

Portland Water Bureau and United States Forest Service

Bull Run Watershed Management Unit Annual Report

April 2017



Bull Run Watershed Semi-Annual Meeting



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A. OVERVIEW

This report fulfills the annual work plan reporting commitment described in the 2007 Bull Run Watershed Management Unit Agreement (“Agreement”) between the Portland Water Bureau (referred to as the “City” and “PWB” throughout report) and the US Forest Service (referred to as “USFS” and “Forest Service” throughout report). As part of the Agreement, the PWB and the USFS agree to utilize a working group format and annual work plan to update each other on pertinent projects and monitoring occurring within the Bull Run Watershed Management Unit (BRWMU). Specific topics covered in the Agreement and included in this report include: security and access management; emergency response planning; transportation system; water quality/quantity monitoring; terrestrial and aquatic natural resources; conservation education; administrative trails; and simplifying land ownership and occupancy arrangements. Other topics of interest to both agencies within the BRWMU can be added or removed depending on annual applicability.

B. SECURITY and ACCESS MANAGEMENT

Bull Run Security Access Policies and Procedures

PWB continues to implement the Bull Run Security Access Policies and Procedures Standard Operating Procedure, which include procedures for entering the Bull Run as an employee or contractor. Key components of the plan include a requirement for PWB employees and contractors to notify Security Dispatch when entering and exiting the watershed, and a vehicle permit designed to more clearly mark vehicles in the watershed, used by both PWB and the Forest Service. The PWB Security’s electronic lock and key went live in 2012, and continues to be used by PWB employees, contractors, and partner agencies. Two full-time PWB Watershed Rangers conduct frequent foot and vehicle patrols, monitor surveillance cameras at the main gate, Dam 1, and Dam 2, and monitor remote trail cameras at undisclosed locations. They check for evidence of trespass, domesticated animal incursion, and other illicit activity. Rangers also regularly check the condition and functionality of all gates and locks, and confirm the condition of boundary signage. U.S. Forest Service Law Enforcement Officers also conduct patrols of the BRWMU for illegal activity.

PWB Security staff continue to regularly attend the Bull Run Community Planning Organization meetings as part of on-going community outreach efforts.

C. EMERGENCY PLANNING and RESPONSE

The Forest Service and PWB exchange updated emergency contact information for key personnel in the fall and spring of each year.

Life Flight Helicopter Landing Zones

PWB and the Forest Service worked with the program aviation manager for the local Life Flight program to identify a total of five potential Life Flight landing zones in the watershed, all of which are located on roadways, previously cleared storage areas or rock quarries. In 2016, staff from Life Flight held a landing zone training session for PWB staff. Criteria for landing zones were provided during the training. In coordination with the USFS, PWB intends to evaluate the five potential sites and mark landing zones that meet the Life Flight criteria in 2017.

D. TRANSPORTATION SYSTEM

In the BRWMU Agreement (2007), the Water Bureau and the Forest Service agreed that the City should become primarily responsible for the BRWMU transportation system, including capital reinvestment and regular maintenance. At the time, it was recognized that a legal agreement would be needed to formally recognize this arrangement. The Water Bureau and the Forest Service have begun the process of negotiating an easement that fulfills the legal agreement envisioned by the two parties in the BRWMU Agreement. The easement provides the legal mechanism for the City to continue to use the roads and to accomplish routine road maintenance as well as capital road repair for the benefit of both City and USFS management purposes in the BRWMU.

2016 Projects: Road 10 (“10C” and “10D”; MP 3.0 – MP 6.2)

A 3.2 mile segment of Road 10, from approximately the intersection with Road 14 to milepost 6.2, was reconstructed and repaved in 2016. The project improved pavement condition, created better ditch lines, improve drainage, and address slumping and slides. The project helps to ensure continuous, reliable, and safe access to all facilities, as well as maintenance of other City-owned infrastructure within the BRWMU. Striping of the project area was delayed in 2016 due to an early onset of wet weather; striping is now scheduled for spring of 2017.

2017 Projects: Road 10 (“10H1H2”; MP 10.95 – MP 12.56)

Project design for a 1.6 mile segment of Road 10, from approximately Cougar Creek to the North Fork Bull Run bridge, is currently underway. This segment will be reconstructed and repaved to improve pavement condition, enhance ditch lines,

improve drainage, and address slumping and sliding. Several culverts, including two stream-crossing culverts, are also currently planned for replacement in order to improve drainage and reduce risks to water quality. The project will ensure continuous, reliable, and safe access to all facilities and access throughout the watershed for fire protection, monitoring, security, and other water supply operational and regulatory needs.

E. FIRE PLANNING, PREVENTION, DETECTION, and SUPPRESSION

Fire season was relatively quiet in 2016. No fires were reported in, or in close proximity to, the BRWMU during 2016.

Hickman Butte Fire Lookout

In 2017, PWB and the Forest Service completed a renewal of an interagency agreement to staff the fire lookout at Hickman Butte. The agreement covers the five-year period from 2017 to 2021 and includes authorization for a small maintenance fund to cover the cost of minor maintenance work on the tower.

A draft maintenance plan for the tower was developed by the Forest Service in 2014-2015 and is continuing to be refined. In 2016, small (<12" diameter) trees were cleared that encroached on the site-line visibility, heli-spot landing zone, and the defensible space around the tower. Supplies, including a new refrigerator and stove for the cabin, were purchased and are planned for installation in 2017. Maintenance on the tower support joists is also being considered for 2017.

F. WATER MONITORING (Quality and Quantity)

The Water Bureau continues its cooperative agreement with the U.S. Geological Survey (USGS) to monitor stream flow, reservoir levels, and/or water quality at 11 stations within the Bull Run watershed as well as 2 additional stations, one on the Little Sandy and the other on the Sandy River below its confluence with the Bull Run River. PWB also continues to conduct water quality monitoring at the four key stations as well as Reservoirs 1 and 2 to meet regulatory and operational objectives.

PWB continues to contract with the Natural Resources Conservation Service (NRCS) to monitor snow depth, snow water equivalent, and meteorological conditions at three sites in the watershed.

PWB also continues to monitor for *Cryptosporidium* at the raw water intake as required under the Bull Run Treatment Variance (BRTV). The treatment variance

was granted by the Oregon Health Authority (OHA) to the City of Portland on March 14, 2012. Maintenance of the variance enables the City to comply with the treatment requirements of the federal Environmental Protection Agency's Long Term 2 Enhanced Surface Water Treatment Rule ("LT2"). Between April 2012 through December 2016, no detections of *Cryptosporidium* occurred at the Bull Run water supply intake. In early January 2017, low amounts of *Cryptosporidium* began being detected in some raw water samples collected from the Bull Run water supply intake. At the time of this report, PWB does not believe it can meet the requirements for the concentration of *Cryptosporidium* outlined in the variance and is awaiting guidance from OHA. In the interim, PWB is continuing to maintain all conditions specified by the variance, including watershed protection, intake, tributary and wildlife scat monitoring, inspections, and reporting activities. Additional information on *Cryptosporidium* detections and the BRTV can be found at PWB's [Treatment Variance for Cryptosporidium](#) website. Results of watershed inspections and environmental sampling for Water Year 2016 (Oct 1 – Sept 30) were submitted to OHA in an annual [Bull Run Treatment Variance Watershed Report](#).

The Forest Service continues to implement stream temperature monitoring in the Little Sandy watershed. Water temperature is monitored year round at four locations in the Little Sandy River; the Upper, Middle and Lower Goodfellow Lakes; and at the outlet of the upper and lower Goodfellow Lakes.

The Forest Service is also conducting watershed monitoring in the Bull Run in the summer of 2017 as part of the Aquatic and Riparian Effectiveness Monitoring Program (AREMP). AREMP is used to evaluate effectiveness of the Northwest Forest Plan's aquatic conservation strategy in achieving the goals of maintaining and restoring the condition of watersheds. Physical habitat data, macroinvertebrates and water temperature are collected to assess stream conditions. These surveys occur every five years in selected streams of the Blazed Alder, Middle Bull Run and South Bull Run sub-watersheds. The Middle Bull Run is scheduled to be sampled in 2017. A pilot project with the U.S. Forest Service Pacific Northwest Research Station is also planned in conjunction with the AREMP surveys to detect invasive species using eDNA. Water samples will be collected at AREMP survey sites in the Middle Bull Run sub-watershed and potentially at sample locations lower in the watershed to discern where invasive species may be present in the watershed.

G. NATURAL RESOURCES – TERRESTRIAL

Invasive Species - Plants

The PWB continues to implement the Invasive Plant Standard Operating Protocol (SOP). The SOP is consistent with USFS requirements for invasive plant management within the BRWMU. As part of this SOP, PWB installed a wheel wash station on Road 10, just inside the main gate. The wheel wash is designed to clean City vehicles entering the management unit to minimize the risk of the spread of invasive non-native plant species.

In developing the Invasive Plant SOP, the PWB identified high priority invasive plant species based on how the species could become established in the BRWMU and affect water-supply operations. PWB continues to monitor and control high priority invasive plant species inside the watershed along the primary roadways, trails, reservoirs, and near infrastructure as well as sites of recent road projects. A database of high priority invasive species occurrences inside the BRWMU is maintained by the PWB.

PWB continues to remove reed canary grass, which inhibits egg incubation for western toads and red-legged frogs, along the north bank of the upper end of Reservoir 1. Removal includes cutting and raking. The site is accessed by boat from the reservoir and by trail. The work is performed annually and constitutes Measure R-3 of the City's Bull Run Water Supply Habitat Conservation Plan.

PWB also coordinates with the Oregon Department of Agriculture on the control of A-listed Noxious Weeds and on the release of biocontrols for scotch broom.

Aerial Survey for Forest Health /Insects & Disease

The Forest Service flies aerial surveys in Oregon and Washington each year to survey for forest disturbances. The aerial surveys cover all forested lands and are flown on a 4-mile grid. The surveys in Oregon are conducted in cooperation with the Oregon Department of Forestry. The results of the survey flights from 2016 and previous years are posted on the Forest Health Protection web site at:

<http://www.fs.usda.gov/detail/r6/forest-grasslandhealth/insects-diseases/?cid=stelprdb5286951>. Portions of the Bull Run watershed area are mapped on the following quadrangle maps: Vancouver, Hood River, Oregon City, and Mt. Hood.

Bull Run Wildlife Monitoring

The Water Bureau is conducting ongoing wildlife monitoring and studies within the Bull Run watershed to improve its knowledge of wildlife as a potential source of *Cryptosporidium*. In 2012, the bureau began ongoing scat sampling and wildlife-

related inspections as a condition of the Bull Run Treatment Variance. Studies for 2016 included:(1) camera monitoring for wildlife activity; (2) using live traps for collecting small mammal scat. Results of these studies are submitted to OHA in an annual [Bull Run Treatment Variance Watershed Report](#).

Planned work for 2017 includes: (1) camera monitoring for wildlife activity and (2) using live traps for collecting small mammal scat.

H. NATURAL RESOURCES - AQUATIC

Invasive Species - Aquatic

PWB staff continue to implement preventative measures outlined in the City's Aquatic Invasive and Nuisance Species Standard Operating Protocol for both contractors and in-house maintenance and operations work, including boat and equipment decontamination for safe use in the reservoirs and Bull Run River.

Bull Run Lake

PWB operates and maintains drinking-water supply facilities at Bull Run Lake under a 20-year easement with the Mt. Hood National Forest. The easement expires June 30, 2017. The PWB and the Forest Service have begun the process of renewing the easement under terms and conditions very similar to the existing agreement. Both parties have agreed to a one-year extension of the existing easement until the renewal is complete.

Until 2016, water withdrawals at Bull Run Lake had not occurred since 2000. In 2016, PWB conducted a test release of 20 cfs between July 20-August 17, 2016, to test a recent pipe repair (see section 'I' below) and evaluate effects of a release on downstream stream flows and temperature. The release increased flows at the Lower Springs by approximately 35-45%. Temperature increased at the Lower Springs during the release from 6.0 to 6.4 °C. Without a release, the Lower Springs temperature would be expected to increase 0.1-0.2 °C. Therefore, the temperature impact of the release downstream was estimated at 0.2-0.3 °C. Temperature of the release water was measured regularly throughout the release and was consistently close to 5 °C, indicating that the repair on the pipe remained intact.

The Water Bureau continues to implement mitigation and monitoring measures as required by the easement and the Bull Run Lake Mitigation and Monitoring Implementation Plan. The Forest Service and the Water Bureau continue to evaluate the monitoring and mitigation plan. The plan was last revised in September 2012, and was signed by the Forest Service in 2013. The revised plan expires with the term of the existing easement in 2017, but will be extended for one year along with the

existing easement. A new plan, expected to be very similar to the existing plan, will accompany the renewed easement.

Various monitoring activities have been conducted at Bull Run Lake from 1998 through 2016; monitoring is expected to continue through the duration of the easement term that expires in 2017 and for the duration of the easement extension until the easement is renewed. The goal of the monitoring is to assess potential effects of lake water withdrawals on the fish population and provide information for mitigation. In 2016, activities included: bald eagle, osprey, and loon surveys, fish spawning surveys, and fish population estimates (hydroacoustic surveys). The same activities are scheduled for 2017. Spawning surveys are typically conducted in the tributaries of Bull Run Lake each spring and summer documenting adult abundance, spawning timing and redd counts of coastal cutthroat trout. The annual spawning surveys, from 1998-2015, have been completed either by Forest Service personnel from the Zigzag Ranger District or, more recently (2004, 2009-2016) by contractors hired by PWB. PWB plans to use a contractor to conduct spawning surveys in 2017.

The annual spawning surveys have not shown a statistically significant relationship between lake water surface elevation and cutthroat trout spawning success. In addition, the hydroacoustic surveys conducted by PWB document fish population size. To date, these surveys show no significant change in the lake's cutthroat trout population over time.

Salmon & Steelhead Monitoring and Spawning Gravel Placement in lower Bull Run River

PWB continues to conduct salmon spawning and snorkel surveys in the lower Bull Run River in adherence to the terms of the City's Incidental Take Permit and Habitat Conservation Plan ("HCP"). Spawning surveys for adult Chinook salmon are conducted annually, from August through December, to monitor adult salmon numbers. The spawning surveys began in 2006 and are expected to continue through 2029 (HCP Years 1-20).

Snorkel surveys are also conducted annually in the lower Bull Run River, from the mouth of the Bull Run River to the location of the former rock weir (below spillway of Dam 2). Snorkel surveys monitor juvenile salmon and steelhead populations and support HCP fish management activities. Snorkel surveys have been performed annually since 2009 and are expected to continue indefinitely.

The City also annually augments spawning gravel in the lower Bull Run River and monitors the effects of the gravel placements in accordance with the terms of the City's Incidental Take Permit and HCP. Gravel is placed at three sites in the river each year. Gravel augmentation is intended to mitigate the effects of Dam 1 and Dam

2 on transport of natural spawning gravel to the lower Bull Run River. The project constitutes Measure H-1 of the Bull Run HCP. Gravel augmentation began in 2010 and is expected to continue through 2059 (HCP Years 1–50). Summaries of the gravel augmentation monitoring and Chinook spawning surveys are included in the [Bull Run Water Supply Habitat Conservation Plan](#) annual report (available in May 2017).

Salmon & Steelhead Monitoring in Little Sandy River

PWB continues to conduct two activities in the Little Sandy River: 1) maintenance of a smolt trap just upstream of the former Little Sandy Dam site, and 2) fish habitat surveys and snorkel surveys from the mouth of the river to the former dam site. These activities are done in accordance with terms of the City's Incidental Take Permit and HCP. The smolt trap is operated from roughly mid-March through mid-June. Results of the fish trapping effort are summarized in the 2016 Compliance Report for the [Bull Run Water Supply Habitat Conservation Plan](#) (available in May 2017).

Oregon Department of Fish and Wildlife (ODFW) continues to conduct spawning surveys for spring Chinook, coho, and winter steelhead above and below the former Little Sandy Dam site. All three species have been documented above the former dam site and appear to be re-colonizing their former habitat.

I. CONSERVATION EDUCATION

The Portland Water Bureau offers educational field trips and tours of the Bull Run watershed for students and the general public. All tours are planned and guided by a professional Water Resources Educator.

Participants on adult tours learn about the history of the watershed, its natural resources, the water supply infrastructure and operations, and the cooperative partnership between PWB and the Mt. Hood National Forest. These tours generally occur June through September.

Tours for school groups are generally scheduled in May, June, September, and October. During PWB's tours for school groups, students are divided into small groups at Bull Run Dam No. 1 to tour the dam, to measure the turbidity of a reservoir water sample, and to learn about the role of forest protection in providing high-quality raw water.

PWB led a total of 85 tours in the Bull Run during calendar year 2016. The total number of tours was 75 in the 2015 calendar year and 68 in the 2014 calendar year.

J. ADMINISTRATIVE USE TRAILS

Several trails in the BRWMU provide access to stream gauges operated by the U.S. Geological Survey (USGS) and water-quality monitoring stations maintained by PWB. PWB plans to do routine maintenance on several of these trails during the 2017 field season.

K. LAND OWNERSHIP and LAND OCCUPANCY ARRANGEMENTS

Land Exchange

The Land Exchange process between the Forest Service and the City of Portland continues. The primary purpose of the exchange is to create a better alignment of land ownerships with the respective missions of the City and the Forest Service, including consolidating City ownership to lands where water system facilities are located and significantly reducing City-owned inholdings in upland forest areas surrounded by national forest. The land exchange involves approximately 5% of the BRWMU land area.

The Forest Service awarded a contract for the property appraisal in the fall of 2016. The contract appraiser completed a draft appraisal in February 2017. After review of the appraisal and equalization of the properties offered for the exchange, the appraisal is expected to be final by summer 2017. Work on the draft Environmental Assessment continues. The draft Environmental Assessment will be available for public comment when it is complete. Forest Service and Portland Water Bureau personnel are continuing to work on draft agreements for use, maintenance, and ownership of roads on exchanged lands.

L. OTHER ACTIVITIES

Bull Run Lake Outlet Pipe Repair

This project repaired the outlet pipe and ballast tank in Bull Run Lake (the ballast tank keeps the intake off of the bottom of lake). A repair to the outlet piping was completed in 2014, but was unsuccessful. Additional issues with the outlet piping system were then identified in 2015. Repairs to the outlet piping system were necessary to allow the PWB to draw water from Bull Run Lake when needed. The project was completed in July 2016.