



Cherry Creek Wetland Restoration Project 2016/2017 Final Report



Prepared by The Nature Trust of BC with Financial Support of the Fish and Wildlife Compensation Program on behalf of its program partners, BC Hydro, the Province of BC, Fisheries and Oceans Canada, First Nations and the public

February, 2017

Acknowledgements:

This project (W-F17-04) is funded by the Fish and Wildlife Compensation Program on behalf of its program partners BC Hydro, the Province of British Columbia, First Nations and the public, who work together to conserve and enhance fish and wildlife impacted by the construction of BC Hydro dams.

Executive Summary:

In July 2014, The Nature Trust of B.C. (TNTBC) participated in a process designed to identify potential locations for restoring wetlands and streams in the Kootenay Region. Through this regional evaluation process it was determined that there was a high probability that wetlands could be restored on TNTBC's Cherry Creek (Madison) conservation property which is situated approximately 10 kilometres north of Fort Steele BC.

After completing groundwater elevation, soil texture and slope measurements on the property it was determined that 6 wetlands could be restored. Subsequent to the determination that wetlands could be developed, a wetland design and construction budget was prepared for each site.

Tom Biebighauser and Robin Annschild were contracted to prepare the wetland design, construction budgets, layout the design (Figure 2) on the ground and supervise the development of shallow water wetlands within wetland sites 1 and 2 (Figure 3).

Construction of the shallow water wetlands within wetland 1 and 3 was completed through a contract with Custom Dozing Ltd. Equipment used on the wetland restoration project included a D6N crawler tractor (Photo 12), a JD 200CLC excavator (Photo 13) and a 644 loader (Photo 12).

The principle objectives of the Cherry Creek wetland restoration program are to improve or restore habitat for waterfowl, wading birds, and shorebirds, provide suitable habitat conditions for amphibian species such as the western toad, western painted turtle, and Columbia spotted frog and enhance biodiversity on the property.

It is anticipated that the Cherry Creek wetland project will enhance the adjacent Bummers Flats wetland complex by increasing the availability of permanent and ephemeral wetlands on the Kootenay River floodplain and the Cherry Creek delta.

In October 2016, The Nature Trust of B.C. (TNTBC), with financial assistance provided by the Fish and Wildlife Compensation Program (FWCP), initiated the shallow water wetland restoration project on the Cherry Creek (Madison) conservation property.

Table of Contents

	Page
Cherry Creek Conservation Property Information:.....	6 and 7
Wetland Restoration Rationale:	8
Wetland and Stream Restoration Goals and Objectives:.....	8
Management Responsibility:	8
Site Selection and Recording:	8 and 9
Wetland Restoration Design Criteria:	9
Project Results:.....	10
Project Benefits:	10
Wetland Restoration Budget:	10
Communication:.....	10
Wetland Project Figures:	11, 12, 13, 14
Wetland Project Photos:	15, 16, 17, 18, 19, 20, 21

List of Figures

	Page
Cherry Creek Conservation Properties:.....	11
Configuration of the Wetland Sites:	12
Cherry Creek Shallow Wetland Sites:.....	13
Restored Wetlands Within Sites 1 and 2:.....	14

Cherry Creek Conservation Property Complex Information

Acquisition History:

The Nature Trust of British Columbia currently owns two conservation properties near the confluence of Cherry Creek and the Kootenay River. They are, the 726 ha Cherry Creek – Bummars Flats (Madison) Ranch, which was purchased in 1985 and the 242.8 ha Cherry Creek – Bummars Flats (Pighin) property which was purchased in 1986. Collectively, these properties comprise the Cherry Creek – Bummars Flats Conservation Complex (Figure 1).

Cherry Creek Conservation Lands Complex Location and Size:

The Cherry Creek – Bummars Flats Conservation Complex is situated in the East Kootenay Region of British Columbia and is located approximately 10 kilometres north of Fort Steele, B.C. The two properties are separated by the Kootenay River but are essentially contiguous. Collectively, they create 968.8 hectares of private conservation land in the area.

Bummars Flats Conservation Lands Complex Ecological Characteristics:

The two Bummars Flats conservation properties are located entirely within the fire-maintained Kootenay dry, hot Ponderosa Pine (PPdh2) biogeoclimatic zone, which is characterized by hot, very dry summers and cool winters with very light snowfall. Coniferous forest cover on the Cherry Creek (Madison) property is primarily confined to the upper benches of the property and the steep slopes separating the upper benches from the lower floodplain. A mixture of tree species and age classes exist, however, Douglas-fir and Ponderosa Pine predominate. The floodplain is primarily comprised of a mosaic of open grassland habitats, former agriculture pasture land, aspen and cottonwood stands and riparian shrub communities. Collectively these floodplain habitats represent an important source of winter forage for elk and white-tailed deer and provide suitable and functional habitat for a wide spectrum of bird, mammal and amphibian species.

Bummars Flats Conservation Lands Complex Red and Blue Listed Plant & Wildlife Species:

With respect to (HaBC 2017 data);

1. Plant communities: The two properties have the potential to support 7 Red-listed and 10 Blue-listed plant species. There are 7 Red or Blue-listed ecological communities within the PPdh2 zone in the vicinity of these properties.
2. Mammals: The two properties have the potential to support 1 Red-listed (American Badger) and 3 Blue-listed species.
3. Ungulate winter range: The two properties have been classified between high (Class 1) and moderate winter range capability for elk, mule deer and white-tailed deer. The properties are ranked as Class 3 winter range capability for moose.
4. Birds: The two properties have the habitat characteristics to support 5 Red-listed species, 9 Blue-listed species, and 1 Yellow-listed SARA Schedule 1 Threatened

species (Common Nighthawk), along with the Yellow-listed Sandhill Crane (Photo 1).

5. Amphibians and Reptiles: The two properties have the habitat characteristics to support 2 Blue-listed species (Western Toad and Western Painted Turtle) and 1 Yellow-listed SARA Schedule 1 Special Concern species (Rubber Boa).
6. Invertebrates: The two properties have the potential to support 1 Red-listed dragonfly (Vivid Dancer) and 9 Blue-listed invertebrate species

Historical Use of Cherry Creek Conservation Property

The 726 hectare Cherry Creek (Madison) property was formerly a working ranch owned by George Madison. The lower benches were continually dry land farmed, to support domestic livestock on the ranch, until the property was purchased for its conservation values in 1985.

Property Securement

The property was secured through donations and contributions from a variety of public and private sources which include the Habitat Conservation Trust Fund, the Kootenay Wildlife Heritage Fund, the Nature Trust of B.C. and the Provincial government.

Previous Wetland Restoration

In 1980, Ducks Unlimited Canada “installed a berm, drop-inlet water control structure, a diversion structure in Cherry Creek and a 975 m long conveyance ditch to provide a consistent supply of water to a water starved wetland downstream” (Ken Johnson pers. com.). By augmenting the water supply to this wetland, commonly referred to as the Madison Marsh, a 27 acre wetland was restored.

Existing Water Sources

Water sources on the 726 hectare Cherry Creek (Madison) property are associated with the Kootenay River, Cherry Creek, Ducks Unlimited Canada wetlands (Photos 5 and 6), springs along the steep slopes separating the upper benches of the property from the floodplain lands and “George’s Pond (Photo 2). The latter is a man-made water impoundment which was used for watering livestock. This structure continues to contain water but will require restoration work on the dyke to remain functional.

Existing Structures on the Property

Shortly after the property was purchased all structures associated with the ranching operation, excluding the log shop building, a granary and the historical homestead building, were dismantled.

Cherry Creek Wetland Restoration Project

Determination of Wetland Restoration Potential:

In July 2014, The Nature Trust of B.C. (TNTBC) participated in a process designed to identify potential locations for restoring wetlands and streams in the Kootenay Region. Through this wetland evaluation process, which was conducted on a number of

conservation properties, it was determined that there was a high probability that wetlands could be restored on TNTBC's Cherry Creek (Madison) conservation property.

Wetland Restoration Rationale:

Wetlands are very productive ecosystems that are capable of supporting a wide spectrum of plants, reptiles, amphibians, birds and mammals. Because of this beneficial characteristic and the fact that wetlands are a relatively uncommon feature in the south eastern area of the East Kootenay, a regional decision to develop wetlands on TNTBC's Cherry Creek (Madison) conservation property was made in 2014. It is anticipated that by creating a series of wetlands the inherent ecological richness and diversity of the Cherry Creek property will be enhanced.

Wetland Restoration Goals:

The principle goal of the Cherry Creek wetland restoration project is to restore the wetlands to a condition that will appear very natural (Photo 3), establish benefits for wildlife and plants and to ensure that the shallow water structures will require little if any maintenance.

Wetland Restoration Objectives:

The principle objectives of the Cherry Creek wetland restoration project are to;

1. improve or restore habitat for waterfowl, wading birds, and shorebirds
2. provide suitable habitat conditions for amphibian species such as the western toad, western painted turtle and Columbia spotted frog
3. control erosion
4. improve water quality
5. replenish groundwater supplies
6. increase habitat diversity on the property

Wetland and Stream Restoration Management Responsibility:

The engineering, lay-out (Figure 2), mapping, recording and on-site supervision of the wetland and stream restoration construction contractors was conducted by wetland specialists Tomas Biebighauser and Robin Annschild with TNTBC and FWCP staff assistance. TNTBC staff, in the Kootenay region, was responsible for hiring qualified construction contractors and ensuring that the project was completed satisfactorily.

Wetland Restoration Site Characteristics:

Sedges (*Carex* spp.) and reed canary grass (*Phalaris arundinacea*) were the predominant species on Wetland sites 1 and 3 (Photo 4).

Wetland Restoration Site Selection and Specifications:

Suitable locations for wetland restoration sites were identified through an on-site assessment (Photo 7) and suitability was verified with the use of a variety of sampling tools. This involved the determination of the current and historic elevations of groundwater at each site by using a 48-inch long tile probe and a 48-inch long soil auger. The soil texture at each location was identified by using maps, a soil auger, and by using the ribbon test.

A laser level and survey rod was used to measure slope on each project site (Photo 8). The perimeter of each area was marked so that it had no more than a 6-percent slope, and changed 50cm or less from upper to lower edge.

Wetland Restoration Site Selection Records:

A GPS unit was used to record the location and perimeter of each possible wetland project. Photographs were taken of each work area and plastic ribbons were used to mark the planned perimeter of each possible wetland.

A detailed Wetland Design Form and budget was prepared for each wetland project.

Wetland and Stream Restoration Design Criteria:

The following factors were used to guide the construction of each wetland and stream restoration project so the finished habitats would appear natural and would require little if any maintenance:

1. Streams will not be blocked or dammed. Wetlands that are built by damming a stream are often short lived as they soon fill with sediment.
2. Above ground dams higher than 20cm will not be built to restore these wetlands.
3. Water control structures will not be used in the restored wetlands but will be designed and built to obtain desired hydro-periods.
4. The restored wetlands will be supplied naturally with stream water, groundwater, and/or with surface water. No pumps or wells will be used to supply the wetlands.
5. The slopes surrounding each restored wetland will generally be made gradual, averaging 5-percent or less.
6. The size and shape (Photo 9) of each wetland will take into consideration the disposition of soil (Photo 10) that would be removed to build the wetland. The excess soil will be placed in naturally appearing ridges and mounds (Photo 11) around the wetlands being restored. This soil would provide sites for planting wildflowers, trees and shrubs. Some of the soil will be placed so that it would become saturated and form wet-meadow wetlands. This soil will not be compacted and it is anticipated that the hydrology of the wet-meadows will be maintained by water flowing from the restored wetlands.
7. The area surrounding each proposed wetland site will be examined to make certain that rare species of plants or animals are not impacted by restoration activities.
8. Roads will not be built to access work sites.
9. Heavy equipment will be cleaned prior to construction to avoid introducing non-native plants to wetland and stream restoration areas.
10. Heavy equipment (Photos 12 and 13) will be used to remove non-native vegetation, topsoil, and organics from each work site as well as used to dig shallow depressions for each wetland.
11. Desirable plants growing on each site will be carefully removed, saved, and replanted following restoration activities. Non-native plants that are growing on the worksites will be destroyed so they do not germinate and grow.
12. Naturally appearing pit and mound topography will be formed in many of the wetlands to improve plant and animal diversity.

13. Large and small woody debris (Photo14) will be added to the wetlands to improve habitat for plants and animals.

14. Areas of compacted soil will be loosened and planted to native trees, shrubs and wildflowers

Project Results:

- The Nature Trust of British Columbia, through funds provided by FWCP, have implemented and completed phase 1, of a three year wetland restoration project, on TNTBC's Cherry Creek (Madison) conservation property.
- Two (2) new wetland sites #1 (25,200 m²) and #3(62,050 m²) were restored on The Nature Trust of BC's Cherry Creek conservation property (Figure 3).
- Within wetland sites 1 and 3 several shallow water wetlands were restored (Figure 4).
- The soil removed from the wetland site depressions was shaped in low, un-compacted ridges on higher ground adjacent to the wetlands.

Project Benefits:

The development of wetlands will enhance biodiversity values on the Cherry Creek (Madison) conservation property.

Communication:

The Nature Trust of BC recognizes the importance of communicating and conveying to the public the significant financial and supportive role the Fish and Wildlife Compensation Program has provided for the development and completion of the first phase of the Cherry Creek Wetland Project. TNTBC is committed to working with FWCP communication personnel in the preparation of a public news release that will relate the conservation benefits derived from the funding directed towards the Cherry Creek Wetland Project.

Figure 1: Cherry Creek Conservation Properties

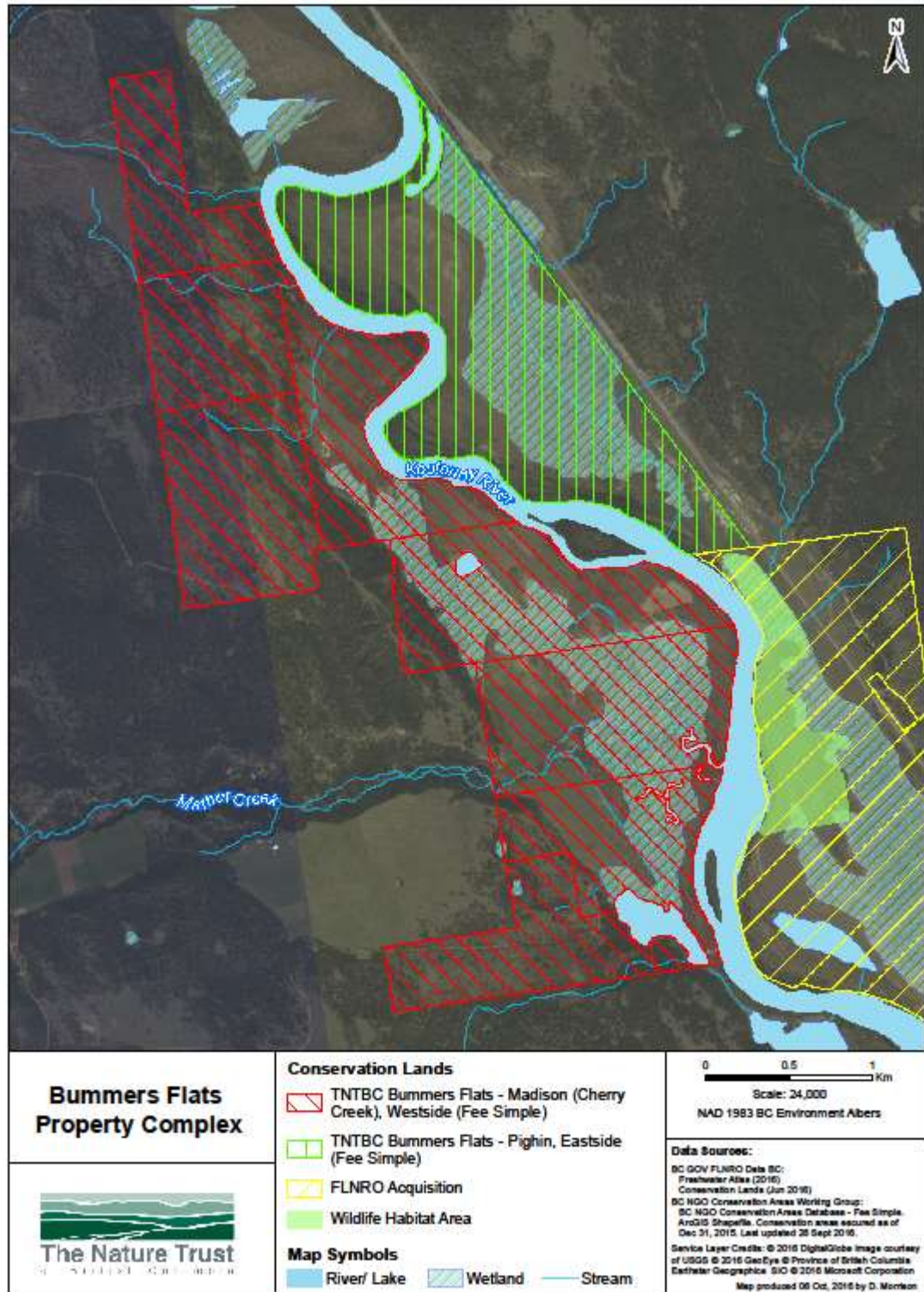


Figure 2: Configuration and Location of the 6 Cherry Creek Wetland Sites



Figure 3: Six Cherry Creek (Madison) Shallow Wetland Sites

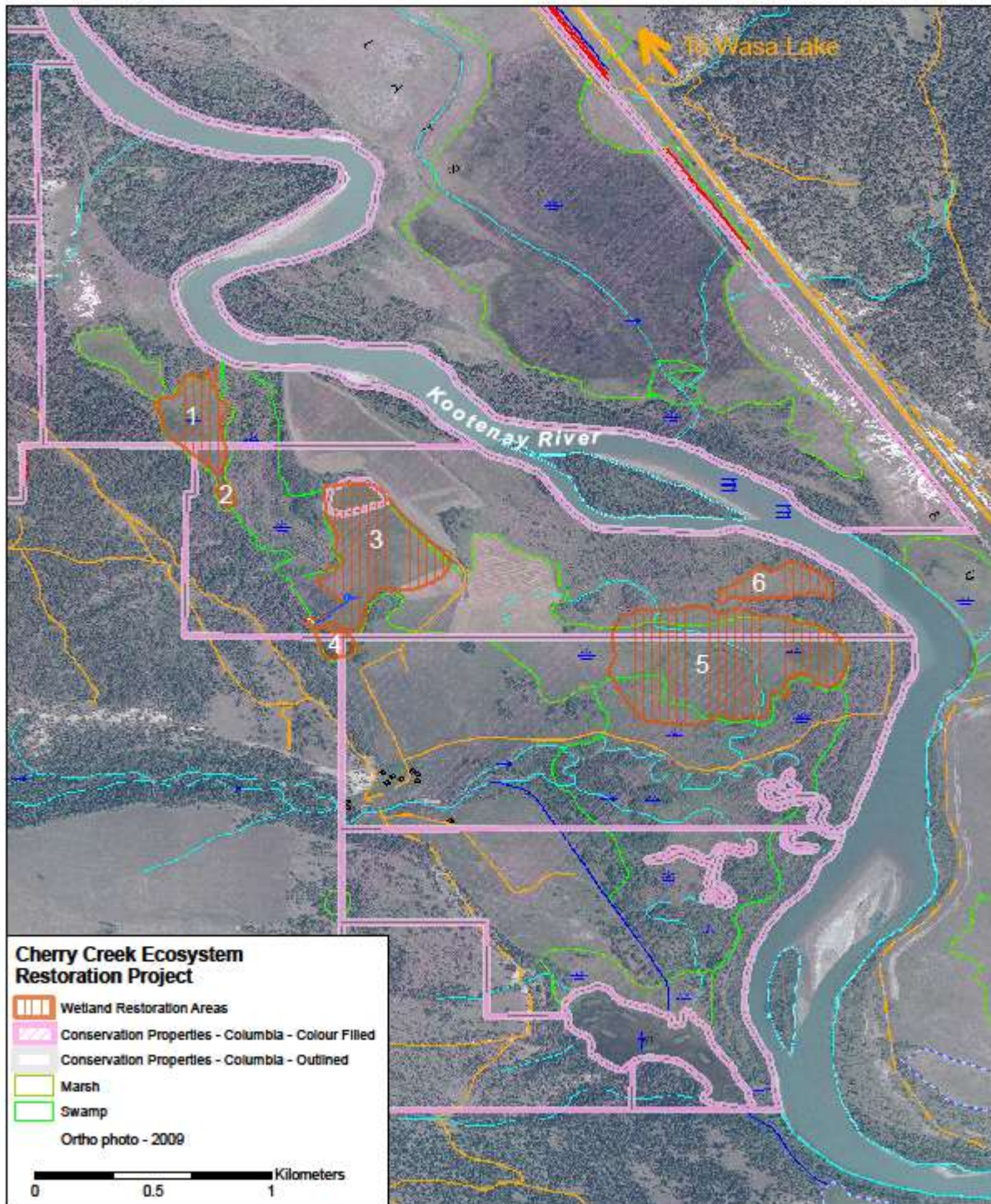


Figure 4: Shallow Wetlands Restored Within Wetland Sites 1 and 3
Cherry Creek TNT - Wetland Construction 2016 - Areas 1 and 3

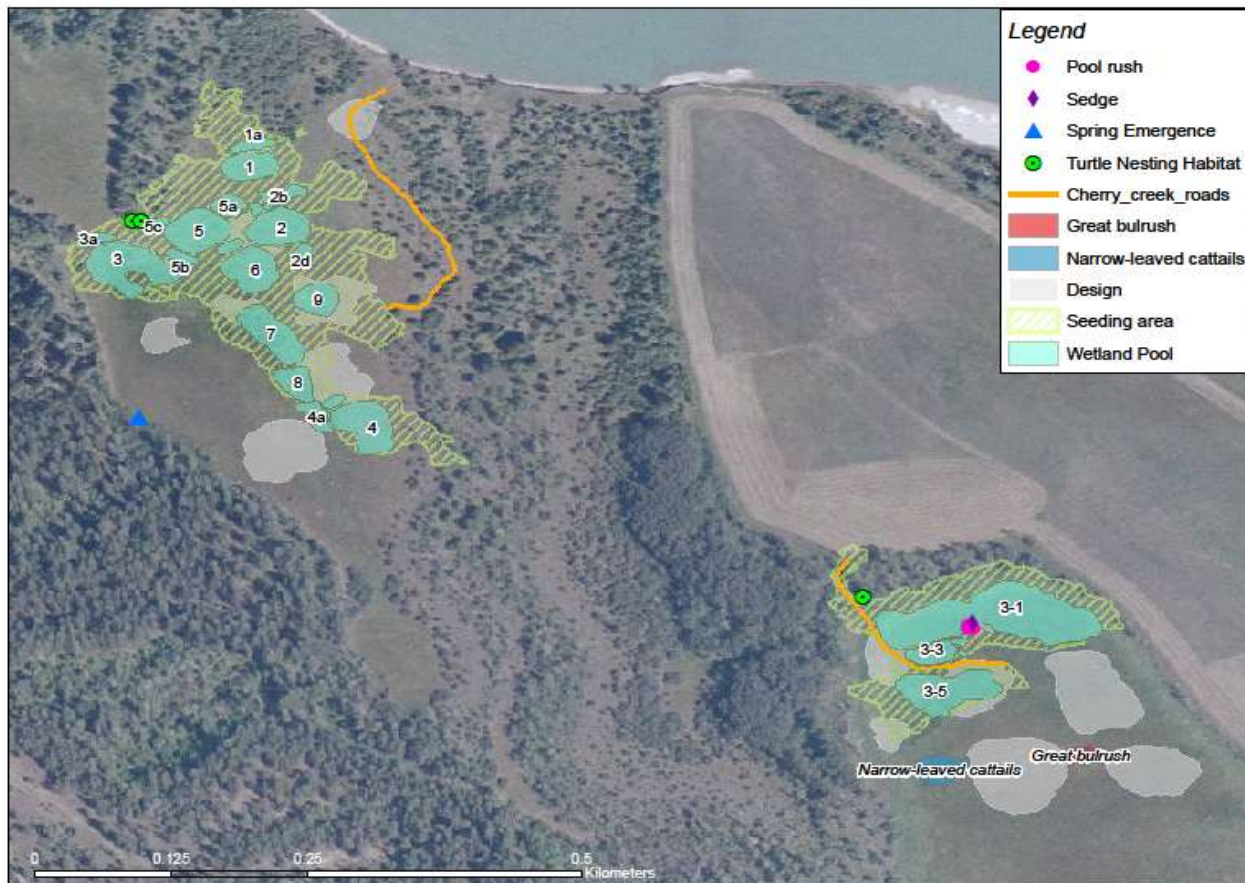


Photo 1: Sandhill Cranes on the Property



Photo 2: Georges Pond



Photo 3: Natural Wetland Close to the Property



Photo 4: Typical Wetland Site Characteristics (Sites 1 and 3)



Photo 5: Ducks Unlimited Canada Wetland Site



Photo 6: Ducks Unlimited Canada Wetland Site



Photo 7: Wetland Site Assessment and Elevation Measurements



Photo 8: Wetland Site Slope Measurements



Photo 9: Shaping the Shallow Wetlands on Wetland Site 1



Photo 10: Soil Deposition on Wetland Site 1



Photo 11: Completion of Shallow Wetlands and Mounds on Wetland Site 1



Photo 12: Wetland Restoration Equipment



Photo 13: Wetland Restoration Equipment



Photo 14: Woody Debris placed in the Shallow Wetlands

