

Portland Water Bureau and United States Forest Service

Bull Run Watershed Management Unit Annual Report

April 2019



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. BRWMU gates are operated with a standard hard lock and key system. The main watershed gate also continues to be able to be opened by authorized electronic key-card holders.

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 occasionally conduct patrols of the BRWMU for illegal activity.

Additional barrier fencing was installed in 2017 at the Homestead gate, along the southern border of the BRWMU near the Sandy Ridge bike trail system. This fencing has been effective in deterring potential trespassers and making trespass more difficult. Installation of similar barrier fencing at the Pete Creek gate is planned for 2019.

PWB Security also 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.

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 continue to work on completing 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.

2018 Project: Road 10 (“10H”: MP 10.95 – MP 12.56;)

A 1.6-mile segment (“10H”) of Road 10, from approximately Cougar Creek to the North Fork Bull Run bridge, was reconstructed and repaved during the summer and fall of 2018. The project improved pavement condition, enhanced ditch lines, improved drainage, and addressed slumping and sliding. Several culverts, including two stream-crossing culverts, were replaced to improve drainage, improve aquatic habitat, and reduce risks to water quality. The project ensures 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.

2019 Projects: Road 10 (“10R”: MP 28.77 - 31.85; Road 10 Shoulder Repair: MP 1.47)

Project design is complete for a 3.1-mile section (“10R”) of Road 10 that will be reconstructed and repaved to improve pavement condition, create better ditch lines, improve drainage, and address significant slumping and slides in the area. Several culverts will also be replaced. Project design and permitting was completed in 2018 and construction is scheduled for the summer and fall of 2019. The project is located between MP 28.77 and 31.85 along the Road 10 in the upper Bull Run watershed. This area extends from approximately the intersection with Road 1000524 to the intersection with Road 1027. The project will ensure continuous, reliable, and safe

access throughout the watershed for fire protection, monitoring, security, and other water supply operational and regulatory needs.

Project design and permitting is also complete for the repair of a short, approximately 70-foot, segment of Road 10 at MP 1.47. Construction is also scheduled during the summer/fall of 2019, concurrent with the 10R project. The project will repair significant cracking occurring along the road shoulder. The repair will reduce the risk of unexpected road failure and help to ensure continuous, reliable, and safe access to all facilities.

2020 Project: Road 10 (“10E”: MP 6.2 to MP 8.2)

Project design is underway for reconstruction of a 2.0-mile section of Road 10, from approximately MP 6.2 to the intersection with Road 1008 (MP 8.2). The road segment will be reconstructed and repaved to improve pavement condition, create better ditch lines, improve drainage, and address slumping and slides. Several culverts are also expected to be replaced to improve drainage, improve aquatic habitat, and reduce risks to water quality. Project design and permitting is scheduled to be complete in 2019. Due to the complexity of the project and site conditions, construction will likely occur during the summer and fall of 2020 and the summer and fall of 2021.

E. FIRE PLANNING, PREVENTION, DETECTION, and SUPPRESSION

Fire season was active in 2018, with two small (less than 2 acres) fires, the Reservoir fire and the Table Mountain fire, occurring in or near the BRWMU.

Reservoir Fire - 2018

A small fire occurred in the BRWMU along Road 10, west of the Bear Creek House in July 2018. The fire was located between Reservoir 1 and Reservoir 2; it was officially named the “Reservoir Fire” by responding fire agencies. The fire was approximately 0.1 acre in size and was located approximately 1000 feet from the river connecting Reservoir 1 and 2. The fire was caused by a tree leaning over a powerline that resulted in ignition of a branch and vegetation beneath the line. The fire was reported by a contractor working on a road repair project within the BRWMU (see Section D). Contractor staff along with PWB maintenance and security staff quickly responded with water trucks that were on-site; they were able to nearly extinguish it by dousing it with water. Fire agencies (Sandy Fire, Oregon Department of Forestry, and Forest Service) responded within an hour of receiving the initial report. The agencies fully extinguished the fire using water and construction of a small “hand-line” around its perimeter. A small amount of diluted firefighting foam was also applied during the fire response. A total of 25-30 gallons of water with Phos-Chek WD881 Class A foam solution at concentration of 0.3% was used in suppression of the fire. This foam is

highly biodegradable and does not contain Per- and Polyfluoroalkyl Substances (PFAS). The foam did not enter the drinking water supply. PWB is continuing to evaluate and implement strategies to reduce the future risk of fire ignitions from the powerline.

Table Mountain Fire – 2018

A small fire was reported on July 29, 2018, burning in the Mark O. Hatfield Wilderness, east of the BRWMU. The fire was estimated to be 0.75 acres and was located approximately 0.75 miles from the BRWMU administrative boundary and approximately 1 mile from the water supply drainage boundary. The fire was burning in rugged and remote terrain, limiting initial attack options. The Forest Service deployed a team of 8 smokejumpers to manage the fire on the ground and also used helicopters for aerial water drops. The fire grew to approximately 1.5 acres over the next two weeks; it was fully contained by mid-August. The fire was determined to be human-caused. During management of the fire, fire fighters used roads in the BRWMU to supply and extract smokejumpers. While managing the fire, a helicopter dipped an estimated one to two times from a small unnamed lake just inside the BRWMU boundary, but outside the water supply drainage area. Aside from that, no other helicopter dipping from water sources within the BRWMU occurred during management of the fire.

Other Fires – 2018

One other small fire occurred within 3 miles of the BRWMU boundary in 2018. It was located in the Old Maid Flats area of the Mt. Hood National Forest, approximately 1.8 miles from the BRWMU boundary and approximately 2.8 miles from the water supply drainage boundary. It occurred on July 22 and was caused by an escaped campfire. The fire was approximately 0.1 acre in size and was extinguished the same day it was reported.

Hickman Butte Fire Lookout

PWB and the Forest Service operate under a five-year interagency agreement to staff and maintain the fire lookout at Hickman Butte during fire season. The current agreement covers the period from 2017 to 2021 and includes authorization for a small maintenance fund to cover the cost of minor maintenance work on the tower.

An updated maintenance plan for the tower was developed by the Forest Service in 2014-2015. In 2018, concrete pier blocks at the base of the tower were painted and sealed. Additional lumber and paint were also purchased in preparation for planned 2019 maintenance. Planned maintenance activities for 2019 include placing gravel at the base of tower to improve drainage, painting the exterior of the tower cabin, treating the cabin roof, and filling propane tanks. Development of a plan to replace the floor joists is also being considered for 2019.

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 continues to conduct routine monitoring at the intake for *Cryptosporidium*. From 2012 to 2017, the Portland Water Bureau operated under a variance from treating Bull Run drinking water for *Cryptosporidium*. The treatment variance was issued in accordance with federal and state law. After a series of *Cryptosporidium* detections in early 2017, Oregon Health Authority (OHA) revoked the variance and on December 18, 2017, OHA and PWB entered into a Bilateral Compliance Agreement for the purpose of establishing a schedule for *Cryptosporidium* treatment as well as for protective interim measures until treatment facilities are operational, no later than September 30, 2027. Watershed inspections and environmental sampling is also required as part of a Watershed Inspection and Monitoring Plan. Results of watershed inspections and environmental sampling for each water year (Oct 1 – Sep 30) are submitted to OHA in an annual [Watershed Report](#) each December.

Additional information on *Cryptosporidium* and the Bilateral Compliance Agreement can be found on the PWB's *Cryptosporidium* website:

<https://www.portlandoregon.gov/water/crypto>

The Forest Service continues to implement stream temperature monitoring in the Little Sandy watershed. Water temperature is monitored during the summer at five locations in the Little Sandy River and at the outlet of Upper Goodfellow Lakes.

The Forest Service conducted watershed monitoring in the BRWMU in the summer of 2018 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 was sampled in 2018. A pilot project with the U.S. Forest Service Pacific Northwest Research Station was also conducted in conjunction with the AREMP surveys to detect invasive species using eDNA. No AREMP surveys are planned in the Bull Run for 2019. More information on the

AREMP program and available reports can be found at the [USFS Northwest Forest Plan Watershed Monitoring program](#) webpage.

G. NATURAL RESOURCES - TERRESTRIAL

Invasive Species - Plants

The PWB continues to implement the Invasive Plant Standard Operating Protocol (SOP). The SOP is consistent with Forest Service requirements for invasive plant management within the BRWMU. The PWB continues to maintain a wheel wash station on Road 10, just inside the main gate, to clean City vehicles entering the management unit and 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 2018 and previous years are posted on the [Aerial Detection Survey website](#). 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 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. Wildlife scat monitoring continues under the Bilateral Compliance Agreement (see Water Monitoring section above). Activities and results of scat monitoring and other wildlife-related investigations are submitted to OHA in an annual [Watershed Report](#).

Planned work for 2019 includes: (1) using live traps for collecting small mammal scat near the diversion pool and reservoirs and (2) routine deer surveys around Headworks.

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 expired June 30, 2017. The USFS has issued an extension to the PWB for the existing easement until the renewed easement is complete. The PWB and the Forest Service are continuing the process of renewing the easement under terms and conditions very similar to the existing agreement.

Until 2016, water withdrawals at Bull Run Lake had not occurred since 2000. In 2016, PWB conducted a test release to test a pipe repair and evaluate effects of a release on downstream stream flows and temperature. Results from that test release are summarized in the [2017 BRWMU Annual Report](#).

The PWB released approximately 90 million gallons of water from Bull Run Lake to augment supply during August 2018. The release was stopped on the fifth day due to malfunction of the pipe and pump. Using a short test release in November 2018 (approximately 3 million gallons released), PWB determined that the pipe remains operable, but the pump is no longer functioning. PWB is assessing options to repair the pipe. Until the pump is repaired, future releases will be limited to what is possible by gravity (lower limit of approximately 3154-foot lake surface elevation).

The PWB 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 expired with the term of the existing easement in 2017 but has been extended along with the existing easement until the renewed easement is complete. 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 2018; monitoring is expected to continue 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 2018, activities included: bird surveys, fish spawning surveys, fish population estimates (hydroacoustic surveys), and limnological monitoring. The same activities are scheduled for 2019. 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 1998-2018, have been completed either by Forest Service personnel from the Zigzag Ranger District or, more recently (2004, 2009-2018), by contractors hired by PWB. PWB plans to use a contractor to conduct spawning surveys in 2019.

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 statistically significant change (95% level of confidence) 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 2018 [Bull Run Water Supply Habitat Conservation Plan Annual Compliance Report](#) (available in May 2019).

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 2018 [Bull Run Water Supply Habitat Conservation Plan Annual Compliance Report](#) (available in May 2019).

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 94 tours in the Bull Run during calendar year 2018. The total number of tours was 85 in the 2017 calendar year and 85 in the 2016 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.

In 2018, USGS staff notified the PWB that one of the trees anchoring the cableway for Key Station 18 was failing and that the cableway would need to be relocated. The new location of the cableway caused the cable to cross low across the existing trail, resulting in unsafe conditions. PWB rerouted a small section (approximately 300 feet) of the Key Station 18 trail to accommodate the cableway relocation.

PWB plans to do routine maintenance on several of these trails during the 2019 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 NEPA analysis for the land exchange is complete; the Forest Service published a final Decision Notice in March 2019. The City, Forest Service and Oregon State Historic Preservation Office signed a Memorandum of Agreement (MOA) in July 2018. The MOA commits the City to prepare a Historic Properties Management Plan to protect structures and archeological resources. City and Forest Service staff continue to work on drafting an Exchange Agreement. The agreement, when signed, will authorize both agencies to proceed to complete the property transaction. Signing of the agreement is currently anticipated in summer 2019.

L. OTHER ACTIVITIES

Dam 1 Needle Valve Repair

This project will replace three Lerner-Johnson Needle Valves from the face of Dam 1 with three new valves of modern equivalence. It will improve operation, access, and worker safety, and is intended to reduce annual maintenance costs. The existing needle valves are 90 years old and are antiquated, leak, require significant occasional maintenance, are difficult to operate, and have been proven to be unsafe in certain operational conditions. The final project design is complete. The Memorandum of Agreement with the State Historic Preservation Office is expected to be finalized and signed in the spring of 2019. Construction is planned to begin in late 2019. Visual impacts to the valve house structure will be minimized during the project.

Camp Creek Microwave Improvement Project

This is one component of a phased project to improve and update microwave communication in the BRWMU. All existing microwave equipment will be replaced with new equipment. The Camp Creek communication site, located on City owned property in the BRWMU, will be upgraded from a passive microwave reflector to an active microwave tower. This will result in an increased bandwidth and is expected to provide a stronger signal and improve data transmission, communications and reliability throughout the year. The project will include construction of the microwave tower, installation of a small building adjacent to the tower to house equipment, and addition of a propane and/or solar power source. A geotechnical assessment was completed in the summer of 2017, and design and permitting of the project is complete. Establishment of the secondary fire break, required by the County permit, was completed in 2018. Construction of the tower, installation of the building and power source, and replacement of the equipment is planned for summer and fall of 2019.