



# Ecosystem Sciences

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## **MEMORANDUM**

**TO:** Steve Marmon (Whitewater Eng), Laura Conway (USFS), Erik Eneboe (State of Montana), Nora Taylor and John Simons (BLM), Larry Hoffman and Paul Wick (Montana Weed Control Association)

**FROM:** Tim Maguire

**DATE:** 6/18/08

**SUBJECT:** Gibson Dam Hydroelectric Project FERC NO. P-12478-002  
Special Status Plant/Noxious Weed Survey Plan

The attached document describes the Gibson Dam Hydroelectric Project FERC NO. P-12478-002 special status plant/noxious weed survey plan. The methods used to survey the project area are contained within the document. Final methods used and geographic locations of specific sample areas will be contained in the final report. The survey will take place from July 9<sup>th</sup> – 16<sup>th</sup>, 2008. I envision spending the entire week in the project area. If anyone would like to meet with me during the survey please contact me via cell phone (208 871 1688), as I will not be checking email regularly that week. Please feel free to comment on the plan and provide input. Thank you all for your comments from May and for providing species lists.

Sincerely,

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## **SPECIAL STATUS PLANT/NOXIOUS WEED SURVEY PLAN**

### **Gibson Dam Hydroelectric Project FERC NO. P-12478-002**

**Date: June 17<sup>th</sup>, 2008**

Construction activities (e.g. powerhouse, maintenance building, transmission line, and transformation substation) related to the Gibson Dam Hydroelectric Project (FERC NO. P-12478-002) may disturb vegetation communities within the project area. Such activities have the potential to negatively affect threatened, endangered and sensitive species (T, E & S) and exacerbate the spread of noxious weeds located within the project area. Therefore, the goal of this study is to document the presence/absence of T, E & S species and noxious weeds within the project area, focusing primarily on areas that will be disturbed during construction activities. The results of this study will detail the presence or absence of T, E & S species and noxious weeds within the project area. If T, E & S species or noxious weeds are encountered during the study, their geographic location, abundance and potential extent will be documented. The rationale and need for this study are described in the Final Minutes Agency Scoping Meeting (GDHC 2006) and Scoping Document 2 (GDHC 2007) as well as mandated by the United States Department of the Interior (USDI 2005) and Federal Energy Regulatory Commission (FERC).

### **PROJECT AREA LOCATION AND DESCRIPTION**

The Gibson Dam Hydroelectric Project is located in Lewis and Clark and Teton counties in northwest Montana. The project area encompasses approximately 650 acres. The majority of the project area consists of a 25 mile long transmission line route and its associated 197 foot (60 meter) buffer (Figure 1). The transmission line extends east from Gibson Dam 25 miles to Highway 287 (Figure 1) and is known as the Jackson's Corner alternative (GDHC 2008).

The Gibson Dam Hydroelectric Project area ranges in elevation from near 4,840ft at Gibson Dam to below 4,200ft near Jackson's Corner, the terminus of the transmission line. The project area consists of a mix of vegetation types (Table 1) primarily dominated by grasslands (59.4%), Forest lands (17.4%) and agricultural lands (11.9%)(Table 2)(Fisher et al.1998). The remaining 11% of the project area consists of a mixture of shrublands, barren lands, riparian areas and water (Table 2). Most cover types (Table 2) and vegetation communities (Table 1) will be sampled during the study. Vegetation and cover types were mapped by Fisher et al. (1998) as part of the Montana Gap Analysis Project. Fisher et al. (1998) provides a description of each vegetation type documenting its dominant species, range, and elevational limits. Such information facilitates field surveys by identifying common species and vegetation types that could potentially contain T, E & S species and noxious weeds.

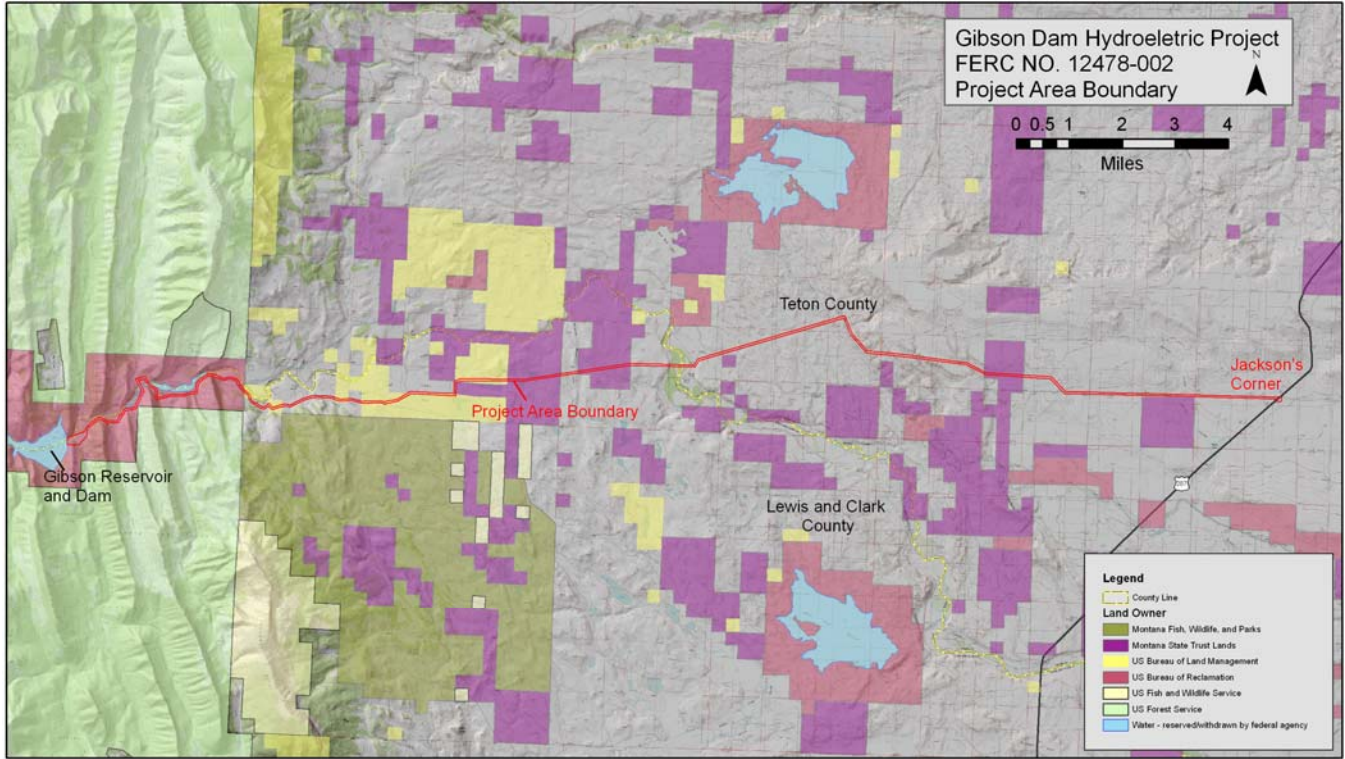


Figure 1. Gibson Dam Hydroelectric Project FERC NO. 12478-002 Project Area.

Table 1. Montana Gap Vegetation and Cover Type acreage and Percent of Project Area

Gap Vegetation Type Name	Gap Cover Type	Acres	% of Project Area
Mixed Riparian	Riparian	1.1	0.2
Conifer Riparian	Riparian	1.2	0.2
Agricultural Lands - Irrigated	Urban and Agricultural Lands	1.6	0.2
Mixed Xeric Shrubs	Shrublands	3.1	0.5
Douglas-fir/Lodgepole Pine	Forest Lands	3.6	0.6
Rock	Barren Lands	3.6	0.6
Mixed Mesic Forest	Forest Lands	3.8	0.6
Mixed Broadleaf Forest	Forest Lands	5.1	0.8
Lodgepole Pine	Forest Lands	5.2	0.8
Water	Water	5.5	0.8
Shrub Riparian	Riparian	5.5	0.8
Sagebrush	Shrublands	6.2	1.0
Mixed Subalpine Forest	Forest Lands	9.2	1.4
Limber Pine	Forest Lands	14.2	2.2
Mixed Barren Sites	Barren Lands	15.1	2.3
Mixed Mesic Shrubs	Shrublands	30.2	4.7
Douglas-fir	Forest Lands	36.5	5.6
Mixed Xeric Forest	Forest Lands	37.2	5.7
Agricultural Lands - Dry	Urban and Agricultural Lands	75.6	11.7
Low/Moderate Cover Grasslands	Grasslands	384.8	59.4
<b>Total</b>		<b>648.3</b>	<b>100</b>

**Table 2. Summary of GAP Cover Type acreage and Percent of Project Area**

<b>Gap Cover Type</b>	<b>Acres</b>	<b>% of Project Area</b>
Water	5.5	0.8
Riparian	7.8	1.2
Barren Lands	18.7	2.9
Shrublands	39.5	6.1
Urban and Agricultural Lands	77.2	11.9
Forest Lands	114.9	17.7
Grasslands	384.8	59.4
<b>Total</b>	<b>648.3</b>	<b>100</b>

## **METHODS - DETAILED FIELD SURVEY**

The project area traverses Bureau of Reclamation (BOR), Forest Service (USFS), Bureau of Land Management (BLM), Montana State Lands, and private land before terminating at Jackson’s Corner (Figure 1). The initial step for the T, E & S/noxious weed survey is to research suitable habitats for each plant species (Table 1). This step familiarizes surveyors with the most likely areas for species occurrences. Once suitable habitats for plants are understood, a detailed field survey will be conducted to determine the presence or absence of T, E & S species and noxious weeds. The goal of the survey is to document T, E & S species/noxious weed locations, abundance, and spatial extent within the project area.

The detailed field survey of the Gibson Hydroelectric Project area will focus primarily on zones potentially disturbed during construction activities: the powerhouse, maintenance building, transmission line, and transformation substation and staging areas (Table 3). To thoroughly sample potential construction areas, a mixture of intuitive controlled survey methods (Hibler and O’Dell 1998), transects and intensive 1m x 1m plots will be employed (Table 3). Intuitive controlled inventories are particularly effective when performed over a large area (greater than 2.47 acres) (Hibler and O’Dell 1998). With this method a surveyor uses meander transects (survey lines) determined during pre-field planning and in the field based on habitat communities, site condition, topography, and the experience and judgment of the surveyors. Construction staging areas for the powerhouse, control /maintenance building and transformation substation will be sampled using intuitive controlled inventories (Table 3). The course of the transmission line, although linear and narrow in width, intersects a mixture of habitats that may contain T, E & S species as well as noxious weeds. The transmission line contains underground sections that will require excavation and above ground sections that may incorporate new poles, updating of existing poles and removal of old poles, thus a mix of transects and 1m x 1m intensive sample plots will be used. Underground sections within the Sun River Canyon will be traversed in their entirety using meander transects. Intensive sample plots will record all species present within the 1m x 1m frame and will primarily be employed at new/updated/removed pole locations. A detailed description of all methods and geographic location of survey areas will be provided in the Final Report – Results of the Survey.

If a T, E & S species or noxious weed is located within the project area its geographic location (GPS point), relative extent (polygon) and abundance (number of plants) will be recorded. The geographic location and spatial extent will be recorded in a GPS (Garmin Colorado 300) and disseminated as ESRI shapefiles. The geographic location is most important to the future of the Gibson Dam Hydroelectric Project as project proponents may have to alter construction activities or mitigate for the loss of any T, E & S plant species.

Tables 4 and 5 depict T, E & S species and noxious weeds that could potentially reside within the project area (Montana Natural Heritage Program 2008). Appendix A contains a complete list of T, E & S species (Table A1)

and noxious weeds (Table A2) that are known to occur in the vicinity of the project area. These lists are compilations of species lists provided by members of the USFS, BLM and Montana State Lands.

### FINAL REPORT: RESULTS OF SURVEY

Following the field survey, a report detailing the findings of the survey will be produced. The final report will document the presence/absence of T, E & S species and noxious weeds within the project area, methods employed and a discussion of the results. For those areas in which a T, E & S species or noxious weed is detected, the geographic location, spatial extent and abundance (number of plants within plots) will be documented.

**Table 3. Gibson Dam Hydroelectric Project construction components and potential sample areas (GDHC 2008).**

Project Component	Location	Sample Area (proposed technique)	Notes
Powerhouse	Base of Gibson Dam.	Staging area near base of Dam (intuitive controlled inventories).	Powerhouse will be constructed in existing tailrace thus minimal disturbance to existing vegetation.
Control/Maintenance Building	East of Beaver Creek and existing road approximately 4500sq. ft. in area.	Adjacent to existing BOR maintenance facility (intuitive controlled inventories).	Area presently disturbed due to existing facilities.
Transmission Line	25.84 miles extending from Gibson Dam to Jackson's Corner.	Sample entire underground line in canyon and portions of underground line outside canyon. Sample new/updated or removed pole locations (mix of transects and 1m x 1m plots).	The 197ft (60m) buffer of the transmission line route will be the primary area for sampling.
Transformation Substation (BLM Substation)	4.86 miles east of USFS boundary.	Location where transmission line transitions from underground to above ground (intuitive controlled inventories).	5000sq. ft. in area includes substation and staging area.
Temporary Construction Staging Area	East Of Beaver Creek near proposed Control/Maintenance Building.	Location where construction vehicles and material will be stored (Intuitive controlled inventories).	Two staging areas; one 3 acre parcel and one 1 acre parcel.

**Table 4. Sample T, E & S species known to occur in project area vicinity.\*** (For full list see Appendix A)

Common Name	Scientific Name	Phenology
Giant Helleborine	<i>Epipactis gigantea</i>	Flowers late June – August
Macoun's Gentian	<i>Gentianopsis macounii</i>	Flowers in August
Round-leaved Orchid	<i>Amerorchis rotundifolia</i>	Flowers June – July
Sparrow's-egg lady's Slipper	<i>Cypripedium passerium</i>	Flowers June – July

\*Phenology information derived from the Montana Field Guide (<http://fieldguide.mt.gov/>).

**Table 5. Sample Noxious weeds know to occur project area vicinity.\*** (For full list see Appendix A)

County	Common Name	Scientific Name
Lewis and Clark	Burdock	<i>Arctium minus</i>
	Common Mullein	<i>Verbascum thapsus</i>
Teton	Musk Thistle	<i>Cardus nutans</i>

\*Data derived from the Montana Department of Agriculture's Noxious Weed Program (<http://agr.mt.gov/weedpest/noxiousweeds.asp>).

If a special status plant is documented within a construction zone, the final report will contain a recommended construction alternative and/or mitigation action section. Additionally, the final report will contain a section outlining strategies for minimizing the spread of noxious weeds that occur in the project area.

## LITERATURE CITED

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## APPENDIX A. T, E & S SPECIES AND NOXIOUS WEED LISTS

**Table A1. Potentially occurring T, E & S Species list** (Provided by Laura Conway of the USFS and Nora Taylor and John A. Simons of the BLM\*)

Common Name	Genus	Species	Var or Spp.
Alpine meadowrue	<i>Thalictrum</i>	<i>alpinum</i>	
Austin's knotweed	<i>Polygonum</i>	<i>douglasii</i>	<i>ssp. Austinae</i>
Barratt's willow	<i>Salix</i>	<i>barrattiana</i>	
Blunt-leaved pondweed	<i>Potamogeton</i>	<i>obtusifolius</i>	
Long-styled thistle	<i>Cirsium</i>	<i>longistylum</i>	
Crawe's sedge	<i>Carex</i>	<i>crawei</i>	
English sundew	<i>Drosera</i>	<i>anglica</i>	
Five-leaved cinquefoil	<i>Potentilla</i>	<i>quinquefolia</i>	
Giant helleborine	<i>Epipactis</i>	<i>gigantea</i>	
Geyer's milkvetch	<i>Astragalus</i>	<i>geyeri</i>	
Hall's rush	<i>Juncus</i>	<i>hallii</i>	
Lackschewitz' fleabane	<i>Erigeron</i>	<i>lackschewitzii</i>	
Lackschewitz' milkvetch	<i>Astragalus</i>	<i>lackschewitzii</i>	
Linear-leaved sundew	<i>Drosera</i>	<i>linearis</i>	
Macoun's gentian	<i>Gentianopsis</i>	<i>macounii</i>	
Missoula phlox	<i>Phlox</i>	<i>kelseyi</i>	<i>var. missoulensis</i>
Northern rattlesnake-plantain	<i>Goodyera</i>	<i>repens</i>	
Northern wild-rye	<i>Elymus</i>	<i>innovatus</i>	
Peculiar moonwort	<i>Botrychium</i>	<i>paradoxum</i>	
Round-leaved orchis	<i>Amerorchis</i>	<i>rotundifolia</i>	
Short-styled columbine	<i>Aquilegia</i>	<i>brevistyla</i>	
Slender-branched popcorn flower	<i>Plagiobothrys</i>	<i>leptocladus</i>	
Small clubrush	<i>Trichophorum</i>	<i>pumilum</i>	<i>Scirpus pumilis var. rollandii</i>
Small yellow lady's-slipper	<i>Cypripedium</i>	<i>parviflorum</i>	
Sparrow's-egg lady's-slipper	<i>Cypripedium</i>	<i>passerinum</i>	
Square-stem monkeyflower	<i>Mimulus</i>	<i>ringens</i>	
Stalked-pod crazyweed	<i>Oxytropis</i>	<i>podocarpa</i>	
Upward-lobed moonwort	<i>Botrychium</i>	<i>ascendens</i>	
Water bulrush	<i>Scirpus</i>	<i>subterminalis</i>	
Worm moss	<i>Scorpidium</i>	<i>scorpioides</i>	

\*Only species known to occur within the Lewistown Field Office management area are presented here.

**Table A2. Potentially occurring noxious weed list** (Provided by Erik Eneboe with the State of Montana and John A. Simons of the BLM)

<b>Common Name</b>	<b>Genus</b>	<b>Species</b>
Blueweed	<i>Echium</i>	<i>vulgare</i>
Burdock	<i>Articum</i>	<i>minus</i>
Canada thistle	<i>Cirsium</i>	<i>arvense</i>
Common Crupina	<i>Crupina</i>	<i>vulgaris</i>
Common Tansy	<i>Tanacetum</i>	<i>vulgare</i>
Dalmatian Toadflax	<i>Linaria</i>	<i>dalmatica</i>
Diffuse Knapweed	<i>Centaurea</i>	<i>diffusa</i>
Dyers Woad	<i>Isatis</i>	<i>tinctoria</i>
Eurasian Watermilfoil	<i>Myriophyllum</i>	<i>spicatum</i>
Field Bindweed	<i>Convolvulus</i>	<i>arvensis</i>
Flowering Rush	<i>Butomus</i>	<i>umbellatus</i>
Hoary Alyssum	<i>Berteroa</i>	<i>incana</i>
Houndstongue/Gypsyflower	<i>Cynoglossum</i>	<i>officinale</i>
Japenese Knotwood Complex	<i>Polygonum</i>	<i>cuspidatum, sachlinense, polystachyum</i>
Leafy Spurge	<i>Euphorbia</i>	<i>esula</i>
Meadow Hawkweed Complex	<i>Hieracium</i>	<i>- pretense, floribundum, piloselloides</i>
Mullein	<i>Verbascum</i>	<i>thapsus</i>
Musk or Nodding Plumless Thistle	<i>Carduus</i>	<i>nutans</i>
Orange Hawkweed Complex	<i>Hieracium</i>	<i>aurantiacum</i>
Oxeye Daisy	<i>Chrysanthemum</i>	<i>eucanthemum</i>
Perennial Pepperweed	<i>Lepidium</i>	<i>latifolium</i>
Purple Loosestrife	<i>Lythrum</i>	<i>salicaria, virgatum, and all hybrid crosses</i>
Rush Skeletonweed	<i>Chondrilla</i>	<i>juncea</i>
Russian Knapweed	<i>Centaurea</i>	<i>repens</i>
Saltcedar/Tamarisk	<i>Tamarix</i>	<i>spp.</i>
Scotch Broom	<i>Cytisus</i>	<i>scoparius</i>
Spotted Knapweed	<i>Centaurea</i>	<i>biebersteinii, maculosa</i>
St. Johnswort	<i>Hypericum</i>	<i>perforatum</i>
Sulfur Cinquefoil	<i>Potentilla</i>	<i>recta</i>
Tall Buttercup	<i>Ranunculus</i>	<i>acris</i>
Tansy Ragwort	<i>Senecio</i>	<i>jacobaea</i>
White Knapweed	<i>Centaurea</i>	<i>diffusa</i>
Whitetop Complex	<i>Cardaria</i>	<i>draba, pubescens, chalapensis</i>
Yellow Flag Iris	<i>Iris</i>	<i>pseudoacorus</i>
Yellow Mignonette	<i>Reseda</i>	<i>lutea</i>
Yellow Starthistle	<i>Centaurea</i>	<i>solstitialis</i>
Yellow Toadflax	<i>Linaria</i>	<i>vulgaris</i>