26	e31	e21	e12	e13	4.8	3	2.2	18.0	8	42
5	43	25	e35	e25	e12	e12	4.9	3	e2.4	15.0	10	34
6	37	32	e37	e33	e11	e12	4.8	3	e4.2	13.0	11	30
7	40	38	e36	e51	e11	e11	4.7	3	e3	11.0	23	27
8	65	35	e34	e46	e11	e10	4.6	3	e2.6	11.0	26	24
9	88	30	e31	e41	e10	e9.6	4.4	3	e2.3	9.5	19	22
10	79	32	e30	e37	10	e9.3	4.2	3	e2.1	8.7	15	21
11	60	29	e28	e33	10	e8.9	4.2	3	1.9	8.2	13	20
12	52	28	e27	e30	10	e8.8	4.2	3	1.9	8.1	15	19
13	42	27	e26	e28	10	e10	4.0	3	2.0	7.6	13	19
14	41	26	e25	e28	9	e8.9	4	3	2.2	7.0	12	17
15	39	25	e24	e26	10	e8.1	4	3	2.3	6.7	12	16
16	36	25	e23	e25	11	e7.5	4	3	2.4	6.6	16	16
17	33	24	e23	e24	10	e7.3	4	3	2.3	6.5	18	15
18	33	25	e21	e23	10	e7.6	4	3	2.1	6.3	27	14
19	31	24	e24	e23	10	7	4	3	2.1	6.1	57	14
20	27	24	e57	e21	9	7	4	3	2.1	6.1	41	14
21	25	26	e52	e20	9	7	4	2	2.8	6.0	30	14
22	24	42	e48	e20	10	7	4	2	4.5	5.8	25	13
23	23	49	e43	e19	21	7	4	2	4.8	5.7	22	13
24	28	38	e39	e19	20	8	3.4	3	3.7	5.6	20	13
25	26	38	e35	e18	16	8.3	3.2	3	3.8	5.6	18	12
26	28	41	e32	e17	15	7.6	3.1	3	3.3	5.7	16	12
27	29	e42	e29	e16	24	7.1	3	3	4.5	6	15	12
28	28	e42	e27	e15	22	6.4	3	3	34.0	6	14	11
29	31	—	e26	e14	27	5.8	3	2.9	72.0	6	13	11
30	32	—	e24	e14	24	5.5	3	3.0	66.0	6	12	11
31	32	—	e23	—	20	—	3	2.5	—	6	—	10
TOTAL	1269	884	1002	748	420.3	275.1	124	88.3	246.4	306.8	548.5	721
MEAN	40.9	31.6	32.3	24.9	13.6	9.2	4.0	2.8	8.2	9.9	18.3	23.3
MAX	88	49	57	51	27	18	5.3	3.5	72.0	38	57	114
MIN	0	24	21	14	9	5.5	3.1	2.3	1.9	5.6	6	10
AC-FT	2520	1750	1990	1480	830	550	250	180	490	610	1090	1430

[†] Provisional data–subject to revision; e=estimated value

SCHO — 14202920 — Sain Creek above Henry Hagg Lake near Gaston, Oregon [RM 1.6]



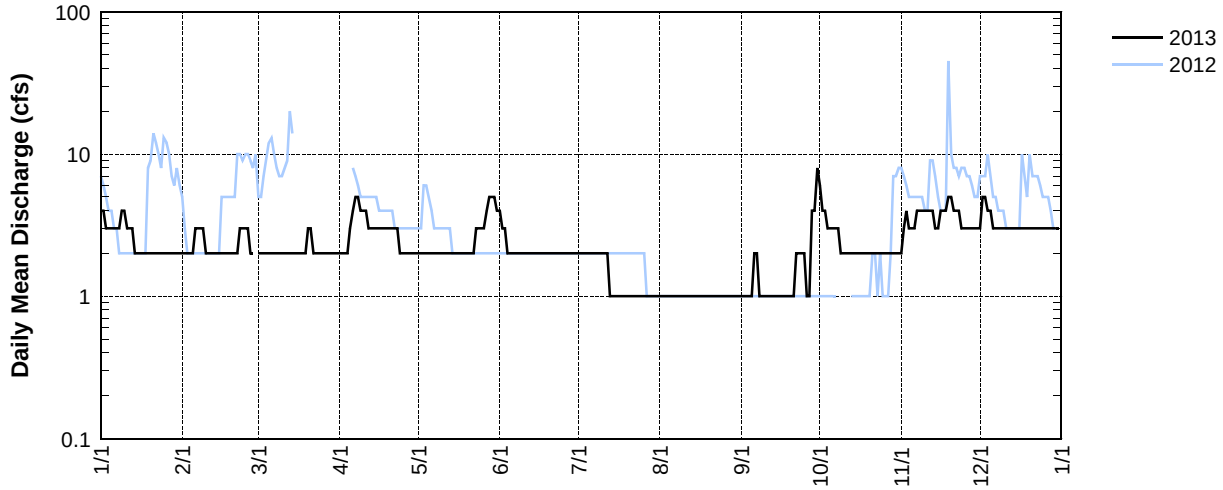
TANO – 14202860 – TANNER CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 1.6]

Latitude: 45 30 21 Longitude: 123 13 10 Source Agency: Tualatin Valley Irrigation District

Day	2013 Daily Mean Discharge in Cubic Feet per Second[a]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4	2	2	2	2	4	2	1	1	6	2	3
2	4	2	2	2	2	3	2	1	1	4	3	5
3	3	2	2	2	2	3	2	1	1	4	4	5
4	3	2	2	2	2	2	2	1	1	3	3	4
5	3	2	2	3	2	2	2	1	1	3	3	4
6	3	3	2	4	2	2	2	1	2	3	3	3
7	3	3	2	5	2	2	2	1	2	3	4	3
8	3	3	2	5	2	2	2	1	1	3	4	3
9	4	3	2	4	2	2	2	1	1	2	4	3
10	4	2	2	4	2	2	2	1	1	2	4	3
11	3	2	2	4	2	2	2	1	1	2	4	3
12	3	2	2	3	2	2	2	1	1	2	4	3
13	3	2	2	3	2	2	1	1	1	2	4	3
14	2	2	2	3	2	2	1	1	1	2	3	3
15	2	2	2	3	2	2	1	1	1	2	3	3
16	2	2	2	3	2	2	1	1	1	2	4	3
17	2	2	2	3	2	2	1	1	1	2	4	3
18	2	2	2	3	2	2	1	1	1	2	4	3
19	2	2	2	3	2	2	1	1	1	2	5	3
20	2	2	3	3	2	2	1	1	1	2	5	3
21	2	2	3	3	2	2	1	1	1	2	4	3
22	2	2	2	3	2	2	1	1	2	2	4	3
23	2	3	2	3	3	2	1	1	2	2	4	3
24	2	3	2	2	3	2	1	1	2	2	3	3
25	2	3	2	2	3	2	1	1	2	2	3	3
26	2	3	2	2	3	2	1	1	1	2	3	3
27	2	2	2	2	4	2	1	1	1	2	3	3
28	2	2	2	2	5	2	1	1	4	2	3	3
29	2	—	2	2	5	2	1	1	4	2	3	3
30	2	—	2	2	5	2	1	1	8	2	3	3
31	2	—	2	—	4	—	1	1	—	2	—	3
TOTAL	79	64	64	87	79	64	43	31	49	75	107	99
AC-FT	160	130	130	170	160	130	90	60	100	150	210	200

[a]Values are read from a staff plate. Values may be daily readings taken at about 0800 or averages over several days

TANO — 14202860 — Tanner Creek above Henry Hagg Lake near Gaston, Oregon [RM 1.6]

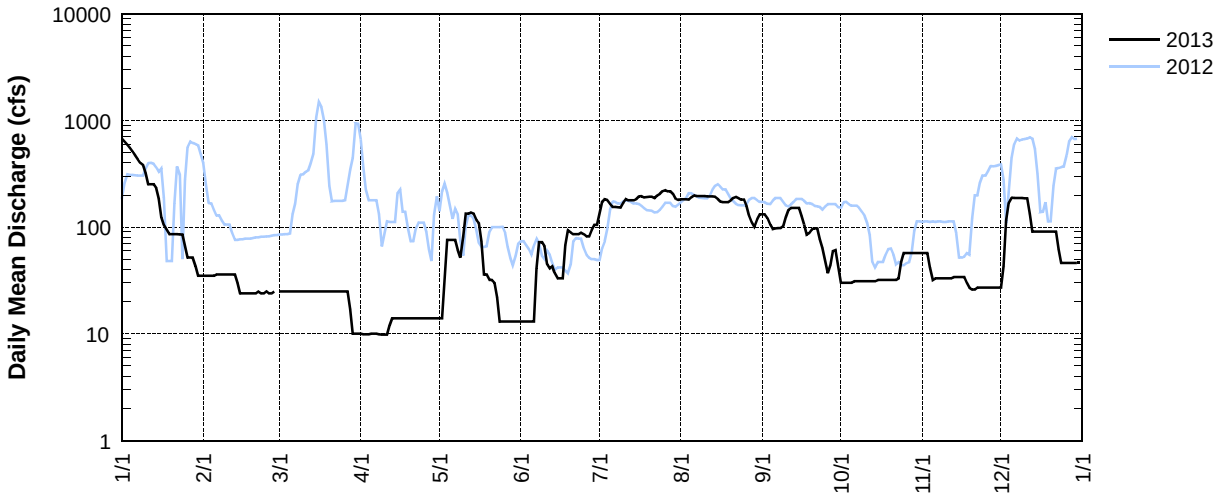


SCOO – 14202980 – SCOGGINS CREEK BELOW HENRY HAGG LAKE NEAR GASTON, OREGON [RM 4.8]

Latitude: 45 28 10 Longitude: 123 11 56 Source Agency: Bureau of Reclamation & District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	676	35	25	10	14	13	135	182	132	30	57	27
2	635	35	25	10	14	13	172	182	132	30	57	43
3	594	35	25	10	31	13	182	182	122	30	57	116
4	554	35	25	10	76	13	180	181	106	30	42	169
5	513	35	25	10	76	13	165	192	96	30	32	189
6	471	36	25	10	76	13	155	198	97	31	33	188
7	432	36	25	10	76	41	155	195	98	31	33	187
8	399	36	25	10	61	72	153	195	98	31	33	187
9	382	36	25	10	52	72	152	195	103	31	33	187
10	321	36	25	10	81	66	170	195	125	31	33	186
11	252	36	25	10	134	45	183	194	145	31	33	186
12	252	36	25	12	134	41	179	194	151	31	33	134
13	252	36	25	14	137	43	179	194	151	31	34	91
14	233	30	25	14	135	37	178	193	151	31	34	91
15	185	24	25	14	117	33	184	184	151	32	34	91
16	124	24	25	14	109	33	194	174	127	32	34	91
17	104	24	25	14	74	33	196	171	106	32	34	91
18	94	24	25	14	36	68	190	171	85	32	30	91
19	86	24	25	14	36	93	191	171	88	32	27	91
20	86	24	25	14	32	89	193	178	96	32	26	91
21	86	24	25	14	32	86	193	189	97	32	26	91
22	86	25	25	14	30	86	188	193	97	32	27	91
23	85	24	25	14	22	86	198	187	77	33	27	62
24	85	24	25	14	13	89	205	181	64	47	27	46
25	67	25	25	14	13	86	218	181	48	57	27	46
26	52	24	25	14	13	82	223	158	37	57	27	46
27	52	24	25	14	13	82	217	127	44	57	27	46
28	52	25	17	14	13	94	217	111	60	57	27	46
29	43	—	10	14	13	105	205	101	61	57	27	46
30	35	—	10	14	13	105	185	119	42	57	27	46
31	35	—	10	—	13	—	180	132	—	57	—	46
TOTAL	7323	832	722	373	1689	1745	5715	5400	2987	1164	998	3139
MEAN	236.2	29.7	23.3	12.4	54.5	58.2	184.4	174.2	99.6	37.5	33.3	101.3
MAX	676	36	25	14	137	105	223	198	151	57	57	189
MIN	35	24	10	10	13	13	135	101	37	30	26	27
AC-FT	14530	1650	1430	740	3350	3460	11340	10710	5930	2310	1980	6230

SCOO — 14202980 — Scoggins Creek below Henry Hagg Lake near Gaston, Oregon [RM 4.8]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

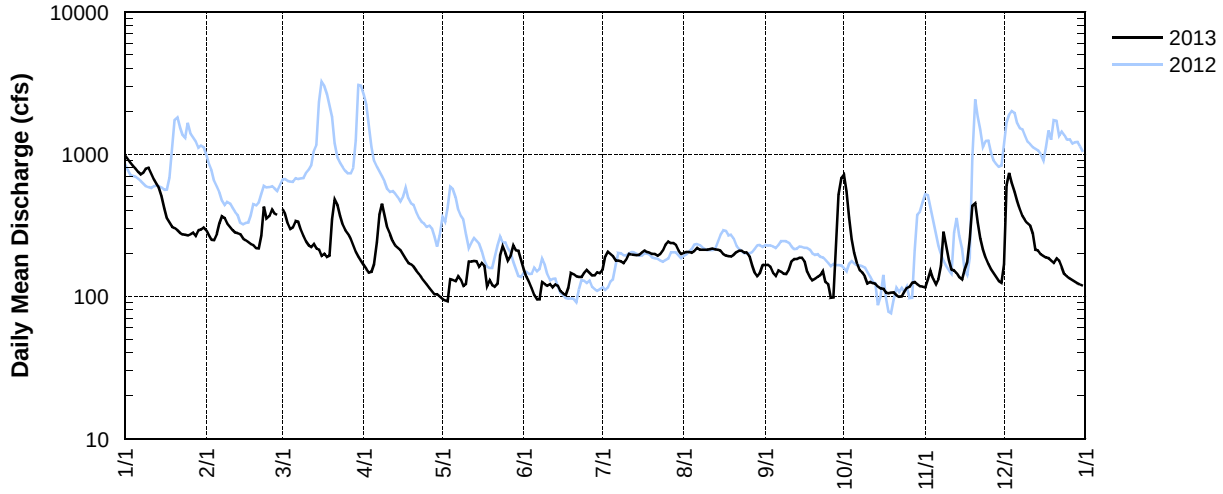
STATION NUMBER: 14203500 TUALATIN RIVER NEAR DILLEY, OREG.

LATITUDE: 452830 LONGITUDE: 1230723 DRAINAGE AREA: 125.00 DATUM: 147.57

Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	985	291	410	166	96	154	154	203	165	717	115	166
2	928	269	380	155	94	137	190	204	166	550	130	600
3	877	249	327	146	92	126	206	205	162	362	151	736
4	831	248	297	148	131	114	198	203	147	254	133	628
5	791	274	305	168	130	102	191	208	140	202	121	543
6	750	326	337	239	128	95	178	219	152	169	132	468
7	722	366	336	374	138	94	178	212	150	152	164	409
8	740	356	294	448	131	125	176	213	144	147	285	367
9	791	326	267	369	118	122	171	212	143	138	229	343
10	805	308	245	306	122	119	181	212	154	124	179	327
11	725	292	228	273	175	122	199	215	176	126	154	313
12	663	281	222	244	175	116	196	216	183	124	152	277
13	616	278	233	227	177	121	196	213	183	122	146	212
14	578	273	216	219	176	119	194	213	187	117	136	210
15	509	255	213	211	161	109	195	209	187	113	131	199
16	416	247	192	195	171	104	204	199	177	113	154	192
17	352	240	199	183	165	102	210	193	148	106	174	187
18	329	232	189	172	118	115	205	191	137	105	252	185
19	308	230	193	168	130	146	203	190	129	106	431	178
20	302	218	346	162	120	143	198	195	133	107	453	172
21	291	216	480	151	117	138	198	204	137	102	331	184
22	279	264	437	144	123	137	194	208	141	99	255	178
23	272	427	368	135	194	136	198	208	151	99	214	160
24	271	353	319	128	225	146	210	202	125	107	188	143
25	268	366	293	122	203	153	230	204	122	114	168	138
26	274	407	276	114	179	146	243	192	97	117	155	134
27	280	382	254	109	193	140	236	165	98	124	145	131
28	267	374	228	103	228	140	237	147	229	126	137	127
29	291	—	205	103	210	147	230	139	519	121	128	124
30	294	—	190	100	209	146	210	145	680	117	124	121
31	306	—	177	—	181	—	198	167	—	117	—	119
TOTAL	16111	8348	8656	5782	4810	3814	6207	6106	5462	5197	5667	8271
MEAN	520	298	279	193	155	127	200	197	182	168	189	267
MAX	985	427	480	448	228	154	243	219	680	717	453	736
MIN	267	216	177	100	92	94	154	139	97	99	115	119
AC-FT	31960	16560	17170	11470	9540	7570	12310	12110	10830	10310	11240	16410

DLLO — 14203500 — Tualatin River near Dilley, Oregon [RM 58.8]



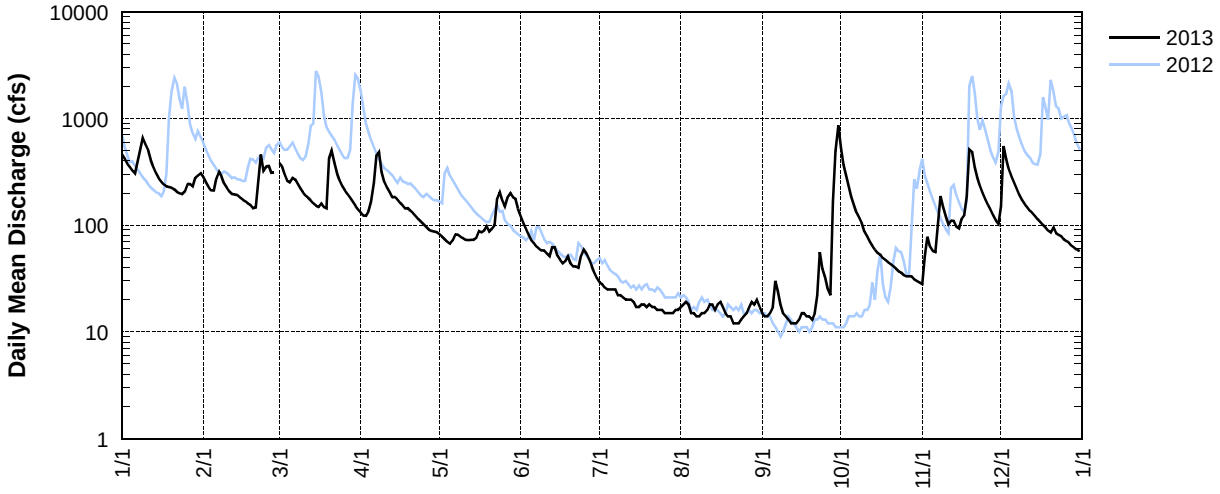
GALES – 14204530 – GALES CREEK AT OLD HWY 47 NEAR FOREST GROVE, OREGON [RM 2.36]

Latitude: 45 30 39 Longitude: 123 06 56 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second†											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	e460	e282	e384	e132	e82	e120	29	17	15	536	28	150
2	e420	e252	e357	e123	e78	e104	28	18	14	369	51	550
3	e380	e229	e299	e122	e74	e92	26	19	14	291	78	417
4	353	e212	e261	e135	e70	e81	25	18	15	230	63	336
5	328	e211	e253	e165	e67	e73	25	15	17	185	57	283
6	e307	e276	e277	e249	e72	e68	25	15	30	152	56	248
7	e391	e316	e269	e450	e82	e63	25	14	24	130	97	218
8	e504	e285	e244	e485	e81	e60	22	14	18	117	188	191
9	e654	e246	e221	e315	e78	e58	22	15	15	104	148	172
10	e575	e223	e203	e255	e76	e58	21	15	14	87	120	159
11	e504	e206	e189	e225	e73	e54	20	16	13	78	102	147
12	e410	e195	e180	e203	e72	51	20	18	12	70	110	136
13	e350	e194	e170	e182	e73	62	20	18	12	64	109	130
14	e308	e192	e160	e184	e73	62	19	16	12	59	97	122
15	e278	e181	e152	e175	e76	52	17	18	13	55	93	114
16	e255	e174	e148	e162	e88	47	17	19	15	53	115	107
17	e240	e168	e160	e153	e86	44	18	17	15	49	124	101
18	e231	e160	e148	e143	e89	46	18	15	14	47	186	95
19	e227	e156	e144	e144	e98	51	17	14	14	45	510	89
20	e224	e144	e423	e136	e87	44	18	14	13	43	483	85
21	e216	e146	e499	e129	e92	41	17	12	15	41	350	95
22	e205	e258	e382	e121	e100	41	17	12	22	39	278	84
23	e199	e461	e306	e114	e178	40	16	12	56	37	233	81
24	e195	e326	e262	e108	e205	52	16	13	39	36	201	79
25	e206	e357	e233	e102	e170	59	16	14	32	34	174	74
26	e244	e360	e212	e96	e149	54	15	15	25	33	154	71
27	e242	e309	e195	e91	e183	48	15	17	22	33	139	68
28	e230	e309	e180	e88	e199	42	15	19	166	33	124	64
29	e277	—	e165	e87	e184	36	15	18	495	31	112	61
30	e291	—	e152	e86	e177	32	16	20	865	30	103	59
31	e307	—	e141	—	e143	—	16	17	—	29	—	57
TOTAL	10011	6828	7369	5160	3355	1735	606	494	2046	3140	4683	4643
MEAN	322.9	243.9	237.7	172.0	108.2	57.8	19.5	15.9	68.2	101.3	156.1	149.8
MAX	654	461	499	485	205	120	29	20	865	536	510	550
MIN	0	144	141	86	67	32	15	12	12	29	28	57
AC-FT	19860	13540	14620	10240	6660	3440	1200	980	4060	6230	9290	9210

† Provisional data–subject to revision; e=estimated value

GALES — 14204530 — Gales Creek at Old Hwy 47 near Forest Grove, Oregon [RM 2.36]



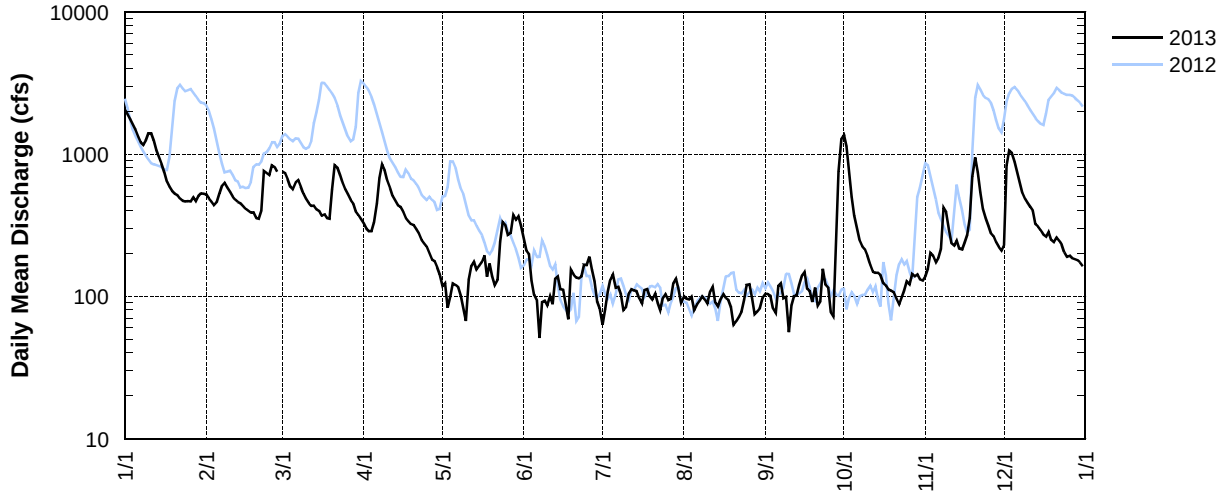
TRGC – 14204800 – TUALATIN RIVER AT GOLF COURSE ROAD NEAR CORNELIUS, OREGON [RM 51.5]

Latitude: 45 30 08 Longitude: 123 03 22 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second[†]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2040	520	754	324	118	256	63	100	104	1360	138	231
2	1900	488	737	299	124	210	81	96	104	1130	156	833
3	1760	465	667	286	83	198	107	95	101	769	201	1060
4	1620	439	591	287	99	129	131	99	82	501	193	1020
5	1470	461	569	332	123	102	143	80	76	369	173	880
6	1330	527	633	449	120	93	115	88	118	299	186	746
7	1210	599	657	680	116	51	117	93	123	246	215	630
8	1160	625	593	845	101	91	104	100	97	225	419	533
9	1250	583	527	771	83	93	80	95	99	214	391	487
10	1400	542	485	654	67	86	84	89	56	193	294	455
11	1400	503	452	577	132	100	105	108	86	166	235	425
12	1250	479	432	506	164	88	112	117	100	149	227	400
13	1070	462	434	471	175	133	110	90	101	146	246	321
14	953	452	409	439	155	138	109	85	120	146	217	309
15	854	431	399	427	164	112	97	95	140	141	213	292
16	744	412	369	392	175	111	89	103	148	123	239	270
17	639	400	377	356	194	87	111	97	113	119	271	263
18	589	386	355	338	137	69	113	94	109	111	357	284
19	551	389	351	323	170	153	100	84	91	110	700	249
20	529	355	564	317	138	142	95	63	115	107	946	240
21	514	351	835	295	120	135	105	67	86	96	747	259
22	485	399	801	276	131	134	90	72	92	88	539	247
23	469	760	712	251	242	138	80	78	156	98	412	231
24	465	736	628	237	333	166	97	94	121	110	358	204
25	466	713	565	224	317	165	103	120	115	127	314	189
26	464	835	523	200	271	190	94	121	77	121	278	193
27	497	812	477	182	279	153	96	97	72	143	265	185
28	466	752	449	177	372	127	124	75	186	138	240	183
29	507	—	395	160	346	92	133	78	754	142	223	180
30	529	—	374	143	365	82	113	82	1280	132	210	173
31	526	—	348	—	314	—	90	98	—	129	—	163
TOTAL	29107	14876	16462	11218	5728	3824	3191	2853	5022	7948	9603	12135
MEAN	938.9	531.3	531.0	373.9	184.8	127.5	102.9	92.0	167.4	256.4	320.1	391.5
MAX	2040	835	835	845	372	256	143	121	1280	1360	946	1060
MIN	0	351	348	143	67	51	63	63	56	88	138	163
AC-FT	57740	29510	32660	22250	11360	7590	6330	5660	9960	15770	19050	24070

[†] Provisional data–subject to revision

TRGC — 14204800 — Tualatin River at Golf Course Road near Cornelius, Oregon [RM 51.5]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

STATION NUMBER: 14205400 EAST FORK DAIRY CREEK NEAR MEACHAM CORNER, OR

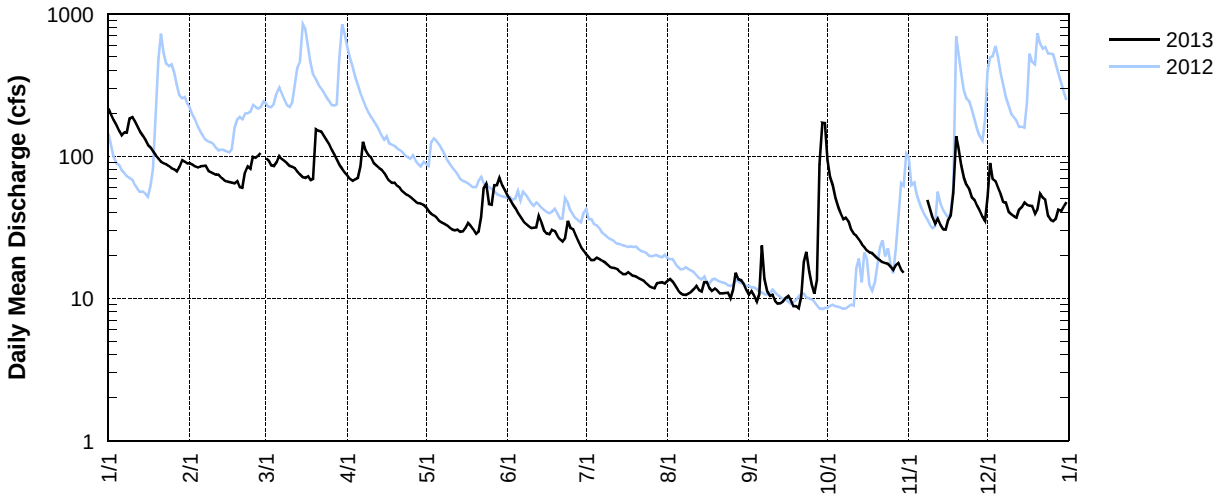
LATITUDE: 454051 LONGITUDE: 1230412 DRAINAGE AREA: 32.92 DATUM: 290

Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT*	NOV*	DEC
1	217	89	96	73	44	53	20	13	11	94		51
2	195	87	93	69	41	50	20	14	11	71		90
3	179	85	86	67	39	46	19	13	10	63		69
4	164	83	85	69	38	43	19	12	9.4	51		66
5	151	84	91	70	37	40	19	11	11	44		60
6	140	85	100	85	35	37	19	11	24	40		53
7	147	86	95	126	34	35	18	11	14	36		47
8	146	79	92	110	33	34	18	10	11	37	e51	47
9	183	77	89	101	32	32	17	11	10	35	43	41
10	188	76	85	98	31	31	17	11	11	30	37	39
11	176	74	84	90	30	31	16	12	9.6	28	33	38
12	162	74	82	86	30	31	16	12	9.2	27	36	37
13	149	70	78	83	30	38	16	11	9.2	26	33	42
14	139	68	75	80	29	34	15	11	9.5	24	31	44
15	130	66	71	76	29	30	15	13	10	23	30	47
16	120	66	70	71	31	29	15	13	10	22	36	46
17	115	65	72	67	34	28	15	12	9.7	21	38	45
18	108	64	68	65	33	30	15	11	8.8	21	55	45
19	101	67	69	65	31	30	14	12	8.8	20	138	39
20	97	61	154	62	28	28	14	11	8.5	19	112	42
21	92	60	151	60	29	26	14	11	10	18	86	54
22	89	76	149	57	37	25	14	11	18	18	71	51
23	88	85	139	55	60	26	13	11	21	18	62	49
24	85	81	130	53	64	35	13	11	15	17	58	38
25	82	99	121	51	46	31	12	10	12	17	51	36
26	81	97	111	50	45	31	12	11	11	16	49	35
27	78	101	102	48	62	28	12	15	13	17	45	36
28	84	105	94	47	62	25	13	14	87	18	41	42
29	93	—	87	46	70	23	13	13	170	16	37	41
30	91	—	81	45	62	22	13	13	172	e14	35	44
31	89	—	77	—	57	—	13	12	—		—	47
TOTAL	3959	2210	2977	2125	1263	982	479	367	744.7	901	1346	1461
MEAN	128	78.9	96.0	70.8	40.7	32.7	15.5	11.8	24.8	30.0	44.9	47.1
MAX	217	105	154	126	70	53	20	15	172	94	138	90
MIN	78	60	68	45	28	22	12	10	8.5	14	14	35
AC-FT	7850	4380	5900	4210	2510	1950	950	728	1480	1787	2670	2900

*Incomplete record (monthly totals were computed when at least 80% of the record was complete for the month); e=estimated value

5400 — 14205400 — East Fork Dairy Creek near Meacham Corner, Oregon [RM 12.4]



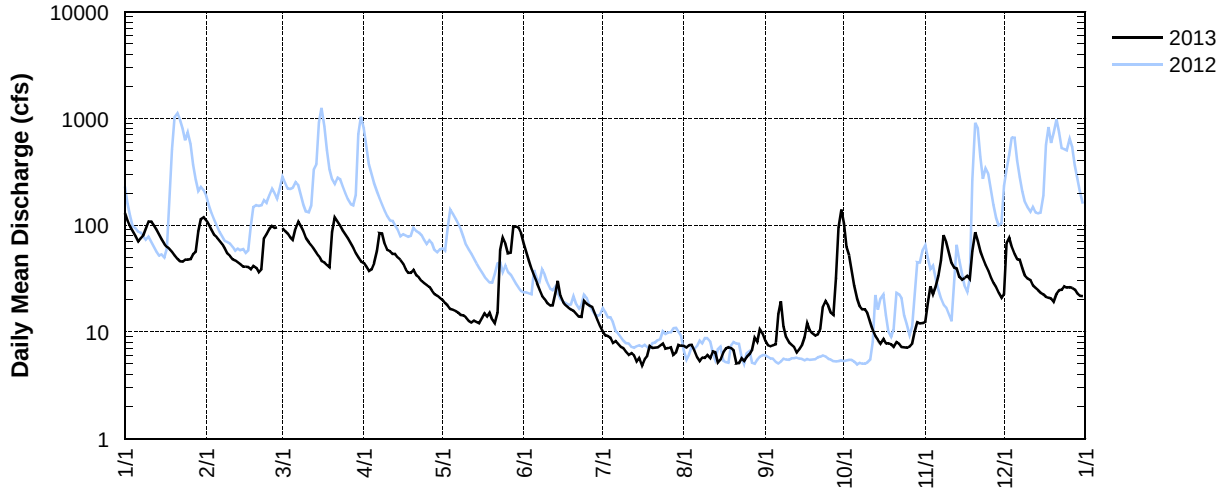
MCSC – 14206070 – MCKAY CREEK AT SCOTCH CHURCH RD ABOVE WAIBLE CREEK NEAR NORTH PLAINS, OREGON [RM 6.3]

Latitude: 45 57 21 Longitude: 122 99 18 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	130	111	94	e44	20	67	10	7.4	8.2	104	12	23
2	110	101	88	e41	19	56	9.2	7.1	7.5	63	19	69
3	97	90	84	e37	18	46	9.2	7.5	7.3	52	27	76
4	87	81	77	e38	16	39	8.8	7.5	7.5	38	23	62
5	79	77	e73	e44	16	33	7.9	6.7	7.7	27	27	53
6	70	72	e94	e57	16	29	8.2	5.8	15	21	34	48
7	75	67	e108	e84	15	25	7.7	5.3	19	17	47	47
8	80	61	e98	e84	14	22	7.2	5.7	11	16	81	40
9	93	55	e87	e67	14	20	7.0	5.7	8.9	16	70	34
10	108	51	e76	e59	14	19	6.5	6.0	7.9	15	55	32
11	108	48	e70	e57	13	18	6.1	5.7	7.5	12	44	31
12	99	47	e65	54	12	18	6.3	6.5	7.2	10	40	27
13	91	45	e60	54	13	23	6.0	6.4	6.4	9.1	39	26
14	82	43	e55	50	12	30	5.3	5.2	6.8	8.4	33	25
15	74	41	e51	47	12	22	5.7	5.5	7.5	7.7	31	23
16	67	41	e46	44	14	19	4.8	6.4	8.9	8.5	32	22
17	63	40	e45	38	15	18	5.5	7.0	12	7.8	33	21
18	60	38	e42	36	14	17	5.9	7.2	10	7.8	31	21
19	56	42	e40	36	15	16	7.4	7.1	9.7	7.6	57	20
20	52	40	e87	38	13	16	7.1	6.7	9.3	7.3	86	19
21	48	36	e118	34	12	15	7.1	5.1	9.5	8.0	71	23
22	46	39	e107	33	15	14	7.2	5.1	11	7.8	57	25
23	46	75	e99	30	58	14	7.4	5.7	17	7.2	49	25
24	48	83	e89	29	77	20	7.7	5.4	19	7.2	42	27
25	47	93	e82	28	67	18	6.9	5.8	17	7.1	37	26
26	48	98	e75	26	54	18	7.0	6.2	15	7.3	32	26
27	54	94	e68	24	55	17	7.2	6.8	14	7.8	29	26
28	56	95	e61	23	96	15	6.1	8.8	32	10	26	25
29	87	—	e55	22	97	13	6.4	8.1	95	12	23	23
30	114	—	e50	21	95	11	7.5	10	140	12	21	22
31	119	—	e46	—	84	—	7.4	9.5	—	12	—	21
TOTAL	2394	1804	2290	1279	1005	708	219.7	204.9	554.8	553.6	1208	988
MEAN	77.2	64.4	73.7	42.5	32.5	23.5	7.1	6.6	18.6	17.9	40.3	31.8
MAX	130	111	118	84	97	67	10	10	140	104	86	76
MIN	46	36	40	21	12	11	4.8	5.1	6.4	7.1	12	19
AC-FT	4748	3578	4542	2537	1993	1404	436	406	1100	1098	2396	1960

e=estimated value

MCSC — 14206070 — McKay Creek at Scotch Church Road above Waible Creek near North Plains, Oregon [RM 6.3]



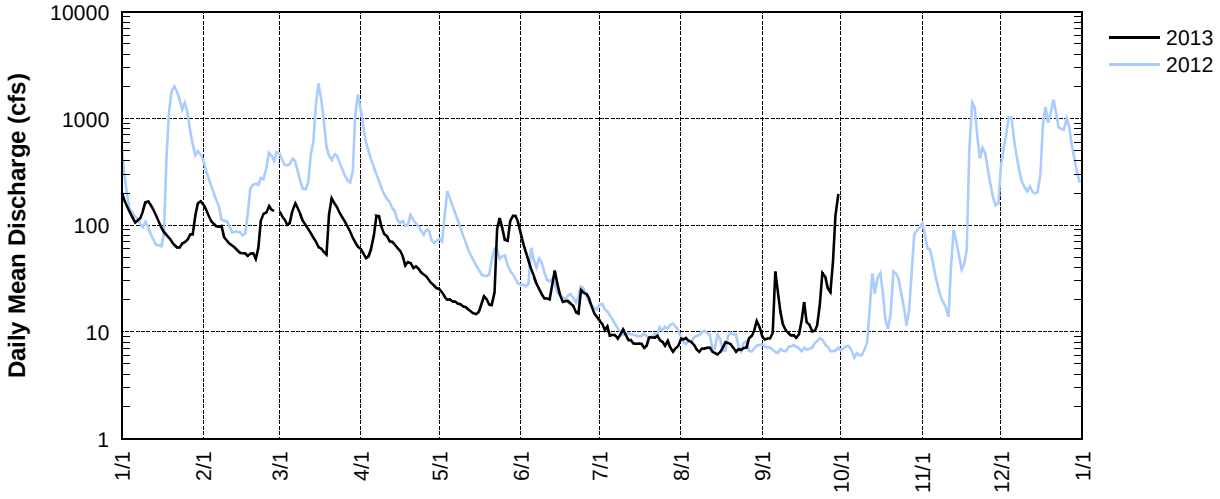
MCKP – 14206190 – MCKAY CREEK AT PADGETT ROAD NEAR HILLSBORO, OREGON [RM 1.31]

Latitude: 45 31 57 Longitude: 123 00 16 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	e201	157	135	60	25	84	13	8.6	9.1			
2	e169	141	121	54	23	67	12	8.5	8.5			
3	e149	124	113	49	21	56	10	8.8	8.6			
4	e133	110	101	51	20	46	11	8.3	8.7			
5	e119	103	104	59	20	39	9.2	8.1	9.9			
6	e106	97	138	80	19	33	9.4	7.6	37			
7	e111	97	160	122	19	28	9.3	6.8	24			
8	e116	99	144	121	18	25	8.7	6.5	15			
9	e135	77	127	95	18	22	9.5	6.9	12			
10	e163	72	109	83	17	21	10	7.0	10			
11	e167	67	99	78	17	21	9.3	7.1	9.8			
12	e153	64	91	71	16	20	8.3	7.1	9.2			
13	e139	61	84	70	16	27	8.3	6.5	9.3			
14	e124	58	76	66	15	38	7.7	6.4	8.8			
15	109	55	70	62	15	28	7.7	6.1	9.5			
16	95	54	62	57	15	22	7.8	6.5	13			
17	86	54	60	51	18	19	7.7	7.1	19			
18	81	51	56	42	22	19	7.0	8.0	12			
19	76	54	53	45	20	20	7.4	7.9	12			
20	70	54	126	44	18	18	8.9	7.7	10			
21	65	48	177	40	18	17	8.8	7.1	10			
22	61	61	159	41	23	15	8.8	6.5	12			
23	62	112	146	39	92	15	9.1	6.9	18			
24	67	128	130	36	116	25	8.4	6.8	36			
25	69	132	118	34	94	23	8.1	7.0	33			
26	73	151	108	33	73	23	7.4	7.1	25			
27	82	139	96	31	72	21	8.3	8.8	23			
28	82	136	87	29	110	17	7.1	9.2	45			
29	121	—	76	27	122	15	6.5	10	e125			
30	160	—	68	26	122	14	7.0	13	e197			
31	168	—	62	—	107	—	7.3	11	—		—	
TOTAL	3512	2556	3256	1696	1321	838	269	240.9	779.4			
MEAN	113.3	91.3	105.1	56.5	42.6	27.9	8.7	7.8	26.0			
MAX	201	157	177	122	122	84	13	13	197			
MIN	61	48	53	26	15	14	6.5	6.1	8.5			
AC-FT	6966	5070	6458	3364	2620	1662	534	478	1546			

Station discontinued 9/30/2013; e=estimated value

MCKP — 14206190 — McKay Creek at Padgett Road near Hillsboro, Oregon [RM 1.31]



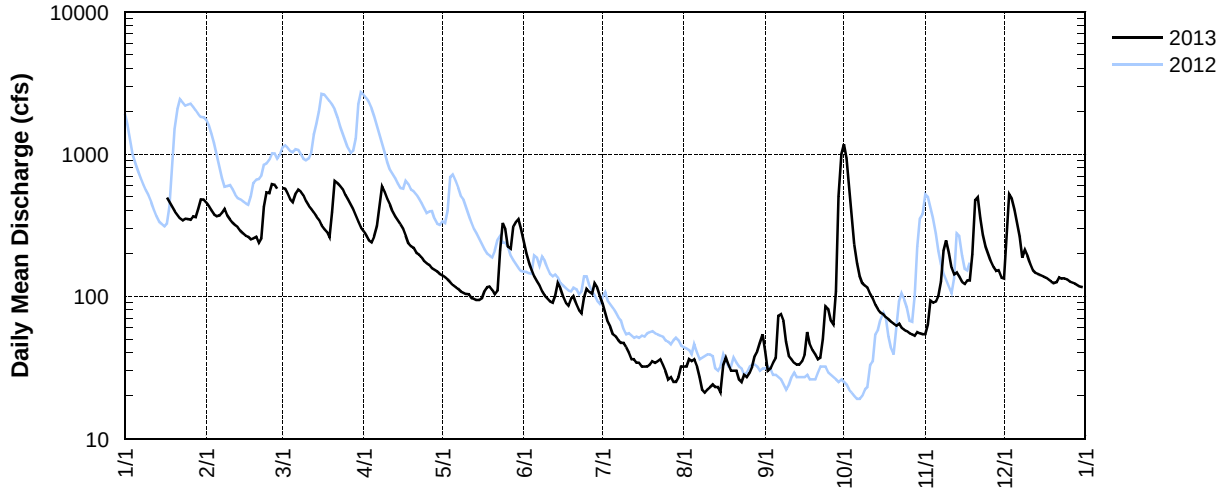
DAIRY – 14206200 – DAIRY CREEK AT HWY 8 NEAR HILLSBORO, OREGON [RM 2.06]

Latitude: 45 30 38 Longitude: 123 06 56 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second†											
	JAN*	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		456	e578	286	140	241	89	32	41	e1170	54	133
2		429	e572	266	136	200	77	32	30	e937	63	266
3		402	e527	247	131	173	66	36	31	e574	93	e520
4		378	480	239	126	153	61	35	34	363	90	487
5		365	460	263	120	138	54	36	37	233	92	403
6		369	e527	312	116	127	52	32	73	171	101	324
7		387	e562	e439	113	119	49	27	75	139	127	263
8		412	e544	e591	108	108	47	22	67	124	209	187
9		372	e515	e542	106	101	47	21	48	119	247	212
10		347	469	485	104	97	44	22	38	115	200	193
11		329	434	441	103	92	40	23	36	103	159	168
12		316	411	392	97	90	36	24	34	96	142	152
13		306	389	364	96	101	36	23	33	87	147	146
14		289	364	342	94	124	34	23	33	81	137	144
15		276	345	321	94	114	34	21	35	77	126	141
16		267	316	297	97	99	32	33	39	75	122	138
17	494	263	297	267	109	90	32	37	56	71	129	135
18	458	252	284	236	116	86	32	33	46	69	129	131
19	428	256	260	226	117	96	33	30	42	66	197	127
20	398	262	e391	220	111	100	35	30	39	64	e475	124
21	374	238	e646	202	103	88	34	30	36	62	e500	126
22	353	256	e623	197	110	80	35	26	37	64	355	136
23	341	428	e598	188	211	76	36	25	50	60	269	133
24	351	e536	e569	177	327	98	33	28	85	58	225	134
25	349	e530	e516	171	297	113	30	27	81	57	197	132
26	346	e615	481	166	223	107	26	29	67	55	175	127
27	364	e606	441	158	215	104	27	32	63	54	160	125
28	359	e570	408	154	309	123	25	38	109	53	151	123
29	411	—	370	150	333	115	25	41	e506	56	152	120
30	479	—	334	144	348	101	27	47	e1000	55	135	117
31	478	—	305	—	299	—	32	54	—	54	—	116
TOTAL		10512	14016	8483	5009	3454	1260	949	2901	5362	5358	5783
MEAN		375.4	452.1	282.8	161.6	115.1	40.6	30.6	96.7	173.0	178.6	186.5
MAX		615	646	591	348	241	89	54	1000	1170	500	520
MIN		238	260	144	94	76	25	21	30	53	54	116
AC-FT		20850	27800	16830	9940	6850	2500	1880	5750	10640	10630	11470

†Provisional data–subject to revision; *incomplete record (monthly totals were computed when at least 80% of the record was complete for the month); e=estimated value

DAIRY — 14206200 — Dairy Creek at Hwy 8 near Hillsboro, Oregon [RM 2.06]



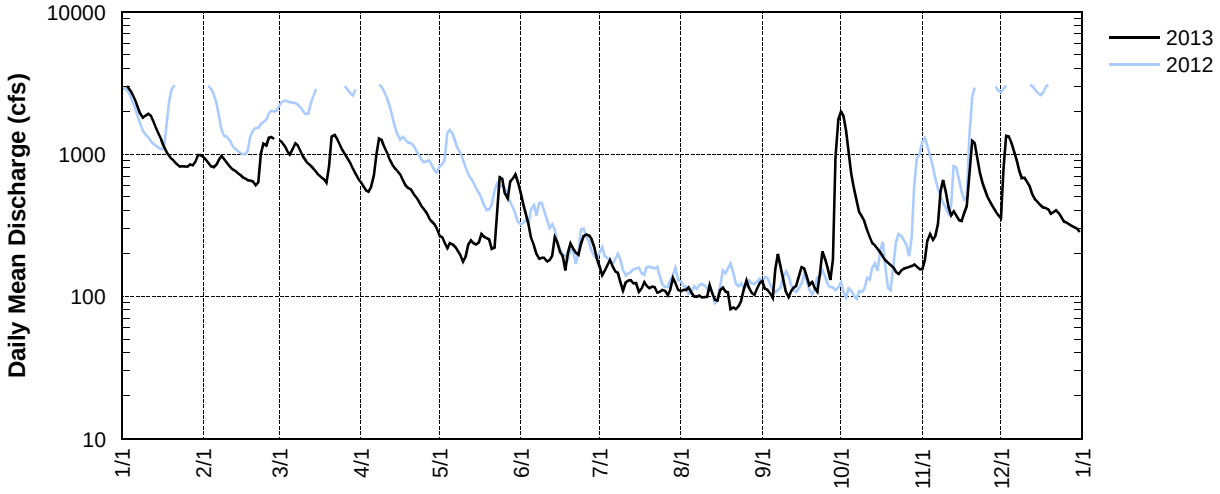
TRJB – 14206241 – TUALATIN RIVER AT HWY 219 BRIDGE [RM 44.4]

Latitude: 45 30 01 Longitude: 122 59 24 Source Agency: Jackson Bottom Wetland Education Center

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN*	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		958	1247	637	266	530	162	109	129	1984	154	354
2		913	1212	593	260	441	141	111	113	1852	179	798
3	3007	868	1143	556	238	378	152	111	111	1463	247	1344
4	2844	822	1049	543	217	321	165	115	105	1025	276	1327
5	2642	809	996	586	237	257	181	106	97	732	249	1193
6	2403	840	1085	706	231	226	161	100	156	568	266	1041
7	2146	913	1190	994	223	198	149	99	199	467	321	907
8	1917	974	1147	1290	208	184	147	101	161	389	544	762
9	1805	923	1050	1263	195	186	126	98	131	364	657	679
10	1863	870	963	1125	175	187	110	98	107	337	537	680
11	1914	823	900	1018	191	176	126	99	98	289	425	630
12	1858	787	855	913	232	179	129	120	109	260	371	590
13	1694	765	825	847	248	193	129	105	115	235	394	517
14	1525	739	790	800	236	260	123	94	118	229	370	478
15	1390	716	756	765	232	239	124	93	139	217	341	463
16	1258	687	711	720	239	203	108	111	160	203	338	439
17	1123	674	683	656	274	193	113	115	157	189	385	421
18	1037	652	666	603	262	153	126	108	138	179	432	418
19	976	650	630	579	257	201	118	106	120	171	695	411
20	924	640	820	567	252	234	114	81	126	166	1235	380
21	886	605	1328	528	216	215	117	83	114	159	1194	391
22	844	632	1361	501	220	201	116	81	107	148	942	404
23	815	1001	1277	468	384	196	106	85	142	143	739	385
24	820	1188	1167	435	687	235	108	93	207	151	629	359
25	816	1150	1069	414	669	265	111	110	182	157	554	335
26	814	1298	999	387	527	272	109	129	156	159	490	330
27	847	1317	926	356	486	267	102	114	130	161	454	321
28	832	1272	863	337	642	251	112	106	182	163	422	314
29	880	—	792	322	673	223	134	102	955	168	396	306
30	986	—	729	300	721	186	123	113	1757	162	370	300
31	982	—	678	—	638	—	111	125	—	154	—	284
TOTAL	41848	24486	29906	19808	10536	7249	3952	3221	6521	13041	14605	17557
MEAN	1443	874	965	660	340	242	127	104	217	421	487	566
MAX	3007	1317	1361	1290	721	530	181	129	1757	1984	1235	1344
MIN	814	605	630	300	175	153	102	81	97	143	154	284
AC-FT	83010	48570	59320	39290	20900	14380	7840	6390	12930	25870	28970	34830

*Incomplete record (monthly totals were computed when at least 80% of the record was complete for the month).

TRJB — 14206241 —Tualatin River at Hwy 219 Bridge [RM 44.4]



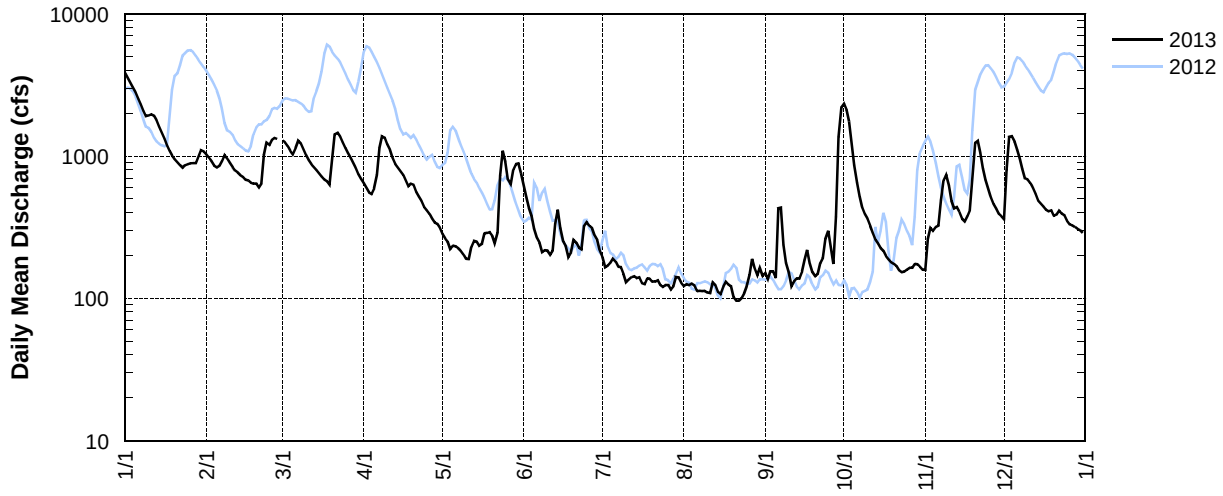
ROOD – 14206295 – TUALATIN RIVER AT ROOD BRIDGE ROAD NEAR HILLSBORO, OREGON [RM 38.4]

Latitude: 45 29 24 Longitude: 122 57 06 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second†											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3850	1030	1290	644	282	620	193	122	151	2330	158	359
2	3560	977	1250	599	264	513	165	126	136	2120	261	799
3	3290	917	1180	557	250	432	170	124	155	1750	313	1360
4	3040	861	1090	542	222	381	178	127	155	1240	299	1380
5	2800	831	1030	591	234	308	190	124	139	863	318	1260
6	2540	856	1140	734	232	265	181	112	430	648	324	1110
7	2310	924	1280	1140	224	245	166	113	434	521	491	963
8	2080	1020	1230	1380	215	211	165	112	238	434	678	812
9	1910	964	1120	1350	203	218	148	113	177	391	741	698
10	1930	893	1020	1210	189	217	130	110	151	363	621	688
11	1970	838	933	1100	188	202	136	109	122	323	484	645
12	1930	792	877	968	230	217	141	129	132	286	429	599
13	1790	767	836	882	253	335	143	124	138	258	439	546
14	1620	737	801	834	251	420	139	111	137	243	405	489
15	1470	713	758	788	234	312	141	107	155	226	362	467
16	1330	682	719	740	241	251	128	121	186	215	347	443
17	1190	673	683	673	286	232	126	131	219	198	378	421
18	1090	648	667	614	288	195	138	125	176	188	416	410
19	1010	639	629	641	293	210	137	122	153	180	682	416
20	951	639	946	631	277	257	131	102	143	175	1240	381
21	905	600	1420	557	244	245	131	96	148	168	1280	389
22	862	638	1460	516	289	227	134	96	177	157	1050	414
23	827	1020	1370	483	731	221	124	100	192	152	819	395
24	863	1240	1250	441	1090	322	120	108	263	154	681	385
25	877	1200	1140	419	914	344	124	121	298	159	584	352
26	891	1300	1050	394	683	323	124	146	225	164	509	332
27	893	1340	970	363	634	311	115	189	174	164	460	326
28	893	1320	892	342	805	277	121	162	374	174	428	317
29	994	—	822	334	878	257	141	145	1360	173	393	308
30	1100	—	745	315	887	217	140	164	2210	167	377	301
31	1080	—	690	—	757	—	129	144	—	159	—	288
TOTAL	51846	25059	31288	20782	12768	8785	4449	3835	9148	14743	15967	18053
MEAN	1672.5	895.0	1009.3	692.7	411.9	292.8	143.5	123.7	304.9	475.6	532.2	582.4
MAX	3850	1340	1460	1380	1090	620	193	189	2210	2330	1280	1380
MIN	0	600	629	315	188	195	115	96	122	152	158	288
AC-FT	102850	49710	62070	41230	25330	17430	8830	7610	18150	29250	31670	35810

† Provisional data–subject to revision

ROOD — 14206295 — Tualatin River at Rood Bridge Road near Hillsboro, Oregon [RM 38.4]



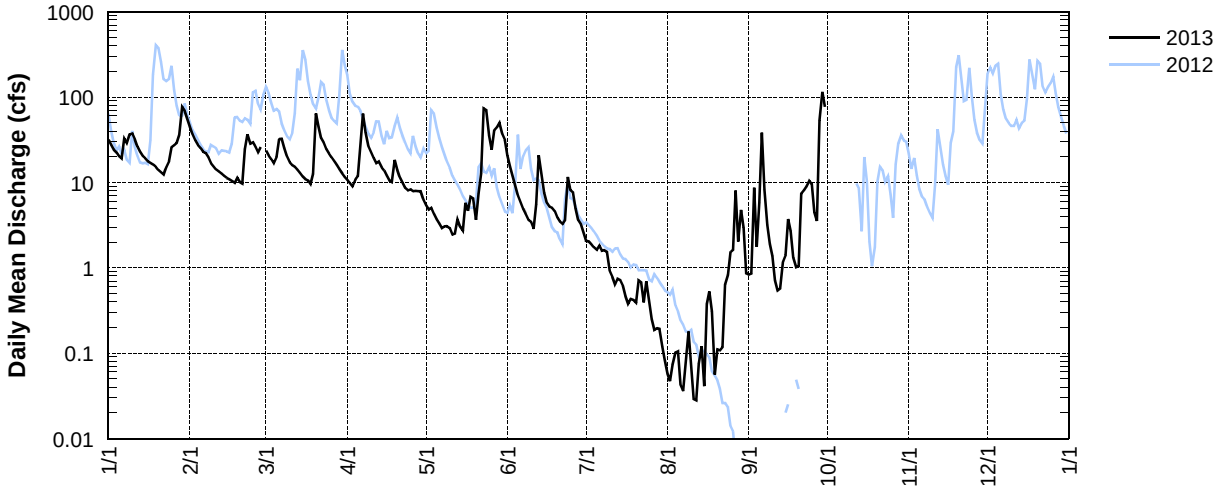
RCBL – 14206340 – ROCK CREEK BELOW BETHANY LAKE [RM 8.9]

Latitude: 45 33 21 Longitude: 122 52 25 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	32	45	24	11	5.4	21	2.1	0.06	0.83			
2	e28	37	21	9.8	4.8	16	2.0	0.05	0.86			
3	e24	31	19	9.1	5.1	12	1.9	0.07	8.7			
4	22	27	17	11	4.3	9.0	1.7	0.10	1.8			
5	20	26	20	12	3.7	7.0	1.6	0.10	5.8			
6	19	23	32	27	3.3	5.9	1.8	0.04	38			
7	33	22	33	64	2.9	4.9	1.6	e0.04	8.3			
8	29	20	25	39	3.1	4.3	1.6	e0.07	3.2			
9	37	17	21	26	3.1	3.6	1.5	e0.18	1.9			
10	38	16	17	23	2.9	3.5	0.91	e0.07	1.4			
11	32	14	16	19	2.5	2.9	0.78	e0.03	0.71			
12	27	13	15	17	2.5	5.5	0.64	e0.03	0.54			
13	23	13	14	18	3.7	21	0.75	e0.08	0.57			
14	21	12	13	15	3.1	12	0.73	e0.12	1.2			
15	19	11	12	14	2.7	7.6	0.62	e0.04	1.4			
16	18	11	11	12	5.8	5.8	0.47	e0.37	3.7			
17	17	10	11	11	4.6	5.2	0.38	0.53	2.7			
18	16	9.9	9.5	10	6.8	5.1	0.43	0.31	1.3			
19	15	11	13	18	6.5	4.6	0.42	0.06	1.0			
20	14	10	64	14	3.7	3.9	0.39	0.11	1.1			
21	13	9.7	45	11	7.4	3.5	0.71	0.11	7.4			
22	12	25	33	10.0	13	3.3	0.67	0.12	8.1			
23	15	37	29	8.7	74	3.6	0.39	0.63	9.0			
24	18	29	25	8.1	71	12	0.70	0.82	10			
25	26	30	22	8.3	36	8.1	0.40	1.5	9.6			
26	27	26	20	7.9	24	7.6	0.25	1.6	4.5			
27	29	23	18	8.0	41	5.0	0.19	8.0	3.5			
28	36	26	16	7.9	44	3.6	0.20	2.0	54			
29	76	—	14	7.9	50	3.2	0.19	4.8	116			
30	69	—	13	6.2	37	2.6	0.12	2.9	78			
31	56	—	12	—	32	—	0.08	0.87	—		—	
TOTAL	861	584.6	654.5	463.9	509.9	213.3	26.22	25.81	385.11			
MEAN	27.8	20.9	21.1	15.5	16.4	7.1	0.85	0.84	12.8			
MAX	76	45	64	64	74	21	2.1	8.0	116			
MIN	12	9.7	9.5	6.2	2.5	2.6	0.08	0.03	0.54			
AC-FT	1708	1160	1298	920	1011	423	52	51	764			

Station discontinued 9/30/2013; e=estimated value;

RCBL— 14206340 — Rock Creek below Bethany Lake [RM 8.9]



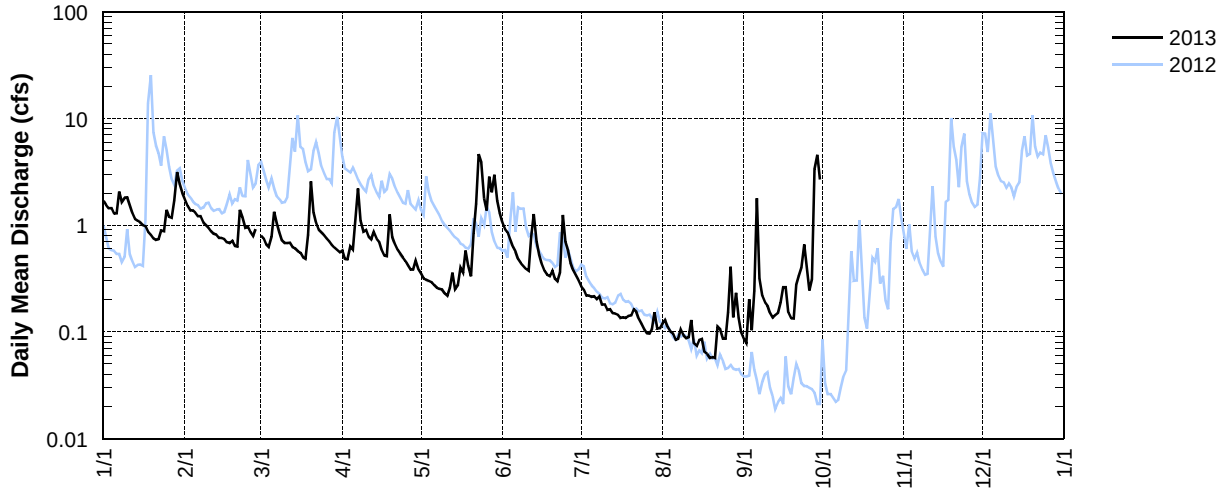
BCSR – 14206419 – BRONSON CREEK AT SALTZMAN ROAD [RM 5.1]

Latitude: 45 33 19 Longitude: 122 48 25 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1.7	1.7	0.80	0.58	0.35	1.1	0.27	0.12	0.09			
2	1.6	1.5	0.75	0.48	0.32	0.92	0.25	0.13	0.08			
3	1.4	1.4	0.66	0.48	0.31	0.86	0.22	0.11	0.20			
4	1.4	1.4	0.63	0.63	0.30	0.73	0.22	0.10	0.10			
5	1.3	1.3	0.78	0.59	0.29	0.63	0.21	0.10	0.24			
6	1.3	1.2	1.3	1.1	0.27	0.56	0.22	0.08	1.8			
7	2.1	1.2	1.0	2.2	0.26	0.48	0.20	0.09	0.32			
8	1.7	1.1	0.86	1.1	0.25	0.44	0.21	0.11	0.22			
9	1.8	1.00	0.72	0.87	0.25	0.41	0.18	0.09	0.19			
10	1.8	0.95	0.68	0.90	0.23	0.39	0.18	0.09	0.18			
11	1.5	0.88	0.68	0.78	0.22	0.37	0.16	0.09	0.15			
12	1.3	0.83	0.69	0.74	0.26	0.78	0.16	0.13	0.14			
13	1.1	0.81	0.63	0.87	0.36	1.3	0.15	0.08	0.14			
14	1.1	0.76	0.61	0.75	0.25	0.70	0.15	0.07	0.15			
15	1.1	0.76	0.57	0.70	0.28	0.53	0.14	0.08	0.19			
16	1.00	0.74	0.55	0.58	0.40	0.43	0.13	0.09	0.26			
17	0.98	0.69	0.50	0.52	0.36	0.38	0.14	0.07	0.26			
18	0.87	0.68	0.48	0.51	0.58	0.34	0.13	0.06	0.15			
19	0.81	0.71	0.81	1.3	0.42	0.33	0.14	0.06	0.13			
20	0.75	0.64	2.6	0.78	0.33	0.37	0.14	0.06	0.13			
21	0.73	0.63	1.3	0.67	0.83	0.32	0.16	0.06	0.28			
22	0.74	1.4	1.1	0.59	1.6	0.30	0.15	0.11	0.34			
23	0.89	1.2	0.91	0.54	4.6	0.36	0.13	0.11	0.40			
24	0.88	0.95	0.86	0.50	3.9	1.2	0.12	0.09	0.66			
25	1.4	0.96	0.81	0.46	1.8	0.70	0.10	0.09	0.40			
26	1.2	0.86	0.75	0.42	1.4	0.58	0.10	0.15	0.24			
27	1.2	0.79	0.71	0.38	2.9	0.44	0.10	0.41	0.31			
28	1.7	0.92	0.66	0.38	2.0	0.38	0.11	0.14	3.3			
29	3.1	—	0.62	0.46	3.0	0.34	0.15	0.23	4.6			
30	2.4	—	0.59	0.38	1.7	0.30	0.11	0.14	2.7			
31	2.0	—	0.56	—	1.3	—	0.11	0.10	—		—	
TOTAL	42.85	27.96	25.17	21.24	31.32	16.97	4.94	3.44	18.35			
MEAN	1.4	1.00	0.81	0.71	1.0	0.56	0.16	0.11	0.61			
MAX	3.1	1.7	2.6	2.2	4.6	1.3	0.27	0.41	4.6			
MIN	0.73	0.63	0.48	0.38	0.22	0.30	0.10	0.06	0.08			
AC-FT	85	55	50	42	62	34	9.8	6.8	36			

Station discontinued 9/30/2013

BCSR — 14206419 — Bronson Creek at Saltzman Road [RM 5.1]



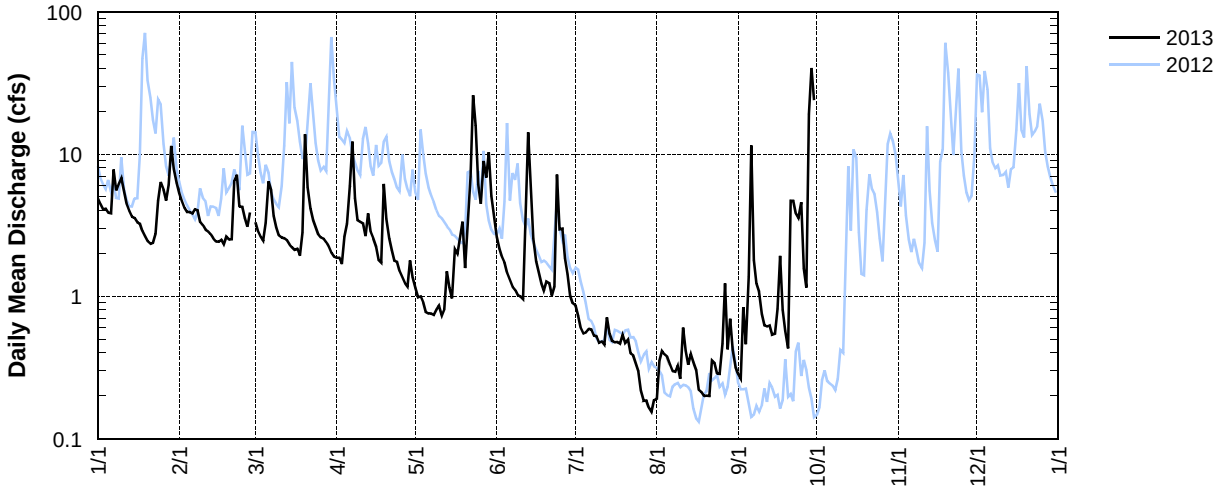
BCBR – 14206423 – BRONSON CREEK AT BRONSON ROAD NEAR ORENCO, OREGON [RM 2.1]

Latitude: 45 32 18 Longitude: 122 51 15 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.9	5.3	3.3	1.9	1.1	2.6	0.86	0.19	e0.28			
2	4.4	4.7	2.9	1.9	0.98	2.2	0.73	0.35	e0.26			
3	4.1	4.2	2.6	1.7	1.00	1.9	0.60	0.41	e0.84			
4	4.1	3.9	2.4	2.6	0.91	1.7	0.55	0.39	e0.46			
5	3.9	3.9	3.3	3.2	0.77	1.5	0.56	0.38	e1.4			
6	3.8	3.8	6.4	6.0	0.76	1.3	0.59	0.33	e12			
7	7.8	4.1	5.6	12	0.76	1.2	0.59	0.30	e1.8			
8	5.6	4.0	3.7	4.9	0.74	1.1	0.53	0.30	e1.2			
9	6.2	3.4	3.0	3.4	0.81	1.0	0.52	0.33	e1.1			
10	6.8	3.2	2.7	3.3	0.86	1.0	0.47	0.26	0.75			
11	5.4	2.9	2.6	3.3	0.73	0.96	0.48	0.60	0.62			
12	4.4	2.9	2.5	2.6	0.81	4.2	0.46	0.41	0.61			
13	4.0	2.7	2.5	3.8	1.5	14	0.71	0.33	0.62			
14	3.6	2.6	2.3	2.8	1.2	5.2	0.55	e0.39	0.54			
15	3.6	2.4	2.2	2.6	0.96	2.5	0.49	e0.34	0.55			
16	3.3e	2.4	2.1	2.2	2.1	1.8	0.48	e0.30	0.82			
17	3.2e	2.5	2.2	1.8	2.0	1.5	0.48	e0.22	1.9			
18	2.9e	2.3	1.9	1.7	2.6	1.2	0.47	e0.21	0.81			
19	2.6e	2.6	2.8	6.2	3.3	1.1	0.54	e0.20	0.57			
20	2.4e	2.5	14	3.5	1.6	1.3	0.47	e0.20	0.43			
21	2.3e	2.5	5.9	2.6	2.9	1.2	0.50	e0.20	4.7			
22	2.4e	6.5	4.1	2.1	6.9	1.0	0.40	e0.35	4.7			
23	2.7e	7.2	3.5	1.8	26	1.2	0.38	e0.34	3.8			
24	4.7	4.3	3.1	1.7	16	7.2	0.34	e0.28	3.5			
25	6.3	4.2	2.7	1.5	6.1	3.0	0.30	e0.28	4.6			
26	5.6	3.5	2.6	1.4	4.5	3.0	0.22	e0.47	1.6			
27	4.7	3.1	2.5	1.2	9.0	1.9	0.18	e1.2	1.2			
28	6.1	3.9	2.4	1.2	6.8	1.4	0.19	e0.42	19			
29	11	—	2.2	1.8	10	1.0	0.16	e0.69	40			
30	7.8	—	2.0	1.4	5.1	0.89	0.15	e0.42	24			
31	6.3	—	1.9	—	3.7	—	0.19	e0.32	—		—	
TOTAL	146.9	101.5	103.9	88.1	122.49	71.05	14.14	11.41	134.66			
MEAN	4.8	3.6	3.4	2.9	4.0	2.4	0.46	0.37	4.5			
MAX	11	7.2	14	12	26	14	0.86	1.2	40			
MIN	2.3	2.3	1.9	1.2	0.73	0.89	0.15	0.19	0.26			
AC-FT	291	201	206	175	243	141	28	23	267			

Station discontinued 9/30/2013; e=estimated value

BCBR — 14206423 — Bronson Creek at Bronson Road near Orenco, Oregon [RM 2.1]



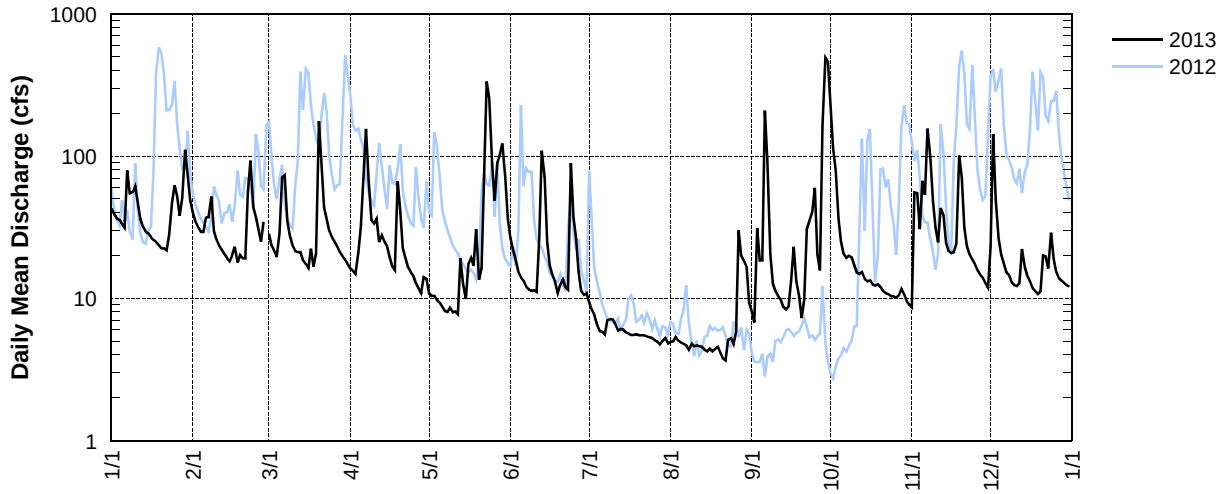
BVTS – 14206435 – BEAVERTON CREEK AT NE GUSTON COURT NEAR ORENCO, OREGON [RM 1.2]

Latitude: 45 31 15 Longitude: 122 53 59 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	43	40	28	16	11	27	9.4	e4.9	8.1	242	e8.6	23
2	39	35	23	16	10	22	8.3	e5.0	e6.7	114	e55	143
3	37	31	22	15	10	19	7.7	e5.4	31	81	55	50
4	36	29	20	21	9.8	15	6.5	e5.0	18	36	31	27
5	33	29	29	32	9.3	14	5.9	e4.9	18	25	67	20
6	31	37	71	71	8.7	13	5.8	e4.8	208	20	53	18
7	79	37	73	155	8.1	12	5.6	e4.7	90	19	156	15
8	55	52	35	69	8.0	12	e7.0	e4.3	20	20	97	15
9	56	30	28	36	8.6	11	e7.1	e4.8	13	19	49	13
10	62	26	23	34	8.0	11	e7.1	e4.6	11	17	31	12
11	48	23	21	36	8.1	11	e6.6	e4.7	10	15	25	12
12	36	22	21	25	7.7	26	e5.9	e4.6	e9.8	15	43	13
13	32	20	21	28	19	109	e6.1	e4.5	e8.8	15	38	22
14	29	19	18	25	13	71	e6.0	e4.3	e8.3	e14	25	17
15	29	18	17	23	9.9	25	e5.7	e4.2	e8.8	e13	21	14
16	27	20	16	19	18	17	e5.7	e4.4	e13	e13	21	13
17	26	23	22	17	19	15	e5.5	e4.2	e23	e13	21	12
18	25	18	17	16	17	13	e5.5	e4.4	13	12e	24	11
19	24	20	21	67	31	11	e5.6	e4.6	10	e13	101	11
20	23	19	176	41	13	12	e5.5	e4.1	e7.3	12e	71	11
21	22	19	88	22	16	14	e5.5	e3.8	e9.9	e11	31	20
22	22	56	44	19	49	12	e5.5	e3.7	31	e11	23	20
23	28	93	36	17	334	11	e5.4	e5.1	35	11e	20	16
24	47	44	30	15	255	89	e5.3	e5.2	41	e10	19	29
25	62	37	27	14	88	37	e5.3	e4.7	60	e10	17	19
26	52	31	25	13	49	27	e5.1	e5.8	20	e10	16	15
27	38	25	23	12	89	15	e5.0	e30	16	e10	15	14
28	51	34	21	11	102	11	e4.7	20	164	e12	14	13
29	111	—	20	14	123	11	e5.0	18	490	e11	13	13
30	73	—	19	14	71	11	e5.2	17	459	e9.5	12	12
31	49	—	17	—	36	—	e4.8	9.3	—	e9.0	—	12
TOTAL	1325	887	1052	913	1459.2	704	185.3	215	1861.7	842.5	1172.6	655
MEAN	42.7	31.7	34.0	30.4	47.1	23.5	6.0	6.9	62.1	27.2	39.1	21.1
MAX	111	93	176	155	334	109	9.4	30	490	242	156	143
MIN	22	18	16	11	7.7	11	4.7	3.7	6.7	9.0	8.6	11
AC-FT	2628	1759	2087	1811	2894	1396	368	426	3693	1671	2326	1299

e=estimated value

BVTS — 14206435 — Beaverton Creek at NE Guston Court near Orenco, Oregon [RM 1.2]



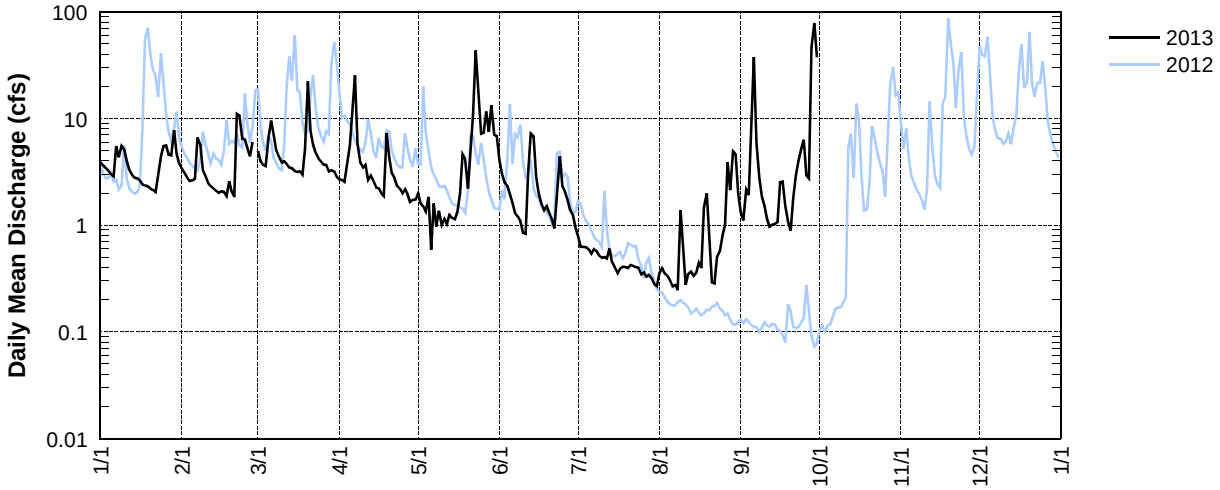
DCBR – 14206443 – DAWSON CREEK AT BROOKWOOD ROAD NEAR HILLSBORO, OREGON [RM 0.7]

Latitude: 45 31 27 Longitude:122 56 01 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.9	3.4	5.0	2.7	2.0	4.1	0.79	0.36	1.3			
2	3.6	3.1	4.0	2.7	1.6	3.0	0.62	0.39	1.1			
3	3.4	2.8	3.7	2.5	1.5	2.5	0.63	0.35	2.1			
4	3.2	2.6	3.6	3.8	1.3	2.3	0.62	0.33	1.9			
5	3.0	2.6	6.6	5.6	1.8	1.9	0.59	0.30	6.2			
6	2.8	2.7	9.6	13	0.59	1.6	0.54	0.27	38			
7	5.5	6.6	7.1	25	1.6	1.3	0.59	0.27	6.0			
8	4.3	5.6	5.0	5.8	0.97	1.2	0.57	0.25	2.8			
9	5.5	3.3	4.4	3.8	1.4	1.1	0.52	1.4	1.9			
10	5.1	2.9	3.9	3.5	1.0	0.85	0.49	0.61	1.5			
11	4.0	2.5	4.0	3.7	1.1	0.83	0.50	0.28	1.2			
12	3.3	2.3	3.7	2.7	1.0	3.1	0.49	0.35	0.97			
13	3.0	2.2	3.5	2.9	1.3	7.2	0.60	0.37	1.0			
14	2.8	2.1	3.4	2.6	1.2	6.8	0.45	0.34	1.0			
15	2.7	2.0	3.2	2.3	1.1	2.8	0.40	0.36	1.1			
16	2.6	2.1	3.2	2.2	1.3	2.0	0.35	0.44	2.5			
17	2.4	2.1	3.2	2.0	2.0	1.6	0.39	0.39	2.5			
18	2.4	1.9	3.0	1.9	4.6	1.4	0.41	1.5	1.5			
19	2.3	2.6	5.2	7.3	4.2	1.5	0.40	2.0	1.1			
20	2.2	2.0	22	4.3	2.2	1.3	0.40	0.76	0.89			
21	2.1	1.8	7.8	3.1	5.2	1.1	0.42	0.29	1.8			
22	2.0	11	5.7	2.8	11	0.94	0.41	0.29	2.9			
23	2.9	11	4.8	2.4	43	1.9	0.40	0.51	4.0			
24	4.4	6.5	4.3	2.2	20	4.4	0.40	0.57	5.2			
25	5.5	6.4	4.0	2.0	7.2	2.3	0.35	0.80	6.3			
26	5.6	5.3	3.7	2.2	7.4	2.0	0.36	1.0	2.9			
27	4.6	4.4	3.7	2.0	12	1.7	0.33	3.9	2.7			
28	4.5	6.0	3.2	1.7	7.5	1.4	0.34	2.1	46			
29	7.8	—	3.3	1.7	13	1.2	0.32	4.9	79			
30	4.6	—	3.2	1.7	7.1	0.95	0.28	4.6	38			
31	3.8	—	2.8	—	6.9	—	0.27	2.0	—		—	
TOTAL	115.8	109.8	153.8	122.1	174.06	66.27	14.23	32.28	265.36			
MEAN	3.7	3.9	5.0	4.1	5.6	2.2	0.46	1.0	8.8			
MAX	7.8	11	22	25	43	7.2	0.79	4.9	79			
MIN	2.0	1.8	2.8	1.7	0.59	0.83	0.27	0.25	0.89			
AC-FT	230	218	305	242	345	131	28	64	526			

Station discontinued 9/30/2013

DCBR — 14206443 — Dawson Creek at Brookwood Road near Hillsboro, Oregon [RM 0.7]



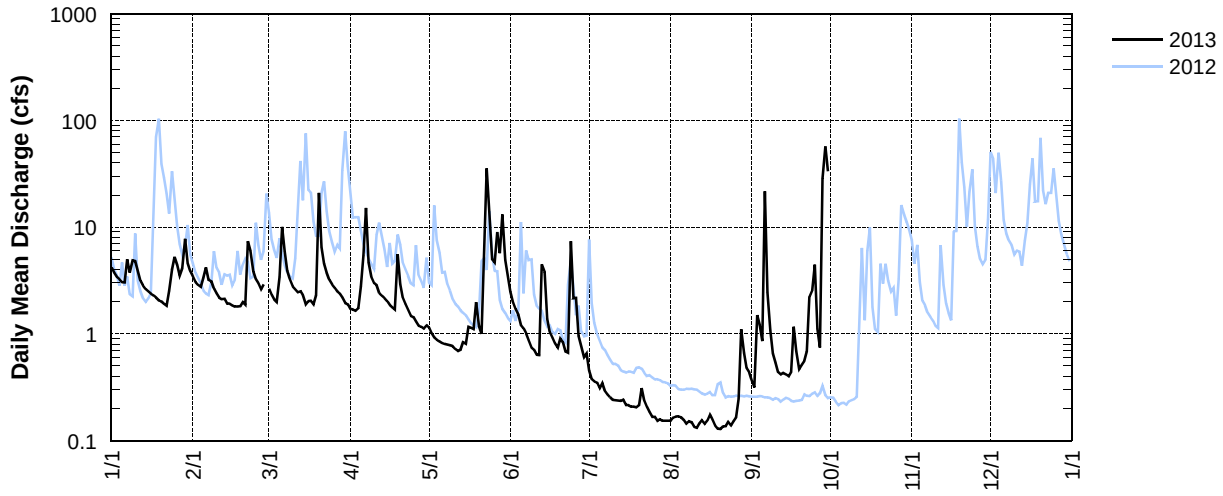
BCRR – 14206483 – BUTTERNUT CREEK AT ROSA ROAD [RM 1.0]

Latitude: 43 28 42 Longitude:122 55 05 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.2	3.4	2.6	1.7	1.1	2.5	0.45	0.15	0.36			
2	3.7	3.1	2.3	1.7	1.0	2.0	0.38	0.16	0.31			
3	3.4	2.9	2.1	1.6	0.92	1.7	0.36	0.17	1.5			
4	3.2	2.7	2.0	1.7	0.88	1.5	0.35	0.17	1.2			
5	3.0	3.4	3.4	2.8	0.85	1.2	0.31	0.16	0.85			
6	3.0	4.2	10	5.4	0.82	1.1	0.35	0.16	22			
7	5.0	3.2	6.0	15	0.80	1.0	0.29	0.14	2.5			
8	3.8	3.1	3.9	4.7	0.79	0.87	0.27	0.15	1.1			
9	4.9	2.6	3.2	3.4	0.78	0.74	0.25	0.15	0.65			
10	4.8	2.4	2.8	3.0	0.76	0.70	0.24	0.13	0.54			
11	3.9	2.2	2.6	2.9	0.72	0.63	0.24	0.13	0.44			
12	3.2	2.1	2.5	2.4	0.69	0.63	0.24	0.15	0.42			
13	2.8	2.1	2.5	2.3	0.71	4.5	0.23	0.16	0.43			
14	2.6	1.9	2.3	2.1	0.84	3.8	0.24	0.14	0.42			
15	2.5	1.9	1.9	2.0	0.81	1.4	0.21	0.15	0.40			
16	2.4	1.8	2.0	1.9	1.2	1.0	0.21	0.17	0.44			
17	2.3	1.8	2.0	1.8	1.1	0.92	0.21	0.16	1.2			
18	2.2	1.8	1.9	1.7	1.1	0.82	0.21	0.14	0.69			
19	2.1	1.8	2.3	5.6	2.0	0.74	0.21	0.13	0.47			
20	2.0	2.0	21	2.9	1.2	0.90	0.21	0.13	0.51			
21	1.9	1.9	6.5	2.2	1.0	0.84	0.31	0.14	0.56			
22	1.8	7.4	4.6	1.9	4.6	0.69	0.24	0.14	0.69			
23	2.5	6.0	3.7	1.7	36	0.67	0.21	0.15	2.2			
24	4.0	3.8	3.2	1.5	15	7.4	0.19	0.14	2.6			
25	5.2	3.2	2.9	1.4	5.0	2.2	0.17	0.15	4.5			
26	4.5	3.0	2.7	1.3	4.7	2.2	0.17	0.16	1.1			
27	3.5	2.6	2.5	1.2	9.0	0.95	0.15	0.25	0.75			
28	4.1	2.9	2.4	1.2	5.7	0.77	0.16	1.1	28			
29	7.8	—	2.2	1.1	13	0.60	0.15	0.66	58			
30	4.6	—	1.9	1.2	4.9	0.66	0.15	0.47	34			
31	3.8	—	1.9	—	3.5	—	0.15	0.44	—		—	
TOTAL	108.7	81.2	113.8	81.3	121.47	45.63	7.51	6.8	168.83			
MEAN	3.5	2.9	3.7	2.7	3.9	1.5	0.24	0.22	5.6			
MAX	7.8	7.4	21	15	36	7.4	0.45	1.1	58			
MIN	1.8	1.8	1.9	1.1	0.69	0.60	0.15	0.13	0.31			
AC-FT	216	161	226	161	241	91	15	13	335			

Station discontinued 9/30/2013

BCRR — 14206483 — Butternut Creek at Rosa Road [RM 1.0]



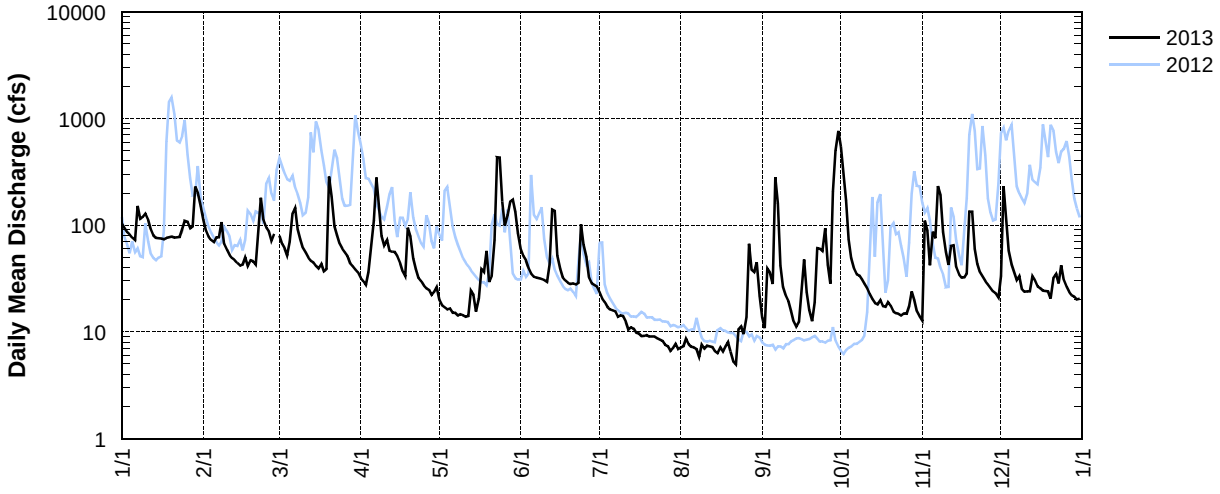
RCTV – 14206451** – ROCK CREEK AT HWY 8 NEAR HILLSBORO, OREGON [RM 1.2]

Latitude: 45 30 08 Longitude: 122 56 52 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	e103	113	80	32	20	59	24	7.1	14	545	13	33
2	e93	90	67	30	18	51	21	7.4	11	289	110	232
3	e86	78	61	28	17	47	19	8.6	39	171	89	112
4	e82	73	52	36	16	40	17	7.7	36	74	42	58
5	e76	69	70	62	17	35	16	7.2	28	49	87	43
6	e72	77	130	111	15	33	16	7.2	281	39	75	36
7	e151	77	146	279	15	32	16	6.9	160	35	233	31
8	e115	107	91	142	14	32	14	5.8	42	34	192	33
9	120	67	74	79	15	31	14	7.5	26	31	87	25
10	128	59	61	65	14	31	14	6.9	22	28	56	24
11	112	53	55	73	14	29	12	7.4	19	25	42	24
12	91	49	50	57	14	43	10	7.3	16	23	64	24
13	80	47	46	57	24	140	11	7.2	12	20	65	33
14	76	44	45	56	22	136	11	6.6	11	19	40	30
15	75	42	41	51	15	52	9.8	6.3	13	18	34	27
16	75	43	39	44	20	39	9.6	7.1	25	20	32	26
17	74	50	43	37	39	32	9.1	6.5	48	17	32	24
18	76	42	37	33	36	30	9.1	7.3	24	17	35	24
19	77	47	39	94	58	29	9.3	8.0	16	19	134	24
20	78	46	286	79	30	28	9.1	6.5	13	18	134	20
21	77	43	186	49	34	28	9.1	5.3	19	15	60	32
22	77	94	97	39	73	28	9.0	4.9	61	15	43	35
23	78	181	80	32	432	29	8.7	11	60	15	36	29
24	91	112	67	30	429	102	8.5	11	57	14	33	42
25	109	94	60	27	167	66	8.3	9.6	94	15	30	31
26	107	87	56	26	99	50	7.6	14	42	15	28	26
27	94	72	51	25	125	32	7.3	67	28	17	26	24
28	97	83	44	22	167	29	6.6	38	206	24	24	22
29	230	—	41	24	174	28	7.0	36	e500	20	23	21
30	201	—	38	26	133	27	7.7	45	767	16	21	20
31	151	—	36	—	84	—	6.9	22	—	14	—	20
TOTAL	3152	2039	2269	1745	2350	1368	357.7	406.3	2690	1671	1920	1185
MEAN	101.6	72.7	73.3	58.1	75.8	45.6	11.5	13.1	89.7	53.9	64.1	38.2
MAX	230	181	286	279	432	140	24	67	767	545	233	232
MIN	72	42	36	22	14	27	6.6	4.9	11	14	13	20
AC-FT	6252	4044	4500	3461	4661	2713	709	806	5336	3314	3808	2350

**Site moved 120 feet downstream in 2012, previous ID was 14205450; e=estimated value

RCTV — 14206451 — Rock Creek at Hwy 8 near Hillsboro, Oregon [RM 1.2]



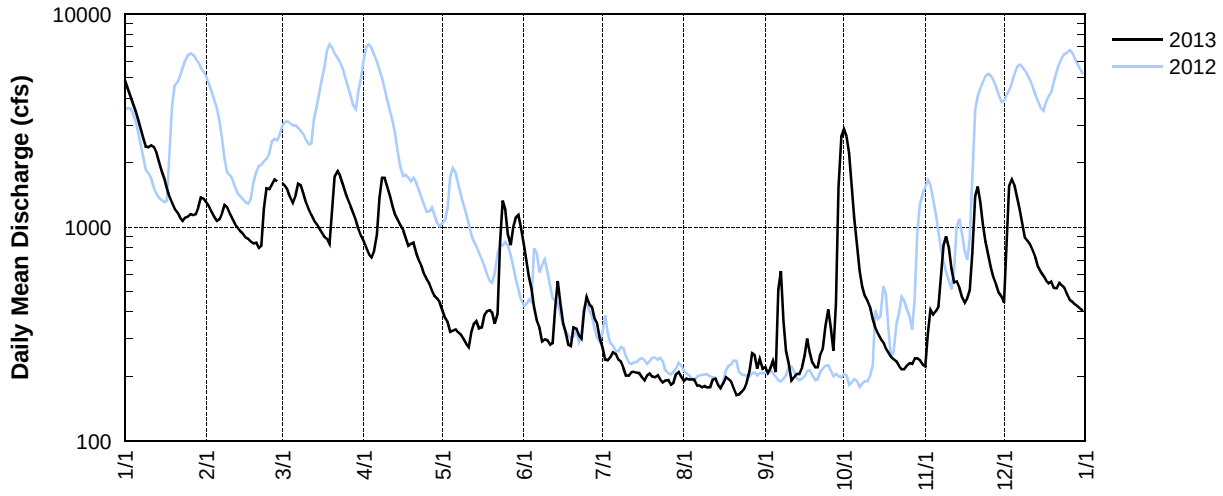
FRMO – 14206500 – TUALATIN RIVER AT FARMINGTON, OREGON [RM 33.3]

Latitude: 45 26 58 Longitude: 122 57 02 Source Agency: District 18 Watermaster

Day	2013 Daily Mean Discharge in Cubic Feet per Second[†]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4880	1310	1610	855	406	832	272	190	221	2880	222	442
2	4530	1250	1560	800	375	693	239	195	207	2670	316	850
3	4180	1180	1490	748	358	583	238	193	218	2230	409	1570
4	3850	1120	1380	723	323	515	246	193	236	1620	389	1680
5	3520	1070	1300	774	328	422	259	193	209	1110	404	1560
6	3200	1090	1410	920	332	362	255	181	511	806	423	1380
7	2900	1160	1600	1370	321	337	239	181	622	624	589	1210
8	2620	1270	1570	1700	313	291	234	178	365	526	821	1040
9	2390	1240	1440	1700	299	297	219	180	263	475	903	896
10	2370	1150	1310	1550	285	295	201	177	227	452	797	864
11	2420	1090	1210	1400	274	281	201	178	191	418	637	823
12	2380	1030	1140	1250	322	286	209	193	198	371	551	773
13	2240	996	1080	1140	352	418	210	195	205	337	557	721
14	2030	959	1040	1080	362	559	208	183	205	316	523	651
15	1850	930	989	1020	336	442	207	176	220	300	468	619
16	1690	896	945	970	339	353	198	186	249	288	443	592
17	1520	882	898	893	388	320	192	198	300	269	464	564
18	1390	855	879	819	405	281	202	194	259	257	506	547
19	1300	839	832	835	408	278	206	189	232	246	758	555
20	1220	843	1160	846	398	339	199	176	220	240	1400	519
21	1170	799	1730	757	352	335	198	163	220	234	1550	516
22	1110	818	1830	698	392	311	202	164	254	223	1310	548
23	1070	1220	1740	658	863	301	193	169	271	216	1030	534
24	1110	1520	1600	604	1330	402	187	175	343	216	856	520
25	1120	1510	1460	571	1210	471	191	187	411	224	735	488
26	1150	1590	1350	540	926	434	192	211	338	230	645	456
27	1140	1670	1250	502	825	421	183	256	264	229	579	448
28	1150	1640	1160	474	1000	372	186	251	437	243	539	435
29	1240	—	1080	462	1110	352	204	217	1540	243	494	426
30	1380	—	981	444	1140	303	209	241	2670	238	473	416
31	1360	—	912	—	996	—	199	217	—	226	—	404
TOTAL	65480	31927	39936	27103	17068	11886	6578	5980	12106	18957	19791	23047
MEAN	2112.3	1140.3	1288.3	903.4	550.6	396.2	212.2	192.9	403.5	611.5	659.7	743.5
MAX	4880	1670	1830	1700	1330	832	272	256	2670	2880	1550	1680
MIN	0	799	832	444	274	278	183	163	191	216	222	404
AC-FT	129890	63330	79220	53760	33860	23580	13050	11860	24010	37610	39260	45720

[†] Provisional data–subject to revision

FRMO — 14206500 — Tualatin River at Farmington, Oregon [RM 33.3]



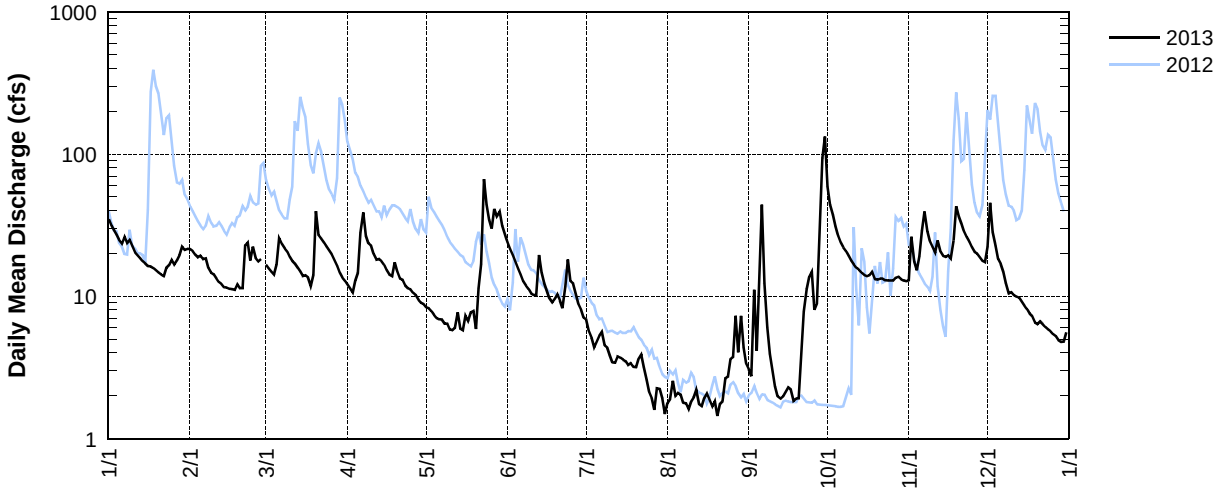
CCSR – 14206750 – CHICKEN CREEK AT ROY ROGERS ROAD NEAR SHERWOOD, OREGON [RM 2.3]

Latitude: 45 22 31 Longitude: 122 51 24 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	35	21	17	12	8.4	24	6.9	1.8	3.1	59	13	22
2	32	21	16	11	8.3	22	5.7	1.9	2.7	44	26	45
3	29	20	15	11	7.8	19	5.1	2.5	11	37	17	28
4	27	19	14	13	7.4	17	4.4	2.0	4.1	31	15	23
5	25	19	17	15	7.0	16	4.8	2.1	12	27	19	18
6	23	18	26	28	6.9	14	5.3	2.0	44	24	29	17
7	26	18	23	39	6.9	13	5.6	1.8	12	22	40	15
8	24	16	22	27	6.4	12	4.5	1.8	6.0	21	29	12
9	25	15	21	24	6.4	11	4.3	1.6	3.9	19	24	11
10	e23	14	19	23	5.8	11	3.8	1.8	3.0	18	22	11
11	e20	13	18	20	5.8	10	3.4	2.0	2.3	17	20	10
12	19	13	17	18	6.0	10	3.4	2.2	2.0	16	25	10.0
13	18	12	16	18	7.7	20	3.8	1.7	1.9	15	21	9.8
14	18	12	15	18	5.9	15	3.7	1.7	2.0	15	19	9.1
15	17	11	14	17	5.8	12	3.6	1.9	2.1	14	19	8.6
16	16	11	14	15	7.3	11	3.5	2.1	2.3	14	19	8.1
17	16	11	14	14	6.7	9.7	3.3	1.9	2.2	14	18	7.6
18	16	11	12	14	7.7	9.1	3.4	1.7	1.8	15	25	7.3
19	15	12	14	17	7.9	9.6	3.2	1.8	1.9	13	43	6.5
20	15	11	40	15	5.9	10	3.2	1.4	1.9	13	37	6.4
21	14	11	27	13	11	9.4	3.6	1.8	3.9	13	33	6.6
22	14	23	26	13	17	8.3	3.9	1.8	7.8	13	29	6.4
23	16	24	24	12	67	12	3.2	2.7	11	13	26	6.1
24	17	18	22	11	44	18	2.6	2.7	14	13	24	5.8
25	18	22	21	11	35	13	2.1	3.6	15	13	22	5.7
26	17	18	20	11	30	12	1.9	3.7	8.0	13	21	5.4
27	18	18	18	10	41	10	1.6	7.3	8.9	14	20	5.2
28	20	18	16	9.5	36	8.8	2.3	4.0	39	14	19	4.9
29	22	—	15	9.0	40	8.1	2.2	7.3	94	13	18	4.8
30	21	—	14	8.8	31	7.1	1.9	4.4	133	13	17	4.8
31	22	—	13	—	27	—	1.5	3.3	—	13	—	5.6
TOTAL	638	450	580	477.3	517	382.1	111.7	80.3	456.8	593	709	346.7
MEAN	20.6	16.2	18.6	15.9	16.7	12.7	3.6	2.6	15.2	19.1	23.6	11.2
MAX	35	24	40	39	67	24	6.9	7.3	133	59	43	45
MIN	14	11	12	8.8	5.8	7.1	1.5	1.4	1.8	13	13	4.8
AC-FT	1265	893	1150	947	1025	758	222	159	906	1176	1406	688

e=estimated value

CCSR — 14206750 — Chicken Creek at Roy Rogers Road near Sherwood, Oregon [RM 2.3]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

STATION NUMBER 14206900 FANNO CREEK AT 56TH AVENUE

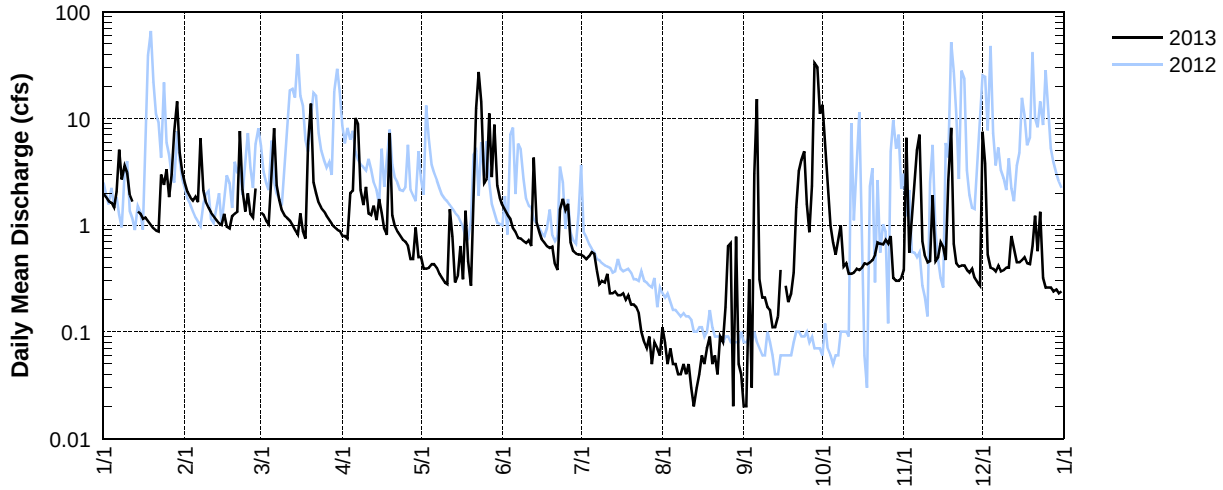
LATITUDE: 452917 LONGITUDE: 1224401 DRAINAGE AREA: 2.37

Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.0	2.5	1.3	0.79	0.51	1.5	0.53	0.11	0.02	13	0.37	e7.5
2	1.8	2.0	1.2	0.79	0.39	1.4	0.51	0.08	0.02	5.0	6.6	4.0
3	1.7	1.8	1.1	0.75	0.39	1.2	0.48	0.05	0.31	2.3	0.60	0.53
4	1.6	1.7	1.0	2.0	0.40	1.1	0.51	0.06	0.02	1.00	1.1	0.40
5	1.5	1.8	3.0	2.1	0.44	0.93	0.56	0.05	3.0	0.69	2.3	0.38
6	2.0	1.6	8.1	10	0.43	0.86	0.55	0.04	15	0.53	5.0	0.37
7	5.1	6.6	2.4	9.0	0.40	0.76	0.38	0.04	0.31	0.72	7.1	0.42
8	2.7	2.1	1.7	2.2	0.35	0.75	0.28	0.04	0.21	1.00	0.71	0.37
9	3.6	1.6	1.4	1.5	0.32	0.71	0.30	0.04	0.20	0.41	0.51	0.38
10	3.1	1.4	1.2	2.3	0.29	0.68	0.29	0.03	0.17	0.44	0.45	0.39
11	1.9	1.3	1.2	1.3	0.28	0.73	0.35	0.05	0.16	0.35	0.46	0.40
12	e1.6	1.2	1.1	1.2	1.4	0.64	0.23	0.03	0.11	0.35	1.9	0.79
13	e1.5	1.1	1.0	1.5	0.80	4.3	0.22	0.02	0.11	0.35	0.45	0.59
14	e1.4	1.0	0.90	1.1	0.30	1.1	0.24	0.03	0.14	0.38	0.49	0.45
15	1.3	1.0	0.81	1.7	0.34	0.87	0.21	0.04	e0.40	0.38	0.69	0.45
16	1.2	1.3	1.3	1.3	0.64	0.74	0.22	0.06	e0.30	0.40	0.63	0.47
17	1.2	0.97	0.89	0.92	0.32	0.70	0.22	0.05	e0.30	0.44	0.47	0.49
18	1.1	0.93	0.75	0.81	1.4	0.65	0.20	0.07	0.19	0.43	2.6	0.44
19	1.0	1.2	5.6	7.3	0.47	0.61	0.21	0.09	0.22	0.45	8.2	0.43
20	0.93	1.3	14	1.2	0.26	0.63	0.18	0.05	0.36	0.47	0.67	0.64
21	0.89	1.3	2.5	0.98	3.1	0.43	0.18	0.06	1.5	0.53	0.44	1.2
22	0.87	7.6	2.0	0.87	12	0.39	0.17	0.04	3.1	0.69	e0.40	0.57
23	e3.0	2.2	1.6	0.80	28	1.4	0.15	0.09	4.2	0.67	e0.40	1.3
24	2.4	1.3	1.4	0.73	14	1.8	0.10	0.08	4.9	0.66	e0.40	0.32
25	3.4	2.0	1.3	0.70	2.5	1.4	0.07	0.17	1.6	0.73	e0.40	0.25
26	1.8	1.3	1.2	0.64	2.7	1.6	0.07	0.60	0.86	0.67	e0.40	0.25
27	3.0	1.2	1.1	0.49	11	0.69	0.09	0.72	2.3	0.79	e0.40	0.26
28	7.4	2.2	1.0	0.48	2.8	0.57	0.05	0.02	33	0.32	e0.30	0.24
29	15	—	0.96	0.95	8.8	0.54	0.07	0.78	30	0.30	e0.30	0.25
30	4.8	—	0.90	0.50	2.4	0.53	0.07	0.04	11	0.30	e0.30	0.23
31	3.2	—	0.88	—	1.8	—	0.06	0.03	—	0.32	—	0.23
TOTAL	83.99	53.50	64.79	56.90	99.23	30.21	7.75	3.66	114.01	35.07	45.04	24.99
MEAN	2.71	1.91	2.09	1.90	3.20	1.01	0.25	0.12	3.80	1.13	1.50	0.81
MAX	15	7.6	14	10	28	4.3	0.56	0.78	33	13	8.2	7.5
MIN	0.87	0.93	0.75	0.48	0.26	0.39	0.05	0.02	0.02	0.30	0.30	0.23
AC-FT	167	106	129	113	197	60	15	7.3	226	70	89	50

e=estimated value

6900 — 14206900 — Fanno Creek at 56th Avenue [RM 11.9]



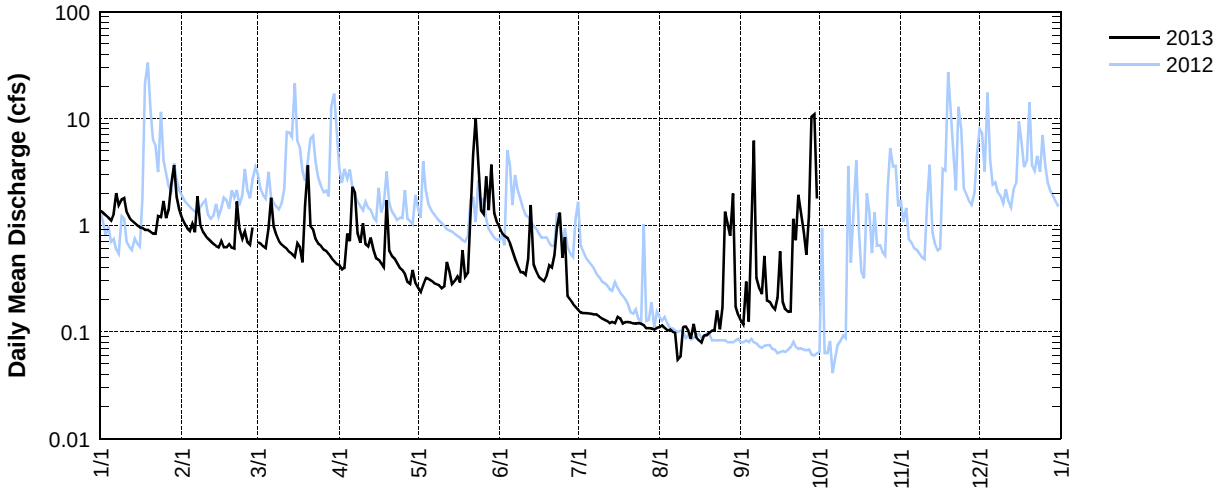
SCRL – 14206905 – SYLVAN CREEK AT RALEIGHWOOD LANE NEAR WEST SLOPE, OREGON [RM 1.0]

Latitude: 45 29 35 Longitude: 122 44 48 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1.4	1.2	0.70	e0.42	0.26	0.95	0.16	0.11	0.13			
2	1.3	1.0	0.68	e0.38	0.24	0.85	0.15	0.12	0.12			
3	1.2	0.93	0.63	e0.40	0.28	0.79	0.15	0.11	0.30			
4	1.2	0.88	0.61	0.83	e0.32	e0.77	e0.15	0.10	0.12			
5	1.1	1.0	0.94	0.71	e0.31	e0.68	e0.15	0.10	1.0			
6	1.3	0.86	1.8	2.3	e0.30	e0.57	e0.15	0.10	6.2			
7	2.0	1.9	0.97	2.0	e0.29	e0.49	e0.14	0.10	0.32			
8	1.5	0.99	0.81	0.84	e0.28	e0.42	e0.14	0.06	0.25			
9	1.7	0.87	0.71	0.68	e0.27	e0.36	e0.14	0.06	0.23			
10	1.8	0.79	0.66	1.0	e0.26	0.36	e0.13	0.11	e0.51			
11	e1.3	0.75	0.62	0.66	0.27	0.34	e0.13	0.11	0.20			
12	1.2	0.71	0.60	0.63	0.45	0.48	e0.13	0.10	e0.19			
13	1.1	0.66	0.56	0.77	0.37	1.5	0.12	0.09	e0.17			
14	1.0	0.64	0.54	e0.58	0.28	0.43	0.12	0.12	e0.16			
15	0.99	0.62	0.50	e0.49	0.30	0.37	0.12	0.09	0.21			
16	0.95	0.72	0.67	0.47	0.33	0.33	e0.14	0.08	0.57			
17	0.94	0.62	e0.62	0.44	0.29	0.31	e0.13	0.08	0.19			
18	e0.90	0.62	e0.45	0.40	0.59	0.30	0.12	0.09	0.16			
19	e0.90	0.66	1.5	1.7	0.33	0.34	0.12	0.09	0.15			
20	e0.86	0.61	3.6	0.57	0.36	0.42	0.12	0.10	0.15			
21	e0.83	0.60	0.98	e0.52	1.1	0.40	0.12	0.10	1.1			
22	0.83	1.7	0.91	e0.49	4.5	0.52	0.12	0.10	0.72			
23	1.2	0.93	0.74	e0.44	10	0.96	0.12	0.16	1.9			
24	1.2	0.75	0.67	e0.39	4.3	1.3	0.12	0.11	1.3			
25	1.7	0.87	0.64	0.38	1.4	0.49	0.12	0.17	e0.87			
26	1.2	0.69	e0.59	0.35	1.3	e0.77	0.12	1.3	e0.53			
27	1.4	0.66	e0.57	0.29	2.9	e0.22	0.11	1.0	e1.2			
28	2.4	0.96	e0.53	0.28	1.4	0.20	0.11	0.79	10			
29	3.7	—	e0.50	0.38	3.7	0.18	0.11	2.0e	11			
30	1.8	—	e0.46	0.28	1.3	0.17	0.11	0.17e	1.8			
31	1.4	—	e0.43	—	1.1	—	0.11	0.14	—		—	
TOTAL	42.3	24.19	25.19	20.07	39.38	16.27	3.98	7.96	41.75			
MEAN	1.4	0.86	0.81	0.67	1.3	0.54	0.13	0.26	1.4			
MAX	3.7	1.9	3.6	2.3	10	1.5	0.16	2.0	11			
MIN	0.83	0.60	0.43	0.28	0.24	0.17	0.11	0.06	0.12			
AC-FT	84	48	50	40	78	32	7.9	16	83			

Station discontinued 9/30/2013; e=estimated value;

SCRL — 14206905 — Sylvan Creek at Raleighwood Lane near West Slope, Oregon [RM 1.0]



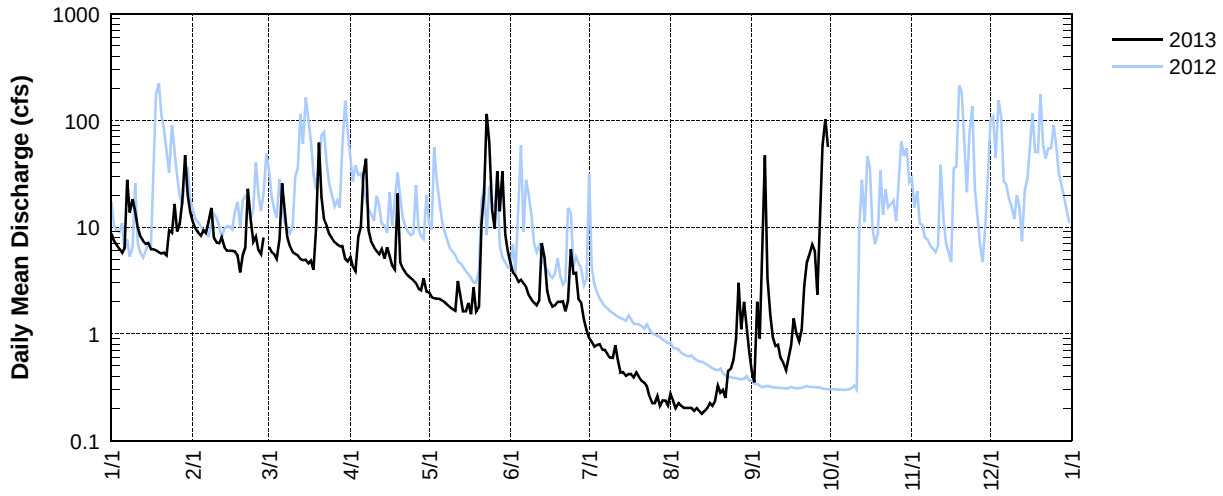
FCTW – 14206927 – FANNO CREEK AT TUCKERWOOD [RM 7.3]

Latitude: 45 27 27 Longitude: 122 47 49 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	e8.7	11	6.5	5.3	e2.4	e4.6	e0.91	e0.27	e0.45			
2	e7.4	9.7	5.8	4.3	e2.2	e3.8	e0.84	e0.24	e0.35			
3	e6.8	8.9	5.6	3.8	e2.2	e3.5	e0.76	e0.20	e2.0			
4	e6.2	8.4	5.0	8.1	e2.1	e3.1	e0.79	e0.22	e0.90			
5	e5.8	9.3	7.8	10	e2.1	e3.2	e0.80	e0.21	e6.2			
6	e6.4	8.8	26	31	e2.1	e3.0	e0.71	e0.20	e47			
7	28	11	14	44	e2.0	e2.7	e0.70	e0.20	e3.4			
8	14	15	8.1	e9.3	e1.9	e2.3	e0.64	e0.20	e1.5			
9	18	7.9	6.7	e7.2	e1.8	e2.1	e0.60	e0.20	e0.92			
10	14	7.2	5.8	e6.5	e1.7	e2.0	e0.59	e0.19	e0.77			
11	10.0	7.1	5.6	e6.0	e1.6	e1.8	e0.78	e0.20	e0.79			
12	8.2	8.1	5.4	e5.6	e3.1	e2.1	e0.56	e0.19	e0.59			
13	7.5	6.5	5.0	e6.2	e2.3	e7.1	e0.43	e0.18	e0.54			
14	7.0	6.0	4.9	e5.1	e1.6	e5.1	e0.44	e0.19	e0.45			
15	7.1	6.0	4.9	e6.5	e1.6	e2.5	e0.41	e0.20	e0.59			
16	6.2	6.0	4.6	e5.3	e1.9	e2.0	e0.42	e0.22	e0.78			
17	6.2	5.9	4.8	e4.3	e1.5	e1.8	e0.42	e0.21	e1.4			
18	6.1	5.4	4.0	e4.0	e2.7	e1.8	e0.39	e0.23	e1.0			
19	5.8	3.8	9.6	e21	e1.6	e2.0	e0.43	e0.33	e0.85			
20	5.7	5.5	62	e4.6	e1.8	e2.0	e0.39	e0.28	e1.1			
21	5.8	6.4	19	e4.1	e11	e2.0	e0.36	e0.30	e2.8			
22	5.5	23	12	e3.7	21	e1.6	e0.35	e0.25	e4.7			
23	9.3	13	10	e3.5	115	e2.0	e0.32	e0.45	e5.5			
24	8.8	7.4	8.6	e3.3	63	e6.2	e0.26	e0.47	e6.8			
25	17	8.2	7.8	e3.2	14	e3.7	e0.22	e0.57	e5.9			
26	9.2	6.1	7.2	e3.0	9.7	e3.7	e0.22	e0.90	e2.3			
27	11	5.5	6.9	e2.7	34	e2.1	e0.26	e3.0	e9.3			
28	17	8.0	6.6	e2.6	14	e2.0	e0.21	e1.1	e58			
29	47	—	6.6	e3.3	33	e1.3	e0.24	e2.0	e103			
30	20	—	5.0	e2.5	e8.6	e1.1	e0.24	e1.2	e57			
31	14	—	4.8	—	e6.0	—	e0.21	e0.68	—		—	
TOTAL	349.7	235.1	296.6	230	369.5	84.2	14.9	15.28	326.88			
MEAN	11.3	8.4	9.6	7.7	11.9	2.8	0.48	0.49	10.9			
MAX	47	23	62	44	115	7.1	0.91	3.0	103			
MIN	5.5	3.8	4.0	2.5	1.5	1.1	0.21	0.18	0.35			
AC-FT	694	466	588	456	733	167	30	30	648			

Station discontinued 9/30/2013; e=estimated value;

FCTW — 14206927 — Fanno Creek at Tuckerwood [RM 7.3]



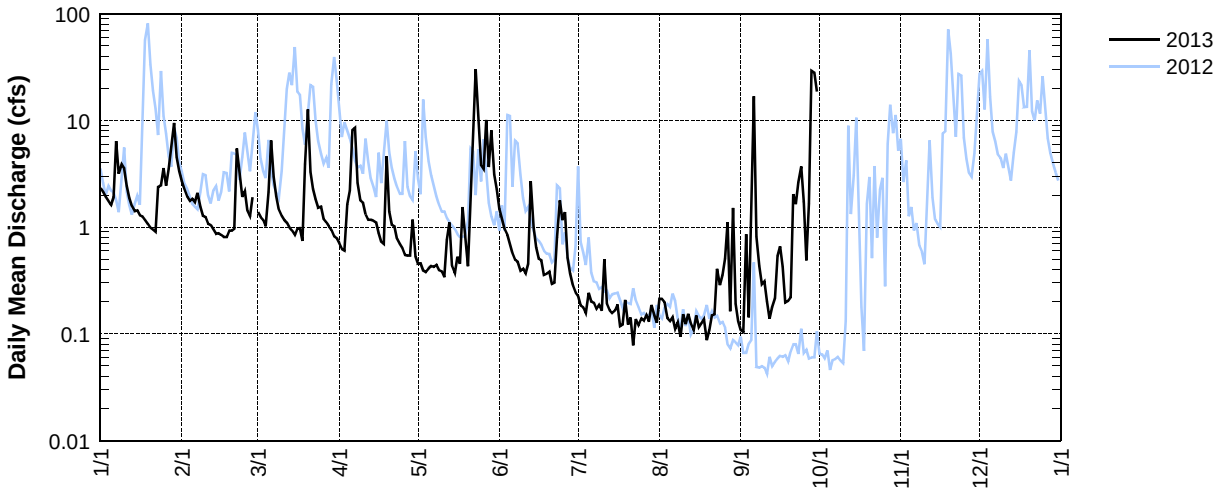
ASMP – 14206933 – ASH CREEK AT METZGER PARK AT METZGER, OREGON [RM 1.25]

Latitude: 45 27 00 Longitude: 122 45 45 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.3	2.7	1.4	0.70	0.45	1.5	0.23	0.21	0.11			
2	2.1	2.3	1.2	0.62	0.46	1.2	0.18	0.21	0.10			
3	1.9	1.9	1.2	0.60	0.39	0.96	0.18	0.20	0.86			
4	1.7	1.8	1.0	1.6	0.38	0.84	0.16	0.14	0.14			
5	1.6	1.9	2.1	2.2	0.41	0.69	0.24	0.13	2.4			
6	1.9	1.7	6.5	8.2	0.43	0.57	0.20	0.14	17			
7	6.4	2.1	3.0	8.5	0.42	0.49	0.20	0.11	0.82			
8	3.2	1.6	2.0	2.6	0.44	0.47	0.17	0.13	0.43			
9	3.9	1.3	1.5	1.8	0.40	0.39	0.19	0.09	0.29			
10	3.5	1.3	1.3	1.7	0.38	0.41	0.16	0.15	0.31			
11	2.4	1.1	1.2	1.3	0.34	0.37	0.50	0.12	0.20			
12	1.9	1.0	1.1	1.2	0.76	0.45	0.19	0.15	0.14			
13	1.6	0.95	1.00	1.2	1.1	2.7	0.17	0.12	0.18			
14	1.4	0.87	0.93	1.2	0.43	1.0	0.16	0.11	0.22			
15	1.4	0.87	0.84	1.1	0.37	0.64	0.17	0.15	0.54			
16	1.3	0.85	0.97	0.88	0.53	0.51	0.19	0.12	0.66			
17	1.3	0.81	0.98	0.73	0.46	0.49	0.12	0.13	0.43			
18	1.2	0.81	0.74	0.69	1.5	0.36	0.12	0.14	0.20			
19	1.1	0.93	3.9	4.6	0.85	0.37	0.21	0.09	0.20			
20	0.99	0.93	13	1.4	0.43	0.38	0.12	0.11	0.22			
21	0.95	0.97	3.3	1.1	1.8	0.29	0.14	0.15	2.0			
22	0.90	5.5	2.3	1.0	8.2	0.30	0.08	0.15	1.6			
23	2.4	3.4	1.8	0.78	30	0.80	0.14	0.41	2.7			
24	2.5	1.9	1.5	0.70	13	1.8	0.12	0.29	3.7			
25	3.6	2.2	1.6	0.64	3.8	1.2	0.14	0.35	1.7			
26	2.5	1.4	1.2	0.55	3.5	1.4	0.13	0.51	0.49			
27	3.5	1.3	1.1	0.54	10	0.52	0.15	1.1	1.6			
28	5.6	1.9	1.0	0.54	3.7	0.37	0.13	0.16	29			
29	9.5	—	0.95	1.2	8.1	0.28	0.19	1.5	28			
30	4.5	—	0.82	0.53	3.1	0.24	0.15	0.19	19			
31	3.3	—	0.78	—	2.3	—	0.13	0.13	—		—	
TOTAL	82.34	46.29	62.21	50.4	98.43	21.99	5.36	7.69	115.24			
MEAN	2.7	1.6	2.0	1.7	3.2	0.73	0.17	0.25	3.8			
MAX	9.5	5.5	13	8.5	30	2.7	0.50	1.5	29			
MIN	0.90	0.81	0.74	0.53	0.34	0.24	0.08	0.09	0.10			
AC-FT	163	92	123	100	195	44	11	15	229			

Station discontinued 9/30/2013

ASMP — 14206933 — Ash Creek at Metzger Park at Metzger, Oregon [RM 1.25]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

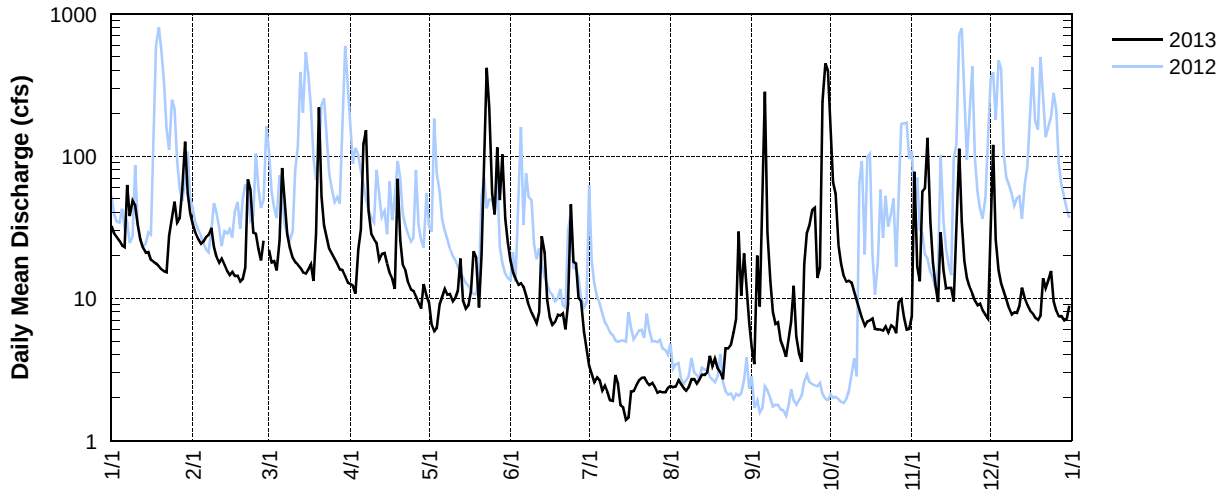
STATION NUMBER 14206950 FANNO CREEK AT DURHAM

LATITUDE: 452413 LONGITUDE: 1224513 DRAINAGE AREA: 31.50

Day	Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	32	33	22	13	9.4	19	3.4	2.4	4.5	184	7.3	23
2	29	29	18	12	6.5	15	3.0	2.4	3.5	66	78	123
3	27	26	18	11	5.9	14	2.6	2.4	20	56	17	26
4	25	24	16	22	6.2	12	2.7	2.6	9.0	24	12	16
5	24	25	25	30	9.1	13	2.7	2.5	37	18	57	13
6	23	27	82	119	10	12	2.2	2.3	283	14	57	11
7	63	28	50	154	12	11	2.4	2.3	30	13	136	9.8
8	38	31	28	42	11	8.9	2.2	2.4	13	13	36	8.5
9	48	23	23	28	11	7.9	1.9	2.7	8.0	13	18	7.7
10	45	19	19	26	9.5	7.3	1.9	2.7	6.6	11	12	e7.6
11	33	18	18	25	10	6.7	2.9	2.5	6.8	9.7	9.4	7.9
12	26	19	17	19	11	7.9	2.6	2.7	5.1	8.4	29	8.8
13	23	17	16	20	19	27	1.7	2.9	4.6	7.3	16	12
14	21	16	15	21	9.8	22	1.7	2.9	3.9	6.4	12	10
15	21	15	15	18	8.5	9.8	1.4	3.0	5.1	6.8	12	8.9
28	19	15	16	15	8.9	7.4	1.5	3.9	6.7	7.0	12	8.2
17	18	14	17	14	11	6.5	2.2	3.3	12	7.2	9.6	7.9
18	18	14	13	12	21	6.8	2.2	3.8	5.5	6.1	22	7.3
19	17	13	26	69	20	7.6	2.4	3.2	4.1	6.1	112	7.0
20	16	14	222	26	8.7	7.5	2.7	3.0	3.6	6.0	36	7.5
21	15	16	53	17	19	7.9	2.8	2.7	17	5.9	19	14
22	15	66	33	16	82	6.1	2.8	4.4	28	6.4	14	12
23	27	60	27	13	417	8.7	2.6	4.5	33	5.8	12	13
24	37	29	22	12	223	46	2.5	4.7	41	6.4	11	16
25	48	28	20	11	56	18	2.6	5.7	45	6.3	9.6	9.5
26	34	22	19	10	39	18	2.4	6.9	14	5.7	9.0	8.2
27	36	18	17	9.4	113	10	2.2	30	15	9.3	9.1	7.5
28	57	25	16	8.5	51	9.4	2.2	11	235	9.9	8.2	7.5
29	127	—	16	13	102	5.9	2.2	20	448	7.3	7.6	7.0
30	56	—	14	10	37	4.4	2.2	12	407	6.0	7.1	7.2
31	40	—	13	—	25	—	2.3	6.8	—	6.1	—	8.8
TOTAL	684	926	815.9	1382.5	363.7	73.1	164.6	1755.0	558.1	806.9	441.8	
MEAN	34.1	24.4	29.9	27.2	44.6	12.1	2.36	5.31	58.5	18.0	26.9	14.3
MAX	127	66	222	154	417	46	3.4	30	448	184	136	123
MIN	15	13	13	8.5	5.9	4.4	1.4	2.3	3.5	5.7	7.1	7.0
AC-FT	2100	1360	1840	1620	2740	721	145	326	3480	1110	1600	876

e=estimated value

FANO — 14206950 — Fanno Creek at Durham Road near Tigard, Oregon [RM 1.2]



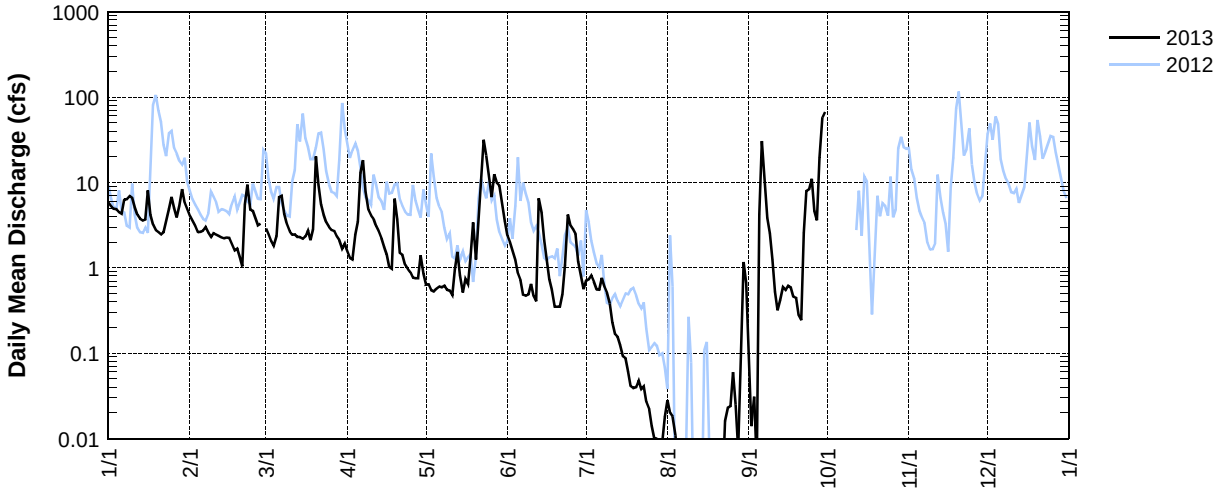
HCTP – 14206958 – HEDGES CREEK AT TUALATIN PARK AT TUALATIN, OREGON [RM 0.3]

Latitude: 45 23 08 Longitude:122 45 37 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.8	4.1	2.9	1.6	e0.64	2.4	0.71	0.03	0.11			
2	5.3	3.6	2.5	1.3	e0.64	2.0	0.73	0.02	0.01			
3	4.9	3.1	2.1	1.3	e0.55	1.6	0.82	0.02	0.03			
4	4.9	2.6	1.8	2.4	e0.53	1.2	0.69	0.01	0.01			
5	4.5	2.6	2.3	3.5	e0.57	0.86	0.56	0.01	4.2			
6	4.3	2.7	6.8	13	e0.60	0.72	0.55	0.01	31			
7	6.3	3.0	7.0	18	e0.59	0.49	0.76	0.01	10			
8	6.4	2.6	4.3	7.8	e0.62	0.47	0.60	0.01	3.8			
9	6.9	2.3	3.3	4.8	e0.55	0.49	0.51	0.01	2.5			
10	6.6	2.5	2.7	4.1	e0.54	0.65	0.38	0.00	1.3			
11	5.1	2.5	2.5	3.8	e0.47	0.46	0.23	0.00	0.52			
12	4.2	2.4	2.5	3.1	e0.96	0.40	0.17	0.01	0.32			
13	3.8	2.3	2.3	2.7	e1.5	6.5	0.16	0.01	0.41			
14	3.6	2.2	2.3	2.2	e0.82	4.4	0.13	0.01	0.60			
15	3.7	2.2	2.2	1.8	e0.52	2.1	0.09	0.01	0.55			
16	8.1	2.2	2.3	1.4	e0.74	1.3	0.09	0.01	0.62			
17	4.2	1.9	2.8	1.0e	e0.64	0.73	0.06	0.01	0.59			
18	3.2	1.6	2.1	e0.97	1.3	0.55	0.04	0.01	0.46			
19	2.8	1.7	2.8	e6.5	3.4	0.35	0.04	0.00	0.45			
20	2.6	1.4	20	e3.7	1.2	0.35	0.04	0.00	0.28			
21	2.5	1.0	9.4	e1.5	3.4	0.35	0.05	0.00	0.24			
22	2.6	5.5	5.5	e1.4	9.2	0.49	0.04	0.00	2.6			
23	3.5	9.5	4.2	e1.1	32	1.1	0.04	0.02	8.0			
24	4.9	4.8	3.4	e0.97	21	4.2	0.03	0.02	8.4			
25	6.8	4.7	3.0	e0.89	11	3.1	0.02	0.02	11			
26	5.0	3.8	2.8	e0.76	6.8	2.8	0.01	0.06	4.6			
27	3.9	3.2	2.7	e0.75	12	2.5	0.01	0.03	3.6			
28	5.3	3.3	2.3	e0.75	10	1.2	0.01	0.01	20			
29	8.4	—	2.1	e1.4	9.2	0.80	0.01	0.11	58			
30	5.8	—	1.7	e0.85	5.6	0.56	0.01	1.2	68			
31	4.8	—	1.9	—	3.5	—	0.02	0.67	—		—	
TOTAL	150.7	85.3	116.5	95.34	141.08	45.12	7.61	2.34	242.2			
MEAN	4.9	3.0	3.8	3.2	4.6	1.5	0.25	0.073	8.0			
MAX	8.4	9.5	20	18	32	6.5	0.82	1.2	68			
MIN	2.5	1.0	1.7	0.75	0.47	0.35	0.01	0.00	0.01			
AC-FT	299	169	231	189	280	89	15	4.6	480			

Station discontinued 9/30/2013

HCTP — 14206958 — Hedges Creek at Tualatin Park at Tualatin, Oregon [RM 0.3]



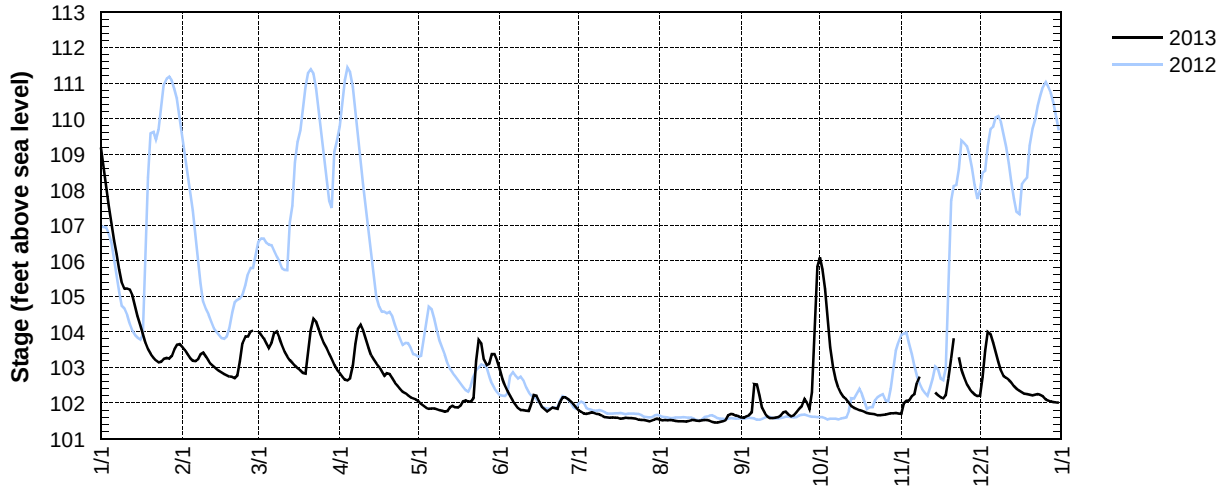
TRT – 14206956 (formerly 14206960) – TUALATIN RIVER AT TUALATIN, OREGON [RM 8.9]

Latitude: 45 23 14 Longitude: 122 45 46 Source Agency: District 18 Watermaster

Day	Daily Elevation in Feet above Mean Sea Level for 2013†											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV*	DEC
1	109.2	103.6	104.0	102.8	102.1	102.9	101.8	101.5	101.6	106.1	101.7	102.2
2	108.7	103.5	103.9	102.7	102.0	102.7	101.8	101.5	101.6	105.8	102.0	102.7
3	108.1	103.4	103.8	102.7	101.9	102.5	101.7	101.5	101.6	105.2	102.1	103.5
4	107.6	103.3	103.7	102.6	101.9	102.3	101.7	101.5	101.7	104.4	102.1	104.0
5	107.1	103.2	103.5	102.7	101.8	102.2	101.7	101.5	101.7	103.6	102.2	103.9
6	106.6	103.2	103.7	103.1	101.8	102.1	101.7	101.5	102.5	103.0	102.3	103.7
7	106.2	103.2	104.0	103.7	101.8	102.0	101.7	101.5	102.5	102.7	102.6	103.4
8	105.8	103.4	104.0	104.1	101.8	101.9	101.7	101.5	102.2	102.4	102.7	103.2
9	105.4	103.4	103.8	104.2	101.8	101.8	101.7	101.5	101.9	102.3		102.9
10	105.2	103.3	103.6	104.0	101.8	101.8	101.6	101.5	101.7	102.2		102.8
11	105.2	103.2	103.4	103.8	101.8	101.8	101.6	101.5	101.6	102.1		102.7
12	105.2	103.1	103.3	103.5	101.8	101.8	101.6	101.5	101.6	102.0		102.6
13	105.0	103.0	103.2	103.3	101.9	102.0	101.6	101.5	101.6	101.9		102.6
14	104.7	103.0	103.1	103.2	101.9	102.2	101.6	101.5	101.6	101.9	102.3	102.5
15	104.4	102.9	103.1	103.1	101.9	102.2	101.6	101.5	101.6	101.8	102.2	102.4
16	104.2	102.9	103.0	103.0	101.9	102.0	101.6	101.5	101.6	101.8	102.2	102.4
17	103.9	102.8	102.9	102.9	101.9	101.9	101.6	101.5	101.7	101.8	102.1	102.3
18	103.7	102.8	102.8	102.8	102.1	101.8	101.6	101.5	101.8	101.8	102.2	102.3
19	103.5	102.7	102.8	102.8	102.1	101.8	101.6	101.5	101.7	101.7	102.7	102.3
20	103.4	102.7	103.5	102.8	102.0	101.8	101.6	101.5	101.6	101.7	103.3	102.2
21	103.3	102.7	104.0	102.7	102.0	101.9	101.6	101.5	101.7	101.7	103.8	102.2
22	103.2	102.8	104.4	102.6	102.2	101.9	101.6	101.5	101.7	101.7		102.2
23	103.1	103.2	104.3	102.5	103.2	101.8	101.6	101.5	101.8	101.7	103.3	102.3
24	103.2	103.7	104.1	102.4	103.8	102.0	101.5	101.5	101.9	101.7	102.9	102.2
25	103.2	103.9	103.9	102.3	103.7	102.2	101.5	101.5	102.1	101.7	102.7	102.2
26	103.3	103.9	103.7	102.3	103.2	102.2	101.5	101.5	102.0	101.7	102.5	102.1
27	103.3	104.0	103.5	102.2	103.1	102.1	101.5	101.7	101.8	101.7	102.4	102.1
28	103.3	104.0	103.4	102.2	103.1	102.0	101.5	101.7	102.3	101.7	102.3	102.0
29	103.5	—	103.2	102.1	103.4	102.0	101.5	101.7	104.0	101.7	102.2	102.0
30	103.6	—	103.1	102.1	103.4	101.9	101.5	101.6	105.8	101.7	102.2	102.0
31	103.7	—	102.9	—	103.2	—	101.6	101.6	—	101.7	—	102.0
MEAN	104.8	103.2	103.5	102.9	102.3	102.0	101.6	101.5	102.0	102.4	102.5	102.6
MAX	109.2	104.0	104.4	104.2	103.8	102.9	101.8	101.7	105.8	106.1	103.8	104.0
MIN	103.1	102.7	102.8	102.1	101.8	101.8	101.5	101.5	101.6	101.7	102.0	102.0

† Preliminary data–subject to revision; *Incomplete record (monthly totals were computed when at least 80% of the record was complete for the month)

TRT — 14206956 (formerly 14206960) **— Tualatin River at Tualatin, Oregon [RM 8.9]**



UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - OREGON WATER SCIENCE CENTER

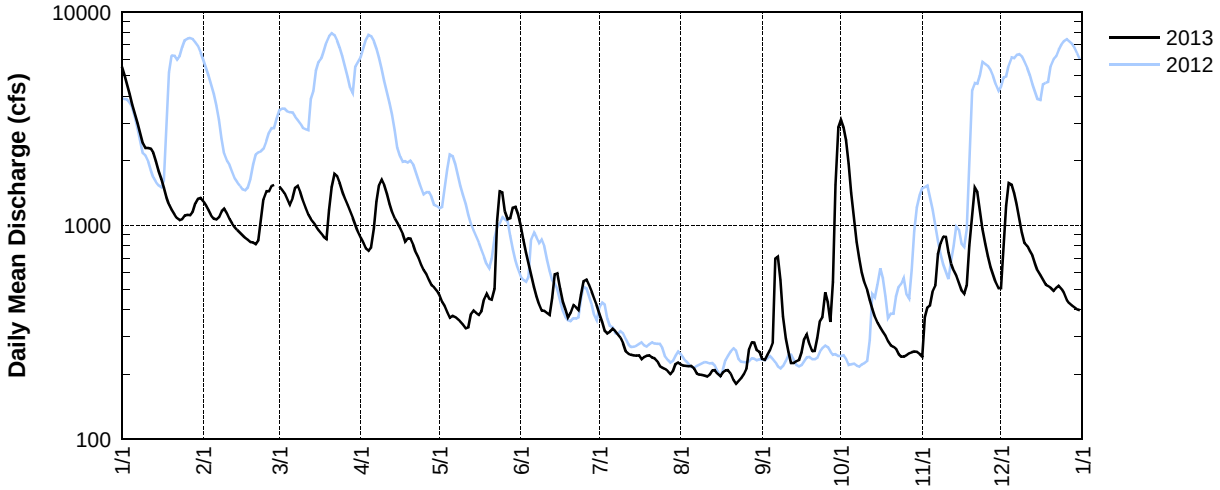
STATION NUMBER: 14207500 TUALATIN RIVER AT WEST LINN, OREG.

LATITUDE: 452103 LONGITUDE: 1224030 DRAINAGE AREA: 706.00 DATUM: 85.61

Discharge, Cubic Feet per Second, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5520	1290	1520	873	468	992	382	223	236	3120	241	504
2	5060	1240	1470	827	436	854	352	219	233	2890	368	804
3	4570	1180	1410	778	417	746	321	219	247	2500	410	1230
4	4120	1110	1330	758	391	664	311	218	260	1950	421	1580
5	3690	1070	1250	786	368	591	316	219	281	1420	493	1550
6	3310	1060	1340	965	376	514	326	213	695	1060	522	1410
7	3010	1090	1500	1290	371	463	319	202	715	837	728	1250
8	2690	1160	1530	1540	362	425	308	199	555	702	824	1080
9	2420	1190	1430	1640	354	397	297	198	375	601	883	926
10	2300	1130	1310	1550	343	396	281	197	294	539	879	828
11	2300	1070	1200	1400	329	387	256	195	255	496	747	799
12	2280	1020	1120	1260	332	379	250	199	226	447	660	756
13	2190	979	1070	1150	382	455	247	208	226	405	613	720
14	2000	949	1030	1080	398	589	245	209	230	372	580	661
15	1800	922	988	1020	388	597	244	201	234	349	534	612
16	1650	897	949	967	380	504	245	196	253	330	495	583
17	1500	871	915	910	394	439	235	204	292	315	478	554
18	1350	854	878	840	449	404	241	208	308	303	521	528
19	1250	833	857	868	477	371	244	209	278	285	797	520
20	1180	830	1180	866	452	388	245	202	257	274	1130	509
21	1120	816	1500	808	446	422	239	188	257	269	1490	492
22	1080	848	1740	742	501	413	238	181	295	263	1430	507
23	1050	1050	1700	702	1040	400	230	186	355	249	1180	520
24	1070	1330	1580	655	1440	472	219	192	369	241	961	504
25	1110	1440	1440	616	1430	545	215	200	484	242	816	483
26	1120	1440	1340	588	1170	557	212	213	436	246	715	448
27	1110	1530	1250	553	1070	524	207	264	353	251	638	431
28	1150	1550	1160	523	1080	489	200	282	534	254	587	420
29	1260	—	1080	511	1210	451	206	281	1530	255	541	411
30	1330	—	1000	494	1220	421	223	260	2870	254	506	403
31	1340	—	931	—	1130	—	228	254	—	249	—	399
TOTAL	66930	30749	38998	27560	19604	15249	8082	6639	13933	21968	21188	22422
MEAN	2159	1098	1258	919	632	508	261	214	464	709	706	723
MAX	5520	1550	1740	1640	1440	992	382	282	2870	3120	1490	1580
MIN	1050	816	857	494	329	371	200	181	226	241	241	399
AC-FT	132800	60990	77350	54670	38880	30250	16030	13170	27640	43570	42030	44470

WSLO — 14207500 —Tualatin River at West Linn, Oregon [RM 1.75]

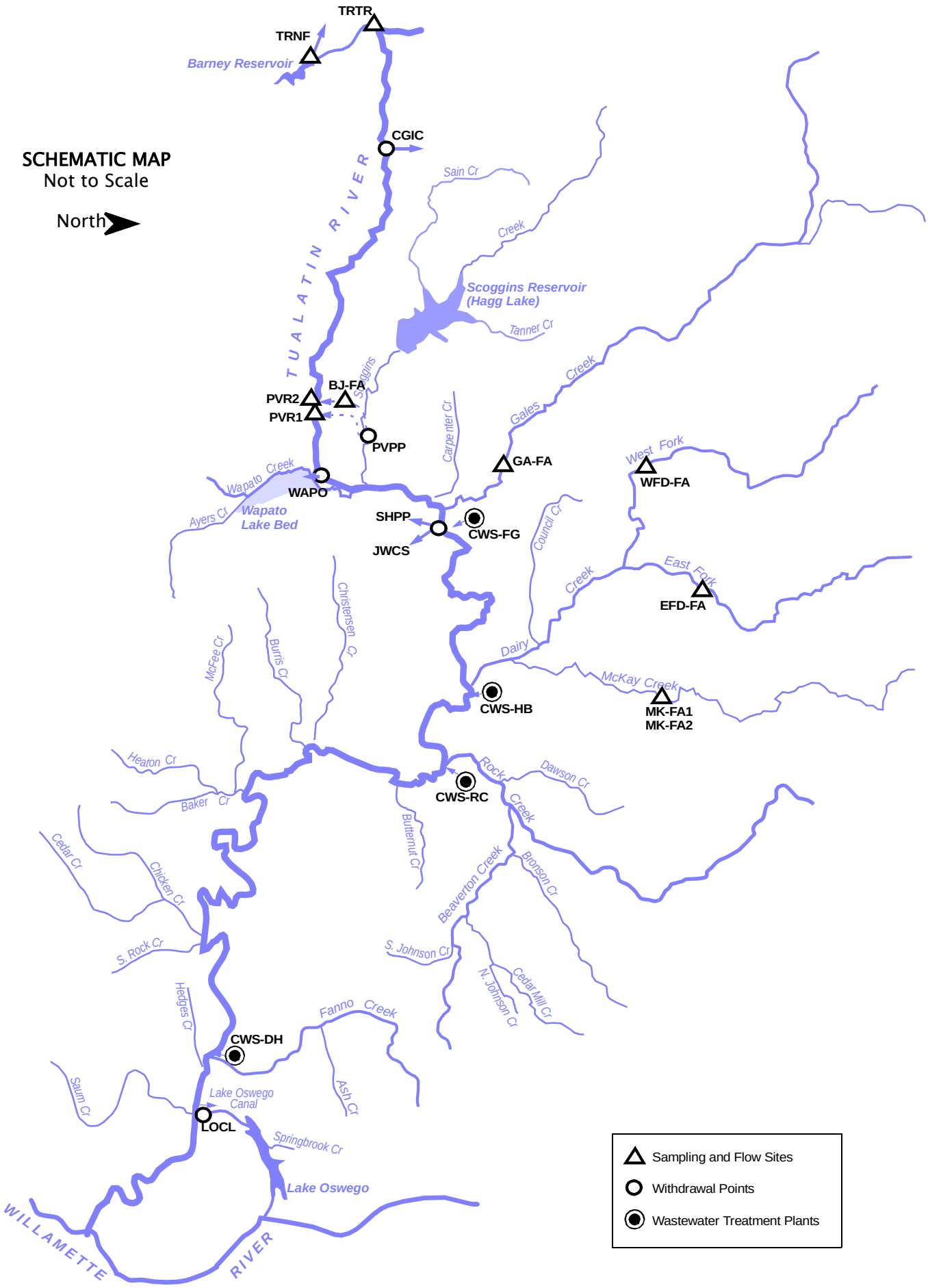


Appendix B

Selected Releases and Withdrawals

The following information is for selected water releases to and withdrawals from the Tualatin River and its tributaries. It is not a comprehensive listing of releases and withdrawals. Some of the data represent daily mean flows and some represent instantaneous measurements. All streamflow measurements are in Appendix A.

SELECTED RELEASES AND WITHDRAWALS — LOCATIONS



SELECTED RELEASE AND WITHDRAWAL SITES — ALPHABETICAL LISTING BY SITE CODE

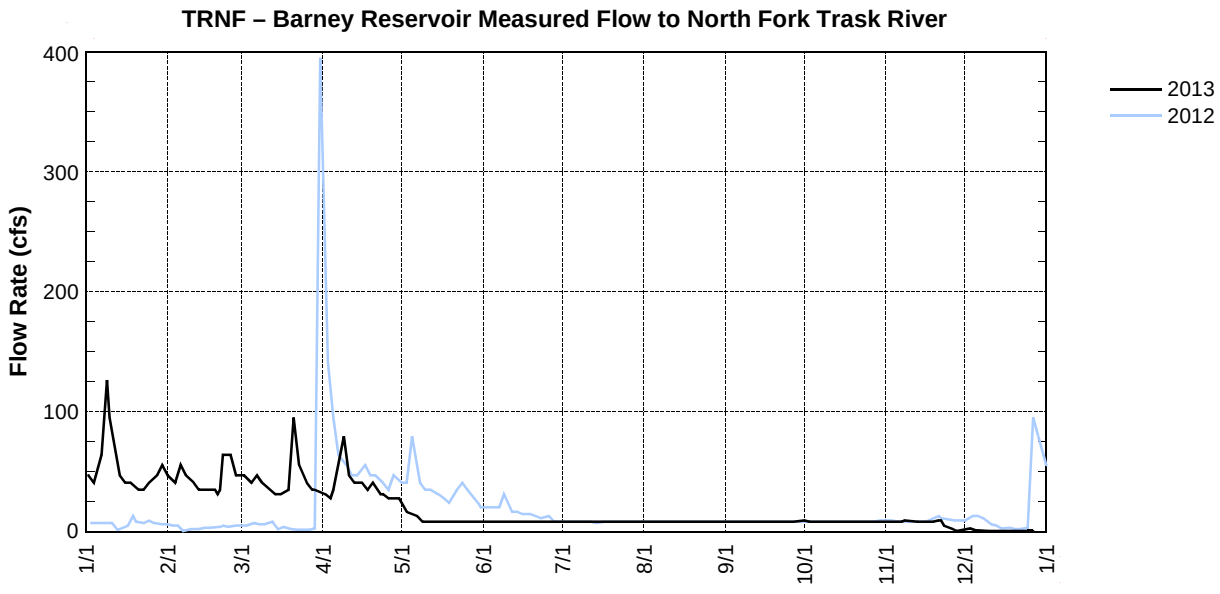
SITE CODE	SITE NAME	RIVER MILE	PAGE
BJ-FA	CWS Black Jack Creek Flow Augmentation with TVID	—	B-13
CGIC	City of Hillsboro Withdrawal at Cherry Grove	73.3	B-6
CWS-DH	CWS Durham WWTF Release	9.33	B-12
CWS-FG	CWS Forest Grove WWTF Release	55.2	B-9
CWS-HB	CWS Hillsboro WWTF Release	43.8	B-10
CWS-RC	CWS Rock Creek WWTF Release	38.08	B-11
EFD-FA	CWS East Fork Dairy Flow Augmentation with TVID	4.9	B-13
GA-FA	CWS Gales Creek Flow Augmentation with TVID	5.0	B-13
JWCS	Joint Water Commission Withdrawal at Spring Hill Pump Plant	56.1	B-8
LOCL	Lake Oswego Corp. Canal Diversion	6.7	*
MK-FA1	CWS McKay Creek Flow Augmentation with TVID – Site 1	7.6	B-13
MK-FA2	CWS McKay Creek Flow Augmentation with TVID – Site 2	7.8	B-13
PVPP	TVID Withdrawal at Patton Valley Pump Plant	1.71	**
PVR1	TVID—Patton Valley River Turnout #1 Release	63.13	**
PVR2	TVID—Patton Valley River Turnout #2 Release	64.26	**
SHPP	TVID–Withdrawal at Spring Hill Pump Plant	56.1	B-7
TRNF	Barney Reservoir Measured Flow to North Fork Trask River	—	B-4
TRTR	Barney Reservoir Release to Tualatin River	78.0	B-5
WAPO	Wapato Canal Diversion	62.0	**
WFD-FA	CWS West Fork Dairy Flow Augmentation with TVID	5.2	B-13

*Monitoring of the Lake Oswego Canal Diversion was discontinued 8/23/2012.
**Withdrawals and releases at Patton Valley Pump Plant, Patton Valley River turnouts and Wapato Canal Diversion were not measured in 2013.
**Wapato Creek was monitored by the USGS; results are in Appendix A.

TRNF – BARNEY RESERVOIR MEASURED FLOW TO NORTH FORK TRASK RIVER

Source Agency: Joint Water Commission

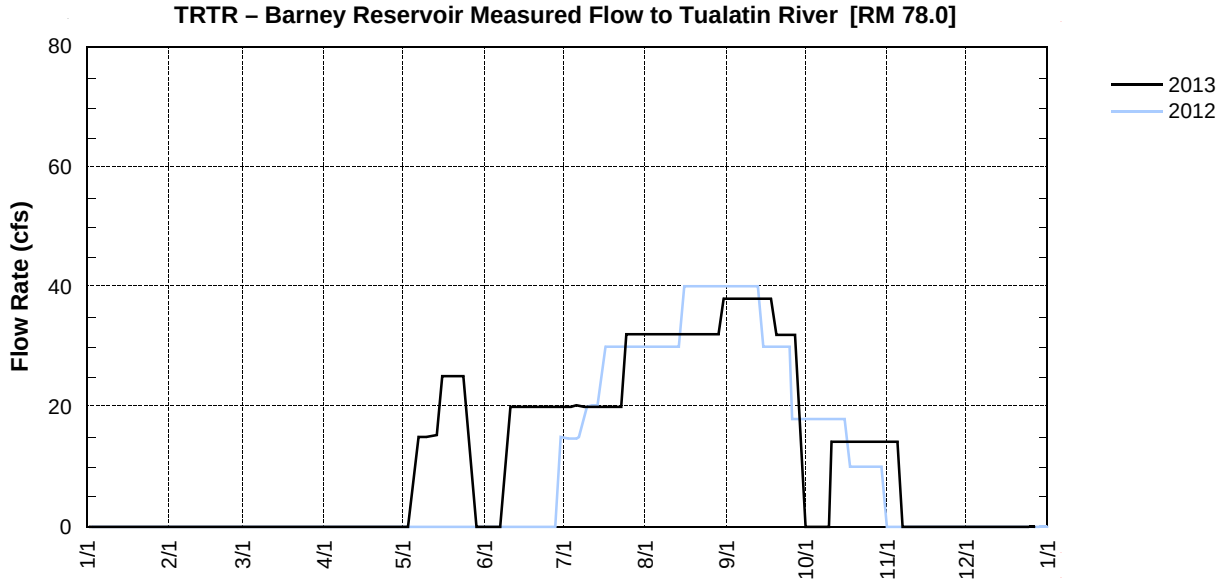
Day	2013 — Instantaneous Measured Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		47.0	47.0	31.3	20.2		8.4				8.4	
2	47.0				16.5			8.4		8.4		2.8
3				27.6		8.4	8.4		8.4	8.4		
4	41.0	41.0	41.0	35.0					8.4		8.4	1.1
5						8.4	8.4	8.4	8.4			1.1
6		55.5	47.0		13.0	8.4					8.4	
7	64.0							8.4		8.4	9.5	
8		47.0	41.0	79.6	8.4		8.4	8.4				
9	126.4				8.4				8.4	8.4		0.5
10	95.2			47.0		8.4	8.4			8.4		
11		41.0	35.0				8.4		8.4			
12				41.0		8.4		8.4	8.4		8.4	0.5
13		35.0	31.3		8.4	8.4					8.4	0.5
14	47.0							8.4		8.4	8.4	
15		35.0	31.3	41.0	8.4		8.4	8.4				
16	41.0				8.4				8.4	8.4		0.5
17				35.0		8.4	8.4		8.4	8.4		
18	41.0		35.0				8.4				8.4	0.5
19		35.0		41.0		8.4		8.4	8.4			0.5
20		31.3	95.2		8.4						9.5	
21	35.0	35.0				8.4		8.4		8.4	9.5	
22		64.0	55.5	31.3	8.4		8.4	8.4			5.1	
23	35.0			31.3	8.4				8.4	8.4		0.5
24						8.4	8.4		8.4	8.4		0.5
25	41.0	64.0	41.0	27.6			8.4		8.4		2.8	
26						8.4		8.4	8.4			0.5
27		47.0	35.0			8.4					0.5	
28	47.0		35.0		8.4			8.4		8.4		
29		—		27.6	8.4		8.4					
30	55.5	—			8.4			8.4	9.5	8.4		
31		—		—		—	8.4		—		—	



TRTR — BARNEY RESERVOIR MEASURED FLOW TO TUALATIN RIVER [RM 78.0]

Source Agency: Joint Water Commission

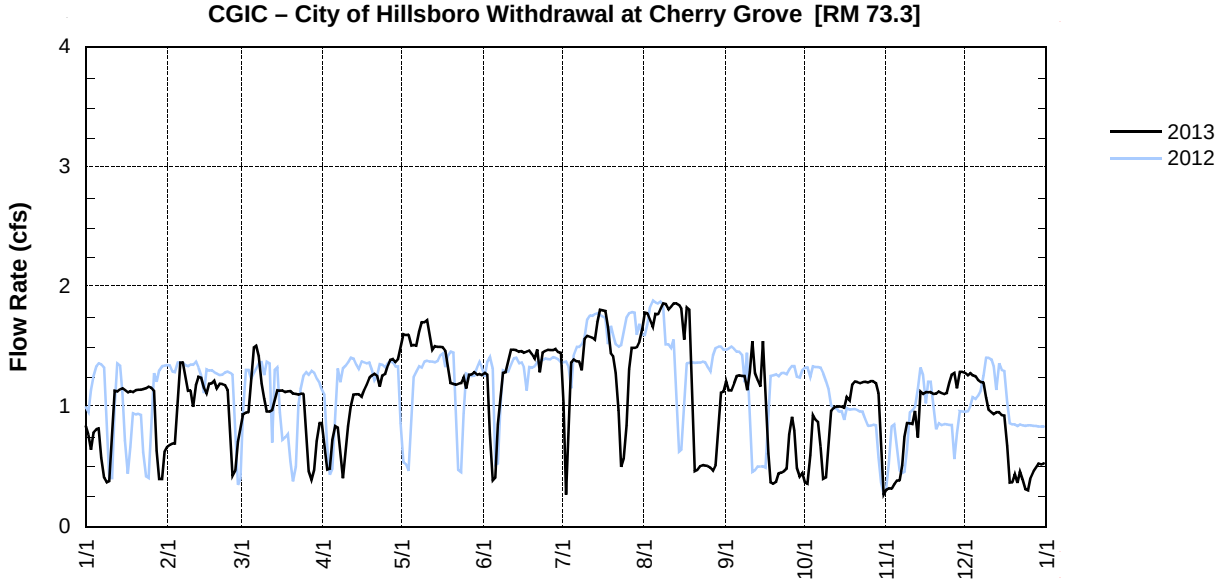
Day	2013 — Instantaneous Measured Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		0.0	0.0	0.0	0.0		20.0				14.2	
2	0.0				0.0			32.1		0.0		0.0
3				0.0		0.0	20.0		38.0	0.0		
4	0.0	0.0	0.0	0.0					38.0		14.2	0.0
5						0.0	20.3	32.1	38.0			0.0
6		0.0	0.0		15.0	0.0					0.0	
7	0.0							32.1		0.0	0.0	
8		0.0	0.0	0.0	15.0		20.0	32.1				
9	0.0				15.0				38.0	0.0		0.0
10	0.0			0.0		20.0	20.0			14.2		
11		0.0	0.0				20.0		38.0			
12				0.0		20.0		32.1	38.0		0.0	0.0
13		0.0	0.0		15.3	20.0					0.0	0.0
14	0.0							32.1		14.2	0.0	
15		0.0	0.0	0.0	25.1		20.0	32.1				
16	0.0				25.1				38.0	14.2		0.0
17				0.0		20.0	20.0		38.0	14.2		
18	0.0		0.0				20.0				0.0	0.0
19		0.0		0.0		20.0		32.1	32.0			0.0
20		0.0	0.0		25.1						0.0	
21	0.0	0.0				20.0		32.1		14.2	0.0	
22		0.0	0.0	0.0	25.1		20.0	32.1			0.0	
23	0.0			0.0	25.1				32.0	14.2		0.0
24						20.0	32.1		32.0	14.2		0.0
25	0.0	0.0	0.0	0.0			32.1		32.0		0.0	
26						20.0		32.1	32.0			0.0
27		0.0	0.0			20.0					0.0	
28	0.0		0.0		0.0			32.1		14.2		
29		—		0.0	0.0		32.1					
30	0.0	—			0.0			38.0	0.0	14.2		
31		—		—		—	32.1		—		—	



CGIC — CITY OF HILLSBORO WITHDRAWAL AT CHERRY GROVE [RM 73.3]

Source Agency: Joint Water Commission

Day	2013 — Calculated Average Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.84	0.67	0.94	0.67	1.61	1.28	1.04	1.79	1.21	0.37	0.31	1.28
2	0.76	0.68	0.95	0.48	1.60	1.27	0.27	1.78	1.14	0.36	0.32	1.26
3	0.64	0.70	0.96	0.49	1.60	0.77	0.87	1.73	1.14	0.60	0.32	1.28
4	0.79	0.70	1.23	0.72	1.51	0.39	1.37	1.66	1.20	0.93	0.36	1.26
5	0.81	1.04	1.50	0.84	1.51	0.41	1.39	1.77	1.26	0.89	0.38	1.25
6	0.82	1.37	1.51	0.83	1.51	0.86	1.38	1.77	1.26	0.87	0.39	1.22
7	0.58	1.37	1.42	0.61	1.63	1.06	1.38	1.82	1.26	0.67	0.51	1.21
8	0.41	1.24	1.20	0.41	1.71	1.28	1.30	1.86	1.25	0.40	0.75	1.20
9	0.37	1.13	1.07	0.61	1.71	1.29	1.57	1.86	1.14	0.41	0.86	1.08
10	0.38	1.14	0.96	0.84	1.72	1.38	1.59	1.81	1.29	0.71	0.86	0.97
11	0.73	1.00	0.96	1.00	1.60	1.48	1.58	1.84	1.55	0.97	0.86	0.95
12	1.13	1.18	0.97	1.10	1.48	1.48	1.58	1.86	1.28	1.00	0.97	0.94
13	1.13	1.25	1.06	1.10	1.51	1.47	1.56	1.86	1.23	1.00	0.75	0.95
14	1.15	1.24	1.14	1.10	1.50	1.46	1.71	1.85	1.17	1.00	1.13	0.95
15	1.16	1.16	1.13	1.08	1.50	1.46	1.81	1.82	1.55	1.00	1.11	0.93
16	1.14	1.11	1.14	1.14	1.50	1.45	1.80	1.56	1.04	0.99	1.12	0.93
17	1.12	1.19	1.12	1.19	1.47	1.46	1.80	1.83	0.61	1.08	1.12	0.68
18	1.13	1.20	1.13	1.24	1.34	1.47	1.66	1.81	0.37	1.06	1.12	0.37
19	1.12	1.22	1.13	1.26	1.20	1.44	1.45	1.07	0.36	1.19	1.11	0.37
20	1.14	1.16	1.11	1.28	1.19	1.40	1.42	0.46	0.38	1.21	1.11	0.44
21	1.14	1.19	1.11	1.26	1.19	1.48	1.28	0.48	0.45	1.21	1.13	0.37
22	1.14	1.19	1.10	1.17	1.19	1.29	0.97	0.51	0.45	1.20	1.12	0.46
23	1.15	1.18	1.11	1.26	1.20	1.45	0.50	0.52	0.46	1.21	1.11	0.40
24	1.16	1.14	1.11	1.28	1.25	1.47	0.57	0.51	0.49	1.21	1.12	0.31
25	1.17	0.78	0.77	1.35	1.15	1.48	0.85	0.51	0.77	1.20	1.20	0.30
26	1.16	0.43	0.46	1.39	1.27	1.47	1.32	0.49	0.92	1.21	1.27	0.41
27	1.13	0.47	0.39	1.40	1.27	1.47	1.49	0.47	0.80	1.21	1.28	0.47
28	0.64	0.71	0.48	1.38	1.29	1.48	1.49	0.52	0.49	1.20	1.16	0.50
29	0.40	—	0.72	1.40	1.27	1.46	1.50	0.86	0.42	1.11	1.29	0.53
30	0.40	—	0.86	1.49	1.28	1.45	1.55	1.12	0.45	0.67	1.29	0.52
31	0.63	—	0.86	—	1.27	—	1.65	1.13	—	0.27	—	0.53

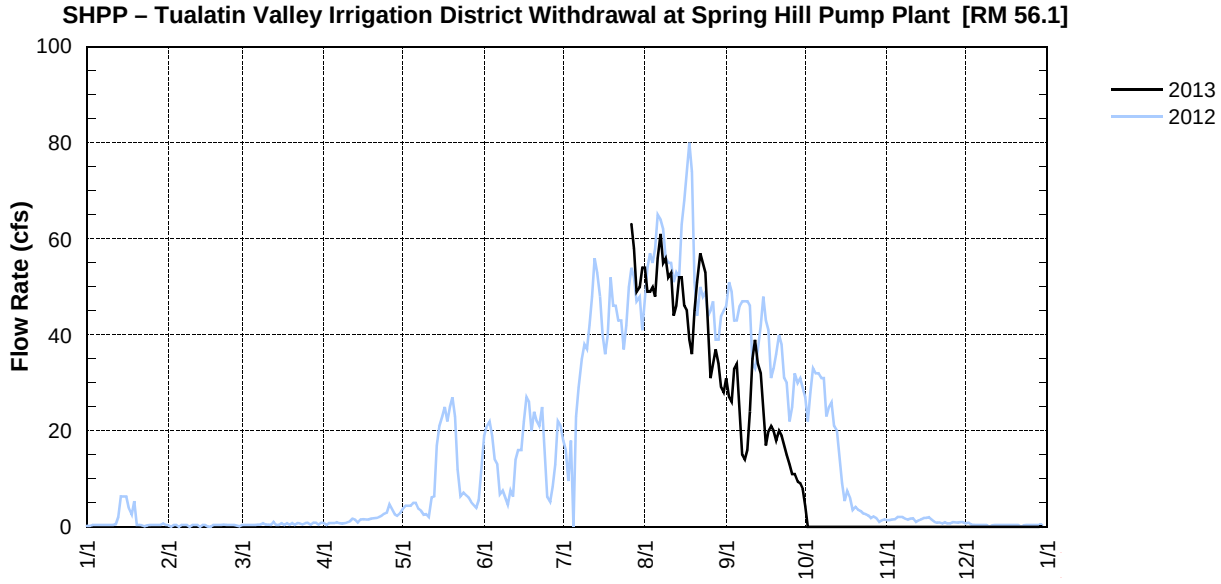


SHPP – TVID WITHDRAWAL AT SPRING HILL PUMP PLANT [RM 56.1]

Source Agency: US Geological Survey, Oregon Water Science Center

Day	2013 — Mean Daily Water Withdrawal in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL*	AUG*	SEP*†	OCT†	NOV†	DEC†
1								49.0	27.0	0.0	0.0	0.0
2								49.0	26.0	0.0	0.0	0.0
3								50.0	33.0	0.0	0.0	0.0
4								48.0	34.0	0.0	0.0	0.0
5								56.0	23.0	0.0	0.0	0.0
6								61.0	15.0	0.0	0.0	0.0
7								55.0	14.0	0.0	0.0	0.0
8								56.0	16.0	0.0	0.0	0.0
9								52.0	24.0	0.0	0.0	0.0
10								53.0	35.0	0.0	0.0	0.0
11								44.0	39.0	0.0	0.0	0.0
12								46.0	34.0	0.0	0.0	0.0
13								52.0	32.0	0.0	0.0	0.0
14								52.0	25.0	0.0	0.0	0.0
15								46.0	17.0	0.0	0.0	0.0
16								45.0	20.0	0.0	0.0	0.0
17								39.0	21.0	0.0	0.0	0.0
18								36.0	20.0	0.0	0.0	0.0
19								45.0	18.0	0.0	0.0	0.0
20								51.0	20.0	0.0	0.0	0.0
21								57.0	19.0	0.0	0.0	0.0
22								55.0	17.0	0.0	0.0	0.0
23								53.0	15.0	0.0	0.0	0.0
24								42.0	13.0	0.0	0.0	0.0
25								31.0	11.0	0.0	0.0	0.0
26							63.0	34.0	11.0	0.0	0.0	0.0
27							58.0	37.0	9.5	0.0	0.0	0.0
28							49.0	34.0	9.1	0.0	0.0	0.0
29		—					50.0	29.0	7.9	0.0	0.0	0.0
30		—					54.0	28.0	4.3	0.0	0.0	0.0
31		—		—		—	54.0	31.0	—	0.0	—	0.0

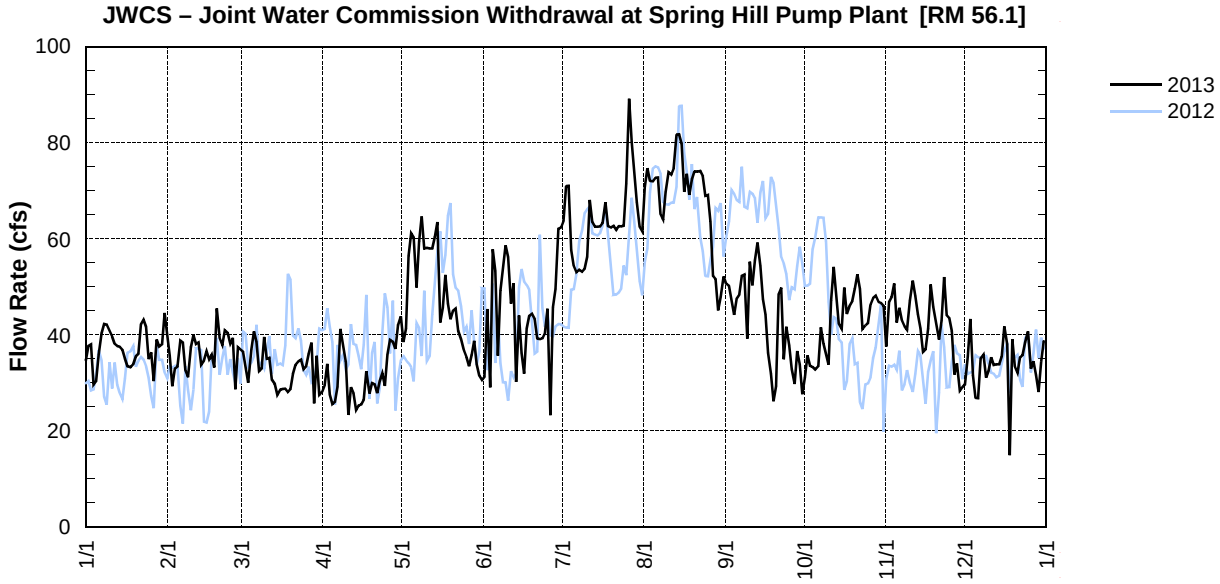
No data available for Jan 1-Jul 25; measurement from flow meter July 26 to September 19; measurement from sum of pump rates September 20-December 31



JWCS – JOINT WATER COMMISSION WITHDRAWAL AT SPRING HILL PUMP PLANT [RM 56.1]

Source Agency: Joint Water Commission

Day	2013 — Calculated Average Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	34.7	40.2	36.4	29.6	38.5	31.2	63.8	70.8	50.6	31.1	37.5	29.6
2	37.7	35.7	33.2	34.0	41.4	45.4	71.0	74.7	50.2	35.8	46.9	35.6
3	38.1	29.3	30.1	27.6	56.4	29.0	71.0	72.0	47.3	33.6	47.9	43.4
4	29.6	33.0	37.0	25.6	61.1	57.9	57.7	72.0	44.2	33.3	50.7	31.6
5	30.4	33.4	40.7	26.0	60.3	53.3	54.3	72.7	47.6	32.8	42.6	26.9
6	36.0	38.8	38.6	29.2	49.8	35.6	53.0	72.8	48.4	33.5	45.6	26.8
7	40.3	38.4	32.5	41.2	59.5	49.2	53.6	65.1	52.3	41.6	43.0	35.2
8	42.2	32.5	33.0	38.0	64.7	54.2	53.2	64.0	52.5	38.2	41.8	35.9
9	42.1	31.2	39.6	34.4	58.0	58.7	53.8	69.8	39.2	36.0	41.1	31.1
10	40.8	37.4	35.1	23.3	58.1	56.2	56.2	73.9	55.2	33.8	47.2	32.6
11	39.7	39.9	35.2	29.1	58.0	46.5	68.1	73.4	50.3	47.3	51.3	35.3
12	38.1	38.1	30.6	27.9	58.0	50.8	63.5	74.7	55.6	54.2	48.1	33.7
13	37.7	38.4	29.8	24.4	60.4	30.2	62.5	81.7	59.3	47.8	44.3	33.9
14	37.5	33.9	27.6	25.3	63.5	44.0	62.5	81.8	54.3	42.2	41.4	33.9
15	36.9	34.8	28.6	25.5	42.6	36.2	62.6	79.8	47.5	41.2	36.4	35.5
16	35.1	36.6	28.7	26.6	45.6	31.9	63.3	69.8	44.3	49.9	37.0	41.8
17	33.4	34.9	28.8	32.5	52.5	41.4	67.6	73.6	36.2	44.4	41.3	38.0
18	33.3	35.9	28.1	27.8	46.5	43.9	62.6	69.2	32.0	46.1	50.5	14.9
19	33.9	33.2	28.7	30.0	43.3	44.4	62.4	72.4	26.2	47.1	45.8	39.1
20	35.5	45.5	31.9	29.7	45.1	43.2	62.7	74.0	29.3	49.7	42.4	33.3
21	36.1	39.2	33.8	27.8	45.5	39.2	61.8	74.0	48.6	52.7	39.1	32.1
22	42.3	37.9	34.5	30.4	40.8	39.1	62.6	74.1	49.9	49.6	43.0	35.3
23	43.2	40.9	34.9	32.0	39.1	39.3	62.6	73.0	35.0	41.2	52.1	35.8
24	41.7	40.4	32.9	29.4	36.8	40.5	62.7	69.0	41.7	41.9	44.1	38.5
25	35.0	38.2	33.4	35.9	35.3	45.5	71.4	69.2	37.9	42.5	43.6	40.7
26	36.4	39.4	36.1	39.0	33.5	23.2	89.2	63.6	32.9	46.4	40.8	33.0
27	30.4	28.7	38.4	38.6	35.8	45.8	80.2	52.3	29.8	47.7	31.7	34.5
28	39.1	37.3	25.7	37.1	38.8	49.5	73.7	51.6	36.7	48.2	34.1	31.6
29	37.6	—	35.7	42.0	33.8	62.1	67.6	45.1	33.9	46.8	28.4	28.1
30	38.0	—	27.5	43.9	31.4	62.4	62.5	47.9	27.7	46.6	29.2	34.4
31	44.6	—	28.2	—	30.6	—	61.5	52.2	—	46.1	—	38.6

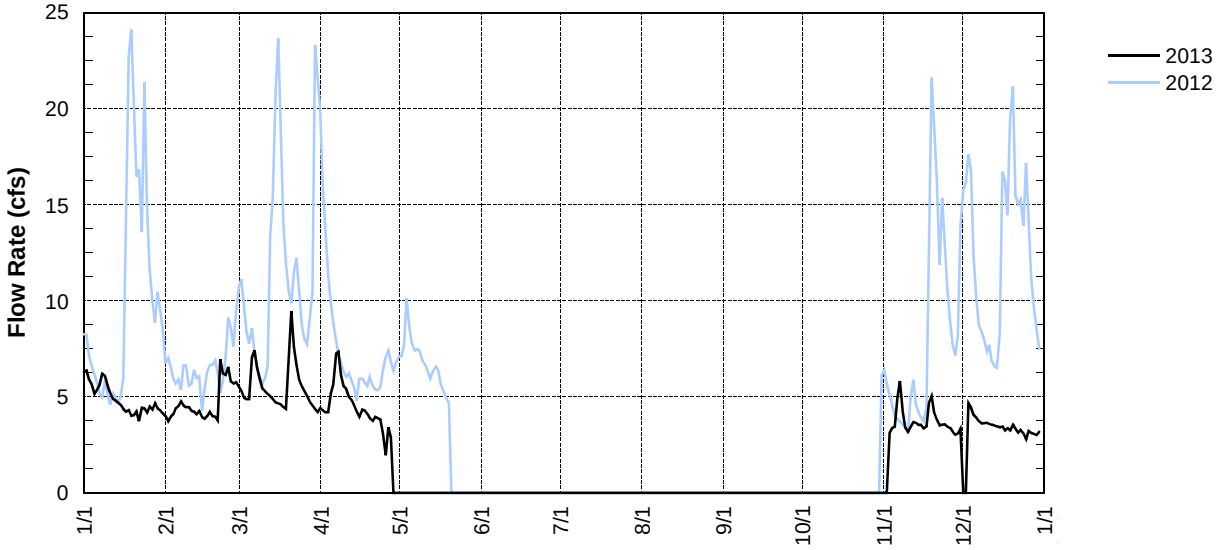


CWSFG – CLEAN WATER SERVICES FOREST GROVE WASTEWATER TREATMENT FACILITY DISCHARGE [RM 55.2]

Source Agency: Clean Water Services

Day	2013 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6.3	4.0	5.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	6.4	3.7	5.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	5.9	4.0	4.9	4.2	0.0	0.0	0.0	0.0	0.0	0.0	3.1	4.7
4	5.6	4.1	4.9	5.2	0.0	0.0	0.0	0.0	0.0	0.0	3.4	4.5
5	5.2	4.4	7.1	5.7	0.0	0.0	0.0	0.0	0.0	0.0	3.4	4.1
6	5.4	4.5	7.4	7.3	0.0	0.0	0.0	0.0	0.0	0.0	4.9	3.9
7	5.6	4.8	6.5	7.4	0.0	0.0	0.0	0.0	0.0	0.0	5.8	3.7
8	6.2	4.5	6.0	6.2	0.0	0.0	0.0	0.0	0.0	0.0	4.2	3.6
9	6.1	4.5	5.4	5.6	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.6
10	5.6	4.5	5.3	5.4	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.6
11	5.2	4.3	5.2	5.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.6
12	4.9	4.2	5.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.6
13	4.8	4.1	4.9	4.6	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.5
14	4.7	4.3	4.7	4.2	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.5
15	4.6	3.9	4.7	4.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.4
16	4.4	3.9	4.6	4.3	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.5
17	4.2	4.0	4.5	4.3	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.3
18	4.3	4.2	4.4	4.1	0.0	0.0	0.0	0.0	0.0	0.0	4.7	3.4
19	4.0	4.0	6.7	3.9	0.0	0.0	0.0	0.0	0.0	0.0	5.1	3.3
20	4.0	4.0	9.5	3.8	0.0	0.0	0.0	0.0	0.0	0.0	4.2	3.5
21	4.2	3.8	7.6	4.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.3
22	3.7	7.0	6.7	3.9	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.1
23	4.4	6.2	5.9	3.8	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.3
24	4.4	6.1	5.5	3.1	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.1
25	4.2	6.5	5.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	2.8
26	4.5	5.8	5.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.2
27	4.3	5.7	4.8	2.9	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.1
28	4.7	5.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.1
29	4.4	—	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.0
30	4.3	—	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.2
31	4.1	—	4.4	—	0.0	—	0.0	0.0	—	0.0	—	3.1

CWSFG –Clean Water Services Forest Grove Wastewater Treatment Plant Discharge [RM 55.2]

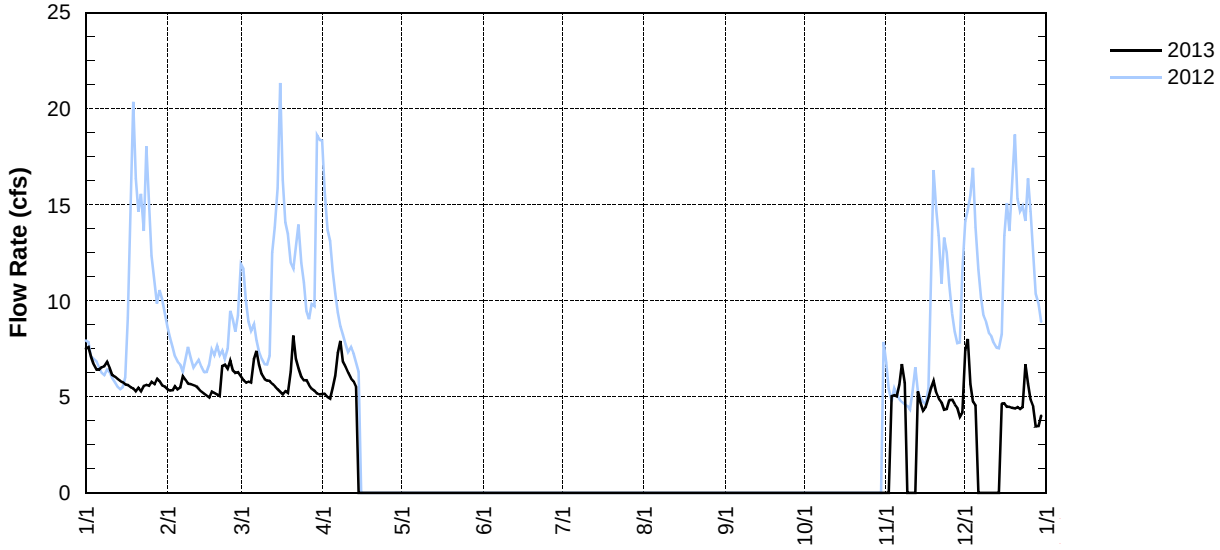


CWSHB – CLEAN WATER SERVICES HILLSBORO WASTEWATER TREATMENT FACILITY DISCHARGE [RM 43.8]

Source Agency: Clean Water Services

Day	2013 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	7.5	5.4	5.9	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
2	7.6	5.3	5.8	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
3	7.1	5.3	5.8	4.9	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.7
4	6.7	5.6	5.7	5.5	0.0	0.0	0.0	0.0	0.0	0.0	5.1	4.7
5	6.4	5.4	7.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.5
6	6.4	5.5	7.4	7.3	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0
7	6.5	6.1	6.7	7.9	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0
8	6.6	5.9	6.2	6.8	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0
9	6.8	5.7	5.9	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	6.5	5.7	5.9	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	6.2	5.6	5.8	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	6.1	5.6	5.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	5.9	5.4	5.6	5.5	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0
14	5.8	5.3	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0
15	5.8	5.2	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.6
16	5.6	5.1	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.7
17	5.6	5.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.5
18	5.5	5.3	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.5
19	5.4	5.2	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	4.4
20	5.3	5.1	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	4.4
21	5.5	5.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.5
22	5.3	6.6	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.4
23	5.6	6.7	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.5
24	5.6	6.5	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	6.7
25	5.6	6.9	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	5.7
26	5.8	6.4	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.9
27	5.7	6.2	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	4.5
28	6.0	6.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	3.5
29	5.8	—	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	3.5
30	5.6	—	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	4.0
31	5.6	—	5.1	—	0.0	—	0.0	0.0	—	0.0	—	4.3

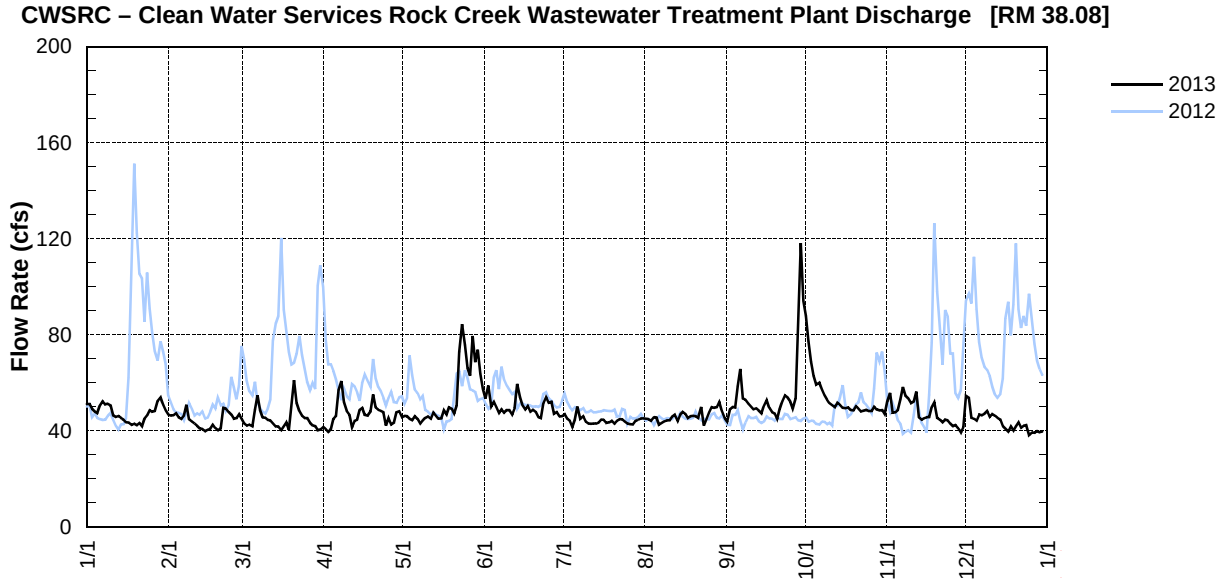
CWSHB – Clean Water Services Hillsboro Wastewater Treatment Plant Discharge [RM 43.8]



CWSRC – CLEAN WATER SERVICES ROCK CREEK WASTEWATER TREATMENT FACILITY DISCHARGE [RM 38.08]

Source Agency: Clean Water Services

Day	2013 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	51.2	46.9	43.1	40.8	46.2	53.4	47.0	45.2	43.9	88.0	52.3	54.7
2	51.2	46.3	42.2	39.6	46.1	58.9	45.2	44.9	49.1	77.4	55.8	53.8
3	49.3	46.5	42.6	40.7	45.1	50.2	44.2	44.3	50.0	68.9	47.6	45.4
4	48.1	47.4	42.0	45.1	44.4	52.1	41.6	45.7	49.8	62.9	47.7	45.1
5	47.4	45.7	49.0	46.3	46.1	49.8	44.6	45.6	58.7	59.3	48.6	44.2
6	50.4	45.1	54.9	56.9	44.9	47.5	50.1	42.7	65.9	60.2	53.1	46.8
7	52.3	46.4	48.7	60.8	43.1	49.1	45.1	43.4	53.6	57.1	58.2	46.5
8	51.1	51.0	45.6	52.0	44.4	47.6	46.1	44.0	53.1	54.8	54.7	47.2
9	51.3	44.7	45.5	48.3	45.5	48.6	43.9	44.4	51.5	53.0	53.6	48.3
10	50.6	43.9	44.5	46.9	46.0	48.7	43.1	44.4	50.2	51.4	51.6	45.9
11	46.5	43.1	44.3	41.7	45.1	46.7	42.9	45.9	49.1	50.7	52.2	47.1
12	45.9	42.1	43.3	44.2	47.8	49.6	42.9	46.8	49.4	49.8	56.4	46.4
13	46.2	41.0	41.8	44.7	46.4	59.5	43.1	44.2	48.4	51.7	45.6	45.5
14	45.5	40.8	41.8	48.8	45.1	54.0	43.5	46.7	47.3	51.0	44.6	44.8
15	44.8	39.9	40.3	49.6	45.2	50.5	44.7	47.8	50.7	49.6	45.4	42.0
16	43.7	40.5	42.0	46.6	48.5	48.9	44.6	47.1	52.9	49.4	45.7	40.9
17	43.5	40.8	43.6	46.3	46.9	50.4	43.3	45.3	49.7	49.9	45.7	39.8
18	42.5	42.6	40.5	48.3	49.9	47.9	43.7	46.1	47.9	48.8	50.0	41.9
19	43.0	41.3	51.2	55.2	49.4	48.8	44.3	46.2	47.4	48.5	52.0	40.1
20	42.4	40.3	61.2	49.8	47.2	47.8	43.1	46.2	45.0	50.2	45.4	42.0
21	43.3	41.0	51.7	48.8	50.4	45.8	44.3	45.3	49.2	49.4	44.6	43.6
22	42.0	49.6	48.1	48.3	72.9	45.3	45.0	50.0	52.4	48.1	43.6	41.4
23	45.2	49.3	46.3	47.8	84.5	51.7	44.8	42.3	54.9	48.4	44.6	42.2
24	46.5	47.8	45.4	42.3	75.8	54.1	43.8	44.8	54.0	48.9	44.4	42.4
25	48.7	46.8	45.4	45.4	66.3	51.7	43.1	47.7	52.2	48.2	42.9	38.3
26	48.0	45.1	43.4	42.7	63.1	52.0	42.7	50.0	49.4	48.3	41.9	39.3
27	48.2	45.3	42.2	43.5	79.6	47.2	42.6	49.6	53.6	50.1	42.4	39.1
28	52.4	46.9	42.0	47.9	68.7	47.9	44.1	49.9	90.4	48.9	41.3	40.0
29	54.0	—	40.3	48.3	73.8	46.0	44.6	52.1	118.2	48.5	39.3	39.5
30	50.9	—	40.5	45.8	63.9	46.1	45.2	48.3	94.3	48.6	41.8	39.8
31	48.5	—	41.6	—	57.5	—	45.2	45.4	—	47.0	—	43.4

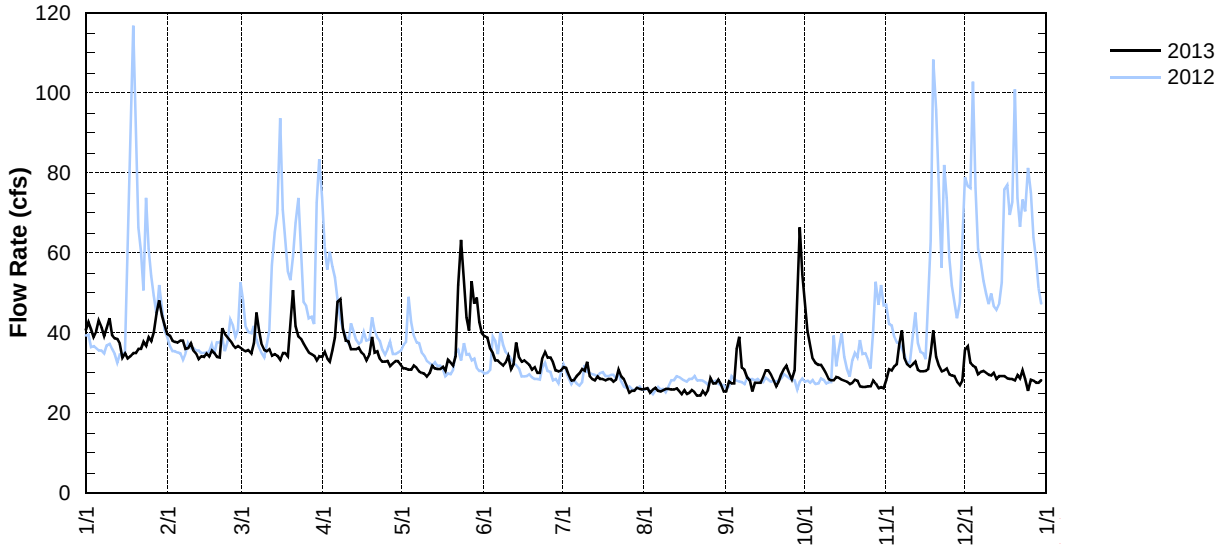


CWSDH – CLEAN WATER SERVICES DURHAM WASTEWATER TREATMENT FACILITY DISCHARGE [RM 9.33]

Source Agency: Clean Water Services

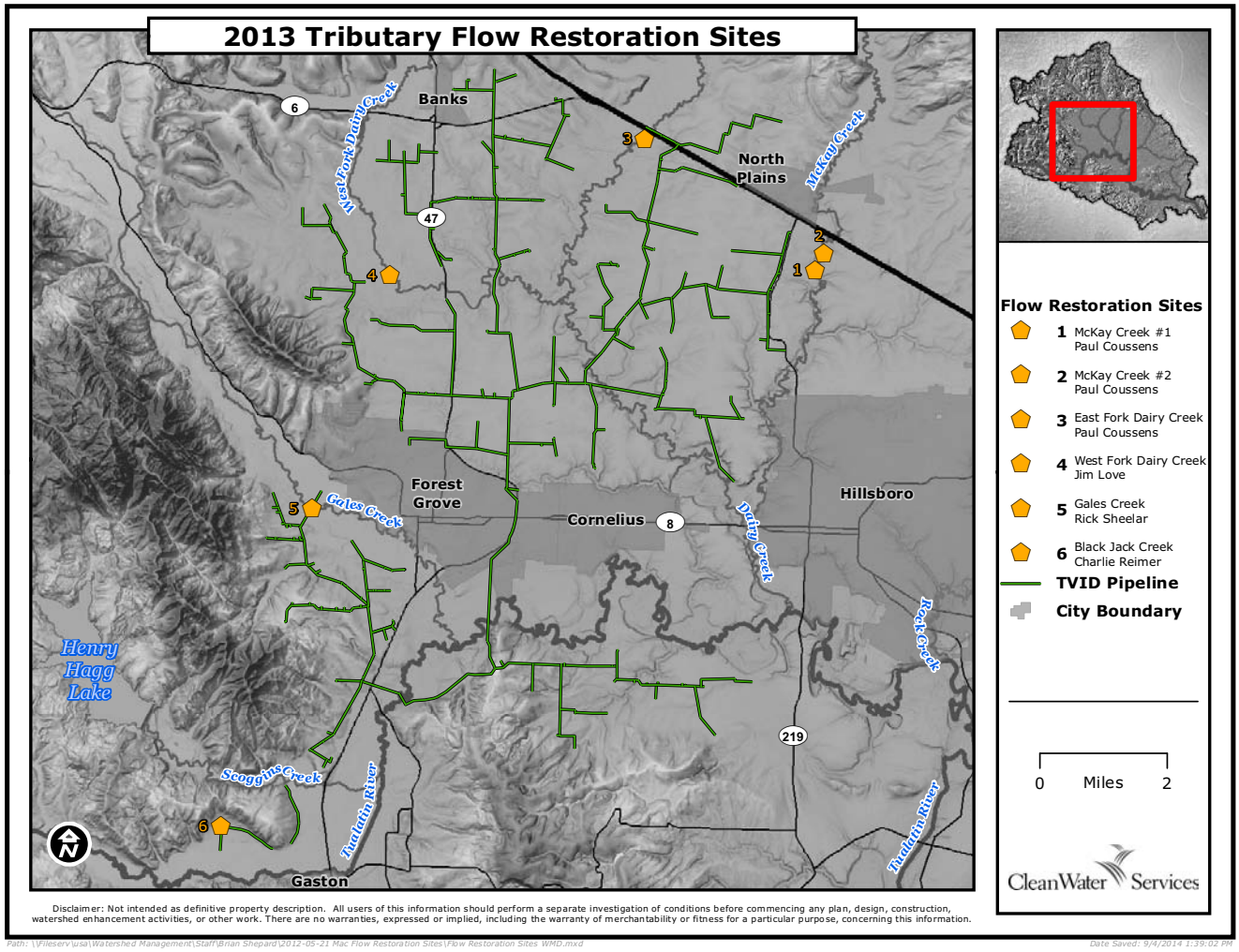
Day	2013 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	40.8	39.8	35.7	35.3	31.1	39.1	31.4	26.0	25.4	47.6	28.2	35.7
2	42.7	39.3	35.4	33.6	31.1	38.8	31.2	26.1	27.8	40.5	30.9	36.7
3	41.0	38.1	35.7	32.8	30.8	36.0	29.5	25.1	27.4	37.1	30.6	32.5
4	39.0	37.7	34.8	35.6	30.8	35.0	28.0	25.8	27.4	33.6	31.7	31.9
5	40.4	37.6	37.4	38.8	31.9	33.1	28.2	26.3	36.0	32.5	32.2	31.4
6	43.2	38.1	45.2	47.8	31.2	33.1	29.1	25.5	39.0	32.0	37.3	29.7
7	41.3	38.1	40.7	48.4	30.3	32.3	29.9	25.4	31.2	32.0	40.7	30.2
8	39.1	36.0	37.1	41.0	30.0	31.9	30.9	25.7	30.8	30.9	33.6	30.5
9	41.2	36.2	35.7	38.1	29.9	32.6	30.5	26.0	28.8	29.9	32.2	30.0
10	43.6	37.4	35.4	37.9	29.1	34.3	32.8	26.0	28.2	28.5	31.6	29.5
11	39.4	35.6	35.9	35.9	30.0	30.9	29.2	25.8	25.4	28.2	32.2	29.4
12	38.7	34.8	34.3	35.9	31.9	32.2	28.5	25.8	27.5	28.2	32.8	30.0
13	38.5	33.4	34.7	35.9	31.1	37.6	28.2	26.1	27.5	28.9	30.8	28.5
14	37.3	34.2	34.3	36.4	30.9	33.9	29.1	25.5	27.5	28.8	30.3	29.2
15	33.9	34.0	33.3	35.1	30.9	32.8	28.5	24.8	28.9	28.3	30.3	29.2
16	34.8	34.8	35.0	34.5	31.6	33.1	28.5	25.7	30.6	28.0	30.5	29.2
17	33.6	34.2	35.0	33.1	30.5	32.5	28.2	24.8	30.6	27.8	30.9	28.6
18	34.2	35.6	34.2	34.7	33.3	32.0	28.5	25.1	29.5	27.2	35.0	28.5
19	35.0	35.0	41.8	39.0	32.6	30.8	28.5	25.7	28.2	27.5	40.7	28.5
20	35.0	34.0	50.7	35.1	31.9	31.4	27.8	25.2	26.6	28.3	34.0	28.2
21	36.0	33.9	41.6	35.4	34.2	30.0	28.3	24.3	27.8	28.0	31.7	29.5
22	36.0	41.2	39.0	33.6	52.0	30.0	30.8	24.3	29.7	26.6	30.3	28.6
23	37.7	39.8	38.5	32.8	63.3	33.9	29.1	25.5	30.9	26.5	30.6	30.6
24	36.7	38.8	37.3	32.8	52.8	35.3	28.5	24.6	31.9	26.5	31.1	28.5
25	38.8	38.1	36.2	33.0	43.8	33.9	26.9	25.7	29.9	26.6	29.7	25.5
26	37.9	37.0	35.1	31.7	40.5	33.9	25.1	28.6	28.3	26.6	29.4	28.3
27	40.1	36.4	34.7	32.3	52.9	32.6	25.5	27.4	30.6	28.2	29.2	28.0
28	45.0	36.7	34.3	33.0	47.3	30.6	25.5	27.4	52.4	27.4	27.8	27.5
29	48.1	—	33.1	33.0	48.9	30.3	26.3	28.3	66.4	26.1	26.9	27.5
30	44.2	—	34.2	32.0	42.7	30.6	26.0	27.2	54.6	26.5	28.2	28.2
31	41.9	—	34.0	—	39.9	—	25.8	25.4	—	26.1	—	27.5

CWSDH – Clean Water Services Durham Wastewater Treatment Plant Discharge [RM 9.33]



RELEASES FOR CLEAN WATER SERVICES TRIBUTARY FLOW AUGMENTATION AT TVID RELEASE POINTS

Map #	Site Name	River Mile	Start Date	End Date	Average Flow (cfs)	Total Release (ac-ft)
6	Black Jack Creek	—	7/9/2013	9/1/2013	1.0	144
3	East Fork Dairy Creek	4.9	7/9/2013	9/1/2013	0.9	125
4	West Fork Dairy Creek	5.2	7/9/2013	9/1/2013	0.8	118
5	Gales Creek	5.0	7/9/2013	9/1/2013	2.0	287
1	McKay Creek #1	6.5	7/9/2013	9/1/2013	3.0	444
2	McKay Creek #2	7.0				



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Appendix C

Scoggins Reservoir Operations Monthly Records

The information presented here regarding water allocations is provisional. Final allocations for municipal use can be found in the Appendix E of this report.

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
January 2013

Source: Tualatin Valley Irrigation District

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	52	79	4	135	290.43	39590	-881	-444	677	233	370	1140	1990	3890	4971	5590	0.00	37	29	0	0	0	0	0
2	48	71	4	123	289.47	38649	-941	-474	636	162	327	1060	1840	3600	4460	5130	0.00	41	27	0	0	0	0	0
3	44	65	3	112	288.57	37774	-875	-441	596	155	289	983	1690	3330	4166	4640	0.00	43	27	0	0	0	0	0
4	41	61	3	105	287.74	36974	-800	-403	556	153	262	922	1530	3080	3788	4180	0.00	39	27	0	0	0	0	0
5	38	54	3	95	286.96	36228	-746	-376	515	139	243	878	1410	2830	3429	3760	0.01	43	35	0	0	0	0	0
6	38	53	3	94	286.27	35573	-655	-330	473	143	223	838	1260	2580	3085	3360	0.00	40	32	0	0	0	0	0
7	41	61	3	105	285.64	34979	-594	-299	433	134	229	797	1130	2340	2670	3050	0.15	46	33	0	0	0	0	0
8	48	72	3	123	285.18	34548	-431	-217	398	181	417	816	1070	2120	2483	2730	0.15	53	43	0	0	0	0	0
9	73	129	4	206	284.96	34342	-206	-104	378	274	741	870	1120	1910	2212	2430	0.17	52	41	0	0	0	0	0
10	69	114	4	187	284.86	34249	-93	-47	366	319	607	900	1300	1910	2174	2290	0.03	45	33	0	0	0	0	0
11	65	96	3	164	284.84	34230	-19	-10	247	237	445	813	1330	1970	2228	2280	0.01	41	29	0	0	0	0	0
12	53	82	3	138	284.78	34174	-56	-28	246	218	352	738	1190	1940	2212	2280	0.00	41	23	0	0	0	0	0
13	48	72	3	123	284.69	34090	-84	-42	246	204	295	681	1000	1820	2086	2210	0.00	32	22	0	0	0	0	0
14	41	64	2	107	284.58	33988	-102	-51	245	194	257	634	886	1640	1877	2020	0.00	28	23	0	0	0	0	0
15	40	59	2	101	284.50	33913	-75	-38	211	173	231	563	795	1490	1694	1830	0.00	32	27	0	0	0	0	0
16	32	54	2	88	284.49	33904	-9	-5	165	160	208	479	691	1354	1542	1680	0.00	40	32	0	0	0	0	0
17	30	50	2	82	285.20	34566	662	334	98	432	194	390	588	1220	1389	1520	0.00	34	29	0	0	0	0	0
18	29	47	2	78	285.25	34613	47	24	98	122	185	369	537	1100	1261	1370	0.00	43	28	0	0	0	0	0
19	28	45	2	75	285.32	34679	66	33	78	111	182	343	499	1030	1179	1250	0.01	40	25	0	0	0	0	0
20	27	42	2	71	285.39	34744	65	33	80	113	180	334	475	964	1108	1180	0.00	38	24	0	0	0	0	0
21	24	41	2	67	285.47	34819	75	38	80	118	173	326	462	917	1054	1120	0.00	45	23	0	0	0	0	0
22	21	39	2	62	285.53	34876	57	29	80	109	163	313	435	880	1008	1080	0.00	43	24	0	0	0	0	0
23	20	38	2	60	285.58	34923	47	24	78	102	154	302	419	830	956	1040	0.01	43	26	0	0	0	0	0
24	21	37	2	60	285.67	35007	84	42	78	120	154	306	425	868	984	1060	0.16	37	32	0	0	0	0	0
25	22	39	2	63	285.71	35045	38	19	78	97	161	305	415	866	993	1100	0.10	40	32	0	0	0	0	0
26	24	41	2	67	285.83	35158	113	57	47	104	182	295	399	900	1034	1110	0.05	47	36	0	0	0	0	0
27	24	41	2	67	285.96	35280	122	62	47	109	197	317	455	893	1019	1100	0.20	44	32	0	0	0	0	0
28	22	40	2	64	286.08	35394	114	57	47	104	181	299	423	896	1025	1140	0.02	42	32	0	0	0	0	0
29	29	48	2	79	286.21	35516	122	62	47	109	230	326	434	958	1072	1250	0.12	45	36	0	0	0	0	0
30	30	50	2	82	286.39	35687	171	86	29	115	235	325	477	1110	1242	1310	0.00	49	41	0	0	0	0	0
31	32	54	2	88	286.55	35838	151	76	30	106	259	340	465	1090	1235	1340	0.00	52	41	0	0	0	0	0
TOTALS																								
cfs	1154	1838	79	3071				-2336	7383	5047	8326	18002	27140	52326	61636	67430	1.19 inches			0	0	0	0	0
ac-ft	2289	3646	157	6091			-4633	-4633	14644	10011	16515	35707	53832	103789	122255	133747	MAX	53	43	0	0	0	0	0
																	MIN	28	22	0	0	0	0	0

Water storage elevation ± to fill curve:	**-0.36**
Water storage in ac-ft ± to fill curve:	**-346**
Percentage of full reservoir:	**67.2%**

SNOTEL Summary for Water Year 2013

Updated: January 31, 2013

SECO W/Y pc:	47.9"	sno depth/water content	0
SDMO W/Y pc:	58.4"	sno depth/water content	22"/10.8"

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	0	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	0	13500
planning purposes only	Other	0	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
February 2013

Source: Tualatin Valley Irrigation District

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	26	54	2	82	286.72	36000	162	82	30	112	237	329	470	1050	1187	1300	0.00	52	39	0	0	0	0	0
2	24	50	2	76	286.88	36152	152	77	30	107	207	303	435	993	1139	1240	0.00	54	36	0	0	0	0	0
3	22	47	2	71	287.01	36276	124	63	30	93	185	284	418	929	1071	1180	0.00	56	33	0	0	0	0	0
4	21	45	2	68	287.17	36428	152	77	30	107	170	270	388	875	1008	1120	0.00	43	37	0	0	0	0	0
5	21	45	2	68	287.31	36562	134	68	30	98	162	301	407	834	956	1070	0.02	50	38	0	0	0	0	0
6	27	58	3	88	287.51	36753	191	96	31	127	225	352	444	853	972	1060	0.23	50	42	0	0	0	0	0
7	30	64	3	97	287.73	36964	211	106	31	137	270	399	525	917	1030	1080	0.14	49	37	0	0	0	0	0
8	28	61	3	92	287.96	37185	221	111	31	142	239	398	574	1030	1141	1140	0.07	46	30	0	0	0	0	0
9	26	56	3	85	288.15	37368	183	92	31	123	201	364	530	982	1124	1200	0.00	50	30	0	0	0	0	0
10	25	52	2	79	288.32	37532	164	83	31	114	180	344	498	905	1043	1140	0.02	44	38	0	0	0	0	0
11	24	48	2	74	288.48	37687	155	78	31	109	164	327	461	850	979	1070	0.00	45	38	0	0	0	0	0
12	21	45	2	68	288.63	37832	145	73	31	104	154	314	434	804	924	1020	0.01	47	40	0	0	0	0	0
13	20	42	2	64	288.75	37948	116	58	31	89	152	309	410	782	897	981	0.00	54	43	0	0	0	0	0
14	20	41	2	63	288.86	38055	107	54	31	85	151	308	402	748	863	949	0.00	53	36	0	0	0	0	0
15	20	39	2	61	289.02	38210	155	78	20	98	143	288	385	727	839	918	0.00	52	38	0	0	0	0	0
16	19	38	2	59	289.15	38337	127	64	20	84	136	280	361	691	806	893	0.00	61	39	0	0	0	0	0
17	19	36	2	57	289.27	38454	117	59	21	80	132	274	353	683	794	863	0.02	52	31	0	0	0	0	0
18	18	35	2	55	289.40	38580	126	64	20	84	125	265	339	659	772	845	0.00	47	32	0	0	0	0	0
19	19	36	2	57	289.55	38727	147	74	21	95	125	265	339	643	750	834	0.07	45	34	0	0	0	0	0
20	17	32	2	51	289.64	38815	88	44	21	65	112	251	311	658	766	828	0.00	51	31	0	0	0	0	0
21	17	32	2	51	289.74	38912	97	49	21	70	111	249	307	610	724	816	0.02	46	33	0	0	0	0	0
22	18	33	2	53	289.87	39040	128	65	21	86	132	270	326	597	703	776	0.06	45	37	0	0	0	0	0
23	45	70	3	118	290.31	39472	432	218	21	239	414	480	710	950	1008	1000	0.97	48	34	0	0	0	0	0
24	38	61	3	102	290.55	39708	236	119	21	140	279	400	689	1250	1371	1290	0.02	47	34	0	0	0	0	0
25	47	72	3	122	290.84	39995	287	145	21	166	270	362	602	1200	1360	1440	0.47	50	37	0	0	0	0	0
26	45	68	3	116	291.13	40282	287	145	21	166	307	447	769	1250	1411	1420	0.08	48	31	0	0	0	0	0
27	41	63	2	106	291.42	40570	288	145	21	166	259	422	739	1350	1504	1520	0.00	47	33	0	0	0	0	0
28	41	63	2	106	291.70	40849	279	141	21	162	237	402	687	1330	1486	1550	0.15	49	38	0	0	0	0	0
TOTALS																								
cfs	739	1386	64	2189				2526	720	3246	5479	9257	13313	25150	28628	30543	2.35 inches			0	0	0	0	0
ac-ft	1466	2749	127	4342			5011	5011	1428	6439	10868	18361	26406	49885	56784	60582	MAX	61	43	0	0	0	0	0
																	MIN	43	30	0	0	0	0	0

Water storage elevation ± to fill curve:	**-6.5**
Water storage in ac-ft ± to fill curve:	**-6700**
Percentage of full reservoir:	**76.6%**

SNOTEL Summary for Water Year 2013

Updated: February 28, 2013

SECO W/Y pc:	51.2"	sno depth/water content	0
SDMO W/Y pc:	63.9"	sno depth/water content	18"/11.9"

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	0	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	0	13500
planning purposes only	Other	0	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
March 2013

Source: Tualatin Valley Irrigation District

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	41	63	2	106	291.92	41068	219	110	21	131	319	443	683	1300	1450	1520	0.04	49	38	1	0	0	0	0
2	35	60	2	97	292.16	41309	241	122	21	143	306	425	681	1264	1411	1470	0.00	61	43	1	0	0	0	0
3	30	56	2	88	292.37	41519	210	106	21	127	252	368	619	1200	1350	1420	0.00	55	29	1	0	0	0	0
4	26	52	2	80	292.58	41730	211	106	21	127	216	324	546	1110	1260	1340	0.01	49	29	1	0	0	0	0
5	26	50	2	78	292.76	41911	181	91	21	112	193	326	507	1020	1159	1240	0.15	56	32	1	0	0	0	0
6	30	56	2	88	293.02	42174	263	133	21	154	225	365	564	1100	1227	1280	0.43	43	39	1	0	0	0	0
7	30	53	2	85	293.26	42417	243	123	21	144	222	377	605	1290	1432	1470	0.18	45	36	1	0	0	0	0
8	28	49	2	79	293.43	42589	172	87	21	108	202	331	544	1260	1428	1530	0.00	54	32	1	0	0	0	0
9	26	46	2	74	293.62	42782	193	97	21	118	183	302	487	1140	1314	1440	0.00	59	30	1	0	0	0	0
10	25	44	2	71	293.76	42924	142	72	21	93	168	278	439	1040	1200	1330	0.00	59	33	1	0	0	0	0
11	24	40	2	66	293.93	43098	174	88	21	109	157	262	407	947	1097	1200	0.00	51	37	1	0	0	0	0
12	23	39	2	64	294.08	43251	153	77	21	98	150	250	386	890	1026	1130	0.00	54	43	1	0	0	0	0
13	22	37	2	61	294.22	43394	143	72	21	93	143	236	385	847	972	1070	0.00	61	46	1	0	0	0	0
14	22	36	2	60	294.35	43527	133	67	21	88	136	208	361	818	937	1030	0.00	63	44	1	0	0	0	0
15		35	2	58	294.46	43640	113	57	21	78	130	215	353	768	887	994	0.00	56	44	1	0	0	0	0
16	20	33	2	55	294.57	43752	112	56	21	77	122	192	324	733	853	943	0.02	60	43	1	0	0	0	0
17	22	36	2	60	294.67	43876	124	63	21	84	142	205	330	683	806	918	0.06	50	34	1	0	0	0	0
18	19	33	2	54	294.82	44009	133	67	21	88	131	190	314	682	795	869	0.01	47	31	1	0	0	0	0
19	19	32	2	53	294.90	44092	83	42	21	63	123	193	307	634	749	845	0.00	52	33	2	0	0	0	0
20	53	82	3	138	295.19	44391	299	151	22	173	238	276	372	853	919	1090	1.27	52	38	2	0	0	0	0
21	44	76	3	123	295.57	44784	393	198	21	219	448	485	765	1400	1526	1410	0.28	51	35	2	0	0	0	0
22	41	68	2	111	295.89	45116	332	167	21	188	338	451	747	1470	1662	1730	0.02	46	31	2	0	0	0	0
23	39	63	2	104	296.13	45366	250	126	21	147	267	377	668	1390	1586	1710	0.03	46	31	2	0	0	0	0
24	30	56	2	88	296.38	45627	261	132	21	153	228	326	581	1270	1456	1600	0.00	49	32	2	0	0	0	0
25	26	50	2	78	296.58	45836	209	105	21	126	201	290	520	1160	1328	1460	0.00	56	36	2	0	0	0	0
26	26	46	2	74	296.75	46014	178	90	21	111	185	280	488	1080	1227	1350	0.00	58	37	2	0	0	0	0
27	31	42	2	75	296.91	46182	168	85	21	106	170	258	444	996	1141	1250	0.00	53	40	2	0	0	0	0
28	30	39	2	71	297.07	46350	168	85	24	109	158	234	402	912	1049	1170	0.09	63	42	2	0	0	0	0
29	27	36	2	65	297.26	46550	200	101	10	111	146	205	358	852	979	1090	0.02	60	45	2	0	0	0	0
30	26	35	2	63	297.43	46729	179	90	10	100	136	194	336	765	889	1010	0.00	67	40	2	0	0	0	0
31	24	33	2	59	297.62	46930	201	101	10	111	127	182	309	709	829	936	0.00	75	41	2	0	0	0	0
TOTALS																	2.61 inches							
cfs	865	1476	64	2426				3066	622	3688	6162	9048	14832	31583	35944	38845	MAX	75	46	44	0	0	0	0
ac-ft	1716	2928	127	4812			6081	6081	1234	7315	12222	17947	29419	62645	71295	77049	MIN	43	29	87	0	0	0	0

Water storage elevation ± to fill curve:	**-4.01**
Water storage in ac-ft ± to fill curve:	**-4318**
Percentage of full reservoir:	**88.0%**

SNOTEL Summary for Water Year 2013

Updated: March 31, 2013

SECO W/Y pc:	54.2"	sno depth/water content	0
SDMO W/Y pc:	69.9"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	87	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	0	13500
planning purposes only	Other	0	

SCOGGINS DAM -- RESERVOIR OPERATIONS
April 2013

[See Appendix E for breakdown of municipal use by water provider.]

Source: Tualatin Valley Irrigation District

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	23	30	2	55	297.78	47099	169	85	10	95	118	166	289	664	776	875	0.00	72	42	2	0	0	0	1
2	0	29	2	31	297.90	47226	127	64	10	74	111	157	268	619	729	828	0.00	66	44	2	0	0	0	1
3	0	28	2	30	297.98	47311	85	43	10	53	105	147	252	576	684	776	0.00	65	39	6	0	0	0	1
4	0	27	2	29	298.08	47417	106	53	10	63	101	143	248	547	651	737	0.00	63	44	6	0	0	0	1
5	26	41	3	70	298.22	47566	149	75	10	85	119	159	280	594	690	771	0.38	59	51	7	0	0	0	1
6	0	75	4	79	298.40	47757	191	96	10	106	195	225	349	705	786	949	0.49	58	45	7	0	0	0	1
7	0	111	5	116	298.66	48035	278	140	10	150	351	355	534	1100	1166	1250	0.60	55	46	7	0	0	0	1
8	46	108	5	159	299.02	48420	385	194	10	204	445	461	780	1380	1516	1510	0.15	50	35	6	0	0	0	1
9	0	93	4	97	299.28	48699	279	141	10	151	286	383	737	1380	1550	1640	0.00	55	37	4	0	0	0	1
10	0	81	4	85	299.52	48957	258	130	10	140	214	307	612	1240	1413	1560	0.00	55	41	5	0	0	0	1
11	0	74	4	78	299.77	49226	269	136	10	146	196	279	551	1130	1285	1420	0.05	59	37	5	0	0	0	1
12	30	67	3	100	299.94	49410	184	93	10	103	174	245	471	999	1150	1280	0.00	55	33	5	0	0	0	1
13	0	63	3	66	300.11	49594	184	93	14	107	160	230	432	896	1034	1160	0.01	52	39	4	0	0	0	1
14	0	59	3	62	300.25	49745	151	76	14	90	161	226	398	855	981	1070	0.00	48	40	4	0	0	0	1
15	26	58	3	87	300.41	49919	174	88	13	101	153	215	394	804	924	1030	0.12	50	36	4	0	0	0	1
16	0	54	3	57	300.55	50071	152	77	14	91	139	196	359	765	882	968	0.03	55	34	4	0	0	0	1
17	0	50	3	53	300.66	50191	120	61	14	75	131	184	316	701	816	918	0.00	58	34	5	0	0	0	1
18	0	48	3	51	300.78	50321	130	66	14	80	122	175	357	635	710	845	0.00	56	40	5	0	0	0	1
19	25	48	3	76	300.92	50471	150	76	14	90	114	164	339	630	689	851	0.07	58	45	5	0	0	0	1
20	0	45	3	48	301.02	50583	112	56	13	69	114	163	340	656	736	863	0.02	57	47	5	0	0	0	1
21	0	42	3	45	301.13	50703	120	61	14	75	107	152	314	576	663	816	0.00	57	42	5	0	0	0	1
22	0	41	3	44	301.20	50780	77	39	14	53	101	145	302	532	613	743	0.00	55	37	5	0	0	0	1
23	0	39	3	42	301.31	50900	120	61	14	75	94	136	274	503	585	705	0.00	64	34	5	0	0	0	1
24	18	38	2	58	301.43	51032	132	67	14	81	90	130	264	461	543	657	0.00	69	37	5	0	0	0	1
25	0	36	2	38	301.55	51163	131	66	14	80	85	122	261	432	510	615	0.00	75	41	10	0	0	0	1
26	0	36	2	38	301.65	51273	110	55	14	69	80	115	234	411	485	584	0.00	77	40	15	0	0	0	1
27	0	34	2	36	301.74	51372	99	50	14	64	76	109	219	375	451	552	0.00	78	41	26	0	0	0	1
28	0	33	2	35	301.80	51438	66	33	14	47	72	102	206	347	423	522	0.00	68	47	22	0	0	0	1
29	16	33	2	51	301.85	51493	55	28	14	42	71	103	202	343	415	502	0.01	63	48	21	0	0	0	1
30	16	32	2	50	301.84	51482	-11	-6	14	8	69	99	185	327	405	487	0.00	54	34	20	0	0	0	1
TOTALS																								
cfs	226	1553	87	1866				2295	370	2665	4354	5793	10767	21183	24261	27484	1.93 inches			232	0	0	0	30
ac-ft	448	3080	173	3701			4552	4552	734	5286	8636	11490	21356	42016	48122	54515	MAX	78	51	460	0	0	0	60
																	MIN	48	33					

Water storage elevation ± to fill curve:	**-1.62**
Water storage in ac-ft ± to fill curve:	**-1797**
Percentage of full reservoir:	**96.5%**

SNOTEL Summary for Water Year 2013

Updated: April 30, 2013

SECO W/Y pc:	58.0"	sno depth/water content	0
SDMO W/Y pc:	76.2"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	547	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	0	13500
planning purposes only	Other	60	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
May 2013

Source: Tualatin Valley Irrigation District

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	15	31	2	48	301.85	51493	11	6	14	20	66	96	109	302	380	459	0.00	57	31	0	0	0	0	1
2	14	30	2	46	301.93	51581	88	44	14	58	64	94	116	279	349	432	0.00	69	39	0	0	0	0	1
3	14	29	2	45	302.04	51702	121	61	14	75	60	91	88	275	341	410	0.00	79	61	0	0	0	0	2
4	13	28	2	43	302.10	51768	66	33	50	83	57	133	94	232	307	393	0.00	78	47	13	0	0	34	2
5	13	28	2	43	302.07	51735	-33	-17	76	59	54	130	136	233	302	360	0.00	82	55	20	0	0	50	2
6	13	27	2	42	302.02	51691	-44	-22	76	54	52	128	134	238	315	364	0.00	83	47	20	0	0	50	2
7	12	26	2	40	301.97	51625	-66	-33	76	43	65	139	128	233	304	360	0.00	83	45	20	0	0	50	2
8	12	25	2	39	301.91	51559	-66	-33	76	43	64	137	116	226	302	356	0.00	76	46	20	0	0	50	2
9	12	25	2	39	301.87	51515	-44	-22	52	30	62	119	103	211	284	348	0.00	70	48	20	0	0	32	2
10	11	24	2	37	301.87	51515	0	0	52	52	60	115	85	196	273	336	0.00	81	48	20	0	0	32	2
11	11	24	2	37	301.79	51427	-88	-44	134	90	57	174	148	178	259	321	0.00	82	55	48	0	0	32	2
12	11	23	2	36	301.64	51262	-165	-83	134	51	56	174	163	227	293	314	0.00	83	58	64	0	0	32	2
13	10	23	2	35	301.50	51109	-153	-77	134	57	57	176	178	248	317	368	0.01	69	53	65	0	0	32	2
14	11	18	2	31	301.29	50878	-231	-116	140	24	59	180	159	264	345	384	0.04	65	41	60	0	0	48	2
15	10	17	2	29	301.14	50714	-164	-83	132	49	53	167	168	235	335	380	0.00	65	45	61	0	0	40	2
16	10	19	2	31	301.00	50561	-153	-77	108	31	74	171	170	211	335	368	0.10	57	50	57	0	0	18	2
17	10	19	2	31	300.90	50452	-109	-55	108	53	75	178	199	287	380	376	0.13	60	42	58	0	0	18	1
18	9	18	2	29	300.87	50420	-32	-16	50	34	72	115	142	301	407	427	0.16	61	42	44	0	0	18	1
19	10	20	2	32	300.87	50420	0	0	37	37	90	135	167	297	404	478	0.17	55	48	19	0	0	18	1
20	9	17	2	28	300.88	50430	10	5	37	42	75	123	145	297	412	445	0.00	63	40	19	0	0	18	1
21	9	17	2	28	300.93	50485	55	28	29	57	71	113	128	244	350	427	0.03	72	47	20	0	0	10	1
22	9	16	2	27	300.85	50398	-87	-44	34	-10	80	123	133	257	375	468	0.00	56	42	20	0	0	10	1
23	24	32	3	59	300.88	50430	32	16	28	44	190	174	176	610	704	962	1.03	50	43	20	0	0	3	1
24	20	33	3	56	300.97	50529	99	50	14	64	201	223	294	1080	1320	1340	0.44	52	46	6	0	0	3	1
25	16	27	3	46	301.09	50660	131	66	14	80	166	209	308	952	1270	1400	0.11	58	47	0	0	0	3	1
26	16	28	3	47	301.22	50802	142	72	14	86	143	181	250	686	960	1130	0.32	64	49	0	0	0	3	1
27	20	33	4	57	301.35	50944	142	72	14	86	123	163	236	564	785	936	0.46	63	50	0	0	0	3	1
28	23	42	5	70	301.50	51109	165	83	14	97	204	237	361	757	963	994	0.14	63	50	0	0	0	3	1
29	32	56	5	93	301.67	51295	186	94	14	108	164	190	282	821	1060	1100	0.56	62	49	0	0	0	0	1
30	24	45	5	74	301.82	51460	165	83	14	97	167	213	343	891	1160	1150	0.00	60	48	0	0	0	0	1
31	20	38	4	62	301.93	51581	121	61	14	75	143	187	297	763	1030	1080	0.09	60	45	0	0	0	0	2
TOTALS																	3.79 inches							
cfs	443	838	79	1360				49.91	1717	1767	2924	4788	5556	12595	16621	18666	MAX	83	61	694	0	0	610	46
ac-ft	879	1662	157	2698			99	99	3406	3505	5800	9497	11020	24982	32968	37024	MIN	50	31	1377	0	0	1210	91

Water storage elevation ± to fill curve:	**-1.57**
Water storage in ac-ft ± to fill curve:	**-1742**
Percentage of full reservoir:	**96.7%**

SNOTEL Summary for Water Year 2013

Uptdated: May 31, 2013

SECO W/Y pc:	62.7"	sno depth/water content	0
SDMO W/Y pc:	82.6"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	1924	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	1210	12290.065
planning purposes only	Other	151	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
June 2013

Source: Tualatin Valley Irrigation District

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	19	35	4	58	302.04	51702	121	61	14	75	119	157	242	625	862	943	0.00	66	44	0		0	0	2
2	17	32	3	52	302.16	51835	133	67	14	81	99	137	208	504	711	805	0.00	73	49	0		0	0	2
3	16	29	3	48	302.23	51912	77	39	14	53	88	127	185	420	601	694	0.00	69	44	0		0	0	2
4	15	27	2	44	302.31	52000	88	44	14	58	80	115	141	383	538	610	0.00	75	42	0		0	0	2
5	14	25	2	41	302.39	52089	89	45	14	59	69	102	117	291	430	542	0.00	84	51	0		0	0	2
6	13	24	2	39	302.45	52155	66	33	14	47	63	96	94	240	369	464	0.00	82	52	0		0	0	2
7	12	22	2	36	302.49	52199	44	22	14	36	58	86	70	236	347	406	0.00	83	48	0		0	0	2
8	10	21	2	33	302.45	52155	-44	-22	73	51	55	126	124	176	287	376	0.00	78	44	13	0	0	50	2
9	10	21	2	33	302.39	52089	-66	-33	73	40	51	121	109	189	294	340	0.00	79	46	20	0	0	50	2
10	10	20	2	32	302.31	52000	-89	-45	73	28	49	119	114	188	292	340	0.00	72	41	20	0	0	50	2
11	10	19	2	31	302.26	51945	-55	-28	57	29	71	126	112	173	282	336	0.00	66	47	20	0	0	40	2
12	9	18	2	29	302.22	51901	-44	-22	41	19	68	115	108	182	281	325	0.00	62	48	18	0	0	23	2
13	9	20	2	31	302.20	51879	-22	-11	45	34	70	119	109	292	392	352	0.25	62	50	20	0	0	23	2
14	9	19	2	30	302.18	51857	-22	-11	45	34	69	121	147	438	589	502	0.29	62	43	20	0	0	23	2
15	9	18	2	29	302.20	51879	22	11	34	45	66	109	124	300	458	547	0.00	68	44	20	0	0	23	2
16	8	16	2	26	302.24	51923	44	22	35	57	61	103	109	227	359	459	0.00	79	47	20	0	0	13	2
17	8	16	2	26	302.24	51923	0	0	35	35	60	102	120	208	319	388	0.00	73	49	20	0	0	13	2
18	8	16	2	26	302.23	51912	-11	-6	35	29	59	100	87	172	285	356	0.00	72	46	20	0	0	13	2
19	8	16	2	26	302.15	51824	-88	-44	96	52	59	145	168	157	255	321	0.02	65	48	55	0	0	13	2
20	8	16	2	26	302.02	51680	-144	-73	95	22	58	145	152	231	331	325	0.01	65	52	54	0	0	13	2
21	8	14	2	24	301.92	51570	-110	-55	89	34	56	138	148	222	335	368	0.00	67	51	55	0	0	8	2
22	7	14	2	23	301.84	51482	-88	-44	89	45	56	137	149	197	306	360	0.00	68	47	56	0	0	8	2
23	7	14	2	23	301.77	51405	-77	-39	87	48	53	134	142	189	292	348	0.00	78	56	54	0	0	8	2
24	8	18	2	28	301.70	51328	-77	-39	89	50	64	145	169	238	335	410	0.16	67	54	51	0	0	8	2
25	8	19	2	29	301.61	51229	-99	-50	95	45	69	156	159	332	483	468	0.08	64	56	48	0	0	16	2
26	8	18	2	28	301.55	51163	-66	-33	85	52	66	148	170	297	430	502	0.10	66	57	39	0	0	16	2
27	7	16	2	25	301.48	51087	-76	-38	84	46	60	141	163	301	430	464	0.02	70	63	41	0	0	16	2
28	7	14	2	23	301.42	51021	-66	-33	85	52	55	137	147	246	368	436	0.01	76	56	43	0	0	16	3
29	6	13	2	21	301.33	50922	-99	-50	108	58	50	147	110	238	357	393	0.00	91	61	52	0	0	32	3
30	6	12	2	20	301.22	50802	-120	-61	107	46	48	145	96	194	308	372	0.00	87	59	52	0	0	32	3
TOTALS																	0.94 inches							
cfs	294	582	64	940				-393	1753	1360	1949	3799	4093	8086	11926	13552	MAX	91	63	811	0	0	507	63
ac-ft	583	1154	127	1864			-779	-779	3477	2698	3866	7535	8118	16039	23655	26880	MIN	62	41	1609	0	0	1006	125

Water storage elevation ± to fill curve:	**-2.28**
Water storage in ac-ft ± to fill curve:	**-2521**
Percentage of full reservoir:	**95.3%**

SNOTEL Summary for Water Year 2013

Uptdated: June 30, 2013

SECO W/Y pc:	67.2"	sno depth/water content	0
SDMO W/Y pc:	84.7"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS

These allocations, amounts used and remaining are provisional and subject to daily changes as the WS elevation rises and falls. These numbers are for planning purposes only.

	USED	REMAINING
TVID	3533	
CWS	0	12615
LO	0	500
MUNI	2216	11284
Other	276	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
July 2013

Source: Tualatin Valley Irrigation District

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	5	11	2	18	301.11	50682	-120	-61	110	49	44	139	93	172	275	333	0.00	93	62	56	0	0	32	3
2	4	10	2	16	300.91	50463	-219	-110	160	50	44	181	105	140	245	306	0.00	90	59	81	20	0	40	3
3	5	10	2	17	300.46	49973	-490	-247	189	-58	43	207	121	141	237	275	0.00	87	53	104	20	0	45	3
4	5	9	2	16	300.18	49670	-303	-153	183	30	40	198	132	148	241	296	0.00	83	47	104	20	0	40	3
5	5	10	2	17	299.90	49367	-303	-153	183	30	41	198	153	160	251	306	0.00	73	46	104	20	0	40	3
6	4	9	2	15	299.67	49118	-249	-126	159	33	42	178	127	158	256	321	0.00	75	47	96	20	0	25	3
7	4	9	2	15	299.44	48871	-247	-125	159	34	41	178	125	140	237	317	0.00	78	50	96	20	0	25	3
8	5	9	2	16	299.22	48634	-237	-119	159	40	40	177	122	140	233	303	0.00	80	48	96	20	0	25	3
9	4	8	2	14	298.99	48388	-246	-124	155	31	38	171	102	129	224	296	0.00	83	54	93	20	0	25	3
10	4	8	2	14	298.77	48152	-236	-119	155	36	37	169	91	109	203	278	0.00	88	50	93	20	0	25	3
11	4	7	2	13	298.49	47853	-299	-151	184	33	36	196	114	107	194	258	0.00	78	46	95	30	3	40	3
12	4	7	2	13	298.19	47534	-319	-161	183	22	37	197	124	115	208	249	0.00	75	43	88	40	3	36	3
13	4	7	1	12	297.90	47226	-308	-155	183	28	56	194	125	116	205	246	0.00	70	43	91	40	3	34	3
14	4	7	1	12	297.62	46930	-296	-149	183	34	53	193	116	114	209	246	0.00	79	48	91	40	3	34	3
15	4	7	1	12	297.34	46634	-296	-149	182	33	52	195	118	118	205	246	0.00	85	49	90	40	3	34	3
16	4	6	1	11	297.05	46329	-305	-154	192	38	43	201	107	108	201	249	0.00	85	54	96	45	3	34	3
17	4	7	1	12	296.73	45993	-336	-169	203	34	44	212	118	101	191	239	0.00	87	56	100	45	3	40	3
18	4	7	1	12	296.42	45668	-325	-164	197	33	44	207	130	114	197	246	0.00	77	50	100	45	3	34	3
19	4	6	1	11	296.13	45366	-302	-152	192	40	44	201	115	117	207	252	0.00	83	50	95	45	3	34	4
20	4	6	1	11	295.82	45043	-323	-163	197	34	41	199	109	107	196	255	0.00	84	49	95	50	3	34	4
21	3	5	1	9	295.50	44711	-332	-167	197	30	41	198	118	105	196	252	0.00	84	47	97	50	3	34	4
22	3	5	1	9	295.19	44391	-320	-161	197	36	40	197	107	112	203	252	0.00	85	48	97	50	3	34	4
23	3	5	1	9	294.89	44081	-310	-156	190	34	42	190	96	105	195	242	0.00	84	52	90	50	3	34	4
24	3	5	1	9	294.55	43732	-349	-176	210	34	40	210	111	96	187	233	0.00	91	53	105	55	3	34	4
25	3	4	1	8	294.21	43384	-348	-175	209	34	50	220	114	101	190	227	0.00	90	52	105	55	3	34	4
26	3	4	1	8	293.82	42986	-398	-201	229	28	50	244	107	104	195	227	0.00	88	49	109	55	3	50	4
27	3	4	1	8	293.43	42589	-397	-200	221	21	50	234	100	91	181	224	0.00	89	46	103	60	3	44	4
28	3	4	1	8	293.05	42204	-385	-194	221	27	51	237	118	93	181	215	0.00	81	45	106	60	3	40	4
29	3	5	1	9	292.67	41821	-383	-193	221	28	52	238	139	112	196	221	0.00	75	50	105	60	3	40	4
30	3	4	1	8	292.34	41489	-332	-167	203	36	51	219	120	120	209	239	0.00	79	51	100	60	3	28	4
31	3	4	1	8	292.03	41178	-311	-157	182	25	50	196	98	111	201	249	0.00	82	53	97	50	3	20	4
TOTALS																	0.00 inches							
cfs	118	209	43	370				-4852	5788	936	1377	6174	3575	3704	6549	8098	MAX	93	62	2978	1205	63	1068	106
ac-ft	234	415	85	734			-9624	-9624	11480	1856	2731	12246	7091	7347	12990	16062	MIN	70	43	5907	2390	125	2118	210

Water storage elevation ± to fill curve:	**-11.47**
Water storage in ac-ft ± to fill curve:	**-12145**
Percentage of full reservoir:	**77.2%**

SNOTEL Summary for Water Year 2013

Updated: July 31, 2013

SECO W/Y pc:	67.6"	sno depth/water content	0
SDMO W/Y pc:	84.8"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	9439	
remaining are provisional and subject	CWS	2390	10225
to daily changes as the WS elevation	LO	125	375
rises and falls. These numbers are for	MUNI	4334	9166
planning purposes only	Other	486	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
August 2013

Source: Tualatin Valley Irrigation District

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	3	5	1	9	291.73	40879	-299	-151	189	38	51	203	106	96	186	249	0.00	78	56	93	50	3	30	4
2	4	5	1	10	291.42	40570	-309	-156	189	33	52	206	104	105	192	246	0.00	68	52	87	50	3	35	4
3	4	5	1	10	291.11	40262	-308	-155	188	33	53	206	102	102	191	252	0.00	70	52	86	50	3	35	4
4	3	4	1	8	290.81	39965	-297	-150	188	38	50	203	116	102	191	249	0.00	81	55	88	50	3	35	4
5	3	4	1	8	290.51	39669	-296	-149	188	39	49	201	98	105	195	252	0.00	88	56	88	50	3	35	4
6	3	3	1	7	290.17	39334	-335	-169	207	38	48	222	102	92	183	249	0.00	90	48	108	50	3	35	4
7	2	3	1	6	289.82	38991	-343	-173	201	28	47	211	103	105	182	233	0.00	92	53	112	50	3	26	4
8	2	3	1	6	289.48	38658	-333	-168	201	33	46	212	108	108	185	230	0.00	85	57	106	50	3	26	4
9	3	3	1	7	289.13	38317	-341	-172	201	29	46	213	98	108	180	233	0.00	86	56	101	50	3	32	4
10	3	3	1	7	288.79	37987	-330	-166	201	35	46	212	95	101	175	233	0.00	85	59	100	50	3	37	4
11	3	5	1	9	288.45	37658	-329	-166	200	34	49	213	99	98	175	230	0.00	81	57	97	50	3	37	4
12	3	4	1	8	288.10	37320	-338	-170	200	30	50	218	125	115	186	233	0.00	74	59	98	50	3	37	4
13	3	4	1	8	287.75	36984	-336	-169	200	31	48	215	102	120	201	246	0.00	78	51	90	50	3	45	4
14	3	3	1	7	287.41	36658	-326	-164	199	35	47	214	97	104	187	257	0.00	86	54	90	50	3	45	4
15	3	4	1	8	287.08	36343	-315	-159	200	41	49	215	95	97	175	246	0.08	82	58	90	50	3	45	4
16	3	5	1	9	286.77	36047	-296	-149	184	35	50	202	115	106	180	239	0.01	75	60	86	50	3	32	4
17	3	4	1	8	286.48	35772	-275	-139	179	40	48	193	103	122	196	246	0.00	84	55	87	40	3	37	4
18	3	3	1	7	286.17	35479	-293	-148	179	31	47	190	98	114	191	258	0.00	83	54	88	40	3	37	4
19	3	3	1	7	285.86	35186	-293	-148	178	30	46	190	110	112	186	258	0.00	83	53	87	40	3	37	4
20	2	2	1	5	285.54	34885	-301	-152	178	26	49	191	78	98	185	249	0.00	81	48	89	40	3	37	4
21	2	2	1	5	285.20	34566	-319	-161	191	30	48	201	86	85	161	236	0.00	82	53	102	40	3	37	4
22	2	2	1	5	284.85	34239	-327	-165	200	35	45	208	86	86	165	224	0.00	90	54	101	50	3	37	4
23	2	2	1	5	284.49	33904	-335	-169	200	31	47	209	93	90	167	175	0.00	83	55	102	50	3	37	3
24	3	3	1	7	284.16	33598	-306	-154	191	37	49	202	99	96	172	182	0.00	75	58	96	50	3	32	3
25	3	3	1	7	283.82	33284	-314	-158	189	31	49	204	121	105	180	188	0.00	73	50	94	50	3	32	3
26	3	4	1	8	283.49	32980	-304	-153	189	36	51	204	140	134	203	201	0.02	69	57	93	50	3	32	3
27	3	5	1	9	283.25	32759	-221	-111	152	41	53	172	111	168	230	252	0.13	75	58	82	40	3	15	3
28	3	5	1	9	283.07	32594	-165	-83	126	43	53	150	94	163	260	272	0.12	79	60	76	20	3	15	3
29	3	7	1	11	282.89	32429	-165	-83	116	33	50	140	97	126	213	275	0.03	78	61	74	10	3	15	3
30	3	8	1	12	282.72	32274	-155	-78	107	29	52	134	99	160	246	246	0.40	74	60	71	10	3	8	3
31	3	6	1	10	282.49	32064	-210	-106	140	34	58	168	108	134	216	252	0.00	78	52	71	30	3	24	3
TOTALS																	0.79 inches							
cfs	89	122	31	242				-4595	5651	1056	1526	6122	3188	3457	5935	7391	MAX	92	61	2833	1360	93	999	115
ac-ft	177	242	61	480			-9114	-9114	11209	2095	3027	12143	6323	6857	11772	14660	MIN	68	48	5619	2698	184	1982	228

Water storage elevation ± to fill curve:	**-21.01**
Water storage in ac-ft ± to fill curve:	**-21259**
Percentage of full reservoir:	**60.1%**

SNOTEL Summary for Water Year 2013

Uptdated: August 31, 2013

SECO W/Y pc:	68.8"	sno depth/water content	0
SDMO W/Y pc:	86.7"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	15059	
remaining are provisional and subject	CWS	5088	7527
to daily changes as the WS elevation	LO	309	191
rises and falls. These numbers are for	MUNI	6315	7185
planning purposes only	Other	714	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
September 2013

Source: Tualatin Valley Irrigation District

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	2	5	1	8	282.26	31855	-209	-105	140	35	56	165	119	145	221	230	0.00	89	54	73	30	3	23	3
2	2	5	1	8	282.02	31638	-217	-109	140	31	56	165	115	126	205	230	0.00	82	56	73	30	3	23	3
3	3	5	1	9	281.79	31429	-209	-105	140	35	56	168	113	122	199	233	0.10	78	57	72	30	3	23	3
4	2	5	1	8	281.58	31240	-189	-95	115	20	55	151	97	154	240	246	0.00	80	58	53	30	3	18	3
5	3	5	1	9	281.42	31096	-144	-73	99	26	56	139	85	123	203	252	0.02	77	59	51	15	3	18	3
6	5	13	2	20	281.29	30979	-117	-59	93	34	68	150	113	343	383	678	0.63	69	60	35	15	3	18	2
7	4	8	2	14	281.12	30826	-153	-77	98	21	62	151	143	408	691	716	0.03	68	57	41	15	3	23	2
8	3	6	1	10	280.96	30683	-143	-72	97	25	58	145	115	192	392	589	0.00	80	56	44	15	3	23	2
9	3	5	1	9	280.79	30530	-153	-77	97	20	56	142	106	138	271	380	0.00	84	54	45	15	3	23	2
10	2	5	1	8	280.60	30361	-169	-85	105	20	56	145	79	150	232	292	0.00	86	56	47	15	3	30	2
11	2	4	1	7	280.36	30147	-214	-108	137	29	55	173	125	108	190	252	0.00	92	60	65	35	3	25	2
12	2	4	1	7	280.10	29916	-231	-116	149	33	54	183	123	121	195	215	0.00	97	54	67	45	3	25	2
13	2	4	1	7	279.82	29668	-248	-125	149	24	55	182	119	130	201	215	0.00	85	55	62	45	3	30	2
14	3	5	1	9	279.55	29430	-238	-120	149	29	58	187	125	126	200	224	0.00	75	59	60	45	3	30	2
15	3	5	1	9	279.27	29183	-247	-125	148	23	57	185	141	140	207	224	0.00	82	59	59	45	3	30	2
16	3	6	1	10	278.99	28937	-246	-124	148	24	59	189	167	162	234	239	0.00	67	58	58	45	3	30	2
17	2	6	1	9	278.79	28762	-175	-88	110	22	55	151	129	217	298	275	0.01	68	53	49	35	3	12	2
18	2	5	1	8	278.60	28597	-165	-83	99	16	55	143	126	172	266	306	0.00	68	47	49	25	3	12	2
19	2	5	1	8	278.46	28475	-122	-62	73	11	58	124	90	150	232	275	0.00	71	44	43	15	3	2	2
20	2	4	1	7	278.29	28327	-148	-75	93	18	49	131	126	132	216	252	0.00	78	47	44	25	3	12	2
21	2	6	1	9	278.12	28179	-148	-75	93	18	54	137	94	138	216	239	0.05	68	49	30	25	3	24	2
22	3	7	2	12	277.96	28040	-139	-70	93	23	53	138	92	176	251	272	0.21	65	52	28	25	3	26	2
23	5	20	2	27	277.86	27954	-86	-43	93	50	74	162	129	173	253	356	0.42	62	53	10	25	3	26	2
24	3	11	2	16	277.77	27876	-78	-39	60	21	65	126	126	250	322	317	0.07	61	51	16	5	3	18	2
25	4	12	2	18	277.70	27816	-60	-30	61	31	70	130	115	306	410	468	0.27	58	49	14	5	3	18	2
26	3	10	1	14	277.64	27764	-52	-26	33	7	60	98	83	238	354	441	0.11	60	41	18	5	3	5	2
27	4	9	1	14	277.60	27729	-35	-18	33	15	61	98	74	166	267	356	0.15	65	43	24	5	3	0	2
28	28	72	4	104	277.64	27764	35	18	55	73	112	143	92	234	284	393	1.06	58	47	25	5	3	14	1
29	28	120	4	152	278.09	28153	389	196	55	251	487	513	665	1080	1230	1260	2.01	61	52	25	5	3	21	1
30	63	203	8	274	279.17	29095	942	475	55	530	995	645	1170	2140	2570	2730	1.96	56	50	25	5	3	21	1
TOTALS																	7.10 inches							
cfs	195	580	49	824				-1497	3010	1513	3165	5359	4996	8260	11433	13155	MAX	97	60	1305	680	90	603	62
ac-ft	387	1150	97	1634			-2969	-2969	5970	3001	6278	10630	9910	16384	22677	26093	MIN	56	41	2588	1349	179	1196	123

Water storage elevation ± to fill curve:	**-24.33**
Water storage in ac-ft ± to fill curve:	**-24228**
Percentage of full reservoir:	**54.6%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2013
Uptdated: September 30, 2013

SECO W/Y pc:	80.10"	sno depth/water content	0
SDMO W/Y pc:	101.00"	sno depth/water content	0

RESERVOIR DELIVERY STATUS

These allocations, amounts used and remaining are provisional and subject to daily changes as the WS elevation rises and falls. These numbers are for planning purposes only

	USED	REMAINING
TVID	17647	
CWS	6436	6179
LO	488	12
MUNI	7512	5988
Other	837	

SCOGGINS DAM -- RESERVOIR OPERATIONS
October 2013

[See Appendix E for breakdown of municipal use by water provider.]

Source: Tualatin Valley Irrigation District

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	43	134	6	183	279.78	29635	540	272	27	299	513	741	1300	2350	2890	3100	0.43	60	48	5	5	3	0	1
2	28	98	4	130	280.12	29934	299	151	26	177	311	588	1140	2200	2750	2930	0.42	58	42	5	0	3	0	1
3	22	79	4	105	280.35	30138	204	103	26	129	205	385	775	1850	2360	2590	0.11	53	38	5	0	0	0	1
4	17	64	3	84	280.49	30263	125	63	26	89	149	263	501	1340	1770	2050	0.00	58	38	5	0	0	0	1
5	15	54	3	72	280.59	30352	89	45	26	71	121	207	360	914	1240	1490	0.00	66	38	5	0	0	0	1
6	13	47	3	63	280.68	30432	80	40	26	66	105	172	290	676	928	1100	0.00	71	40	5	0	0	0	1
7	11	42	3	56	280.74	30486	54	27	26	53	93	152	246	538	737	857	0.00	71	42	10	0	0	0	1
8	11	40	3	54	280.77	30513	27	14	26	40	92	148	218	447	619	716	0.00	60	46	10	0	0	0	1
9	10	37	2	49	280.79	30530	17	9	26	35	90	142	210	396	544	615	0.02	57	36	10	0	0	0	1
10	9	35	2	46	280.82	30557	27	14	26	40	80	124	197	374	506	542	0.00	63	37	10	0	0	0	1
11	8	33	2	43	280.83	30566	9	5	26	31	90	128	162	336	467	502	0.00	58	39	10	0	0	0	1
12	8	32	2	42	280.85	30584	18	9	26	35	85	123	145	275	414	454	0.04	59	40	10	0	0	0	1
13	8	30	2	40	280.85	30584	0	0	27	27	85	121	135	257	378	414	0.01	56	38	10	0	0	0	1
14	7	28	2	37	280.86	30593	9	5	26	31	81	117	147	254	351	376	0.00	64	37	10	0	0	0	1
15	7	28	2	37	280.86	30593	0	0	26	26	77	113	142	240	337	356	0.00	68	36	10	0	0	0	1
16	7	27	2	36	280.86	30593	0	0	26	26	78	113	134	231	325	336	0.00	68	37	10	0	0	0	1
17	7	25	2	34	280.85	30584	-9	-5	26	21	72	105	123	193	304	321	0.00	66	40	10	0	0	0	1
18	6	25	2	33	280.84	30575	-9	-5	26	21	71	105	115	183	256	306	0.00	69	38	10	0	0	0	1
19	6	24	2	32	280.84	30575	0	0	26	26	73	105	114	177	244	292	0.00	72	37	10	0	0	0	1
20	6	24	2	32	280.82	30557	-18	-9	26	17	70	105	111	164	237	282	0.00	70	38	10	0	0	0	1
21	6	23	2	31	280.81	30548	-9	-5	26	21	68	101	108	160	233	275	0.00	67	42	10	0	0	0	1
22	6	22	2	30	280.80	30539	-9	-5	26	21	66	97	97	149	223	268	0.00	77	43	15	0	0	0	1
23	6	22	2	30	280.79	30530	-9	-5	26	21	65	98	97	144	216	258	0.00	76	42	15	0	0	0	1
24	6	21	2	29	280.77	30513	-17	-9	26	17	67	104	117	143	211	252	0.00	74	43	15	0	0	0	1
25	5	21	2	28	280.72	30468	-45	-23	48	25	64	114	130	149	219	252	0.00	71	44	15	20	0	0	1
26	6	21	2	29	280.65	30405	-63	-32	48	16	62	113	122	155	224	255	0.00	55	45	15	20	0	0	1
27	6	21	2	29	280.59	30352	-53	-27	48	21	63	125	147	147	220	258	0.00	57	41	15	20	0	0	1
28	6	22	2	30	280.53	30298	-54	-27	48	21	67	125	134	167	244	262	0.00	58	37	15	20	0	0	1
29	6	21	2	29	280.47	30245	-53	-27	48	21	63	121	145	161	241	265	0.00	58	32	15	20	0	0	1
30	6	20	2	28	280.39	30174	-71	-36	47	11	62	118	135	160	239	265	0.00	59	31	15	20	0	0	1
31	6	20	2	28	280.34	30129	-45	-23	47	24	63	118	130	151	225	262	0.01	55	33	15	20	0	0	1
TOTALS																	1.04 inches							
cfs	314	1140	75	1529				521.3	960	1481	3251	5291	7927	15081	20152	22501	MAX	77	48	330	145	6	0	31
ac-ft	623	2261	149	3033			1034	1034	1904	2938	6448	10495	15723	29913	39971	44631	MIN	53	31	655	288	12	0	61

Water storage elevation ± to fill curve:	**-23.16**
Water storage in ac-ft ± to fill curve:	**-23194**
Percentage of full reservoir:	**56.5%**

SNOTEL Summary for Water Year 2014
Updated: October 31, 2013

SECO W/Y pc:	0.8"	sno depth/water content	0
SDMO W/Y pc:	1.7"	sno depth/water content	0

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	18302	
remaining are provisional and subject	CWS	6724	5891
to daily changes as the WS elevation	LO	500	0
rises and falls. These numbers are for	MUNI	7512	5988
planning purposes only	Other	899	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
November 2013

Source: Tualatin Valley Irrigation District

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	6	19	2	27	280.28	30076	-53	-27	47	20	63	115	135	147	219	252	0.00	60	45	10	20	0	0	1
2	10	31	3	44	280.29	30085	9	5	47	52	72	122	146	205	250	372	0.54	59	50	10	20	0	0	1
3	13	40	4	57	280.29	30085	0	0	48	48	96	148	191	298	406	414	0.29	54	38	10	20	0	0	1
4	7	28	3	38	280.25	30049	-36	-18	47	29	83	139	195	290	386	432	0.01	49	39	10	20	0	0	1
5	10	31	3	44	280.26	30058	9	5	24	29	82	115	165	298	385	532	0.09	49	43	10	0	0	0	1
6	11	29	3	43	280.28	30076	18	9	24	33	96	131	181	306	415	502	0.08	54	48	10	0	0	0	1
7	23	40	4	67	280.40	30183	107	54	25	79	102	137	194	410	511	667	0.71	54	48	8	0	0	0	1
8	26	68	4	98	280.53	30298	115	58	25	83	268	289	383	629	802	816	0.27	55	43	8	0	0	0	1
9	19	53	4	76	280.63	30388	90	45	25	70	181	241	384	721	904	875	0.00	51	39	8	0	0	0	1
10	15	45	4	64	280.71	30459	71	36	24	60	132	184	289	613	819	905	0.00	49	41	8	0	0	0	1
11	13	40	4	57	280.76	30504	45	23	25	48	109	157	229	477	654	776	0.00	58	43	8	0	0	0	1
12	13	48	4	65	280.81	30548	44	22	25	47	101	145	210	397	535	667	0.31	60	44	8	0	0	0	1
13	13	41	4	58	280.87	30602	54	27	25	52	100	148	244	419	553	625	0.01	53	43	8	0	0	0	1
14	12	38	3	53	280.91	30638	36	18	25	43	92	137	208	397	531	595	0.00	50	39	8	0	0	0	1
15	12	37	3	52	280.94	30665	27	14	25	39	88	131	203	348	467	552	0.03	49	36	8	0	0	0	1
16	16	47	4	67	281.00	30718	53	27	25	52	121	148	207	330	439	512	0.12	50	38	8	0	0	0	1
17	18	50	4	72	281.05	30763	45	23	25	48	132	165	247	355	448	482	0.02	50	39	8	0	0	0	1
18	27	76	4	107	281.16	30862	99	50	25	75	233	245	310	377	484	502	0.04	51	45	8	0	0	0	1
19	57	159	5	221	281.54	31204	342	172	27	199	494	406	539	542	649	694	0.79	52	47	8	0	0	0	1
20	41	118	5	164	281.99	31610	406	205	27	232	390	477	903	1180	1330	1030	0.02	50	30	8	0	0	0	1
21	30	91	4	125	282.28	31873	263	133	26	159	227	348	731	1300	1590	1480	0.00	47	32	8	0	0	0	1
22	26	75	4	105	282.48	32055	182	92	27	119	168	264	517	1060	1350	1460	0.00	48	24	8	0	0	0	0
23	22	65	4	91	282.64	32201	146	74	26	100	139	219	392	808	1060	1210	0.00	50	27	8	0	0	0	0
24	20	58	3	81	282.77	32320	119	60	27	87	121	191	340	665	874	987	0.00	54	27	8	0	0	0	0
25	18	52	3	73	282.87	32411	91	46	27	73	106	171	298	569	750	839	0.00	52	27	8	0	0	0	0
26	17	47	3	67	282.96	32493	82	41	27	68	96	157	260	502	659	716	0.00	52	30	8	0	0	0	0
27	15	42	3	60	283.04	32567	74	37	27	64	88	147	252	448	582	636	0.00	46	30	8	0	0	0	0
28	14	39	3	56	283.10	32622	55	28	27	55	82	138	246	414	543	589	0.00	54	29	8	0	0	0	0
29	13	37	3	53	283.16	32677	55	28	27	55	76	130	232	381	498	542	0.00	53	29	8	0	0	0	1
30	12	36	3	51	283.21	32722	45	23	27	50	72	123	219	373	484	497	0.00	44	32	8	0	0	0	1
TOTALS																	3.33 inches							
cfs	549	1580	107	2236				1307	858	2165	4210	5668	9050	15259	19577	21158	MAX	60	50	252	80	0	0	23
ac-ft	1089	3134	212	4435			2593	2593	1702	4295	8351	11242	17951	30266	38831	41967	MIN	44	24	500	159	0	0	46

Water storage elevation ± to fill curve:	**-0.29**
Water storage in ac-ft ± to fill curve:	**-267**
Percentage of full reservoir:	**61.4%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2014
Updated: November 30, 2013

SECO W/Y pc:	7.4"	sno depth/water content	0
SDMO W/Y pc:	11.5"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	18802	
remaining are provisional and subject	CWS	6883	5732
to daily changes as the WS elevation	LO	500	0
rises and falls. These numbers are for	MUNI	7512	5988
planning purposes only	Other	944	

[See Appendix E for breakdown of municipal use by water provider.]

SCOGGINS DAM -- RESERVOIR OPERATIONS
December 2013

Source: Tualatin Valley Irrigation District

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	51	53	3	107	283.31	32814	92	46	27	73	73	123	214	334	434	482	0.41	54	40	0	0	0	0	0
2	105	182	5	292	284.08	33524	710	358	28	386	1095	541	723	605	668	787	1.29	56	42	0	0	0	0	0
3	58	118	5	181	284.58	33988	464	234	72	306	564	757	990	1330	1520	1110	0.03	46	32	0	0	0	0	0
4	42	93	4	139	284.75	34146	158	80	142	222	330	645	967	1380	1670	1560	0.00	43	24	0	0	0	0	0
5	34	79	4	117	284.73	34127	-19	-10	190	180	231	557	849	1270	1570	1570	0.00	37	17	0	0	0	0	0
6	30	69	3	102	284.67	34072	-55	-28	189	161	191	479	723	1110	1390	1430	0.00	33	18	0	0	0	0	0
7	27	61	3	91	284.56	33969	-103	-52	189	137	164	417	617	957	1200	1270	0.00	29	19	0	0	0	0	0
8	24	55	3	82	284.42	33839	-130	-66	189	123	152	360	521	800	1020	1100	0.00	28	11	0	0	0	0	0
9	22	50	3	75	284.27	33700	-139	-70	189	119	155	336	474	674	869	936	0.00	26	14	0	0	0	0	0
10	21	48	3	72	284.10	33546	-154	-78	188	110	117	330	449	666	830	822	0.00	28	19	0	0	0	0	0
11	20	45	3	68	283.93	33385	-161	-81	188	107	110	316	418	625	789	799	0.00	34	23	0	0	0	0	0
12	19	42	3	64	283.74	33210	-175	-88	188	100	103	302	401	579	735	754	0.00	41	23	0	0	0	0	0
13	18	42	3	63	283.73	33201	-9	-5	92	87	102	214	317	538	693	726	0.07	36	24	0	0	0	0	0
14	17	39	3	59	283.70	33173	-28	-14	92	78	96	215	306	473	611	667	0.01	42	36	0	0	0	0	0
15	17	37	3	57	283.69	33164	-9	-5	92	87	90	200	294	452	578	610	0.00	40	37	0	0	0	0	0
16	16	36	3	55	283.65	33127	-37	-19	92	73	87	193	275	431	594	578	0.00	43	35	0	0	0	0	0
17	15	36	3	54	283.61	33090	-37	-19	92	73	83	188	271	406	561	552	0.00	48	32	0	0	0	0	0
18	15	34	3	52	283.56	33044	-46	-23	92	69	82	186	274	392	543	522	0.00	35	32	0	0	0	0	0
19	14	33	3	50	283.54	33026	-18	-9	92	83	79	180	255	413	561	507	0.02	42	26	0	0	0	0	0
20	14	32	3	49	283.46	32952	-74	-37	92	55	73	171	241	370	518	507	0.04	41	30	0	0	0	0	0
21	14	34	3	51	283.44	32934	-18	-9	92	83	86	188	262	367	504	482	0.09	40	33	0	0	0	0	0
22	13	32	3	48	283.41	32906	-28	-14	92	78	78	178	253	401	546	492	0.00	50	40	0	0	0	0	0
23	13	31	3	47	283.33	32833	-73	-37	92	55	73	169	241	383	535	507	0.00	52	41	0	0	0	0	0
24	13	31	3	47	283.36	32860	27	14	47	61	78	145	219	372	518	497	0.07	52	30	0	0	0	0	0
25	12	30	3	45	283.36	32860	0	0	47	47	75	138	200	345	493	482	0.01	43	31	0	0	0	0	0
26	12	29	3	44	283.38	32878	18	9	47	56	72	134	210	318	452	445	0.00	43	30	0	0	0	0	0
27	12	28	3	43	283.40	32897	19	10	47	57	70	131	197	315	447	423	0.00	34	29	0	0	0	0	0
28	11	28	3	42	283.39	32888	-9	-5	47	42	67	127	196	305	433	414	0.00	34	29	0	0	0	0	0
29	11	28	3	42	283.39	32888	0	0	47	47	64	124	193	299	425	405	0.00	44	30	0	0	0	0	0
30	11	27	3	41	283.38	32878	-10	-5	47	42	63	122	190	291	415	397	0.00	38	33	0	0	0	0	0
31	11	27	3	41	283.37	32869	-9	-5	47	42	61	119	179	279	402	388	0.02	41	35	0	0	0	0	0
TOTALS																	2.06 inches							
cfs	712	1509	99	2320				74.11	3167	3241	4764	8285	11919	17480	22524	22221	MAX	56	42	0	0	0	0	0
ac-ft	1412	2993	196	4602			147	147	6282	6429	9449	16433	23641	34672	44676	44075	MIN	26	11	0	0	0	0	0

Water storage elevation ± to fill curve:	**-0.13**
Water storage in ac-ft ± to fill curve:	**-120**
Percentage of full reservoir:	**61.6%**

SNOTEL Summary for Water Year 2014
Updated: December 31, 2013

SECO W/Y pc:	10.5"	sno depth/water content	0
SDMO W/Y pc:	18.3"	sno depth/water content	0

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	18802	
remaining are provisional and subject	CWS	6883	5732
to daily changes as the WS elevation	LO	500	0
rises and falls. These numbers are for	MUNI	7512	5988
planning purposes only	Other	944	

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Appendix D

Barney Reservoir Operations Monthly Records

Breakdown of allocations for municipal use by water provider can be found in Appendix E of this report.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF JANUARY 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1									0	0	0	0	0	0
2	1640.8	20000	0	0.04	26	32	47.0	0.0	0	0	0	0	0	0
3									0	0	0	0	0	0
4	1640.7	20000	0	0.12	26	38	41.0	0.0	0	0	0	0	0	0
5									0	0	0	0	0	0
6									0	0	0	0	0	0
7	1640.8	20000	0	0.96	31	41	64.0	0.0	0	0	0	0	0	0
8									0	0	0	0	0	0
9	1640.9	20000	0	1.25	33	42	126.4	0.0	0	0	0	0	0	0
10	1640.9	20000	0	0.28	31	36	95.2	0.0	0	0	0	0	0	0
11									0	0	0	0	0	0
12									0	0	0	0	0	0
13									0	0	0	0	0	0
14	1640.7	20000	0	0.09	33	34	47.0	0.0	0	0	0	0	0	0
15									0	0	0	0	0	0
16	1640.7	20000	0	0.05	33	36	41.0	0.0	0	0	0	0	0	0
17									0	0	0	0	0	0
18	1640.7	20000	0	0.01	38	42	41.0	0.0	0	0	0	0	0	0
19									0	0	0	0	0	0
20									0	0	0	0	0	0
21	1640.7	20000	0	0.00	31	47	35.0	0.0	0	0	0	0	0	0
22									0	0	0	0	0	0
23	1640.7	20000	0	0.01	32	42	35.0	0.0	0	0	0	0	0	0
24									0	0	0	0	0	0
25	1640.7	20000	0	0.48	34	48	41.0	0.0	0	0	0	0	0	0
26									0	0	0	0	0	0
27									0	0	0	0	0	0
28	1640.7	20000	0	1.26	31	45	47.0	0.0	0	0	0	0	0	0
29									0	0	0	0	0	0
30	1640.8	20000	0	0.69	42	46	55.5	0.0	0	0	0	0	0	0
31									0	0	0	0	0	0
Monthly Totals			0	5.24						0		0		0
Year to Date Totals			0	5.24						0		0		0

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF FEBRUARY 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1640.8	20000	0	0.02	42	46	47.0	0.0	0	0	0	0	0	0
2									0	0	0	0	0	0
3									0	0	0	0	0	0
4	1640.7	20000	0	0.00	44	52	41.0	0.0	0	0	0	0	0	0
5									0	0	0	0	0	0
6	1640.7	20000	0	1.11	34	43	55.5	0.0	0	0	0	0	0	0
7									0	0	0	0	0	0
8	1640.7	20000	0	0.73	35	47	47.0	0.0	0	0	0	0	0	0
9									0	0	0	0	0	0
10									0	0	0	0	0	0
11	1640.7	20000	0	0.02	42	44	41.0	0.0	0	0	0	0	0	0
12									0	0	0	0	0	0
13	1640.7	20000	0	0.17	42	46	35.0	0.0	0	0	0	0	0	0
14									0	0	0	0	0	0
15	1640.7	20000	0	0.00	42	52	35.0	0.0	0	0	0	0	0	0
16									0	0	0	0	0	0
17									0	0	0	0	0	0
18									0	0	0	0	0	0
19	1640.7	20000	0	0.32	32	53	35.0	0.0	0	0	0	0	0	0
20	1640.7	20000	0	0.03	30	43	31.3	0.0	0	0	0	0	0	0
21	1640.7	20000	0	0.42	36	38	35.0	0.0	0	0	0	0	0	0
22	1640.8	20000	0	1.55	37	44	64.0	0.0	0	0	0	0	0	0
23									0	0	0	0	0	0
24									0	0	0	0	0	0
25	1640.8	20000	0	1.60	33	44	64.0	0.0	0	0	0	0	0	0
26									0	0	0	0	0	0
27	1640.7	20000	0	0.19	31	41	47.0	0.0	0	0	0	0	0	0
28									0	0	0	0	0	0
29									0	0	0	0	0	0
Monthly Totals			0	6.16						0		0		0
Year to Date Totals			0	11.40						0		0		0

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF MARCH 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1640.7	20000	0	0.78	42	48	47.0	0.0	0	0	0	0	0	0
2									0	0	0	0	0	0
3									0	0	0	0	0	0
4	1640.7	20000	0	0.07	31	44	41.0	0.0	0	0	0	0	0	0
5									0	0	0	0	0	0
6	1640.8	20000	0	0.69	33	45	47.0	0.0	0	0	0	0	0	0
7									0	0	0	0	0	0
8	1640.7	20000	0	0.32	31	42	41.0	0.0	0	0	0	0	0	0
9									0	0	0	0	0	0
10									0	0	0	0	0	0
11	1640.7	20000	0	0.00	32	43	35.0	0.0	0	0	0	0	0	0
12									0	0	0	0	0	0
13	1640.7	20000	0	0.10	42	52	31.3	0.0	0	0	0	0	0	0
14									0	0	0	0	0	0
15	1640.7	20000	0	0.04	42	53	31.3	0.0	0	0	0	0	0	0
16									0	0	0	0	0	0
17									0	0	0	0	0	0
18	1640.7	20000	0	1.12	32	40	35.0	0.0	0	0	0	0	0	0
19									0	0	0	0	0	0
20	1640.8	20000	0	1.72	34	42	95.2	0.0	0	0	0	0	0	0
21									0	0	0	0	0	0
22	1640.8	20000	0	1.15	30	38	55.5	0.0	0	0	0	0	0	0
23									0	0	0	0	0	0
24									0	0	0	0	0	0
25	1640.7	20000	0	0.06	31	43	41.0	0.0	0	0	0	0	0	0
26									0	0	0	0	0	0
27	1640.7	20000	0	0.03	34	47	35.0	0.0	0	0	0	0	0	0
28	1640.7	20000	0	0.08	41	50	35.0	0.0	0	0	0	0	0	0
29									0	0	0	0	0	0
30									0	0	0	0	0	0
31									0	0	0	0	0	0
Monthly Totals			0	6.16						0		0		0
Year to Date Totals			0	17.56						0		0		0

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF APRIL 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1640.7	20000	0	0.06	41	58	31.3	0.0	0	0	0	0	0	0
2									0	0	0	0	0	0
3	1640.7	20000	0	0.00	42	53	27.6	0.0	0	0	0	0	0	0
4	1640.7	20000	0	0.31	45	55	35.0	0.0	0	0	0	0	0	0
5									0	0	0	0	0	0
6									0	0	0	0	0	0
7									0	0	0	0	0	0
8	1640.8	20000	0	4.86	34	49	79.6	0.0	0	0	0	0	0	0
9									0	0	0	0	0	0
10	1640.8	20000	0	0.34	34	45	47.0	0.0	0	0	0	0	0	0
11									0	0	0	0	0	0
12	1640.7	20000	0	0.00	33	46	41.0	0.0	0	0	0	0	0	0
13									0	0	0	0	0	0
14									0	0	0	0	0	0
15	1640.7	20000	0	0.97	32	44	41.0	0.0	0	0	0	0	0	0
16									0	0	0	0	0	0
17	1640.7	20000	0	0.20	32	46	35.0	0.0	0	0	0	0	0	0
18									0	0	0	0	0	0
19	1640.7	20000	0	0.36	38	48	41.0	0.0	0	0	0	0	0	0
20									0	0	0	0	0	0
21									0	0	0	0	0	0
22	1640.6	20000	0	0.11	34	48	31.3	0.0	0	0	0	0	0	0
23	1640.7	20000	0	0.00	35	55	31.3	0.0	0	0	0	0	0	0
24									0	0	0	0	0	0
25	1640.7	20000	0	0.00	40	62	27.6	0.0	0	0	0	0	0	0
26									0	0	0	0	0	0
27									0	0	0	0	0	0
28									0	0	0	0	0	0
29	1640.6	20000	0	0.27	40	65	27.6	0.0	0	0	0	0	0	0
30									0	0	0	0	0	0
Monthly Totals			0	7.48						0		0		0
Year to Date Totals				25.04						0		0		0

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF MAY 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1640.6	20000	0	0.01	31	52	20.2	0.0	0	0	0	0	0.0	0
2	1640.6	20000	0	0.00	43	57	16.5	0.0	0	0	0	0	0.0	0
3									0	0	0	0	0.0	0
4									0	0	0	0	0.0	0
5									0	0	0	0	0.0	0
6	1640.6	20000	0	0.00	43	70	13.0	15.0	0	0	0	0	15	30
7									0	0	0	0	15	30
8	1640.5	20000	0	0.00	44	69	8.4	15.0	8	17	0	0	15	30
9	1640.5	20000	0	0.00	43	59	8.4	15.0	8	17	0	0	15	30
10									8	17	0	0	15	30
11									8	17	0	0	15	30
12									8	17	0	0	15	30
13	1640.2	19880	-120	0.01	53	71	8.4	15.3	8	17	0	0	15	30
14									8	17	0	0	15	30
15	1640.1	19840	-40	0.32	42	56	8.4	25.1	8	17	0	0	25	50
16	1640.0	19800	-40	0.21	45	50	8.4	25.1	8	17	0	0	25	50
17									8	17	0	0	25	50
18									8	17	0	0	25	50
19									8	17	0	0	25	50
20	1639.6	19640	-160	0.68	38	53	8.4	25.1	8	17	0	0	25	50
21									8	17	0	0	25	50
22	1639.4	19560	-80	0.75	36	58	8.4	25.1	8	17	0	0	25	50
23	1639.5	19600	40	1.81	39	43	8.4	25.1	8	17	0	0	25	50
24									8	17	0	0	25	50
25									8	17	0	0	25	50
26									8	17	0	0	25.1	50
27									8	17	0	0	25	50
28	1639.6	19640	40	2.21	40	51	8.4	0.0	8	17	0	0	0	0
29	1639.8	19720	80	0.73	43	49	8.4	0.0	8	17	0	0	0	0
30	1640.0	19800	80	0.39	44	44	8.4	0.0	8	17	0	0	0	0
31									8	17	0	0	0	0
Monthly Totals			-200	7.12						400		0		913
Year to Date Totals			-200	32.16						400		0		913

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF JUNE 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1									8	17	0	0	0	0
2									8	17	0	0	0	0
3	1640.3	19880	80	0.02	41	61	8.4	0.0	8	17	0	0	0	0
4									8	17	0	0	0	0
5	1640.4	19960	80	0.00	41	68	8.4	0.0	8	17	0	0	0	0
6	1640.4	19960	0	0.00	49	69	8.4	0.0	8	17	0	0	0	0
7									8	17	0	0	0	0
8									8	17	0	0	0	0
9									8	17	0	0	0	0
10	1640.5	20000	40	0.00	40	70	8.4	20.0	8	17	0	0	20	40
11									8	17	0	0	20	40
12	1640.3	19920	-80	0.04	38	52	8.4	20.0	8	17	0	0	20	40
13	1640.2	19880	-40	0.13	45	52	8.4	20.0	8	17	0	0	20	40
14									8	17	0	0	20	40
15									8	17	0	0	20	40
16									8	17	0	0	20	40
17	1639.9	19760	-120	0.01	44	64	8.4	20.0	8	17	0	0	20	40
18									8	17	0	0	20	40
19	1639.7	19680	-80	0.05	44	61	8.4	20.0	8	17	0	0	20	40
20									8	17	0	0	20	40
21	1639.5	19600	-80	0.14	44	64	8.4	20.0	8	17	0	0	20	40
22									8	17	0	0	20	40
23									8	17	0	0	20	40
24	1639.3	19520	-80	0.49	46	64	8.4	20.0	8	17	0	0	20	40
25									8	17	0	0	20	40
26	1639.1	19440	-80	0.99	50	66	8.4	20.0	8	17	0	0	20	40
27	1639.1	19440	0	0.14	56	67	8.4	20.0	8	17	0	0	20	40
28									8	17	0	0	20	40
29									8	17	0	0	20	40
30									8	17	0	0	20	40
Monthly Totals			-360	2.01						500		0		833
Year to Date Totals			-560	34.17						900		0		1746

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF JULY 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1638.7	19280	-160	0.00	66	76	8.4	20.0	8	17	0	0	20	40
2									8	17	0	0	20	40
3	1638.4	19160	-120	0.00	54	74	8.4	20.0	8	17	0	0	20	40
4									8	17	0	0	20	40
5	1638.2	19040	-120	0.00	47	70	8.4	20.3	8	17	0	0	20	40
6									8	17	0	0	20	40
7									8	17	0	0	20	40
8	1637.8	18900	-140	0.00	52	66	8.4	20.0	8	17	0	0	20	40
9									8	17	0	0	20	40
10	1637.6	18800	-100	0.00	50	76	8.4	20.0	8	17	0	0	20	40
11	1637.5	18750	-50	0.00	46	78	8.4	20.0	8	17	0	0	20	40
12									8	17	0	0	20	40
13									8	17	0	0	20	40
14									8	17	0	0	20	40
15	1637.0	18500	-250	0.00	44	71	8.4	20.0	8	17	0	0	20	40
16									8	17	0	0	20	40
17	1636.7	18350	-150	0.00	52	72	8.4	20.0	8	17	0	0	20	40
18	1636.6	18300	-50	0.00	49	64	8.4	20.0	8	17	0	0	20	40
19									8	17	0	0	20	40
20									8	17	0	0	20	40
21									8	17	0	0	20	40
22	1636.1	18000	-300	0.00	47	72	8.4	20.0	8	17	0	0	20	40
23									8	17	0	0	20	40
24	1635.9	17963	-37	0.00	52	84	8.4	32.1	8	17	0	0	32	63
25	1635.7	17888	-75	0.00	52	75	8.4	32.1	8	17	0	0	32	63
26									8	17	0	0	32	63
27									8	17	0	0	32	63
28									8	17	0	0	32	63
29	1634.8	17550	-338	0.00	46	74	8.4	32.1	8	17	0	0	32	63
30									8	17	0	0	32	63
31	1634.4	17400	-150	0.00	48	66	8.4	32.1	8	17	0	0	32	63
Monthly Totals			-2040	0.00						517		0		1421
Year to Date Totals			-2600	34.17						1417		0		3166

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF AUGUST 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1									8	17	0	0	32	63
2	1634.0	17250	-150	0.00	49	63	8.4	32.1	8	17	0	0	32	63
3									8	17	0	0	32	63
4									8	17	0	0	32	63
5	1633.5	17063	-187	0.00	51	72	8.4	32.1	8	17	0	0	32	63
6									8	17	0	0	32	63
7	1633.1	16913	-150	0.00	51	75	8.4	32.1	8	17	0	0	32	63
8	1632.9	16838	-75	0.00	52	71	8.4	32.1	8	17	0	0	32	63
9									8	17	0	0	32	63
10									8	17	0	0	32	63
11									8	17	0	0	32	63
12	1632.1	16538	-300	0.28	52	71	8.4	32.1	8	17	0	0	32	63
13									8	17	0	0	32	63
14	1631.7	16388	-150	0.00	53	65	8.4	32.1	8	17	0	0	32	63
15	1631.5	16313	-75	0.21	62	66	8.4	32.1	8	17	0	0	32	63
16									8	17	0	0	32	63
17									8	17	0	0	32	63
18									8	17	0	0	32	63
19	1630.7	16013	-300	0.00	50	68	8.4	32.1	8	17	0	0	32	63
20									8	17	0	0	32	63
21	1630.3	15863	-150	0.00	46	68	8.4	32.1	8	17	0	0	32	63
22	1630.0	15750	-113	0.00	57	73	8.4	32.1	8	17	0	0	32	63
23									8	17	0	0	32	63
24									8	17	0	0	32	63
25									8	17	0	0	32	63
26	1629.2	15450	-300	0.15	50	70	8.4	32.1	8	17	0	0	32	63
27									8	17	0	0	32	63
28	1628.8	15300	-150	0.38	54	63	8.4	32.1	8	17	0	0	32	63
29									8	17	0	0	32	63
30	1628.4	15150	-150	0.22	56	64	8.4	38.0	8	17	14	28	24	48
31									8	17	14	28	24	48
Monthly Totals			-2250	1.24						517		56		1936
Year to Date Totals			-4850	35.41						1933		56		5103

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF SEPTEMBER 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1									8	17	14	28	24	48
2									8	17	14	28	24	48
3	1627.4	14775	-375	0.04	52	69	8.4	38.0	8	17	14	28	24	48
4	1627.2	14700	-75	0.00	54	64	8.4	38.0	8	17	14	28	24	48
5	1626.9	14588	-112	0.11	55	62	8.4	38.0	8	17	14	28	24	48
6									8	17	14	28	24	48
7									8	17	14	28	24	48
8									8	17	14	28	24	48
9	1626.0	14250	-338	0.54	51	70	8.4	38.0	8	17	14	28	24	48
10									8	17	14	28	24	48
11	1625.4	14025	-225	0.00	55	75	8.4	38.0	8	17	14	28	24	48
12	1625.2	13950	-75	0.00	53	75	8.4	38.0	8	17	14	28	24	48
13									8	17	14	28	24	48
14									8	17	14	28	24	48
15									8	17	14	28	24	48
16	1624.2	13575	-375	0.05	52	70	8.4	38.0	8	17	14	28	24	48
17	1623.9	13463	-112	0.02	51	62	8.4	38.0	8	17	14	28	24	48
18									8	17	14	28	24	48
19	1623.4	13275	-188	0.12	45	57	8.4	32.0	8	17	14	28	18	36
20									8	17	14	28	18	36
21									8	17	14	28	18	36
22									8	17	14	28	18	36
23	1622.7	13013	-262	1.59	47	59	8.4	32.0	8	17	14	28	18	36
24	1622.5	12938	-75	0.30	45	51	8.4	32.0	8	17	14	28	18	36
25	1622.3	12863	-75	0.36	46	46	8.4	32.0	8	17	14	28	18	36
26	1622.1	12788	-75	0.04	41	50	8.4	32.0	8	17	14	28	18	36
27									8	17	14	28	18	36
28									8	17	14	28	18	36
29									8	17	14	28	18	36
30	1623.4	13275	487	8.70	40	52	9.5	0.0	10	19	0	0	18	36
Monthly Totals			-1875	11.87						502		806		1286
Year to Date Totals			-6725	47.28						2435		861		6388

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF OCTOBER 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1									10	19	0	0	0	0
2	1624.1	13538	263	1.02	40	45	8.4	0.0	8	17	0	0	0	0
3	1624.2	13575	37	0.19	35	45	8.4	0.0	8	17	0	0	0	0
4									8	17	0	0	0	0
5									8	17	0	0	0	0
6									8	17	0	0	0	0
7	1624.5	13688	113	0.20	43	57	8.4	0.0	8	17	0	0	0	0
8									8	17	0	0	0	0
9	1624.6	13725	37	0.62	37	49	8.4	0.0	8	17	0	0	0	0
10	1624.6	13725	0	0.01	39	47	8.4	14.2	8	17	14	28	0	0
11									8	17	14	28	0	0
12									8	17	14	28	0	0
13									8	17	14	28	0	0
14	1624.4	13650	-75	0.21	36	50	8.4	14.2	8	17	14	28	0	0
15									8	17	14	28	0	0
16	1624.3	13613	-37	0.00	40	53	8.4	14.2	8	17	14	28	0	0
17	1624.2	13575	-38	0.00	39	54	8.4	14.2	8	17	14	28	0	0
18									8	17	14	28	0	0
19									8	17	14	28	0	0
20									8	17	14	28	0	0
21	1623.9	13463	-112	0.00	42	57	8.4	14.2	8	17	14	28	0	0
22									8	17	14	28	0	0
23	1623.8	13425	-38	0.00	46	60	8.4	14.2	8	17	14	28	0	0
24	1623.7	13388	-37	0.00	46	58	8.4	14.2	8	17	14	28	0	0
25									8	17	14	28	0	0
26									8	17	14	28	0	0
27									8	17	14	28	0	0
28	1623.4	13275	-113	0.03	39	57	8.4	14.2	8	17	14	28	0	0
29									8	17	14	28	0	0
30	1623.2	13200	-75	0.00	33	54	8.4	14.2	8	17	14	28	0	0
31									8	17	14	28	0	0
Monthly Totals			-75	2.28						519		611		0
Year to Date Totals			-6800	49.56						2954		1472		6388

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF NOVEMBER 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1623.0	13125	-75	0.06	40	50	8.4	14.2	8	17	14	28	0	0
2									8	17	14	28	0	0
3									8	17	14	28	0	0
4	1623.0	13125	0	1.54	36	51	8.4	14.2	8	17	14	28	0	0
5									8	17	14	28	0	0
6	1622.9	13088	-37	0.65	41	47	8.4	0.0	8	17	0	0	0	0
7	1623.1	13163	75	1.15	41	48	9.5	0.0	8	17	0	0	0	0
8									8	17	0	0	0	0
9									8	17	0	0	0	0
10									8	17	0	0	0	0
11									8	17	0	0	0	0
12	1623.8	13425	262	1.35	43	51	8.4	0.0	8	17	0	0	0	0
13	1623.9	13463	38	0.02	39	49	8.4	0.0	8	17	0	0	0	0
14	1623.9	13463	0	0.00	43	53	8.4	0.0	8	17	0	0	0	0
15									8	17	0	0	0	0
16									8	17	0	0	0	0
17									8	17	0	0	0	0
18	1624.4	13650	187	1.67	36	44	8.4	0.0	8	17	0	0	0	0
19									8	17	0	0	0	0
20	1625.3	13988	338	2.16	32	52	9.5	0.0	8	17	0	0	0	0
21	1625.5	14063	75	0.00	29	37	9.5	0.0	8	17	0	0	0	0
22	1625.7	14138	75	0.00	28	38	5.1	0.0	5	10	0	0	0	0
23									5	10	0	0	0	0
24									5	10	0	0	0	0
25	1625.9	14213	75	0.00	31	42	2.8	0.0	3	6	0	0	0	0
26									3	6	0	0	0	0
27	1626.1	14250	37	0.00	32	43	0.5	0.0	0	0	0	0	0	0
28									0	0	0	0	0	0
29									0	0	0	0	0	0
30									0	0	0	0	0	0
Monthly Totals			1050	8.60						391		139		0
Year to Date Totals			-5750	58.16						3346		1611		6388

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF DECEMBER 2013

[See Appendix E for breakdown of municipal use by water provider.] Source: Joint Water Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1									0	0	0	0	0	0
2	1628.0	15000	750	5.62	33	45	2.8	0.0	0	0	0	0	0	0
3									0	0	0	0	0	0
4	1628.8	15300	300	0.16	23	44	1.1	0.0	0	0	0	0	0	0
5	1629.1	15375	75	0.00	19	32	1.1	0.0	0	0	0	0	0	0
6									0	0	0	0	0	0
7									0	0	0	0	0	0
8									0	0	0	0	0	0
9	1629.6	15600	225	0.01	11	26	0.5	0.0	0	0	0	0	0	0
10									0	0	0	0	0	0
11									0	0	0	0	0	0
12	1630.0	15750	150	0.11	24	34	0.5	0.0	0	0	0	0	0	0
13	1630.1	15788	38	0.26	31	42	0.5	0.0	0	0	0	0	0	0
14									0	0	0	0	0	0
15									0	0	0	0	0	0
16	1630.4	15900	112	0.06	31	42	0.5	0.0	0	0	0	0	0	0
17									0	0	0	0	0	0
18	1630.6	15975	75	0.02	31	40	0.5	0.0	0	0	0	0	0	0
19	1630.7	16013	38	0.05	28	41	0.5	0.0	0	0	0	0	0	0
20									0	0	0	0	0	0
21									0	0	0	0	0	0
22									0	0	0	0	0	0
23	1631.0	16125	112	0.67	28	44	0.5	0.0	0	0	0	0	0	0
24	1631.2	16200	75	0.17	30	45	0.5	0.0	0	0	0	0	0	0
25									0	0	0	0	0	0
26	1631.3	16238	38	0.00	29	43	0.5	0.0	0	0	0	0	0	0
27									0	0	0	0	0	0
28									0	0	0	0	0	0
29									0	0	0	0	0	0
30									0	0	0	0	0	0
31									0	0	0	0	0	0
Monthly Totals			1988	7.13						0		0		0
Year to Date Totals			-3762	65.29						3346		1611		6388

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

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Appendix E

Municipal Water Use Allocations
Monthly Records

MONTHLY SUMMARIES OF MUNICIPAL ALLOCATIONS

MUNICIPAL ALLOCATIONS FOR THE MONTH OF MAY 2013

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney*	Scoggins	Barney	Scoggins	Barney*	Scoggins	Barney*
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	34	0	34	-5	20	0	1	-4	13	9
5	50	0	50	-10	32	-1	2	-5	16	16
6	50	0	50	-7	17	-1	2	-13	31	21
7	65	15	50	-5	20	-1	4	-6	26	27
8	65	15	50	-4	30	0	2	-3	18	22
9	47	15	32	1	20	0	1	0	11	14
10	47	15	32	0	19	0	1	0	12	15
11	47	15	32	0	17	0	2	0	13	15
12	47	15	32	0	16	0	1	0	15	16
13	47	15	32	-1	17	0	2	-1	14	17
14	63	15	48	-5	27	-1	3	-3	18	23
15	55	15	40	-1	21	0	2	-1	17	18
16	43	25	18	6	9	0	1	5	8	14
17	43	25	18	7	10	0	0	5	8	13
18	43	25	18	6	9	0	0	6	9	13
19	43	25	18	6	9	0	0	6	8	13
20	43	25	18	7	10	0	0	6	8	12
21	35	25	10	8	5	0	0	6	4	10
22	35	25	10	7	5	1	0	7	5	10
23	28	25	3	10	2	1	0	9	1	5
24	28	25	3	9	1	1	0	9	1	5
25	28	25	3	9	1	1	0	10	1	5
26	28	25	3	9	1	0	0	10	2	6
27	28	25	3	9	1	2	0	9	1	5
28	28	25	3	9	1	3	0	9	1	4
29	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0
Monthly Summary										
Mean daily cfs	34.5	14.8	19.7	2.1	10.4	0.2	0.9	2.0	8.4	10.5
Total ac-ft	2,122	912	1,210	130	637	13	53	122	519	647
Year-to-Date Summary										
Mean daily cfs	34.5	14.8	19.7	2.1	10.4	0.2	0.9	2.0	8.4	10.5
Total ac-ft	2,122	912	1,210	130	637	13	53	122	519	647

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

*When regulation begins before staff can reach Barney Reservoir to begin releases from stored water, TVWD's stored water balance in Barney is charged and Hillsboro's and Beaverton's is credited.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF JUNE 2013

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney*	Scoggins	Barney	Scoggins	Barney*	Scoggins	Barney*
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	50	0	50	-4	27	0	3	-3	20	7
9	50	0	50	-4	30	0	3	-2	18	7
10	50	0	50	-5	27	0	3	-3	20	9
11	60	20	40	4	19	0	2	4	19	12
12	43	20	23	8	13	1	1	5	9	6
13	43	20	23	6	9	1	2	9	13	4
14	43	20	23	9	11	1	1	8	11	2
15	33	20	13	9	6	1	1	8	6	2
16	33	20	13	7	5	2	1	11	7	0
17	33	20	13	12	8	1	1	7	5	0
18	33	20	13	11	8	1	1	6	4	1
19	33	20	13	9	6	1	1	9	6	2
20	33	20	13	9	7	1	0	9	6	1
21	28	20	8	9	4	1	0	9	4	1
22	28	20	8	10	4	1	0	8	3	1
23	28	20	8	9	4	1	0	8	4	1
24	28	20	8	9	4	1	0	8	4	1
25	36	20	16	9	8	1	1	8	7	2
26	36	20	16	7	6	1	1	11	9	1
27	36	20	16	11	9	1	1	8	6	0
28	36	20	16	12	11	1	1	5	4	3
29	52	20	32	4	18	0	2	3	12	13
30	52	20	32	4	19	1	2	2	11	13
Monthly Summary										
Mean daily cfs	299	13.3	16.6	5.2	8.8	0.5	0.9	4.6	6.9	3.0
Total ac-ft	1,779	793	986	312	522	31	53	272	411	179
Year-to-Date Summary										
Mean daily cfs	32.2	14.1	18.1	3.7	9.6	0.4	0.9	3.3	7.7	6.8
Total ac-ft	3,902	1,706	2,196	442	1,159	44	106	394	931	826

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

*When regulation begins before staff can reach Barney Reservoir to begin releases from stored water, TVWD's stored water balance in Barney is charged and Hillsboro's and Beaverton's is credited.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF JULY 2013

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	52	20	32	5	20	1	3	2	9	12
2	60	20	40	2	23	0	4	1	13	16
3	65	20	45	3	28	0	4	2	13	15
4	60	20	40	3	23	0	3	2	14	15
5	60	20	40	4	23	0	2	2	15	14
6	45	20	25	6	14	1	2	4	9	9
7	45	20	25	6	14	1	2	4	9	9
8	45	20	25	7	15	1	2	4	8	9
9	45	20	25	7	15	1	3	4	8	9
10	45	20	25	5	12	1	3	4	9	11
11	60	20	40	5	24	1	4	2	12	12
12	56	20	36	6	23	1	3	2	10	11
13	54	20	34	5	20	1	3	3	11	12
14	54	20	34	5	20	1	3	3	11	11
15	54	20	34	4	21	1	3	2	10	13
16	54	20	34	3	19	1	3	2	11	14
17	60	20	40	3	22	1	5	2	13	15
18	54	20	34	4	19	1	4	2	11	13
19	54	20	34	5	20	1	3	2	11	12
20	54	20	34	4	19	1	4	2	11	13
21	54	20	34	4	20	1	3	2	11	13
22	54	20	34	4	20	1	4	2	11	13
23	54	20	34	3	19	1	4	2	11	14
24	54	20	34	4	21	1	4	2	9	14
25	66	32	34	9	20	2	4	5	10	16
26	82	32	50	9	28	2	6	5	16	17
27	76	32	44	4	27	1	5	2	12	25
28	72	32	40	4	23	1	5	2	12	24
29	72	32	40	6	23	1	4	3	12	22
30	60	32	28	8	15	2	3	5	9	17
31	52	32	20	9	12	2	2	5	6	16
Monthly Summary										
Mean daily cfs	57.2	22.7	34.5	5.0	20.0	0.9	3.5	2.8	10.9	14.0
Total ac-ft	3,515	1,396	2,118	310	1,232	54	215	171	672	860
Year-to-Date Summary										
Mean daily cfs	40.6	17.0	23.6	4.1	13.1	0.5	1.7	3.1	8.8	9.2
Total ac-ft	7,416	3,102	4,314	752	2,391	98	321	565	1,602	1,687

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF AUGUST 2013

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	62	32	30	7	16	1	4	4	10	20
2	67	32	35	6	19	1	4	3	12	22
3	67	32	35	6	20	1	4	3	11	21
4	67	32	35	6	20	1	4	3	11	21
5	67	32	35	7	21	1	4	3	10	20
6	67	32	35	7	20	1	4	3	10	20
7	58	32	26	7	14	2	3	4	9	20
8	58	32	26	9	16	2	3	4	7	17
9	64	32	32	8	20	1	4	3	8	20
10	69	32	37	6	23	1	4	3	10	22
11	69	32	37	5	22	1	4	3	11	23
12	69	32	37	5	21	1	5	2	11	24
13	77	32	45	2	24	1	6	1	15	28
14	77	32	45	5	28	1	5	2	12	25
15	77	32	45	6	30	1	4	2	11	23
16	64	32	32	6	19	1	3	3	10	22
17	69	32	37	7	22	1	4	3	11	21
18	69	32	37	7	22	1	4	3	11	21
19	69	32	37	6	22	1	4	3	10	22
20	69	32	37	4	21	1	4	2	11	25
21	69	32	37	4	21	1	4	3	12	24
22	69	32	37	4	22	1	4	2	11	25
23	69	32	37	5	22	1	4	2	11	24
24	64	32	32	6	19	1	3	3	9	22
25	64	32	32	6	18	1	3	3	10	22
26	64	32	32	9	18	2	3	5	11	16
27	47	32	15	13	8	3	2	8	5	9
28	47	32	15	15	9	2	1	8	5	7
29	47	32	15	16	9	3	1	8	5	5
30	40	32	8	16	5	2	1	8	2	5
31	47	24	23	7	13	1	2	4	7	11
Monthly Summary										
Mean daily cfs	63.9	31.7	32.2	7.2	18.9	1.3	3.6	3.7	9.7	19.6
Total ac-ft	3,931	1,952	1,980	441	1,164	81	222	228	594	1,203
Year-to-Date Summary										
Mean daily cfs	46.5	20.7	25.7	4.9	14.5	0.7	2.2	3.3	9.0	11.8
Total ac-ft	11,348	5,054	6,294	1,193	3,555	179	542	793	2,196	2,890

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF SEPTEMBER 2013

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	47	24	23	7	13	1	2	4	7	11
2	47	24	23	8	14	1	2	4	7	11
3	47	24	23	7	13	1	3	4	8	12
4	42	24	18	5	8	2	3	5	7	11
5	42	24	18	6	8	2	3	5	6	11
6	42	24	18	8	10	2	2	4	5	10
7	47	24	23	10	15	2	3	4	5	8
8	47	24	23	12	15	2	2	5	6	6
9	47	24	23	8	13	1	2	4	7	10
10	54	24	30	7	17	1	4	3	9	13
11	49	24	25	10	16	2	3	3	6	9
12	49	24	25	8	17	1	3	3	5	12
13	54	24	30	5	18	1	4	2	8	16
14	54	24	30	5	19	1	3	2	7	16
15	54	24	30	7	20	1	3	3	7	13
16	54	24	30	7	18	1	3	3	8	12
17	36	24	12	11	7	2	1	5	4	6
18	36	24	12	12	7	2	1	6	4	5
19	26	24	2	12	1	2	0	6	1	3
20	30	18	12	8	7	1	1	5	4	4
21	42	18	24	7	13	2	3	4	8	6
22	44	18	26	8	16	2	3	4	7	5
23	44	18	26	7	14	2	3	5	9	5
24	36	18	18	7	10	1	2	5	7	4
25	36	18	18	8	10	1	1	5	7	3
26	23	18	5	8	3	1	0	5	2	3
27	18	18	0	8	0	2	0	6	0	2
28	32	18	14	7	6	3	3	5	5	2
29	39	18	21	6	10	3	4	4	7	4
30	39	18	21	2	5	3	6	6	10	6
Monthly Summary										
Mean daily cfs	41.9	21.8	20.1	7.8	11.5	1.7	2.6	4.3	6.1	8.0
Total ac-ft	2,493	1,297	1,196	462	682	104	152	257	362	475
Year-to-Date Summary										
Mean daily cfs	45.6	20.9	24.6	5.5	13.9	0.9	2.3	3.5	8.4	11.0
Total ac-ft	13,841	6,351	7,490	1,655	4,237	283	695	1,050	2,558	3,364

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF OCTOBER 2013

Source: Joint Water Commission

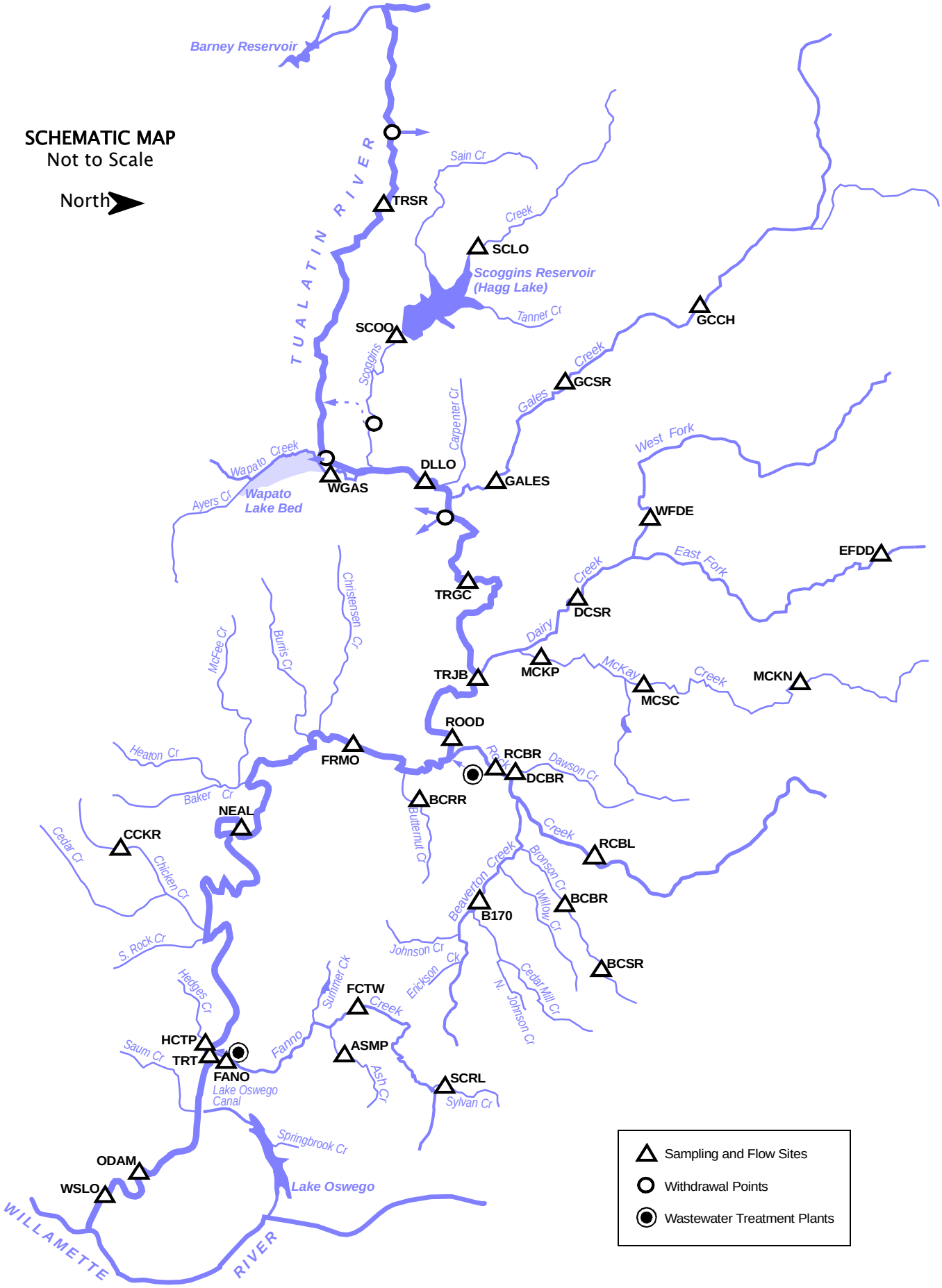
DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	18	18	0	6	0	4	0	6	0	2
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0
Monthly Summary										
Mean daily cfs	0.6	0.6	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.1
Total ac-ft	36	36	0	12	0	8	0	12	0	4
Year-to-Date Summary										
Mean daily cfs	38.0	17.5	20.5	4.6	11.6	0.8	1.9	2.9	7.0	9.2
Total ac-ft	13,877	6,387	7,490	1,666	4,237	290	695	1,062	2,558	3,369

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

Appendix F

Stream Temperature Records

STREAM TEMPERATURE SITES — LOCATIONS



STREAM TEMPERATURE SITES — ALPHABETICAL LISTING BY SITE CODE

SITE CODE	SITE NAME	RIVER MILE	STATION ID	PAGE
ASMP	Ash Creek at Metzger Park at Metzger, Oregon	1.25	14206933	F-29
B170	Beaverton Creek at 170th Ave, Beaverton, Oregon	4.9	—	F-18
BCBR	Bronson Creek at Bronson Road near Orenco, Oregon	2.1	14206423	F-20
BCRR	Butternut Creek at Rosa Road near Farmington, Oregon	1.0	14206483	F-23
BCSR	Bronson Creek at Saltzman Road near Orenco, Oregon	5.1	14206419	F-19
CCKR	Chicken Creek at Kruger Road	4.5	—	F-26
DCBR	Dawson Creek at Brookwood Road near Hillsboro, Oregon	0.7	14206443	F-21
DCSR	Dairy Creek at Susbauer Road	6.02	—	F-11
DLLO	Tualatin River at Dilley, Oregon	58.8	14203500	F-7
EFDD	East Fork Dairy Creek near Dairy Creek Road near Mountaindale, Oregon	12.33	14205480	ND*
FANO	Fanno Creek at Durham Road near Tigard, Oregon	1.2	14206950	F-30
FCTW	Fanno Creek at Tuckerwood	7.3	14206927	F-28
FRMO	Tualatin River at Farmington, Oregon	33.3	14206500	F-24
GALES	Gales Creek at Old Hwy 47 near Forest Grove, Oregon	2.36	14204530	F-9
GCCH	Gales Creek at Clapshaw Hill Road near Gales Creek, Oregon	12.36	14204540	ND*
GCSR	Gales Creek at Stringtown Road	6.98	—	F-8
HCTP	Hedges Creek at Tualatin Community Park at Tualatin, Oregon	0.3	14206958	F-31
MCKN	McKay Creek at Northrup Road near North Plains, Oregon	15.5	14205980	F-12
MCKP	McKay Creek at Padgett Road	1.31	14206190	F-14
MCSC	McKay Creek at Scotch Church Road above Waible Ck near North Plains, Oregon	6.3	14206070	F-13
NEAL	Tualatin River at RM 24.5 near Scholls, Oregon	24.5	14206694	F-25
ODAM	Tualatin River at Oswego Dam near West Linn, Oregon	3.4	14207200	F-32
RCBL	Rock Creek below Bethany Lake	8.9	14206340	F-17
RCBR	Rock Creek at Brookwood Avenue, Hillsboro, Oregon	2.4	—	F-22
ROOD	Tualatin River at Rood Bridge Road near Hillsboro, Oregon	38.4	14206295	F-16
SCLO	Scoggins Creek above Henry Hagg Lake near Gaston, Oregon	9.3	14202850	F-5
SCOO	Scoggins Creek below Henry Hagg Lake near Gaston, Oregon	4.80	14202980	F-6
SCRL	Sylvan Creek at Raleighwood Lane near West Slope, Oregon	1.0	14206905	F-27
TRGC	Tualatin River at Golf Course Road near Cornelius, Oregon	51.5	14204800	ND*
TRJB	Tualatin River at Hwy 219 Bridge	44.4	14206241	F-15
TRSR	Tualatin River at South Road near Cherry Grove, Oregon	67.83	—	ND*
TRT	Tualatin River at Tualatin, Oregon	8.9	14206956	ND*
WFDE	West Fork Dairy Creek at Evers Road	1.96	14205160	F-10
WGAS	Wapato Creek at Gaston Road at Gaston, Oregon	—	14202650	F-4
WSLO	Tualatin River at West Linn	1.75	14207500	F-33

* No data for 2013 due to instrument malfunction

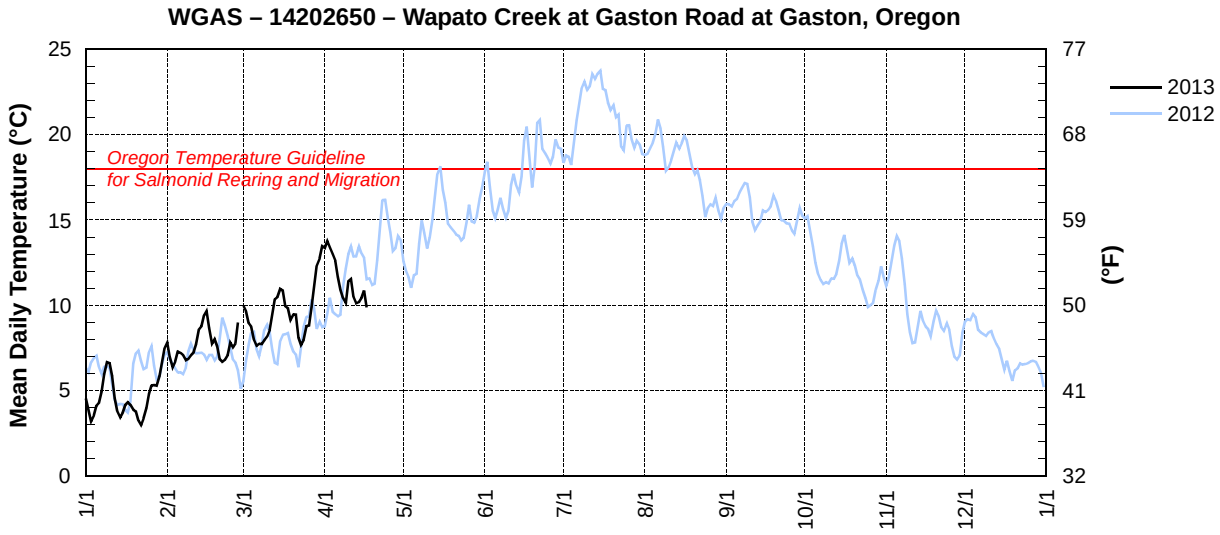
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14202650 WAPATO CREEK AT GASTON ROAD AT GASTON, OR

LATITUDE: 452626 LONGITUDE: 1230730

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.5	7.9	10.0	13.4								
2	3.9	7.0	9.7	13.8								
3	3.2	6.4	9.0	13.4								
4	3.6	6.7	8.8	13.0								
5	4.1	7.3	8.0	12.6								
6	4.3	7.2	7.6	11.7								
7	4.9	7.1	7.7	10.9								
8	6.0	6.8	7.7	10.5								
9	6.7	6.9	8.0	10.1								
10	6.6	7.1	8.2	11.4								
11	5.9	7.2	8.5	11.6								
12	4.6	7.7	9.5	10.5								
13	3.8	8.6	10.4	10.1								
14	3.5	8.8	10.5	10.2								
15	3.7	9.4	11.0	10.4								
16	4.2	9.7	10.9	10.9								
17	4.3	8.7	9.9									
18	4.2	7.8	9.8									
19	3.9	8.0	9.2									
20	3.8	7.6	9.4									
21	3.2	6.9	9.5									
22	3.0	6.7	8.1									
23	3.4	6.8	7.7									
24	4.0	7.1	8.0									
25	4.8	7.8	8.8									
26	5.3	7.6	8.8									
27	5.3	7.8	9.9									
28	5.3	9.0	11.2									
29	5.9	—	12.3									
30	6.7	—	12.8									
31	7.5	—	13.5	—		—			—		—	
MEAN	4.6	7.6	9.5									
MAX	7.5	9.7	13.5									
MIN	3.0	6.4	7.6									

*Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month); station discontinued 4/16/2013



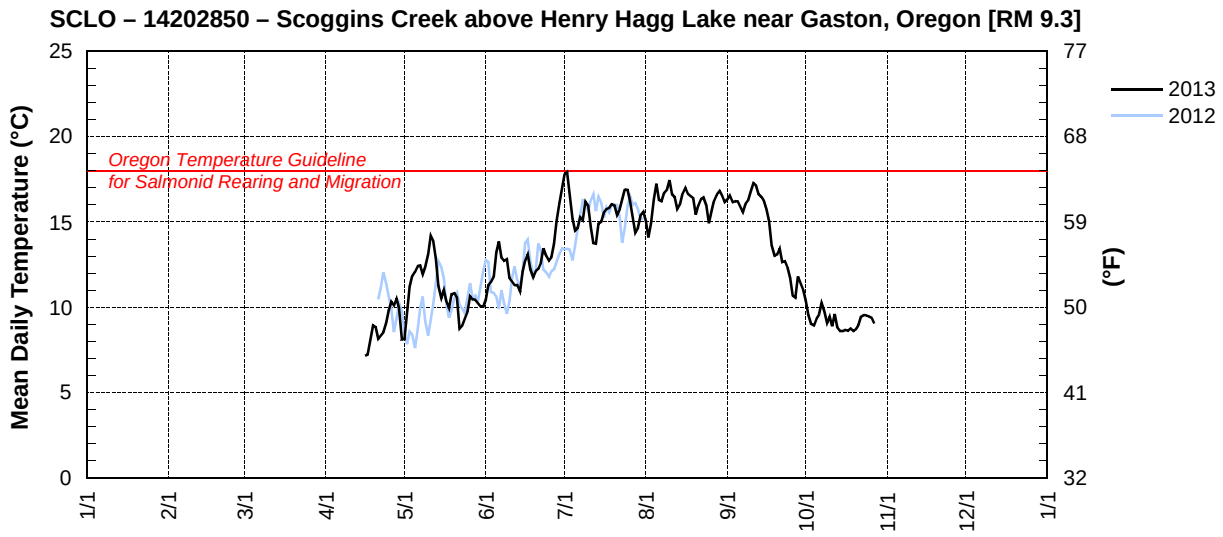
SCLO – 14202850 — SCOGGINS CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 9.3]

Latitude: 45 30 06 Longitude: 123 15 06 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT*	NOV	DEC
1					8.1	10.4	17.8	15.1	16.3	10.4		
2					9.7	11.3	17.9	14.1	16.6	9.5		
3					11.2	11.5	16.6	14.9	16.2	9.0		
4					11.8	11.8	15.2	16.3	16.2	8.9		
5					12.1	13.2	14.5	17.3	16.2	9.3		
6					12.4	13.9	14.7	16.3	15.9	9.6		
7					12.5	12.9	15.3	16.2	15.6	10.3		
8					12.0	12.7	15.1	16.7	16.1	9.8		
9					12.4	12.8	16.2	16.9	16.3	9.1		
10					13.1	11.7	15.9	17.5	16.8	9.5		
11					14.2	11.5	14.7	16.6	17.3	8.9		
12					13.9	11.3	13.8	16.5	17.1	9.6		
13					12.9	11.3	13.7	15.8	16.6	8.8		
14					11.3	10.9	14.9	16.1	16.5	8.6		
15					10.5	12.1	15.0	16.7	16.2	8.6		
16				7.2	11.0	12.7	15.6	17.0	15.7	8.7		
17				7.2	10.3	13.1	15.8	16.7	15.0	8.6		
18				8.1	9.9	12.2	15.8	16.5	13.6	8.8		
19				9.0	10.8	11.8	16.1	16.4	13.0	8.6		
20				8.8	10.8	12.1	16.0	15.4	13.1	8.7		
21				8.2	10.6	12.3	15.4	16.0	13.5	9.0		
22				8.3	8.8	12.6	15.7	16.3	12.7	9.5		
23				8.5	8.9	13.5	16.3	16.5	12.7	9.5		
24				9.1	9.3	13.0	16.9	16.0	12.3	9.5		
25				9.8	9.8	12.7	16.9	14.9	11.7	9.5		
26				10.3	10.7	12.9	16.2	15.6	10.7	9.4		
27				10.1	10.5	13.7	15.2	16.3	10.6	9.1		
28				10.5	10.4	15.0	14.4	16.6	11.8			
29				10.0	10.3	16.1	14.7	16.8	11.4			
30				8.1	10.1	17.0	15.4	16.5	11.0			
31				—	10.0	—	15.6	16.2	—			
MEAN					11.0	12.7	15.6	16.2	14.5	9.2		
MAX					14.2	17.0	17.9	17.5	17.3	10.4		
MIN					8.1	10.4	13.7	14.1	10.6	8.6		

†No calibration checks in 2013; daily temperature range in 2013 suggest instrument may be near surface; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



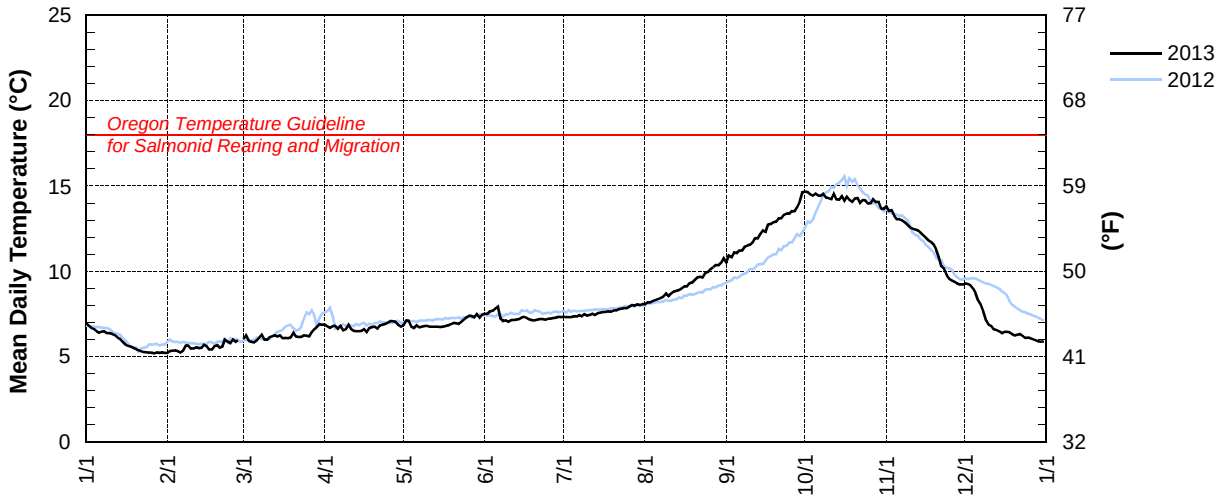
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14202980 SCOGGINS CK BLW HENRY HAGG LAKE, NR GASTON, OR

LATITUDE: 452810 LONGITUDE: 12311561

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	7.0	5.2	6.1	6.9	6.8	7.5	7.3	8.1	10.5	14.7	13.8	9.3
2	6.8	5.3	6.3	6.8	7.1	7.5	7.3	8.2	10.9	14.6	13.6	9.3
3	6.7	5.3	6.0	6.7	7.1	7.7	7.3	8.2	10.8	14.5	13.6	9.2
4	6.6	5.4	5.9	6.8	6.8	7.7	7.3	8.3	11.1	14.5	13.3	9.0
5	6.5	5.3	5.8	6.8	6.7	7.8	7.4	8.3	11.1	14.6	13.1	8.7
6	6.4	5.3	6.0	6.6	6.8	7.9	7.4	8.4	11.2	14.4	13.1	8.3
7	6.5	5.3	6.1	6.8	6.7	7.3	7.4	8.5	11.2	14.4	13.0	8.1
8	6.5	5.7	6.3	6.5	6.8	7.1	7.4	8.5	11.5	14.6	12.9	7.7
9	6.4	5.7	6.0	6.6	6.8	7.1	7.5	8.7	11.5	14.3	12.8	7.1
10	6.4	5.5	6.0	6.9	6.8	7.1	7.4	8.6	11.6	14.3	12.6	6.9
11	6.4	5.5	6.2	6.6	6.8	7.1	7.5	8.7	11.7	14.2	12.5	6.8
12	6.3	5.6	6.2	6.5	6.8	7.2	7.5	8.8	12.0	14.6	12.5	6.6
13	6.1	5.5	6.3	6.5	6.8	7.2	7.5	8.8	11.9	14.2	12.4	6.6
14	6.0	5.5	6.2	6.5	6.8	7.2	7.6	8.9	12.2	14.2	12.3	6.5
15	5.9	5.7	6.3	6.5	6.7	7.3	7.6	9.0	12.4	14.4	12.1	6.4
16	5.7	5.6	6.1	6.6	6.8	7.3	7.6	9.1	12.3	14.1	12.0	6.5
17	5.7	5.4	6.1	6.5	6.8	7.3	7.6	9.1	12.8	14.4	11.8	6.5
18	5.6	5.4	6.1	6.7	6.8	7.2	7.7	9.3	12.8	14.2	11.7	6.4
19	5.5	5.6	6.1	6.7	6.9	7.1	7.6	9.3	12.9	14.1	11.6	6.3
20	5.5	5.7	6.4	6.8	7.0	7.1	7.7	9.5	12.9	14.3	11.3	6.3
21	5.4	5.5	6.2	6.7	7.0	7.2	7.7	9.6	13.1	14.3	10.9	6.3
22	5.3	5.6	6.2	6.8	6.9	7.2	7.8	9.7	13.1	14.0	10.3	6.3
23	5.3	6.0	6.2	6.9	7.0	7.2	7.8	9.7	13.3	14.2	10.2	6.2
24	5.3	5.9	6.2	6.9	7.2	7.2	7.8	9.9	13.4	14.2	9.8	6.1
25	5.2	5.8	6.2	7.0	7.3	7.2	7.9	10.0	13.4	14.0	9.6	6.1
26	5.2	6.0	6.2	7.1	7.4	7.2	7.9	10.1	13.5	14.0	9.5	6.1
27	5.2	5.9	6.4	7.1	7.4	7.3	8.0	10.3	13.5	14.2	9.4	6.0
28	5.3	6.0	6.6	7.1	7.3	7.3	8.0	10.4	13.8	14.1	9.3	6.0
29	5.2	—	6.7	6.9	7.5	7.3	8.1	10.4	14.1	14.1	9.2	5.9
30	5.3	—	6.9	6.8	7.3	7.3	8.1	10.5	14.6	13.7	9.2	5.9
31	5.2	—	6.9	—	7.5	—	8.1	10.8	—	13.7	—	5.9
MEAN	5.9	5.6	6.2	6.8	7.0	7.3	7.6	9.2	12.4	14.3	11.6	6.9
MAX	7.0	6.0	6.9	7.1	7.5	7.9	8.1	10.8	14.6	14.7	13.8	9.3
MIN	5.2	5.2	5.8	6.5	6.7	7.1	7.3	8.1	10.5	13.7	9.2	5.9

SCOO – 14202980 – Scoggins Creek below Henry Hagg Lake near Gaston, Oregon [RM 4.80]



DLLO – 14203500 – TUALATIN RIVER AT DILLEY, OREGON [RM 58.8]

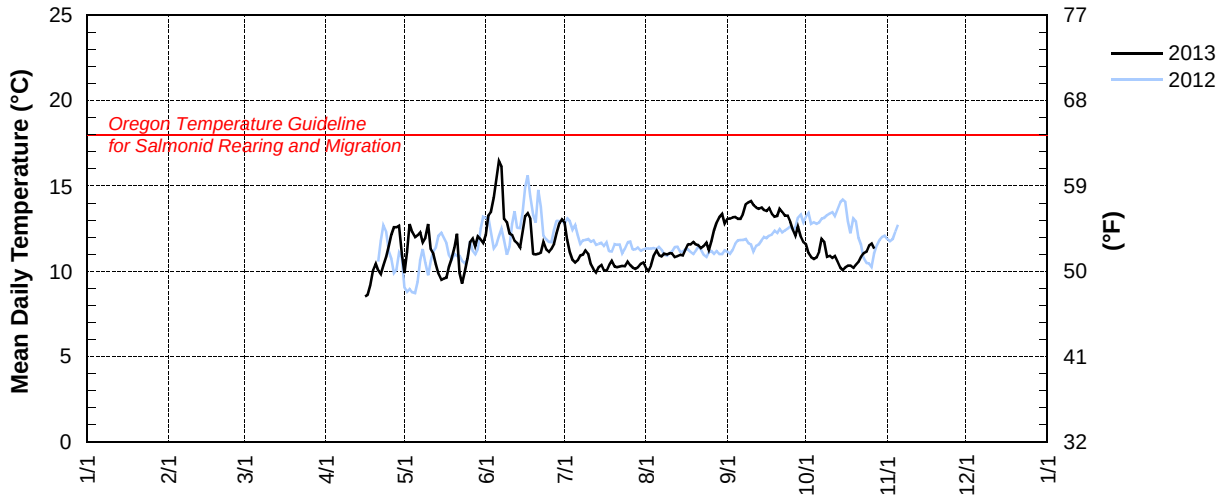
Latitude: 45 28 30 Longitude: 123 07 23 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT*	NOV	DEC
1					9.9	12.1	12.9	10.2	13.1	11.6		
2					11.1	13.3	11.9	10.0	13.1	11.1		
3					12.8	13.5	11.2	10.4	13.2	10.8		
4					12.3	14.3	10.7	11.0	13.2	10.7		
5					12.0	15.3	10.5	11.2	13.1	10.8		
6					12.1	16.5	10.7	11.0	13.1	11.2		
7					12.3	16.1	10.9	10.9	13.4	11.9		
8					11.7	13.1	11.0	11.0	13.9	11.7		
9					12.0	12.9	11.2	11.0	14.1	10.9		
10					12.8	12.2	11.0	11.1	14.1	10.9		
11					11.3	12.1	10.4	11.0	13.9	10.8		
12					11.0	11.8	10.1	10.8	13.8	10.9		
13					10.4	11.7	9.9	10.9	13.7	10.6		
14					9.9	11.4	10.2	11.0	13.8	10.2		
15					9.5	12.3	10.4	10.9	13.6	10.1		
16				8.5	9.6	13.2	10.1	11.3	13.5	10.2		
17				8.6	9.6	13.4	10.0	11.6	13.7	10.3		
18				9.2	10.3	13.1	10.4	11.6	13.4	10.3		
19				10.1	10.7	11.0	10.6	11.7	13.2	10.2		
20				10.5	11.4	11.0	10.3	11.6	13.3	10.4		
21				10.0	12.2	11.0	10.2	11.5	13.7	10.6		
22				9.8	9.9	11.1	10.3	11.4	13.5	10.9		
23				10.3	9.3	11.7	10.3	11.5	13.3	11.1		
24				10.9	9.9	11.3	10.3	11.7	13.3	11.2		
25				11.5	10.8	11.2	10.6	11.3	12.9	11.5		
26				12.2	11.7	11.3	10.4	11.8	12.4	11.6		
27				12.6	11.9	11.6	10.2	12.4	12.1	11.3		
28				12.6	11.5	12.2	10.1	12.9	12.6			
29		—		12.7	12.0	12.8	10.2	13.2	12.0			
30		—		11.0	11.9	13.1	10.4	13.4	11.7			
31		—		—	11.7	—	10.5	12.8	—		—	
MEAN					11.1	12.6	10.6	11.4	13.2	10.9		
MAX					12.8	16.5	12.9	13.4	14.1	11.9		
MIN					9.3	11.0	9.9	10.0	11.7	10.1		

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

DLLO – 14203500 – Tualatin River at Dilley, Oregon [RM 58.8]



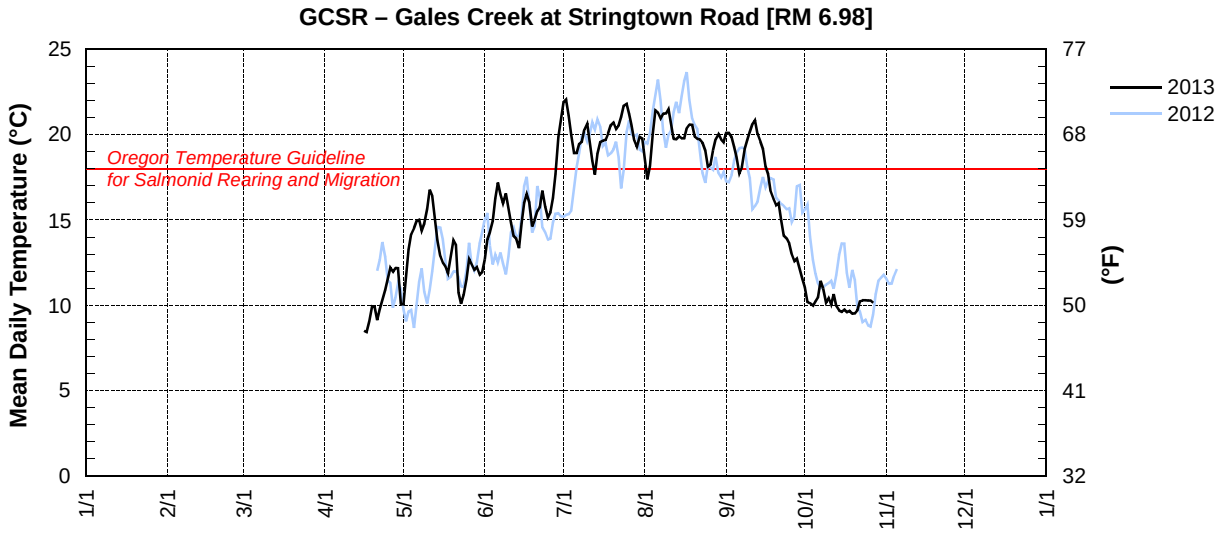
GCSR – GALES CREEK AT STRINGTOWN ROAD [RM 6.98]

Latitude: 45 32 26 Longitude: 123 10 09 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT*	NOV	DEC
1					10.1	12.7	21.9	18.6	20.1	11.0		
2					11.7	13.9	22.1	17.4	20.1	10.2		
3					13.3	14.3	21.1	18.2	19.9	10.1		
4					14.2	15.0	20.0	20.1	19.3	10.0		
5					14.5	16.3	18.9	21.4	18.7	10.2		
6					14.9	17.2	18.9	21.3	17.7	10.5		
7					15.0	16.5	19.5	21.0	18.1	11.4		
8					14.4	16.0	19.6	21.2	19.2	11.0		
9					14.8	16.6	20.3	21.3	19.7	10.2		
10					15.6	15.7	20.7	21.5	20.2	10.4		
11					16.8	14.8	19.6	20.6	20.6	10.0		
12					16.4	14.1	18.5	19.8	20.9	10.7		
13					15.2	13.9	17.7	19.7	20.0	10.0		
14					13.8	13.4	18.9	19.9	19.6	9.7		
15					12.9	14.8	19.6	19.8	19.2	9.6		
16				8.5	12.5	16.0	19.7	19.8	18.1	9.8		
17				8.4	12.3	16.5	19.7	20.4	17.7	9.6		
18				9.0	11.9	16.0	20.1	20.6	16.7	9.7		
19				9.9	12.8	14.6	20.5	20.6	16.2	9.5		
20				9.9	13.8	15.0	20.7	19.9	15.9	9.5		
21				9.1	13.5	15.5	20.3	19.8	16.0	9.7		
22				9.8	10.7	15.8	20.5	19.7	15.0	10.2		
23				10.3	10.1	16.7	21.0	19.5	14.1	10.3		
24				10.9	10.6	15.8	21.7	19.1	13.9	10.3		
25				11.6	11.5	15.2	21.8	18.1	13.6	10.3		
26				12.2	12.7	15.5	21.2	18.2	13.0	10.3		
27				12.0	12.4	16.3	20.5	19.1	12.6	10.2		
28				12.2	12.1	17.7	19.6	19.7	12.7			
29		—		12.2	12.3	19.9	19.3	20.0	12.1			
30		—		10.1	11.8	20.8	19.9	19.7	11.6			
31		—		—	11.9	—	19.8	19.6	—			
MEAN					13.1	15.7	20.1	19.9	17.1	10.2		
MAX					16.8	20.8	22.1	21.5	20.9	11.4		
MIN					10.1	12.7	17.7	17.4	11.6	9.5		

†No calibration checks in 2013; daily temperature range in 2013 suggest instrument may be near surface; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

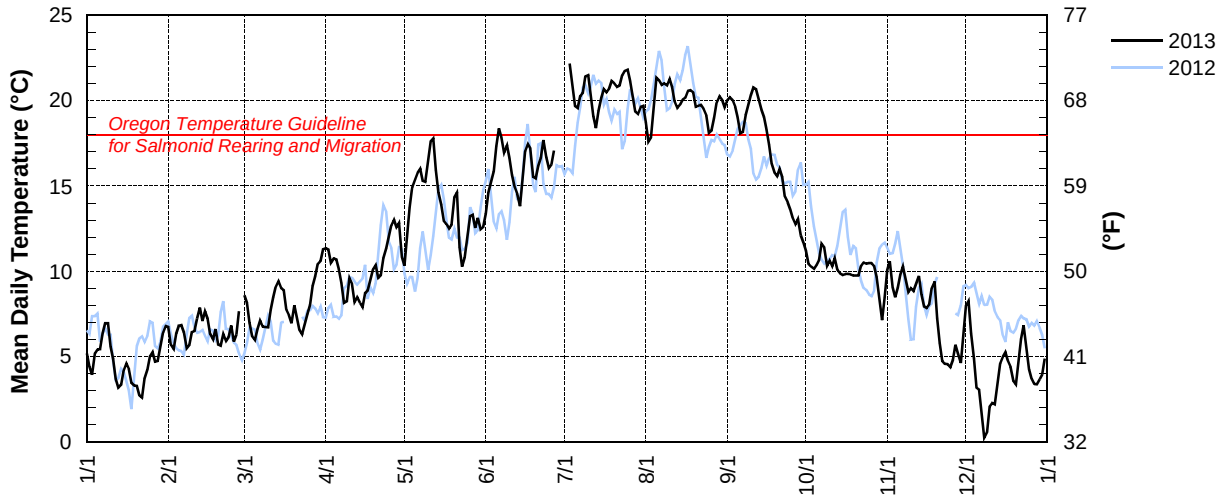
STATION NUMBER 453040123065201 GALES CREEK AT OLD HWY 47, FOREST GROVE, OR**

LATITUDE: 453039.75 LONGITUDE: 1230652.0

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN*	JUL*	AUG	SEP	OCT	NOV	DEC
1	5.2	6.7	8.6	11.4	10.3	13.4		18.8	20.0	11.2	10.0	8.0
2	4.4	5.7	8.2	11.3	12.0	14.6		17.6	20.2	10.5	10.6	8.3
3	3.9	5.4	7.0	10.5	13.7	15.2	22.2	17.8	20.0	10.3	9.1	6.4
4	5.2	6.3	6.2	10.8	14.9	15.9	20.9	19.8	19.7	10.1	8.5	4.9
5	5.4	6.8	6.0	10.7	15.4	17.3	19.7	21.3	19.0	10.4	9.0	3.2
6	5.4	6.9	6.6	10.2	15.8	18.4	19.6	21.2	18.1	10.7	9.8	3.1
7	6.3	6.4	7.1	9.3	16.0	17.9	20.3	20.9	18.2	11.6	10.3	1.6
8	7.0	5.5	6.7	8.2	15.3	17.0	20.4	21.0	19.2	11.5	9.5	0.3
9	7.0	5.7	6.7	8.3	15.2	17.4	21.4	20.9	19.8	10.4	8.8	0.6
10	5.6	6.4	6.8	9.6	16.5	16.7	21.5	21.3	20.3	10.6	9.0	2.0
11	4.9	6.5	7.7	9.3	17.6	15.7	20.4	20.8	20.8	10.3	8.9	2.3
12	3.7	7.2	8.5	8.3	17.8	15.0	19.1	20.0	20.7	10.8	9.3	2.2
13	3.2	7.9	9.1	8.5	16.0	14.6	18.4	19.6	20.2	10.1	9.7	3.4
14	3.4	7.1	9.5	8.2	14.6	13.8	19.4	19.8	19.5	9.9	8.7	4.6
15	4.2	7.6	9.0	7.9	13.9	15.3	20.2	20.1	19.1	9.8	8.0	5.0
16	4.6	7.3	8.9	8.7	13.0	17.1	20.7	20.2	18.3	9.9	7.9	5.3
17	4.3	6.3	7.7	8.8	12.8	17.4	20.5	20.6	17.5	9.9	8.1	4.8
18	3.5	6.0	7.4	9.4	12.5	17.2	20.7	20.6	16.3	9.8	9.0	4.4
19	3.3	6.6	7.0	10.1	12.7	15.6	21.1	20.5	15.8	9.8	9.4	3.6
20	3.3	5.8	8.0	10.4	14.3	15.5	21.0	19.7	15.6	9.7	7.3	3.4
21	2.7	5.6	7.3	9.6	14.7	16.2	20.8	19.7	16.0	9.7	5.8	4.6
22	2.6	6.3	6.6	9.7	11.5	16.6	20.9	19.8	15.5	10.3	4.8	6.0
23	3.7	5.9	6.3	10.8	10.3	17.7	21.5	19.5	14.4	10.5	4.6	6.9
24	4.2	6.2	6.9	11.3	10.8	16.7	21.8	19.1	14.1	10.5	4.6	5.6
25	5.0	6.8	7.5	12.1	12.0	16.1	21.8	18.1	13.6	10.5	4.4	4.3
26	5.3	5.9	8.0	12.7	13.2	16.2	21.2	18.2	13.1	10.5	4.8	3.7
27	4.7	6.3	9.1	13.1	13.3	17.1	20.3	19.0	12.8	10.3	5.7	3.4
28	4.7	7.6	9.7	12.6	12.6		19.4	19.9	13.1	9.7	5.2	3.4
29	5.6	—	10.4	12.9	13.1		19.2	20.3	12.1	8.3	4.6	3.7
30	6.4	—	10.6	10.9	12.5		19.7	20.1	11.7	7.2	6.2	3.9
31	6.8	—	11.3	—	12.6	—	19.7	19.6	—	8.5	—	4.9
MEAN	4.7	6.5	7.9	10.2	13.8	16.2	20.5	19.9	17.1	10.1	7.7	4.1
MAX	7.0	7.9	11.3	13.1	17.8	18.4	22.2	21.3	20.8	11.6	10.6	8.3
MIN	2.6	5.4	6.0	7.9	10.3	13.4	18.4	17.6	11.7	7.2	4.4	0.3

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

GALES – 453040123065201 – Gales Creek at Old Hwy 47 near Forest Grove, Oregon [RM 2.36]**



**USGS #453040123065201 is equivalent to OWRD #14204530.

WFDE – 14205160 – WEST FORK DAIRY CREEK AT EVERS ROAD BRIDGE [RM 1.96]

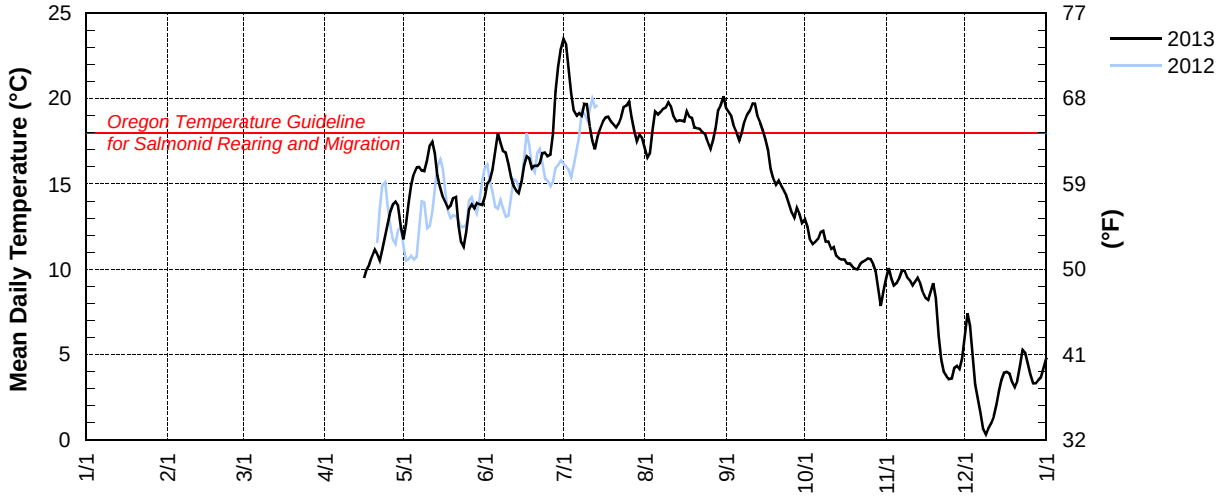
Latitude: 45 34 34 Longitude: 123 05 34 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1					11.8	14.2	23.5	17.1	19.4	12.9	9.5	6.1
2					12.7	15.0	23.2	16.6	19.2	12.5	10.1	7.4
3					13.9	15.2	21.8	16.8	19.0	11.7	9.5	6.7
4					14.9	15.8	20.3	18.1	18.4	11.5	9.1	5.0
5					15.6	16.9	19.3	19.3	18.0	11.6	9.2	3.2
6					16.0	18.0	19.0	19.1	17.6	11.8	9.5	2.4
7					16.0	17.4	19.1	19.2	18.0	12.2	9.9	1.5
8					15.8	16.9	19.0	19.4	18.7	12.3	9.9	0.6
9					15.7	16.9	19.7	19.5	19.1	11.6	9.6	0.3
10					16.3	16.2	19.7	19.8	19.3	11.6	9.4	0.7
11					17.2	15.4	18.4	19.5	19.7	11.2	9.1	1.0
12					17.5	14.9	17.5	18.9	19.7	11.3	9.3	1.4
13					16.8	14.6	17.0	18.7	19.0	10.8	9.5	2.0
14					15.5	14.5	17.8	18.7	18.6	10.7	9.2	2.9
15					14.8	15.2	18.2	18.7	18.2	10.6	8.7	3.5
16				9.5	14.2	16.1	18.7	18.7	17.6	10.6	8.3	3.9
17				10.0	13.9	16.6	18.9	19.3	17.0	10.3	8.2	4.0
18				10.3	13.6	16.5	18.9	18.9	15.9	10.3	8.7	3.9
19				10.7	13.7	15.9	18.7	18.9	15.3	10.2	9.2	3.4
20				11.2	14.2	16.1	18.5	18.3	15.0	10.0	8.3	3.1
21				10.9	14.3	16.0	18.3	18.3	15.2	10.0	6.1	3.4
22				10.5	12.6	16.2	18.6	18.2	14.9	10.3	4.7	4.4
23				11.2	11.6	16.8	18.9	18.0	14.6	10.5	4.0	5.3
24				11.9	11.3	16.8	19.5	17.9	14.3	10.5	3.7	5.1
25				12.7	12.2	16.6	19.6	17.5	13.8	10.6	3.6	4.5
26				13.4	13.5	16.7	19.8	17.0	13.3	10.6	3.6	3.9
27				13.8	13.8	17.9	18.9	17.6	13.0	10.3	4.2	3.3
28				14.0	13.6	20.4	18.1	18.3	13.6	9.9	4.3	3.3
29		—		13.7	13.9	21.9	17.5	19.3	13.2	8.8	4.2	3.5
30		—		12.5	13.8	22.9	17.9	19.6	12.7	7.9	4.8	3.7
31		—		—	13.8	—	17.7	20.1	—	8.7	—	4.2
MEAN					14.3	16.7	19.1	18.6	16.7	10.8	7.6	3.5
MAX					17.5	22.9	23.5	20.1	19.7	12.9	10.1	7.4
MIN					11.3	14.2	17.0	16.6	12.7	7.9	3.6	0.3

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

WFDE – 14205160 – West Fork Dairy Creek at Evers Road Bridge [RM 1.96]



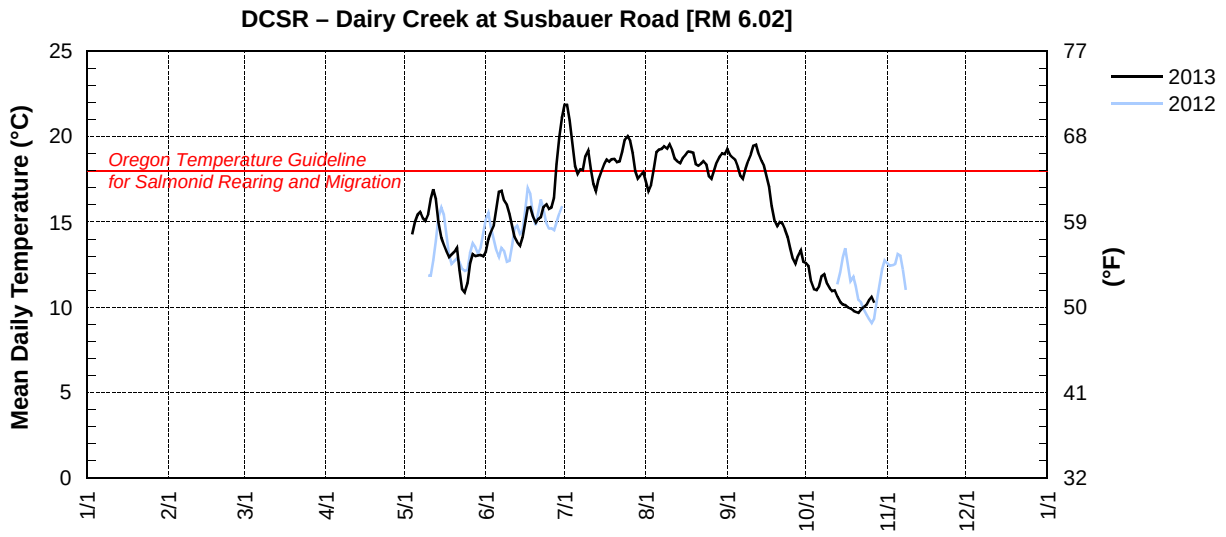
DCSR – DAIRY CREEK AT SUSBAUER ROAD [RM 6.02]

Latitude: 45 32 23 Longitude: 123 02 30 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY*	JUN	JUL	AUG	SEP	OCT*	NOV	DEC
1						13.3	21.9	17.4	19.3	12.6		
2						14.0	21.9	16.8	19.0	12.4		
3						14.4	21.0	17.2	18.8	11.5		
4					14.3	14.8	19.5	18.1	18.6	11.1		
5					15.0	15.8	18.3	19.1	18.3	11.0		
6					15.4	16.8	17.8	19.3	17.7	11.2		
7					15.6	16.8	18.1	19.3	17.5	11.8		
8					15.2	16.3	18.0	19.4	18.2	11.9		
9					15.1	16.0	18.9	19.3	18.6	11.4		
10					15.5	15.5	19.2	19.6	19.0	11.1		
11					16.4	14.8	18.1	19.2	19.5	11.0		
12					16.9	14.1	17.3	18.7	19.5	11.0		
13					16.4	13.8	16.8	18.6	19.0	10.6		
14					15.0	13.6	17.5	18.4	18.6	10.3		
15					14.1	14.1	18.0	18.7	18.3	10.2		
16					13.7	15.0	18.4	18.9	17.7	10.1		
17					13.3	15.8	18.7	19.1	17.1	10.0		
18					12.9	15.9	18.5	19.1	15.9	9.9		
19					13.1	15.3	18.7	19.1	15.1	9.8		
20					13.3	15.0	18.7	18.4	14.8	9.7		
21					13.5	15.2	18.5	18.3	15.0	9.7		
22					12.2	15.3	18.5	18.4	14.9	9.9		
23					11.1	15.9	19.1	18.6	14.6	10.0		
24					10.9	16.0	19.8	18.4	14.1	10.2		
25					11.4	15.8	20.0	17.7	13.4	10.4		
26					12.6	15.9	19.8	17.5	12.9	10.6		
27					13.1	16.4	19.0	18.0	12.6	10.3		
28					13.0	18.4	18.0	18.5	13.0			
29		—			13.0	20.0	17.6	18.8	13.4			
30		—			13.1	21.1	17.8	19.0	12.7			
31		—		—	13.0	—	17.9	19.0	—			
MEAN					13.9	15.7	18.7	18.6	16.6	10.7		
MAX					16.9	21.1	21.9	19.6	19.5	12.6		
MIN					10.9	13.3	16.8	16.8	12.6	9.7		

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



MCKN – 14205980 – MCKAY CREEK AT NORTHRUP ROAD NEAR NORTH PLAINS, OREGON [RM 15.5]

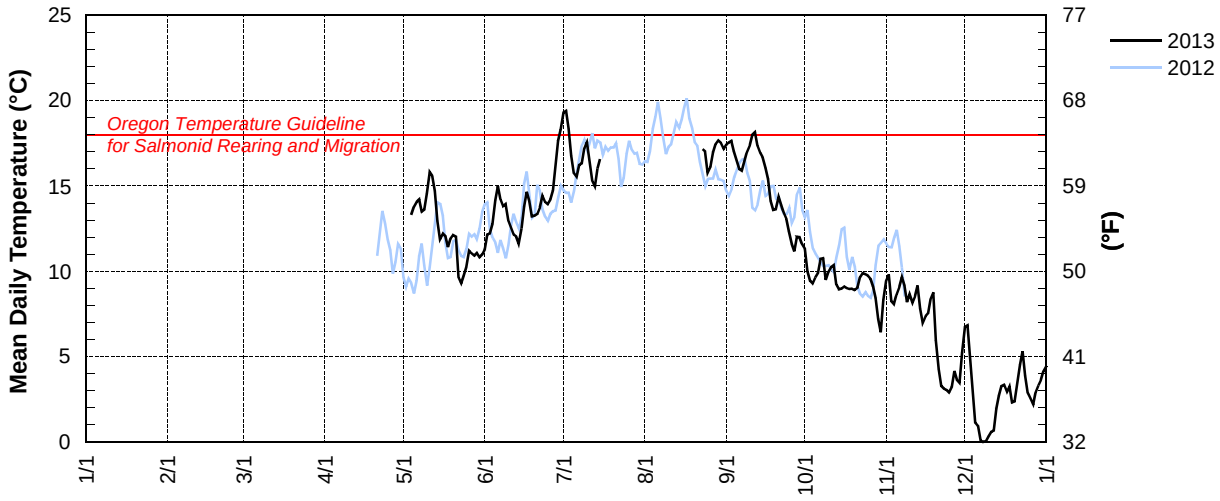
Latitude: 45 38 36 Longitude: 122 59 32 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR	MAY*	JUN	JUL*	AUG*	SEP	OCT	NOV	DEC
1						11.3	19.3		17.4	11.3	9.5	6.8
2						12.2	19.4		17.6	10.0	9.8	6.9
3						12.2	18.4		17.6	9.4	8.2	4.7
4					13.3	12.8	16.8		17.0	9.3	8.1	2.9
5					13.8	14.2	15.8		16.5	9.6	8.6	1.2
6					14.1	15.0	15.6		16.0	9.9	9.1	0.9
7					14.2	14.2	16.2		15.9	10.7	9.7	0.1
8					13.5	13.8	16.3		16.5	10.8	9.2	0.0
9					13.6	14.0	17.2		17.0	9.5	8.2	0.0
10					14.5	12.9	17.6		17.4	10.0	8.7	0.3
11					15.8	12.5	16.4		18.0	10.3	8.2	0.6
12					15.6	12.2	15.3		18.1	10.4	8.6	0.7
13					14.7	12.0	15.0		17.3	9.2	9.2	2.0
14					13.0	11.6	16.0		17.0	9.0	7.8	2.7
15					11.9	12.5	16.6		16.7	9.0	7.0	3.3
16					12.2	13.8			16.1	9.1	7.4	3.4
17					12.1	14.7			15.4	9.0	7.6	2.9
18					11.4	14.1			14.1	9.0	8.4	3.3
19					11.9	13.2			13.6	9.0	8.8	2.3
20					12.1	13.3			13.6	8.9	6.0	2.4
21					12.0	13.4			14.4	9.0	4.3	3.4
22					9.6	13.8			13.9	9.7	3.3	4.5
23					9.3	14.4		17.2	13.4	9.9	3.1	5.3
24					9.7	14.1		17.0	13.1	9.8	3.1	3.9
25					10.2	13.9		15.8	12.3	9.8	2.9	2.9
26					11.2	14.2		16.1	11.6	9.6	3.2	2.6
27					11.0	14.7		17.0	11.2	9.1	4.2	2.2
28					10.9	16.1		17.5	12.0	8.4	3.6	3.0
29		—			11.1	17.6		17.7	12.0	7.2	3.5	3.3
30		—			10.8	18.3		17.5	11.6	6.4	5.2	3.6
31		—			11.0	—		17.2	—	8.3	—	4.1
MEAN					12.3	13.8			15.1	9.4	6.8	2.8
MAX					15.8	18.3			18.1	11.3	9.8	6.9
MIN					9.3	11.3			11.2	6.4	2.9	0.0

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

MCKN – 14205980 – McKay Creek at Northrup Road near North Plains, Oregon [RM 15.5]



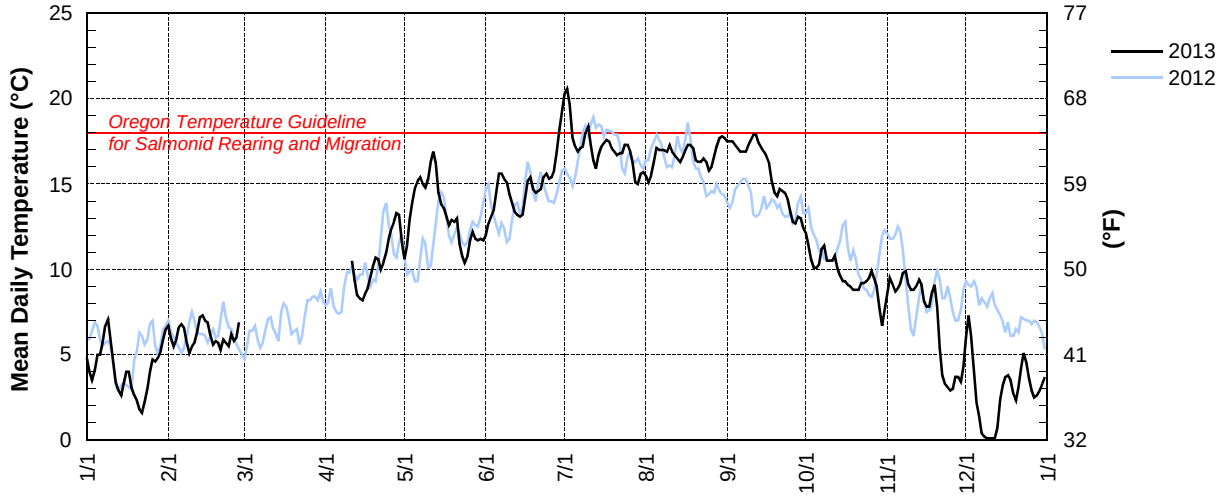
MCSC – 14206070 – MCKAY CREEK AT SCOTCH CHURCH ROAD ABOVE WAIBLE CREEK NEAR NORTH PLAINS, OREGON [RM 6.3]

Latitude: 45 57 21 Longitude: 122 99 18 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR*	APR*	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.8	6.7	8.1		10.6	12.0	20.3	15.5	17.5	12.1	8.5	6.0
2	4.0	6.0	8.5		11.4	12.7	20.6	15.1	17.5	11.4	9.5	7.3
3	3.5	5.5	7.5		12.9	13.1	19.7	15.5	17.5	10.6	9.1	6.1
4	4.1	5.9	6.1		13.9	13.5	17.7	16.3	17.3	10.1	8.7	4.1
5	5.0	6.6	5.7		14.8	14.5	17.2	17.1	17.1	10.1	8.9	2.2
6	5.0	6.8			15.2	15.6	16.9	17.0	16.9	10.3	9.2	1.4
7	5.7	6.6			15.4	15.6	17.1	17.0	16.9	11.2	9.8	0.4
8	6.7	5.7			15.0	15.3	17.2	17.0	16.9	11.4	9.9	0.2
9	7.1	5.1			14.8	15.1	18.0	16.9	17.3	10.5	9.1	0.1
10	5.9	5.5			15.3	14.4	18.4	17.3	17.6	10.5	8.8	0.1
11	4.7	5.7		10.5	16.3	13.9	17.3	16.9	17.9	10.5	8.8	0.1
12	3.4	6.3		9.4	16.9	13.4	16.4	16.7	17.9	10.8	9.0	0.1
13	2.9	7.2		8.5	16.2	13.2	15.9	16.5	17.4	10.1	9.4	0.7
14	2.6	7.3		8.3	14.5	13.1	16.7	16.3	17.1	9.6	9.1	2.4
15	3.3	7.0		8.2	13.8	13.2	17.2	16.6	16.9	9.3	8.1	3.2
16	4.0	6.9		8.6	13.6	14.2	17.4	17.0	16.6	9.3	7.8	3.7
17	4.0	6.2		8.9	13.1	15.2	17.6	17.3	16.2	9.1	7.8	3.8
18	3.1	5.6		9.5	12.6	15.4	17.5	17.3	15.2	9.0	8.6	3.5
19	2.6	5.8		10.2	12.9	14.7	17.1	17.1	14.5	8.8	9.1	2.7
20	2.3	5.7		10.7	12.8	14.5	16.9	16.4	14.3	8.8	7.8	2.3
21	1.8	5.3		10.6	13.0	14.6	16.7	16.3	14.7	8.8	5.4	3.1
22	1.6	5.9		10.0	11.5	14.7	16.8	16.3	14.6	9.2	3.8	4.2
23	2.2	5.7		10.4	10.8	15.4	16.8	16.5	14.5	9.2	3.3	5.1
24	3.0	5.5		11.0	10.4	15.6	17.3	16.3	14.1	9.3	3.1	4.5
25	4.0	6.2		11.8	10.8	15.3	17.3	15.8	13.4	9.5	2.9	3.6
26	4.7	5.8		12.4	11.7	15.4	16.9	16.0	12.8	9.9	3.0	2.9
27	4.6	6.0		12.8	12.2	15.8	16.2	16.6	12.7	9.5	3.7	2.5
28	4.8	6.9		13.3	11.8	16.8	15.1	17.2	13.1	9.0	3.7	2.6
29	5.2	—		13.2	11.7	18.2	15.0	17.7	13.0	7.7	3.4	2.9
30	5.9	—		11.6	11.8	19.2	15.6	17.8	12.4	6.7	4.3	3.3
31	6.5	—		—	11.7	—	15.7	17.7	—	7.6	—	3.7
MEAN	4.2	6.1	7.2	10.5	13.2	14.8	17.2	16.7	15.7	9.7	7.1	2.9
MAX	7.1	7.3	8.5	13.3	16.9	19.2	20.6	17.8	17.9	12.1	9.9	7.3
MIN	1.6	5.1	5.7	8.2	10.4	12.0	15.0	15.1	12.4	6.7	2.9	0.1

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

MCSC – 14206070 – McKay Creek at Scotch Church Road above Waible Creek near North Plains, Oregon [RM 6.3]

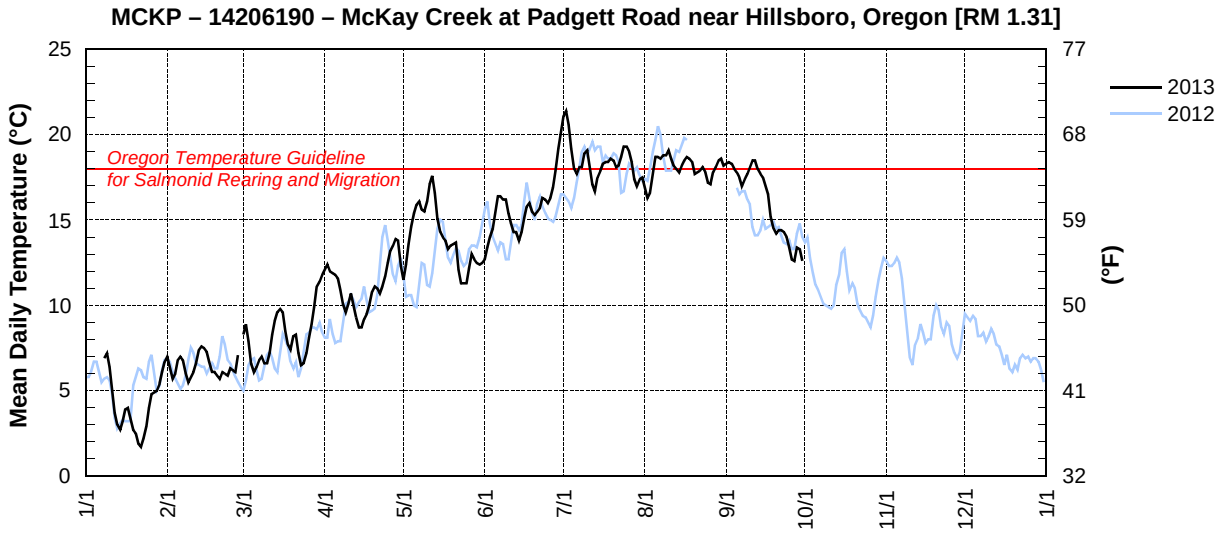


MCKP – 14206190 – MCKAY CREEK AT PADGETT ROAD NEAR HILLSBORO, OREGON [RM 1.31]

Latitude: 45 31 57 Longitude: 123 00 16 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN*	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.8	7.0	8.3	12.1	11.5	12.7	21.1	16.9	18.3			
2	4.1	6.4	8.9	12.4	12.4	13.4	21.4	16.3	18.4			
3	3.5	5.7	7.9	12.0	13.6	14.0	20.6	16.6	18.3			
4	3.7	6.0	6.6	11.9	14.6	14.5	19.2	17.7	18.0			
5	4.2	6.8	6.1	11.8	15.4	15.5	18.0	18.7	17.8			
6		7.0	6.4	11.6	15.9	16.4	17.7	18.7	17.5			
7		6.8	6.8	10.9	16.1	16.4	18.1	18.6	17.0			
8	6.9	6.0	7.0	10.1	15.6	16.2	18.1	18.8	17.4			
9	7.2	5.5	6.6	9.6	15.5	16.2	18.9	18.8	17.7			
10	6.4	5.8	6.6	10.1	16.1	15.4	19.1	19.1	18.1			
11	5.0	6.1	7.2	10.7	17.1	14.8	18.1	18.6	18.5			
12	3.7	6.6	8.3	10.0	17.6	14.3	17.1	18.2	18.5			
13	3.0	7.4	9.1	9.3	16.6	14.3	16.7	18.0	18.0			
14	2.7	7.6	9.6	8.7	15.1	13.8	17.5	17.8	17.7			
15	3.2	7.5	9.8	8.7	14.3	14.3	17.9	18.2	17.5			
16	3.9	7.3	9.6	9.2	14.0	15.1	18.3	18.5	17.0			
17	4.0	6.7	8.5	9.5	13.8	15.8	18.4	18.7	16.5			
18	3.4	6.1	7.7	10.0	13.3	16.0	18.4	18.6	15.2			
19	2.7	6.1	7.4	10.8	13.5	15.5	18.6	18.4	14.5			
20	2.5	5.9	8.2	11.1	13.6	15.3	18.5	17.7	14.2			
21	1.9	5.7	8.3	11.0	13.7	15.5	18.1	17.8	14.4			
22	1.7	6.1	7.2	10.7	12.1	15.7	18.2	17.9	14.4			
23	2.2	6.0	6.5	11.1	11.3	16.3	18.7	18.1	14.3			
24	2.9	5.9	6.6	11.7	11.3	16.2	19.3	17.8	14.0			
25	4.0	6.3	7.2	12.5	11.3	16.0	19.3	17.2	13.4			
26	4.8	6.2	8.1	13.2	12.2	16.3	19.0	17.1	12.7			
27	4.9	6.1	8.9	13.5	13.0	16.9	18.4	17.8	12.6			
28	5.0	7.1	9.9	13.9	12.7	17.9	17.4	18.1	13.4			
29	5.4	—	11.1	13.8	12.5	19.2	17.0	18.5	13.3			
30	6.1	—	11.4	12.3	12.4	20.1	17.4	18.6	12.6			
31	6.7	—	11.8	—	12.5	—	17.5	18.2	—		—	
MEAN	4.2	6.4	8.2	11.1	13.9	15.7	18.5	18.1	16.0			
MAX	7.2	7.6	11.8	13.9	17.6	20.1	21.4	19.1	18.5			
MIN	1.7	5.5	6.1	8.7	11.3	12.7	16.7	16.3	12.6			

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month); **Mean daily value based on incomplete record



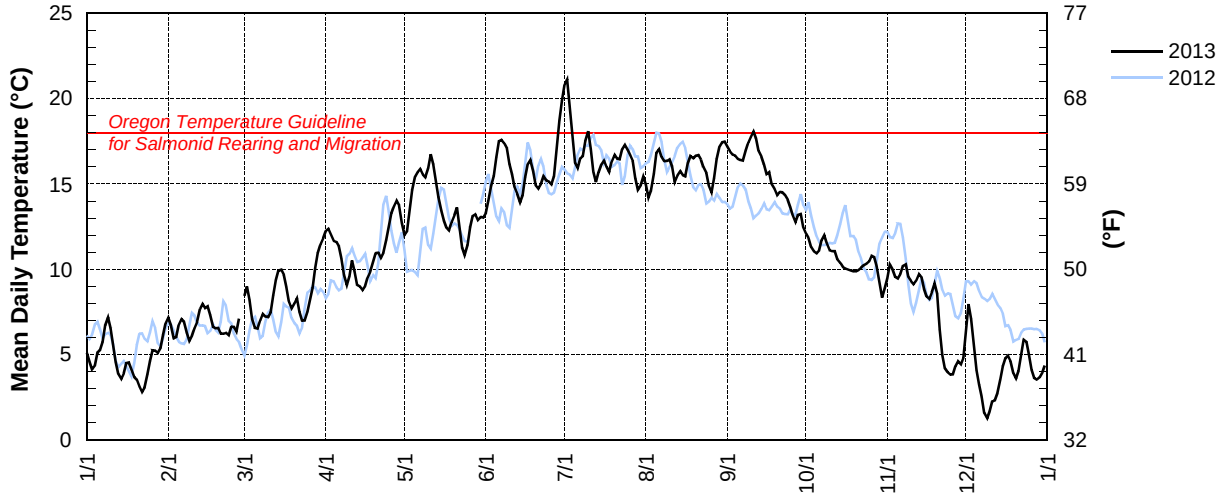
TRJB – 14206241 – TUALATIN RIVER AT HWY 219 BRIDGE [RM 44.4]

Latitude: 45 30 01 Longitude: 122 59 24 Source Agency: Jackson Bottom Wetland Education Center

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY*	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.1	7.2	8.5	12.2	12.0	13.3	20.8	15.0	17.2	12.1	9.5	6.3
2	4.6	6.8	9.0	12.4	12.3	14.0	21.2	14.2	16.9	11.8	10.3	8.0
3	4.1	6.0	8.2	12.0	13.5	14.8	19.6	14.6	16.7	11.3	10.0	7.1
4	4.4	6.1	7.1	11.7	14.7	15.5	17.8	15.6	16.7	11.1	9.6	5.6
5	5.1	6.8	6.6	11.6	15.4	16.6	16.2	16.8	16.5	10.9	9.5	4.1
6	5.3	7.1	6.5	11.3	15.7	17.5	15.9	17.1	16.4	11.1	9.7	3.3
7	5.8	6.9	7.0	10.6	15.9	17.6	16.5	16.6	16.4	11.7	10.2	2.5
8	6.7	6.3	7.4	9.7	15.6	17.4	16.6	16.3	17.0	12.0	10.3	1.6
9	7.2	5.8	7.3	9.1	15.4	17.1	17.5	16.4	17.4	11.5	9.6	1.3
10	6.5	6.1	7.2	9.6	15.9	16.2	18.1	16.4	17.8	11.1	9.3	1.7
11	5.6	6.6	7.5	10.5	16.7	15.6	17.1	16.0	18.1	11.1	9.1	2.3
12	4.6	6.9	8.5	9.9	16.1	14.8	15.7	15.1	17.7	11.1	9.4	2.3
13	3.9	7.7	9.4	9.1	15.2	14.4	15.1	15.5	16.9	10.6	9.7	2.7
14	3.6	8.0	9.9	9.0	14.2	13.9	15.7	15.8	16.6	10.4	9.5	3.5
15	3.9	7.7	10.0	8.8	13.5	14.4	16.1	15.5	16.1	10.2	8.9	4.3
16	4.5	7.8	9.7	9.0	12.9	15.4	16.4	15.5	15.6	10.1	8.4	4.8
17	4.5	7.3	9.0	9.6	12.5	16.2	16.0	16.2	15.7	10.0	8.3	4.9
18	4.1	6.6	8.1	9.9	12.3	16.4	15.7	16.6	15.0	9.9	8.6	4.6
19	3.7	6.6	7.7	10.5	12.8	15.8	16.3	16.5	14.7	9.9	9.2	3.9
20	3.5	6.6	8.0	11.0	13.2	14.9	16.7	16.7	14.3	9.9	8.6	3.6
21	3.1	6.2	8.3	11.0	13.6	14.8	16.5	16.7	14.5	10.0	6.5	4.1
22	2.8	6.2	7.5	10.7	12.4	15.0	16.4	16.4	14.5	10.1	5.0	5.0
23	3.1	6.3	7.0	11.0	11.3	15.5	17.0	16.0	14.4	10.2	4.2	5.9
24	3.9	6.1	7.0	11.7	10.8	15.2	17.3	15.6	14.1	10.3	4.0	5.7
25	4.6	6.6	7.5	12.5	11.4	15.2	17.0	14.9	13.7	10.5	3.8	5.0
26	5.3	6.6	8.2	13.3	12.5	15.0	16.7	14.5	13.1	10.8	3.9	4.1
27	5.2	6.4	8.9	13.7	13.1	15.5	16.4	15.4	12.8	10.7	4.3	3.6
28	5.1	7.1	10.1	14.0	13.2	16.9	15.4	16.5	13.2	10.2	4.6	3.6
29	5.4	8.5	11.0	13.8	12.9	18.7	14.7	17.2	13.3	9.2	4.4	3.7
30	6.2	—	11.5	12.7	13.1	19.9	14.9	17.4	12.4	8.4	4.9	3.9
31	6.9	—	11.8	—	13.0	—	15.4	17.5	—	8.9	—	4.4
MEAN	4.8	6.8	8.4	11.1	13.6	15.8	16.7	16.0	15.5	10.5	7.8	4.1
MAX	7.2	8.5	11.8	14.0	16.7	19.9	21.2	17.5	18.1	12.1	10.3	8.0
MIN	2.8	5.8	6.5	8.8	10.8	13.3	14.7	14.2	12.4	8.4	3.8	1.3

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

TRJB – 14206241 – Tualatin River at Hwy 219 Bridge [RM 44.4]



ROOD – 14206295 – TUALATIN RIVER AT ROOD BRIDGE ROAD NEAR HILLSBORO, OREGON [RM 38.4]

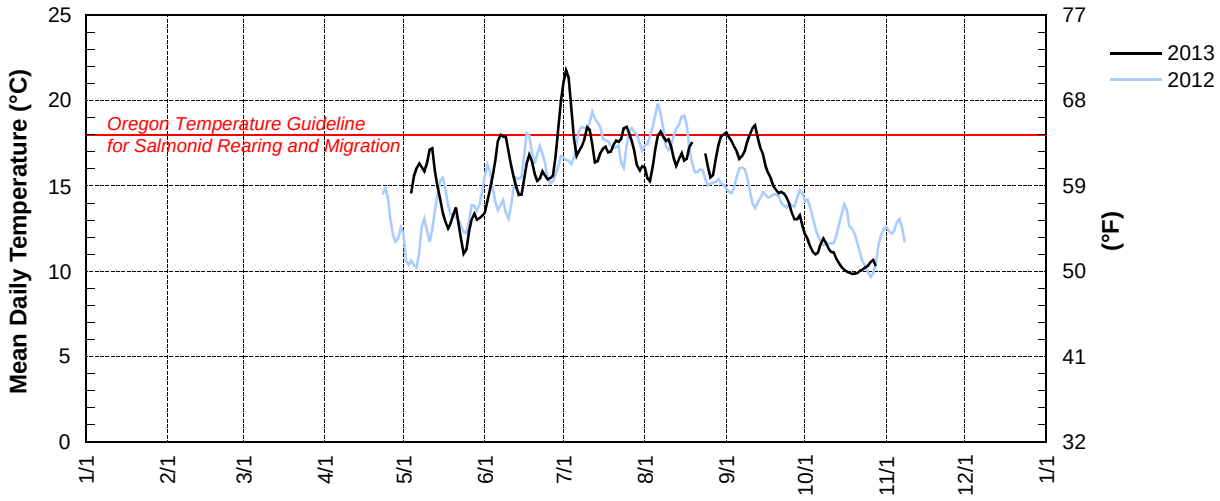
Latitude: 45 30 38 Longitude: 123 06 56 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR	MAY*	JUN	JUL	AUG*	SEP	OCT*	NOV	DEC
1						13.4	21.1	16.1	18.1	12.2		
2						14.1	21.8	15.4	17.9	11.9		
3						14.8	21.4	15.3	17.6	11.5		
4					14.6	15.6	19.6	16.2	17.3	11.1		
5					15.6	16.5	17.7	17.2	17.0	11.0		
6					16.0	17.7	16.8	18.0	16.6	11.1		
7					16.3	18.0	17.1	18.2	16.8	11.6		
8					16.1	17.9	17.3	17.9	17.0	11.9		
9					15.9	17.9	17.7	17.6	17.6	11.6		
10					16.4	17.1	18.4	17.7	18.0	11.3		
11					17.1	16.2	18.3	17.3	18.4	11.1		
12					17.2	15.5	17.4	16.7	18.6	11.1		
13					15.9	15.0	16.4	16.2	17.9	10.7		
14					15.0	14.5	16.5	16.6	17.2	10.4		
15					14.2	14.5	16.9	16.9	16.9	10.2		
16					13.4	15.4	17.2	16.5	16.2	10.1		
17					12.9	16.3	17.3	16.6	15.7	10.0		
18					12.5	16.8	17.0	17.3	15.5	9.9		
19					12.8	16.4	17.0	17.6	15.0	9.9		
20					13.3	15.7	17.4		14.8	9.9		
21					13.7	15.3	17.7		14.6	9.9		
22					12.9	15.4	17.6		14.7	10.0		
23					11.9	15.9	17.8		14.6	10.1		
24					11.1	15.6	18.4	16.9	14.3	10.2		
25					11.3	15.4	18.5	16.1	13.9	10.3		
26					12.3	15.5	18.1	15.5	13.4	10.5		
27					13.0	15.6	17.7	15.6	13.0	10.7		
28					13.4	16.7	17.1	16.5	13.1	10.3		
29		—			13.0	18.6	16.2	17.4	13.3			
30		—			13.1	20.0	15.9	17.9	12.7			
31		—			13.3	—	16.2	18.0	—			
MEAN					14.1	16.1	17.8	16.9	15.9	10.7		
MAX					17.2	20.0	21.8	18.2	18.6	12.2		
MIN					11.1	13.4	15.9	15.3	12.7	9.9		

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

ROOD – 14206295 – Tualatin River at Rood Bridge Road near Hillsboro, Oregon [RM 38.4]

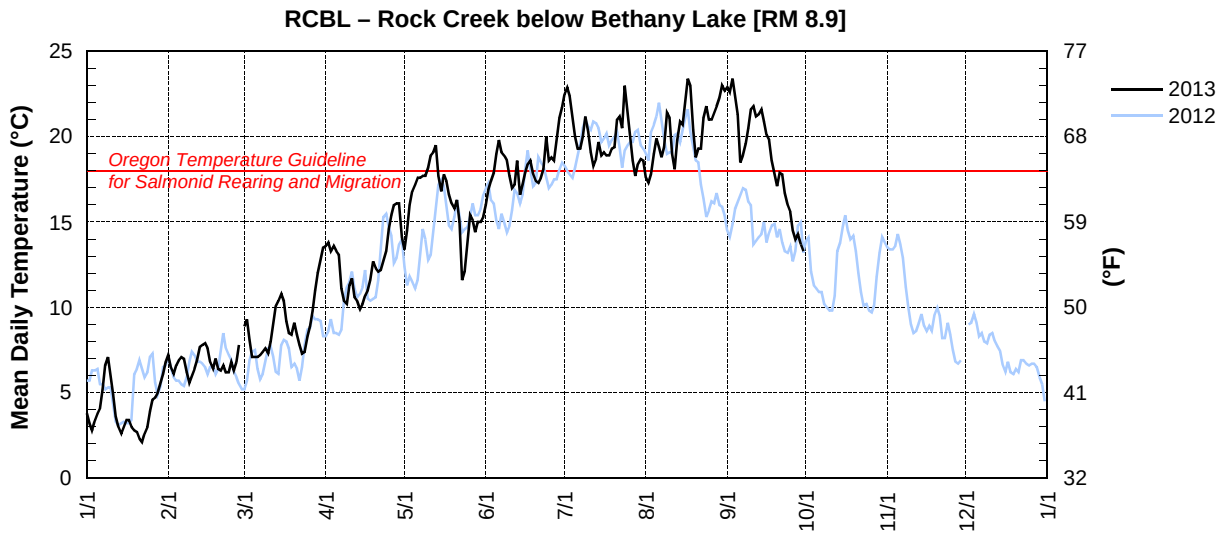


RCBL – 14206340 – ROCK CREEK BELOW BETHANY LAKE [RM 8.9]

Latitude: 45 33 21 Longitude: 122 52 25 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN*	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.8	7.2	8.9	13.6	13.4	16.0	22.5	17.6	22.9			
2		6.5	9.3	13.8	14.5	16.9	22.9	17.3	22.6			
3		6.1	8.1	13.3	16.0	17.4	22.4	17.8	23.4			
4	3.4	6.6	7.1	13.6	16.8	17.9	21.1	19.0	22.4			
5	3.8	6.9	7.1	13.3	17.2	19.0	20.0	19.9	21.3			
6	4.1	7.1	7.1	13.1	17.6	19.8	19.3	19.4	18.5			
7	5.2	7.0	7.2	11.1	17.6	19.1	19.3	18.8	18.9			
8	6.6	6.2	7.4	10.4	17.7	18.9	20.0	19.4	19.6			
9	7.1	5.6	7.6	10.2	17.7	18.6	21.2	21.4	20.5			
10	6.0	6.0	7.3	11.3	18.2	17.7	20.3	21.1	21.6			
11	4.9	6.4	8.0	11.7	18.9	17.0	19.1	19.0	21.8			
12	3.6	6.9	9.0	10.6	19.1	17.2	18.3	18.1	21.2			
13	3.0	7.7	10.1	10.4	19.5	18.6	18.7	19.8	21.3			
14	2.6	7.8	10.4	9.9	17.7	16.6	19.7	20.9	21.6			
15	3.0	7.9	10.8	10.2	16.8	17.2	18.9	20.7	20.9			
16	3.4	7.6	10.4	10.7	17.8	17.9	19.1	22.1	20.1			
17	3.4	6.8	9.2	11.0	17.4	18.4	18.9	23.4	19.8			
18	3.0	6.4	8.5	11.6	16.6	18.6	18.9	23.0	18.6			
19	2.8	7.0	8.4	12.7	16.1	17.8	19.3	20.4	17.8			
20	2.7	6.4	9.1	12.3	15.8	17.4	19.4	18.8	17.1			
21	2.3	6.3	8.4	12.1	16.3	17.3	21.0	19.3	17.9			
22	2.1	6.6	7.8	12.2	15.0	17.6	21.2	19.3	17.8			
23	2.6	6.2	7.3	12.7	11.6	18.1	20.5	21.1	16.7			
24	3.0	6.2	7.4	13.3	12.1	20.0	23.0	21.8	16.0			
25	3.9	6.8	8.3	14.6	13.9	18.6	21.3	21.0	15.6			
26	4.6	6.3	8.9	15.4	15.4	18.8	19.9	21.0	14.5			
27	4.7	6.8	9.8	16.0	15.1	18.6	18.6	21.4	14.0			
28	5.0	7.8	11.0	16.1	14.4	19.8	17.7	21.8	14.3			
29	5.6	—	12.0	16.1	15.0	21.1	18.4	22.3	13.7			
30	6.1	—	12.8	14.1	15.0	21.7	18.7	23.0	13.3			
31	6.8	—	13.5	—	15.3	—	18.6	22.7	—		—	
MEAN	4.1	6.8	9.0	12.6	16.2	18.3	19.9	20.4	18.9			
MAX	7.1	7.9	13.5	16.1	19.5	21.7	23.0	23.4	23.4			
MIN	2.1	5.6	7.1	9.9	11.6	16.0	17.7	17.3	13.3			

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



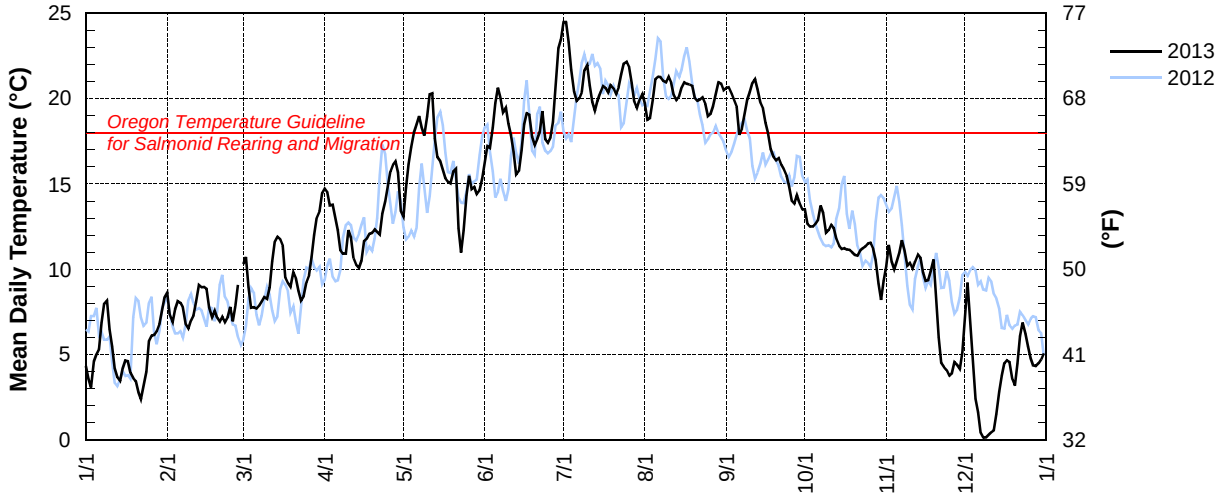
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 453004122510301 BEAVERTON CREEK AT 170TH AVE, BEAVERTON, OR.

LATITUDE: 453004 LONGITUDE: 1225103

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.4	8.7	10.3	14.8	13.0	16.2	24.5	19.8	20.6	13.5	10.2	7.2
2	3.6	7.4	10.7	14.6	14.7	17.2	24.5	18.8	20.7	12.7	11.4	9.3
3	3.1	6.9	9.0	13.8	16.1	17.1	23.4	18.9	20.3	12.5	10.5	7.2
4	4.6	7.7	7.7	13.8	17.1	18.3	21.8	19.9	19.9	12.5	10.0	4.5
5	5.0	8.2	7.8	13.1	18.0	19.7	20.4	21.1	19.6	12.7	10.5	2.5
6	5.3	8.1	7.7	12.3	18.5	20.6	19.9	21.3	17.9	12.9	11.0	1.7
7	6.9	7.8	7.9	11.2	19.0	20.1	20.0	21.2	18.2	13.7	11.7	0.4
8	8.0	6.8	8.1	10.9	18.3	19.2	20.4	21.1	19.2	13.3	11.1	0.1
9	8.2	6.5	8.4	10.9	17.8	19.5	21.6	21.0	19.9	12.2	10.2	0.1
10	6.5	7.0	8.3	12.3	18.9	18.5	22.0	21.3	20.4	12.3	10.4	0.3
11	5.5	7.3	8.9	11.9	20.3	17.9	20.8	21.0	20.9	12.6	10.1	0.5
12	4.2	8.1	10.4	10.7	20.4	16.9	19.8	20.2	21.2	12.4	10.5	0.6
13	3.7	9.1	11.6	10.3	17.7	15.6	19.3	19.9	20.6	11.8	10.9	1.5
14	3.5	9.0	11.9	10.1	16.6	15.8	19.9	20.1	19.8	11.4	10.7	2.8
15	4.2	9.0	11.8	10.5	16.4	16.9	20.4	20.7	19.5	11.2	9.8	3.8
16	4.7	8.9	11.4	11.6	15.9	18.5	20.7	21.0	18.6	11.3	9.3	4.5
17	4.6	7.8	9.5	11.8	15.4	19.1	20.6	20.9	18.0	11.2	9.4	4.7
18	4.0	7.2	9.2	12.1	15.2	19.1	20.4	20.8	17.1	11.2	9.9	4.6
19	3.6	7.6	9.0	12.1	15.0	17.8	20.8	20.8	16.6	11.0	10.6	3.6
20	3.5	7.2	9.8	12.3	15.7	17.3	20.6	20.1	16.4	10.8	8.3	3.2
21	2.8	6.9	9.5	12.2	15.9	17.7	20.3	19.9	16.5	10.8	6.1	4.5
22	2.4	7.2	8.8	12.0	12.5	18.1	20.6	19.9	16.1	11.1	4.5	6.1
23	3.2	6.9	8.2	13.2	11.0	19.3	21.4	20.1	15.9	11.2	4.3	6.9
24	4.0	7.2	8.4	14.0	12.2	17.7	22.0	19.7	15.5	11.4	4.1	6.3
25	5.8	7.8	9.2	14.9	14.3	17.4	22.2	19.0	14.8	11.5	3.8	5.5
26	6.1	7.0	9.7	15.7	15.5	17.7	21.9	19.1	14.0	11.6	3.9	4.8
27	6.2	7.9	10.7	16.1	14.7	18.6	20.9	19.5	13.9	11.2	4.5	4.4
28	6.4	9.1	12.0	16.3	14.8	20.5	19.9	20.2	14.3	10.6	4.4	4.3
29	6.8	—	13.0	15.7	14.4	22.9	19.4	20.9	13.9	9.2	4.2	4.5
30	7.6	—	13.4	13.4	14.6	23.5	20.0	20.9	13.5	8.2	5.1	4.7
31	8.4	—	14.5	—	15.3	—	20.3	20.5	—	9.3	—	5.1
MEAN	5.0	7.7	9.9	12.8	16.0	18.5	21.0	20.3	17.8	11.6	8.4	3.9
MAX	8.4	9.1	14.5	16.3	20.4	23.5	24.5	21.3	21.2	13.7	11.7	9.3
MIN	2.4	6.5	7.7	10.1	11.0	15.6	19.3	18.8	13.5	8.2	3.8	0.1

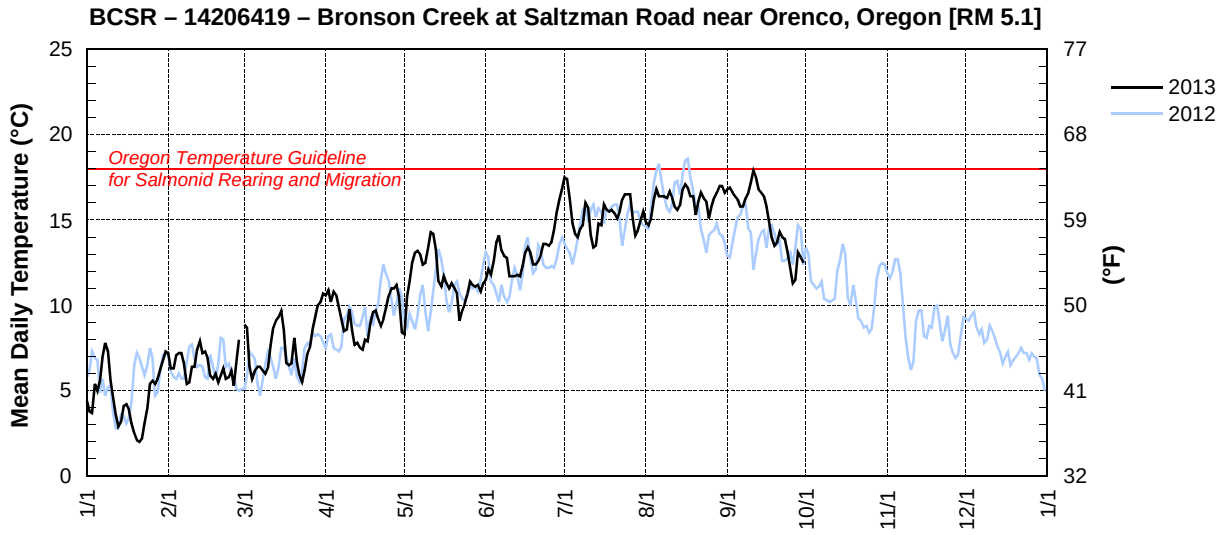
B170 – Beaverton Creek at 170th Ave, Beaverton, Oregon [RM 4.9]



BCSR – 14206419 – BRONSON CREEK AT SALTZMAN ROAD NEAR ORENCO, OREGON [RM 5.1]

Latitude: 45 33 19 Longitude: 122 48 25 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.4	7.2	8.9	10.6	8.3	11.5	17.5	14.9	16.8			
2	3.8	6.3	8.7	10.9	10.5	12.1	17.4	14.7	16.9			
3	3.7	6.3	6.4	10.2	11.4	11.8	16.3	15.1	16.6			
4	5.4	7.1	5.7	10.8	12.5	12.6	14.8	16.2	16.4			
5	5.0	7.2	6.2	10.6	13.1	13.7	14.2	16.8	16.2			
6	5.6	7.2	6.4	9.9	13.2	14.1	14.0	16.4	15.8			
7	7.0	6.6	6.4	9.2	13.0	13.2	14.5	16.4	15.8			
8	7.8	5.4	6.2	8.5	12.4	12.9	14.7	16.4	16.3			
9	7.3	5.5	6.0	8.6	12.5	12.8	16.0	16.3	16.6			
10	5.6	6.4	6.4	9.8	13.4	11.7	15.7	16.7	17.2			
11	4.6	6.4	7.7	8.6	14.3	11.7	14.1	16.3	17.9			
12	3.6	7.4	8.7	7.7	14.2	11.7	13.4	15.8	17.5			
13	2.9	7.9	9.1	7.8	13.3	11.8	13.5	15.6	16.8			
14	3.2	7.2	9.3	7.5	11.4	11.7	14.8	15.9	16.6			
15	4.1	7.3	9.7	7.4	11.1	12.3	14.7	16.8	16.4			
16	4.2	6.9	8.6	8.0	11.7	13.1	15.9	17.1	15.8			
17	3.9	5.9	6.6	7.9	11.3	13.4	15.6	16.9	14.9			
18	3.1	5.7	6.5	8.9	11.0	13.1	15.5	16.4	14.0			
19	2.5	6.0	6.6	9.6	11.3	12.4	15.6	16.4	13.5			
20	2.1	5.5	8.1	9.7	11.0	12.4	15.4	15.3	13.7			
21	2.0	5.9	6.7	9.2	10.7	12.6	15.1	16.1	14.3			
22	2.2	6.3	5.9	8.8	9.1	13.0	15.5	16.6	14.0			
23	3.1	5.7	5.5	9.2	9.7	13.6	16.2	16.3	13.9			
24	4.0	5.8	6.2	9.9	10.1	13.6	16.5	16.1	13.1			
25	5.4	6.2	7.2	10.6	10.7	13.5	16.5	15.1	12.2			
26	5.6	5.3	7.6	11.0	11.4	13.7	16.5	15.8	11.3			
27	5.4	6.7	8.6	11.0	11.2	14.4	15.1	16.3	11.5			
28	5.7	8.0	9.3	11.2	11.1	15.4	14.1	16.6	13.1			
29	6.3	—	10.0	10.5	11.2	16.2	14.4	17.0	12.8			
30	6.8	—	10.2	8.4	10.8	16.8	15.0	17.0	12.5			
31	7.3	—	10.7	—	11.3	—	15.5	16.6	—		—	
MEAN	4.6	6.5	7.6	9.4	11.6	13.1	15.3	16.2	15.0			
MAX	7.8	8.0	10.7	11.2	14.3	16.8	17.5	17.1	17.9			
MIN	2.0	5.3	5.5	7.4	8.3	11.5	13.4	14.7	11.3			



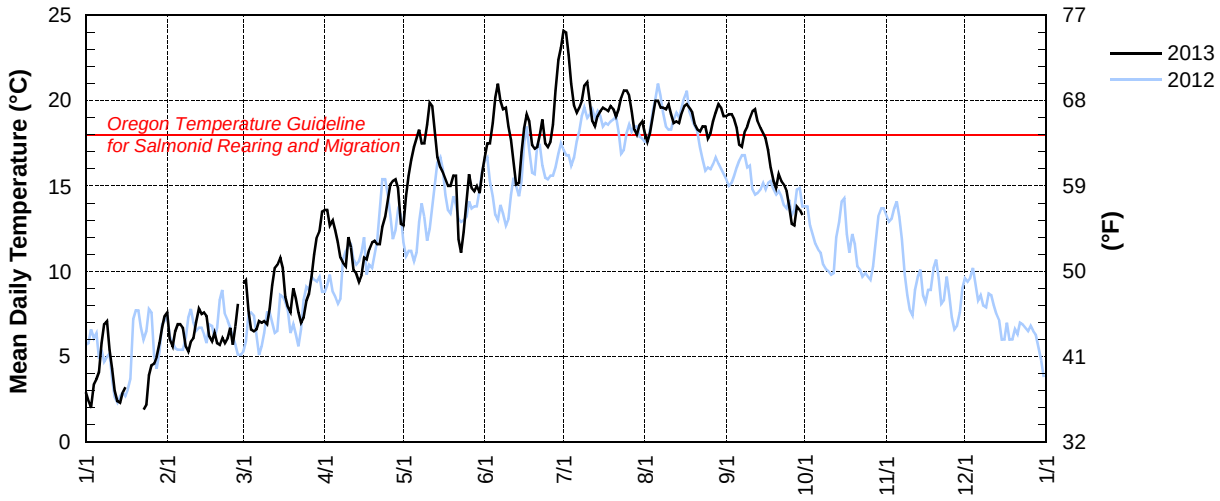
BCBR – 14206423 – BRONSON CREEK AT BRONSON ROAD NEAR ORENCO, OREGON [RM 2.1]]

Latitude: 45 32 18 Longitude: 122 51 15 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN*	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.9	7.6	9.3	13.6	12.7	16.7	24.1	18.1	19.1			
2	2.4	6.0	9.5	13.6	14.4	17.5	24.0	17.6	19.2			
3	2.0	5.6	7.7	12.7	15.6	17.5	22.7	18.1	19.2			
4	3.4	6.5	6.6	13.0	16.5	18.7	21.0	19.1	18.9			
5	3.7	6.9	6.5	12.4	17.3	20.2	19.7	20.0	18.4			
6	4.1	6.9	6.6	11.7	17.8	21.0	19.3	20.0	17.4			
7	5.8	6.7	7.1	10.8	18.3	20.0	19.6	19.6	17.3			
8	6.9	5.6	7.0	10.5	17.5	19.5	20.0	19.6	18.2			
9	7.1	5.3	7.1	10.3	17.5	19.6	20.9	19.5	18.5			
10	5.4	5.9	6.9	12.0	18.6	18.5	21.1	19.8	19.0			
11	4.3	6.1	7.8	11.4	19.9	17.7	19.9	19.2	19.4			
12	3.0	7.0	9.2	10.1	19.7	16.4	18.8	18.7	19.5			
13	2.4	7.8	10.2	9.9	18.1	15.1	18.5	18.8	18.8			
14	2.3	7.5	10.4	9.4	16.7	15.2	19.1	18.7	18.4			
15	2.9	7.6	10.8	9.8	16.1	17.0	19.4	19.3	18.1			
16		7.4	10.2	10.8	15.8	18.4	19.6	19.7	17.8			
17		6.2	8.5	10.7	15.4	19.2	19.5	19.8	17.1			
18		5.9	7.9	11.3	15.0	18.8	19.4	19.6	16.1			
19		6.4	7.6	11.7	15.0	17.4	19.7	19.3	15.3			
20		5.8	9.0	11.8	15.6	17.2	19.5	18.6	14.9			
21		5.7	8.4	11.6	15.6	17.3	19.1	18.3	15.7			
22		6.1	7.6	11.6	11.9	18.0	19.5	18.2	15.3			
23		5.8	7.0	12.6	11.1	18.9	20.2	18.5	15.1			
24	2.2	6.1	7.3	13.2	12.3	17.5	20.6	18.5	14.7			
25	3.9	6.7	8.3	14.1	14.0	17.3	20.6	17.8	13.8			
26	4.5	5.7	8.7	15.1	15.7	17.6	20.3	18.1	12.8			
27	4.6	6.8	9.7	15.3	14.9	18.6	19.4	18.8	12.7			
28	5.0	8.1	11.0	15.4	14.7	20.6	18.3	19.3	13.8			
29	5.8	—	12.0	14.9	15.0	22.4	18.0	19.8	13.6			
30	6.7	—	12.4	12.8	14.6	23.1	18.6	19.6	13.3			
31	7.4	—	13.5	—	15.8	—	18.8	19.1	—		—	
MEAN		6.5	8.8	12.1	15.8	18.4	20.0	19.0	16.7			
MAX		24.1	24.1	24.1	24.1	24.1	24.1	20.0	19.5			
MIN		5.3	6.5	9.4	11.1	12.7	12.7	12.7	12.7			

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

BCBR – 14206423 – Bronson Creek at Bronson Road near Orenco, Oregon [RM 2.1]

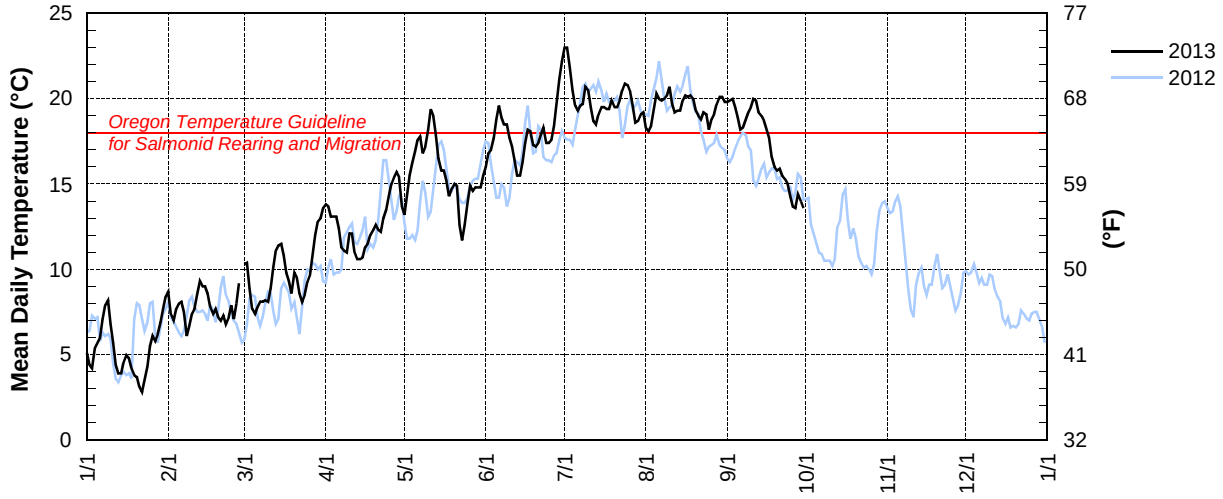


DCBR – 14206443 – DAWSON CREEK AT BROOKWOOD ROAD NEAR HILLSBORO, OREGON [RM 0.7]

Latitude: 45 31 27 Longitude:122 56 01 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.1	8.7	10.3	13.8	13.2	16.0	23.0	18.3	19.8			
2	4.4	7.4	10.4	13.7	14.3	16.8	23.0	18.1	19.9			
3	4.2	7.0	8.9	13.1	15.5	17.0	21.9	18.4	20.0			
4	5.4	7.7	7.7	13.1	16.2	17.7	20.5	19.4	19.5			
5	5.7	8.0	7.4	13.1	16.9	18.8	19.6	20.3	18.9			
6	6.0	8.1	7.8	12.4	17.6	19.6	19.3	20.0	18.2			
7	7.1	7.5	8.1	11.3	17.8	18.9	19.6	19.9	18.3			
8	7.9	6.1	8.1	11.1	16.8	18.5	19.7	20.0	18.8			
9	8.2	6.7	8.2	11.0	17.2	18.5	20.7	20.2	19.2			
10	6.8	7.4	8.1	12.1	18.2	17.7	20.5	20.7	19.5			
11	5.7	7.7	8.9	12.1	19.4	17.2	19.5	19.7	20.0			
12	4.4	8.5	10.1	11.0	19.0	16.4	18.7	19.2	19.9			
13	3.9	9.3	11.1	10.6	17.9	15.5	18.5	19.3	19.2			
14	3.9	9.0	11.4	10.6	16.5	15.5	19.1	19.3	19.0			
15	4.6	9.0	11.5	10.7	15.8	16.3	19.5	19.9	18.7			
16	5.0	8.6	10.8	11.3	15.8	17.4	19.5	20.2	18.2			
17	4.8	7.8	9.8	11.5	15.2	18.2	19.4	20.1	17.7			
18	4.2	7.4	9.3	12.0	14.3	18.1	19.4	20.2	16.6			
19	3.8	7.7	8.6	12.3	14.7	17.3	19.9	20.0	16.0			
20	3.7	7.2	9.8	12.6	15.0	17.2	19.5	19.3	15.8			
21	3.1	7.0	9.5	12.3	14.9	17.4	19.5	19.0	15.9			
22	2.8	7.3	8.6	12.2	12.6	17.9	19.9	18.8	15.5			
23	3.5	6.8	8.1	13.0	11.7	18.3	20.5	19.2	15.3			
24	4.3	7.2	8.5	13.5	12.6	17.4	20.9	19.1	15.0			
25	5.5	7.9	9.3	14.3	13.9	17.4	20.8	18.2	14.3			
26	6.1	7.1	9.7	15.0	14.9	17.6	20.4	18.8	13.7			
27	5.8	8.0	10.9	15.4	14.6	18.4	19.6	19.1	13.6			
28	6.2	9.2	12.0	15.7	14.8	19.8	18.6	19.7	14.4			
29	6.9	—	12.8	15.4	14.8	21.2	18.7	20.1	14.0			
30	7.7	—	13.0	13.7	14.8	22.2	19.1	20.1	13.6			
31	8.4	—	13.6	—	15.5	—	19.2	19.8	—		—	
MEAN	5.3	7.8	9.8	12.7	15.6	17.9	19.9	19.5	17.3			
MAX	8.4	9.3	13.6	15.7	19.4	22.2	23.0	20.7	20.0			
MIN	2.8	6.1	7.4	10.6	11.7	15.5	18.5	18.1	13.6			

DCBR – 14206443 – Dawson Creek at Brookwood Road near Hillsboro, Oregon [RM 0.7]



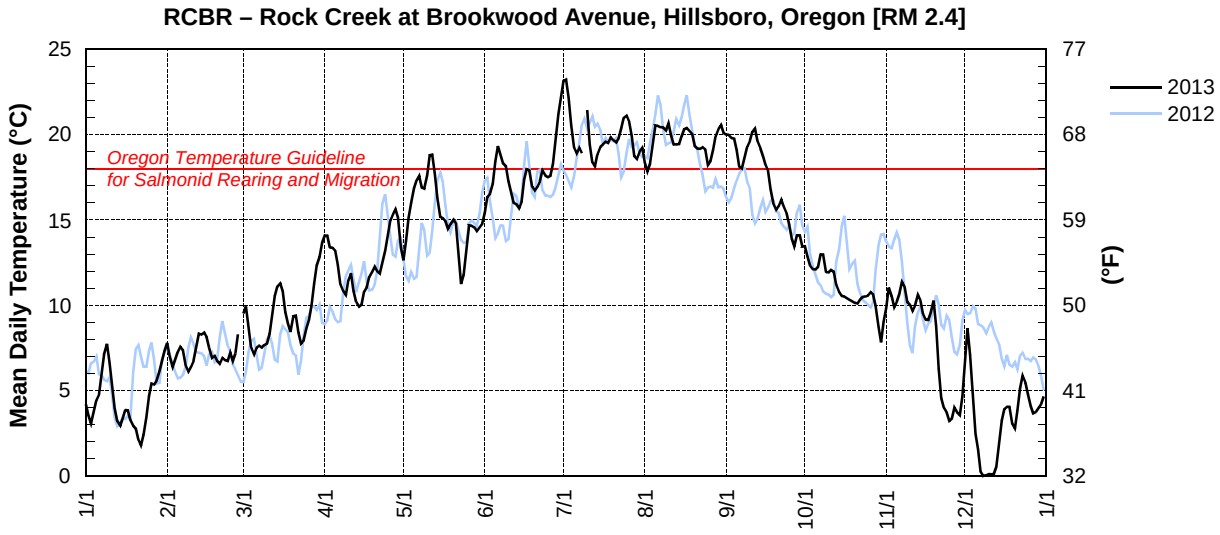
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 453030122560101 ROCK CREEK AT BROOKWOOD AVENUE, HILLSBORO, OR.

LATITUDE: 453029.5 LONGITUDE: 1225600.6

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL*	AUG	SEP	OCT	NOV	DEC
1	4.2	7.8	9.5	14.1	12.6	15.4	23.1	18.4	20.0	13.5	9.8	6.5
2	3.6	7.0	10.0	14.1	13.7	16.3	23.3	17.9	20.0	12.9	11.0	8.7
3	3.1	6.4	8.8	13.4	15.1	16.5	22.2	18.3	19.8	12.4	10.6	7.2
4	3.8	6.8	7.6	13.4	16.0	17.1	20.6	19.4	19.8	12.1	9.9	4.6
5	4.5	7.3	7.1	13.2	16.8	18.4	19.3	20.5	19.1	12.1	10.2	2.5
6	4.8	7.6	7.5	12.4	17.3	19.3	18.9	20.5	18.1	12.3	10.7	1.6
7	6.0	7.4	7.6	11.2	17.6	18.8	19.2	20.5	18.0	13.0	11.4	0.2
8	7.1	6.5	7.5	10.9	16.9	18.3	18.9	20.4	18.7	13.0	11.1	0.0
9	7.8	6.1	7.7	10.6	16.8	18.2		20.3	19.3	12.0	10.2	0.0
10	6.7	6.4	7.8	11.5	17.6	17.3		20.7	19.6	11.9	10.0	0.1
11	5.4	6.7	8.3	11.9	18.8	16.7	19.5	20.0	20.2	12.1	9.7	0.1
12	4.0	7.5	9.4	10.9	18.9	16.0	18.4	19.4	20.4	12.0	10.0	0.1
13	3.2	8.3	10.5	10.2	17.8	16.0	18.1	19.4	19.6	11.2	10.6	0.5
14	2.9	8.3	11.1	9.9	16.3	15.7	18.9	19.5	19.2	10.8	10.3	2.0
15	3.4	8.4	11.3	10.0	15.2	16.1	19.3	19.9	18.8	10.5	9.5	3.2
16	3.9	8.2	10.9	10.8	15.1	17.3	19.4	20.3	18.2	10.5	9.2	3.9
17	3.9	7.5	9.6	11.0	15.0	18.0	19.6	20.4	17.9	10.4	9.1	4.1
18	3.3	6.9	9.0	11.6	14.5	17.9	19.5	20.2	16.8	10.3	9.6	4.1
19	2.9	7.0	8.4	12.0	14.8	17.0	19.9	20.1	15.9	10.2	10.3	3.1
20	2.8	6.7	9.3	12.3	15.0	16.7	19.7	19.3	15.6	10.2	8.8	2.8
21	2.1	6.6	9.4	12.0	14.8	16.9	19.6	19.2	15.8	10.1	6.3	3.9
22	1.8	6.9	8.4	11.9	13.1	17.3	19.8	19.2	16.2	10.3	4.6	5.1
23	2.4	6.8	7.8	12.5	11.3	17.9	20.3	19.3	15.8	10.5	4.0	5.9
24	3.4	6.7	7.9	13.2	11.7	17.6	21.0	19.1	15.4	10.5	3.7	5.5
25	4.6	7.2	8.5	14.1	13.2	17.5	21.1	18.2	14.7	10.6	3.2	4.8
26	5.4	6.8	9.2	15.0	14.7	17.6	20.8	18.5	13.9	10.8	3.3	4.1
27	5.4	7.2	10.0	15.4	14.7	18.3	20.0	19.1	13.5	10.6	4.0	3.7
28	5.6	8.3	11.2	15.6	14.6	19.7	18.8	19.9	14.1	10.0	3.8	3.8
29	6.1	—	12.3	15.2	14.3	21.2	18.6	20.3	14.1	8.8	3.6	4.0
30	6.8	—	12.8	13.4	14.6	22.2	19.1	20.6	13.5	7.8	4.6	4.2
31	7.4	—	13.7	—	14.8	—	19.3	20.1	—	9.0	—	4.7
MEAN	4.5	7.2	9.4	12.4	15.3	17.6	19.9	19.6	17.4	11.0	8.1	3.4
MAX	7.8	8.4	13.7	15.6	18.9	22.2	23.3	20.7	20.4	13.5	11.4	8.7
MIN	1.8	6.1	7.1	9.9	11.3	15.4	18.1	17.9	13.5	7.8	3.2	0.0

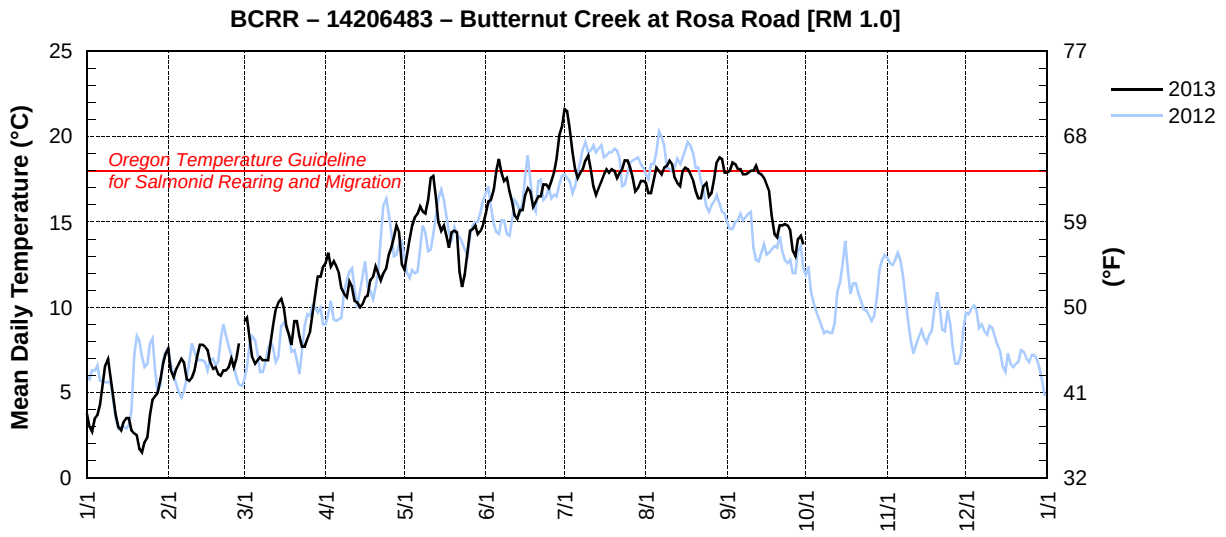
* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



BCRR – 14206483 – BUTTERNUT CREEK AT ROSA ROAD [RM 1.0]

Latitude: 43 28 42 Longitude:122 55 05 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.8	7.6	9.2	12.6	12.2	15.5	21.6	17.3	17.9			
2	3.0	6.3	9.4	13.2	13.1	16.2	21.5	16.7	18.0			
3	2.7	5.9	8.2	12.4	14.0	16.3	20.5	16.7	18.5			
4	3.5	6.4	7.1	12.7	14.8	16.9	19.1	17.5	18.4			
5	3.7	6.7	6.7	12.4	15.3	18.0	18.1	18.2	18.1			
6	4.3	7.0	6.9	12.0	15.5	18.7	17.6	18.0	18.1			
7	5.4	6.8	7.1	11.1	15.9	17.9	17.9	17.8	17.8			
8	6.6	5.8	6.9	10.8	15.6	17.4	18.1	18.2	17.8			
9	7.0	5.7	6.9	10.6	15.5	17.6	18.6	18.3	17.9			
10	6.0	5.9	6.9	11.5	16.3	16.8	18.9	18.6	18.0			
11	4.9	6.3	7.9	11.2	17.6	16.2	18.1	18.4	18.0			
12	3.7	7.1	9.0	10.4	17.7	15.4	17.1	17.6	18.3			
13	3.0	7.8	9.9	10.3	16.5	15.2	16.6	17.3	17.9			
14	2.8	7.8	10.3	10.0	15.0	15.7	17.0	17.1	17.8			
15	3.3	7.7	10.5	10.2	14.5	15.7	17.4	18.0	17.6			
16	3.5	7.5	10.0	10.6	14.8	16.6	17.8	18.2	17.2			
17	3.5	6.8	8.9	10.7	14.2	17.0	18.1	18.1	16.8			
18	2.8	6.4	8.4	11.6	13.5	16.8	17.9	17.8	15.4			
19	2.6	6.5	7.8	11.8	14.4	15.9	18.1	17.4	14.3			
20	2.5	6.1	9.2	12.4	14.5	16.2	18.0	16.8	14.1			
21	1.7	6.0	9.2	12.0	14.4	16.5	17.6	16.4	14.8			
22	1.5	6.3	8.3	11.6	12.1	16.5	17.9	16.4	14.8			
23	2.1	6.3	7.7	12.0	11.2	17.2	18.1	17.1	14.9			
24	2.4	6.5	7.7	12.3	11.9	17.2	18.6	17.3	14.8			
25	3.7	7.0	8.2	13.1	13.3	17.0	18.6	16.5	14.5			
26	4.6	6.5	8.6	13.5	14.5	17.4	18.2	16.7	13.3			
27	4.8	7.0	9.6	14.1	14.6	17.9	17.6	17.5	13.0			
28	5.0	7.9	10.7	14.8	14.8	18.7	16.8	18.5	14.0			
29	5.8	—	11.8	14.4	14.3	20.1	17.0	18.8	14.2			
30	6.7	—	11.8	12.5	14.5	20.6	17.4	18.7	13.7			
31	7.3	—	12.4	—	14.9	—	17.4	17.9	—		—	
MEAN	4.0	6.7	8.8	12.0	14.6	17.0	18.2	17.6	16.3			
MAX	7.3	7.9	12.4	14.8	17.7	20.6	21.6	18.8	18.5			
MIN	7.3	5.7	6.7	10.0	11.2	15.2	16.6	16.4	13.0			



FRMO – 14206500 – TUALATIN RIVER AT FARMINGTON, OREGON [RM 33.3]

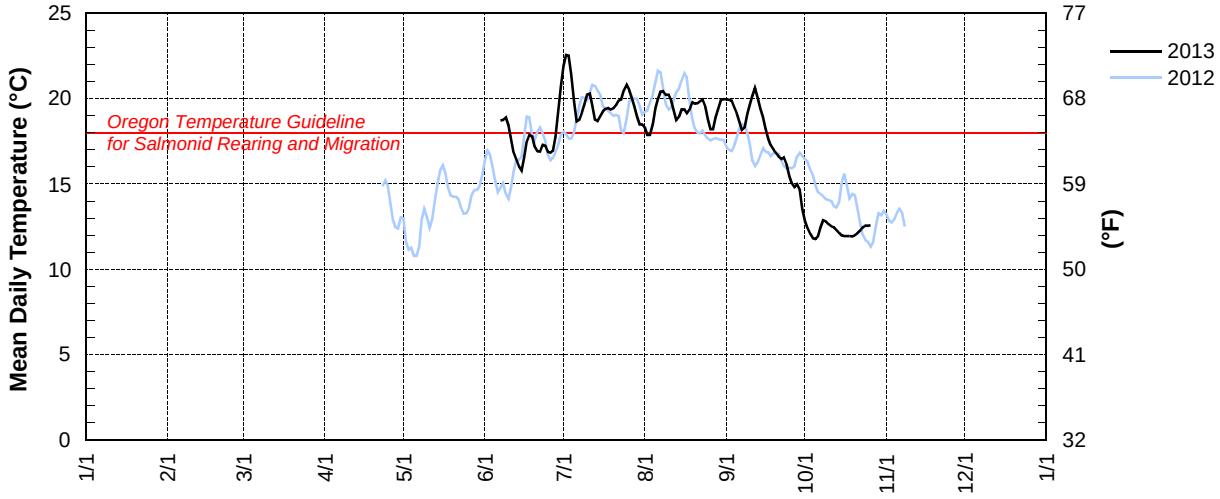
Latitude: 45 26 58 Longitude: 122 57 02 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR	MAY	JUN*	JUL	AUG	SEP	OCT*	NOV	DEC
1							21.9	18.3	20.0	12.9		
2							22.6	17.9	19.9	12.4		
3							22.5	17.9	19.9	12.1		
4							21.4	18.5	19.5	11.8		
5							19.8	19.4	19.1	11.8		
6							18.7	20.0	18.7	12.0		
7						18.7	18.8	20.4	18.2	12.5		
8						18.8	19.2	20.4	18.3	12.9		
9						18.9	19.6	20.2	19.1	12.8		
10						18.5	20.3	20.2	19.6	12.6		
11						17.6	20.3	19.9	20.2	12.5		
12						16.8	19.6	19.3	20.6	12.5		
13						16.4	18.8	18.8	20.1	12.3		
14						16.0	18.7	19.0	19.4	12.1		
15						15.8	19.0	19.4	18.9	12.0		
16						16.6	19.3	19.4	18.2	11.9		
17						17.5	19.4	19.1	17.7	11.9		
18						17.9	19.5	19.4	17.3	11.9		
19						17.8	19.4	19.8	17.0	11.9		
20						17.2	19.4	19.7	16.8	12.0		
21						16.9	19.6	19.7	16.6	12.1		
22						16.9	19.9	19.8	16.5	12.3		
23						17.3	19.9	20.0	16.6	12.5		
24						17.2	20.5	19.5	16.1	12.6		
25						16.9	20.8	18.8	15.5	12.5		
26						16.8	20.5	18.2	15.1	12.6		
27						17.0	20.1	18.2	14.8			
28						17.8	19.6	18.9	15.0			
29		—				19.3	19.0	19.5	14.6			
30		—				20.8	18.5	19.9	13.5			
31		—				—	18.5	20.0	—			
MEAN							19.8	19.3	17.8	12.3		
MAX							22.6	20.4	20.6	12.9		
MIN							18.5	17.9	13.5	11.8		

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

FRMO – 14206500 – Tualatin River at Farmington, Oregon [RM 33.3]



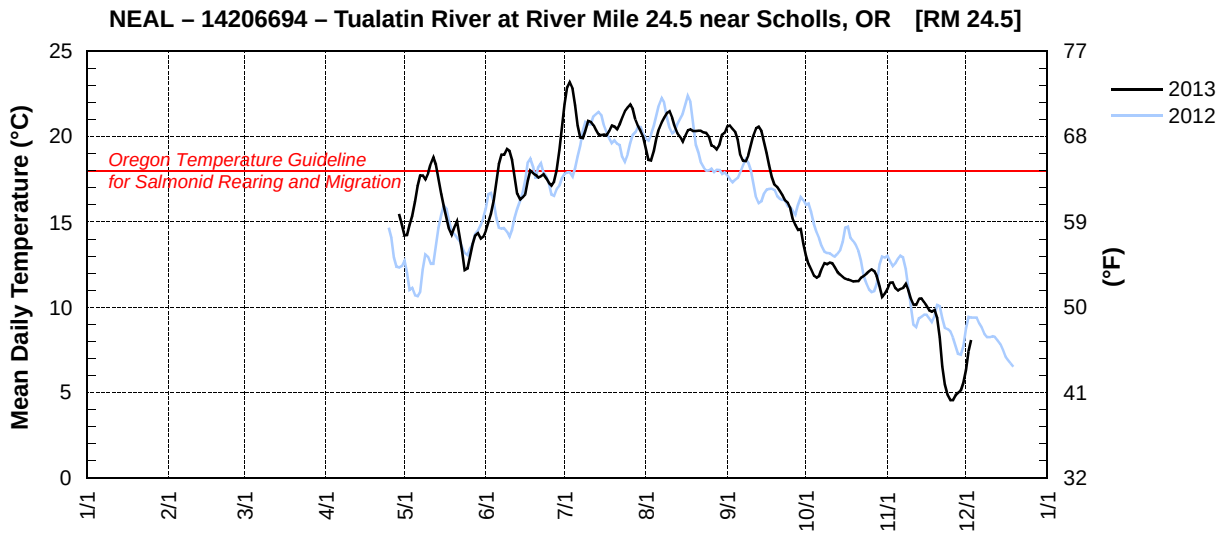
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14206694 TUALATIN RIVER AT RIVER MILE 24.5, NR SCHOLLS, OR

LATITUDE: 452406 LONGITUDE: 1225338

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC*
1					14.2	14.5	21.9	19.3	20.6	13.1	11.1	6.3
2					14.2	15.0	22.9	18.7	20.7	12.5	11.4	7.4
3					14.8	15.5	23.2	18.6	20.5	12.2	11.5	8.1
4					15.3	16.3	22.9	19.2	20.3	11.9	11.1	
5					16.2	17.3	21.9	19.9	19.8	11.7	11.0	
6					17.1	18.4	20.7	20.5	18.9	11.8	11.1	
7					17.7	19.0	20.0	20.8	18.6	12.3	11.1	
8					17.7	18.9	19.9	21.1	18.6	12.6	11.4	
9					17.5	19.3	20.3	21.4	18.9	12.5	11.0	
10					17.9	19.2	20.9	21.5	19.5	12.6	10.5	
11					18.4	18.7	20.9	21.1	20.1	12.6	10.2	
12					18.8	17.6	20.7	20.6	20.5	12.4	10.1	
13					18.4	16.7	20.4	20.2	20.6	12.1	10.5	
14					17.6	16.3	20.1	20.0	20.3	11.9	10.5	
15					16.7	16.4	20.1	19.7	19.7	11.8	10.3	
16					15.9	16.6	20.1	20.1	19.1	11.7	10.1	
17					15.3	17.4	20.1	20.4	18.4	11.6	9.8	
18					14.6	18.0	20.3	20.4	17.7	11.6	9.8	
19					14.3	17.9	20.6	20.3	17.2	11.5	9.8	
20					14.7	17.8	20.6	20.3	17.1	11.5	9.4	
21					15.1	17.6	20.5	20.3	16.8	11.6	8.3	
22					14.3	17.7	20.7	20.4	16.6	11.7	6.6	
23					13.3	17.8	21.1	20.3	16.3	11.8	5.5	
24					12.2	17.6	21.5	20.2	16.1	12.0	4.9	
25					12.3	17.3	21.7	20.0	15.8	12.1	4.6	
26					13.0	17.1	21.9	19.5	15.2	12.2	4.6	
27					13.7	17.4	21.6	19.4	14.8	12.1	4.8	
28					14.2	18.0	21.0	19.3	14.5	11.8	5.0	
29		—		15.5	14.3	19.2	20.6	19.5	14.6	11.3	5.1	
30		—		14.9	14.0	20.5	20.3	20.1	13.8	10.6	5.6	
31		—		—	14.1	—	20.0	20.2	—	10.8	—	
MEAN					15.4	17.6	20.9	20.1	18.0	11.9	8.9	
MAX					18.8	20.5	23.2	21.5	20.7	13.1	11.5	
MIN					12.2	14.5	19.9	18.6	13.8	10.6	4.6	

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



CCKR – CHICKEN CREEK AT KRUGER ROAD [RM 4.5]

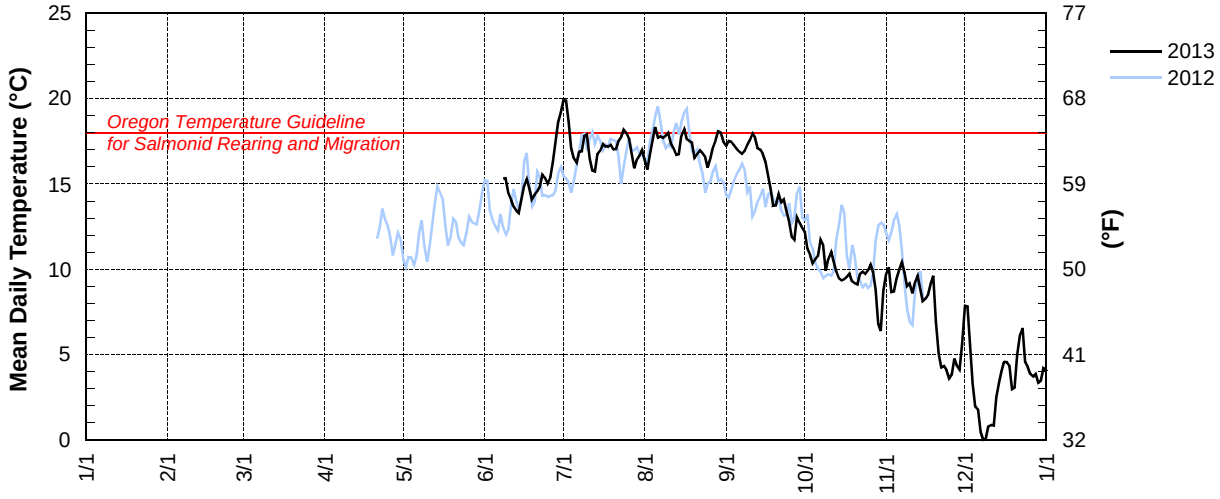
Latitude: 45 22 05 Longitude: 122 51 22 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR	MAY	JUN*	JUL	AUG	SEP	OCT	NOV	DEC
1							19.9	16.4	17.3	12.2	9.8	7.9
2							19.9	15.8	17.5	11.2	10.1	7.8
3							18.7	16.7	17.5	10.9	8.7	5.7
4							17.1	17.5	17.3	10.4	8.7	3.3
5							16.5	18.4	17.1	10.6	9.4	2.0
6							16.2	17.7	16.9	10.8	10.0	1.8
7							16.9	17.8	16.8	11.7	10.4	0.5
8						15.3	16.9	17.7	16.9	11.4	9.8	0.0
9						15.3	17.8	17.8	17.3	9.9	9.0	0.1
10						14.4	17.9	18.0	17.6	10.6	9.2	0.8
11						14.1	16.5	17.3	18.0	11.0	8.6	0.9
12						13.7	15.8	17.1	17.7	10.5	9.3	0.9
13						13.5	15.7	16.7	17.1	9.9	9.6	2.5
14						13.3	16.8	16.8	17.0	9.5	8.9	3.3
15						14.1	17.0	17.8	16.8	9.4	8.1	4.0
16						14.9	17.3	18.2	16.3	9.4	8.3	4.6
17						15.3	17.2	17.6	15.5	9.6	8.5	4.6
18						14.8	17.2	17.5	14.7	9.7	9.2	4.4
19						14.1	17.3	17.4	13.7	9.3	9.6	3.0
20						14.4	17.0	16.5	13.7	9.2	7.0	3.1
21						14.6	17.0	16.8	14.4	9.1	5.1	5.0
22						14.8	17.5	17.0	13.9	9.7	4.3	6.2
23						15.6	17.8	16.8	14.1	9.9	4.3	6.6
24						15.4	18.2	16.6	13.4	9.7	4.1	4.6
25						15.0	18.0	16.0	12.9	9.9	3.6	4.3
26						15.4	17.6	16.5	11.9	10.3	3.9	3.9
27						16.3	16.8	17.2	11.7	9.8	4.8	3.7
28						17.5	15.9	17.6	13.0	8.8	4.3	3.9
29		—				18.6	16.4	18.1	12.7	6.8	4.1	3.4
30		—				19.1	16.7	18.0	12.4	6.4	5.6	3.5
31		—				—	17.0	17.5	—	8.8	—	4.2
MEAN							17.2	17.3	15.4	9.9	7.5	3.5
MAX							19.9	18.4	18.0	12.2	10.4	7.9
MIN							15.7	15.8	11.7	6.4	3.6	0.0

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

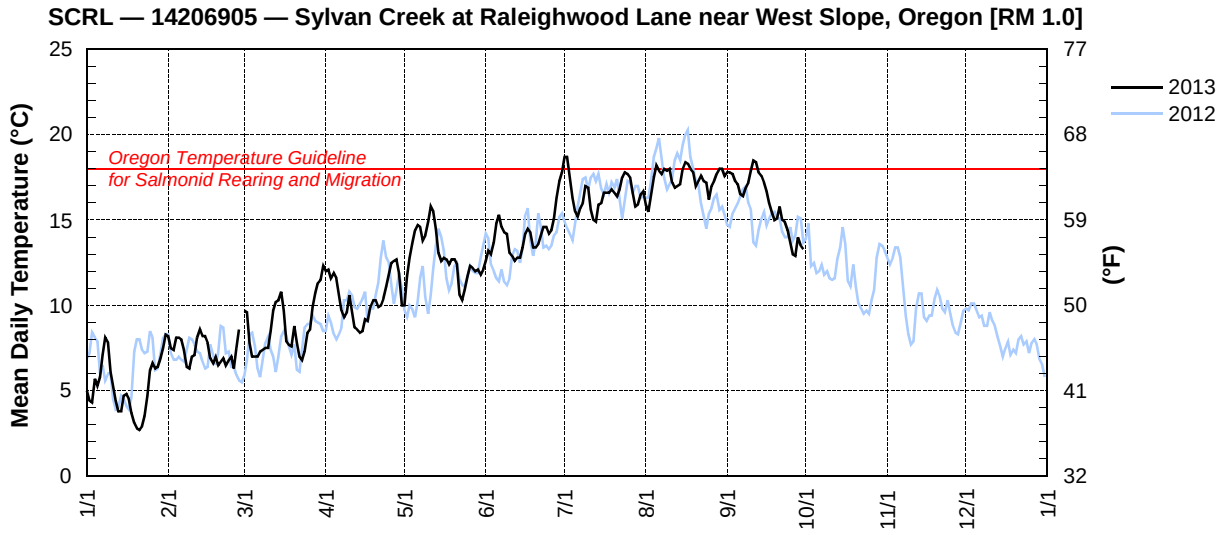
CCKR – Chicken Creek at Kruger Road [RM 4.5]



SCRL – 14206905 – SYLVAN CREEK AT RALEIGHWOOD LANE NEAR WEST SLOPE, OREGON [RM 1.0]

Latitude: 45 27 27 Longitude: 122 47 49 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.0	8.2	9.7	12.0	10.0	12.6	18.7	15.9	17.8			
2	4.4	7.5	9.6	12.1	11.7	13.2	18.7	15.5	17.8			
3	4.3	7.4	7.8	11.6	12.8	13.0	17.6	16.4	17.7			
4	5.7	8.1	7.0	11.9	13.6	13.7	16.3	17.5	17.3			
5	5.3	8.1	7.0	11.6	14.4	14.8	15.5	18.2	17.1			
6	5.8	8.0	7.0	10.6	14.7	15.3	15.2	17.9	16.5			
7	7.1	7.4	7.3	9.7	14.6	14.6	15.7	17.7	16.4			
8	8.1	6.4	7.4	9.3	13.8	14.3	16.0	18.0	16.9			
9	7.8	6.3	7.5	9.6	14.1	14.2	17.0	17.9	17.2			
10	6.1	7.0	7.5	10.6	14.9	13.1	16.9	18.0	17.9			
11	5.3	7.1	8.5	9.6	15.8	12.9	15.6	17.2	18.5			
12	4.4	8.1	9.7	8.7	15.5	12.6	15.0	16.9	18.4			
13	3.8	8.6	10.2	8.6	14.5	12.8	14.9	17.0	17.8			
14	3.8	8.2	10.3	8.4	13.1	12.8	15.9	17.1	17.6			
15	4.7	8.2	10.8	8.5	12.6	13.4	16.0	18.0	17.2			
16	4.8	7.8	9.7	9.2	12.8	14.2	16.6	18.4	16.7			
17	4.5	6.9	7.9	9.1	12.7	14.5	16.6	18.3	16.0			
18	3.7	6.6	7.7	9.9	12.4	14.3	16.6	18.0	15.5			
19	3.1	7.0	7.6	10.3	12.7	13.4	16.8	17.8	15.0			
20	2.8	6.5	8.8	10.3	12.7	13.4	16.6	17.0	15.1			
21	2.7	6.7	7.8	9.9	12.4	13.6	16.4	17.3	15.8			
22	2.9	6.9	7.0	10.0	10.6	14.1	16.8	17.6	15.0			
23	3.5	6.5	6.8	10.4	10.3	14.6	17.5	17.3	14.9			
24	4.7	6.8	7.3	11.1	10.9	14.6	17.8	17.2	14.4			
25	6.2	7.0	8.4	11.8	11.7	14.2	17.7	16.2	13.7			
26	6.6	6.3	8.6	12.5	12.3	14.4	17.5	17.0	13.0			
27	6.3	7.5	9.9	12.6	12.2	15.1	16.6	17.3	12.9			
28	6.4	8.6	10.7	12.7	12.0	16.3	15.8	17.7	14.0			
29	6.9	—	11.3	11.9	12.1	17.3	15.9	18.0	13.5			
30	7.5	—	11.5	10.0	11.8	17.8	16.5	18.0	13.3			
31	8.3	—	12.3	—	12.1	—	16.7	17.6	—		—	
MEAN	5.2	7.3	8.7	10.5	12.8	14.2	16.6	17.4	16.0			
MAX	8.3	8.6	12.3	12.7	15.8	17.8	18.7	18.4	18.5			
MIN	2.7	6.3	6.8	8.4	10.0	12.6	14.9	15.5	12.9			

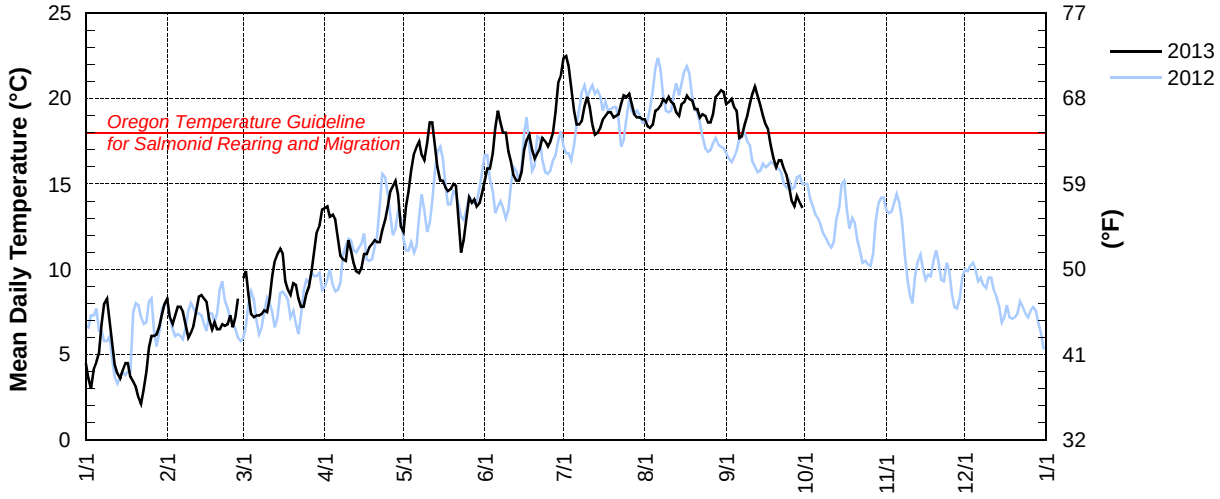


FCTW – 14206927 – FANNO CREEK AT TUCKERWOOD [RM 7.3]

Latitude: 45 27 27 Longitude: 122 47 49 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.5	8.3	9.5	13.6	12.2	15.2	22.4	18.8	19.7			
2	3.6	7.2	9.9	13.7	13.7	15.9	22.5	18.4	19.8			
3	3.0	6.8	8.5	13.1	14.6	15.9	21.9	18.3	20.0			
4	4.2	7.3	7.4	13.2	15.8	16.8	20.6	18.5	19.5			
5	4.6	7.8	7.2	12.9	16.8	18.3	19.3	19.3	19.3			
6	5.1	7.8	7.3	11.9	17.2	19.3	18.5	19.4	17.7			
7	6.8	7.5	7.3	10.8	17.5	18.6	18.5	19.6	17.8			
8	8.0	6.7	7.4	10.6	16.7	18.0	18.7	20.0	18.5			
9	8.3	6.0	7.6	10.5	16.4	18.0	19.5	19.8	19.0			
10	6.9	6.3	7.5	11.7	17.4	16.9	20.1	20.1	19.7			
11	5.7	6.7	8.3	11.1	18.6	16.3	19.5	19.8	20.3			
12	4.4	7.5	9.6	10.4	18.6	15.5	18.5	19.7	20.7			
13	3.9	8.4	10.5	9.9	17.3	15.2	17.9	19.2	20.2			
14	3.6	8.5	10.9	9.8	16.0	15.2	18.0	19.0	19.6			
15	4.1	8.3	11.2	10.1	15.2	15.7	18.3	19.7	19.0			
16	4.5	8.1	10.9	10.9	15.2	17.0	18.8	19.8	18.5			
17	4.5	7.1	9.3	10.9	14.8	17.6	19.0	20.2	18.2			
18	3.7	6.5	8.8	11.3	14.6	17.9	19.2	20.0	17.3			
19	3.4	6.9	8.5	11.5	14.7	17.0	19.2	19.9	16.5			
20	3.1	6.5	9.2	11.7	15.0	16.5	18.9	19.4	16.0			
21	2.5	6.5	9.1	11.6	14.9	16.8	19.0	19.4	16.4			
22	2.1	6.8	8.3	11.6	12.8	17.1	19.1	18.9	16.4			
23	2.9	6.7	7.8	12.3	11.0	17.7	19.7	19.1	15.9			
24	4.0	6.8	7.8	12.9	11.7	17.5	20.2	19.0	15.5			
25	5.4	7.3	8.6	13.7	13.1	17.2	20.1	18.6	14.8			
26	6.1	6.6	9.0	14.6	14.2	17.5	20.3	18.6	14.0			
27	6.1	7.2	9.9	14.9	13.9	18.0	19.7	19.1	13.7			
28	6.2	8.3	11.1	15.2	14.1	19.2	19.1	20.1	14.3			
29	6.7	—	12.2	14.4	13.7	21.0	18.9	20.3	13.9			
30	7.4	—	12.6	12.5	13.9	21.4	18.9	20.5	13.6			
31	8.0	—	13.5	—	14.5	—	18.8	20.4	—		—	
MEAN	4.9	7.2	9.2	12.1	15.0	17.3	19.5	19.4	17.5			
MAX	8.3	8.5	13.5	15.2	18.6	21.4	22.5	20.5	20.7			
MIN	2.1	6.0	7.2	9.8	11.0	15.2	17.9	18.3	13.6			

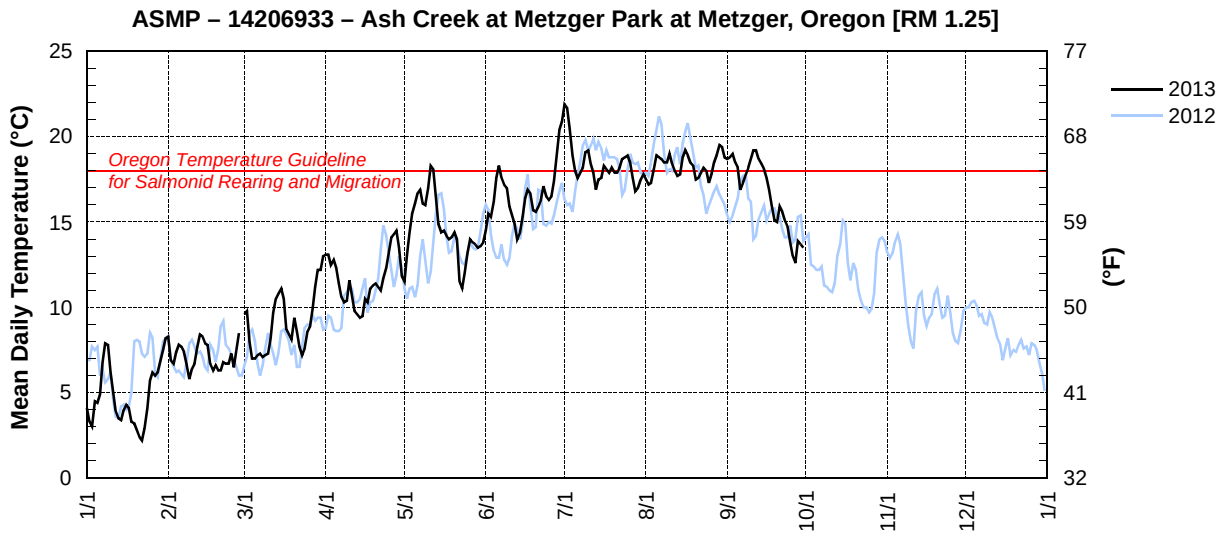
FCTW — 14206927 — Fanno Creek at Tuckerwood [RM 7.3]



ASMP – 14206933 – ASH CREEK AT METZGER PARK AT METZGER, OREGON [RM 1.25]

Latitude: 45 27 00 Longitude: 122 45 45 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.1	8.3	9.6	13.1	11.5	14.5	21.9	17.5	18.7			
2	3.3	6.9	9.8	13.1	13.1	15.5	21.7	17.2	18.8			
3	3.0	6.7	8.0	12.5	14.4	15.3	20.5	17.3	19.0			
4	4.5	7.4	7.0	12.8	15.5	16.2	18.9	18.1	18.5			
5	4.4	7.8	7.0	12.3	16.1	17.6	18.0	18.9	18.2			
6	4.9	7.7	7.2	11.4	16.7	18.3	17.6	18.8	16.9			
7	6.8	7.4	7.3	10.6	16.9	17.6	17.9	18.7	17.3			
8	7.9	6.6	7.1	10.3	16.1	17.2	18.2	18.5	17.8			
9	7.8	5.8	7.2	10.4	16.0	17.0	19.1	18.5	18.2			
10	6.2	6.4	7.3	11.6	17.0	15.9	19.2	19.0	18.7			
11	5.1	6.7	8.2	10.7	18.3	15.4	18.4	18.4	19.2			
12	3.9	7.6	9.7	9.8	18.1	14.9	17.9	18.0	19.2			
13	3.5	8.4	10.5	9.6	16.5	14.0	16.9	17.7	18.7			
14	3.4	8.3	10.8	9.4	14.9	14.4	17.5	17.8	18.4			
15	4.0	7.9	11.1	9.5	14.4	15.3	17.6	18.8	18.1			
16	4.3	7.8	10.5	10.5	14.5	16.4	18.3	19.2	17.6			
17	4.1	6.7	8.7	10.3	14.2	16.9	18.1	18.9	16.9			
18	3.3	6.3	8.4	11.1	14.0	16.7	17.9	18.5	16.0			
19	3.2	6.6	8.1	11.3	14.1	15.7	18.2	18.3	15.1			
20	2.8	6.3	9.4	11.4	14.4	15.6	17.9	17.5	15.0			
21	2.4	6.3	8.6	11.2	14.0	15.9	17.9	17.6	15.9			
22	2.2	6.8	7.7	11.0	11.5	16.3	18.2	17.9	15.6			
23	2.9	6.7	7.2	11.7	11.1	17.1	18.7	18.2	15.1			
24	4.1	6.7	7.6	12.3	12.0	16.5	18.8	18.0	14.7			
25	5.7	7.3	8.6	13.2	13.2	16.3	18.9	17.3	13.8			
26	6.2	6.5	8.9	14.1	14.0	16.5	18.5	17.8	13.0			
27	6.0	7.5	9.9	14.3	13.8	17.4	17.6	18.5	12.6			
28	6.2	8.5	11.2	14.5	13.7	18.9	16.8	18.9	13.9			
29	6.9	—	12.2	13.5	13.5	20.4	17.0	19.5	13.7			
30	7.5	—	12.2	11.8	13.6	20.9	17.5	19.4	13.5			
31	8.2	—	13.0	—	13.8	—	17.8	18.8	—		—	
MEAN	4.8	7.1	9.0	11.6	14.5	16.6	18.4	18.3	16.6			
MAX	8.2	8.5	13.0	14.5	18.3	20.9	21.9	19.5	19.2			
MIN	2.2	5.8	7.0	9.4	11.1	14.0	16.8	17.2	12.6			



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

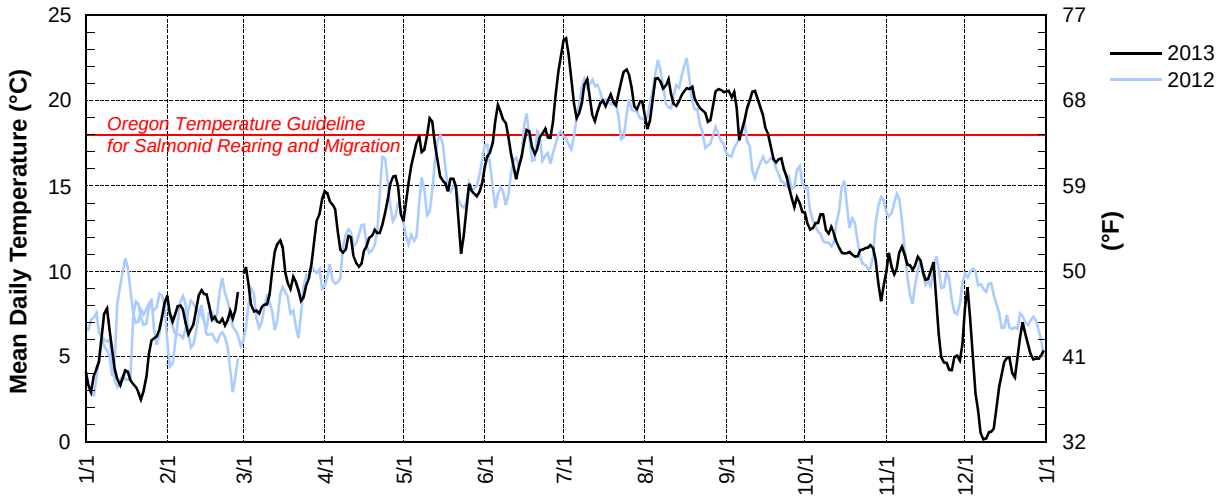
STATION NUMBER 14206950 FANNO CREEK AT DURHAM, OR

LATITUDE: 452413 LONGITUDE: 1224513

Water Temperature, degrees Celsius, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.2	8.6	9.9	14.7	12.9	16.1	23.5	19.2	20.6	13.5	9.9	7.8
2	3.3	7.6	10.3	14.6	14.1	16.7	23.7	18.3	20.6	12.8	11.1	9.1
3	2.9	7.1	9.3	14.1	15.2	17.0	22.7	18.8	20.2	12.5	10.3	7.4
4	3.9	7.5	8.0	13.9	16.1	17.5	21.3	20.0	20.5	12.5	9.9	4.8
5	4.3	7.9	7.7	13.6	16.9	18.8	19.8	21.3	19.6	12.8	10.2	2.9
6	4.7	8.0	7.7	12.3	17.6	19.7	19.0	21.3	17.7	12.8	11.1	1.9
7	6.2	7.8	7.6	11.3	18.0	19.4	19.3	21.2	18.2	13.3	11.5	0.5
8	7.5	7.0	7.9	11.1	17.0	18.9	19.8	20.7	18.9	13.4	11.0	0.2
9	7.9	6.3	8.0	11.3	17.1	18.7	20.9	20.9	19.6	12.4	10.4	0.2
10	6.6	6.6	8.1	12.1	18.0	17.9	21.3	21.3	20.0	12.2	10.4	0.6
11	5.5	6.9	8.6	12.0	19.0	16.9	20.2	20.4	20.5	12.6	10.1	0.6
12	4.3	7.7	10.0	10.9	18.9	16.1	19.2	19.8	20.6	12.3	10.3	0.8
13	3.7	8.6	11.1	10.5	17.5	15.4	18.8	19.7	20.2	11.8	10.9	2.0
14	3.3	8.9	11.6	10.3	16.6	16.2	19.4	20.0	19.6	11.4	10.7	3.2
15	3.7	8.7	11.8	10.4	15.6	16.7	19.9	20.3	19.2	11.1	10.0	3.9
16	4.2	8.6	11.4	11.2	15.3	17.6	20.0	20.6	18.4	11.1	9.5	4.7
17	4.1	8.0	10.0	11.5	15.2	18.3	19.7	20.8	18.1	11.1	9.5	4.9
18	3.6	7.2	9.3	12.0	14.7	18.2	20.0	20.7	17.4	11.1	10.0	4.9
19	3.4	7.3	9.0	12.1	15.4	17.3	20.4	20.8	16.6	11.0	10.5	4.0
20	3.2	7.1	9.6	12.5	15.4	16.9	19.9	20.1	16.4	10.9	8.8	3.8
21	2.9	7.0	9.4	12.2	15.0	17.2	19.7	19.8	16.6	10.9	6.4	5.0
22	2.5	7.2	8.9	12.2	13.2	17.8	20.4	19.6	16.6	11.2	5.0	6.1
23	2.9	6.8	8.3	12.7	11.1	18.1	21.1	19.4	16.0	11.3	4.7	7.0
24	3.8	7.1	8.5	13.4	12.0	18.4	21.7	19.3	15.6	11.4	4.6	6.3
25	5.2	7.7	9.2	14.2	13.7	17.8	21.8	18.8	14.9	11.4	4.2	5.7
26	6.0	7.3	9.6	15.2	15.1	17.8	21.5	18.9	14.3	11.5	4.2	5.2
27	6.1	7.7	10.5	15.5	14.7	18.7	20.8	19.7	13.8	11.4	5.0	4.9
28	6.2	8.8	11.8	15.6	14.6	20.3	19.7	20.5	14.3	10.7	5.1	4.9
29	6.6	—	13.0	15.0	14.4	21.7	19.5	20.7	14.0	9.3	4.8	4.9
30	7.3	—	13.4	13.3	14.7	22.6	19.9	20.6	13.5	8.3	5.7	5.1
31	8.2	—	14.2	—	15.2	—	20.0	20.5	—	9.1	—	5.4
MEAN	4.8	7.6	9.8	12.7	15.5	18.0	20.5	20.1	17.7	11.6	8.5	4.1
MAX	8.2	8.9	14.2	15.6	19.0	22.6	23.7	21.3	20.6	13.5	11.5	9.1
MIN	2.5	6.3	7.6	10.3	11.1	15.4	18.8	18.3	13.5	8.3	4.2	0.2

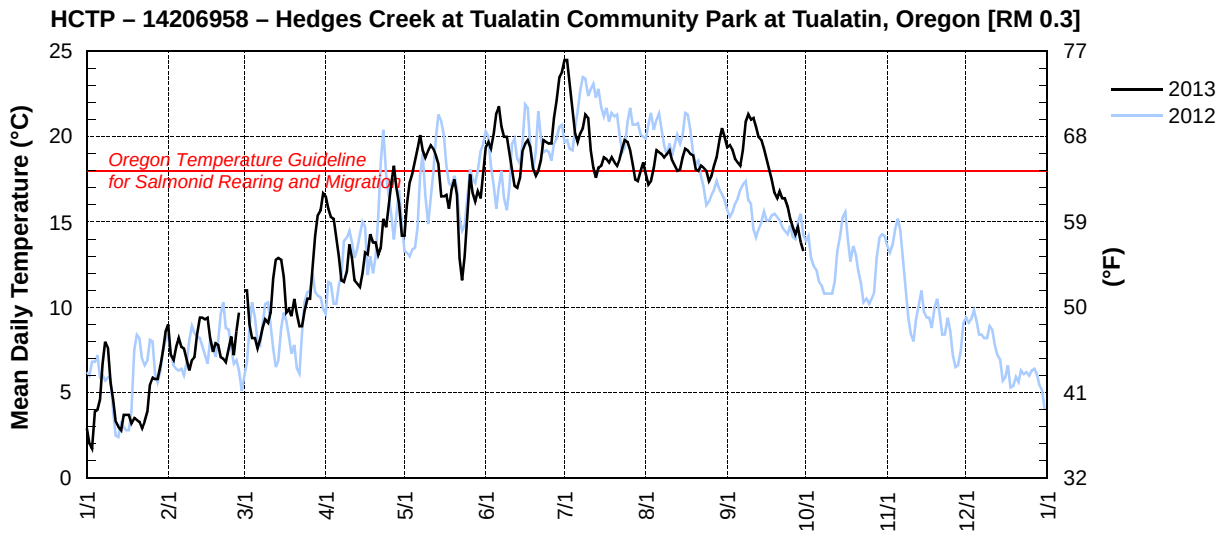
FANO – 14206950 – Fanno Creek at Durham Road near Tigard, Oregon [RM 1.2]



HCTP – 14206958 – HEDGES CREEK AT TUALATIN COMMUNITY PARK AT TUALATIN, OREGON [RM 0.3]

Latitude: 45 23 08 Longitude: 122 45 37 Source Agency: WEST Consultants for Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.9	9.0	11.0	16.5	14.2	19.4	24.5	17.8	19.4			
2	2.0	7.2	11.0	15.8	16.1	19.7	24.5	17.2	19.5			
3	1.7	6.9	9.0	15.3	17.3	19.3	23.2	17.4	19.2			
4	3.9	7.7	8.2	15.2	17.8	20.2	21.5	18.2	18.7			
5	4.0	8.2	8.2	14.1	18.6	21.4	20.2	19.2	18.5			
6	4.6	7.7	7.6	13.0	19.3	21.8	19.7	19.1	18.3			
7	6.7	7.6	8.1	11.6	20.1	20.6	20.2	19.0	19.2			
8	8.0	6.9	8.8	11.5	19.2	20.0	20.5	18.8	20.9			
9	7.6	6.3	9.3	12.1	18.8	20.0	21.3	19.0	21.3			
10	5.6	6.9	9.1	13.7	19.2	19.0	21.1	19.2	21.0			
11	4.6	7.1	9.7	12.9	19.5	18.1	19.2	18.6	21.1			
12	3.3	8.4	11.7	11.6	19.3	17.1	18.2	18.3	20.6			
13	3.0	9.4	12.8	11.4	18.9	17.0	17.6	18.0	20.0			
14	2.8	9.4	12.9	11.2	18.4	17.6	18.2	18.1	19.8			
15	3.7	9.3	12.8	12.0	16.5	19.2	18.3	18.8	19.3			
16	3.7	9.4	11.8	13.2	16.5	19.6	18.8	19.3	18.7			
17	3.7	8.2	9.7	13.1	16.6	19.8	18.7	19.2	18.1			
18	3.2	7.4	9.9	14.3	15.8	19.4	18.5	19.0	17.5			
19	3.5	7.9	9.5	13.8	16.9	18.1	18.8	18.9	16.7			
20	3.4	7.8	10.5	13.8	17.5	17.7	18.5	18.1	16.4			
21	3.3	7.1	9.6	13.1	16.6	18.0	18.3	18.0	16.8			
22	2.9	7.0	8.9	13.5	12.9	18.6	18.7	18.3	16.4			
23	3.3	6.8	8.9	15.2	11.6	19.8	19.3	18.2	16.4			
24	3.9	7.6	9.8	14.7	13.0	19.7	19.8	18.0	15.9			
25	5.5	8.3	10.5	16.1	15.7	19.6	19.7	17.4	15.2			
26	5.9	7.2	10.5	17.3	17.8	19.6	19.2	17.7	14.7			
27	5.8	8.6	12.2	18.3	16.7	21.1	18.4	18.3	14.3			
28	5.8	9.7	14.2	17.0	16.2	22.1	17.5	18.8	14.7			
29	6.6	—	15.4	16.1	16.8	23.5	17.4	19.8	13.8			
30	7.5	—	15.7	14.2	16.4	23.8	18.0	20.5	13.3			
31	8.6	—	16.7	—	17.8	—	18.5	20.0	—		—	
MEAN	4.5	7.9	10.8	14.1	17.0	19.7	19.6	18.6	17.9			
MAX	8.6	9.7	16.7	18.3	20.1	23.8	24.5	20.5	21.3			
MIN	1.7	6.3	7.6	11.2	11.6	17.0	17.4	17.2	13.3			



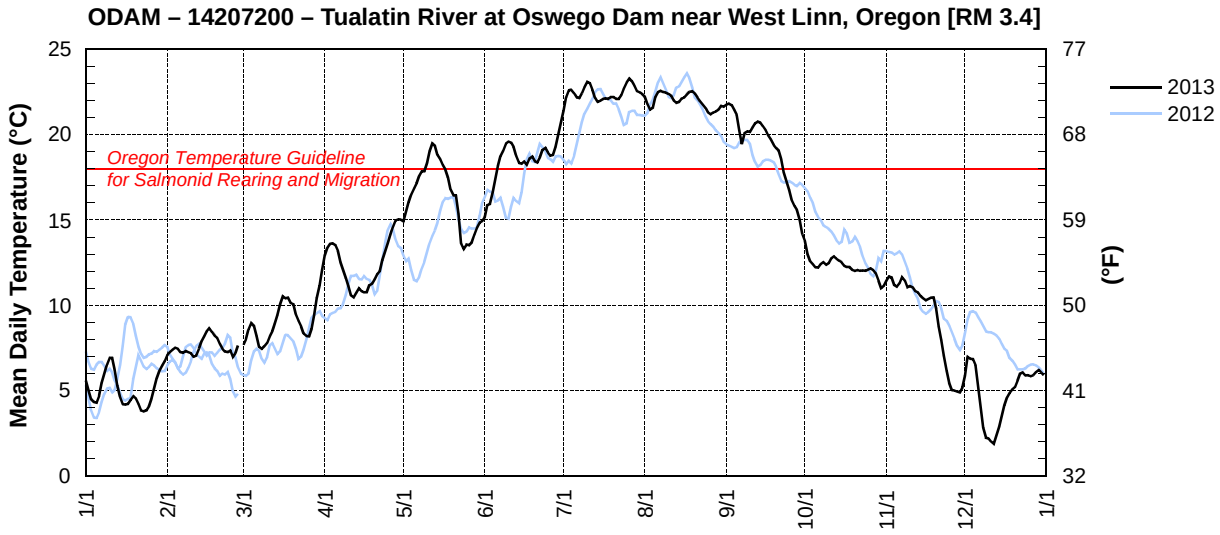
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR.

LATITUDE: 452124 LONGITUDE: 1224102

Water Temperature, degrees Celsius, Calendar Year January to December 2013 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.6	7.1	7.7	12.9	14.9	15.2	21.4	22.2	21.8	13.8	11.4	5.8
2	5.0	7.3	8.0	13.4	15.5	15.9	22.2	21.8	21.8	13.0	11.7	6.9
3	4.5	7.4	8.6	13.6	16.0	15.9	22.6	21.5	21.7	12.6	11.6	6.9
4	4.3	7.5	9.0	13.6	16.5	16.6	22.6	21.6	21.5	12.4	11.2	6.8
5	4.3	7.5	8.8	13.5	16.8	17.4	22.4	22.2	21.2	12.2	11.1	6.5
6	4.7	7.3	8.2	13.2	17.2	18.2	22.2	22.5	20.3	12.2	11.3	5.2
7	5.4	7.2	7.6	12.6	17.6	18.7	22.1	22.6	19.4	12.4	11.7	4.0
8	6.0	7.3	7.4	12.1	17.9	19.1	22.4	22.5	20.1	12.5	11.5	2.9
9	6.5	7.3	7.6	11.6	17.9	19.5	22.8	22.5	20.2	12.4	11.1	2.2
10	6.9	7.2	7.8	11.1	18.3	19.6	23.1	22.4	20.2	12.5	11.1	2.2
11	6.9	7.0	8.2	10.6	19.1	19.5	23.0	22.3	20.4	12.8	11.1	2.0
12	6.2	7.0	8.5	10.5	19.5	19.3	22.6	22.0	20.7	12.9	10.8	1.9
13	5.3	7.5	8.9	10.7	19.4	18.8	22.2	21.9	20.8	12.7	10.8	2.3
14	4.6	7.9	9.4	11.0	18.8	18.4	21.9	21.9	20.7	12.6	10.6	2.9
15	4.2	8.2	10.1	10.8	18.6	18.3	22.0	22.1	20.5	12.5	10.4	3.5
16	4.2	8.5	10.5	10.8	18.2	18.4	22.1	22.2	20.3	12.3	10.3	4.1
17	4.2	8.7	10.4	10.8	18.0	18.2	22.1	22.4	20.0	12.3	10.4	4.6
18	4.4	8.5	10.4	11.2	17.5	18.6	22.1	22.5	19.7	12.2	10.4	4.9
19	4.7	8.2	10.2	11.3	16.8	18.7	22.2	22.6	19.4	12.1	10.5	5.1
20	4.5	8.1	10.1	11.5	16.5	18.5	22.2	22.4	19.2	12.0	9.8	5.2
21	4.2	7.8	9.5	11.8	16.5	18.4	22.1	22.2	19.1	12.1	8.8	5.6
22	3.8	7.5	9.1	12.0	15.4	18.7	22.1	22.0	18.6	12.0	8.0	6.0
23	3.8	7.3	8.8	12.7	13.7	19.1	22.3	21.8	17.8	12.0	7.1	6.1
24	3.9	7.3	8.4	13.2	13.3	19.2	22.7	21.6	17.2	12.0	6.2	5.9
25	4.1	7.3	8.2	13.6	13.6	19.0	23.1	21.3	16.8	12.1	5.5	5.9
26	4.5	7.0	8.2	14.1	13.5	18.8	23.3	21.2	16.2	12.2	5.0	5.8
27	5.1	7.2	8.6	14.6	13.7	18.8	23.2	21.3	15.8	12.1	5.0	5.9
28	5.7	7.6	9.4	15.0	14.1	19.3	22.9	21.4	15.6	11.9	5.0	6.1
29	6.2	—	10.4	15.1	14.6	20.0	22.6	21.5	15.0	11.5	4.9	6.2
30	6.5	—	11.2	15.0	14.9	20.7	22.5	21.7	14.2	11.0	5.2	6.1
31	6.7	—	12.1	—	14.9	—	22.4	21.6	—	11.1	—	5.9
MEAN	5.1	7.5	9.1	12.5	16.4	18.5	22.4	22.0	19.2	12.3	9.3	4.9
MAX	6.9	8.7	12.1	15.1	19.5	20.7	23.3	22.6	21.8	13.8	11.7	6.9
MIN	3.8	7.0	7.4	10.5	13.3	15.2	21.4	21.2	14.2	11.0	4.9	1.9



WSLO – 14207500 – TUALATIN RIVER AT WEST LINN, OREGON [RM 1.75]

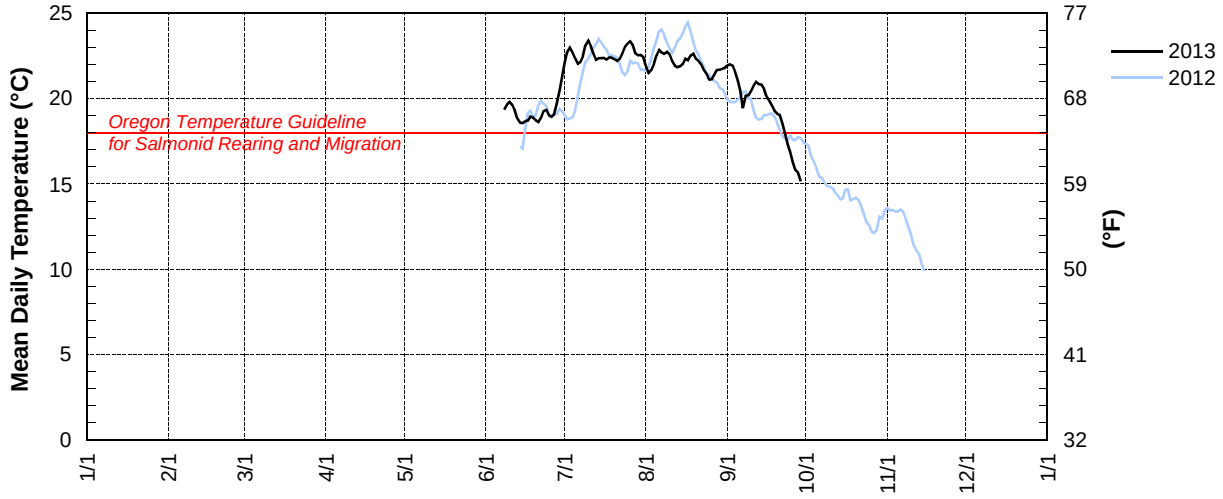
Latitude: 45 22 57 Longitude: 122 43 17 Source Agency: Clean Water Services

Day	2013 Mean Daily Water Temperature in Degrees Celsius†											
	JAN	FEB	MAR	APR	MAY	JUN*	JUL	AUG	SEP*	OCT	NOV	DEC
1							22.1	21.9	21.9			
2							22.7	21.5	22.0			
3							23.0	21.7	21.9			
4							22.7	22.0	21.5			
5							22.4	22.6	21.1			
6							22.1	22.9	20.5			
7							22.1	22.7	19.5			
8						19.4	22.5	22.6	20.2			
9						19.7	23.1	22.7	20.2			
10						19.8	23.4	22.6	20.5			
11						19.6	23.1	22.2	20.8			
12						19.3	22.6	21.9	21.0			
13						18.8	22.3	21.9	20.8			
14						18.6	22.4	21.9	20.8			
15						18.6	22.4	22.0	20.6			
16						18.7	22.4	22.3	20.1			
17						18.7	22.3	22.3	19.9			
18						18.9	22.4	22.5	19.6			
19						18.9	22.4	22.6	19.3			
20						18.7	22.3	22.3	19.1			
21						18.6	22.2	22.2	19.1			
22						18.9	22.3	22.0	18.6			
23						19.3	22.6	21.7	18.0			
24						19.4	23.0	21.5	17.3			
25						19.0	23.2	21.1	16.9			
26						18.9	23.4	21.1	16.3			
27						19.1	23.2	21.4	15.8			
28						19.7	22.7	21.7	15.7			
29		—				20.4	22.5	21.7	15.1			
30		—				21.3	22.6	21.8				
31		—		—		—	22.4	21.8	—			
MEAN							22.6	22.0	19.4			
MAX							23.4	22.9	22.0			
MIN							22.1	21.1	15.1			

†No calibration checks in 2013; instruments used in 2012 and 2013 were not the same

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)

WSLO – 14207500 – Tualatin River at West Linn, Oregon [RM 1.75]



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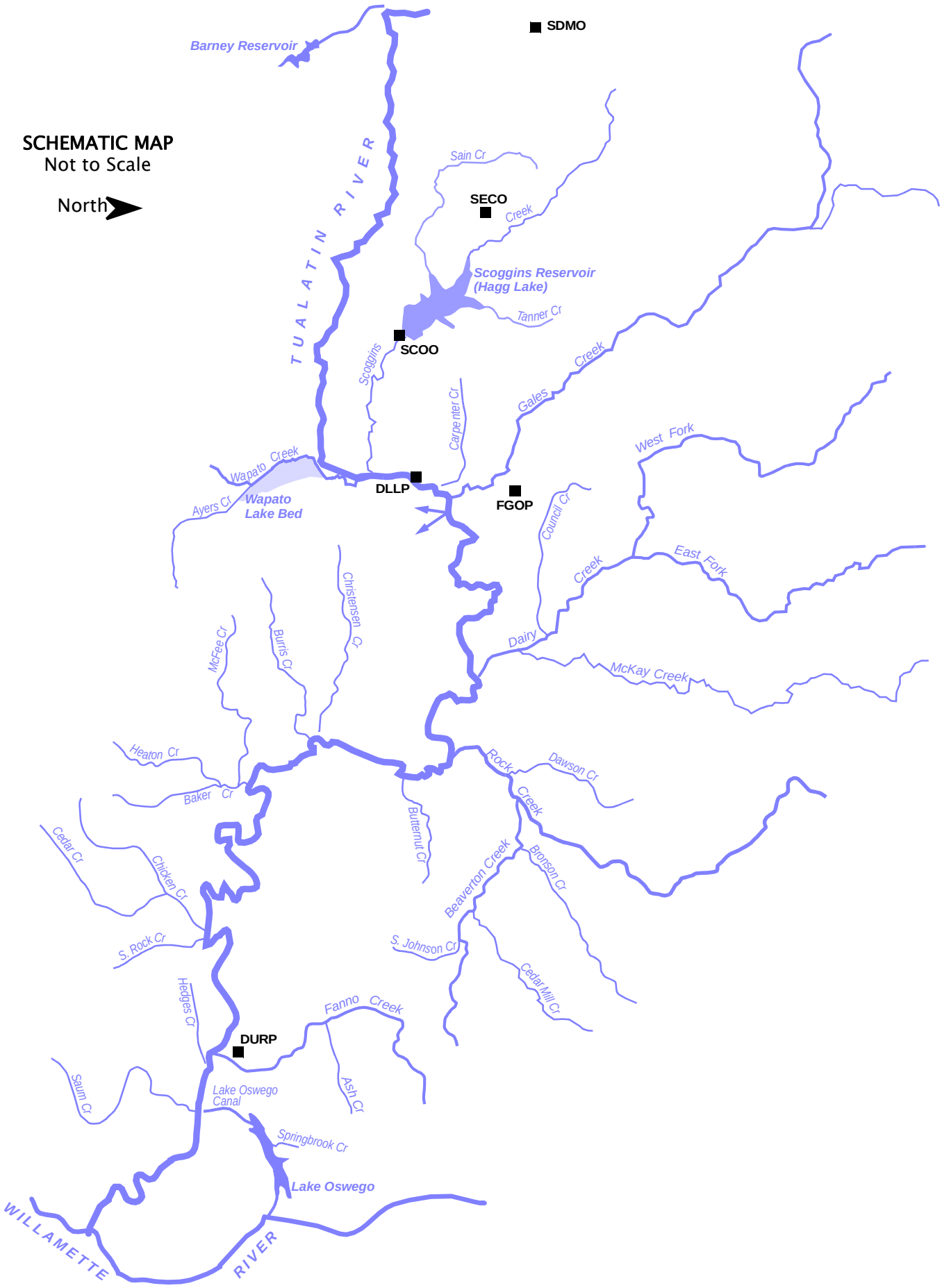
Appendix H

Precipitation Data

PRECIPITATION MONITORING STATIONS — LOCATIONS



PRECIPITATION SITES — ALPHABETICAL LISTING BY SITE CODE

SITE CODE	SITE NAME	Elevation (ft)	PAGE
DLLP	Dilley Precipitation Station	170	H-10
DURP	Durham Wastewater Treatment Plant Precipitation Station	140	H-14
FGOP	Forest Grove Precipitation Station (Verboort)	180	H-12
SCOO	Scoggins Creek below Henry Hagg Lake	215	H-8
SDMO	South Saddle Mountain Precipitation Station	3250	H-4
SECO	Sain Creek Precipitation Station	2000	H-6

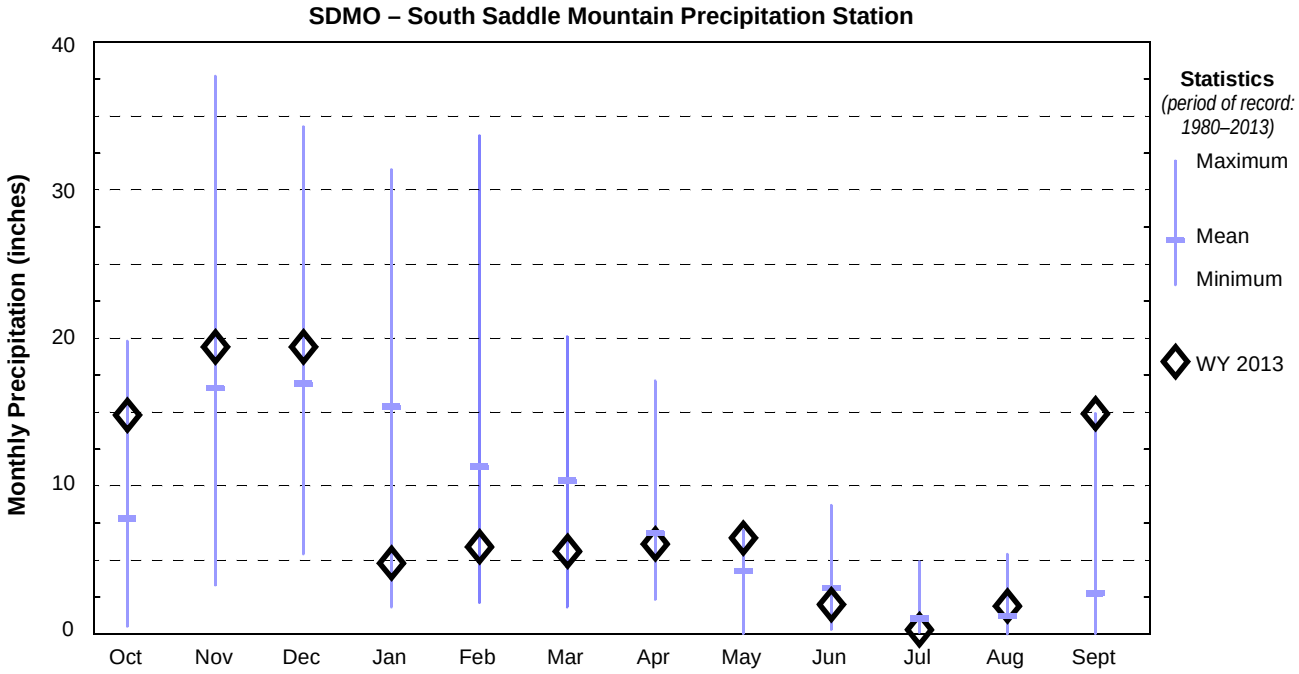
SDMO – SOUTH SADDLE MOUNTAIN PRECIPITATION STATION

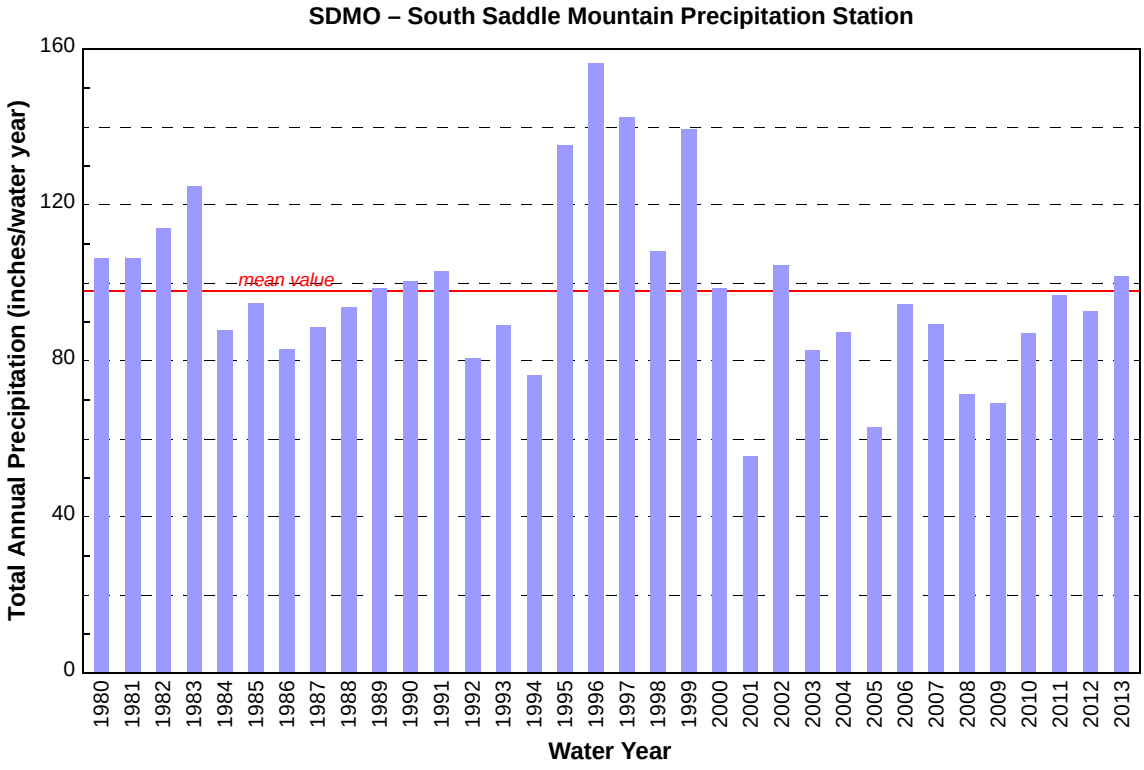
Elevation: 3250 ft
Latitude: 45 31 48 Longitude: 123 22 12

Source Agency: Natural Resources Conservation Service
http://www.wcc.nrcs.usda.gov/cgibin/tab.pl?state=OR

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	10.8	7.5	19.2	19.3	11.2	10.1	6.5	6.4	8.7	1.0	0.6	4.9
1981	4.2	19.3	26.8	5.2	18.6	7.5	7.9	4.1	7.2	0.4	0.7	4.4
1982	13.0	14.9	26.6	19.3	17.2	7.5	7.2	0.0	2.0	1.1	1.9	3.3
1983	13.4	16.7	21.5	17.3	15.2	11.5	7.1	4.3	4.7	4.9	3.4	4.7
1984	1.7	23.3	11.8	8.3	12.6	8.1	6.3	6.4	3.8	0.6	1.1	3.8
1985	11.4	28.6	12.9	1.8	10.2	11.8	4.8	1.5	4.3	0.2	1.4	5.9
1986	12.2	11.1	5.4	15.8	13.4	7.2	5.7	3.2	1.1	1.4	0.2	6.2
1987	5.3	20.2	11.1	17.1	7.7	16.0	2.3	4.9	1.1	1.7	0.2	0.9
1988	0.7	10.8	22.2	14.1	9.6	15.0	7.8	6.1	2.4	2.0	0.3	2.7
1989	2.5	28.5	11.4	14.9	10.2	17.4	5.3	2.8	1.7	1.9	2.0	0.0
1990	5.8	9.6	8.6	31.4	20.8	7.0	6.4	3.3	4.9	0.4	0.8	1.5
1991	11.4	18.7	10.0	12.7	12.7	12.1	15.3	4.4	2.7	1.0	1.2	0.6
1992	2.8	14.4	11.8	19.1	8.8	1.8	10.5	2.4	1.2	1.4	1.1	5.3
1993	6.8	13.8	16.2	10.8	3.3	12.4	13.7	6.4	3.2	1.6	0.9	0.0
1994	2.7	3.3	18.8	11.0	15.2	9.3	5.5	3.6	4.2	0.9	0.5	1.2
1995	14.7	20.9	31.0	19.7	13.5	14.8	6.8	1.5	4.3	3.0	1.3	3.7
1996	8.5	34.8	21.7	21.2	32.6	6.0	17.1	6.4	2.0	1.2	1.0	3.7
1997	11.6	16.9	34.3	17.2	7.3	20.1	8.3	5.9	5.3	2.1	2.6	10.7
1998	19.8	15.3	9.3	24.2	14.7	10.4	3.3	6.1	1.6	0.2	0.4	2.7
1999	7.7	25.9	28.7	20.3	33.7	12.9	2.8	5.0	0.9	0.2	1.3	0.0
2000	6.1	23.6	18.6	17.7	10.1	6.3	2.9	4.9	6.0	0.1	0.6	1.6
2001	4.3	5.6	9.2	5.5	4.8	6.2	6.1	5.2	3.3	1.4	3.1	0.7
2002	6.6	23.0	20.3	21.7	7.5	10.7	7.6	2.9	3.6	0.2	0.3	0.1
2003	0.5	5.8	17.2	21.5	5.4	19.5	7.5	2.3	0.3	0.3	0.4	1.9
2004	9.4	12.1	13.5	15.0	8.7	5.4	4.4	4.9	2.7	0.1	5.4	5.7
2005	7.4	5.0	10.9	9.3	2.1	11.0	6.5	5.8	2.2	1.0	0.4	1.4
2006	9.4	12.4	18.2	29.8	6.1	7.3	3.5	3.0	2.0	0.7	0.0	2.1
2007	1.9	37.7	15.1	9.0	10.3	4.9	3.7	0.5	2.0	0.9	1.1	2.1
2008	7.7	9.5	21.9	11.5	4.7	7.6	4.9	1.1	2.3	0.3	2.4	0.0
2009	6.6	11.9	10.7	11.5	4.4	7.1	4.8	7.0	0.8	0.5	1.3	2.4
2010	7.8	15.5	9.2	14.5	8.5	9.7	7.2	4.8	5.0	0.5	0.5	3.8
2011	9.1	14.1	19.1	12.3	8.2	13.8	10.0	5.1	1.7	1.3	0.1	1.8
2012	5.8	14.6	12.2	17.3	9.6	18.0	5.9	5.0	3.7	0.2	0.0	0.3
2013	14.8	19.4	19.4	4.8	5.9	5.6	6.1	6.5	2.0	0.3	1.9	14.9
MIN	0.5	3.3	5.4	1.8	2.1	1.8	2.3	0.0	0.3	0.1	0.0	0.0
MAX	19.8	37.7	34.3	31.4	33.7	20.1	17.1	7.0	8.7	4.9	5.4	14.9
MEAN	7.78	16.61	16.91	15.36	11.32	10.35	6.81	4.23	3.09	1.03	1.19	3.09

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


SDMO – South Saddle Mountain Precipitation Station
Monthly Precipitation (inches)
40
30
20
10
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record:
1980–2013)
Maximum
Mean
Minimum
WY 2013


SDMO – South Saddle Mountain Precipitation Station
Total Annual Precipitation (inches/water year)
160
120
80
40
0
mean value
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water Year

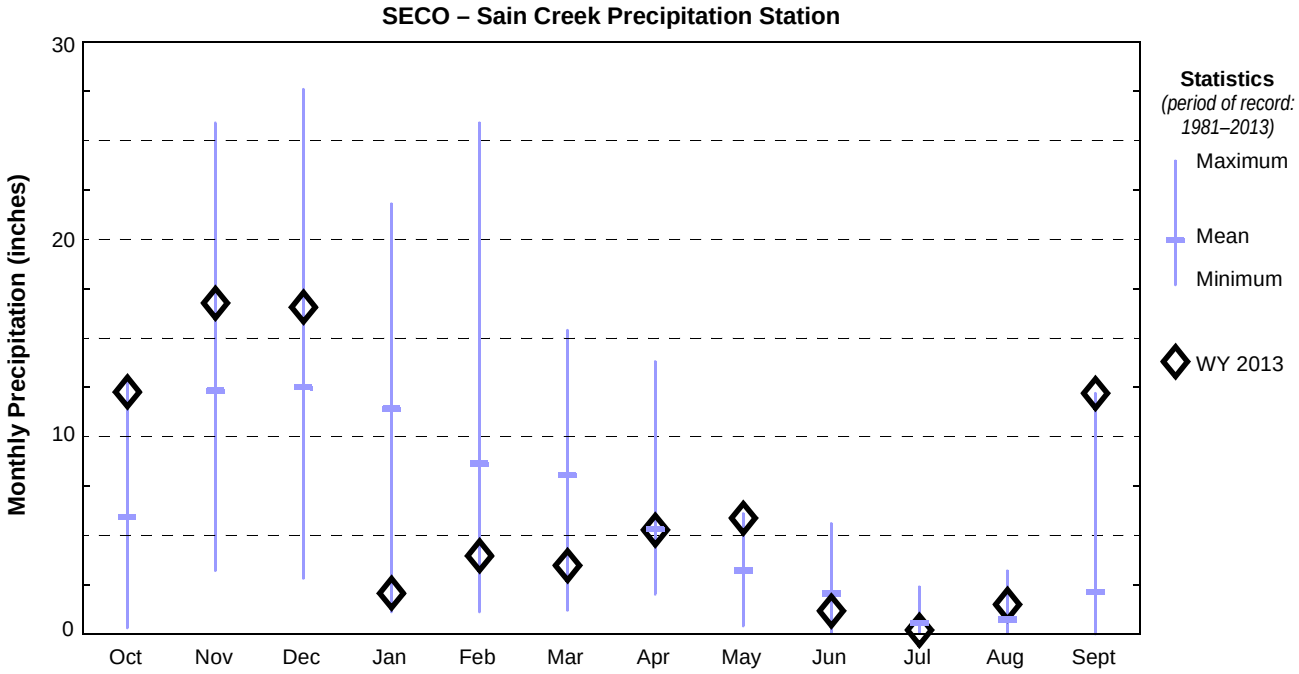
SECO – SAIN CREEK PRECIPITATION STATION

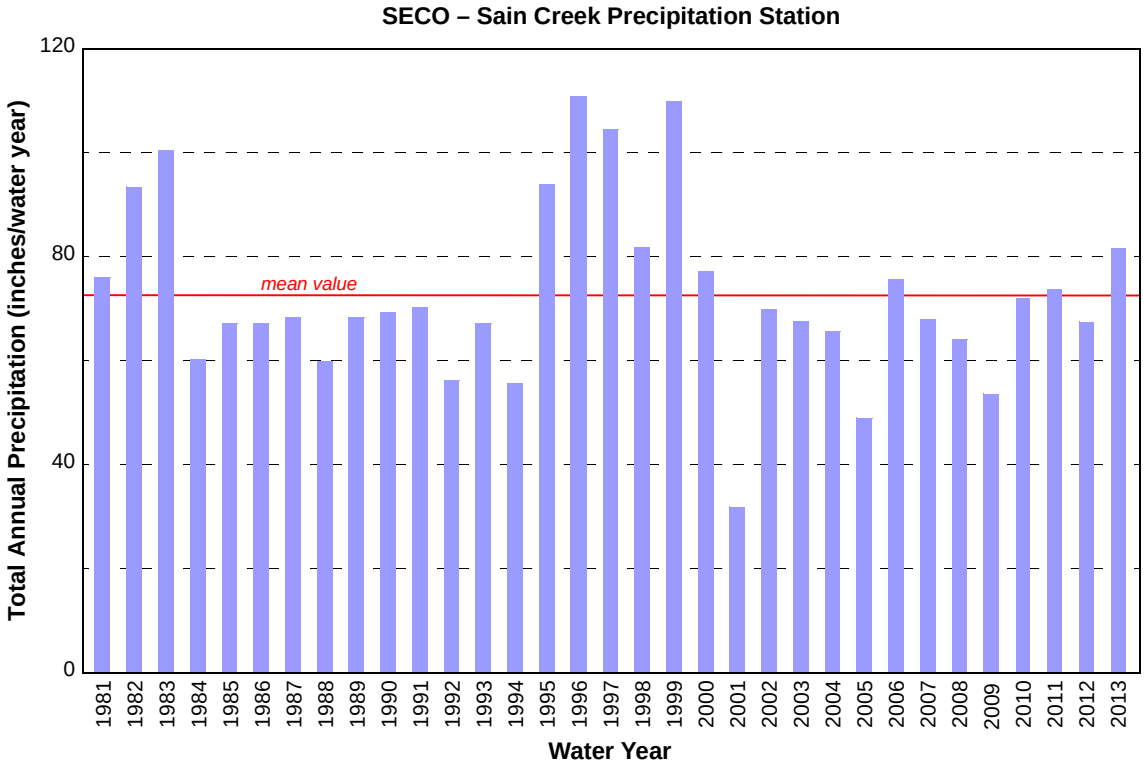
Elevation: 2000 ft
Latitude: 45 31 12 Longitude: 123 16 48

Source Agency: Natural Resources Conservation Service
http://www.wcc.nrcs.usda.gov/cgibin/tab.pl?state=OR

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1981	2.3	13.5	17.8	5.8	12.8	5.3	6.0	3.6	5.6	0.0	0.2	3.0
1982	10.3	11.8	20.8	13.2	14.9	7.9	6.4	0.7	2.0	1.1	1.9	2.4
1983	11.1	11.4	17.0	15.5	17.3	14.5	6.3	2.5	3.1	1.6	0.0	0.1
1984	1.4	16.7	3.5	3.5	12.1	9.1	2.5	5.3	3.3	0.0	0.0	2.8
1985	10.4	22.6	7.0	1.1	4.0	7.9	4.3	1.4	3.5	0.1	1.6	3.2
1986	9.3	4.9	2.8	13.2	15.1	2.9	5.2	6.1	0.2	1.0	0.2	6.3
1987	4.5	15.3	8.4	12.4	6.4	12.3	3.6	3.3	0.4	1.2	0.2	0.3
1988	0.7	6.8	15.8	12.2	2.8	9.1	4.4	4.0	2.0	0.7	0.0	1.4
1989	1.3	21.5	7.4	9.1	7.3	11.6	3.7	1.7	1.9	0.9	1.7	0.1
1990	4.5	6.2	5.8	21.8	14.5	6.4	3.2	2.6	2.5	0.3	0.7	0.8
1991	8.4	10.9	6.1	7.4	9.1	8.3	12.9	2.8	2.1	0.8	0.8	0.5
1992	2.5	9.7	8.4	12.2	6.7	1.2	9.2	1.1	1.1	0.6	0.4	3.1
1993	5.0	9.3	11.9	8.9	2.0	8.8	9.9	5.7	2.7	2.4	0.5	0.0
1994	1.7	4.5	12.7	8.5	10.7	5.9	4.2	3.1	2.4	0.1	0.2	1.6
1995	13.0	13.4	16.6	16.0	9.3	11.2	5.2	1.9	2.9	1.1	0.8	2.5
1996	6.6	24.6	15.7	15.3	21.9	3.4	13.8	4.8	1.4	0.4	0.4	2.6
1997	8.4	12.7	27.6	13.3	4.7	13.7	5.6	4.8	3.4	0.4	1.9	8.1
1998	13.0	12.0	6.4	19.8	12.0	8.5	2.5	5.1	0.8	0.0	0.2	1.5
1999	5.6	20.5	22.3	16.1	25.9	11.1	2.0	4.0	1.0	0.2	1.2	0.0
2000	4.6	18.3	15.4	13.5	8.5	5.3	2.6	3.8	4.0	0.0	0.2	0.9
2001	2.9	3.7	6.4	3.2	3.1	3.7	3.7	2.4	1.1	0.3	1.2	0.2
2002	3.8	16.7	13.3	14.9	5.1	6.6	5.1	2.0	2.0	0.1	0.0	0.3
2003	0.3	7.8	16.5	15.8	4.3	14.1	5.9	1.4	0.0	0.0	0.0	1.5
2004	5.8	7.3	12.0	12.2	7.6	3.9	4.7	2.3	2.0	0.2	3.2	4.4
2005	5.6	3.2	8.3	8.4	1.1	8.5	4.9	5.3	2.5	0.4	0.2	0.6
2006	9.1	10.4	14.7	21.8	3.7	6.9	3.3	3.1	1.5	0.2	0.0	0.9
2007	1.8	25.9	12.0	6.1	9.5	4.0	3.2	0.4	1.1	1.2	0.9	1.9
2008	4.7	7.5	20.0	11.2	5.0	7.5	4.5	0.5	0.6	0.6	1.9	0.0
2009	5.8	7.4	11.3	7.9	3.0	5.9	2.9	5.3	0.8	0.0	1.3	2.0
2010	6.2	12.5	7.7	13.0	7.2	8.2	6.7	3.3	4.1	0.1	0.2	2.7
2011	7.0	10.1	16.1	7.3	6.6	12.3	7.7	2.6	1.4	1.4	0.0	1.3
2012	4.8	10.2	7.7	13.4	6.5	15.4	4.0	2.7	2.0	0.1	0.3	0.3
2013	12.3	16.8	16.6	2.1	4.0	3.5	5.3	5.9	1.2	0.2	1.5	12.2
MIN	0.3	3.2	2.8	1.1	1.1	1.2	2.0	0.4	0.0	0.0	0.0	0.0
MAX	13.0	25.9	27.6	21.8	25.9	15.4	13.8	6.1	5.6	2.4	3.2	12.2
MEAN	5.90	12.31	12.48	11.40	8.63	8.03	5.32	3.20	2.02	0.54	0.72	2.11

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


SECO – Sain Creek Precipitation Station
Monthly Precipitation (inches)
30
20
10
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record: 1981–2013)
Maximum
Mean
Minimum
WY 2013


SECO – Sain Creek Precipitation Station
Total Annual Precipitation (inches/water year)
120
80
40
0
mean value
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water Year

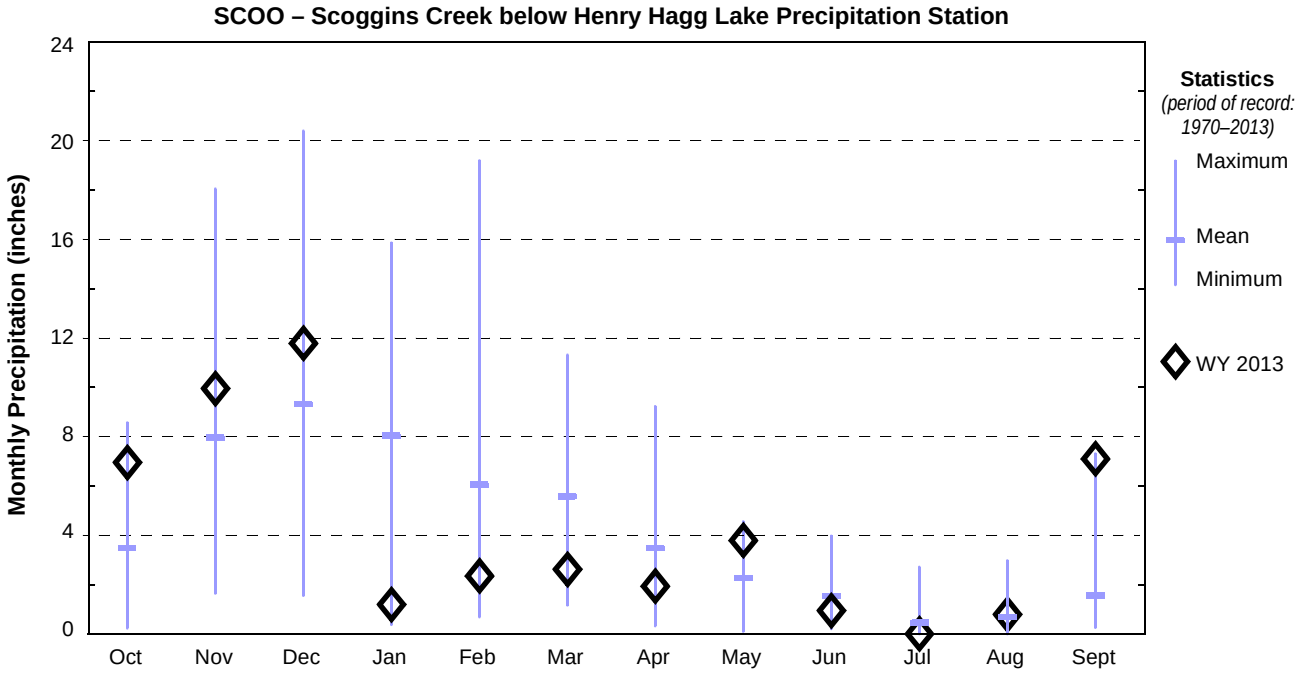
SCOO – SCOGGINS CREEK BELOW HENRY HAGG LAKE PRECIPITATION STATION

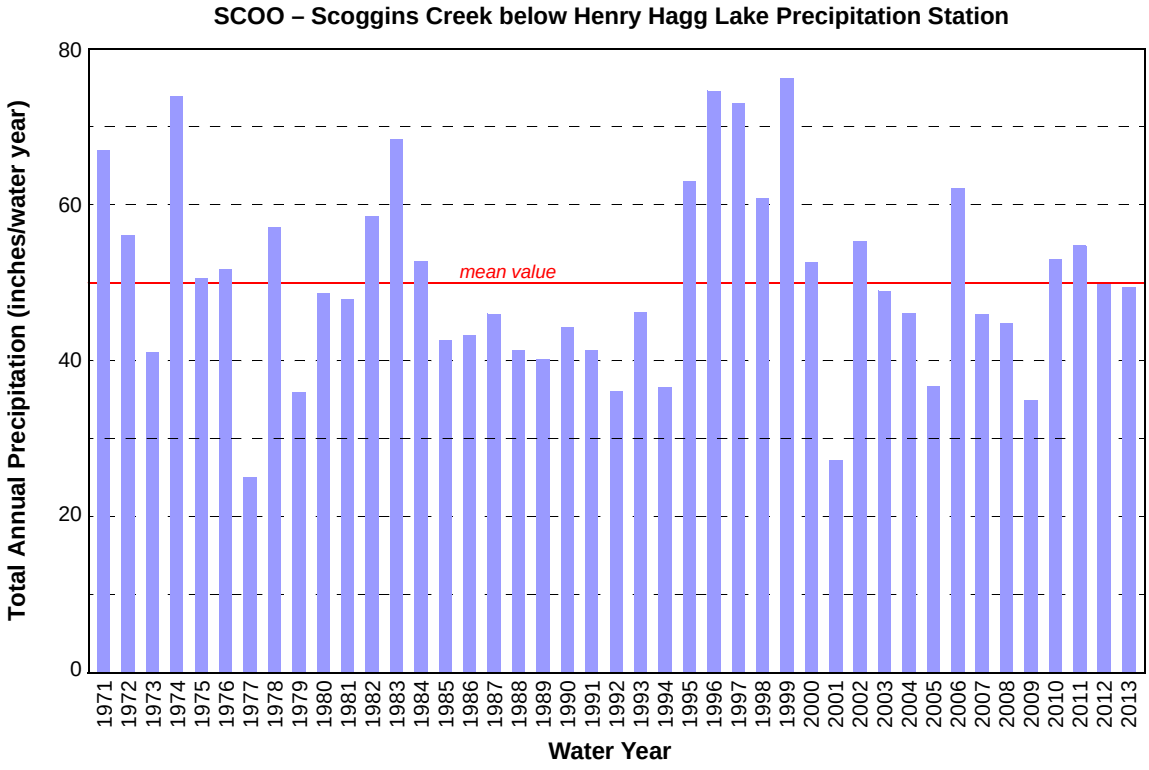
Elevation: 187.5 ft
Latitude: 45 28 10 Longitude: 123 11 56

Source Agency: Tualatin Valley Irrigation District
data not available online

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1970			8.53	15.85	6.30	3.47	3.49	1.27	0.77	0.01	0.00	1.10
1971	4.40	6.86	16.85	10.82	5.60	10.30	3.96	1.54	2.03	0.14	0.52	3.92
1972	4.02	8.68	12.12	10.20	5.05	6.79	3.92	0.92	0.58	0.28	0.25	3.12
1973	0.72	6.31	12.28	6.44	2.36	3.75	2.15	1.19	1.37	0.04	0.86	3.54
1974	3.82	18.05	14.64	12.46	7.92	9.31	3.98	1.31	0.86	1.38	0.02	0.06
1975	1.33	8.02	9.94	10.45	8.11	5.71	2.00	2.12	0.67	0.47	1.72	0.03
1976	6.69	6.38	9.50	7.68	8.25	5.98	1.81	1.63	0.48	0.70	1.80	0.69
1977	1.26	1.65	1.54	1.05	3.37	5.33	0.32	2.50	1.11	0.41	2.99	3.42
1978	2.76	8.11	13.47	7.92	6.66	2.47	5.04	2.95	1.00	0.65	2.11	3.94
1979	0.81	4.29	3.77	3.16	9.75	3.30	2.83	2.99	0.68	0.15	1.71	2.42
1980	6.69	4.25	9.21	8.30	7.13	4.09	4.38	1.10	1.81	0.22	0.05	1.37
1981	1.76	8.71	11.80	3.60	6.07	3.22	2.88	2.67	3.14	0.08	0.06	3.77
1982	5.55	6.77	13.00	7.21	8.43	4.85	6.45	0.51	1.41	0.37	1.46	2.49
1983	5.82	6.90	13.00	8.13	13.46	9.93	2.88	1.54	2.10	2.73	1.19	0.67
1984	1.34	15.16	7.91	3.09	7.92	4.81	4.05	3.95	3.34	0.00	0.00	1.13
1985	5.16	14.86	4.88	0.37	4.03	5.22	1.50	0.73	2.58	0.41	0.68	2.17
1986	4.48	4.55	2.93	9.23	8.42	4.13	2.57	2.65	0.59	1.07	0.00	2.60
1987	3.43	7.85	5.96	8.19	6.67	8.51	1.80	2.10	0.31	0.79	0.11	0.23
1988	0.23	3.09	12.51	9.46	1.67	4.50	3.32	2.78	2.59	0.15	0.09	0.89
1989	0.27	12.19	4.64	4.61	4.59	8.21	1.26	1.63	0.89	0.48	0.83	0.55
1990	2.74	4.39	3.52	13.00	8.87	2.60	2.20	3.01	2.02	0.26	1.18	0.49
1991	4.35	4.49	3.87	4.69	4.72	5.38	9.03	2.29	1.44	0.22	0.54	0.23
1992	1.80	6.31	5.74	7.72	4.66	1.16	5.63	0.09	0.71	0.42	0.35	1.47
1993	2.84	5.94	8.85	6.25	1.21	5.40	6.71	3.95	2.26	2.59	0.17	0.04
1994	1.21	1.92	9.97	6.47	7.71	3.41	2.49	0.96	1.30	0.00	0.13	0.98
1995	4.94	9.30	11.54	12.00	5.36	7.88	4.53	1.47	2.44	0.58	1.01	1.89
1996	3.70	12.24	12.17	11.53	13.61	2.81	9.23	4.49	1.59	0.58	0.34	2.32
1997	5.44	8.73	20.40	10.71	2.98	9.22	3.38	2.68	3.34	0.29	1.28	4.52
1998	8.57	9.32	4.41	14.18	9.08	6.26	2.31	4.56	0.96	0.24	0.00	0.91
1999	4.51	15.20	13.27	11.84	19.20	6.25	1.77	2.15	0.93	0.08	0.96	0.06
2000	3.13	12.68	9.50	9.02	6.51	4.08	1.40	2.94	2.26	0.03	0.19	0.81
2001	3.24	3.08	5.11	2.30	2.36	3.05	2.19	2.20	1.79	0.23	1.12	0.52
2002	3.28	12.10	11.86	11.36	4.11	5.84	2.79	1.58	1.46	0.13	0.19	0.57
2003	0.73	4.37	13.26	9.33	4.20	9.29	5.17	0.86	0.20	0.01	0.62	0.86
2004	3.34	5.26	9.92	8.84	5.96	3.11	3.12	1.63	0.90	0.00	2.01	2.00
2005	4.60	2.75	4.95	4.92	0.70	7.73	3.34	4.52	1.99	0.38	0.39	0.38
2006	5.54	8.57	12.92	15.72	4.10	6.13	3.63	2.96	1.53	0.15	0.00	0.75
2007	0.83	17.64	7.76	4.37	6.42	2.79	2.15	0.90	0.76	0.69	0.58	0.99
2008	3.91	4.68	13.42	8.69	3.30	5.03	2.50	0.92	1.25	0.02	0.98	0.09
2009	2.89	6.29	4.58	6.36	2.20	4.13	1.99	3.95	0.76	0.21	0.66	0.82
2010	3.73	8.95	5.11	10.29	5.16	5.72	5.79	3.20	3.04	0.36	0.05	1.54
2011	4.53	7.24	12.96	4.99	4.78	9.67	5.35	2.96	0.78	1.11	0.00	0.35
2012	2.29	8.12	3.93	9.33	4.53	11.32	2.99	2.94	3.98	0.25	0.02	0.04
2013	6.95	9.95	11.78	1.19	2.35	2.61	1.93	3.79	0.94	0.00	0.79	7.10
MIN	0.23	1.65	1.54	0.37	0.70	1.16	0.32	0.09	0.20	0.00	0.00	0.03
MAX	8.57	18.05	20.40	15.85	19.20	11.32	9.23	4.56	3.98	2.73	2.99	4.52
MEAN	3.48	7.96	9.30	8.03	6.04	5.56	3.46	2.25	1.52	0.44	0.68	1.54

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


SCOO – Scoggins Creek below Henry Hagg Lake Precipitation Station
Monthly Precipitation (inches)
0
4
8
12
16
20
24
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record: 1970–2013)
Maximum
Mean
Minimum
WY 2013


SCOO – Scoggins Creek below Henry Hagg Lake Precipitation Station
Total Annual Precipitation (inches/water year)
0
20
40
60
80
mean value
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water Year

DLLP – DILLEY PRECIPITATION STATION (ID# 352325)

Elevation: 170 ft
Latitude: 45 29 Longitude: 123 07

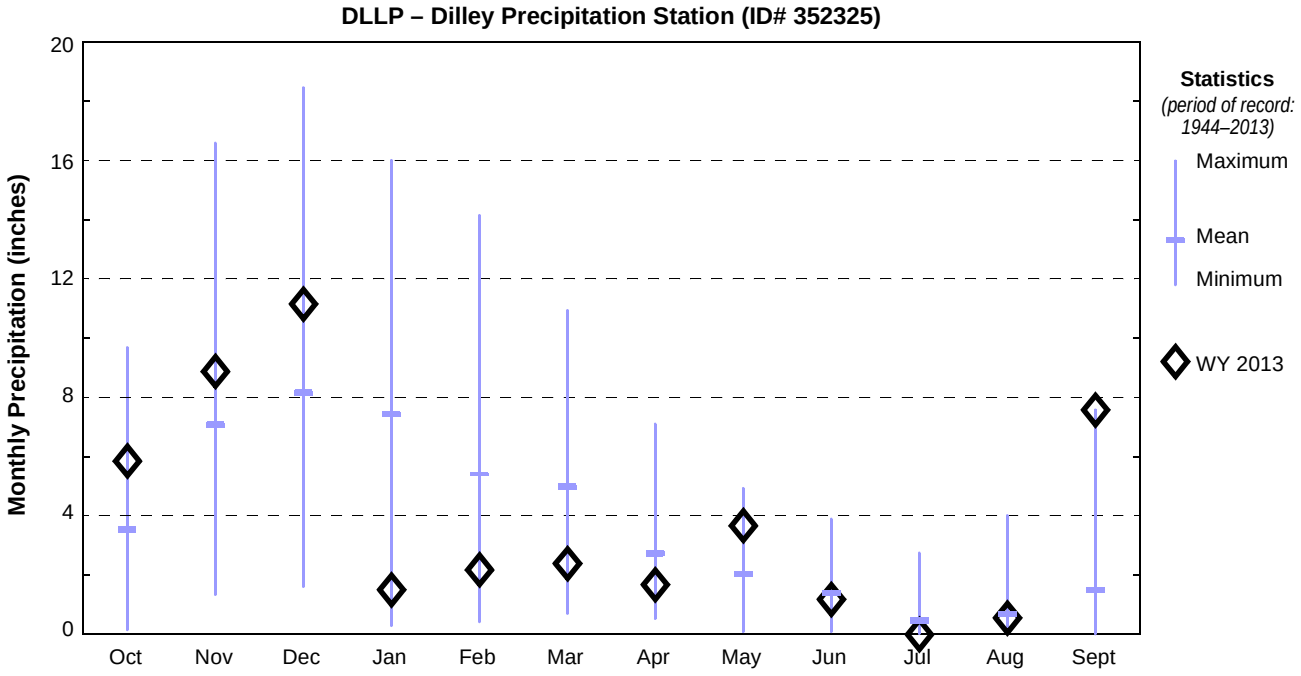
Source Agency: Western Climatic Data Center
www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?or2325

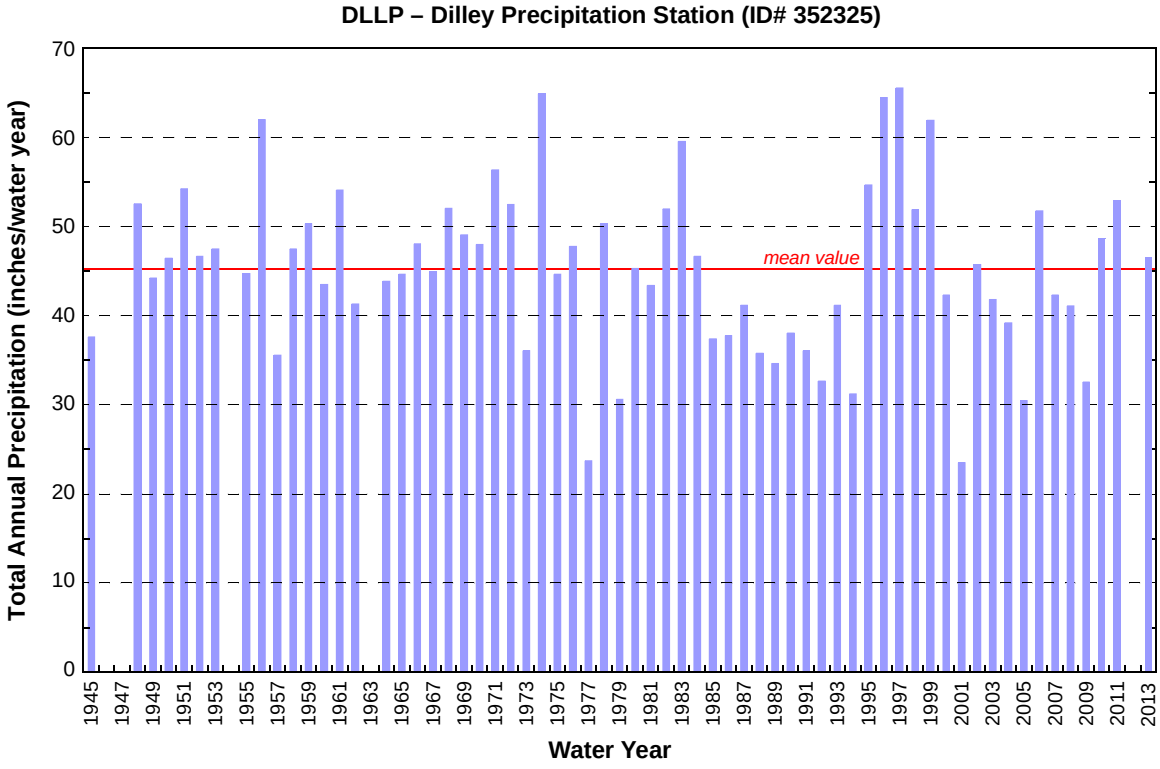
Water	Total Monthly Precipitation (inches)											
Year*	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1944			4.08	5.12	3.98	3.22	3.93	0.94	0.74	1.06	0.20	2.80
1945	1.56	5.5	2.74	4.13	6.99	7.18	2.09	3.71	0.22	0.20	0.13	3.17
1946	1.45	11.82	7.56	7.21	7.61	6.09	1.41	1.51	1.74			
1947		10.27	5.38	5.47	4.46	4.69	1.30	0.09	3.12	0.86	0.50	1.28
1948	9.68	4.08	4.99	7.28	7.52	4.55	3.97	4.92	0.90	0.59	1.35	2.72
1949	2.52	8.69	10.59	2.06	11.83	2.99	0.55	2.98	0.55	0.82	0.03	0.58
1950	2.48	7.55	5.93	10.43	6.58	6.77	1.46	0.48	2.19	0.54	0.84	1.13
1951	9.62	9.55	8.93	11.03	5.01	4.74	0.88	1.67	0.15	0.11	0.15	2.38
1952	6.96	7.89	9.70	7.08	5.65	4.20	1.35	0.77	2.62	0.00	0.03	0.38
1953	0.61	2.29	9.28	14.98	4.86	5.36	2.74	2.87	1.25	0.10	1.51	1.60
1954	3.55	7.37	7.48	13.80	7.32	2.95	3.26	1.33	2.06	0.56		1.97
1955	3.92	7.61	7.66	4.41	4.36	5.55	4.56	0.77	1.78	1.41	0.00	2.65
1956	6.97	10.49	12.90	13.36	4.43	7.27	0.64	1.42	1.29	0.03	1.32	1.84
1957	4.83	1.98	4.69	3.02	5.77	7.09	2.09	3.03	1.52	0.27	0.47	0.75
1958	3.55	3.77	10.90	9.29	8.50	2.62	4.24	1.05	2.96	0.02	0.00	0.59
1959	2.34	8.74	6.09	12.18	5.10	4.42	1.76	2.55	2.57	0.92	0.08	2.75
1960	2.71	4.44	4.86	6.56	6.94	7.27	4.65	4.37	0.43	0.00	0.74	0.53
1961	4.24	10.95	3.64	7.05	11.15	10.02	2.94	2.36	0.24	0.48	0.52	0.46
1962	5.98	4.95	7.67	1.61	4.14	5.78	4.79	2.43	0.44	0.00	1.43	2.08
1963		11.23	3.48	1.91	5.39	6.65	4.03	2.82	1.94	1.01	1.64	1.42
1964	3.68	7.10	5.24	16.01	1.47	5.23	1.34	0.85	1.53	0.66	0.54	0.23
1965	1.87	9.80	14.38	9.04	2.72	0.69	2.21	1.14	0.91	1.02	0.87	0.00
1966	1.92	8.73	9.87	9.62	2.67	8.47	0.66	1.28	1.84	1.10	0.46	1.39
1967	3.62	6.98	11.57	10.14	1.83	6.07	2.63	0.64	0.76	0.00	0.00	0.65
1968	6.35	3.28	7.17	7.94	9.00	5.53	1.41	3.01	2.10	0.11	4.01	2.08
1969	5.45	7.48	12.91	9.61	4.33	1.21	2.19	1.72	2.01	0.02	0.00	2.14
1970	4.64	3.26	11.18	14.21	5.81	3.12	2.64	1.26	0.57	0.01	0.00	1.26
1971	4.01	5.89	14.28	8.96	4.74	8.29	3.68	1.22	1.61	0.13	0.36	3.19
1972	3.21	8.35	10.45	8.19	4.90	7.32	4.41	1.39	0.56	0.28	0.25	3.12
1973	0.61	4.78	11.33	5.37	2.18	3.40	1.57	1.40	1.27	0.05	0.76	3.30
1974	3.36	16.59	12.01	11.25	6.75	8.51	2.96	1.46	0.65	1.25	0.00	0.07
1975	1.32	7.50	8.64	8.99	7.00	4.86	1.75	1.94	0.62	0.44	1.60	0.00
1976	6.42	5.16	8.59	6.85	7.20	5.54	2.31	1.30	0.39	0.82	2.41	0.79
1977	1.30	1.32	1.60	1.05	2.98	4.46	0.51	2.50	1.12	0.60	3.07	3.18
1978	2.94	7.21	11.39	7.37	5.92	2.27	3.70	2.67	0.99	0.99	1.65	3.23
1979	0.71	3.85	3.77	3.06	8.00	2.49	2.41	2.07	0.58	0.13	0.94	2.54
1980	6.67	3.93	7.50	8.14	6.25	4.02	3.70	1.21	2.24	0.22	0.06	1.36
1981	1.63	8.35	11.43	2.65	5.17	2.98	2.17	1.96	3.00	0.15	0.05	3.83
1982	5.90	5.89	12.15	5.82	7.75	3.89	4.83	0.44	1.31	0.36	1.24	2.40
1983	4.87	5.36	11.31	7.40	12.20	8.23	2.49	1.40	1.65	2.74	1.38	0.54
1984	1.32	13.07	6.87	2.70	5.95	4.29	3.95	3.36	3.88	0.00	0.00	1.21
1985	4.63	12.83	3.87	0.27	3.18	4.56	1.20	0.36	2.94	0.45	1.45	1.63
1986	3.97	3.95	2.77	8.38	7.35	3.81	1.59	1.99	0.37	0.85	0.00	2.74
1987	3.31	6.52	5.47	8.25	5.18	7.47	1.72	1.85	0.19	0.85	0.15	0.20
1988	0.20	3.66	10.41	8.14	1.16	3.67	2.6	2.23	2.27	0.07	0.17	1.16
1989	0.14	10.98	3.81	4.14	3.51	7.05	0.81	1.62	0.78	0.36	0.93	0.51
1990	2.47	4.02	3.47	10.42	7.14	2.08	1.71	2.98	1.82	0.27	0.93	0.72
1991	4.14	4.15	3.36	3.97	4.46	5.07	6.36	2.19	1.39	0.29	0.39	0.24
1992	1.91	6.26	4.91	6.62	3.97	1.19	4.79	0.07	0.80	0.31	0.51	1.28
1993	2.79	5.44	7.42	5.39	0.78	5.00	6.76	3.79	1.95	1.76	0.08	0.00
1994	1.26	1.49	9.12	5.67	6.45	3.14	1.41	0.89	0.95	0.00	0.24	0.58
1995	4.64	8.12	10.29	10.56	5.02	6.53	3.74	1.29	1.76	0.45	0.49	1.74
1996	3.41	9.78	10.09	9.69	12.68	2.46	7.09	4.84	1.12	0.60	0.26	2.43
1997	5.37	8.05	18.46	9.63	2.51	8.29	2.98	2.65	2.38	0.47	1.38	3.33
1998	6.58	8.36	3.54	12.10	7.66	5.20	1.76	4.82	1.05	0.09	0.00	0.73
1999	3.24	13.00	10.81	10.29	14.15	4.85	1.90	1.71	0.76	0.02	1.14	0.04
2000	2.55	10.10	7.10	7.81	5.46	3.25	1.52	2.15	1.21	0.00	0.22	0.89
2001	3.09	2.46	4.20	2.17	1.98	2.25	1.72	1.60	1.84	0.32	1.27	0.54
2002	2.91	10.26	10.66	9.00	3.61	4.04	1.93	1.14	1.32	0.19	0.07	0.57
2003	0.59	3.35	12.22	8.61	3.69	7.41	4.24	0.46	0.07	0.01	0.32	0.79
2004	2.87	4.10	9.01	7.70	5.21	2.32	2.24	1.25	1.21	0.00	1.66	1.56
2005	3.80	2.53	3.89	4.25	0.41	5.97	2.79	4.26	1.84	0.29	0.13	0.24
2006	4.16	7.58	11.79	14.09	3.38	4.21	2.58	2.26	0.92	0.17	0.00	0.63
2007	1.01	15.05	8.03	4.03	4.62	2.48	2.32	1.22	0.83	0.82	0.63	1.21
2008	3.80	4.35	10.41	7.03	2.93	4.66	2.91	2.72	0.97	0.00	0.96	0.32
2009	2.42	6.01	4.85	5.53	2.04	3.43	1.72	3.53	0.23	0.17	1.29	1.32

DLLP – DILLEY PRECIPITATION STATION (ID# 352325) – CONTINUED

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2010	3.67	8.41	4.48	8.95	4.91	5.26	4.82	3.36	3.03	0.16	0.08	1.50
2011	4.00	7.00	13.55	5.63	4.36	8.93	4.62	2.47	0.84	0.98	0.07	0.42
2012	2.56	8.00				10.95	2.54	2.3	2.48	0.41	0.07	0.04
2013	5.85	8.87	11.15	1.49	2.17	2.38	1.66	3.66	1.17	0.00	0.54	7.57
MIN	0.14	1.32	1.60	0.27	0.41	0.69	0.51	0.07	0.07	0.00	0.00	0.00
MAX	9.68	16.59	18.46	16.01	14.15	10.95	7.09	4.92	3.88	2.74	4.01	7.57
MEAN	3.52	7.07	8.15	7.42	5.40	4.97	2.72	2.03	1.38	0.44	0.68	1.49

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.





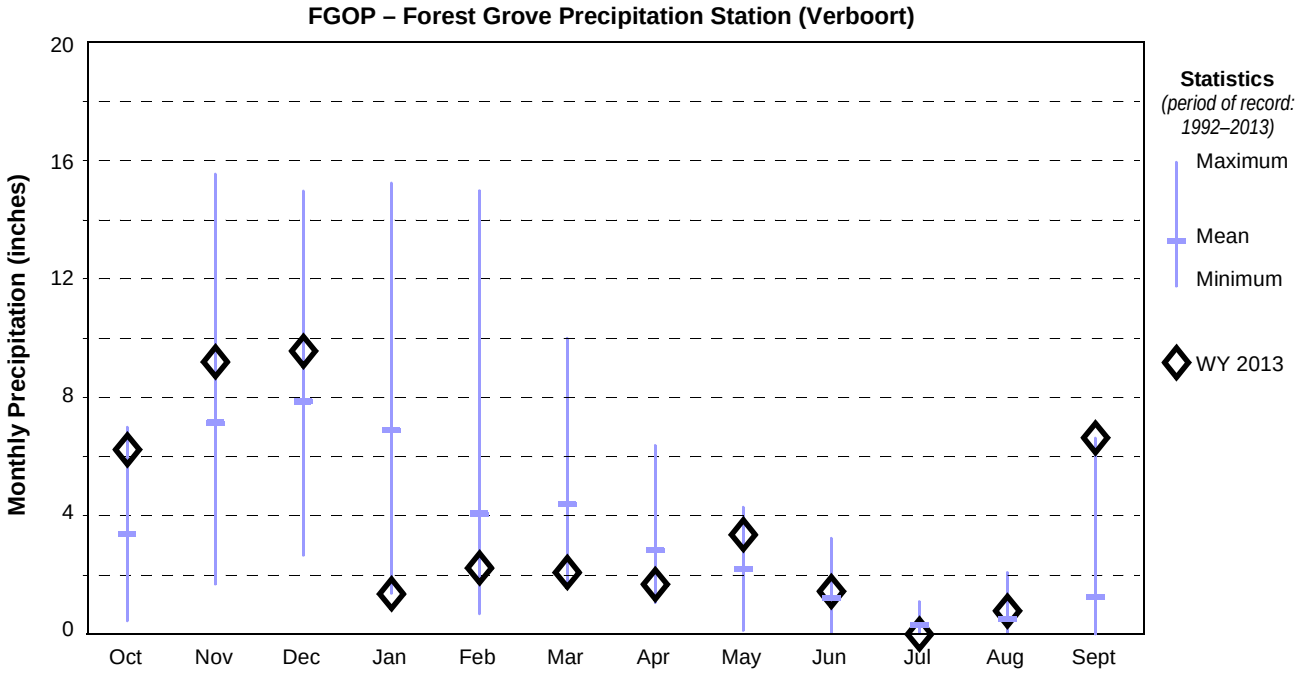
FGOP – FOREST GROVE PRECIPITATION STATION (VERBOORT)

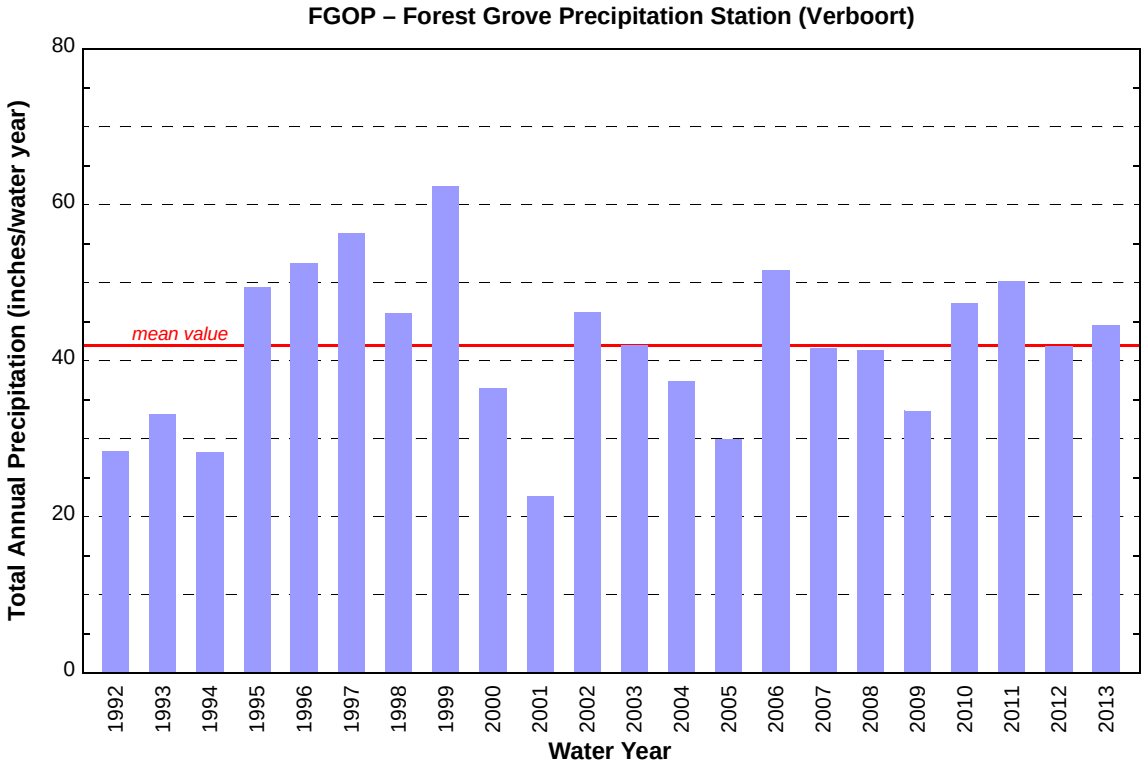
Elevation: 180 ft
Latitude: 45 33 11 Longitude: 123 05 01

Source Agency: US Bureau of Reclamation – Agrimet
http://www.usbr.gov/pn/agrimet/wxdata.html

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1992	1.50	5.10	3.68	5.93	3.56	1.56	4.35	0.10	0.94	0.26	0.28	1.08
1993	2.41	4.17	6.00	3.20	2.22	4.15	4.88	4.22	0.57	1.09	0.14	0.00
1994	1.08	1.68	7.61	4.95	5.75	2.34	1.49	1.31	1.04	0.02	0.23	0.77
1995	6.26	7.51	7.56	9.72	4.05	5.78	3.09	1.57	1.23	0.53	0.50	1.62
1996	3.08	11.72	8.55	9.06	3.63	2.33	6.37	4.14	0.85	0.48	0.26	1.99
1997	4.53	7.99	14.96	7.64	1.78	7.76	3.27	1.83	1.80	0.18	1.32	3.25
1998	6.99	7.08	3.47	9.12	7.20	4.57	1.44	4.28	1.06	0.07	0.00	0.80
1999	3.44	13.67	9.83	9.65	14.97	5.39	1.69	1.68	0.98	0.35	0.66	0.02
2000	2.78	7.84	5.89	7.72	3.99	2.37	1.05	2.06	1.58	0.09	0.13	0.92
2001	3.08	2.63	4.30	1.66	1.74	2.13	1.68	1.07	2.11	0.44	1.15	0.63
2002	2.79	11.22	9.74	9.30	3.45	4.60	1.61	1.16	1.20	0.20	0.03	0.90
2003	0.43	3.02	12.24	10.06	3.18	6.19	5.13	0.55	0.07	0.00	0.35	0.73
2004	3.49	4.62	7.87	6.09	5.23	1.93	2.55	1.10	0.81	0.00	2.08	1.50
2005	3.80	2.78	4.38	2.47	0.67	6.00	2.60	4.08	1.56	0.21	0.11	1.28
2006	4.32	7.44	11.35	15.24	2.15	4.38	2.19	2.91	0.69	0.20	0.07	0.58
2007	0.95	15.55	8.57	3.88	4.24	2.45	2.12	0.78	0.59	0.57	0.50	1.32
2008	3.14	4.51	13.01	8.81	2.70	4.13	2.46	0.71	0.78	0.01	0.97	0.11
2009	2.66	5.69	4.73	6.06	1.91	3.69	1.77	3.43	1.17	0.13	1.06	1.28
2010	3.78	7.70	5.34	7.44	4.78	5.28	4.24	3.37	3.23	0.51	0.23	1.46
2011	4.39	7.42	11.53	5.08	5.52	7.35	4.38	2.37	0.62	1.05	0.00	0.48
2012	2.75	8.28	2.66	7.25	4.17	10.00	2.16	2.15	2.22	0.08	0.08	0.02
2013	6.25	9.20	9.56	1.36	2.24	2.08	1.67	3.36	1.44	0.00	0.78	6.63
MIN	0.43	1.68	2.66	1.36	0.67	1.56	1.05	0.10	0.07	0.00	0.00	0.00
MAX	6.99	15.55	14.96	15.24	14.97	10.00	6.37	4.28	3.23	1.09	2.08	6.63
MEAN	3.36	7.13	7.86	6.90	4.05	4.38	2.83	2.19	1.21	0.29	0.50	1.24

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


FGOP – Forest Grove Precipitation Station (Verboort)
Monthly Precipitation (inches)
20
16
12
8
4
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record: 1992–2013)
Maximum
Mean
Minimum
WY 2013


FGOP – Forest Grove Precipitation Station (Verboort)
Total Annual Precipitation (inches/water year)
80
60
40
20
0
mean value
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water Year

DURP – DURHAM WASTEWATER TREATMENT PLANT PRECIPITATION STATION

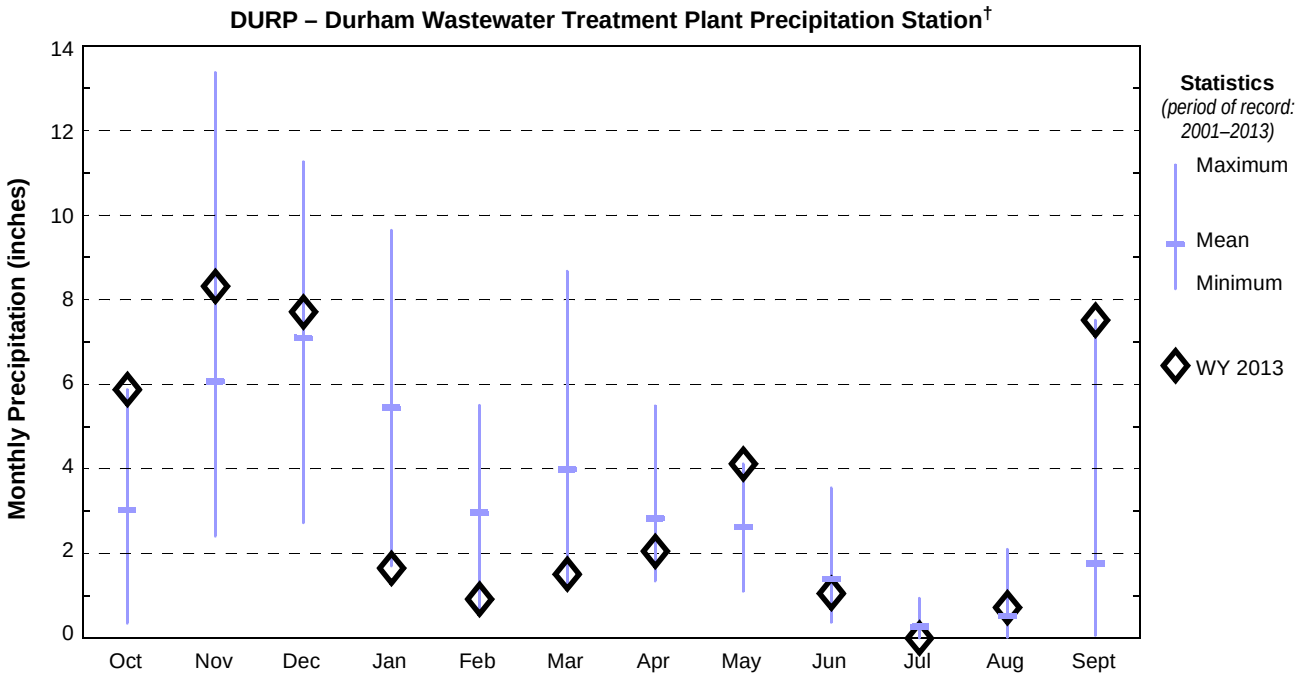
Elevation: 140 ft — Source Agency: US Geological Survey
Latitude: 45 23 59 Longitude: 122 45 45 — http://or.water.usgs.gov/cgi-bin/grapher/table_setup.pl

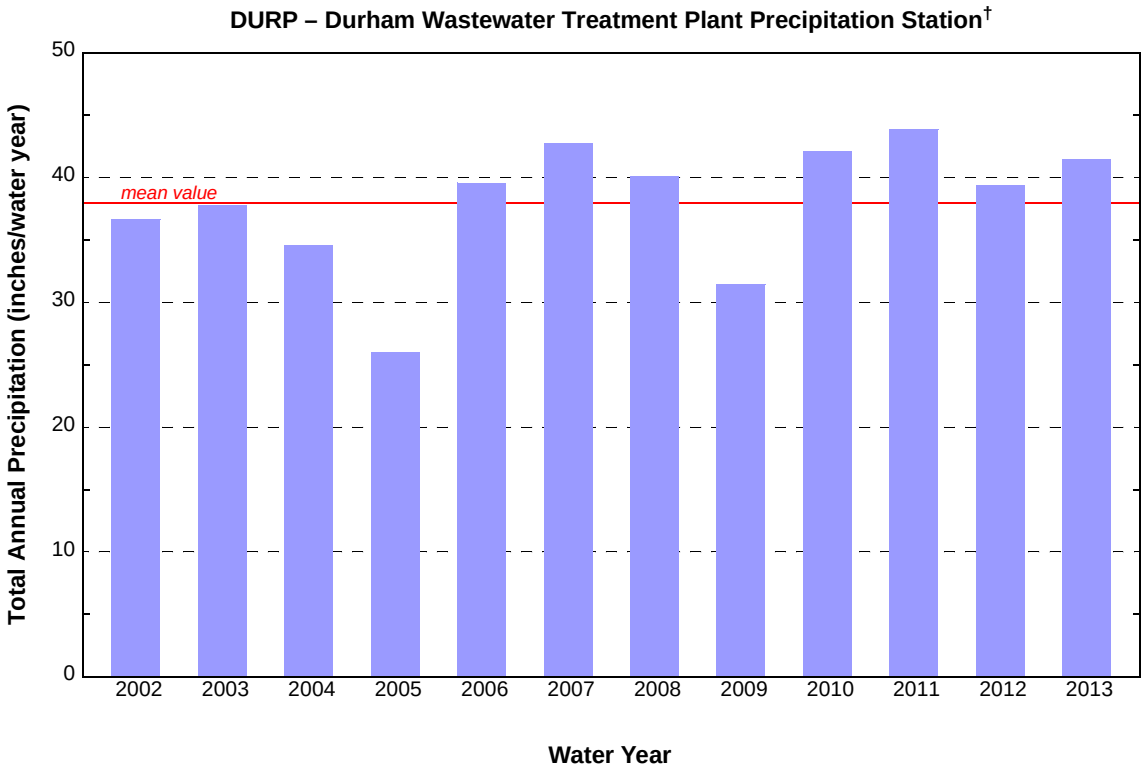
Water Year*	Total Monthly Precipitation (inches)†											
	OCT	NOV[a]	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2001									1.46	0.76	0.74	0.69
2002	3.76	6.93	5.85	5.42	3.42	3.49	2.08	1.60	1.27	0.47	0.20	2.16
2003	0.35	2.55	10.36	8.13	3.19	4.72	5.49	1.30	0.37	0.00	0.38	0.94
2004	2.51	4.71	8.94	4.83	4.69	1.22	1.34	1.10	1.32	0.01	2.11	1.82
2005	3.10	2.41	3.70	1.71	0.64	3.52	3.06	4.07	1.59	0.37	0.03	1.75
2006	2.90	5.83	9.73	9.65	2.07	2.73	2.09	2.97	0.92	0.01	0.02	0.64
2007	1.14	13.38	7.54	3.59	5.51	3.24	2.58	1.62	0.87	0.54	0.71	1.98
2008	3.85	4.13	11.27	6.90	2.37	4.35	2.80	1.58	1.15	0.10	1.27	0.33
2009	3.23	5.44	3.72	5.49	1.90	3.13	1.83	3.72	0.80	0.09	0.74	1.38
2010	3.29	6.32	4.68	6.30	3.37	4.80	3.45	3.91	3.55	0.30	0.04	2.06
2011	4.24	5.69	8.95	4.34	4.33	6.44	4.37	2.89	1.17	0.94	0.00	0.49
2012	2.09	7.05	2.72	7.37	3.14	8.68	2.75	2.61	2.60	0.27	0.00	0.06
2013	5.88	8.32	7.71	1.65	0.92	1.51	2.05	4.12	1.06	0.00	0.72	7.52
MIN	0.35	2.41	2.72	1.65	0.64	1.22	1.34	1.10	0.37	0.00	0.00	0.06
MAX	5.88	13.38	11.27	9.65	5.51	8.68	5.49	4.12	3.55	0.94	2.11	7.52
MEAN	3.03	6.06	7.10	5.45	2.96	3.99	2.82	2.62	1.39	0.26	0.52	1.76

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.

†The USGS adjusted all historical values for precipitation at the Durham Wastewater Treatment Plant in 2006 to correct for systematic undercatch of rainfall.

[a]Rainfall data from the USGS rain gage at Conestoga School was used for missing values at the Durham WWTP rain gage for 12 days in November 2012





†The USGS adjusted all historical values for precipitation at the Durham Wastewater Treatment Plant in 2006 to correct for systematic undercatch of rainfall.

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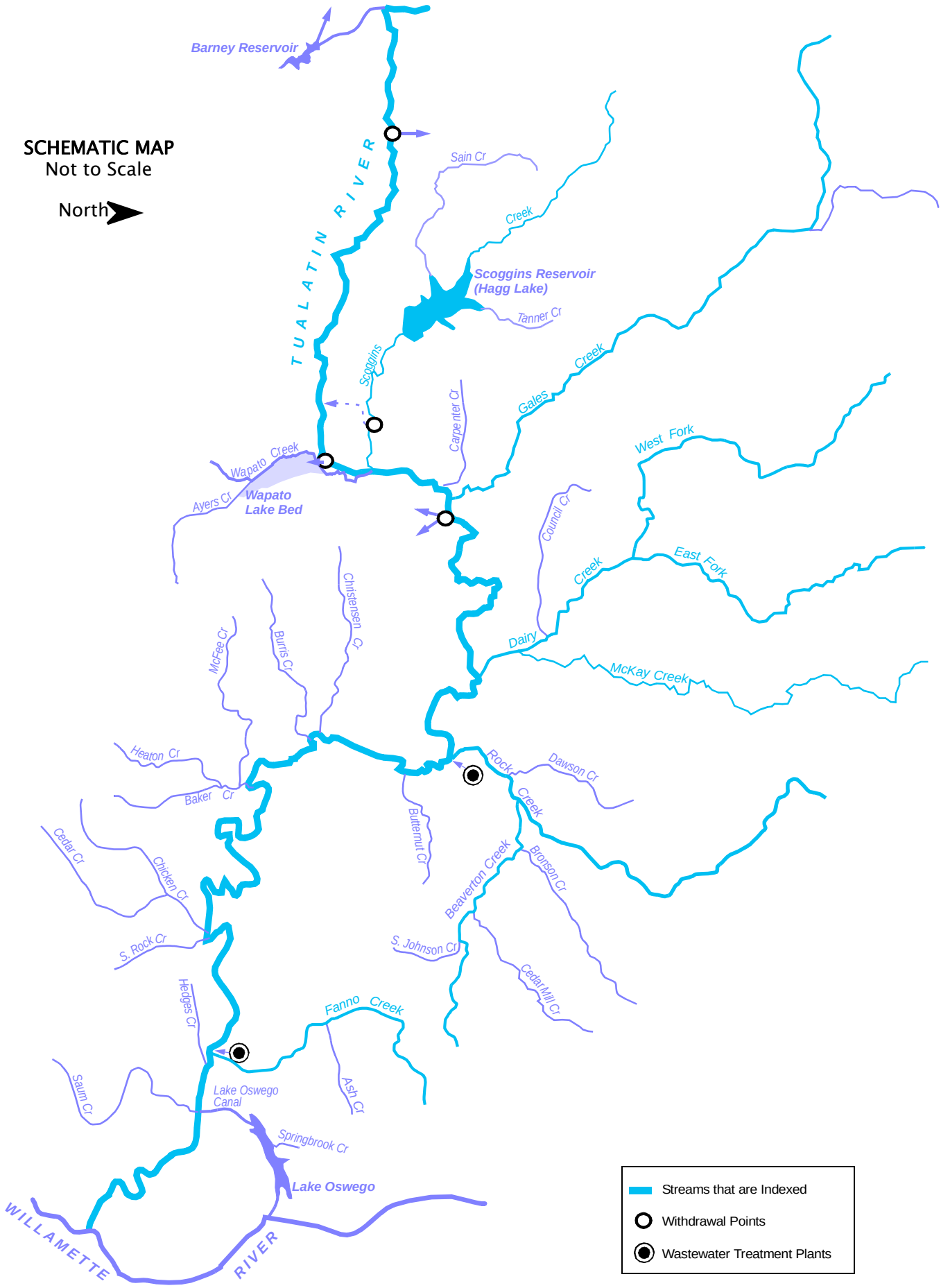
Appendix I

River Mile Indices

STREAMS INDEXED



STREAMS INDEXED

TUALATIN RIVER — RIVER MILE INDEX

HUC: 211400300

[Elevation measured relative to 0.00 gage datum; Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description	Drainage Area (square miles)	Elevation (feet)
0.00		Mouth of Tualatin River at Willamette River (LB of Willamette River @ River Mile 28.5)	712	
0.20		Weiss Bridge – Petes Mtn Rd.		
1.60	RB	Fields Creek (HUC: 02114003000010)		
1.69		State Hwy 212 Bridge (Fields Bridge)		
1.75	LB	West Linn Stream Gage Station – USGS #14207500	706	85.61
2.40	LB	Tate Creek (HUC: 02114003000020)		
3.45		Lake Oswego Corp. Diversion Dam		
4.25		Interstate 205 Bridge		
4.56	LB	Wilson Creek (HUC: 02114003000080)		
5.34	LB	Boat Launch		
5.36	LB	Shipley Creek (HUC: 02114003000100)		
5.38		Shipley Bridge– Stafford Rd. NWS Wire Weight Gage		
5.62	LB	Pecan Creek (HUC: 02114003000120)		
6.02	RB	Athey Creek (HUC: 02114003000123)		
6.70	RB	Saum Creek (HUC: 02114003000130)		
6.70	LB	Oswego Canal Diversion River Elevation Recording Gage #14206990, Headgate, and Canal Recording Gage #14207000		
7.36	LB	Boat Launch – Dogwood Drive		
7.67	RB	Browns Ferry Park Canoe Launch		
7.83		Clackamas County – Washington County Boundary (Underground Cable Crossing Sign)		
8.18		Interstate 5 Bridge		
8.60		Boones Ferry Road Bridge		
8.64	RB	Hedges Creek (HUC: 02114003000150)		
8.90	RB	Tualatin Park Boat Launch		
8.91	RB	Southern Pacific RR Bridge Tualatin River at Tualatin Elevation Recording Station #14206956 (formerly #14206960)		
9.32	LB	Fanno Creek (HUC: 02114003000180) *[Index on page I-13]*	26.8	
9.33	LB	Durham Wastewater Treatment Plant Outfall (9.2 on NPDES permit)		
9.34		Oregon Electric RR Bridge		
9.80	LB	Cook Park Boat Launch		
11.50	LB	US Hwy. 99W Bridge (Pacific Highway) Canoe Launch(access from southeast of bridge)		
12.68		Overhead BPA Transmission Line; Vancouver–Eugene		
12.80	LB	Rivermeade Boat Launch (Private)		
15.20	RB	Rock Creek–South (HUC: 02114003000250)	13.7	
15.50	RB	Chicken Creek (HUC: 02114003000270)		
16.09	RB	Chicken Creek Drainage Ditch		
16.22	RB	Shamberg Bridge (Elsner Road) Rated Staff Gage for Stream Flow		

TUALATIN RIVER — RIVER MILE INDEX

HUC: 211400300

[Elevation measured relative to 0.00 gage datum; Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description	Drainage Area (square miles)	Elevation (feet)
21.12		Overhead BPA Transmission Line; Big Eddy–Keeler		
26.90		State Hwy. 210 bridge (Scholls)		
28.20	RB	McFee Creek (HUC: 02114003000310)		
30.76	LB	Unnamed Stream (HUC: 02114003000320) (Jacktown)		
31.62	RB	Burris Creek (HUC: 02114003000330)		
31.92	RB	Christensen Creek (HUC: 02114003000350)		
33.30		Harris Bridge (State Highway 208)	568	100.42
	LB	Farmington Recording Stream Gage #14206500		
35.68	LB	Butternut Creek (HUC: 02114003000380)		
37.38	LB	Gordon Creek (HUC: 02114003000400)		
38.08	LB	Rock Creek Wastewater Treatment Plant Outfall (37.7 on NPDES permit)		
38.09	LB	Rock Creek (HUC: 02114003000420	74.6	
		Beaverton Creek (HUC:02114003000420060)	36	
38.44	LB	Rood Bridge Small Watercraft Launch		
		Rood Bridge Road Bridge		
	LB	Recording Stream Gage #14206295		105.16
40.44	RB	Davis Creek (HUC: 02114003000430)		
41.64		Minter Bridge Road Bridge		
43.88	LB	Jackson Slough		
		Jackson Bottom Wetlands		
	LB	Hillsboro Wastewater Treatment Plant Effluent Outfall (42.9 and 43.3 on NPDES permit)		
44.40		State Highway 219 Bridge		
	RB	Recording Stream Gage #14206241		
44.73	LB	Dairy Creek (HUC: 02114003000480) *[Index on page I-9]*	226	
		McKay Creek (LB) (HUC: 02114003000480020) *[Index on page I-10]*	63.4	
		East Fork Dairy Creek (HUC: 02114003000480080) *[Index on page I-11]*		
		West Fork Dairy Creek (HUC: 02114003000480090) *[Index on page I-12]*		
51.54		Golf Course Road Bridge		
	RB	Golf Course Recording Stream Gage #14204800		
53.74		LaFollett Road (Bridge removed)		
55.24	LB	Forest Grove Wastewater Treatment Plant Outfall (53.8 on NPDES permit)		
		Fern Hill Wetlands		
55.32		Fernhill Road Bridge		
56.10		Springhill Pump Plant Intake		
56.80	LB	Gales Creek (HUC: 02114003000560) *[Index on page I-8]*	78.6	
57.38	LB	Carpenter Creek (HUC: 02114003000580)		
57.84	LB	Dilley Creek (HUC: 02114003000600)		
58.04	LB	Johnson Creek (HUC: 02114003000602)		
58.82		Springhill Road Bridge	125	147.57
	LB	Tualatin River at Dilley Stream Gage; USGS #14203500		
59.02	LB	O'Neil Creek (HUC: 02114003000620)		
60.00	LB	Scoggins Creek (HUC: 02114003000640) *[Index on page I-7]*		
60.80	RB	Wapato Creek (HUC: –02114003000670)		
		Wapato Creek Improvement District Return Flow		

TUALATIN RIVER — RIVER MILE INDEX

HUC: 211400300

[Elevation measured relative to 0.00 gage datum; Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description	Drainage Area (square miles)	Elevation (feet)
62.00	RB	Wapato Improvement District Headgate)		
62.24		Southern Pacific RR Bridge		
62.25		State Highway 47 Bridge (Gaston) New Tualatin River at Gaston Recording Stream Gage #14202510		
62.30		Bates Road Bridge		
62.80	LB	Black Jack Creek (HUC: 02114003000700)		
62.90		Overhead BPA Transmission Line; Forest Grove–McMinnville		
63.13		TVID Patten Valley Pump Station Outfall #1		
63.87	RB	Discontinued Tualatin River at Gaston Recording Stream Gage	48.5	
64.26		TVID Patten Valley Pump Station Outfall #2		
65.34	RB	Williams Canyon (HUC: 02114003000730)		
65.90		Mt. Richmond Road Bridge		
67.30	LB	Hering Creek (HUC: 02114003000760)		
67.83		South Road Bridge (Cherry Grove)		
68.44	RB	Roaring Creek (HUC: 02114003000790)		
69.42		Little Lee Falls		
70.70	LB	Raines Bridge– Tualatin River below Lee Falls Rated Staff Gage for Stream Flow		
71.07		Lee Falls		
73.28		Haines Falls		
73.30	LB	City of Hillsboro Haines Falls Intake		
74.00	LB	Lee Creek (LB–02114003000860)		
74.05	RB	Patten Creek (HUC: 02114003000870)		
75.70	LB	Sunday Creek (HUC: 02114003000900)		
76.60	LB	Maple Creek (HUC: –02114003000940)		
76.95		Ki–A–Cut Falls		
78.00	RB	Barney Reservoir Aqueduct Outfall		
79.3+		Headwaters of Tualatin River		

FANNO CREEK — STREAM MILE INDEX

HUC: 2114003000180

[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code, ISWR= Instream Water Right]

River Mile	Bank	Description
0.00		Confluence with the Tualatin River (HUC: 02114003000) at River Mile 9.32
0.86		Oregon Electric RR Bridge
1.19		Durham Road Bridge USGS Gage #14206950
2.00	LB	Ball Creek (HUC: 02114003000180020)
2.12		Bonita Street Bridge – Rated Staff Gage
3.28		SW Hall Blvd Bridge
3.95		SW Ash Avenue Bridge
4.28		SW Main St Bridge
4.30		State Hwy 99W Bridge
4.49		SW Grant Ave Bridge
5.07		SW Tiederman Ave. Bridge
5.08	RB	Summer Creek (HUC: 02114003000180070) Rated Staff Gage at Fowler School
5.32		SW Tigard Ave Bridge
5.53		SW North Dakota St Bridge
5.54	LB	Ash Creek (HUC: 02114003000180080) Rated Staff Gage at Greenburg Road
6.38		Scholls Ferry Road Bridge
7.30		Tuckerwood – Rated Staff Gage
7.66		SW Hall Blvd Bridge
8.40		SW Denny Rd Bridge
8.60		Oregon Electric RR Bridge
8.70		State Hwy 217 Bridge
9.42		Scholls Ferry Road Bridge Rated Staff Gage
9.66		SW 92nd Ave Bridge
9.90		SW Bohmann Parkway Bridge
10.16		SW 86th Ave Bridge
10.78		SW Nicol Road Bridge
11.76		Olson Road Bridge
11.96	RB	Sylvan Creek (HUC: 02114003000180190)
11.98		SW Beaverton–Hillsdale Hwy (State Hwy 10)
12.10		Washington County – Multnomah County Line
12.58		SW 56th Ave Bridge USGS Gage #14206900
12.81		SW Shattuck Road Bridge
13.22		SW 45th Ave Bridge
13.23	RB	Ivey Creek (HUC: 02114003000180250)
13.32		SW 43rd Ave Bridge
13.38		SW 42nd Ave Bridge
13.48		SW 39th Ave Bridge
13.98		SW Beaverton–Hillsdale Hwy (State Hwy 10)
14.10		SW 30th Ave Bridge

ROCK CREEK — STREAM MILE INDEX

HUC: 2114003000420
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.8		River Road Bridge
1.2		Southern Pacific RR Bridge
1.2+		State Highway 8 Bridge – Rated Staff Gage for Stream Flow
2.4		SW Brookwood Avenue Bridge
3.1	RB	Dawson Creek
4.4	LB	Beaverton Creek
4.5		Baseline Road Bridge
4.9		NW Quatama Road Bridge – Rated Staff Gage for Stream Flow
5.5		Oregon Electric RR Bridge
5.7		NW 216th Avenue Bridge
6.7		NW Cornell Road Bridge
7.8		US Highway 26 Bridge
9.0		West Union Road Bridge – Rated Staff Gage for Stream Flow
9.3	RB	Holcomb Creek
10.0		NW 185th Avenue Bridge
10.9	LB	Abbey Creek
11.0		Germantown Road Bridge
11.9		Cornelius Pass Road Bridge
13.0		Old Cornelius Pass Road Bridge
14.1		Burlington Northern RR Bridge
15.1		Rated Staff Gage for Stream Flow
16.4		Rock Creek Road Bridge
16.5		Van Raden Reservoir
19.1		Headwaters

BEAVERTON CREEK — STREAM MILE INDEX

HUC: 2114003000420060
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Rock Creek (LB, HUC: 02114003000480080260) @ River Mile 4.3
0.40		Southwest Baseline Road
1.16		Southwest 216th Avenue Road Bridge– Rated Staff Gage for Stream Flow
2.20	RB	Bronson Creek (HUC: 02114003000420060010)
3.32	RB	Willow Creek (HUC: 02114003000420060050)
4.90		Southwest 170th Avenue Road Bridge– Rated Staff Gage for Stream Flow
5.47	LB	Unnamed Stream (HUC: 02114003000420060096)
6.06	LB	Johnson Creek (HUC: 02114003000420060100)
6.30	LB	Unnamed Stream (HUC: 02114003000420060120)
6.66		Oregon Electric Railroad
7.45		Cedar Hills Boulevard
7.90	RB	Reasoners Creek (HUC: 02114003000420060130)
8.75+		Headwaters

DAIRY CREEK — STREAM MILE INDEX

HUC: 02114003000480
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Tualatin River (HUC: 0211400300) @ River Mile 44.73
1.65		Southern Pacific RR Bridge
2.06		State Highway 8 Bridge Dairy Creek at TV Hwy Recording Stream Gage #14206200
2.20		Oregon Electric RR Bridge
2.26	LB	McKay Creek (HUC: 02114003000480020)
3.53	RB	Council Creek (HUC: 02114003000480040)
6.02		Susbauer Road Bridge (County Road 196)
7.39		BPA Power Line Crossing
8.51		Cornelius–Schefflin Road Bridge (County Road 2161) Rated Staff Gage for Stream Flow
10.55		Confluence of East Fork Dairy Ck (HUC: 02114003000480080) & West Fork Dairy Ck (02114003000480090)

MC KAY CREEK — STREAM MILE INDEX

HUC: 2114003000480020
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Dairy Creek (HUC: 02114003000480) @ River Mile 2.26
1.31		Padgett Road Bridge (County Road 2245)
2.25		Hornecker Road Bridge (County Road 2393) Rated Staff Gage for Stream Flow
2.30		Southern Pacific RR Crossing
4.32		Glencoe Road Bridge (County Road A–146½) Rated Staff Gage for Stream Flow
4.46		BPA Transmission Line Crossing
5.34	LB	Waible Creek (HUC: 02114003000480020040)
6.30		NW Old Scotch Church Road Bridge (County Road A–66)
8.00		US Hwy 26 Bridge – Sunset Highway
9.36		NW West Union Road Bridge (County Road 2496) City of North Plains to West
9.38		Southern Pacific RR Crossing
10.94	LB	Jackson Creek (HUC: 02114003000480020100)
12.80		NW Shadybrook Road Bridge (County Road A–110)
15.56		NW Collins Road Bridge (County Road 1889) Rated Staff Gage for Stream Flow
16.56	RB	Brunswick Canyon (HUC: 02114003000480020179)
16.66	LB	East Fork McKay Creek (HUC: 02114003000480020180)
24.0+		Headwaters

EAST FORK DAIRY CREEK — STREAM MILE INDEX

HUC: 2114003000480080

[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code, ISWR= Instream Water Right]

River Mile	Bank	Description
0.00		Confluence with West Fork Dairy Creek (HUC: 02114003000480090) @ River Mile 10.56 of Dairy Creek (HUC: 02114003000480)
1.24		Roy Road Bridge (County Road A–159) Rated Staff Gage for Stream Flow
2.34		Port of Tillamook Bay RR Bridge
3.04	RB	Bledsoe Creek (HUC: 02114003000480080030)
3.20		Harrington Road Bridge (County Road 1989)
4.80		SP&S RR Bridge
5.56		US Highway 26 Bridges
6.91		Mountaindale Road Bridge (County Road 12)
6.97	LB	Baker Creek (HUC: 02114003000480080080)
8.44		Dairy Creek Road Bridge (County Road 2067) Rated Staff Gage for Stream Flow
8.55		East Fork Dairy Creek at Mountaindale, OR – Former USGS Gage #14205500 (10/40–9/51) Drainage Area = 43.0 square miles
9.62		NW Uebel Road Bridge (County Road 304)
12.50		Murphy Lane Bridge (Private) Rated Staff Gage for Stream Flow
12.82	RB	Big Canyon (HUC: 02114003000480080150)
13.00		***ISWR:*** C–59525 5/25/66
13.95	RB	Murtaugh Creek (HUC: 02114003000480080170)
14.04	LB	Meadow Brook Creek (HUC: 02114003000480080180)
14.17		Meacham Road Bridge (County Road 742)
15.55	LB	Plentywater Creek (HUC: 02114003000480080200) ***ISWR:*** C–59527 5/25/66
16.52	RB	Denny Creek (HUC: 02114003000480080210) ***ISWR:*** C–59526 5/25/66
16.56		Bacona Road Bridge (County Road 422) Snooseville Corner
17.21		Greener Road Bridge (County Road 1990)
17.34	LB	Rock Creek (HUC: 02114003000480080260)
17.50		Little Bend Park
17.60		Fern Flat Road Crossing (County Road 241)
18.15	LB	Panther Creek (HUC: 02114003000480080280)
18.31		Fern Flat Road Crossing (County Road 241)
18.84	RB	Roundy Creek (HUC: 02114003000480080290)
19.10	RB	Campbell Creek (HUC: 02114003000480080310)
21.30		Washington County – Columbia County Boundary
21.48		BPA Power Line Crossing
22.0+		Headwaters

WEST FORK DAIRY CREEK — STREAM MILE INDEX

HUC: 2114003000480090
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with East Fork Dairy Creek (HUC: 02114003000480080) @ River Mile 10.56 of Dairy Creek (HUC: 02114003000480)
1.96		Evers Road Bridge (County Road A–187) Rated Staff Gage for Stream Flow
2.09	RB	Lousignant Canal (HUC: 02114003000480090010)
2.82		State Highway 47 Bridge
5.28		Greenville Road Bridge (County Road A–159)
6.20		State Highway 6 Bridge
6.22	RB	Cedar Canyon Creek (HUC: 02114003000480090110)
7.53		Cedar Canyon Road Bridge (County Road 1938) City of Banks to SE
7.70		State Hwy 47 Bridge – Rated Staff Gage for Stream Flow West Fork Dairy Creek at Banks, OR –Former USGS Gage #14205000 (10/40 – 9/43) Drainage Area = 47.5 square miles
7.72		Port of Tillamook Bay RR Bridge
9.30		US Highway 26 Bridge
10.60		NW Green Mountain Road Bridge (County Road 127)
11.02	LB	Garrigus Creek (HUC: 02114003000480090180)
12.19		NW Turk Road Bridge (County Road 233)
12.36	RB	Kuder Creek (HUC: 02114003000480090190)
12.90		NW Pihl Road Bridge (County Road 1045) Community of Manning
13.33		Port of Tillamook Bay RR Bridge
13.48		Port of Tillamook Bay RR Bridge
13.58	LB	Witcher Creek (HUC: 02114003000480090200)
14.37		Port of Tillamook Bay RR Bridge
14.50		US Highway 26 Bridge
15.00		NW Fisher Road Bridge (County Road 394)
15.11	LB	Mendenhall Creek (HUC: 02114003000480090220)
15.58	RB	Burgholzer Creek (HUC: 02114003000480090230)
15.60		US Highway 26 Bridge
16.00		Community of Buxton – ½ mile east
17.02	LB	Williams Creek (HUC: 02114003000480090240)
17.98	RB	Cummings Creek (HUC: 02114003000480090250)
18.10		State Highway 47 Bridge
18.85		Port of Tillamook Bay RR Bridge
22+		Headwaters

GALES CREEK — STREAM MILE INDEX

HUC: 2114003000560

[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code, ISWR= Instream Water Right]

River Mile	RB	Description
0.00		Confluence with Tualatin River (HUC: 0211400300) @ River Mile 56.80 ***ISWR*: C–59523 5/25/66**
1.63		Southern Pacific RR Bridge
1.75		Forest Grove Bypass Bridge – State Highway 47 to State Highway 8
2.36		State Highway 47 Bridge Gales Creek Recording Stream Gage #14204530
3.66		Ritchey Road Bridge (County Road 461)
6.53	RB	Prickett Creek (HUC: 02114003000560090)
6.98		Stringtown Road Bridge (County Road A–176)
7.70	RB	Roderick Creek (HUC: 02114003000560110)
8.56		Roderick Road Bridge (County Road 395) Gales Creek near Forest Grove Oregon – Former USGS Gage #14204500 (10/40–9/56 & 10/70–9/81)
8.94	RB	Godfrey Creek (HUC: 02114003000560130)
9.22	LB	Kelly Creek (HUC: 02114003000560120)
10.68	RB	Clear Creek (HUC: 02114003000560150)
11.44	RB	Iler Creek (HUC: 02114003000560170)
11.46		NW Gales Creek Road (County Road 1312) Community of Gales Creek
11.47	RB	Fir Creek (HUC: 02114003000560190)
12.00		***ISWR:* C–59509 5/25/66 above this point**
12.36		Clapshaw Hill Road Bridge (County Road 2037) Rated Staff Gage for Stream Flow
12.40	LB	Little Beaver Creek (HUC: 02114003000560200)
		***ISWR:* C–59512 5/25/66**
12.92		Parson Road Bridge
14.44	RB	White Creek (HUC: 02114003000560210)
14.68		NW Wilson River Highway Bridge (State Highway 6)
15.74	RB	Lyda Creek (HUC: 02114003000560230)
16.26	RB	Bateman Creek (HUC: 02114003000560250)
17.50		Gales Creek near Gales Creek, OR – Former USGS Gage #1420400 (10/35–9/45 & 10/639/70)
18.00	LB	Beaver Creek (HUC: 02114003000560280) Community of Glenwood ***ISWR:* C–59524 5/25/66**
18.45		NW Timber Road Bridge (County Road 374)
18.65		Wilson River Highway Bridge (State Highway 6)
19.70		Wilson River Highway Bridge (State Highway 6)
19.88	LB	Coffee Creek (HUC: 02114003000560300)
20.07	LB	Finger Creek (HUC: 02114003000560305)
20.70	RB	South Fork Gales Creek (HUC: 02114003000560310) ***ISWR:* C–59514 5/25/66**
21.60	LB	North Fork Gales Creek (HUC: 02114003000560320) ***ISWR:* C–59513 5/25/66**
22.76	RB	Low Divide Creek (HUC: 02114003000560330)
		Gales Creek Forest Park
23.20		Gales Creek near Glenwood, OR – USGS Gage #14203750 (7/94 – present)

SCOGGINS CREEK — STREAM MILE INDEX

HUC: 2114003000640
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Tualatin River (HUC: 0211400300) @ River Mile 60.00
0.94		RR Bridge
1.00		State Highway 47 Bridge
1.70		Old State Highway 47 Bridge
1.71		Scoggins Creek near Gaston, OR – Former USGS Gage #14203000 (10/1940 – 9/1974) Drainage Area = 43.3 square miles
4.80		Scoggins Creek below Henry Hagg Lake, near Gaston, OR – USGS Gage #14202980 (1/1975 –present) Drainage Area = 38.8 square miles
5.10		Scoggins Dam
7.00	RB	Sain Creek (HUC: 02114003000640170)
7.62	LB	Tanner Creek (HUC: 02114003000640200)
8.40	LB	Wall Creek (HUC: 02114003000640220)
9.00		Lake Loop Road Bridge
9.30		Scoggins Creek above Henry Hagg, near Gaston, OR – Gage #14202850 (10/1972 – present) Drainage Area = 15.9 square miles
10.52	LB	Parson Creek (HUC: 02114003000640240)
15.50	LB	Fisher Creek (HUC: 02114003000640300)