Genesee Generating Station: Units 4 and 5 Environmental Overview Report

An Environmental Overview Report prepared for Capital Power Corporation in relation to their proposed expansion of the Genesee Generating Station

Prepared for:
Capital Power Corporation

Prepared by:
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October 2013
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Sign-off Sheet

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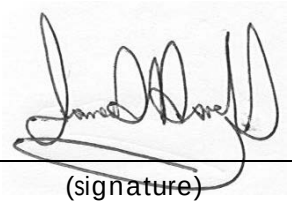
Reviewed by  _____
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1.0 Introduction

Capital Power has retained Stantec Consulting Ltd. (Stantec), to complete an Environmental Overview Report for the proposed Genesee Generation Station Units 4 and 5 Project (the Project). The Project is to be located on a brownfield site along Highway 770, within the SE¼ of Section 25, Township 50, Range 3, West of the 5th Meridian (see Figure 1).

This report provides a description of the current state of the environment in the project area. The report is based upon review of desktop sources relevant to the Project, including past assessments of land use and natural resource use, terrain and soils, hydrology, vegetation, wildlife, and fish and fish habitat. A site visit was conducted September 11, 2013, to supplement and verify the information collected for the Project.

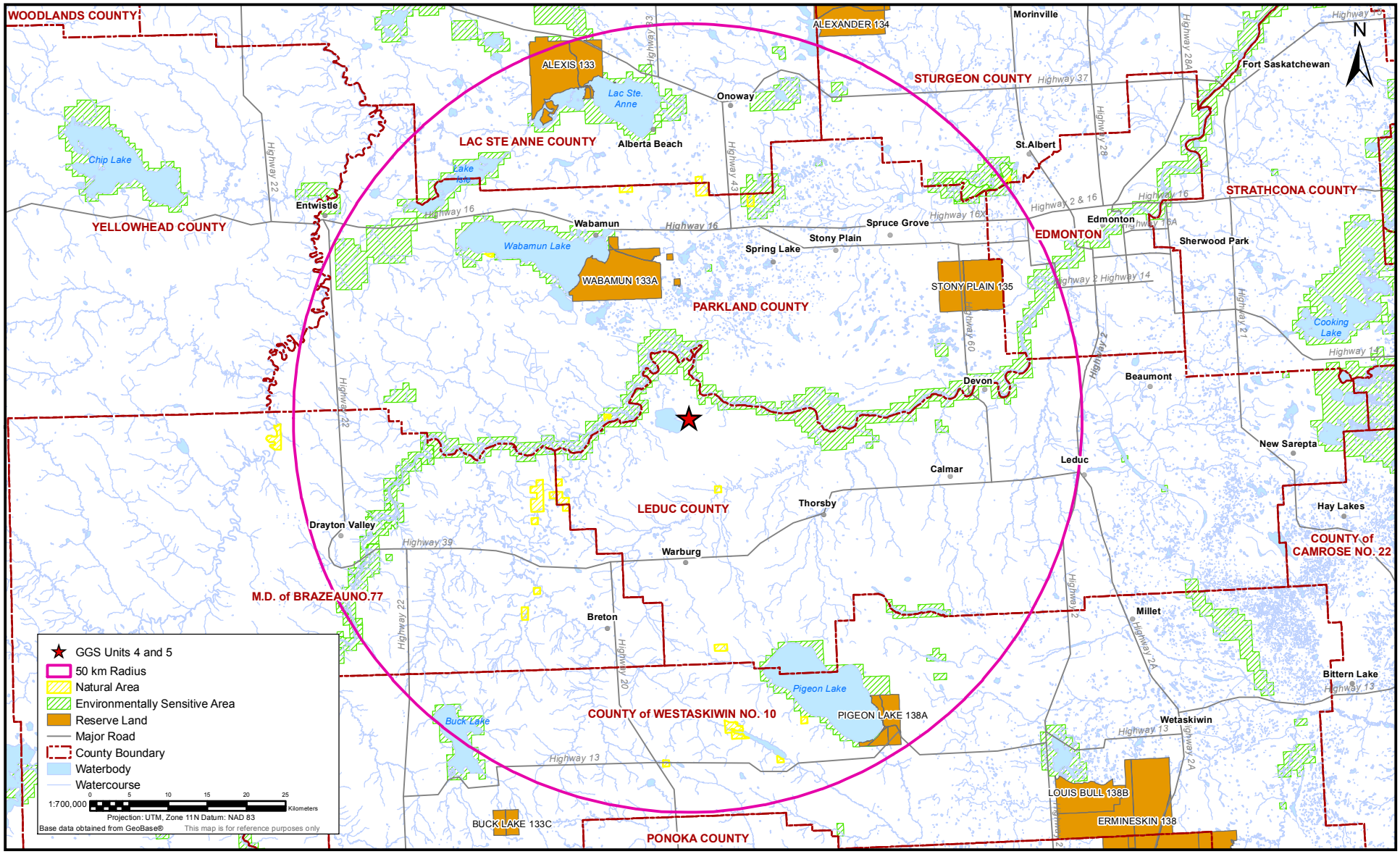
1.1 REGULATORY FRAMEWORK

Various acts, regulations, guidelines and permits may apply to the Project. A summary of these environmental regulatory requirements is provided in Table 1. This list is not designed to be an exhaustive list of all regulatory requirements, but rather a guide to those most common and applicable to the Project.

Table 1 Acts and Regulations that Apply to the Project

Legislation/Regulation	Overseeing Agency	Comments
Municipal Authority		
Land Use Bylaw (Bylaw No. 07-08)	Leduc County	This Bylaw is intended to regulate and control the use of lands and buildings in order to achieve orderly and economic development in the County, consistent with the provisions of the Municipal Development Plan and other statutory plans.
Provincial Authority		
Environmental Protection and Enhancement Act (EPEA)	Alberta Environment and Sustainable Resource Development (ESRD)	EPEA governs all issues related to the environment and is designed to support and promote the protection, enhancement and wise use of the environment. Numerous regulations, Codes of Practice and standards and guidelines are associated with the Act.

Legislation/Regulation	Overseeing Agency	Comments
Provincial Authority (con't)		
Hydro and Electric Energy Act (*HEE Act)*	Alberta Utilities Commission (AUC)	Rule 007 governs the construction or alteration and operation of power plants, substations, transmission lines, and industrial system designations, pursuant to the *HEE Act*, and for approvals of a Needs Identification Document (NID) in accordance to the *Electric Utilities Act* (*EU Act*) and Transmission Regulation. It is designed to protect social, economic and environmental interests of Alberta where competitive market forces do not.
Federal Authorities		
Migratory Birds Convention Act (MBCA)	Environment Canada	The *MBCA* applies to all lands in Canada and prohibits disturbance to migratory birds, their nests or eggs
Species at Risk Act (SARA)	Environment Canada	The *SARA* contains prohibitions that make it an offence to kill, harm, harass, capture or take an individual of a species listed in Schedule 1 of *SARA* as Endangered, Threatened or Extirpated. On private land, these prohibitions apply only to aquatic species listed in Schedule 1 and migratory birds listed in the Migratory Birds Convention Act and listed in Schedule 1.
Fisheries Act	Fisheries and Oceans Canada	The *Fisheries Act* was established to manage and protect Canada's fisheries resources. The *Fisheries Act* governs all fishing zones, territorial seas and inland waters of Canada and is binding to federal, provincial and territorial governments.
Canadian Environmental Assessment Act (*CEA Act*)	Canadian Environmental Assessment Agency (CEA Agency)	The *CEA Act* governs issues related to projects with potential adverse environmental effects that are within federal jurisdiction including; fish and fish habitat and other aquatic species; migratory birds; federal lands; effects that cross provincial or international boundaries; effects that impact on Aboriginal peoples; changes to the environment that are directly linked to or necessarily incidental to any federal decisions about a project.



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Client/Project
CAPITAL POWER CORPORATION
GENESEE GENERATING
STATION EXPANSION

Figure No.
1

Title
REGIONAL SETTING OF THE PROJECT

2.0 Environmental Overview Methods

A desktop review and site visit of the project area was conducted to identify potential environmental considerations relevant to the Project. Readily available reports, maps, and databases were reviewed for relevant information and for inclusion in the environmental overview. Potential adverse environmental effects of the Project were identified through consideration of the interactions between the Project and the environment.. Mitigation strategies that could be implemented were then identified to limit these effects.

2.1 DESKTOP REVIEW

The desktop review involved review or queries of:

- Previous environmental assessments (e.g., the Genesee Mine Extension Project);
- Results of the 2012 Christmas bird count;
- Published literature and maps;
- Species At Risk Public Registry;
- Alberta Conservation Information Management System (ACIMS) (Appendix A); and
- Fish and Wildlife Management Information System (FWMIS) (Appendix B).

2.2 ACIMS AND FWMIS DATABASE SEARCH

A search for known occurrences of listed plants, plant communities, and invertebrates in the project area was conducted through ACIMS (Alberta Tourism, Parks and Recreation, 2012). Known occurrences of wildlife and fisheries species of management concern, and wildlife management areas, within 5 km of the project area were retrieved through the FWMIS Internet Mapping Tool (Alberta Environment and Sustainable Resource Development, 2012).

All species of conservation concern identified via the ACIMS database inquiry were summarized using desktop literature sources; Subnational Status Rank (S_Rank) definitions were provided by the ACIMS. Wildlife species of management concern identified via the FWMIS database were described using desktop literature sources. Provincial ranking classes are: Sensitive, May be at Risk and At Risk (Alberta Environment and Sustainable Resource Development, 2012). The *SARA* was also reviewed to assess the status/ranking of the potential species that could be present within the project area. Table 2 provides a complete list of the conservation status definitions of listed species residing within Alberta.

Table 2 Definitions of Alberta's General Status Categories[1]

Status Rank		Definition
S1	At Risk	Any species known to be at risk after formal detailed status assessment and legal designation as *Endangered* or *Threatened* in Alberta.
S2	May Be At Risk	Any species that may be at risk of extinction or extirpation, and is therefore a candidate for detailed risk assessment.
S3	Sensitive	Any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk.
S4	Apparently Secure	Potentially some cause for long term concern due to declines or other factors. Taxon is uncommon but not rare.
S5	Secure	Taxon is common, widespread, and abundant.
SU	Undetermined	Any species for which insufficient information, knowledge or data is available to reliably evaluate its general status.
SRN	Not Assessed	Any species that has not been examined during this exercise.
SNA	Exotic/Alien	Any species that has been introduced as a result of human activities.
SX	Extirpated/Extinct	Any species no longer thought to be present in Alberta (*Extirpated*) or no longer believed to be present anywhere in the world (*Extinct*).

[1] (Alberta Sustainable Resource Development, 2011)

2.3 SITE VISIT

A site visit was conducted on September 11, 2013. Capital Power and Stantec personnel visually inspected the project site, Genesee Cooling Pond (the cooling pond), and intake/outfall on the North Saskatchewan River (NSR). The objective of the site visit was to observe groundcover, including signs of weed presence, potential contamination, and presence of wildlife habitat. General notes on vegetation species, site drainage, and water features were taken, and photographs collected. During the course of the site visit, incidental wildlife observations and wildlife habitat features were also recorded.

3.0 Current State of the Environment

The project area is located within the Dry Mixed Woods Subregion of the Boreal Forest Region of Alberta (Natural Regions Committee, 2006). This Subregion is characterized by aspen forests and cultivated lands, with fens commonly found in low lying areas. Porcupine grass (*Stipa spartea var. curtiseta*), June grass (*Koeleria macrantha*), sedges and pasture sagewort (*Artemisia frigida*) are commonly found on steep slopes, while in areas where moisture is more abundant slender wheat grass (*Agropyron trachycaulum*) is more abundant. Saskatoon-buckbrush (*Amelanchier alnifolia*) communities are found in ravines, gullies or other lower slope positions. Dry areas of the subregion are primarily dominated by jack pine (*Pinus banksiana*) stands with lichen understories, while somewhat wetter areas can experience mixed or pure stands of jack pine (*Pinus banksiana*), aspen (*Populus tremuloides*), and white spruce (*Picea glauca*), with understories including bearberry (*Arctostaphylos uva-ursi*), common blueberry (*Vaccinium myrtilloides*), green alder (*Alnus crispa*), prickly rose (*Rosa acicularis*), wild lily-of-the-valley (*Maianthemum canadense*) and hairy wild rye (*Elymus villosus*). On rich sites with more moisture, balsam poplar (*Populus balsamifera*), aspen (*Populus tremuloides*), and white spruce (*Picea glauca*) occur in mixed stands. Understories in these areas include red-osier dogwood (*Cornus stolonifera*), prickly rose (*Rosa acicularis*) and herbaceous species found in deciduous or mixed-wood stands and feather mosses and horsetails (*Equisetum arvense*), in coniferous stands.

Given the high level of existing disturbance in the project area and agronomic species cover, the land in the immediate vicinity of the Project is considered to have low habitat value for wildlife, and limited potential to host rare plant species. Furthermore, the Project location is a brownfield site that was previously disturbed as part of construction of the Genesee Phase 3 Project (2001-2005). The Project, itself, is located within the fence line of the existing Genesee Generation Station (GGS) and thus also has a very low habitat value for wildlife, and limited potential to host rare plant species.

3.1 TERRAIN AND SOILS

The topography in the general area varies from flat to gently rolling and slopes in a north-easterly or in a north-westerly direction (EPCOR Utilities Inc., 2001). Slopes in the region typically range from 0 to 30%. Elevation drops from 825 m ASL in the southwest of the general Genesee area, to 660 m ASL on the floodplain of the NSR (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). The project site sits at approximately 735 m ASL and is flat.

The project area and surrounding region is underlain by Paleocene shale, sandstone, and siltstone formations with coal beds of late Cretaceous and early Tertiary age (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). Local surficial geology is described as undulating to hummocky with fine-textured soils (clays and silts) on local till, flat to undulating till with minor amounts of water-sorted materials, ridged or irregular hills/depressions on till or water-sorted materials, and eroded streams and slopewash comprised of exposed till, bedrock, or colluvium.

The project area is located in a transitional region between Black Chernozems and Gray Luvisols (EPCOR Utilities Inc., 2001). The dominant native soils at the project site are Dark Gray Luvisols, Humic Gleysols, and Mesisols (EPCOR Utilities Inc., 2001). However, the project site is currently underlain by fill and replaced topsoil, since native soils had been salvaged when the site was prepared during construction (2001-2005) of the Genesee Phase 3 Project (Unit 3).

3.2 HYDROLOGY

The proposed expansion lies in the basin of Genesee Creek (EPCOR Utilities Inc., 2001). The only watercourses or waterbodies in the immediate vicinity of the Project are the cooling pond, sewage lagoon, and effluent settling pond associated with the existing GGS, as well as some open water wetlands to the north and south of the Project (Figure 2).

Surface runoff from the immediate area collects in small depressions and wetlands to the north and south of the Project, evaporates, or feeds into the cooling pond. All surface runoff from the current generation station and Project site is contained and enters the effluent settling pond prior to flowing into the cooling pond.

The Genesee Cooling Pond, built in 1980s, has a 2.6 km diameter, a surface area of 735 ha, a 3.5 m average depth, and holds 34 Mm^3 (Golder Associates, 2010). The cooling pond draws water from the NSR. Capital Power currently can divert up to 34.1 Mm^3 for the operation of the GGS. To maintain proper operation of the cooling pond, water is released directly to the NSR through a 900 mm pipeline. Returning water to the river is commonly referred to as “blowdown water”. The pipeline connecting the cooling pond to the outfall on the NSR is on the west side of the pond and operates under gravity flow only (Figure 3-1). The temperature of the cooling water released to the river is warmer that the river water. The river is 120 m wide at the pump house.

No additional diversion of water from the NSR is required for the Project beyond the volumes already permitted under the current Licences to Divert Water issued by ESRD for the existing GGS. The current approved annual withdrawal volume of 34.1 Mm^3 represents 0.5% of the NSR mean annual flow (Golder Associates, 2010). The annual volume of water to be released back into the river is expected to be reduced from current conditions once the Project starts operating due to additional evaporative losses. Since the expected net loss of water being released back into the NSR is anticipated to be small in comparison to mean annual flow, measurable changes in flow volume in the NSR is not expected.

3.3 VEGETATION

The majority of the lands around the project area and existing GGS have been cleared for agriculture (mostly cultivation with some pasturelands) with the remaining native vegetation comprised of aspen-dominated woodlots, scattered in isolated pockets throughout the project area. Bare groundcover dominates the project site with some agronomic species cover found on the eastern half of the site (Photos 1 to 4). A number of wetlands occur to the north, south, and east of the project site (Figure 2). The pond to the north of the north laydown area (60 m away) is a Class 4 wetland (dugout) and is covered by open water with cattails and bulrushes at

the margins. The wetlands between Highway 773 and the Project (40 m away) are Class 4 wetlands covered by open water, sedges, and cattails. The wetlands were created to provide stormwater control for the immediate area. The Class 4 wetlands complex to the south of the Project, similar to the north wetland, is covered by open water, cattails and bulrushes. Since surface runoff from the GGS is contained and directed to the stormwater pond, there is no hydrological connection between the project site and the nearby wetlands. No weed populations were observed during the site visit.

Photo 1: Looking southeast across the southwest portion of the power plant site

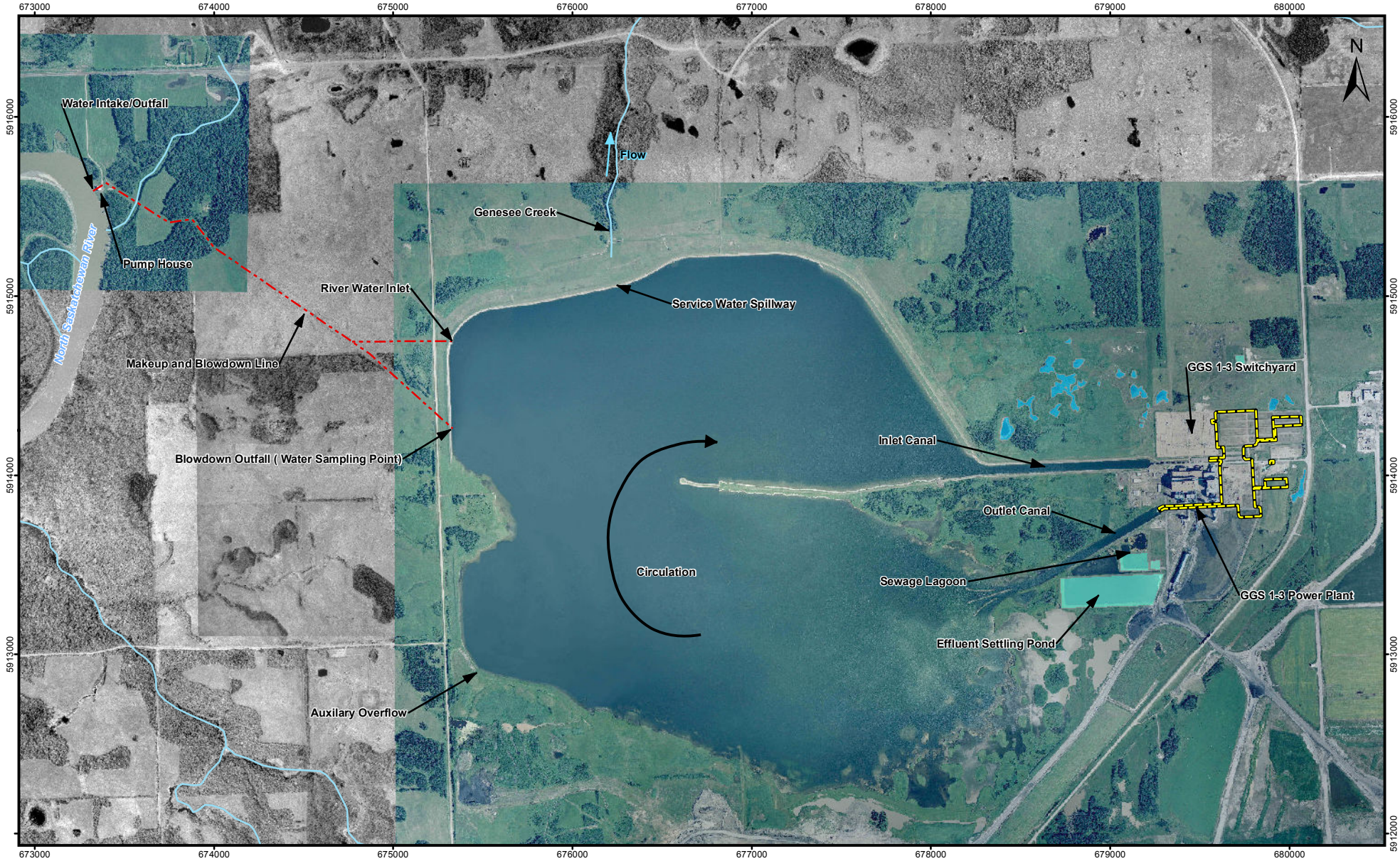
Photo 2: Looking northwest across the northern portion of the power plant site

Photo 3: Looking west across the center of the power plant site

Photo 4: Looking southeast across the southeastern portion of the power plant site

No federally listed plant species and no plants listed under the *Wildlife Act* for endangered species were found for the project area during the ACIMS search (Alberta Tourism, Parks and Recreation, 2012). This can be attributed to the amount of past disturbance to the site, which has reduced the potential for sensitive plant species to occur. However, there are plant species listed by the ACIMS, including golden saxifrage (*Chrysosplenium tetrandrum*) found in the Mine

Extension Area, and some nonvascular species including *Plagiomnium ciliare* and *Leptodictyum humile* found to the southwest of the project area (Alberta Environment and Sustainable Resource Development, 2012). The results of the ACIMS search found in Appendix A shows the location of these plant communities.



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Projection: UTM Zone 11 Datum: NAD 83
Imagery obtained from Alberta Sustainable Resource Development, 2011 and CPC, 2011.

- Limit of Construction
- Makeup and Blowdown Line
- Constructed Waterbody
- Wetland
- Watercourse

1:30,000

0 250 500 750 1,000 1,250 Meters

This map is for reference purposes only

Client/Project
CAPITAL POWER CORPORATION
GENESEE GENERATING
STATION EXPANSION

Figure No.
2

Title
WETLANDS IN THE VICINITY OF THE PROJECT

3.4 WILDLIFE

Although the project area has limited habitat value, native vegetation communities associated with the NSR valley system reside to the north of the project area and existing GGS. The NSR valley system is considered an important piece of high value habitat within the province and is a critical corridor for biodiversity preservation and wildlife movement (EPCOR Utilities Inc., 2001).

The NSR valley is a regionally unique ecotone providing a diversity of habitat supporting a wide range of resident and migratory species. The river valley forest community is structurally complex with coniferous species dominating the drier south-facing slopes and aspen-dominated deciduous communities occupying the wetter north-facing slopes. Differing age-classes of these mixed-wood stands creates various degrees of understory development and canopy closure providing ideal foraging and cover resources for both avian and terrestrial species. An intricate network of tributaries form the NSR watershed and further increase wildlife mobility and habitat availability in the area. The NSR is vital to biological conservation and ecological integrity.

In addition to wildlife studies conducted to support regulatory applications in 1989, 2001, and 2011, ongoing wildlife monitoring has occurred in Genesee area since 2005. This monitoring primarily focuses on overwintering waterbird activities associated with cooling ponds of the Genesee power facility, but also include peregrine falcon nesting, ungulate, small mammal, and amphibian monitoring. A list of wildlife species potentially occurring within the general area is provided Appendix C. This list also indicates the species observed during field surveys conducted to support Capital Power's previous development applications and monitoring requirements.

3.4.1 Amphibians

Amphibian surveys occur in the Genesee plant and mine area every five years, starting in 2005 as part of the biomonitoring program requirements stipulated in the current EPEA approval for the GGS (TransAlta Generation Partnership, 2011; TransAlta Utilities Corporation and EPCOR Utilities Inc., 2006). Capital Power observed boreal chorus frog (*Pseudacris maculate)*, wood frog (*Lithobates sylvaticus*), and Western toad (*Anaxyrus boreas*) in 2005 and 2010. Boreal chorus frogs and wood frogs are considered widespread due to the high number of observations and relative high amount of available habitat. Habitat for the Western toad (*e.g.*, black spruce woodland, bogs, and fens) is limited within the general area, so this species is considered to have low abundance in the area.

3.4.2 Birds

Bird surveys have been conducted in the Genesee plant and mine area in support of previous regulatory applications and under the biomonitoring program as part of the current EPEA approval for the GGS. Species associated with dry mixedwood boreal and deciduous forest occur in the general area (EPCOR Utilities Inc., 2001). However, the project site is located south of this habitat on a heavily disturbed site that does not provide habitat for most species of birds (EPCOR Utilities Inc., 2001). Appendix C presents a summary of the FWMIS review and desktop analysis, and lists potential species occurring in the area.

3.4.2.1 Migratory Birds

The project area has relatively low capability for waterfowl production, based on the limited availability of waterbodies and wetlands suitable for breeding and brood rearing. Drought conditions in recent years, combined with intensive agricultural land uses, have greatly reduced the availability of habitat for waterfowl and other water birds (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). Capital Power monitored migratory waterbird use of the cooling pond in 2001 and has continued to monitor bird presence on the cooling pond and areas in the vicinity of the GGS since 2005. To date, 24 species of waterfowl have been observed utilizing the cooling pond between October and March. Common goldeneye (*Bucephala clangula*), lesser scaup (*Aythya affinis)*, common merganser (*Mergus merganser)*, and redhead (*Aythya Americana)* are observed as the most common species overwintering on the cooling pond (Capital Power Corporation, 2013). Canada goose (*Branta Canadensis)*, mallard (*Anas platyrhynchos)*, and American wigeon (*Anas americana*) are the most dominant species during spring and fall. Neotropical migratory birds do not appear to overwinter at the pond.

3.4.3 Mammals

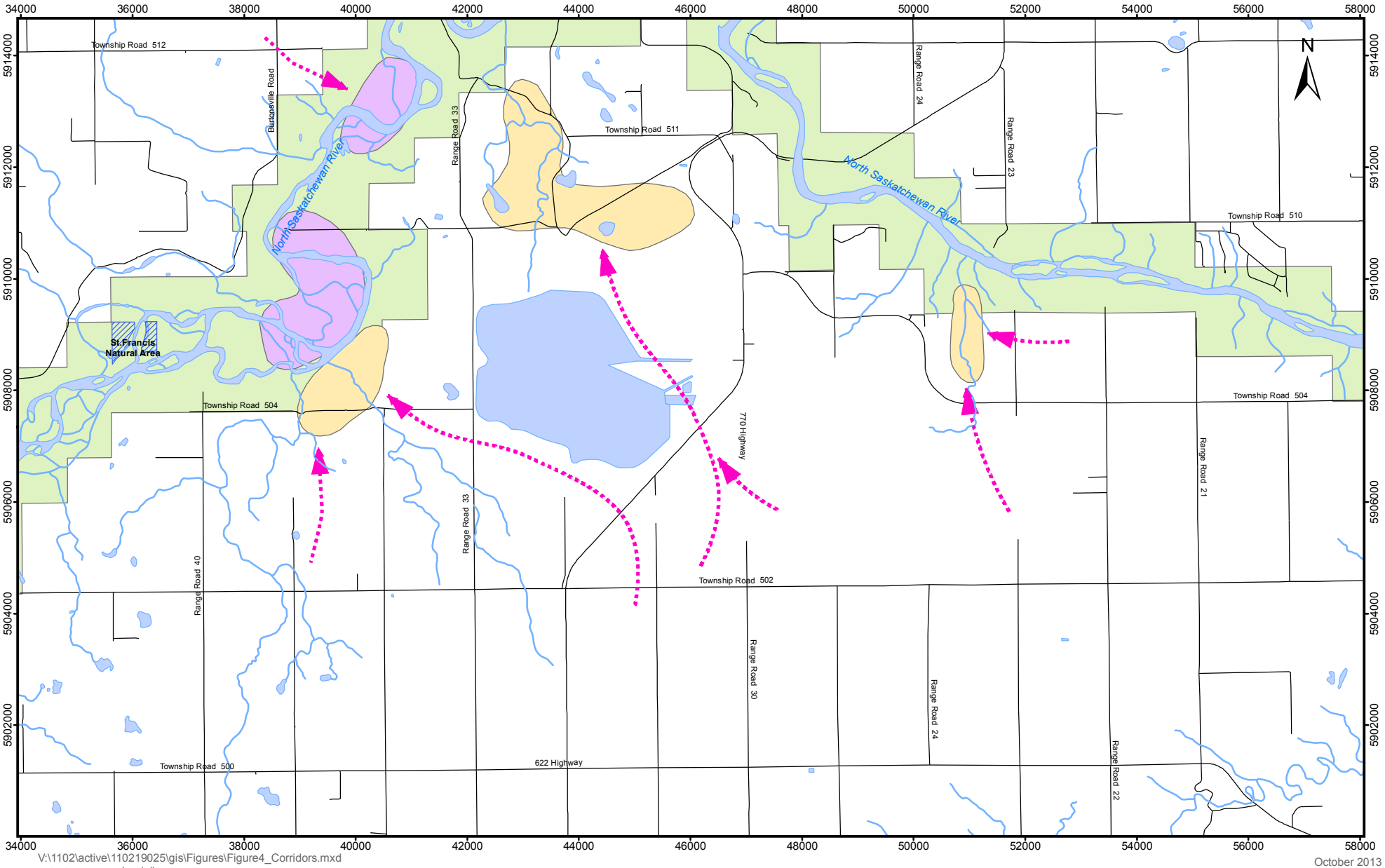
There are several mammal species that could potentially occur in the project area (Appendix C). The most abundant ungulate species are white-tailed deer (*Odocoileus virginianus*), followed by mule deer (*Odocoileus hemionus hemionus*), moose (*Alces alces*), and elk (*Cervus elaphus*) (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). Figure 3 depicts areas identified as ungulate concentration areas in the environmental assessment conducted for the Genesee Mine Extension Project. A movement corridor is indicated passing immediately to the west of the GGS although this is suspected to not accurately reflect ungulate movement in that particular area.

Other species include muskrat (*Ondatra zibethicus*) and red-backed voles (*Myodes gapperi*) (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011).

3.4.4 Species of Concern

Species with special conservation status have the potential to occur within the general area of the Project based on published species ranges (Alberta Environment and Sustainable Resource Development, 2012; Canada, 2011). For the list of species with special conservation status potentially occurring in the area, see Appendix C.

Canada warbler (*Oporornis agilis)*, common nighthawk (*Chordeiles minor)*, loggerhead shrike (*Lanius ludovicianus)*, olive-sided flycatcher (*Contopus cooperi)*, peregrine falcon (*Falco peregrinus)*, rusty blackbird (*Euphagus carolinus)*, short-eared owl (*Asio flammeus)*, Sprague's pipit (*Anthus spragueii)*, yellow rail (*Coturnicops noveboracensis)*, and Western toad (*Anaxyrus boreas)* are the SARA, Schedule 1 species having the potential to occur in the area based on published species ranges. However, suitable habitat does not exist at the project site for these species.



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Projection: 10TM AEP Resource Datum:NAD 83
Imagery obtained from CPC, 2011.

- Movement Corridor
- Mule Deer Concentration Area
- White-tailed Deer Concentration Area
- Environmentally Sensitive Areas
- Natural Area
- GGS Units 4 and 5
- Road
- Watercourse
- Waterbody

0 1 2 3 4 5
1:95,000 Kilometers
This map is for reference purposes only

Client/Project
CAPITAL POWER CORPORATION
GENESEE GENERATING
STATION EXPANSION

Figure No.
3

Title
UNGULATE CONCENTRATION AREAS AND MOVEMENT CORRIDORS IN THE GENESEE AREA

3.5 FISH AND FISH HABITAT

A FWMIS data search identified several fish species found within 5 km of the project area including: brook stickleback (*Culaea inconstans)*, burbot (*Lota lota)*, fathead minnow (*Pimephales promelas)*, goldeye (*Hiodon alosoides)*, lake chub (*Couesius plumbeus)*, lake sturgeon (*Acipenser fulvescens)*, longnose dace (*Rhinichthys cataractae)*, longnose sucker (*Catostomus catostomus)*, northern pike (*Esox Lucius)*, sauger (*Sander Canadensis)*, shorthead redhorse (*Moxostoma macrolepidotum)*, silver redhorse (*Moxostoma anisurum)*, spottail shiner (*Notropis hudsonius)*, trout-perch (*Percopsis omiscomaycus)*, walleye (*Sander vitreus)*, and white sucker (*Catostomus commersonii)* (Appendix B and Appendix C). The NSR is the primary waterbody providing fish habitat in general area of the proposed project site.

3.5.1 North Saskatchewan River

Riparian vegetation along the NSR is comprised primarily of grasses, shrubs and mixed forest with several sections bordered by agricultural developments and residences (Hatfield Consultants, 2011). Overhead canopy cover is low and limited to the immediate shoreline. Instream cover is also low and consists of deep pools with small amounts of instream vegetation during high flows. Substrate composition is primarily dominated by fines and sands overlain with gravel and cobble.

Fish resources in the NSR are comprised of small-bodied, large-bodied, and sport-fish species. Species identified in a 2009/2010 Fish Resource Study (Hatfield Consultants, 2011) were emerald shiner (*Notropis atherinoides)*, goldeye, lake sturgeon, longnose sucker, mountain whitefish (*Prosopium williamsoni)*, northern pike, river shiner (*Notropis belnnius)*, sauger, shorthead redhorse, spottail shiner, trout-perch, walleye and white sucker.

3.5.2 Species of Concern

The NSR is identified as a Class A watercourse due to the presence of significant amounts of sturgeon habitat near the project site (Hatfield Consultants, 2011). According to the Species at Risk Public Registry, lake sturgeon are classified as endangered under COSEWIC and are the only fish species identified by SARA as a species of concern in the general area of the Project (Appendix C). ESRD has also identified goldeye as a species of concern, but they classify this species as secure (Alberta Environment and Sustainable Resource Development, 2012).

3.6 LAND AND NATURAL RESOURCE USE

The town of Warburg, located 16 km south, is the closest urban center to the project site. The nearest aboriginal community to the project area is the Paul First Nation. It is located approximately 16 km north of the Project on the east shore of Lake Wabamun.

The land use in the immediate vicinity of the project area includes; power generation, coal mining and agriculture. The Project will be sited directly adjacent to the existing GGS (Units 1-3).

A coal mine and cooling pond are also associated with the GGS. The Genesee Mine is located to the south of the project site. The coal mine occupies approximately 7252 ha and supplies coal to the existing GGS. Genesee cooling pond and GGS are located entirely within a first-order watershed of the NSR, locally known as Genesee Creek. In 2002, Alberta Environment declared that the cooling pond is not a fishery. A water intake and cooling water discharge structure is located on the right downstream bank of the NSR, approximately 2 km to the west-northwest of the cooling pond (Figure 2). Existing uses of the NSR upstream and downstream of the Project include water supply, and in-stream recreational uses such as fishing and boating. The NSR also receives stormwater and treated sewage from municipalities. Groundwater wells near the Project are used for water supply.

4.0 Conclusion

The proposed location for the Project is a brownfield site that was disturbed in the mid-2000s as part of construction of the Genesee Phase 3 Project. The proposed project location is well within the existing plant fence line of the existing GGS. The site remains disturbed and is currently being utilized as a location for siting portable office trailers and is a laydown area for equipment as part of the ongoing operation of the existing GGS. The site is a level area built up with gravel fill. Given the high level of existing disturbance in the proposed project area, the land in the immediate vicinity of the Project, an active industrial facility, is considered to have low habitat value for wildlife.

The proposed Project also makes effective use of the existing GGS infrastructure, specifically, utilization of the existing river water intake, pumphouse, cooling pond, and point of discharge to the NSR. Utilizing the existing GGS infrastructure will further reduce any potential environmental impacts due to the Project. No additional diversion of water from the NSR is required for the Project beyond the volumes already permitted under the current Licences to Divert Water issued by ESRD for the existing GGS.

Marginal changes in the cooling pond water temperature (slightly higher) are anticipated due to the Project. This will result in a reduction of discharge back to the NSR because of increased evaporative losses from the cooling pond. Given this comparatively small net reduction in volume of discharge anticipated to be released back to the NSR, changes to fish and fish habitat are not expected.

5.0 References

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APPENDIX A
ACIMS SEARCH

Search ACIMS Data

Updated: Nov. 21, 2012
Today: Aug. 21, 2013

1 Select Requester: *
Consultant

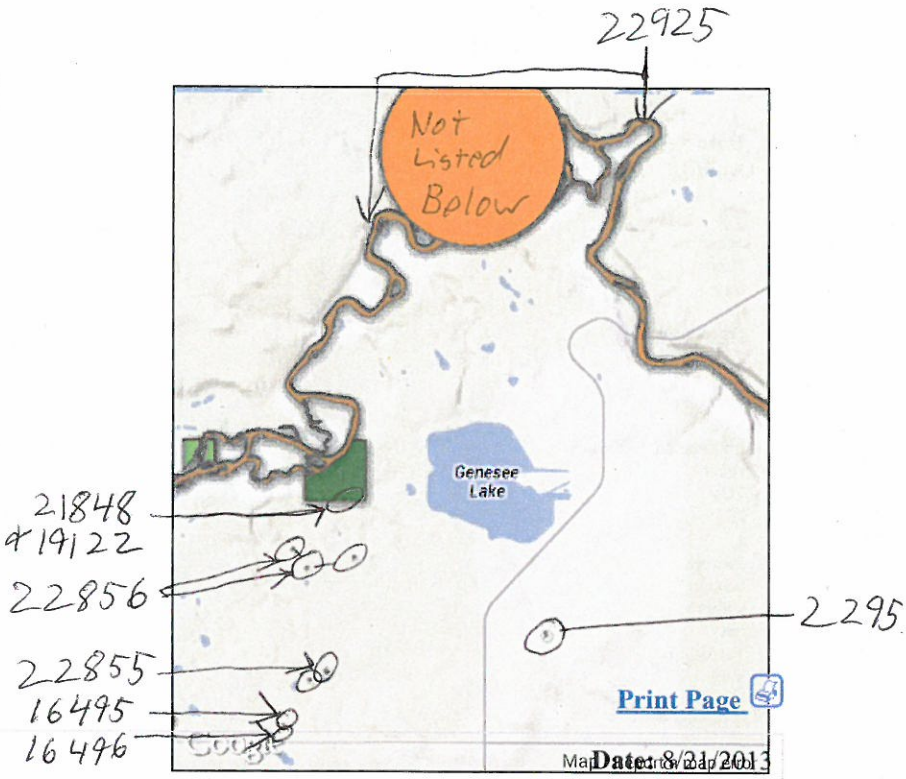
2 Select Reason for Request: *
Environmental Assessment

3 SEC TWP RGE MER
-- 050 03 W5M Submit

(option)
Convert Lat/Long to Township

Layers
- Element Occurrences *(part one, non-sensitive)*
- Element Occurrence *(part two, sensitive)*
- Protected Areas
- Crown Reservation/Notation

* *Required*



Requestor: Consultant
Reason for Request: Environmental Assessment
SEC: -- **TWP:** 050 **RGE:** 03 **MER:** 5

Note: If the map is not displaying 'Refresh' your browser by pushing F5 or Ctrl-R (on PC) or Cmd-R (on Mac)

Table of Results

Sensitive EOs: 0 *(Data Updated: November 2012)*

M-RR-TTT	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D

No Sensitive EOs Found: Next Steps - FAQs #13

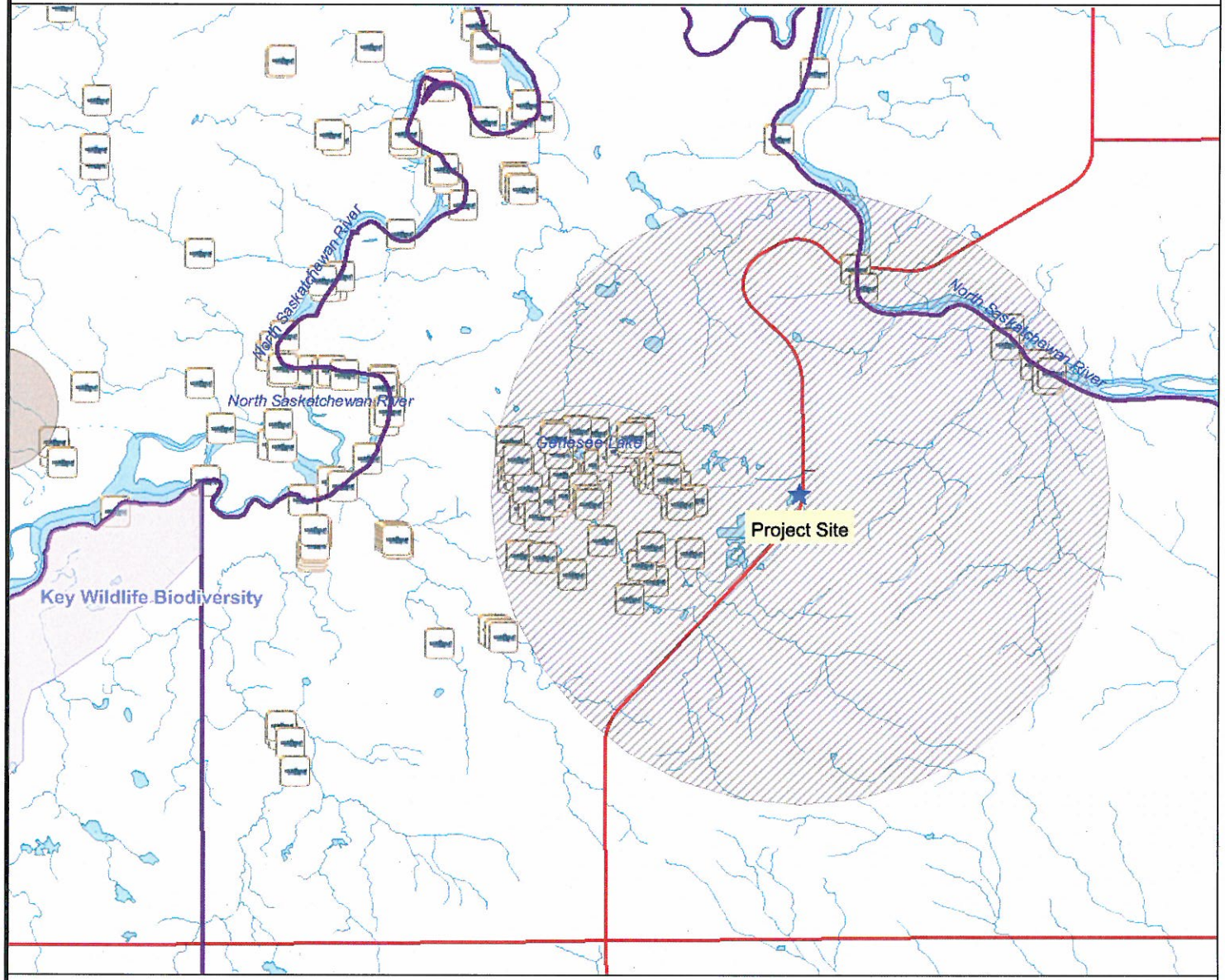
Non-sensitive EOs: 13 *(Data Updated: November 2012)*

M-RR-TTT-SS	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
5-03-050-06	16495	NBMUS81030	*S2*	Plagiomnium ciliare	moss	6/3/2006
5-03-050-06	16496	NBMUS44080	*S1*	Leptodictyum humile	moss	6/3/2006
5-03-050-08	22855	PDSAX07030	*S3?*	Chrysosplenium iowense	golden saxifrage	6/9/2009
5-03-050-12	22955	PDSAX07030	*S3?*	Chrysosplenium iowense	golden saxifrage	6/5/2009
5-03-050-17	22856	PDSAX07030	*S3?*	Chrysosplenium iowense	golden saxifrage	6/4/2009
5-03-050-19	22856	PDSAX07030	*S3?*	Chrysosplenium iowense	golden saxifrage	6/4/2009
5-03-050-20	22856	PDSAX07030	*S3?*	Chrysosplenium iowense	golden saxifrage	6/4/2009
5-03-050-29	19122	NBMUS0E010	*S2*	Aongstroemia longipes	spring moss	8/27/2009
5-03-050-29	21848	NBHEP330D0	*S2*	Scapania glaucocephala	liverwort	7/26/2010
5-03-050-29	22925	IMGASN3050	*SU*	Ferrissia rivularis	Creeping Ancylid	2001-XX-XX
5-03-050-30	22925	IMGASN3050	*SU*	Ferrissia rivularis	Creeping Ancylid	2001-XX-XX
5-03-050-31	22925	IMGASN3050	*SU*	Ferrissia rivularis	Creeping Ancylid	2001-XX-XX
5-03-050-32	22925	IMGASN3050	*SU*	Ferrissia rivularis	Creeping Ancylid	2001-XX-XX

Next Steps: FAQs #13

APPENDIX B
FWMIS SEARCH

Created Wed Aug 21 11:50:53 MDT 2013



0 2.75 5.5 8.25 km.

Scale: 1:97,145

Legend

Sensitive Raptor Ranges

- Bald Eagle
- Ferruginous Hawk
- Golden Eagle
- Peregrine Falcon
- Prairie Falcon

Key Wildlife and Biodiversity Zone

Wildlife Management Area Contacts

Fisheries Management Area Contacts

Fish Inventory

Water

Information as depicted is subject to change, therefore the Government of Alberta assumes no responsibility for discrepancies at time of use.

Wildlife Inventory

AMERICAN WHITE PELICAN
BALD EAGLE
BARN SWALLOW
BARRED OWL
BOREAL TOAD
COMMON YELLOWTHROAT
GOLDEN EAGLE
GREEN-WINGED TEAL
HORNED GREBE
LEAST FLYCATCHER
LESSER SCAUP
NORTHERN GOSHAWK
NORTHERN HARRIER
NORTHERN PINTAIL
PEREGRINE FALCON
PIED-BILLED GREBE
PILEATED WOODPECKER
SORA
SPRAGUE'S PIPIT
SWAINSON'S HAWK
WESTERN GREBE
WESTERN TANAGER

Fish Inventory

BROOK STICKLEBACK
BURBOT
FATHEAD MINNOW
GOLDEYE
LAKE CHUB
LAKE STURGEON
LONGNOSE DACE
LONGNOSE SUCKER
NORTHERN PIKE
SAUGER
SHORTHEAD REDHORSE
SILVER REDHORSE
SPOTTAIL SHINER
TROUT-PERCH
UNKNOWN
WALLEYE
WHITE SUCKER

Buffer extent

Centroid (X,Y):	546876, 5908365
Central Meridian:	-115.0
Centroid (Qtr Sec Twp Rng Mer):	SE 25 50 3 5
Buffer radius:	5 kilometers

APPENDIX C
WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE AREA

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Birds					
Alder Flycatcher	*Empidonax alnorum*	Secure	N/A	N/A	X
American Avocet	*Recurvirostra americana*	Secure	N/A	N/A	X
American Bittern	*Botaurus lentiginosus*	Sensitive	N/A	N/A	
American Coot	*Fulica americana*	Secure	N/A	Not at Risk	X
American Crow	*Corvus brachyrhynchos*	Secure	N/A	N/A	X
American Goldfinch	*Spinus tristis*	Secure	N/A	N/A	X
American Green-winged Teal	*Anas crecca*	Sensitive	N/A	N/A	X
American Kestrel	*Falco sparverius*	Sensitive	N/A	N/A	X
American Redstart	*Setophaga ruticilla*	Secure	N/A	N/A	X
American Robin	*Turdus migratorius*	Secure	N/A	N/A	X
American Three-toed Woodpecker	*Picoides dorsalis*	Secure	N/A	N/A	
American Tree Sparrow	*Spizella arborea*	Secure	N/A	N/A	X
American White Pelican	*Pelecanus erythrorhynchos*	Sensitive	N/A	Not at Risk	X
American Wigeon	*Anas americana*	Secure	N/A	N/A	X
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive	N/A	Not at Risk	X
Baltimore Oriole	*Icterus galbula*	Sensitive	N/A	N/A	X
Bank Swallow	*Riparia riparia*	Secure	N/A	N/A	
Barn Swallow	*Hirundo rustica*	Sensitive	N/A	Threatened	X
Barred Owl	*Strix varia*	Sensitive	N/A	N/A	X
Bay-breasted Warbler	*Setophaga castanea*	Sensitive	N/A	N/A	
Belted Kingfisher	*Megaceryle alcyon*	Secure	N/A	N/A	
Black Tern	*Chlidonias niger*	Sensitive	N/A	Not at Risk	
Black-and-white Warbler	*Mniotilta varia*	Secure	N/A	N/A	X
Black-backed Woodpecker	*Picoides arcticus*	Sensitive	N/A	N/A	
Black-billed Cuckoo	*Coccyzus erythtopthalmus*	Undetermined	N/A	N/A	
Black-billed Magpie	*Pica hudsonia*	Secure	N/A	N/A	X
Blackburnian Warbler	*Setophaga fusca*	Sensitive	N/A	N/A	
Black-capped Chickadee	*Poecile atricapillus*	Secure	N/A	N/A	X
Black-crowned Night-heron	*Nycticorax nycticorax*	Sensitive	N/A	N/A	
Blackpoll Warbler	*Setophaga striata*	Secure	N/A	N/A	
Black-throated Green Warbler	*Setophaga virens*	Sensitive	N/A	N/A	
Blue Jay	*Cyanocitta cristata*	Secure	N/A	N/A	X
Blue-headed Vireo	*Vireo solitarius*	Secure	N/A	N/A	X
Blue-winged Teal	*Anas discors*	Secure	N/A	N/A	X
Bobolink	*Dolichonyx oryzivorus*	Sensitive	N/A	Threatened	
Bohemian Waxwing	*Bombycilla garrulus*	Secure	N/A	N/A	
Bonaparte's Gull	*Chroicocephalus philadelphia*	Secure	N/A	N/A	
Boreal Chickadee	*Poecile hudsonicus*	Secure	N/A	N/A	X
Boreal Owl	*Aegolius funereus*	Secure	N/A	N/A	X
Brewer's Blackbird	*Euphagus cyanocephalus*	Secure	N/A	N/A	X
Broad-winged Hawk	*Buteo platypterus*	Sensitive	N/A	N/A	
Brown Creeper	*Certhia americana*	Sensitive	N/A	N/A	
Brown-headed Cowbird	*Molothrus ater*	Secure	N/A	N/A	X
Bufflehead	*Bucephala albeola*	Secure	N/A	N/A	X
California Gull	*Larus californicus*	Secure	N/A	N/A	X
Canada Goose	*Branta canadensis*	Secure	N/A	N/A	X
Canada Warbler	*Cardellina canadensis*	Sensitive	Schedule 1, Threatened	Threatened	
Canvasback	*Aythya valisineria*	Secure	N/A	N/A	X
Cape May Warbler	*Setophaga tigrina*	Sensitive	N/A	N/A	
Cedar Waxwing	*Bombycilla cedrorum*	Secure	N/A	N/A	X
Chestnut-sided Warbler	*Setophaga pensylvanica*	Secure	N/A	N/A	
Chipping Sparrow	*Spizella passerina*	Secure	N/A	N/A	X
Cinnamon Teal	*Anas cyanoptera*	Secure	N/A	N/A	X
Clay-colored Sparrow	*Spizella pallida*	Secure	N/A	N/A	X
Cliff Swallow	*Petrochelidon pyrrhonota*	Secure	N/A	N/A	X
Common Goldeneye	*Bucephala clangula*	Secure	N/A	N/A	X
Common Grackle	*Quiscalus quiscula*	Secure	N/A	N/A	
Common Loon	*Gavia immer*	Secure	N/A	Not at Risk	X
Common Merganser	*Mergus merganser*	Secure	N/A	N/A	X
Common Nighthawk	*Chordeiles minor*	Sensitive	Schedule 1, Threatened	Threatened	

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Common Raven	*Corvus corax*	Secure	N/A	N/A	X
Common Redpoll	*Acanthis flammea*	Secure	N/A	N/A	X
Common Tern	*Sterna hirundo*	Secure	N/A	Not at Risk	
Common Yellowthroat	*Geothlypis trichas*	Sensitive	N/A	N/A	X
Connecticut Warbler	*Oporornis agilis*	Secure	N/A	N/A	
Cooper's Hawk	*Accipiter cooperii*	Secure	N/A	Not at Risk	X
Dark-eyed Junco	*Junco hyemalis*	Secure	N/A	N/A	X
Double-crested Cormorant	*Phalacrocorax auritus*	Secure	N/A	N/A	X
Downy Woodpecker	*Picoides pubescens*	Secure	N/A	Not at Risk	X
Eared Grebe	*Podiceps nigricollis*	Secure	N/A	N/A	X
Eastern Kingbird	*Tyrannus tyrannus*	Secure	N/A	N/A	X
Eastern Phoebe	*Sayornis phoebe*	Sensitive	N/A	N/A	X
European Starling	*Sturnus vulgaris*	N/A	N/A	N/A	X
Evening Grosbeak	*Coccothraustes vespertinus*	Secure	N/A	N/A	
Forster's Tern	*Sterna forsteri*	Sensitive	N/A	Data Deficient	
Fox Sparrow	*Passerella iliaca*	Secure	N/A	N/A	
Franklin's Gull	*Leucophaeus pipixcan*	Secure	N/A	N/A	X
Gadwall	*Anas strepera*	Secure	N/A	N/A	X
Golden Eagle	*Aquila chrysaetos*	Secure	N/A	N/A	X
Golden-crowned Kinglet	*Regulus satrapa*	Secure	N/A	N/A	X
Gray Catbird	*Dumetella carolinensis*	Secure	N/A	N/A	X
Gray Jay	*Perisoreus canadensis*	Secure	N/A	N/A	X
Great Blue Heron	*Ardea herodias*	Sensitive	N/A	N/A	X
Great Grey Owl	*Strix nebulosa*	Sensitive	N/A	Not at Risk	
Great Horned Owl	*Bubo virginianus*	Secure	N/A	N/A	X
Greater Scaup	*Aythya marila*	Secure	N/A	N/A	X
Greater White-fronted Goose	*Anser albifrons*	Secure	N/A	N/A	
Greater Yellowlegs	*Tringa melanoleuca*	Secure	N/A	N/A	
Gyrfalcon	*Falco rusticolus*	Secure	N/A	Not at Risk	
Hairy Woodpecker	*Picoides villosus*	Secure	N/A	N/A	X
Harris's Sparrow	*Zonotrichia querula*	Secure	N/A	N/A	
Hermit Thrush	*Catharus guttatus*	Secure	N/A	N/A	X
Herring Gull	*Larus argentatus*	Secure	N/A	N/A	X
Hooded Merganser	*Lophodytes cucullatus*	Secure	N/A	N/A	X
Horned Grebe	*Podiceps auritus*	Sensitive	N/A	Special Concern	X
Horned Lark	*Eremophila alpestris*	Secure	N/A	N/A	X
House Finch	*Carpodacus mexicanus*	Secure	N/A	N/A	
House Wren	*Troglodytes aedon*	Secure	N/A	N/A	X
Killdeer	*Charadrius vociferus*	Secure	N/A	N/A	X
Le Conte's Sparrow	*Ammodramus leconteii*	Secure	N/A	N/A	X
Least Flycatcher	*Empidonax minimus*	Sensitive	N/A	N/A	X
Least Sandpiper	*Calidris minutilla*	Secure	N/A	N/A	
Lesser Scaup	*Aythya affinis*	Sensitive	N/A	N/A	X
Lesser Yellowlegs	*Tringa flavipes*	Secure	N/A	N/A	X
Lincoln's Sparrow	*Melospiza lincolnii*	Secure	N/A	N/A	X
Loggerhead Shrike	*Lanius ludovicianus*	Sensitive	Schedule 1, Threatened	Threatened	
Long-billed Dowitcher	*Limnodromus scolopaceus*	Secure	N/A	N/A	
Long-eared Owl	*Asio otus*	Secure	N/A	N/A	X
Magnolia Warbler	*Setophaga magnolia*	Secure	N/A	N/A	X
Mallard	*Anas platyrhynchos*	Secure	N/A	N/A	X
Marbled Godwit	*Limosa fedoa*	Secure	N/A	N/A	X
Marsh Wren	*Cistothorus palustris*	Secure	N/A	N/A	
Merlin	*Falco columbarius*	Secure	N/A	Not at Risk	X
Mountain Bluebird	*Sialia currucoides*	Secure	N/A	N/A	X
Mourning Dove	*Zenaida macroura*	Secure	N/A	N/A	X
Mourning Warbler	*Geothlypis philadelphia*	Secure	N/A	N/A	X
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*	Secure	N/A	Not at Risk	X
Northern Flicker	*Colaptes auratus*	Secure	N/A	N/A	X
Northern Goshawk	*Accipiter gentilis*	Sensitive	N/A	Not at Risk	X
Northern Harrier	*Circus cyaneus*	Sensitive	N/A	Not at Risk	X
Northern Hawk Owl	*Surnia ulula*	Secure	N/A	Not at Risk	

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Northern Pintail	*Anas acuta*	Sensitive	N/A	N/A	X
Northern Pygmy Owl	*Glaucidium gnoma*	Sensitive	N/A	N/A	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Secure	N/A	N/A	
Northern Saw-whet Owl	*Aegolius acadicus*	Secure	N/A	N/A	X
Northern Shoveler	*Anas clypeata*	Secure	N/A	N/A	X
Northern Shrike	*Lanius excubitor*	Secure	N/A	N/A	X
Northern Waterthrush	*Parkesia noveboracensis*	Secure	N/A	N/A	
Olive-sided Flycatcher	*Contopus cooperi*	May Be At Risk	Schedule 1, Threatened	Threatened	
Orange-crowned Warbler	*Vermivora celata*	Secure	N/A	N/A	X
Osprey	*Pandion haliaetus*	Sensitive	N/A	N/A	
Ovenbird	*Seiurus aurocapilla*	Secure	N/A	N/A	X
Palm Warbler	*Setophaga palmarum*	Secure	N/A	N/A	X
Peregrine Falcon	*Falco peregrinus*	At Risk	Schedule 1, Special Concern	Special Concern	X
Philadelphia Vireo	*Vireo philadelphicus*	Secure	N/A	N/A	X
Pied-billed Grebe	*Podilymbus podiceps*	Sensitive	N/A	N/A	X
Pileated Woodpecker	*Dryocopus pileatus*	Sensitive	N/A	N/A	X
Pine Grosbeak	*Pinicola enucleator*	Secure	N/A	N/A	X
Pine Siskin	*Spinus pinus*	Secure	N/A	N/A	X
Prairie Falcon	*Falco mexicanus*	Sensitive	N/A	Not at Risk	
Purple Finch	*Carpodacus purpureus*	Secure	N/A	N/A	X
Purple Martin	*Progne subis*	Sensitive	N/A	N/A	
Red Crossbill	*Loxia curvirostra*	Secure	N/A	N/A	
Red-breasted Merganser	*Mergus serrator*	Secure	N/A	N/A	
Red-breasted Nuthatch	*Sitta canadensis*	Secure	N/A	N/A	X
Red-eyed Vireo	*Vireo olivaceus*	Secure	N/A	N/A	X
Redhead	*Aythya americana*	Secure	N/A	N/A	X
Red-necked Grebe	*Podiceps grisegena*	Secure	N/A	Not at Risk	X
Red-tailed Hawk	*Buteo jamaicensis*	Secure	N/A	Not at Risk	X
Red-winged Blackbird	*Agelaius phoeniceus*	Secure	N/A	N/A	X
Ring-billed Gull	*Larus delawarensis*	Secure	N/A	N/A	X
Ring-necked Duck	*Aythya collaris*	Secure	N/A	N/A	X
Rock Pigeon (Exotic)	*Columba livia*	N/A	N/A	N/A	X
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Secure	N/A	N/A	X
Rough-legged Hawk	*Buteo lagopus*	Secure	N/A	N/A	X
Ruby-crowned Kinglet	*Regulus calendula*	Secure	N/A	N/A	X
Ruby-throated Hummingbird	*Archilochus colubris*	Secure	N/A	N/A	
Ruddy Duck	*Oxyura jamaicensis*	Secure	N/A	N/A	X
Ruffed Grouse	*Bonasa umbellus*	Secure	N/A	N/A	X
Rusty Blackbird	*Euphagus carolinus*	Sensitive	Schedule 1, Special Concern	Special Concern	
Sandhill Crane	*Grus canadensis*	Sensitive	N/A	N/A	X
Savannah Sparrow	*Passerculus sandwichensis*	Secure	N/A	N/A	X
Say's Phoebe	*Sayornis saya*	Secure	N/A	N/A	
Sedge Wren	*Cistothorus platensis*	Sensitive	N/A	Not at Risk	
Semipalmated Sandpiper	*Calidris pusilla*	Secure	N/A	N/A	
Sharp-shinned Hawk	*Accipiter striatus*	Secure	N/A	Not at Risk	X
Sharp-tailed Grouse	*Tympanuchus phasianellus*	Sensitive	N/A	N/A	X
Short-eared Owl	*Asio flammeus*	May Be at Risk	Schedule 1, Special Concern	Special Concern	
Snow Bunting	*Plectrophenax nivalis*	Secure	N/A	N/A	X
Snow Goose	*Chen caerulescens*	Secure	N/A	N/A	X
Snowy Owl	*Bubo scandiacus*	Secure	N/A	N/A	X
Solitary Sandpiper	*Tringa solitaria*	Secure	N/A	N/A	X
Song Sparrow	*Melospiza melodia*	Secure	N/A	N/A	X
Sora	*Porzana carolina*	Sensitive	N/A	N/A	X
Spotted Sandpiper	*Actitis macularius*	Secure	N/A	N/A	X
Sprague's Pipit	*Anthus spragueii*	Sensitive	Schedule 1, Threatened	Threatened	X
Swainson's Hawk	*Buteo swainsoni*	Sensitive	N/A	N/A	X
Swainson's Thrush	*Catharus ustulatus*	Secure	N/A	N/A	X
Swamp Sparrow	*Melospiza georgiana*	Secure	N/A	N/A	X
Tennessee Warbler	*Vermivora peregrina*	Secure	N/A	N/A	X
Townsend's Solitaire	*Myadestes townsendi*	Secure	N/A	N/A	
Tree Swallow	*Tachycineta bicolor*	Secure	N/A	N/A	X

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Trumpeter Swan	*Cygnus buccinator*	At Risk	N/A	Not at Risk	
Tundra Swan	*Cygnus columbianus*	Secure	N/A	N/A	X
Upland Sandpiper	*Bartramia longicauda*	Sensitive	N/A	N/A	
Veery	*Catharus fuscescens*	Secure	N/A	N/A	
Vesper Sparrow	*Pooecetes gramineus*	Secure	N/A	N/A	X
Virginia Rail	*Rallus limicola*	Undetermined	N/A	N/A	
Warbling Vireo	*Vireo gilvus*	Secure	N/A	N/A	X
Western Grebe	*Aechmophorus occidentalis*	Sensitive	N/A	N/A	X
Western Meadowlark	*Sturnella neglecta*	Secure	N/A	N/A	X
Western Tanager	*Piranga ludoviciana*	Sensitive	N/A	N/A	X
Western Wood-pewee	*Contopus sordidulus*	Sensitive	N/A	N/A	X
White-breasted Nuthatch	*Sitta carolinensis*	Secure	N/A	N/A	X
White-crowned Sparrow	*Zonotrichia leucophrys*	Secure	N/A	N/A	
White-throated Sparrow	*Zonotrichia albicollis*	Secure	N/A	N/A	X
White-winged Crossbill	*Loxia leucoptera*	Secure	N/A	N/A	X
White-winged Scoter	*Melanitta fusca*	Sensitive	N/A	N/A	
Willet	*Tringa semipalmata*	Secure	N/A	N/A	
Wilson's Phalarope	*Phalaropus tricolor*	Secure	N/A	N/A	X
Wilson's Snipe	*Gallinago delicata*	Secure	N/A	N/A	X
Wilson's Warbler	*Cardellina pusilla*	Secure	N/A	N/A	
Winter Wren	*Troglodytes troglodytes*	Secure	N/A	N/A	X
Yellow Rail	*Coturnicops noveboracensis*	Undetermined	Schedule 1, Special Concern	Special Concern	
Yellow Warbler	*Cardellina petechia*	Secure	N/A	N/A	X
Yellow-bellied Flycatcher	*Empidonax flaviventris*	Undetermined	N/A	N/A	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Secure	N/A	N/A	X
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	Secure	N/A	N/A	
Yellow-rumped Warbler	*Setophaga coronata*	Secure	N/A	N/A	X

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Mammals					
American Badger	*Taxidea taxus*	Sensitive	N/A	N/A	X
American Mink	*Neovison vison*	Secure	N/A	N/A	
Arctic Shrew	*Sorex arcticus*	Secure	N/A	N/A	
Beaver	*Castor canadensis*	Secure	N/A	N/A	
Big Brown Bat	*Eptesicus fuscus*	Secure	N/A	N/A	
Black Bear	*Ursus americanus*	Secure	N/A	N/A	
Canada Lynx	*Lynx canadensis*	Sensitive	N/A	N/A	
Common Porcupine	*Erethizon dorsatum*	Secure	N/A	N/A	X
Common Raccoon	*Procyon lotor*	Secure	N/A	N/A	
Cougar	*Puma concolor*	Secure	N/A	N/A	
Coyote	*Canis latrans*	Secure	N/A	N/A	X
Deer Mouse	*Peromyscus maniculatus*	Secure	N/A	N/A	X
Dusky Shrew	*Sorex monticolus*	Secure	N/A	N/A	
Eastern Heather Vole	*Phenacomys ungava*	Secure	N/A	N/A	
Elk	*Cervus elaphus*	Secure	N/A	N/A	X
Ermine	*Mustela erminea*	Secure	N/A	N/A	
Franklin's Ground Squirrel	*Spermophilus franklinii*	Undetermined	N/A	N/A	
Gray Wolf	*Canis lupus*	Secure	N/A	N/A	
Hoary Bat	*Lasiurus cinereus*	Sensitive	N/A	N/A	
Least Chipmunk	*Neotamias minimus*	Secure	N/A	N/A	
Least Weasel	*Mustela nivalis*	Secure	N/A	N/A	X
Little Brown Bat	*Myotis lucifugus*	Secure	N/A	N/A	
Long-eared Bat	*Myotis evotis*	Secure	N/A	N/A	
Long-tailed Weasel	*Mustela frenata*	May Be At Risk	N/A	Not at Risk	
Masked Shrew	*Sorex cinereus*	Secure	N/A	N/A	
Meadow Jumping Mouse	*Zapus hudsonius*	Secure	N/A	N/A	
Meadow Vole	*Microtus pennsylvanicus*	Secure	N/A	N/A	
Moose	*Alces americanus*	Secure	N/A	N/A	X
Mule Deer	*Odocoileus hemionus*	Secure	N/A	N/A	X
Muskrat	*Ondatra zibethicus*	Secure	N/A	N/A	X
Northern Bog Lemming	*Synaptomys borealis*	Secure	N/A	N/A	
Northern Flying Squirrel	*Glaucomys sabrinus*	Secure	N/A	N/A	X
Northern Long-eared Bat	*Myotis septentrionalis*	May Be At Risk	N/A	N/A	
Northern Pocket Gopher	*Thomomys talpoides*	Secure	N/A	N/A	
Prairie Vole	*Microtus ochrogaster*	Secure	N/A	N/A	
Pygmy Shrew	*Sorex hoyi*	Secure	N/A	N/A	
Red Bat	*Lasiurus borealis*	Sensitive	N/A	N/A	
Red Fox	*Vulpes vulpes*	Secure	N/A	N/A	X
Red Squirrel	*Tamiasciurus hudsonicus*	Secure	N/A	N/A	X
Richardson's Ground Squirrel	*Spermophilus richardsonii*	Secure	N/A	N/A	
Silver-haired Bat	*Lasionycteris noctivagans*	Sensitive	N/A	N/A	
Snowshoe Hare	*Lepus americanus*	Secure	N/A	N/A	
Southern Red-backed Vole	*Myodes gapperi*	Secure	N/A	N/A	X
Striped Skunk	*Mephitis mephitis*	Secure	N/A	N/A	
Thirteen-lined Ground Squirrel	*Spermophilus tridecimlineatus*	Undetermined	N/A	N/A	
Water Shrew	*Sorex palustris*	Secure	N/A	N/A	
Western Jumping Mouse	*Zapus princeps*	Secure	N/A	N/A	
White-tailed Deer	*Odocoileus virginianus*	Secure	N/A	N/A	X
White-tailed Jack Rabbit	*Lepus townsendii*	Secure	N/A	N/A	
Woodchuck	*Marmota monax*	Secure	N/A	N/A	
Amphibians					
Barred Tiger Salamander	*Ambystoma mavortium*	Secure	N/A	N/A	
Boreal Chorus Frog	*Pseudacris maculata*	Secure	N/A	N/A	X
Canadian Toad	*Anaxyrus hemiophrys*	May Be At Risk	N/A	Not at Risk	
Western Toad	*Anaxyrus boreas*	Sensitive	Schedule 1, Special Concern	Special Concern	X
Wood Frog	*Lithobates sylvaticus*	Secure	N/A	N/A	X
Reptiles					
Plains Garter Snake	*Thamnophis radix*	Sensitive	N/A	N/A	
Red-sided Garter Snake	*Thamnophis sirtalis*	Sensitive	N/A	N/A	

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Fish					
Brook Stickleback	*Culaea inconstans*	Secure	N/A	N/A	X
Burbot	*Lota lota*	Secure	N/A	N/A	
Emerald Shiner	*Notropis atherinoides*	Secure	N/A	N/A	X
Fathead Minnow	*Pimephales promelas*	Secure	N/A	N/A	X
Goldeye	*Hiodon alosoides*	Secure	N/A	N/A	X
Lake Chub	*Couesius plumbeus*	Secure	N/A	N/A	X
Lake Sturgeon	*Acipenser fulvescens*	Undetermined	N/A	Endangered	
Long Nose Dace	*Rhinichthys cataractae*	Secure	N/A	N/A	X
Long Nose Sucker	*Catostomus catostomus*	Secure	N/A	N/A	X
Mountain Whitefish	*Prosopium williamsoni*	Secure	N/A	N/A	X
Northern Pike	*Esox lucius*	Secure	N/A	N/A	X
River Shiner	*Notropis blennius*	Undetermined	N/A	N/A	X
Sauger	*Sander canadensis*	Sensitive	N/A	N/A	X
Shorthead Redhorse	*Moxostoma macrolepidotum*	Secure	N/A	N/A	X
Silver Redhorse	*Moxostoma anisurum*	Undetermined	N/A	N/A	X
Spottail Shiner	*Notropis hudsonius*	Secure	N/A	N/A	X
Trout-Perch	*Percopsis omiscomaycus*	Secure	N/A	N/A	X
Walleye	*Sander vitreus*	Secure	N/A	N/A	X
White Sucker	*Catostomus commersonii*	Secure	N/A	N/A	X