Summary Report for the year 2005

A Work in Progress: Continuation of the **Yaqan Nuki Wetlands Rehabilitation Project Creston, BC**

KUPI (OWL) MARSH RECLAIMED

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February 2006

Continuation of the

Yaqan Nuki Wetlands Rehabilitation Project
Creston, BC

This summary is designed
as an addendum to the March 2005 report
and includes rehabilitation up-grades inclusive to November 30, 2005.

Prepared for:
Columbia Basin Fish and Wildlife Compensation Program
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In partnership with:
Lower Kootenay Indian Band
Ducks Unlimited Canada
Columbia Basin Fish and Wildlife Compensation Program
Columbia Basin Trust

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- The Lower Kootenay Indian Band
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- Columbia Basin Fish and Wildlife Compensation Program
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- Class Glass & Trim
- CWAC Implementation Committee

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1. Introduction

The Yaqan Nuki Wetlands Friendship Society (YNWFS) in co-operation with the Lower Kootenay Indian Band was formed in January 2003 for the purpose of rehabilitation and maintenance of wetlands located 6 km south of the town of Creston, east of the Kootenay River and south of the Goat River. This wetland mosaic forms a vital link between the Creston Valley Wildlife Management Area and the Kootenai National Wildlife Refuge (USA). In the 1970s Ducks Unlimited developed and installed the infrastructure on this 475ha wetland complex. Many wildlife species utilized these wetlands for breeding, resting, feeding and as a migratory stopover. As of 2005, 184 species of birds, 22 species of mammals and 9 species of reptiles and amphibians have been recorded within the boundaries of the Lower Kootenay Indian Band Lands.

With the funding partnership of Ducks Unlimited Canada and the Columbia Basin Trust, the society has undertaken the responsibility of servicing, repairing and maintaining the pumps that will re-flood each of the five wetland compartments.

This summary report does not pretend to be a scientific report. Our society does not have that expertise at its disposal and would not consider utilizing hard won funds allocated for the rehabilitation of these wetlands, to pay for one. This is, instead, a succinct inventory of the society's accomplishments in 2005. We are, however, expert at hands-on and getting things done and we think the descriptive summary herein clearly outlines the magnitude of our collective success. This summary is designed as an addendum to the March 2005 report[1] and includes rehabilitation up-grades inclusive to November 30, 2005.

The reestablishment of these wetlands, which have traditionally received little maintenance attention since the building of the initial infrastructure by Ducks Unlimited Canada (DU), has been a daunting task. It has taken these three years and will include one more year before we can say the marsh lands are fully reconstructed as to original design. Only then can we truly say we have now arrived at "maintenance as usual".

[1] Yaqan Nuki Wetlands Friendship Society. 2005. *Summary Report: Yaqan Nuki Wetlands Rehabilitation Project, Creston, BC*. Prepared for Columbia Basin Fish and Wildlife Compensation Program, Nelson, BC.

2. Reclamation Projects – Method and Implementation

Pump Repair and Maintenance

We serviced the Middle Pump, was serviced in the spring but it was pulled up again as it would still not operate. The electrical hook-up to this newer pump and a submersible is far more sophisticated than the other pumps. We called in an electrician who was able to start-up the pump again (Figure 1).


Figure 1: Middle Pump re-install at Skincus Marsh May 2005.

We discovered that the original pumping infrastructure had incorporated a canal linking the Marsh system to one of the Lower Kootenay Band's excess water outlet systems (installed to maintain arability to adjacent farm lands). About a half kilometre long, it joins the Middle Pump canal that feeds Skincus (Coyote) Marsh (see Appendix 1 for map), entering a few yards from the pump source. We doubt it was ever used much. We found it had a raised bottom height from partial blockage due to fallen trees/wood/debris, and eroded banks from years of cattle trails.

On our initial water test there was back-flow and subsequent over-flow onto the farm land. An old culvert with flap door was found near the outflow terminus. Its diameter, which is smaller than that of the source flow, was also incapable of flow without back-pooling. However, the culvert was found to be unnecessary for flow control so we removed it. Now the canal has been restored to proper working order (Figure 2). The Middle Pump and the band canal link are now functioning, so the commencement of water restoration to Skincus Marsh began.


Figure 2: Canal repair – Band Pump to Skincus Marsh July 2005.

Figure 3: Skincus Marsh – dry bed February 2005.

Figure 4: Skincus Marsh – restored October 2005.

Figure 5: Taking stock of canal at culvert site July 2005.

The next step was to repair to the intake culvert at the North Pump. In 2004 floating milfoil was continually clogging the screened entry, triggering pump failure and a subsequent need for repeated re-start. This necessitated crop harvesting intervals. A look into the 30 foot "well" leading from pump floor to the proximal end of the intake culvert revealed wood/log/debris up to 4 inches in diameter and 3 feet in length. The existing inlet screen was probably a late application. We brought in a sump pump to clear the water from the chamber, and removed the debris by hand. We then installed a screened area 5 feet beyond the culvert mouth and sides to the bank and the original screen was left in place. We built a planked jetty to allow for easier access to milfoil for harvest when needed (Figure 6).

Figure 6: North Pump debris from the intake well April 2005 (left) and screening and jetty for milfoil control May 2005 (right).

Kupi (Owl) Marsh was in fact, reclaimed last year. The picture on the cover of this report was taken March 2005.

Happy Hunting Ground Marsh, which lies above Indian Creek, was also re-flooded after the above mentioned repairs to the North Pump water system. The only access for dyke maintenance to that area is by a bridge spanning the creek, which is in an unusable state of disrepair. The need for bridge repair will be discussed in more detail later in this summary.

Dyke Repair and Maintenance

Generally the dykes had not been repaired or maintained for many years. The cattle guard entrance to the two dykes leading to the North Pump was partially covered so we repaired it (Figure 7). The east-west dyke in Tanal Marsh was impassable by vehicle due to erosion and/or undermining (partly from muskrat activity over the past 30 plus years). We filled the holes. However, a layer of gravel is needed for it to be passable in wet weather since slick mud renders access for pump maintenance dangerous to impossible when it rains. This is also a problem with the two dykes leading to the north and Middle Pumps. It was not rectified in 2005.

Figure 7: Cattle guard repair July 2005 and Skincus Marsh dyke repair October 2005.

After Skincus Marsh was restored to its traditional water levels, we consulted with a Duck's Unlimited representative. It was determined that the containment dyke (approximately 600 meters in length) at the east end of Skincus was no longer stable and there was a concern it would give way, flooding farm lands in the process. It was thought to have been over-flooded at one time, eroding the banks. It has been further compromised by the herds of cattle using the dry basin for foraging over the years. We repaired the dyke and then seeded it for continued stabilization (Figure 8).

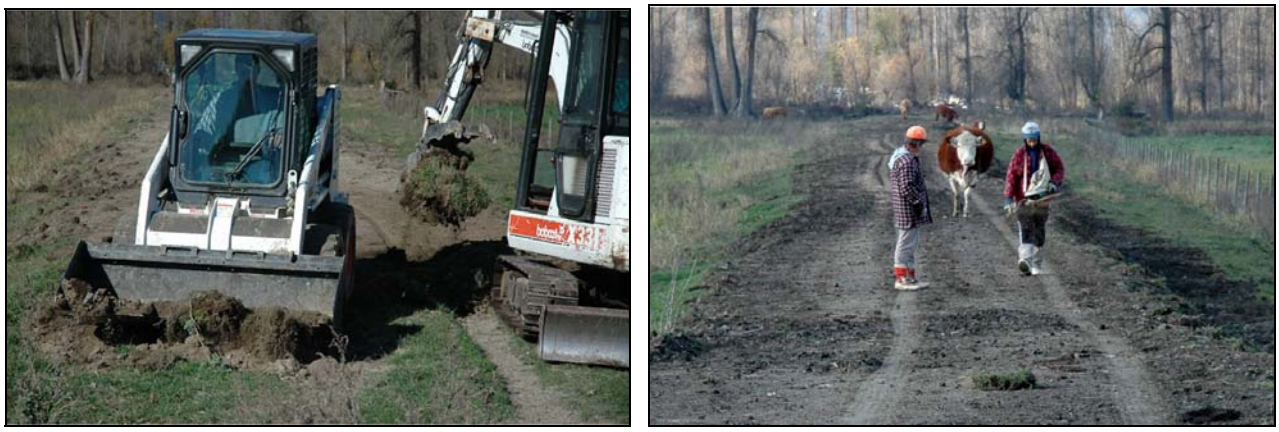


Figure 8: Skincus Marsh dyke repair (left) and seeding (right) October 2005.

The North Pump outlet canal, water access for Kupi Marsh and Hidden Lake, leaked over its banks during pumping, with resultant spillage to cattle grazing land. Debris has raised the height of the bed over the years. To correct his structural failure, we deepened it by two feet for about 300 yards (Figure 9).

Figure 9: North Pump outlet canal cleanup and deepening October 2005

Vehicle Access

The north-west compartment of Tanal Marsh tended to loose more water than the others, and was very difficult to monitor. The band leaders informed us that there was an old vehicular trail along the back (river side) of that compartment that hooked up with the east-west dyke, when the original infrastructure was put in. They requested it be re-established for maintenance and accessibility. We cleared the road for a total distance of approximately 3 kilometres (Figure 10).

Figure 10: Reconstitution of old Tanal Marsh river trail from pump house and connecting with west end of E/W dyke

Investigation found that there is no other route that can be taken for vehicular maintenance of Happy Hunting Ground Marsh dykes other than the old bridge that crosses Indian Creek, which borders two sides of the Marsh. The creek widens toward source, always with steep mud banks. It empties into the Goat River, which forms the third side of the Marsh. The fourth (east) side is a maze of springs feeding the creek and has no stable ground. Cost of a new route would be prohibitive.

We undertook to investigate the degree of rot in the bridge pilings in order to determine rehabilitation feasibility. The outer pilings (both sides) were found to have 30-40% rot at the "tidal line". The inner ones are good at 10%. The planked bridge deck had been removed previous to YNWFS intervention, apparently to stop cattle from crossing. The deck support logs are rotten. The bridge, which was originally 12 feet wide and 100 feet long, could be refurbished at 8 feet wide, thus excluding the outer pilings. The machinery utilized by the Society (e.g. bobcat and pickup) is far lighter than that used during the initial Marsh infrastructure construction, when the bridge was built (Figure 11).

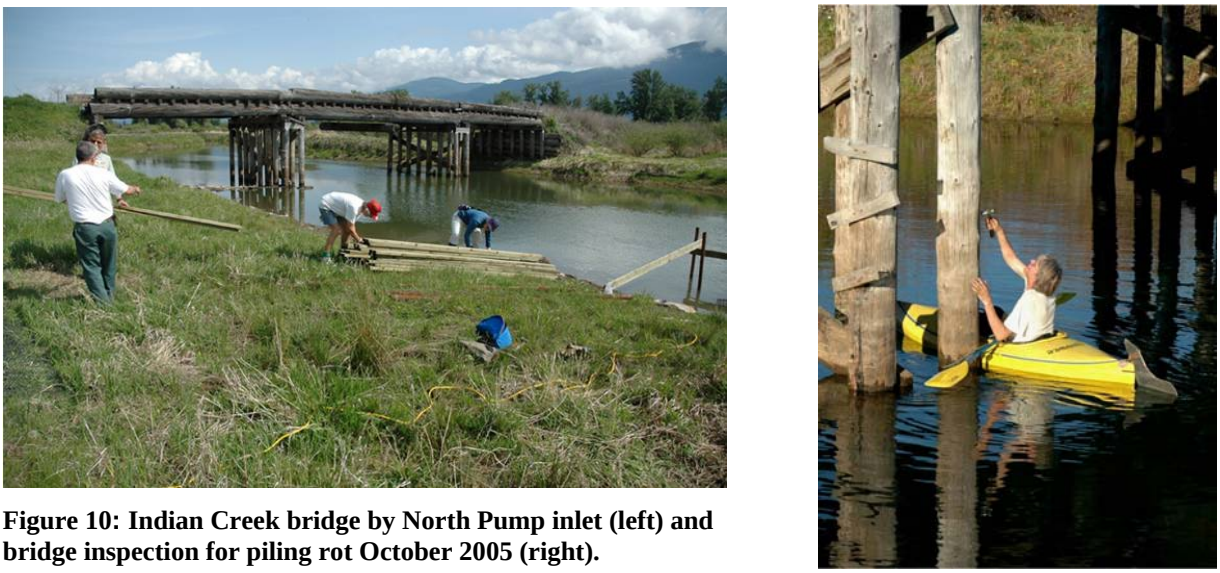


Figure 10: Indian Creek bridge by North Pump inlet (left) and bridge inspection for piling rot October 2005 (right).

Skincus Marsh was without water much longer than the others. During this time of drought, vehicular travel around its south end used the dry bed. When the Marsh was reinstated to its former water levels, the old unused upper trail through the cottonwood forest had to be re-cleared. We accomplished this in August 2005.

2. Some Special Successes

More Great Blue Herons were noted in 2005 in Tanal (Cattails) Marsh than had been observed since our rehabilitation process had begun. A new rookery (eight nests) was found in the dense cottonwood forest at the west end of the marsh (Figure 12)

Figure 11: New Great Blue Heron rookery at Tanal Marsh May 2005.

Amongst marsh nesters, the Yellow-headed Blackbird is most unforgiving when its habitat has been destroyed. It is, therefore, extra special that these birds have chosen to reappear in traditional force (Figure 13).

Figure 12: Yellow-headed Blackbirds at Tanal Marsh August 2005.

The muskrats are back! Suddenly in the beginning of October 2005, their mud houses began to reappear, thirty-plus Tanal Marsh and eight in Kupi Marsh (Figure 14). These animals are proficient in cattail control. With their help at the harvest, marsh health will increase.

Figure 13: Muskrat Houses Tanal Marsh

3. General Maintenance Initiatives

The Short and Long dyke accesses to the North and Middle Pumps, plus the dykes at Tanal Marsh were mowed in the early spring. The three pumps were inspected 1-2 times a week and greased as needed. The North Pump needed to be restarted a few times following electrical storms. There was no problem with milfoil after the fenced enclosure was erected. Water levels were monitored routinely (Figure 15).

Figure 14: Monitoring water level control at canal to Hidden Lake.

The vehicular accesses running adjacent to the Kootenay River that connect the individual marshes were cleared of encroaching branches and fallen log debris as needed. It is approximately 26 kilometres from the North Pump to the South pump via these maintenance trails.

Bird boxes were monitored and repaired as needed. Marsh inhabitant activity was monitored (Figure 16).

Figure 15: Duck box repair and nest inspection.

4. Wetland Education and Promotion Activity

A wetlands bird brochure (see Appendix 2), as mentioned in the Summary of 2004[2], was distributed for the purpose of increasing awareness of local species and rehabilitation in the area to the following places, and restocked as necessary:

- The Lower Kootenay Band School
- The Native Craft store on the Band lands
- The Chamber of Commerce Visitors Center
- The College of the Rockies
- Creston Valley Wildlife Management Area

The 60th anniversary celebration of BC's Commitment to Wetland Conservation was hosted by the Creston Valley Wildlife Management Area (CVWMA) in 2005. Our Society was an active participant and a member of the organizing committee. A display of the YNWFS wildlife and its restoration improvements was exhibited along with bird brochures and a short history. The case for the display was made in three wood frames hinged together to fold and lock as a suitcase (Figure 17). The three display compartment illustration boards slide out which enables upgrades and can be a basis for enlarging a "library" of pictured teaching aides that is also portable. The unit was given to the Lower Kootenay Band administration to be made available to the school.

Figure 16: Teaching display 60th anniversary celebration of BC's Commitment to Wetland Conservation

[2] Yaqan Nuki Wetlands Friendship Society. 2005. *Summary Report: Yaqan Nuki Wetlands Rehabilitation Project, Creston, BC*. Prepared for Columbia Basin Fish and Wildlife Compensation Program, Nelson, BC.

5. Volunteer Contributions (in hours)

A total of 664 volunteer hours were contributed to this project in 2005. They are summarized as follows:

Activity	# Hours
Middle Pump installation repairs	32
Canal repair – Band pump to Skincus Marsh	41
Skincus Marsh water restoration	19
North Pump well cleanout	40
North Pump intake screening and jetty construction	56
Happy Hunting Ground Marsh water restoration	17
Cattle guard repair – entrance to North dykes	3
Mow and repair sink holes – East/west dyke Tanal Marsh	20
Entrance dyke re-surface & repair to pump – Tanal Marsh	20
Skincus Marsh dyke repair and seeding	45
Reconstruction forest trail south end Skincus Marsh ……..	4
Reconstruction back maintenance trail Tanal Marsh	67
North Pump outlet canal deepening	29
Bridge inspection to determine reconstruction feasibility	13
General maintenance mowing of dykes	8
General pump inspections, servicing pumps and monitoring water levels	80
General maintenance of the vehicular access to Marshes	38
Monitoring and repairing bird nest boxes	20
Meeting biologists regarding pest control, Leopard frog program, consult with FortisBC & DU	12
Teaching aide development and environmental awareness promotion	30
Office work	70

In addition to volunteer contribution in hours, donated expenses included such items as large and small engine equipment, vehicle expenses, maintenance and building materials (i.e. bird box restoration, grease for pump servicing etc.), hand tools, office supplies and photography.

6. Summary of Expenses

A total of $17,085.26 was spent in 2005

Activity Item	Cost
Middle Pump installation repairs (Aardvark Electric) (crane truck donated by Home Building Supply)	$63.00
Canal repair – Band pump to Skincus Marsh (40% bobcat time donated)	$1,000.00
Skincus Marsh water restoration (total electricity costs calculated below)	$0.00
North Pump well cleanout (Sump pump rented)	$116.87
North Pump intake screening and jetty construction (cost of materials)	$760.60
Happy Hunting Ground Marsh water restoration (total electricity costs listed below)	$0.00
Cattle guard repair – entrance to North dykes (40% bobcat time donated)	$100.00
Dyke mow and repair sink holes – East/west dyke Tanal Marsh (bobcat)	$819.90
Entrance dyke surfacing – Tanal Marsh (gravel and truck, 40% bobcat time donated)	$1,733.21
Skincus Marsh dyke repair and seeding (40% bobcat time donated – 2 machines used, one operator paid, seed donated)	$2,743.25
Reconstruction back (river side) maintenance trail Tanal Marsh (40% bobcat time donated, one operator paid, one chainsaw operator paid)	$4,829.56
North Pump outlet canal deepening (40% bobcat time donated)	$975.00
Bridge inspection to determine reconstruction feasibility	$0.00
General maintenance mowing of dykes (40% bobcat time donated)	$487.50
General pump inspections, servicing pumps and monitoring water levels	$0.00
General maintenance vehicular accesses to marshes (brushing out)	$0.00
Monitoring and repairing bird next boxes (materials donated)	$0.00
Meeting biologists re pest control, Leopard Frog project, consult with FortisBC and DU	$0.00
Teaching aide development and environmental awareness promotion (bird brochures, other materials donated)	$573.88
Electricity for pumping water	$2,725.00
Registration fees	$25.00
Bank fees	$132.46
TOTAL	**$17,085.26**

Figure 17: Swans in Kupi Marsh.

7. Future Reclamation Projects (Goals for 2006)

We have doubled our initial and somewhat simplistic objectives of 2003. Our initial assessment did not include all parameters since the need for some renovations only became evident when the marshes were re-flooded to historic levels. This includes such reconstruction/restoration as; a major dyke (Skincus Marsh), an old vehicular access with forty-plus years of re-growth (Tanal Marsh), a large bridge to enable maintenance vehicles to cross (Happy Hunting Ground Marsh); the major re-surfacing for all dykes, to allow safe wet weather maintenance. Waxwiik (Dragonflies) Marsh will not be flooded at this point in time. The Lower Kootenay Band wishes to keep this area for cattle grazing. Existing and new partnerships are being actively sought.

Future activities include:

Circuit Breakers

After consultation with a FortisBC representative, it was suggested that the circuit breakers for the North Pump be replaced as that was thought to be at least part of the problem with regard to the pump spontaneously shutting off at times. A lightening strike control is also planned.

Cattail Management

Open water spaces have been significantly compromised in the reclaimed marshes. This has to do mostly with vegetative invasion of the dry beds during the drought, and the past practices in muskrat trapping, coupled with the exodus of the remaining animals because of water habitat loss. Water birds need a certain amount of open water to land and take off with safety. Tanal Marsh is most urgently in need of intervention for the return to traditional open water spaces. It is 90% choked, mostly by cattails, as compared with photos fro 1997. Therefore:

i. Muskrat trapping has been halted at the request of the Society
ii. we plan to build a machine capable of harvesting the excess cattails. Drawdown is not suitable here, partly because Tanal Marsh never totally firms up and quicksand-like pockets occur. The machine is expected to be functioning by early spring, before nesting season.

Bridge Repair

Bridge repair for vehicular maintenance access to Happy Hunting Ground Marsh is expected to be a summer project. At this point in time, the bridge deck support logs are being donated and the deck boards, partially donated.

Dyke Resurfacing

Re-surfacing dykes to allow for safe passage during wet weather is only partially accomplished. We will attempt to finish this in 2006. our plan is to use gravel and perhaps grass seed to stabilize the mud.

Invasive Plant Management

There is an invasion of the noxious plant *Cynoglossum officinale* (Hound's Tongue) on the marsh border-lands and dykes. Cattle grazing is partly responsible, but a necessary revenue for the Lower Kootenay Band. We have discussed the problem with Juliet Craig

(Coordinator of the Central Kootenay Invasive Plant Committee). We hope to receive a supply of the *Mogulones cruciger* beetles, specific for the control of this plant.

Northern Leopard Frog Recovery (NLFR)

In October 2005 the Yaqan Nuki Wetland Friendship Society and the Lower Kootenay Band were approached by the Northern Leopard Frog Recovery Team for permission to consider Kupi and Happy Hunting Ground Marshes for transplant sites. Investigations in 2005 concluded that no populations occur there at this time and that the habitat is prime. Permission was granted and the application has been sent for review. We had made an initial inquiry about this program in 2004. The bridge and dyke restorations mentioned above are imperative for this initiative alone.

Upper Columbia White Sturgeon Recovery Initiative (UCWSRI):

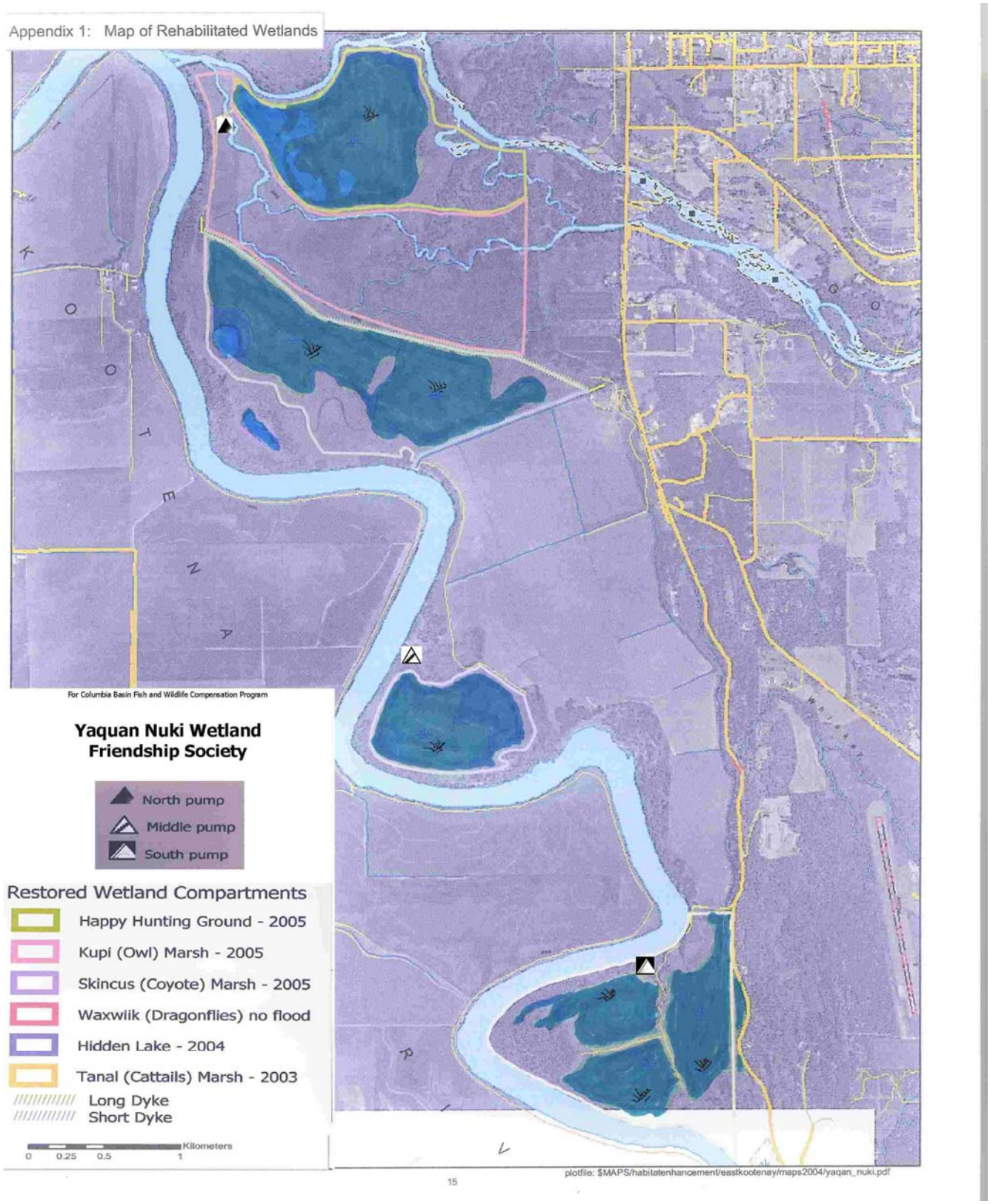
We have also been asked if we would support the UCWSRI. Kootenay River, Goat River and Indian Creek are integrated environments for these fish. Indian Creek begins and ends on the Lower Kootenay Band lands and is the water source for the North Pump. The nature of nay assistance we might provide has not been decided yet.

Highway Lookout

We are still in limbo with regard to the safe highway observation pullout at Tanal Marsh on Highway 21. The Ministry of Transportation and Highways (MoTH) stated, in our last approach, that we would need for a geological survey. We suggested one must have been done when the highway was put in, but we have not been able to verify that to date.

Figure 18: North Pump canal to Kupi Marsh and Hidden Lake.

Appendix 1: Map of Rehabilitated Wetlands



Appendix 2: Birds of the Lower Kootenay Band Lands