

# 14 Lakes Riparian Habitat Restoration Project As-Built Document

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## Background

14 Lakes consists of five small lakes located in the lower Cedar River Municipal Watershed (CRMW) between Landsburg Diversion Dam and Cedar Falls at an elevation of about 800 feet above sea level. The five lakes include: Big Lake (4.3 acres), Small Lake (0.8 acres), Deep Lake (3.5 acres), Blackberry Lake (2.1 acres), and Wood Lake (1.9 acres) (Figure 1). 14 Lakes are kettle lakes that formed in glacial outwash deposits as a result of the melting of large pieces of glacial ice enclosed within outwash sediments. The resulting depressions in the landscape became small lakes as a result of groundwater input, as there are no perennial flowing streams entering the lakes and they have no outlets. This is a unique habitat within the municipal watershed.



Figure 1. Aerial photograph of 14 Lakes

The lakes do not support any fish species and consistently have some of the heaviest density of amphibian breeding in the lower CRMW, including red-legged frog (*Rana aurora*), Pacific tree frogs (*Pseudacris regilla*), roughskinned newt (*Taricha granulose*), and northwestern salamander (*Ambytoma gracile*). Water level fluctuates throughout the year and between years, so at times the forest edge is a substantial distance from the edges of the ponds.

In 2005 both Himalayan (*Rubus armeniacus*) and Evergreen (*Rubus laciniatus*) blackberry were well established in portions of the open areas around the pond edges. Some patches were quite

large; a single thicket on Blackberry Lake was over 6,000 ft<sup>2</sup>. Other invasive plants, including Tansy ragwort (*Senecio jacobaea*), reed canary grass (*Phalaris arundinacea*), English holly (*Ilex aquifolium*), bull thistle (*Cirsium vulgare*), and bitterweet nightshade (*Solanum dulcamara*) were also present.

## Project Objective

The project objective was to enhance wildlife habitat by re-establishing a diverse native plant community in the open riparian areas surrounding the ponds.

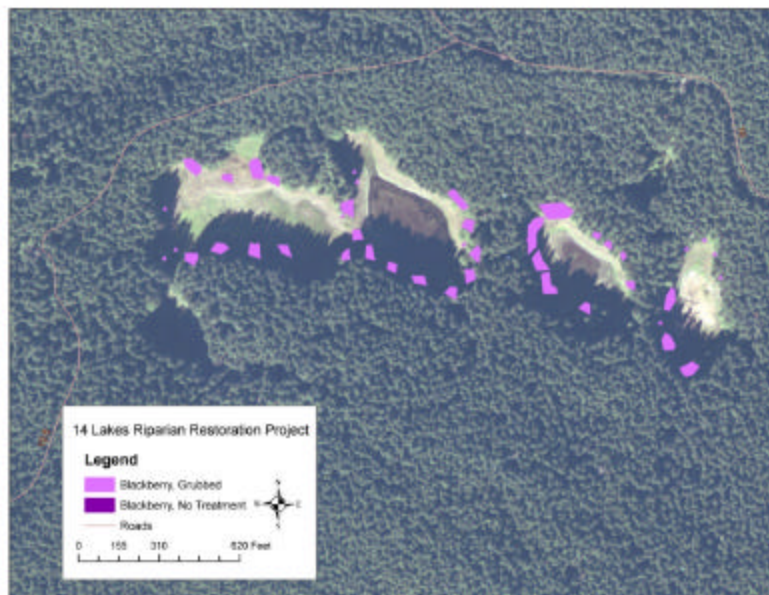
## Relation to Other Projects

This project complemented a 2005 amphibian habitat enhancement project in which 27 trees around three of the lakes (Big, Deep, and Blackberry) were felled to connect the surrounding forest with the pond (Barnett 2005). The tree tops were felled into the water, providing attachment sites for amphibian egg masses. The tree trunks provide a covered migration corridor for amphibians during the breeding season and for newly metamorphosed individuals leaving the ponds.

## Treatments

### Invasive plant species removal

Invasive blackberry plants (both Himalayan and evergreen) were hand-grubbed from sites surrounding the four largest lakes (Big, Deep, Blackberry and Wood Lakes, Figure 2). Small Lake did not have any blackberry in its riparian area.



**Figure 2.** Location of blackberry thickets and plants around 14 Lakes

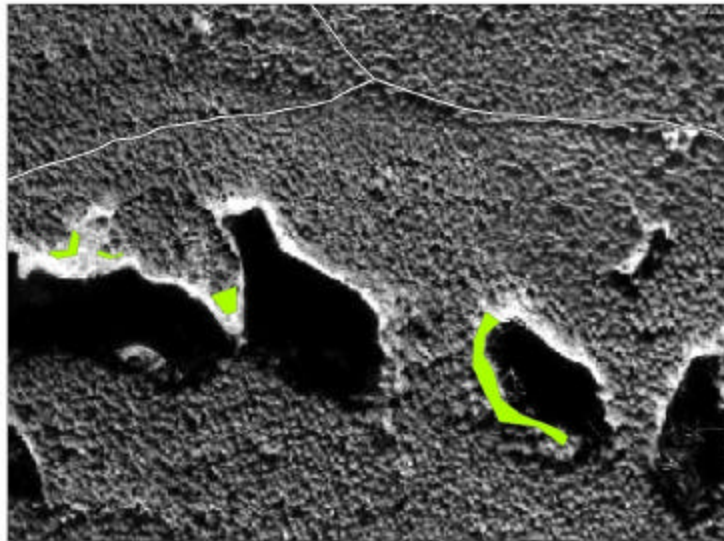
Initial blackberry grubbing was done by a contractor crew in 2005 (3 days) and 2006 (13.5 days). Crews continued doing follow-up work in 2007 (2 days) and 2008 (4 days), when the same sites were re-treated as small bits of root and seeds from the seed bank continued to grow. The large thickets were eliminated by this four-year effort. Crews grubbed isolated individual blackberry

plants in 2009 (2 days) and 2010 (1 day). A total of 1.4 acres around 14 Lakes was treated for blackberry from 2005 through 2010, for a total contractor crew cost of \$29,700 spread over the six years. In 2011 only 20 isolated blackberry plants were found and grubbed out by SPU staff.

Bittersweet nightshade was found only at Blackberry Lake, and was hand-grubbed out by SPU staff in 2009, 2010, and 2011. A few small English holly trees were hand-pulled in 2007 and 2010, but several large trees remain in the forest adjacent to the open riparian areas. Only a few isolated tansy ragwort are found each year, and are pulled by SPU staff prior to seeding. The reed canary grass is extensive, but to date has not received any treatment.

### Planting native species

In the spring of 2006, approximately 200 native trees and 500 native shrubs were planted during an Earthday volunteer event in areas previously cleared of invasive blackberry (Figure 3). This was supplemented by an additional 100 native plants planted by a contractor crew in the spring of 2007. Total cost for plant purchases was \$850. Crew costs are included above.



**Figure 3.** Planting sites, 2006

### **Monitoring**

Water levels were extremely high in all five lakes throughout much of the year in both 2007 and 2011, with much of the area where planting had occurred submerged throughout the growing seasons. Consequently very few of the native trees and shrubs that were planted in 2006 and 2007 have survived.

A complete botanical inventory of herbaceous species in the riparian areas at 14 Lakes was conducted by SPU staff in 2010 (Chapin 2011). A total of 85 species were identified, of which 56 were native species and 28 were introduced non-native species. Of the non-native species, only reed canary grass is considered highly invasive, although bull thistle can pose significant risk. Given the highly variable water levels, it is likely that the areas surrounding the lakes will remain dominated by herbaceous species. The relatively high number of plant species for such a

small area is indicative of the importance 14 Lakes has for biodiversity in the watershed, especially since this type of habitat is rare.

The 14 Lakes riparian area is now sufficiently cleared of blackberry that in two days one SPU staff person can conduct an invasive plant survey around all five lakes and remove all invasive blackberry plants, nightshade, and tansy ragwort found. In 2012 we plan to add bull thistle to the list of species that staff will control, which should not significantly increase the time spent at the site. In 2012 SPU staff also plans to map the reed canary grass using GPS and set up monitoring plots to track its rate of expansion.

### **References**

Barnett, H. 2005. 14 Lakes Riparian Habitat Enhancement Project Plan. Available on:  
[http://www.seattle.gov/util/About\\_SPU/Water\\_System/Habitat\\_Conservation\\_Plan/Species/Ambibians/Pond-Breeding/HCPPProgress/index.htm](http://www.seattle.gov/util/About_SPU/Water_System/Habitat_Conservation_Plan/Species/Ambibians/Pond-Breeding/HCPPProgress/index.htm)

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