

= Balch Creek =

Balch Creek is a 3 @. @ 5 @- @ mile (5 @. @ 6 km) tributary of the Willamette River in the U.S. state of Oregon . Beginning at the crest of the Tualatin Mountains (West Hills) , the creek flows generally east down a canyon along Northwest Cornell Road in unincorporated Multnomah County and through the Macleay Park section of Forest Park , a large municipal park in Portland . At the lower end of the park , the stream enters a pipe and remains underground until reaching the river . Danford Balch , after whom the creek is named , settled a land claim along the creek in the mid @- @ 19th century . After murdering his son @- @ in @- @ law , he became the first person legally hanged in Oregon .

Basalt , mostly covered by silt in the uplands and sediment in the lowlands , underlies the Balch Creek watershed . The upper part of the watershed includes private residential land , the Audubon Society of Portland nature sanctuary , and part of Forest Park . Mixed conifer forest of Coast Douglas @- @ fir , western redcedar , and western hemlock with a well @- @ developed understory of shrubs and flowering plants is the natural vegetation . Sixty @- @ two species of mammals and more than 112 species of birds use Forest Park . A small population of coastal cutthroat trout resides in the stream , which in 2005 was the only major water body in Portland that met state standards for bacteria , temperature , and dissolved oxygen .

Although nature reserves cover much of the upper and middle parts of the watershed , industrial sites dominate the lower part . Historic Guild 's Lake occupied part of the lower watershed through the 19th century , and in 1905 city officials held the Lewis and Clark Centennial Exposition there on an artificial island . After the exposition , developers converted the lake and its surrounds to industrial use , and in 2001 the Portland City Council declared the site to be an " industrial sanctuary " .

= = Course = =

Balch Creek begins in the Forest Park neighborhood in unincorporated Multnomah County near the intersection of Northwest Skyline Boulevard and Northwest Thompson Road at the crest of the West Hills . It flows generally east about 3 @. @ 5 miles (5 @. @ 6 km) to its confluence with the Willamette River , a major tributary of the Columbia River . The creek drops from 1 @, @ 116 feet (340 m) above sea level at its source to 46 feet (14 m) at its mouth , a total of 1 @, @ 070 feet (330 m) . Most of this occurs in the first 2 @. @ 5 miles (4 @. @ 0 km) . In the hills , the stream gradient (slope) generally ranges from 15 to 30 percent interspersed with sections of less than 15 percent along the middle reaches .

From its source , the creek runs east on private property near Forest Park , a large municipal park in Portland , before turning briefly south about 3 miles (5 km) from the mouth . Soon thereafter , the stream receives an unnamed tributary on the right bank and turns southeast on private property along Northwest Cornell Road . It enters the city and the Audubon Society of Portland simultaneously about 2 miles (3 km) from the mouth , receives two more unnamed tributaries on the right , and flows northeast , entering the part of Forest Park known as Macleay Park .

For about 0 @. @ 25 miles (0 @. @ 40 km) the creek parallels Wildwood Trail , the main hiking trail in Forest Park , until reaching a former public restroom known as the Stone House . From here Balch Creek runs beside the Lower Macleay Trail , another hiking trail , for about 0 @. @ 8 miles (1 @. @ 3 km) . Near Northwest Thurman Street , roughly 1 mile (1 @. @ 6 km) from the mouth , the creek flows through a trash rack into an 84 @- @ inch (210 cm) diameter storm sewer . City workers first diverted the creek into a pipe in the early 20th century . The water empties into the Willamette River in the city 's Northwest Industrial neighborhood at Outfall 17 . About 10 miles (16 km) below this outfall , the Willamette enters the Columbia River .

= = = Discharge = = =

The Bureau of Environmental Services (BES) of the city of Portland monitored the flow of Balch

Creek from June 1996 through September 2002 at a site , Node ABB857 , where the stream leaves the surface and enters a storm sewer in Macleay Park . BES reported an average summer flow of 0 @. @ 2 cubic feet per second (0 @. @ 0057 m³ / s) , a maximum of 60 cubic feet per second (1 @. @ 7 m³ / s) , and a minimum of 0 . The average flow in winter was 1 @. @ 9 cubic feet per second (0 @. @ 054 m³ / s) , with a maximum of 73 cubic feet per second (2 @. @ 1 m³ / s) and a minimum of 0 .

Measurements taken during an individual spring , from mid @-@ May to mid @-@ July 2002 , showed the flow starting at about 2 @. @ 5 cubic feet per second (0 @. @ 071 m³ / s) and dwindling to 0 by early June . The flow through June depended partly on the weather ; the highest flow , 4 @. @ 5 cubic feet per second (0 @. @ 13 m³ / s) , occurred after a rain . Measurements taken during an individual autumn , late August to late December 2001 , were close to zero until November . The largest flows during that season , 19 @. @ 2 cubic feet per second (0 @. @ 54 m³ / s) , occurred after many days of rain .

= = Geology = =

Solidified lava from Grande Ronde members of the Columbia River Basalt Group underlies the Balch Creek watershed . About 16 million years ago during the Middle Miocene , the Columbia River ran through a lowland south of its modern channel . Eruptions from linear vents in eastern Oregon and Washington flowed down this channel through what later became the Willamette Valley . These flows , some of which reached the Pacific Ocean , occurred between 16 @. @ 5 and 15 @. @ 6 million years ago and covered almost 60 @, @ 000 square miles (160 @, @ 000 km²) . Geologists have identified several basalt flows in the West Hills , where they underlie the steepest slopes of Forest Park and form the columned rocks visible in parts of Balch Creek Canyon . Wind @-@ deposited silts , unstable when wet , later covered most of the lava . Stream bank instability and siltation are common , and the threat of landslides has discouraged urban development in the hills .

Between 19 @, @ 000 and 15 @, @ 000 years ago , cataclysmic ice age events known as the Missoula Floods or Bretz Floods originating in the Clark Fork region of northern Idaho inundated the Columbia River basin many times . These floods deposited huge amounts of debris and sediment and created new floodplains in the Willamette Valley . From then until the 19th century , the lower Balch Creek watershed consisted of swampy marshlands and shallow semi @-@ permanent lakes such as historic Guild 's Lake . The final 1 mile (1 @. @ 6 km) or so of historic Balch Creek flowed across this floodplain .

= = History = =

= = = Names = = =

Multnomah County is named for Native Americans who lived in the area before settlement by non @-@ indigenous people in the 19th century . Members of the Multnomah tribe of the Chinookan people lived on Sauvie Island in the Willamette River and on the mainland across from the island , downstream from the mouth of Balch Creek . Much of the area near the lower creek was swampy , and was not favored by the Multnomah . By the 1830s , diseases carried by white explorers and traders reduced the native population by up to 90 percent in the lower Columbia basin .

Historic Guild 's Lake , in the lower Balch Creek watershed near the Willamette River , was named for Peter Guild (pronounced guile) , one of the first European American settlers in the area . In 1847 , he acquired nearly 600 acres (2 @. @ 4 km²) of the watershed through a donation land claim . Although variations in the spelling of Guild 's Lake occur in historic newspapers , maps , and other documents , Guild 's Lake has been the preferred form since the beginning of the 20th century .

The creek is named for Danford Balch , who settled a 346 @-@ acre (1 @. @ 40 km²) donation land claim upstream of the Guild property in 1850 . After a man from a neighboring family eloped

with a Balch daughter , Balch killed him with a shotgun . On October 17 , 1859 , at a public gallows he became the first person to be hanged by the State of Oregon .

Macleay Park takes its name from Donald Macleay , a Portland merchant and real estate developer who acquired what had been the Balch property . In 1897 , he donated the land for a park on condition that the city provide transport to the park for hospital patients and build paths wide enough for wheelchairs .

== Early water supply ==

Balch Creek was one of Portland 's sources of drinking water in the mid 19th century . Stephen Coffin and Finice Caruthers , two early Portland entrepreneurs , established the first public water supply for the city in 1857 by piping water from Caruthers Creek in southwest Portland through round fir logs with 2 5 inch (6 4 cm) holes bored in them . In the 1860s , the Portland Water Company , which had acquired the existing business , added water from Balch Creek to the system . It was piped to a wooden reservoir at Alder and Pacific streets . Water shortages and pollution led to a shift in the water supply from sources within the city to the Bull Run River in the Cascade Range . It began supplying most of Portland 's drinking water in 1895 .

== Industry ==

One of the first industries in the Guild 's Lake area was a sawmill built in the 1880s . Although large parts of the land remained undeveloped until the early 20th century , lumber mills , grain storage structures , railroads , and docks appeared along the waterfront . The Guild 's Lake Rail Yard , built by the Northern Pacific Railway in the 1880s , became an important switching yard for trains .

In 1905 , the Lewis and Clark Centennial Exposition , held on an artificial island in Guild 's Lake , helped spur growth in the area . After the exposition ended , developers filled the lake and its surrounds with soil sluiced from parts of the Balch Creek watershed in the West Hills above the floodplain or dredged from the Willamette River . Civic leaders promoted the Guild 's Lake area as a good place for industry , and by the mid 1920s the lake was gone . The USGS places historic Guild 's Lake at coordinates 45 5470620 ° N 122 7206530 ° W ? / 45 5470620 ; -122.7206530 at an elevation of 33 feet (10 m) above sea level between what later became Northwest Saint Helens Road and Northwest Yeon Street , slightly west of Northwest 35th Avenue in the Northwest Industrial district of Portland .

Between the 1890s and the 1930s , channel deepening in the Willamette River improved the city 's status as a deep water seaport , as did completion in 1914 of a port terminal . Guild 's Lake , close to highways as well as marine and rail terminals , became the most important industrial area in Portland . After World War II , chemical and petroleum processing and storage , metals manufacturing , and other large industries expanded in the area . In 2001 , the Portland City Council adopted the Guild 's Lake Industrial Sanctuary Plan aimed at protecting the area 's long term economic viability as an industrial district . "

== Watershed ==

The Balch Creek watershed consists of 2 , 248 acres (910 ha) , equal to 3 5 square miles (9 1 km²) . About 27 percent is zoned for parks and other open space , and about 20 percent is zoned for heavy industry near the Willamette River . Multnomah County has jurisdiction over 586 acres (237 ha) , about a quarter of the watershed . Lands zoned for residential farms and forests occupy about 13 percent of the total , mostly along the watershed 's western edge . A mixture of residential , commercial , and other designations make up smaller segments . About 1 , 600 people lived in the Balch Creek watershed in 2000 , and about 6 , 700 people worked there . Nearby watersheds include those of other small streams flowing directly into the Willamette along the east flank of the West Hills . The city refers to these as the Johnson - Nicolai subwatershed to the southeast , and the Kittredge and Salzman subwatersheds to the northwest .

Rainfall in the watershed from 1977 to 2002 averaged about 40 inches (1 000 mm) per year . About 30 inches (760 mm) of the total fell from November through April , and about 10 inches (250 mm) fell from May through October . Minor flooding has occurred near the trash rack ? where the creek enters a pipe ? and has caused occasional basement flooding along nearby streets . City officials are studying the rack design with a view to alterations by 2017 .

= = = Flora = = =

The watershed lies partly in the Coast Range ecoregion and partly in the Willamette Valley ecoregion designated by the U.S. Environmental Protection Agency (EPA) . The historic lower Balch Creek watershed through the 1880s was a mixture of open water , wetlands , grassland , and forest , while above the flood plain the watershed consisted of closed canopy forest . People who settled here in the 19th century logged much of this forest and filled the wetlands . In 2002 , aerial photographs showed that buildings , parking lots , shoreline structures , and other cleared areas covered most of the lower floodplain . On the other hand , hill forests protected from major disturbance covered about 65 percent of the watershed .

Above the floodplain , much of the habitat in the watershed consists of mixed conifer forest . Trees and shrubs , including stands of red alder and cottonwood trees , cover about 88 percent of the middle reaches . Near the headwaters , the forests consist mainly of mixed conifers and hardwoods with a few older Douglas firs . Common species include big leaf maple , willow , western hemlock , red alder , western red cedar , and Douglas @-@ fir . Most of this forest is relatively young . In Forest Park , old @-@ growth forest , undisturbed for 250 years or more , exists mainly in isolated patches . The largest tree in the park , Heritage Tree 134 , is a Douglas @-@ fir near the Stone House . It is 242 feet (74 m) high , and the trunk is 18 @.@ 6 feet (5 @.@ 7 m) in circumference .

Forest Park and other areas of the watershed have an understory of well @-@ developed shrubs including ferns , Oregon @-@ grape , vine maple , salal , red huckleberry , Fendler 's waterleaf , Indian plum , salmonberry , and stinging nettle . Among the prominent wildflowers are wild ginger , Hooker 's fairy bells , vanilla leaf , evergreen violet , and trillium . Rare or uncommon species include old conifers , Western wahoo shrubs , and ornamental dawn redwoods . Invasive species are English ivy , European holly , clematis , morning glory , and Himalayan blackberry .

= = = Fauna = = =

The historic creek likely supported diverse fish species , including salmon . After people filled the wetlands and diverted the lower stretch of the creek into a pipe , fish could no longer migrate to and from the Willamette River . The industrial parts of the watershed have no remaining aquatic habitat , but above the pipe the aquatic habitat remains relatively high , and Balch Creek and its tributaries support a resident population of coastal cutthroat trout of up to about 7 inches (18 cm) . In 2005 , Balch Creek was the only major water body in Portland that met state water quality standards for bacteria , temperature and dissolved oxygen .

Nearby tracts of habitat strongly affect the wildlife in the Balch Creek watershed . This is especially true of Forest Park , which extends into other watersheds to the northwest . Birds and animals from these watersheds and from the Tualatin River valley , the Coast Range , the Willamette River , Sauvie Island , the Columbia River , and the Vancouver , Washington , lowlands , move in and out of the park with relative ease . Sixty @-@ two mammal species , including the northern flying squirrel , black @-@ tailed deer , creeping vole , bobcat , coyote , Mazama pocket gopher , little brown bat , Roosevelt elk , and Pacific jumping mouse use Forest Park. blue grouse , great horned owl , hairy woodpecker , Bewick 's wren , orange @-@ crowned warbler , osprey , and hermit thrush are among the 112 species of birds that frequent the area . Amphibian species seen at the Audubon Society pond include rough @-@ skinned newts , Pacific tree frogs , and salamanders .

Pressure from habitat loss , pollution , hunting , and urban development has reduced or eliminated the large predators such as wolves , bears , and wild cats and has led to increased numbers of

small predators such as weasels and raccoons . Roads through the watershed severely hamper the movement of large animals . Invasive plant species such as English ivy have made the habitat simpler and less supportive of native insects and the salamanders and other amphibians that feed on them . Citizen groups such as the No Ivy League and Friends of Forest Park have engaged in projects to remove ivy , to plant native species , and to widen and protect riparian zones .