

**WETLANDS, RIPARIAN, AND LITTORAL HABITAT
IDYLWILDE HYDROELECTRIC PROJECT**



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Wetlands, Riparian, and Littoral Habitat Idylwilde Hydroelectric Project

Introduction

The City of Loveland, Colorado (City) is proposing to relicense Federal Energy Regulatory Commission (FERC) Project No. 2829, Idylwilde Hydroelectric Project (the Project). The Project is owned and operated by the City. Water Consult retained ERO Resources Corporation (ERO) to prepare preapplication materials associated with wetland and riparian resources for the proposed relicensing. This report addresses the requirements for a preapplication document described in FERC's Integrated License Application Process (18 CFR 5.6).

Project Description

The Project is on the Big Thompson River along U.S. Highway 34 (U.S. 34), 14 miles west of the City (Figure 1). The dam is on National Forest lands managed by the Arapaho-Roosevelt National Forest. A hydroelectric plant was built on municipally owned property, allowing generation and distribution of energy from the Project to begin in 1925. The original dam and hydroelectric plant were destroyed in the Big Thompson River flood on July 31, 1976, and were subsequently rebuilt and returned to full service in 1981.

The dam is 50.5 feet high and has a total length of 239.1 feet. The reservoir has a surface area of 3.67 acres at spillway elevation, and impounds about 45 acre-feet of water. A minimum bypass flow of 7 cubic feet per second (cfs) is maintained through the dam to provide suitable habitat in the stream reach below. The penstock, 9,534 feet in length, originates at the dam and delivers water to two 450-kilowatt turbine-generator units in Loveland's Viestenz-Smith Mountain Park. The penstock crosses Forest Service and privately owned lands, and U.S. 34. Two taps along the penstock provide access to water for fire protection and 15 irrigation services are tapped into the line. The power generated is connected to the City's distribution system through a 22-kilovolt transmission line 1,153 feet in length.

Existing Environment

The reservoir is on the Big Thompson River, shown on the U.S. Geological Survey (USGS) Drake topographic quadrangle as a perennial stream (USGS 1984). The penstock crosses several tributary drainages to the Big Thompson River between the reservoir and the hydroelectric plant, all of which are shown on the USGS Drake topographic quadrangle as intermittent drainages that flow only during periods of runoff (snowmelt or precipitation). Water from the hydroelectric plant outlets into a small pond

in Loveland's Viestenz-Smith Mountain Park. The pond connects to the Big Thompson River.

A jurisdictional wetland delineation was not conducted within the Project area. During a site visit, ERO observed wetland vegetation along the edges of the reservoir and outlet pond. Wetland vegetation was determined by their wetland indicator status using the *National List of Plant Species that Occur in Wetlands* (Sabine 1994, Table 1). A 1- to 3-foot-wide fringe of reed canarygrass (*Phalaroides arundinacea*) occurs along most of the reservoir's edge. The width of the wetland vegetation might vary depending on the level of the reservoir, but due to the steep slopes, no wide benches occur along the reservoir. A small island occurs in the western end of the reservoir and contains wetland vegetation dominated by willow (*Salix* sp.), reed canarygrass, and thinleaf alder (*Alnus incana* ssp. *tenuifolia*). The reservoir contains a small amount of littoral habitat when the reservoir level is low. Patches of wetland vegetation dominated by softstem bulrush (*Schoenoplectus lacustris* subsp. *creber*) are also present within the small outlet pond in Viestenz-Smith Mountain Park. The total amount of wetland vegetation in the reservoir and park associated with the Project is 0.61 acre.

Riparian vegetation occurs along segments of the penstock, where the penstock is adjacent to the Big Thompson River for a distance of 3,100 feet. In these segments, the penstock is buried beneath a riparian terrace, dominated by ponderosa pine (*Pinus ponderosa*) and sandbar willow (*Salix exigua*), with an understory of smooth brome (*Bromopsis inermis*), dropseed (*Sporobolus* sp.), and western wheatgrass (*Pascopyrum smithii*). Narrowleaf cottonwoods (*Populus angustifolia*) also occur along the terrace.

Riparian and wetland vegetation also occurs along the Big Thompson River between the reservoir and the hydroelectric plant. The banks along the river are steep due to U.S. 34, the penstock, development, and steep cliffs; therefore, the riparian and wetland habitat is limited. Wetland vegetation along the river is dominated by willow (*Salix* sp.), thinleaf alder, sedges (*Carex* sp.), and reed canarygrass. Riparian habitat along the river is similar to the habitat along the penstock described above, with narrowleaf cottonwoods and ponderosa pine dominating the overstory and smooth brome, dropseed, and western wheatgrass dominating the understory.

The reservoir and hydroelectric plant and outlet do not contain riparian habitat. The reservoir has steep slopes with upland species abutting the wetlands. The hydroelectric plant and outlet are in a landscaped park, with mostly ponderosa pine and landscape variety shrubs dominating the vegetation. The amount of riparian habitat in the Project area is 2.70 acres. The areas of riparian and wetland vegetation are shown on Figure 2. Table 1 lists species found in the wetland and riparian habitat in the Project area and their wetland indicator status (Sabine 1994; Weber and Wittmann 2001).

Table 1. List of prevalent wetland and riparian species within the Project area.

Species Name	Common Name	Wetland Indicator Status – Region 8*
Trees		
<i>Elaeagnus angustifolia</i>	Russian olive	FAC
<i>Pinus ponderosa</i>	Ponderosa pine	FACU-
<i>Populus angustifolia</i>	Narrowleaf cottonwood	FAC
Shrubs		
<i>Alnus incana</i> ssp. <i>tenuifolia</i>	Thinleaf alder	FACW
<i>Salix exigua</i>	Sandbar willow	OBL
Graminoids		
<i>Bromopsis inermis</i>	Smooth brome	UPL
<i>Juncus arcticus</i> subsp. <i>ater</i>	Baltic rush	OBL
<i>Pascopyrum smithii</i>	Western wheatgrass	FACU
<i>Phalaroides arundinacea</i>	Reed canarygrass	FACW+
<i>Schoenoplectus lacustris</i> subsp. <i>creber</i>	Softstem bulrush	OBL
<i>Sporobolus</i>	Dropseed	FAC/FACU-

*OBL – Obligate Wetland—Occurs with an estimated 99 percent probability in wetlands.

FACW – Facultative Wetland—Estimated 67 to 99 percent probability of occurrence in wetlands.

FAC – Facultative—Equally likely to occur in wetlands and nonwetlands (34 to 66 percent probability).

FACU – Facultative Upland—67 to 99 percent probability in nonwetlands, 1 to 33 percent in wetlands.

Upland – >99 percent probability in nonwetlands in this region.

NI No Indicator or no information available.

Positive and negative signs are used to more specifically define frequency of occurrence in wetlands; a positive sign indicates a frequency toward the higher end of a category (more frequently found in wetlands), and a negative sign indicates a frequency toward the lower end of a category (less frequently found in wetlands).

Source: Sabine (1994); Weber and Wittmann (2001).

Potential Impacts

DIRECT AND INDIRECT IMPACTS

Relicensing and continued operation of the existing Idylwilde Project facilities would not impact wetlands or riparian vegetation. Some riparian and wetland vegetation is likely inundated due to the presence of the reservoir. Due to the small size of the reservoir, the facility does not cause a significant loss to vegetation. Wetland and riparian vegetation along the Big Thompson River between the reservoir and pond outlet is not impacted due to the small amount of diverted water. If the reservoir was not present, some existing wetland vegetation would be inundated, while other wetland vegetation would likely form at a higher elevation along the banks.

CUMULATIVE IMPACTS

The only reasonably foreseeable action is implementation of the Windy Gap Firming Project, which would slightly increase flows in the river in the Project area during some months (Table 2) in average flow years or wet years (Bureau of Reclamation 2007). This would be at most a 9 percent increase in the average monthly flow of the river. In April of a wet year there would be an estimated flow decrease of 1 cfs (a 1 percent decrease), but flows would not decrease during any other month or in April of an average flow year. There would be no changes in flows during a dry year. The increased flow would be brought through the Adams Tunnel to the Big Thompson River. These small increases in flow would not be significant enough to impact any of the wetlands or riparian vegetation in the Project area.

Table 2. Maximum possible monthly streamflow increase in Big Thompson River below Lake Estes due to Windy Gap Firming Project during an average or wet year.

Month	Predicted Monthly Flow Increase (cfs)
November - March	0
April	1
May	15
June	19
July	18
August	3
September - October	1

Source: Bureau of Reclamation (2007).

MITIGATION MEASURES

No mitigation measures are recommended for wetlands or riparian habitat in the Project area.

Preliminary Issues and Recommended Studies

No preliminary issues were identified and no additional studies regarding wetlands, riparian, or littoral habitat are recommended.

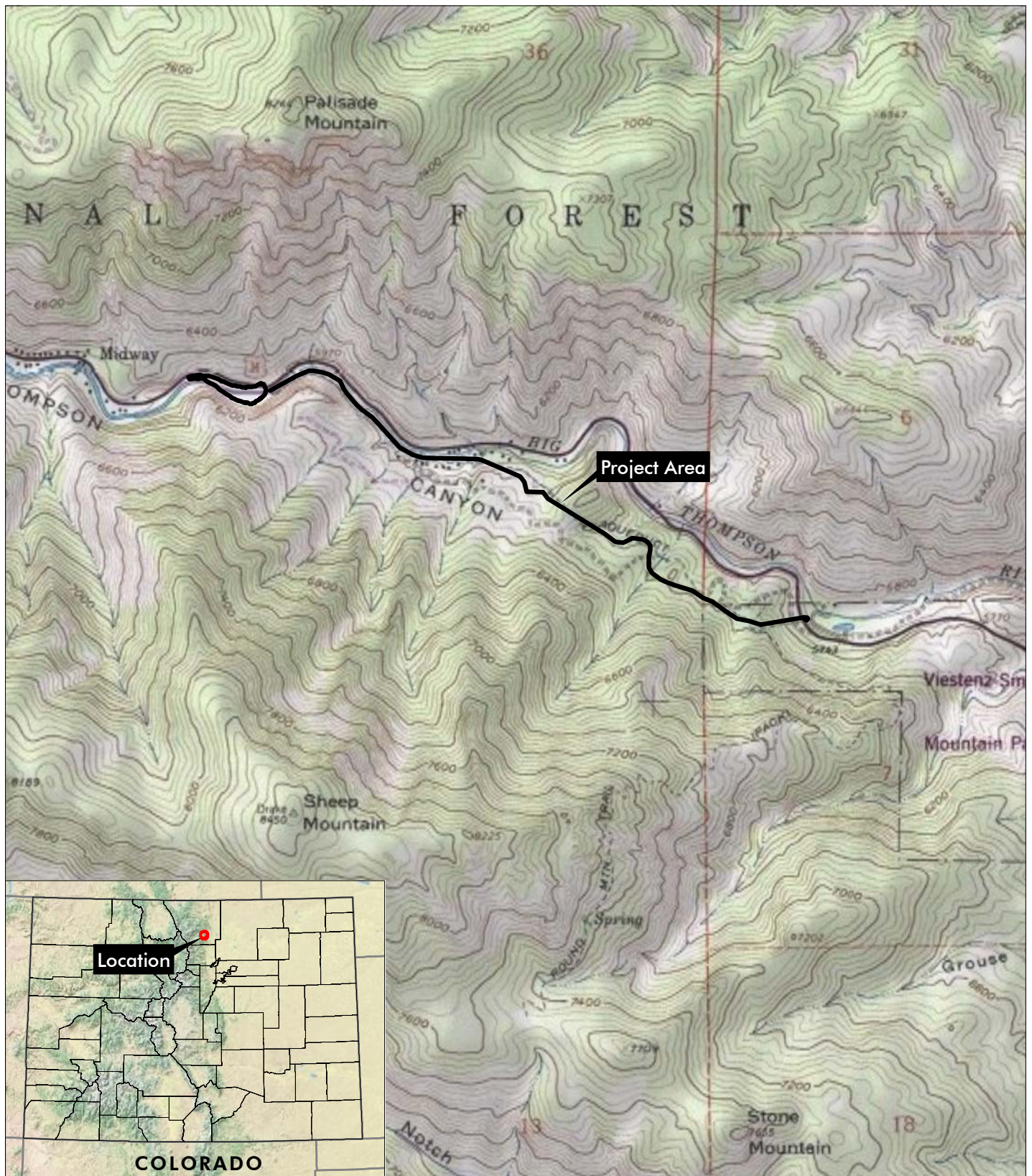
Agencies Contacted

The agency contacted for this report is:

Larry Howard
City of Loveland
200 N. Wilson Avenue
Loveland, Colorado 80537
970-962-3703

References

- Bureau of Reclamation. 2007. Windy Gap Firming Project Draft Water Resources Technical Report. U.S. Department of the Interior, Bureau of Reclamation, Great Plains Region. December.
- Sabine, B. (editor). 1994. National List of Plant Species that Occur in Wetlands: Regions 4, 5, and 8. Resource Management Group, Inc.
- U.S. Geological Survey (USGS). Drake Quadrangle, photorevised 1984. Denver, CO.
- Weber, W.A. and R.C. Wittmann. 2001. Colorado Flora Eastern Slope Third Edition. University Press of Colorado.



Idylwilde Hydroelectric Project

Sections 1 and 2, T5N, R71W; Section 7, T5N, R70W; 6th PM

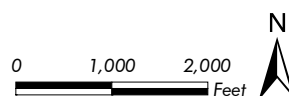
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Latitude, Longitude: 40.424874°N, 105.297895°W

USGS Drake, CO Quadrangle

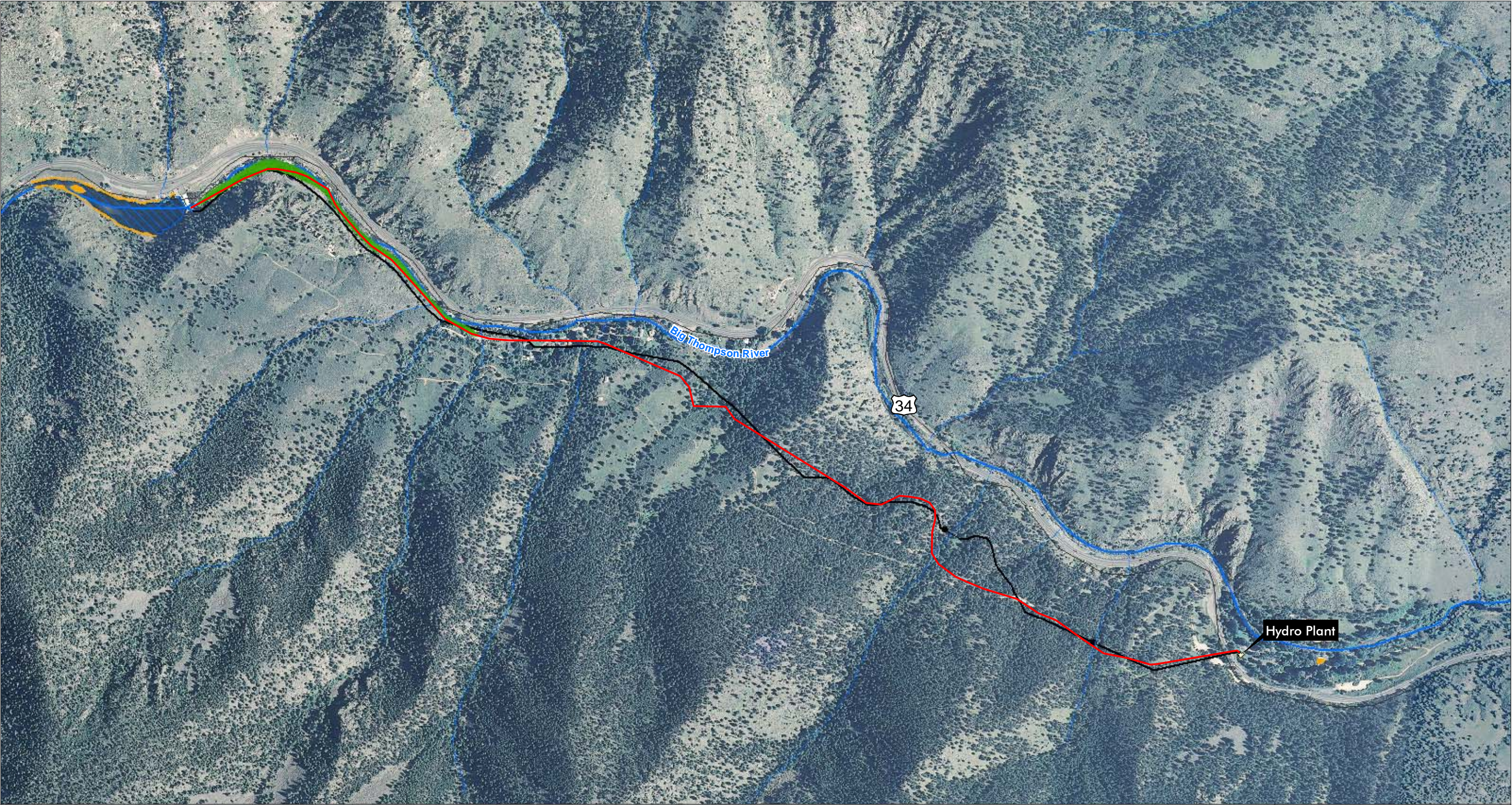
Larimer County, Colorado

Figure 1
Site Location



Prepared for: Water Consult
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December 2010

ERO
ERO Resources Corp.



Idylwilde Hydroelectric Project











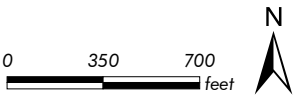
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|--|--|
|  Potential Wetland |  NHD Flowline |
|  Riparian Habitat |  Canal Ditch: Aqueduct |
|  Idylwilde Pipeline |  Pipelines |
|  Hydro Plant |  Stream/River: Intermittent |
|  Reservoir |  Stream/River: Perennial |

Image Source: USDA NAIP, 2009
Data Source: NHD

Figure 2
Potential Wetlands and
Riparian Habitat



Prepared for: Water Consult
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