

Portland Water Bureau and United States Forest Service

# Bull Run Watershed Management Unit Annual Report

April 2016



**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. During 2015, PWB increased security patrols both by adding a second full-time ranger and by increasing the use of security cameras. The two full-time PWB Watershed Rangers conduct vehicle and foot patrols for trespass. U.S. Forest Service Law Enforcement Officers also conduct patrols of the BRWMU for illegal activity. PWB Security also increased and improved camera surveillance at the Main Gate to the BRWMU.

PWB staff installed a new sign at the Oneonta Trail kiosk off of the Larch Mountain Road (FS Road 15) in the summer of 2015. The sign is intended to alert hikers of the BRWMU boundary and BRWMU trespass policies. PWB Security staff also 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 Life Flight landing zones in the watershed, all of which are located on roadways, previously cleared storage areas or rock quarries. Removal of eight alder trees within the road prism was required at one of the landing zones. Test flights were scheduled for 2015 but were postponed due to unavailability of helicopters during a busy fire season; PWB is again coordinating with the Life Flight program to conduct test landings at the five sites in 2016.

### **D. TRANSPORTATION SYSTEM**

#### **2015 Projects: Road 1010**

A 0.5 mile project that includes a segment of Road 1010 (segment “1010F”) and Road 1010125 (from the intersection of Road 1010/Road 10 to Porter’s Pit), was reconstructed and repaved in 2015. The project improved pavement condition, enhanced ditch lines, improved drainage, and addressed slumping and slides.

#### **2016 Projects: Road 10 (“10C” and “10D”)**

Project design for a 1.6 mile segment of Road 10 (segment “10C”; MP 3.0-4.6), from approximately the intersection with Road 14 to the intersection with the Dam #2 access road was completed in 2015. Project design for a second road project (segment “10D”; MP 4.6-6.2), is currently underway; this project will address a 1.6 mile section of Road 10, from approximately the intersection with the Dam #2 access road to milepost 6.2. Both segments will be reconstructed and repaved to improve pavement condition, create better ditch lines, improve drainage, and address slumping and slides. The projects will ensure continuous, reliable, and safe access to all facilities, as well as maintenance of other city-owned infrastructure within the watershed. Both projects are scheduled for construction during the summer / early fall of 2016.

## **E. FIRE PLANNING, PREVENTION, DETECTION, and SUPPRESSION**

Numerous fire detection flights were conducted by the USFS throughout the summer of 2015. One small fire (0.1 acre) occurred just inside the BRWMU, in the vicinity of Buck's Peak, during 2015; no significant fires (>10 acres) burned in or adjacent to the BRWMU during 2015.

### **Hickman Butte Fire Lookout**

PWB and the Forest Service have an interagency agreement to staff the fire lookout at Hickman Butte. The agreement covers the five-year period from 2012 to 2017 and includes authorization for a small maintenance fund to cover the cost of minor maintenance work on the tower. The PWB and USFS will begin negotiation on an agreement renewal in 2016.

A draft maintenance plan for the tower was developed by the Forest Service in 2014-2015 and is continuing to be refined. Repairs were made in 2015 to address maintenance needs for the stairs, handrails, and tower legs and supports. Maintenance on the tower support joists is planned for 2016. Administrative site maintenance also is needed to clear in-growth trees that have encroached on the site-line visibility; this work is planned for 2016 as weather and resources permit.

## **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 (see key station upgrade section below).

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 to meet the conditions of the Bull Run Treatment Variance. The treatment variance was granted by the Oregon Health Authority (OHA) to the City of Portland on March 14, 2012 and is valid for a period of 10 years. 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").

Conditions of the variance include watershed protection, intake, tributary and wildlife scat monitoring, inspections, and reporting activities. Results of watershed inspections and environmental sampling for each water year (Oct 1 – Sept 30) are 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 in the outlet of the upper and lower Goodfellow Lakes.

### **Key Station Upgrades**

Four of the 11 USGS stations in the watershed are referred to as “key stations” – North Fork (station 15), Main Stem (station 18), South Fork (station 35) and Fir Creek (station 44). These stations were replaced in 2013-2014 to address maintenance, data quality, and safety concerns associated with aging instrumentation and decaying infrastructure that has occurred over the 35-47 years the stations have been in operation. Due to low sun angles at Stations 35 and 44, solar power was insufficient to meet the power supply demands of the updated monitoring equipment. In 2015, 120 gallon propane tanks were added to Stations 35 and 44 to supply the additional power needed to operate the monitoring equipment.

## **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 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 2015 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 2015 included:(1) camera monitoring for wildlife activity; (2) using live traps for collecting small mammal scat; (3) piloting scent marking stations for improved scat monitoring of larger mammals; and (4) monitoring bird activity near the diversion pool. . Results of these studies are submitted to OHA in an annual [Bull Run Treatment Variance Watershed Report](#).

Planned work for 2016 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. Water withdrawals at Bull Run Lake have not occurred since 2000. 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.

Various monitoring activities have been conducted at Bull Run Lake from 1998 through 2015; it is anticipated that monitoring will continue through the duration of the easement term that expires in 2017. The goal of the monitoring is to assess potential effects of lake water withdrawals on the fish population and provide information for mitigation. In 2015, activities included: bald eagle, osprey, and loon surveys, fish spawning surveys, fish population estimates (hydroacoustic surveys), and amphibian surveys. Activities scheduled for 2016 include: bald eagle, osprey, and loon surveys, fish spawning surveys, and fish population estimates (hydroacoustic surveys).

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, 2009-2015) by contractors hired by PWB. PWB plans to use a contractor to conduct spawning surveys each spring and early summer from 2016-2017.

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.

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 easement in

2017. The PWB and the Forest Service have begun the process of renewing the easement under terms and conditions similar to the existing agreement.

### **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 2010 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](#) (available in May 2016).

### **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 late March through mid-June. Results of the fish trapping effort are summarized in the 2015 Compliance Report for the [Bull Run Water Supply Habitat Conservation Plan](#) (available in May 2016).

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, 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 75 tours in the Bull Run during calendar year 2015. The total number of tours was 68 in the 2014 calendar year and 75 in the 2013 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 in during the 2016 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. The land exchange involves approximately 5% of the watershed land area.

The Forest Service and Portland Water Bureau personnel continued to work on refining information for the land appraisal, which is expected to occur during 2016. NEPA work has been delayed until the refined basis for the appraisal was completed, allowing for more efficient analysis of impacts. Draft Environmental Assessment will be available for public comment when 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 will repair 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. Although water withdrawals at Bull Run Lake have not occurred since 2000, repairs to the outlet piping system are necessary to allow the PWB to draw water from Bull Run Lake when needed. The project is expected to be completed in July 2016.

### **Bull Run Watershed Landslide Hazard Mapping**

Oregon Department of Geology and Mineral Industries (DOGAMI) updated landslide hazard mapping for the Bull Run watershed. The new mapping uses light detection and ranging (lidar) data and provides more accurate maps than what was possible with older methods. An Intergovernmental Agreement (IGA) was signed between the PWB and DOGAMI in 2013 and the project was completed in 2015.