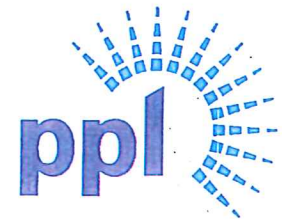


PPL Montana, 45 Basin Creek Road, Butte, Montana 59701



PPL MONTANA, LLC

PPLM-Mystic-4321

Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

October 27, 2014

Re: Filing Revised Ten Year (2015-2024) Weed Management Plan for Mystic Lake Project (2301)

Dear Secretary Bose:

The Commission approved PPL Montana's 2009 Mystic Lake Weed Management Plan by Order date May 19, 2010, pursuant to Mystic Lake Project License Article 401 and USFS 4(e) Condition No. 19. In compliance with the 2009 Weed Management Plan, PPL Montana has completed a comprehensive weed inventory of the Mystic Project area.

Attached is the Revised Ten Year (2015-2024) Mystic Lake Weed Management Plan that PPL Montana has developed (and will implement) in consultation with the U.S. Forest Service (USFS). USFS approval signature is attached on page 2 below. The next Mystic Lake weed inventory will be completed by 2024 and results (with any further Plan revisions) will be filed with the Commission by December 31, 2024.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Jourdonnais".

Jon Jourdonnais
Manager, Hydro Licensing and Compliance

Cc: Andy Welch, PPL Montana
Brent Mabbott, PPL Montana
Roscoe Kronfuss, PPL Montana
Joe Bullis, PPL Montana
Carrie Harris, PPL Montana

Terry Jones, USFS
Traute Parrie, USFS
Frank Cifala, USFS
Jane Taylor, USFS
Kristi Webb, New Wave

PPL Montana has consulted with USFS in the preparation and filing of this Revised Ten Year (2015-2025) Mystic Lake Weed Management Plan. As signed below, the USFS approves this Plan as described above and herein attached.

By: Mary C Euba

Title: Forest Supervisor

Representing the U.S. Forest Service

Date: 10/23/14



**Mystic Lake Hydroelectric Project
FERC Project No. 2301
10-Year Weed Management Plan
(2015-2024)**

**Public
October 2014**

Prepared by:

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Prepared for:

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Executive Summary

PPL Montana, LLC (PPLM) owns and operates the Mystic Lake Hydroelectric Facility (FERC Project No. 2301, hereafter referred to as the “Project”) in the Absaroka Mountains near Fishtail, Montana. The Project is located on West Rosebud Creek, in Stillwater and Carbon counties, Montana. The Federal Energy Regulatory Commission (FERC) boundary for the entire Project (referred to as the “Project boundary”) is located on U.S. Forest Service (USFS) lands within the Custer National Forest and encompasses 673.5 acres of federal lands. The site is located at approximately 6,400 to 7,600 feet above mean sea level and is bordered by the Absaroka-Beartooth Wilderness Area. Lands within and adjacent to the Project boundary are managed by the Custer National Forest – Beartooth Ranger District.

On December 15, 2006, PPLM submitted the Project’s Final License Application (FLA) with FERC. FERC approved the FLA and issued an order for the new license on December 17, 2007. The license expired on December 31, 2009, and the new 40-year license was effective starting January 1, 2010.

The new license includes USFS Section 4(e) Terms and Conditions filed on May 3, 2007. Section 4(e) Condition No. 19 requires PPLM to prepare and implement a weed management plan. On December 17, 2009, PPLM filed the Mystic Lake Hydroelectric Project Weed Inventory Report, November 2009 with FERC. FERC approved the 2009 Weed Management Plan (WMP) pursuant to Article 401 and 4(e) Condition No. 19 on May 19, 2010.

Between 2010 and 2014, PPLM implemented annual weed control measures followed by annual reporting to USFS in compliance with the 2009 WMP. In addition, PPLM completed a comprehensive weed inventory of the Project area, excluding Mystic Lake, in the summer of 2014. The following noxious weed species were identified within the Project area in 2014: Canada thistle (*Cirsium arvense*), spotted knapweed (*Centaurea stoebe*), sulfur cinquefoil (*Potentilla recta*), houndstongue (*Cynoglossum officinale*), meadow hawkweed complex (*Hieracium pretense*), musk thistle (*Carduus nutans*), leafy spurge (*Euphorbia esula*), and field bindweed (*Convolvulus arvensis*). Cheatgrass (*Bromus tectorum*), an invasive weed species was also observed throughout the Project area. All weed infestations that were identified in the weed inventory area were less than 0.5 acre in size (with the exception of cheatgrass). The majority of noxious weed species observed were located in high recreational (pedestrian and vehicles) use areas.

PPLM also completed an evaluation of the effectiveness of the annual weed control measures implemented between 2010 and 2014 and concluded the annual efforts were effective in controlling existing noxious weed infestations and reducing the infestation areas within the Project area.

PPLM proposes to continue annual weed control efforts and annual reporting to the USFS and to extend the comprehensive weed inventory interval from once every 5 years to once every 10 years (the next one occurring in 2024). This 10-year (2015-2024) WMP will supersede the 2009 WMP. The weed management strategies proposed for the next 10-years remain very similar to

the 2009 WMP. Following the next comprehensive weed inventory in 2024, PPLM will report the 2024 weed inventory results as well as work in consultation with USFS to review and revise, as appropriate, weed management strategies for the Project area as outlined in this 10-year WMP for implementation in future years. The 2024 weed inventory and updated weed management plan will be submitted to USFS for review and comment prior to filing with the Commission.

1.0 Introduction

PPL Montana, LLC (PPLM) owns and operates the Mystic Lake Hydroelectric Facility (FERC Project No. 2301, hereafter referred to as the “Project”) in the Absaroka Mountains near Fishtail, Montana. The Project is located on West Rosebud Creek, in Stillwater and Carbon counties, Montana. The Federal Energy Regulatory Commission (FERC) boundary for the entire Project (referred to as the “Project boundary”) is located on U.S. Forest Service (USFS) lands within the Custer National Forest and encompasses 673.5 acres of federal lands. The site is located at approximately 6,400 to 7,600 feet above mean sea level and is bordered by the Absaroka-Beartooth Wilderness Area. Lands within and adjacent to the Project boundary are managed by the Custer National Forest.

In FERC’s Order issuing the new license on December 17, 2007, the Project boundary was adjusted and increased in size from 611.1 acres to 673.5 acres. The current Project boundary (Exhibit 1) encompasses: Mystic Lake and the Mystic Lake Dam; West Rosebud Lake and the West Rosebud Lake Dam (Re-regulation Dam); the flow line, surge tank, penstock, and powerhouse; and PPLM’s Camp located adjacent to the powerhouse. The Camp includes four homes for PPLM employees, three maintenance buildings, transmission lines, and appurtenant facilities.

The Project’s authorized capacity is 11.25 megawatts (MW). The Project has two reservoirs on West Rosebud Creek: (1) Mystic Lake, which is the Project’s storage reservoir; and (2) West Rosebud Lake, which is located downstream from Mystic Lake and is used to moderate peaking flows from the powerhouse.

Water flowing into Mystic Lake is impounded by Mystic Lake Dam, a 45-foot high, 368-foot long concrete arch-type structure. Mystic Lake has a full pool elevation of 7,673.5 feet above mean sea elevation and a total volume of approximately 47,000 acre-feet. Water from the lake flows through the Project’s 2.4-mile long flow line to the powerhouse, which contains two Pelton turbines with an installed capacity of 11.25 MW. Two 50-kilovolt (kV), 5.38-mile long transmission lines run from the powerhouse to NorthWestern Energy’s (NWE’s) Line Creek switchyard.

After exiting the powerhouse, water re-enters West Rosebud Creek and flows for a distance of approximately one mile to West Rosebud Lake, impounded by the Re-regulation Dam. The Re-regulation Dam is a 19-foot high by 420-foot long earth-filled structure that modulates peaking flows from the powerhouse.

PPLM operates the Project in both base load and peaking modes depending on water availability, electric demands, and license constraints. Mystic Lake is used to store water during heavy runoff months (May through July), which is used to augment flows during the remainder of the year.

2.0 Project Description

On December 15, 2006, PPLM submitted the Project's Final License Application (FLA) with FERC. FERC approved the FLA and issued an order for the new license on December 17, 2007. The license expired on December 31, 2009 and the new 40-year license was effective starting January 1, 2010.

The new license includes USFS Section 4(e) Terms and Conditions filed on May 3, 2007. Section 4(e) Condition No. 19 requires PPLM to prepare and implement a weed management plan. On December 17, 2009, PPLM filed the Mystic Lake Hydroelectric Project Weed Inventory Report, November 2009 (2009 Weed Management Plan) with FERC. FERC approved the 2009 Weed Management Plan (WMP) pursuant to Article 401 and 4(3) Condition No. 19 on May 19, 2010.

A weed inventory of the Project area, excluding Mystic Lake, was completed in July 2009 to identify and document the location and degree of infestation of noxious and invasive plant species (PPL Montana 2009). The 2009 WMP identified methods for prevention and control of noxious weeds and to treat existing infestations of high-priority weeds. The plan also included an annual monitoring program to evaluate the effectiveness of noxious weed prevention and control measures.

Between 2010 and 2014, PPLM implemented annual weed control measures followed by annual reporting to USFS. As per the 2009 WMP, a comprehensive weed inventory of the Project area was also completed in 2014. The data collected in 2014 is presented in this report along with an updated 10-year WMP for 2015 through 2024. Refer to Section 5 for details of the 10-year WMP.

3.0 Weed Inventory Methodology

3.1 Inventory Area

The weed inventory area is depicted in **Error! Reference source not found.** and includes the transmission lines, PPLM Camp (staff residential area), West Rosebud Lake shoreline, powerhouse, flow line, surge tank, penstock, and lake house area at the dam.

3.2 Data Collection

Ecosystem Research Group, LLC (ERG), completed the weed inventory for the Project area, excluding Mystic Lake in 2014. ERG completed a review of historic documents including, the 2009 weed inventory and report and annual memoranda, including maps prior to completing the on-site investigations. A comprehensive pedestrian survey within the weed inventory area (Exhibit 1) was conducted on July 22-23 and August 16-17, 2014. Points and polygons were collected and attributed in the field using a Garmin GPS unit. Polygons were also hand-drawn on hard copy maps. Data were recorded in the field during the site investigations that included the location and size of noxious weed and invasive species infestations.

Attribute data were added after the point locations were downloaded from the GPS. Hand-applied noxious weed and invasive plant species locations were added to the GIS coverage file. The point locations were then buffered into polygon data to represent the appropriate size of each infestation identified. All weed infestations that were identified in the weed inventory area were saved in the GIS coverage file as a single GPS point and then converted to polygon data to represent the area of infestation.

Deliverable files were provided to the USFS in ArcGIS format for ease of merging into existing USFS datasets and to meet USFS protocol. ESRI's ArcGIS 10.2 was used to incorporate the GPS data into a shapefile, manage the data, and calculate the area of the weed occurrences. GIS was also used to compare current weed locations to historic weed layers and to prepare figures for this report. The attributes collected for each weed infestation location are consistent with the 2009 WMP, which was consistent with USFS weed dataset field format definitions.

3.3 Noxious Weed Species List

The on-site weed inventory completed in 2014 referred to the following list of noxious and non-native invasive weed species lists from the State of Montana and Stillwater and Carbon counties. The State of Montana maintains a list of 32 noxious weed species and 3 invasive weed species (Montana Department of Agriculture 2013). The most recent list was effective December 2013 and is provided below. The Stillwater County noxious weed list matches the State of Montana list, with the addition of three county-specific weed species that are shown following the State weed list (Lindsey Clarke 2014). The Carbon County noxious weed list also matches the State of Montana list with the addition of 4 county-specific weed species (Pam Schwend 2014). All plant nomenclature has been updated according to the Natural Resources Conservation Service's most recent PLANTS Database, under the U.S. Department of Agriculture.

State of Montana Priority 1A noxious weeds are those that are not present or have a very limited presence in Montana. Management requires eradication if detected, and education and prevention of further proliferation (Montana Department of Agriculture 2013).

State of Montana Priority 1A

- Yellow starthistle (*Centaurea solstitialis*)
- Dyer's woad (*Isatis tinctoria*)

State of Montana Priority 1B noxious weeds are those which have a limited presence in Montana. Management criteria will require eradication or containment and education (Montana Department of Agriculture 2013).

State of Montana Priority 1B

- Knotweed complex (*Polygonum cuspidatum*, *P. sachalinense*, *P. x bohemicum*, *Fallopia japonica*, *F. sachalinensis*, *F. x bohémica*, *Reynoutria japonica*, *R. sachalinensis*, and *R. x bohémica*)
- Purple loosestrife (*Lythrum salicaria*)
- Rush skeletonweed (*Chondrilla juncea*)
- Scotch broom (*Cytisus scoparius*)

State of Montana Priority 2A noxious weeds are those which are common in isolated areas in Montana. Management criteria requires eradication or containment. Management is prioritized by local weed districts (Montana Department of Agriculture 2013).

State of Montana Priority 2A

- Tansy ragwort (*Senecio jacobaea*)
- Meadow hawkweed complex (*Hieracium caespitosum*, *H. praealtum*, *H. floribundum*, *H. piloselloides*). There are many hybridizations of this genus which makes the plethora of species difficult to discern.¹
- Orange hawkweed (*Hieracium aurantiacum*)
- Tall buttercup (*Ranunculus acris*)
- Perennial pepperweed (*Lepidium latifolium*)
- Yellowflag iris (*Iris pseudacorus*)
- Blueweed (*Echium vulgare*)
- Hoary alyssum (*Berteroa incana*)

¹ There is some variation with regard to the correct hawkweed botanical classification. Lessica, in his recent *Manual of Montana Vascular Plants* (2012) designates meadow hawkweed as *Hieracium caespitosum* and corrects other usage believing that *H. pratense* was misapplied. Other confounding factors have been reported with this complex; interbreeding may give the plant other appearances, making it difficult to key out (Lessica 2012).

State of Montana Priority 2B noxious weeds are those which are abundant in Montana and widespread in many counties. Management criteria requires eradication, or containment where less abundant. Management is prioritized by local weed districts (Montana Department of Agriculture 2013).

State of Montana Priority 2B

- Canada thistle (*Cirsium arvense*)
- Field bindweed (*Convolvulus arvensis*)
- Leafy spurge (*Euphorbia esula*)
- Whitetop (*Cardaria draba*)
- Russian knapweed (*Acroptilon repens*)
- Spotted knapweed (*Centaurea stoebe*)
- Diffuse knapweed (*Centaurea diffusa*)
- Dalmatian toadflax (*Linaria dalmatica*)
- St. Johnswort (*Hypericum perforatum*)
- Sulfur cinquefoil (*Potentilla recta*)
- Common tansy (*Tanacetum vulgare*)
- Oxeye daisy (*Leucanthemum vulgare*)
- Houndstongue (*Cynoglossum officinale*)
- Yellow toadflax (*Linaria vulgaris*)
- Saltcedar (*Tamarix spp.*)
- Flowering rush (*Butomus umbellatus*)
- Eurasian watermilfoil (*Myriophyllum spicatum*)

State of Montana Priority 3 plants are those which are regulated and considered invasive; they are not Montana listed noxious weeds. These plants have the potential to have significant negative impacts. They may not be intentionally spread or sold other than as a contaminant in agricultural products. The State recommends research, education and prevention to minimize the spread of these plants (Montana Department of Agriculture 2013).

- Cheatgrass (*Bromus tectorum*)
- Hydrilla (*Hydrilla verticillata*)
- Russian olive (*Elaeagnus angustifolia*)

The Stillwater County noxious weed list matches the State of Montana list with the addition of the three following weed species, which are treated as Priority 2B noxious weeds (Lindsey Clarke 2014).

Stillwater County Noxious Weed List

- Common burdock (*Arctium minus*)
- Common mullein (*Verbascum thapsus*)
- Black henbane (*Hyoscyamus niger*)

The Carbon County noxious weed list matches the State of Montana list with the addition of the four following weed species, which are treated as specified below (Pam Schwend 2014).

Carbon County Priority 2A

- Milk thistle (*Silybum marianum*)
- Musk thistle (*Carduus nutans*)

Carbon County Priority 2B

- Absinth wormwood (*Artemisia absinthium*)
- Scotch thistle (*Onopordum acanthium*)

4.0 Weed Inventory Results

The locations of the noxious and invasive species identified during the 2009 and 2014 weed inventories are provided on Exhibits 2 through 8. Although the 2009 and 2014 data are not directly comparable quantitatively due to some variations in the data collection methodology and personnel completing each inventory, the maps show an overall reduction in noxious weed species infestations and shifts, both in location and size, since the 2009 weed inventory. The weed inventory maps (Exhibits 2 through 8) illustrate the effectiveness of the annual weed control measures implemented by PPLM between 2010 and 2014.

In 2014, weeds were identified at varying infestation levels across the Project area (Exhibits 2 through 8). All weed infestations that were identified in the 2014 inventory were less than 0.5 acre (21,780 square feet) in size with the exception of cheatgrass. It is also important to note that the weed polygons displayed in Exhibits 3 through 8 are enlarged to enhanced visibility of the locations. The following table lists the noxious and invasive species and the approximate size of infestations that were identified during the July/August 2014 inventory.

Table 1. List of noxious and invasive weed species identified in the weed inventory area in July/August 2014.

Noxious Weed List		
Common Name	Scientific Name	2014 Infestation Size (square feet)
Canada thistle	<i>Cirsium arvense</i>	3,350
Spotted knapweed	<i>Centaurea stoebe</i>	17,465
Sulfur cinquefoil	<i>Potentilla recta</i>	367
Houndstongue	<i>Cynoglossum officinale</i>	82
Meadow hawkweed complex	<i>Hieracium pretense</i> , etc. (see section 3.3)	185
Musk thistle	<i>Carduus nutans</i>	16
Leafy spurge	<i>Euphorbia esula</i>	314
Field bindweed	<i>Convolvulus arvensis</i>	706
Invasive Weed List		
Common Name	Scientific Name	Infestation Size (square feet)
Cheatgrass	<i>Bromus tectorum</i>	2,962,080

Many weeds colonize on disturbed soils or heavily used areas. Several weeds are shade-intolerant and are found in reduced quantities under canopy cover from trees. Moist areas tend to support more competitive vegetation and have reduced weed species.

Spotted knapweed is robust and prolific across drier sites and in high use areas such as West Rosebud Lake (Exhibit 5). The disturbed nature of the parking lots and high use areas around the parking lots and trails (around West Rosebud Lake) point to a continued influx of weed seeds.

Weeds were not commonly observed along the flow line or transmission line corridor between the PPLM Camp area and Mystic Lake Dam (Exhibits 3 and 4). There were small clusters of individual weed species, including Canada thistle, around the lake house area and a meadow hawkweed complex within the transmission line corridor located immediately downstream of the dam, identified during the July/August 2014 inventory (Exhibit 3). The tram right-of-way (ROW) had small occurrences of spotted knapweed and Canada thistle in the lower sections, but these were successfully treated in 2014.

Weed infestations were most common in high use or high recreation locations, including the PPLM Camp area and West Rosebud Lake (Exhibits 4 and 5). There were intermittent infestations along the transmission line ROW from the NWE's Line Creek switchyard to the PPLM Camp area.

Cheatgrass appeared to be the most prolific invasive weed species delineated in the weed inventory area in 2014. The 2014 inventory identified cheatgrass coverage in most areas with droughty soil including the majority of the transmission line ROW and related areas around the PPLM Camp. The more moist meadow stands of timothy and a few of the boulder outwash areas do not have much cheatgrass cover.

5.0 10-Year Weed Management Plan

Based on the weed inventory data collected during the 2014 site evaluation, PPLM proposes the following weed management plan for implementation over the next 10 years (2015-2024). The following text outlines the 10-year WMP, including management goals and objectives for the Project area, priority areas for weed management, annual weed control actions, annual monitoring and reporting, and a schedule for the next comprehensive inventory. This 10-year WMP was developed in compliance with requirements of the USFS 4(e) Condition No. 19 in the FERC license for Project 2301 and with reference to the 2007 Custer National Forest Weed Management Field Guide and 2012 Stillwater County Weed Management Plan, as well as consultation with Stillwater and Carbon county weed managers and the Beartooth Ranger District weed manager.

5.1 Management Goals and Objectives

The objective of the 10-year (2015-2024) WMP is to monitor and manage noxious and non-native weed species within the weed inventory area. The 10-year WMP will provide a framework to continue to control those plant species that are listed as “noxious” by the State of Montana and Stillwater and Carbon counties. The 10-year WMP will focus on prevention of new noxious weed infestations and control of existing noxious weed infestations identified in the 2014 inventory while they are still small and manageable. Currently, the USFS and counties (Stillwater and Carbon) do not actively manage for the cheatgrass, an invasive species. Therefore, no control measures are identified for implementation in this 10-year WMP.

5.2 Priorities for Weed Management

Weed management priorities will be based on the actual or potential threat that weeds pose to the management goals within the Project area. Two factors will be used to set priorities including, the weed species and the locations of weed infestations. Weed species are important because they vary considerably in the threat they pose to the resource values of the property. In addition, weed species vary greatly in their susceptibility to control measures. The location of a weed infestation is also very important. The highest priority weed patches will be those that are small and isolated from larger infestations of the same species and which occur on, or could affect, the highest-valued vegetation resources within the Project area.

5.3 Annual Weed Control Actions

The following section outlines PPLM’s recommendations for annual weed control actions within the Project area, excluding Mystic Lake. Based on the presence of weeds observed and documented as a result of the 2014 inventory, annual control efforts implemented since 2010 appear to be effective. PPL Montana proposes to continue to implement annual weed control measures and continue to coordinate with USFS, as appropriate for the next 10 years (2015-2024).

This 10-year WMP identifies priority areas including the species present (based on the 2014 inventory) and management objectives in Table 2. The priority areas remain the same as those identified, in consultation with USFS, in the 2009 WMP (PPL Montana 2009).

Table 2. Priority areas, species identified, and management objectives.

Priority Area	Location of Priority Areas on Associated Exhibits	Species identified	Management Objective
1	Areas within close proximity to the Absaroka-Beartooth Wilderness and small patches of noxious weeds/new* infestations (Exhibits 3, 4, 5 and *future identifications within the weed inventory area)	Canada thistle, meadow hawkweed, sulfur cinquefoil, musk thistle, houndstongue	Removal/eradication
2	PPLM's Camp Area, perimeter of West Rosebud Lake, Mystic Lake Trailhead (Exhibits 4 and 5)	Canada thistle, leafy spurge, spotted knapweed,	Control
3	Transmission Line corridor downstream from West Rosebud Lake (Exhibits 5, 6, 7, 8)	Canada thistle, sulfur cinquefoil, spotted knapweed, houndstongue, field bindweed, musk thistle	Control/Coordination with USFS

The 10-year WMP also identifies species-specific control treatments, including mechanical and chemical methodologies. The herbicides identified for species-specific control treatments in Table 3 remain the same as in the 2009 WMP with some updates provided for the current brand names, as shown in parentheses.

Table 3. Recommended noxious weed species control applications for 2015 through 2024.

Common Name	Recommended Herbicide ² / Active Ingredient ³	Application Rate	Application Period/Frequency
Canada thistle	Aminopyralid (Milestone)	5 to 7 ounces product per acre	Apply to pre-bud in early summer or to fall rosette regrowth/once per year for 5 years.
Spotted knapweed	Aminopyralid (Milestone)	5 to 7 ounces per acre	Apply when plants are actively growing, from rosette to the bolt stage, or in the fall.
Field bindweed	Aminopyralid + 2,4-D (Forefront)	3 ounces per 3 gallons of water	Apply early to late bloom.

² Recommendations are based on current contractors' past herbicide usage and the Stillwater County Herbicide Recommendations for Rangelands and Right-of-Ways.

³ The 2014 WMP uses the active ingredient of a specific herbicide in the recommendation table with the understanding that herbicide trade names may change over time, and to provide consistency for the applicators.

Common Name	Recommended Herbicide ² / Active Ingredient ³	Application Rate	Application Period/Frequency
Sulfur cinquefoil	Aminopyralid (Milestone)	4 to 6 ounces product per acre	Apply to actively growing plants during the pre-bud stage/once per year for 5 years.
Houndstongue	Metsulfuron methyl (Escort)(Cimarron)	1 ounce per acre plus non-ionic surfactant	Apply to actively growing plants before seed set or during fall regrowth once per year for 5 years.
Meadow hawkweed	Aminopyralid (Milestone)	4 to 6 ounces product per acre	Apply from rosette to late bolt stage/once per year for 5 years.
Musk thistle	Aminopyralid (Milestone)	5 to 7 ounces product per acre	Apply to pre-bud in early summer or to fall rosette regrowth/once per year for 5 years.
Common mullein	Metsulfuron methyl (Escort)(Cimarron)	1 to 2 ounces per acre	Apply before seed set.
Leafy Spurge	Picloram (Tordon)	1 quart of product per acre	Spring at flowering growth stage, or fall.
Other herbicides for consideration	2,4-D, Carbaryl, Chlorsulfuron, imazapic, Aminopyralid + 2,4-D, Aminopyralid + metsulfuron, Metsulfuron methyl + aminopyralid	Follow directions on label	Follow directions on label

The noxious weed species identified within the Project area during the 2014 inventory are controlled and managed based on the priority level assigned to the weed species (Table 4). The USFS assigns priority levels based on each species' current infestation, distribution, response to control activities, and management objectives within the USFS Beartooth Ranger District. Table 4 identifies each species' priority level for control according to the USFS. Note that not all weed species presented in Tables 3 and 4 were identified in the Project area during the 2014 inventory.

Table 4. USFS noxious weed control priorities.

Common Name	Scientific Name	USFS Category ⁴
Canada thistle	<i>Cirsium arvense</i>	1
Field bindweed	<i>Convolvulus arvensis</i>	2
Houndstongue	<i>Cynoglossum officinale</i>	1
Leafy Spurge	<i>Euphorbia esula</i>	2
Spotted knapweed	<i>Centaurea stoebe</i>	1

⁴ **USFS Priority key by Category:** Categories developed for the Greater Yellowstone Area by the Greater Yellowstone Coordinating Committee:

1: 3rd Priority: Widespread invaders; goal is containment within infested areas and reduction of plant populations.

2: 2nd Priority: New invaders; goal is containment within already infested areas and strong emphasis on reduction of populations.

Common Name	Scientific Name	USFS Category ⁴
Sulfur cinquefoil	<i>Potentilla recta</i>	1
Meadow hawkweed complex	<i>Hieracium pretense</i> etc.	2
Common mullein	<i>Verbascum thapsus</i>	1

Weed control efforts will occur annually for 10 years (2015-2024) and will next occur during the summer of 2015. All weed control measures implemented within the Project area will be completed in accordance with the methodologies outlined in the 2007 Custer National Forest Weed Management Field Guide, with the exception of cheatgrass management. Cheatgrass is not currently managed (i.e., no weed control has been implemented) by the USFS Beartooth Ranger District. Therefore, the treatments recommended in the 2007 Custer National Forest Weed Management Field Guide for cheatgrass will not be implemented within the Project area.

Noxious weeds will be spot-sprayed (or broadcast-sprayed if necessary) according to the specifications identified in Table 3 and/or with prior approval from USFS for any proposed alternative herbicides not included in Table 3. Weeds within close proximity to water will be sprayed only with herbicides approved for use in riparian areas (e.g., Milestone, Escort, and Cimarron), or weeds will be mowed and/or removed by hand or shovel.

The area adjacent to the Absaroka-Beartooth Wilderness has been identified as a high priority area for weed control (Priority Area 1), as noxious and invasive weed infestations are not currently widespread within the wilderness (Exhibit 3, 4, 5). The management objective for this area is identified as “complete eradication/removal” because infestations are minimal and it is a USFS priority to keep existing weed infestations within the Absaroka-Beartooth Wilderness from propagating and spreading further. Weed infestations that are located within close proximity to the Absaroka-Beartooth Wilderness boundary (Exhibit 3) will be spot-sprayed utilizing a backpack sprayer and plants will be mechanically removed by hand or with a shovel, if determined necessary. The infestations will be sprayed once per year until eradicated or for a period of 10 years (2015-2024) unless an alternative interval and/or measure(s) are identified, proposed, and approved in consultation with the USFS.

The PPLM Camp area, the perimeter of West Rosebud Lake, and the Mystic Lake trailhead have also been identified as a high-priority area (Priority Area 2) for weed control as noxious/invasive weed infestations (Exhibits 4 and 5). Weeds in these locations have been identified as the primary source for potential spread of noxious weeds into the wilderness (via the Mystic Lake trail and trailhead, providing the vector for transport). The management objective for this area is identified as control (chemical and mechanical) to keep weed infestations from entering the Absaroka-Beartooth Wilderness and becoming further established. Weed infestations that are located within the PPLM Camp area, the flow line located between the powerhouse and surge tank, and the perimeter of West Rosebud Lake, will be controlled by a licensed commercial applicator. Weed control will be implemented once per year for 10 years. Weeds within close proximity to West Rosebud Lake or any waterbody will be sprayed only with herbicides approved for use in riparian areas, which include Milestone, Escort, and Cimarron (listed in Table 2), or weeds will be mowed and/or removed by shovel, if determined necessary.

The transmission line corridor located downstream from West Rosebud Lake has been identified as a lower priority area for weed control (Priority Area 3) (Exhibit 5, 6, 7, 8). The noxious/invasive weed infestations in this location were predominantly cheatgrass (not currently managed by USFS Beartooth Ranger District) and were minimal relative to the remainder of the Project area. In addition a portion of this corridor passes through a USFS-managed grazing allotment; the presence of cattle in this area may complicate weed control efforts. Coordination with USFS Beartooth Ranger District representative(s) will be necessary to determine weed control methodologies required for weed infestations that are located throughout the remainder of the Project area and along the transmission line corridor. As was outlined in the 2009 WMP, weed control efforts proposed in this area between 2015 and 2024 will be completed in partnership with the USFS. The weed control activities implemented by PPLM will be proportional to the amount of land managed by PPLM within the Project area. The management objective for this area is identified as control (chemical and mechanical) through a cost-share/coordinated management effort between the USFS and PPLM.

5.4 Monitoring and Reporting Plan

PPLM will contract with a licensed commercial applicator to implement weed control measures in the Project area, excluding Mystic Lake. In order to monitor short-term and long-term effectiveness of control efforts, PPLM will visit the weed control sites and report on the effectiveness of annual treatments completed by the hired licensed commercial applicator. Annual monitoring and treatment efforts completed by September 1 of each year will be included in that year's annual monitoring report submitted to the USFS. PPLM will report the monitoring and treatment information to the USFS Beartooth Ranger District by September 25 annually, and will include treatment dates, treatment types, herbicides used, acres treated, and a map depicting the locations of the treatments and any new invasive species detected. Monitoring or treatment efforts that are completed after September 1 will be included in the monitoring report submitted the following year.

PPLM proposes to continue annual weed control efforts and annual reporting to the USFS and to extend the comprehensive weed inventory interval from once every 5 years to once every 10 years (the next one occurring in 2024). Following the next comprehensive weed inventory in 2024, PPLM will report the 2024 weed inventory results as well as work in consultation with USFS to review and revise, as appropriate, weed management strategies for the Project area as outline in this 10-year WMP for implementation in future years. The 2024 weed inventory and updated weed management plan will be submitted to USFS for review and comment prior to filing with the Commission. The annual review of treated areas and the 10-year comprehensive inventory of the Project area will help evaluate the effectiveness of the weed management plan in the short-term and long-term, respectively. If management objectives are not being met, weed control actions will be modified.

6.0 References

- 121 FERC ¶ 62, 198. United States of America Federal Energy Regulatory Commission. Order Issuing New License. Issued December 17, 2007.
- 131 FERC ¶ 62, 152. United States of America Federal Energy Regulatory Commission. Order Approving Weed Management Plan Pursuant to Article 401 and 4(e) Condition No. 19. Issued May 19, 2010.
- Lessica, Peter. 2012. *Manual of Montana vascular plants*. Ed. Lipscomb, Barney. Fort Worth, Texas: Brit Press.
- Lindsey Clarke, Stillwater County Weed Coordinator. 2014. Personal email communication to ERG. September 18, 2014.
- Montana Department of Agriculture. 2013. Montana Noxious Weed List. <http://agr.mt.gov/agr/Programs/Weeds/PDF/2013WeedList.pdf> (accessed July 2014).
- Pam Schwend, Carbon County Assistant Weed Coordinator. 2014. Personal email communication to ERG. September 22, 2014.
- PPL Montana. 2009. Mystic Lake Hydroelectric Project Weed Inventory Report Public, FERC Project 2301.
- PPL Montana. 2006. Mystic Lake Hydroelectric Project FERC No. 2301, Volume I - Public Final License Application Exhibits A-D, H.

PPL Montana

Mystic Lake

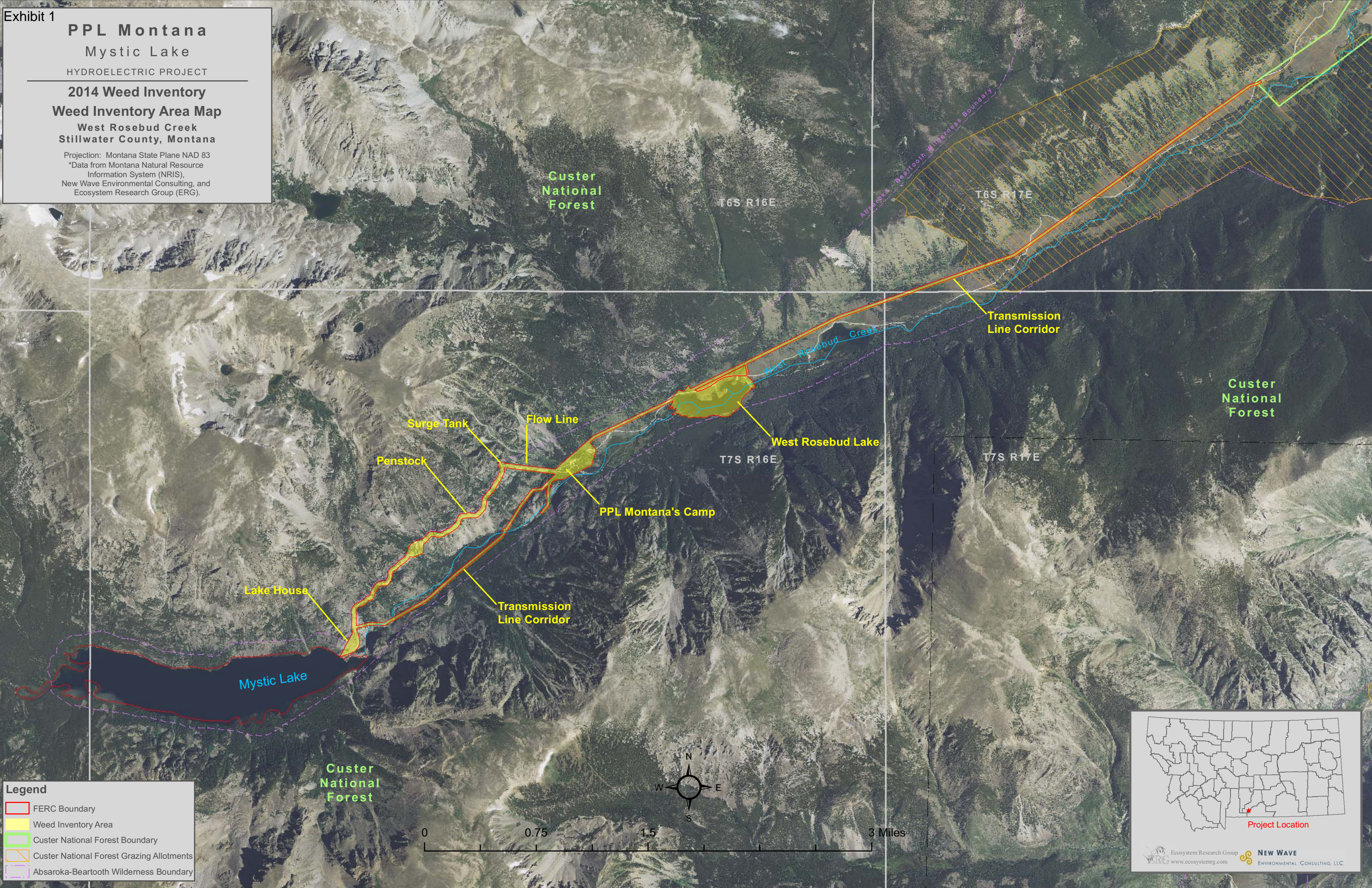
HYDROELECTRIC PROJECT

2014 Weed Inventory

Weed Inventory Area Map

West Rosebud Creek
Stillwater County, Montana

Projection: Montana State Plane NAD 83
*Data from Montana Natural Resource Information System (NRIS),
New Wave Environmental Consulting, and
Ecosystem Research Group (ERG).



Legend

- FERC Boundary
- Weed Inventory Area
- Custer National Forest Boundary
- Custer National Forest Grazing Allotments
- Absaroka-Beartooth Wilderness Boundary



Project Location

Ecosystem Research Group
www.ecosystemrg.com

NEW WAVE
ENVIRONMENTAL CONSULTING, LLC

PPL Montana

Mystic Lake

HYDROELECTRIC PROJECT

2014 Weed Inventory

Overview Map

West Rosebud Creek
Stillwater County, Montana

Projection: Montana State Plane NAD 83
*Data from Montana Natural Resource Information System (NRIS),
New Wave Environmental Consulting, and
Ecosystem Research Group (ERG).

Custer
National
Forest

Custer
National
Forest

Custer
National
Forest

T6S R16E

T6S R17E

T7S R16E

T7S R17E

Absaroka - Bearfoot Wilderness Boundary

Map #6

Map #5

Map #4

Map #3

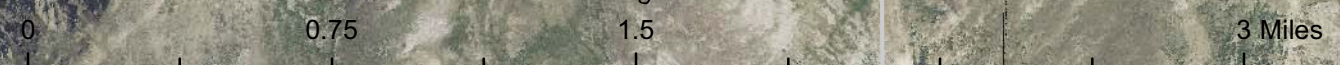
Map #2

Map #1

West Rosebud Lake

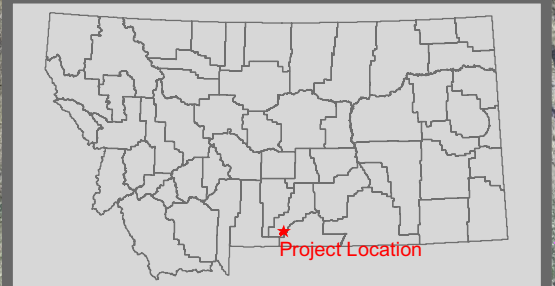
Emerald Lake

Mystic Lake



Legend

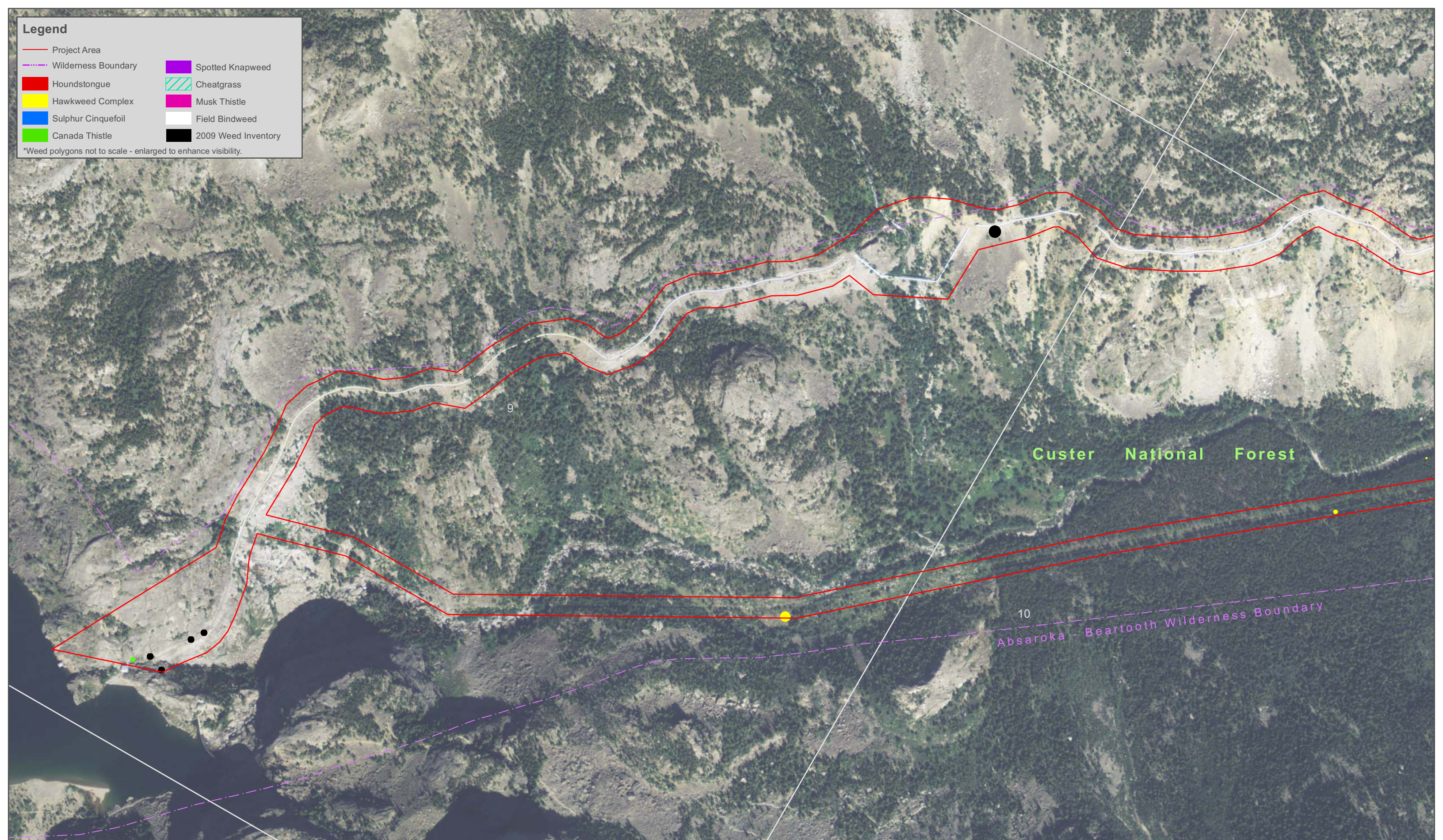
Project Area



Legend

- Project Area
- - - Wilderness Boundary
- Houndstongue
- Hawkweed Complex
- Sulphur Cinquefoil
- Canada Thistle
- Spotted Knapweed
- Cheatgrass
- Musk Thistle
- Field Bindweed
- 2009 Weed Inventory

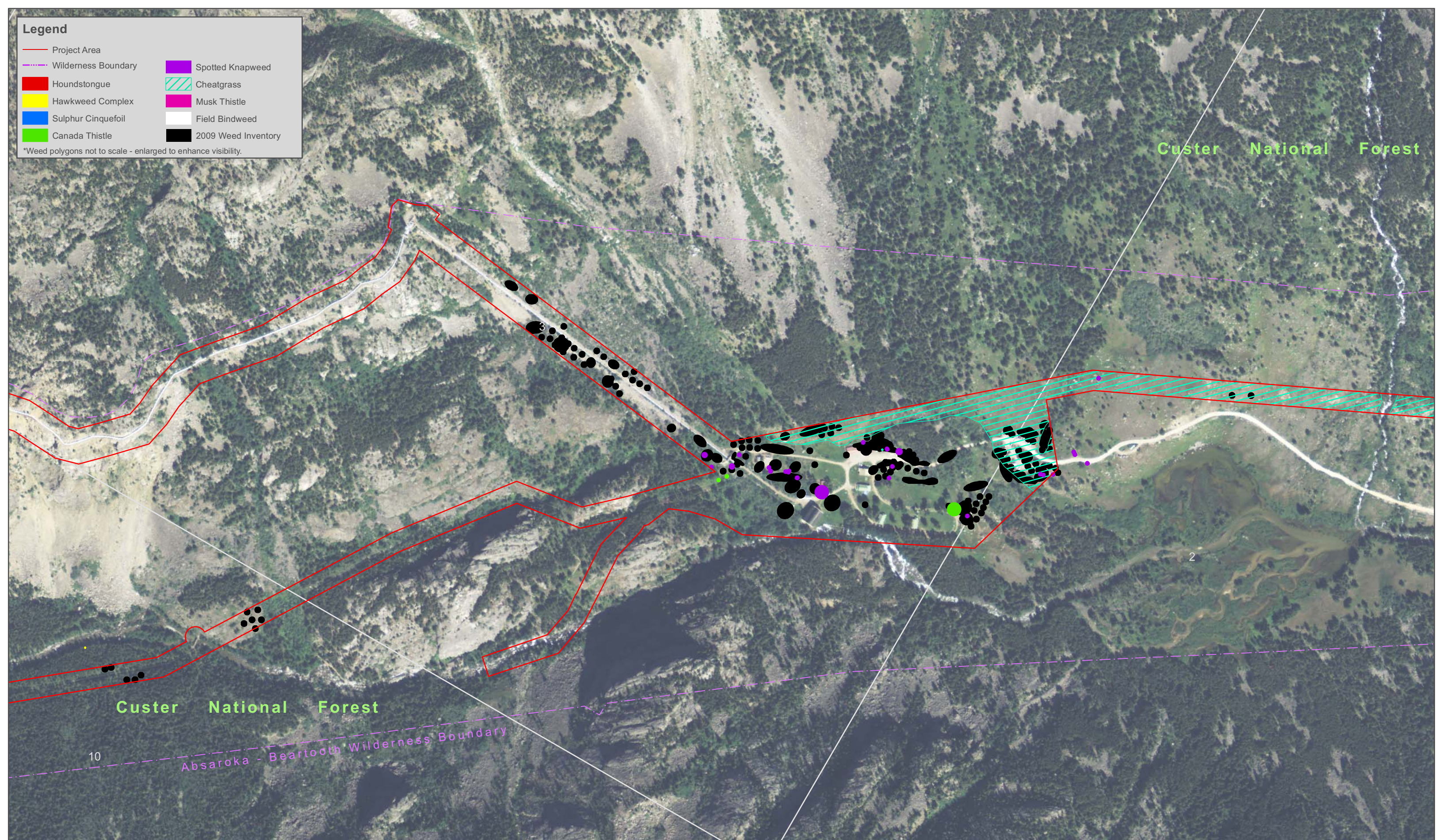
*Weed polygons not to scale - enlarged to enhance visibility.



Legend

- Project Area
- - - Wilderness Boundary
- Houndstongue
- Hawkweed Complex
- Sulphur Cinquefoil
- Canada Thistle
- Spotted Knapweed
- ▨ Cheatgrass
- Musk Thistle
- Field Bindweed
- 2009 Weed Inventory

*Weed polygons not to scale - enlarged to enhance visibility.



Custer National Forest

Custer National Forest

Absaroka - Beartooth Wilderness Boundary

 Ecosystem Research Group
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PPL Montana
Mystic Lake
HYDROELECTRIC PROJECT

2014 Weed Inventory

West Rosebud Creek
Stillwater County, Montana

Projection: Montana State Plane NAD 83
*Data from Montana Natural Resource Information System (NRIS),
New Wave Environmental Consulting, and
Ecosystem Research Group (ERG).

0 500 1,000 2,000 Feet



Map 2 of 6

Drawn By: Travis Benton
Checked by: Kristi Webb
Date: 10/01/2014

Exhibit 4

Legend

- Project Area
- - - Wilderness Boundary
- Houndstongue
- Hawkweed Complex
- Sulphur Cinquefoil
- Canada Thistle
- Spotted Knapweed
- ▨ Cheatgrass
- Musk Thistle
- Field Bindweed
- 2009 Weed Inventory

*Weed polygons not to scale - enlarged to enhance visibility.

Absaroka - Beartooth Wilderness Boundary

Custer National Forest

Custer National Forest

West Rosebud Lake

Emerald Lake

 Ecosystem Research Group
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PPL Montana
Mystic Lake
HYDROELECTRIC PROJECT
2014 Weed Inventory

West Rosebud Creek
Stillwater County, Montana

Projection: Montana State Plane NAD 83
*Data from Montana Natural Resource Information System (NRIS),
New Wave Environmental Consulting, and
Ecosystem Research Group (ERG).

0 500 1,000 2,000 Feet



Map 3 of 6

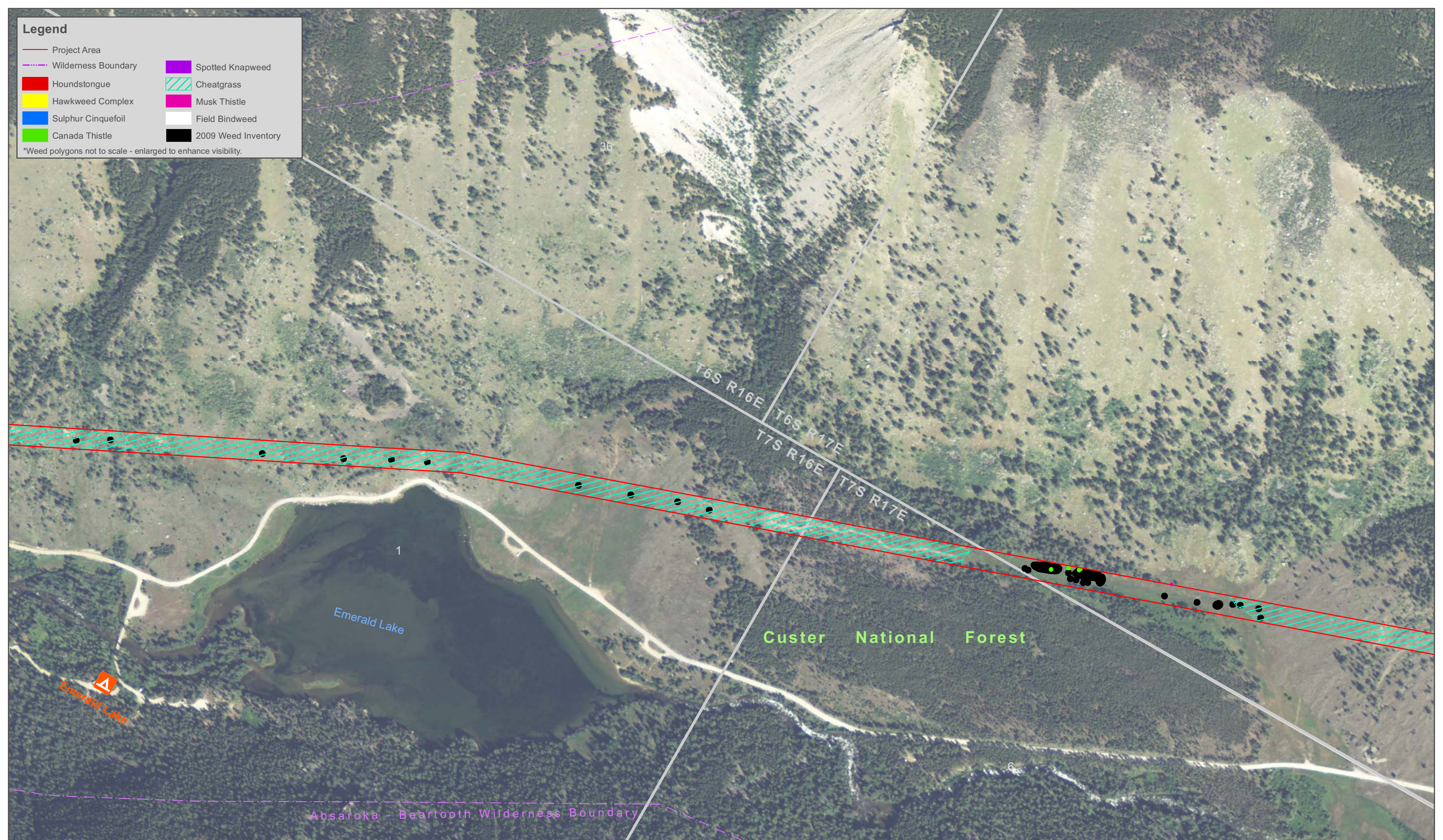
Drawn By: Travis Benton
Checked by: Kristi Webb
Date: 10/01/2014

Exhibit 5

Legend

- Project Area
- - - Wilderness Boundary
- Houndstongue
- Hawkweed Complex
- Sulphur Cinquefoil
- Canada Thistle
- Spotted Knapweed
- ▨ Cheatgrass
- Musk Thistle
- Field Bindweed
- 2009 Weed Inventory

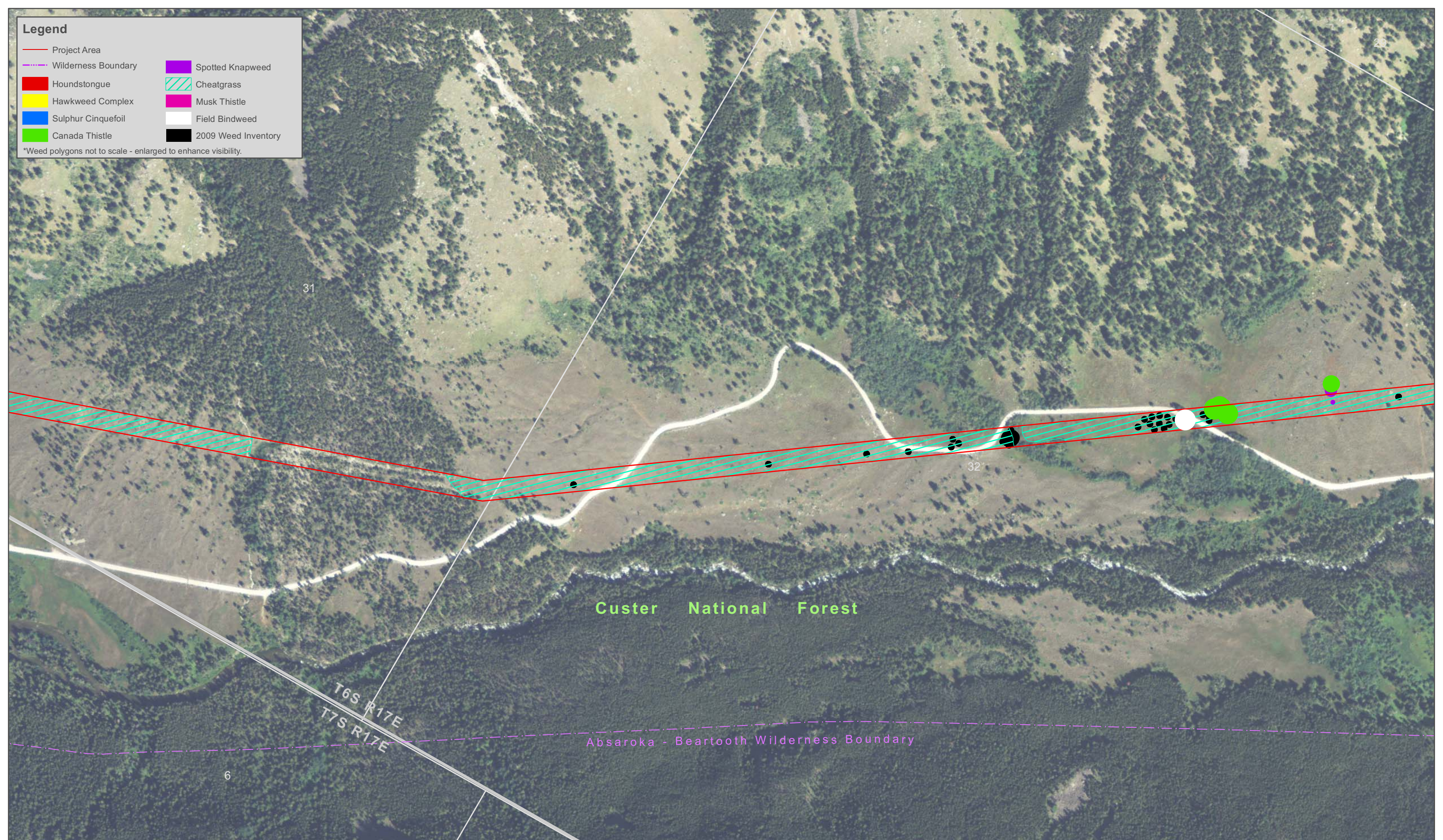
*Weed polygons not to scale - enlarged to enhance visibility.



Legend

- Project Area
- - - Wilderness Boundary
- Houndstongue
- Hawkweed Complex
- Sulphur Cinquefoil
- Canada Thistle
- Spotted Knapweed
- ▨ Cheatgrass
- Musk Thistle
- Field Bindweed
- 2009 Weed Inventory

*Weed polygons not to scale - enlarged to enhance visibility.



Legend

- Project Area
- - - Wilderness Boundary
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- Spotted Knapweed
- Cheatgrass
- Musk Thistle
- Field Bindweed
- 2009 Weed Inventory

*Weed polygons not to scale - enlarged to enhance visibility.

