Environment and Climate Change Canada
Canada Nature Fund: Community-Nominated Priority Places for Species at Risk

Kootenay Connect: Columbia Lake Focal Area

6CL Invasives

March 26, 2025 Final Report

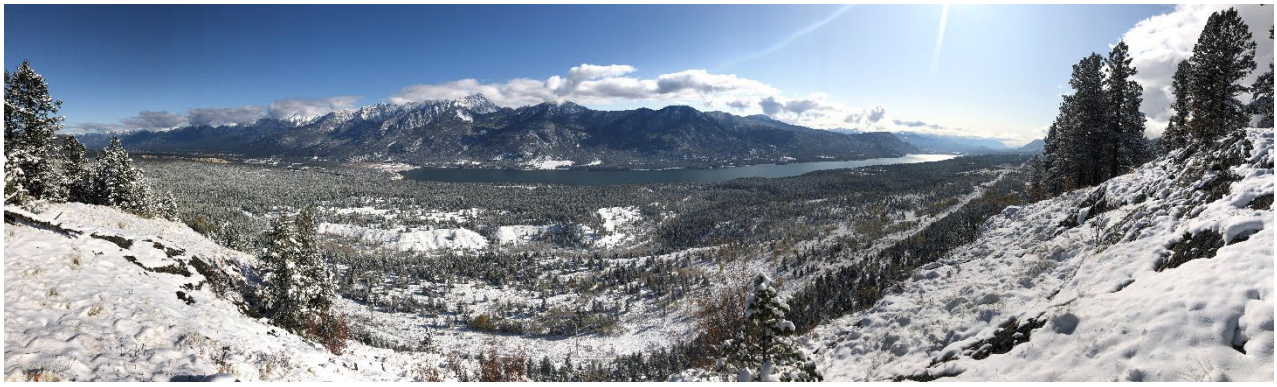

Photo: Chris Bosman

Kootenay Connect is a project facilitated by the Kootenay Conservation Program

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The Nature Trust of BC (NTBC) & East Kootenay Invasive Species Council (EKISC)

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1. BACKGROUND – KINQUQANKI EAST SIDE COLUMBIA LAKE:

Known as kinq̓uq̓anki in the Ktunaxa language, the east side of Columbia Lake is a beautiful and mostly intact natural landscape that possesses significant cultural and ecological values, particularly to First Nations Peoples who have occupied the land for thousands of years. Over the past several decades, there have been significant land conservation efforts undertaken to minimize threats to the land base. As a result, an impressive assemblage of protected and conserved areas has been established.

kinq̓uq̓anki is primarily comprised of the East Side Columbia Lake Conservation Complex which occupies well over 7,000 hectares, underpinned by the expansive East Side Columbia Lake Wildlife Management Area, a provincial government administered conservation area that falls under the responsibility of the BC Ministry of Water, Land and Resource Stewardship (WLRS) with collaboration from the Ktunaxa Nation Council (KNC). BC Parks and protected areas under its purview as well as, private conservation areas managed by The Nature Trust of BC (NTBC) and the Nature Conservancy of Canada (NCC) add to the WMA footprint, as shown in Figure 1.

kinq̓uq̓anki is comprised of a variety of habitats including lake and lakeshore areas, wetlands, and a mosaic of grasslands and dry open forests at lower elevations. Meanwhile, Lodgepole Pine, Englemann Spruce and subalpine fir forests occupy mid and upper elevations. The diversity of the landbase supports a variety of wildlife and biodiversity values.

The area provides critical ungulate winter range for a variety of ungulates including the Columbia Lake Rocky Mountain Bighorn Sheep sub-population. The area also provides habitat to a wide range of other mammals, including wide-ranging carnivores such as Grizzly bears and wolves. Meanwhile, the grasslands and dry open forests provide important habitat attributes for several species at risk, while the lakes and wetlands provide important waterfowl staging along the Pacific Flyway, as well as a Burbot spawning site. The area also functions as a regionally important wildlife connectivity corridor, one of several focal areas of Kootenay Connect, an initiative of the Kootenay Conservation Program, championed by Dr. Michael Proctor and ecologist Marcy Mahr.

In 2024, the Provincial Government, the Ktunaxa Nation Council, the Nature Conservancy of Canada and The Nature Trust of British Columbia (the “Partners”) were awarded funding to kinq̓uq̓anki for the first time, through Year 6 of Kootenay Connect – Columbia Lake Focal Area envelope. The funding was earmarked to manage invasive plants across this special landscape. By addressing this critical threat, the Partners hope to enhance the ecological health and function of plant communities within kinq̓uq̓anki, while also ensuring that cultural values important to local First Nations (i.e. traditional plants for food and medicine) remain protected.

While BC Parks manages Columbia Lake Provincial Park and the two Ecological Reserves (Mt. Sabine & Columbia Lake) at kinq̓uq̓anki, they have not been formal partners in this project - to date. It should also be mentioned that ʔakisq̓nuk First Nation, the closest Ktunaxa member community to the kinq̓uq̓anki had some involvement in this project through review and feedback of the Invasive Species Management Plan (ISMP). Finally, Wildsight Invermere has interest in the area as a local environmental stewardship and advocacy group. Wildsight was involved in a volunteer weed pull in 2024 and undertook inventory activities, primarily in an effort to help protect the local Bighorn Sheep population.

Work completed in 2024-25 was financially supported by Environment and Climate Change – Community Nominated Priority Places for Species-at-Risk, the funding source for Kootenay Connect. WLRS and the Habitat Conservation Trust Foundation were other funders to this project, amongst others (unreported). The Partners all contributed in-kind staff time to this project.

This final report summarizes activities that took place across kinq̓uq̓anki in the first year of the project (2024-25).

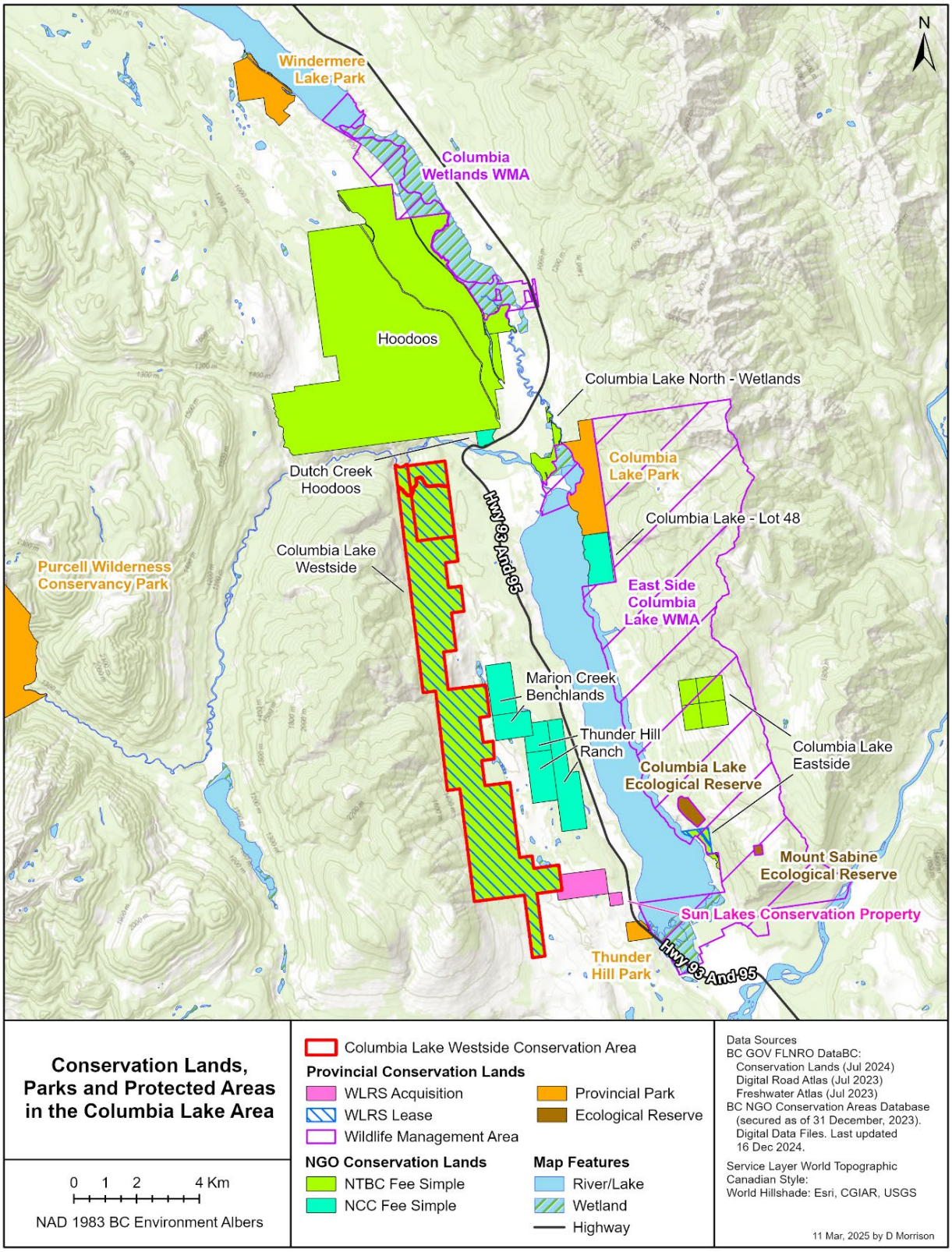

Figure 1: Map Showing Conserved and Protected Areas in the Columbia Lake Area including kinḍuḍanki (east side of Columbia Lake)

2. PROJECT IMPLEMENTATION – YEAR 1:

The 2024-25 fiscal year marked the first year of an invasive species management project at kinq̓uq̓anki, which is likely to extend beyond Kootenay Connect funding availability. Being the first year of the project, a major component of the work focused on inventory and the development of an Invasive Species Management Plan (ISMP). However, limited invasive plant treatments (including monitoring and InvasivesBC data entry) were completed, funded in large part by the Habitat Conservation Trust Foundation Conservation (HCTF) Lands Operations and Maintenance funding that NTBC and WLRS receive on an annual basis. Other partners and/or land management agencies provided other funding for similar work across the landscape.

The Partners hired the East Kootenay Invasive Species Council (EKISC) and its subcontractor (RMC Enterprises Ltd.) to complete all invasive plant planning and management efforts. This was advantageous because both entities know the landscape, with RMC Enterprises having done chemical treatments in the WMA, on NTBC, NCC and BC Parks managed lands in the past. Besides being familiar with the area, EKISC staff also have experience conducting large-scale invasive plant inventories and developing ISMPs, which created some efficiencies.

For a number of reasons, the project got off to a late start. NTBC administered the EKISC contract after a Contribution Agreement had been signed with Kootenay Connect (KCFA) in August. NTBC and WLRS staff developed the EKISC contract over the late summer, with sign-off in October. Fortunately, most treatment had occurred during the growing season, as funded by other sources. However, the late release of the contract meant that more on-the-ground management could have taken place than what actually happened.

Because of the late start to the project, not all components were delivered as anticipated. While there was great participation and input from the Partners during the development of the ISMP, it was back-loaded to late winter and coincided with reporting out to Kootenay Connect. At the time of reporting, the ISMP is considered to be an interim draft, requiring additional refinement from the Partners this spring. Similarly, there weren't long-term effectiveness monitoring plots established, and no grass seeding occurred as a value-added enhancement activity.

3. 6CL - INVASIVE SPECIES MANAGEMENT DESCRIPTION & HIGHLIGHTS:

While NTBC was responsible for administering the contribution agreement with Kootenay Connect and the contract with EKISC, it collaborated with the Partners, particularly WLRS staff.

The year marked what is anticipated to be the beginning of a more coordinated and strategic approach to invasive species (plant) management across kinq̓uq̓anki. While some level of inventory and treatments have occurred in the past, they have often been piece-meal, driven more by regional priorities and not an area-specific strategy, each land management agency working somewhat on its own. While kinq̓uq̓anki is a special place, it is not without a legacy of previous land uses. Resource use has resulted in the spread and establishment of invasive plant species throughout the area. Without strategic direction, better coordination and increased management effort, invasive plants risk compromising the sensitive ecological and cultural values of kinq̓uq̓anki.

Settler activities such as logging and cattle ranching created a network of roads and introduced disturbance to the landscape. In more recent times, the establishment of two communications infrastructure sites, and development at Canal Flats and Fairmont Hot Springs have added further pressures to the landscape. Perhaps the most significant risk that kinq̓uq̓anki currently faces is contemporary recreation across the landscape, both motorized and non-motorized, which brings the threat of further invasive plant spread and establishment.

Developing an Invasive Species Management Plan or ISMP was seen by the Partners as being an important and necessary step to effective natural resource management across kinq̓uq̓anki. An ISMP cannot be accurately developed

without being informed by an extensive inventory, which was prioritized and implemented in 2024. The ISMP is currently at the draft/interim status and is expected to be finalized in May 2025, applicable until 2030.

While the ISMP was a major component of the work over the past year, some treatment and monitoring activities were undertaken. Treatments have been taking place across the landscape for a number of years – typically in an ad-hoc approach by individual agencies/land managers, typically utilizing the services of EKISC and its sub-contractor. Before EKISC was founded, the Provincial government employed crews to undertake treatment across the land base.

The following provides a summary of the results of this sub-project. EKISC's final report (Kinḍuḍanki Columbia Lake East Area Invasive Plant Management Final Report 2024) was the source for most of the information.

Inventory:

- Inventory was a significant focus of effort to best inform the development of an ISMP. While some level of inventory was pre-existing, EKISC and the Partners significantly increased this dataset.
- Inventory functions were focused on invasive plants vs. species (mammals, insects, pathogens, diseases, etc.).
- EKISC utilized its standard protocol for recording invasive species. However, due to the large size of the survey area, staff only surveyed roads, trails and disturbed areas (i.e. landings, shoreline areas, or infrastructure).
- EKISC staff conducted the inventory over three days (July 29-31, 2024). On Day 1, they were accompanied by five WLRS staff to clarify objectives, provide some background and to increase inventory data.
- Much of the inventory was completed using e-bikes for efficiency (Photo 1).
- In addition, a volunteer from Wildsight Invermere conducted an inventory along the shoreline of the WMA from south to north. The inventory was not extended beyond Armstrong Bay due to time constraints. However, this work was valuable in obtaining more data across a varied landscape (Photo 2).
- Approximately 50 kilometres of linear corridors were inventoried via e-bike, exceeding the 25km contract stipulation.
- Approximately 7.5 kilometres of shoreline was inventoried by kayak.
- A total of 175 infestations were recorded during the survey, accounting for a footprint of 15.38 ha (Table 1).
- In total, more than ten invasive plant species were recorded, including: Baby's breathe, Bull thistle, Canada thistle, Cheatgrass/Downy Brome, Diffuse knapweed, Russian thistle, Mullein, Oxeye Daisy, Spotted knapweed, St. John's wort, Yellow Hawkweed species, Yellow/Common Toadflax.
- Of all species, Cheatgrass/Downy Brome represented the largest infestation footprint, while Spotted knapweed was the most common species with detections at 58 sites.
- New or previously unrecorded infestations were entered into the InvasivesBC database by EKISC staff prior to the December 1st deadline instituted by the database administrator (Province of BC).

Photo 1: EKISC staff using e-bikes to conduct inventory, July 2024

Photo 2: Inventory was both terrestrial and riparian based

Invasive Plant	Infestation Count	Area (ha)
Baby's breath	1	0.0001
Bull thistle	6	0.20
Canada thistle	26	0.97
Cheatgrass / downy brome	14	8.83
Common tansy	1	0.001
Diffuse knapweed	6	0.72
Russian thistle	4	0.08
Mullein	4	0.001
Oxeye daisy	27	2.13
Spotted knapweed	58	2.17
St. John's-wort	1	0.03
Yellow hawkweed species	26	0.25
Yellow/common toadflax	1	0.00
Total:	**175**	**15.38**

Table 1: Summary of inventory results across kinq̓uq̓anki (east side of Columbia Lake), July 2024

Treatment Results:

- Treatments were informed by a previous and ad-hoc inventory data within the InvasivesBC database, local knowledge of the EKISC sub-contractor and new infestations discovered through a comprehensive inventory completed in 2024.
- Chemical treatments took place over several days including July 9 & 10, September 8 & 30, and October 1, 17 & 18, 2024.

- One volunteer, mechanical (hand-pulling) event that took place at the north end of kinq̓uq̓anki (within Columbia Lake Provincial Park) which included areas alongside Columbia River Drive and the main parking area at the park. Wildsight Invermere and BC Parks were the lead organizations for this event held in May 2024. Treatment metrics from that event are not included in this report.
- Chemical treatments were completed using a side-by-side ATV equipped with boom-less nozzles and handguns, operated by RMC Enterprises Ltd., a local and long-time EKISC sprayer-applicator sub-contractor. Meanwhile, treatments completed in October were done with backpack sprayer on areas that couldn't be easily accessed using an ATV (i.e. steep, rocky slopes).
- The contract included a target to treat 0.19 hectares of priority invasive plant species, which was exceeded with 1.07 hectares being chemically treated in total, across 48 treatment areas (Table 2).
- The total area-based treatment can be broken down as follows: MWLRS conservation areas - WMA (0.875 ha), NCC Lot 48 Conservation Area (0.07ha), BC Parks – Columbia Lake Provincial Park (0.069), and NTBC Columbia Lake Eastside Conservation Complex (0.065 ha).
- The primary invasive species controlled were: Spotted knapweed, Diffuse knapweed, Yellow Hawkweed spp., and St Johns wort (Photos 3 & 4).
- Herbicides deployed in the treatments included: Milestone (Aminopyralid) and Clearview (Aminopyralid + Metsulfuron), both of which are selective chemistries approved for use in Canada.
- All treatment data was recorded in InvasivesBC, the provincial geo-database for invasive species in BC.
- Treatment maps, based on GPS tracking were developed and included in the EKISC final report (see Figure 2 below as an example).

Photo 3: While not treated last year, Common Tansy is very limited and has the potential to be eradicated, July 2024.

Photo 4: Most treatments were conducted via ATV and included roadside treatments as shown here, October 2024

Conservation Area	Species Targeted	Herbicide used	Treatment Method	Undiluted herbicide used	Treatment sites	Area treated (ha)
East Side Columbia Lake Wildlife Management Area	Spotted knapweed	Milestone	Hand gun, boomless nozzle, backpack	0.29 L	10	0.59
		Clearview	Hand gun, boomless nozzle	0.01 kg	9	0.06
	St. John's wort	Clearview	Boomless Nozzle	0.0003 kg	1	0.002
	yellow hawkweed species	Milestone	Hand gun	0.001 L	1	0.003
		Clearview	Boomless nozzle	0.04 kg	10	0.22
Nature Trust of BC's Columbia Lake East Conservation Complex	Spotted knapweed	Clearview	Boomless nozzle	0.007 kg	1	0.04
	yellow hawkweed species	Clearview	Boomless nozzle	0.004 kg	1	0.025
Nature Conservancy of Canada Lot 48 Conservation Area	Diffuse Knapweed	Milestone	Hand gun, boomless nozzle	0.03 L	4	0.07
BC Park's Columbia Lake Provincial Park	Diffuse knapweed	Milestone	Hand gun, boomless nozzle	0.032 L	8	0.06
	Spotted knapweed	Milestone	Hand gun, boomless nozzle	0.004 L	3	0.009
Total:					**48**	**1.07**

Figure 2: Table showing a summary of treatments across kinq̓uq̓anki (east side of Columbia Lake) completed in 2024

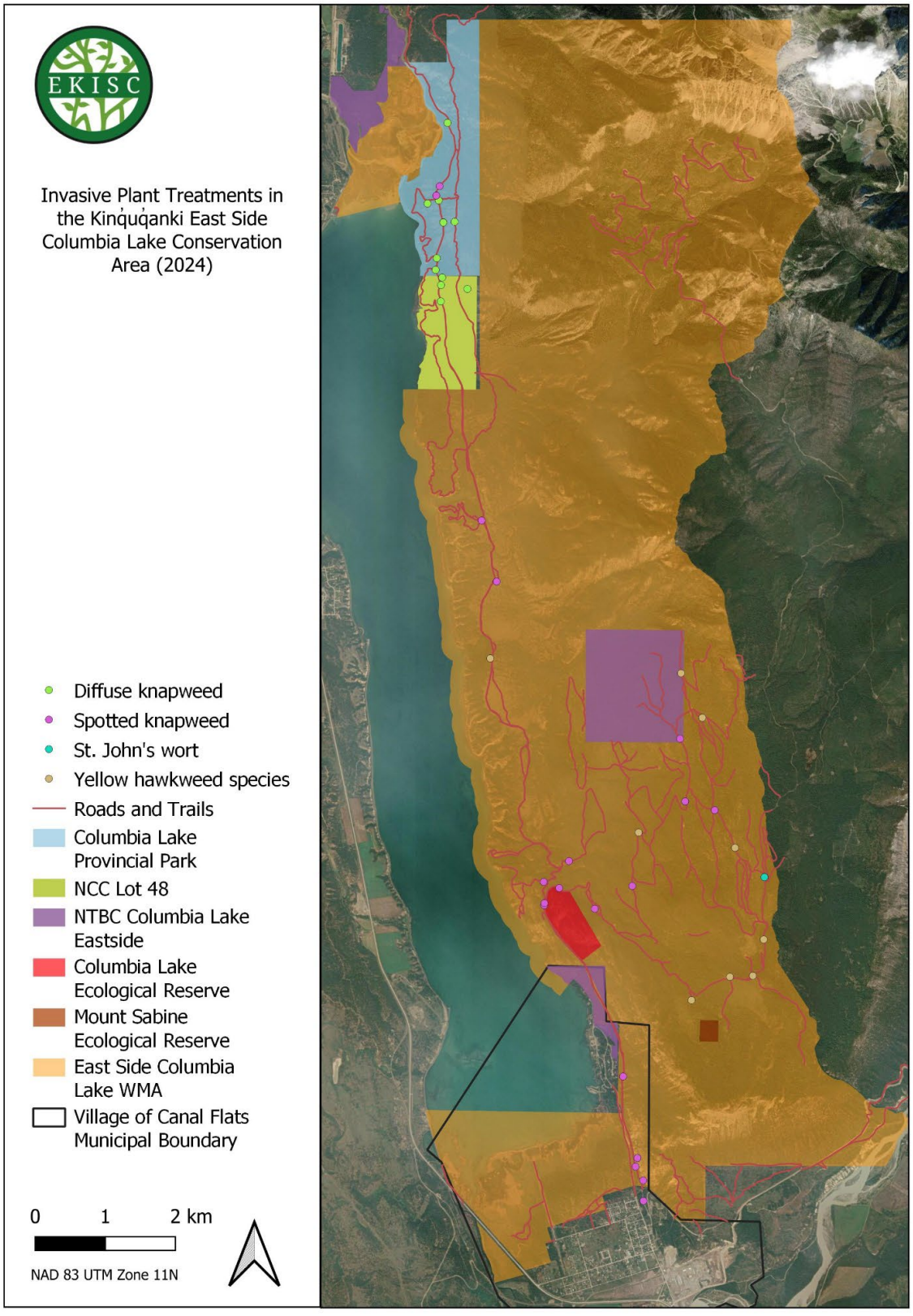

Figure 2: Example of GPS'd treatments across kinq̓uq̓anki (east side of Columbia Lake) completed in 2024

Treatment Monitoring Results:

- The NTBC-EKISC contract stipulated that a minimum of 10% of treatments be monitored for efficacy and site completion following treatment.
- EKISC staff undertook monitoring activities on July 29th and October 8, 2024, leaving a suitable gap between chemical treatments conducted in July and September. Treatments conducted in mid-October were not monitored.
- A total of 4 of 33 treatment areas/sites were monitored in the WMA, representing a 12% monitoring capture. However, when including work completed further afield at Kinq̓uq̓anki (NCC Lot 48 Conservation Area and BC Parks Columbia Lake Provincial Park), there was a capture of 8%.
- All treatments that were monitored in 2024 were for Spotted knapweed infestations alongside one of the main accesses into Kinq̓uq̓anki (Camp 1 FSR).
- EKISC monitors did not identify any performance issues at these sites/areas, with all treatment points receiving passing scores. The sub-contractor achieved scores of 9 out of 10 for efficacy and 10/10 for site completion.
- Grass seeding was not done as a follow-up to treatments in 2024.

Long-term Effectiveness (Vegetation Plot) Monitoring:

- Depending on resources and other variables, the contract with EKISC included a stretch goal to establish 2-4 long-term effectiveness vegetation monitoring plots across kinq̓uq̓anki. Unfortunately, these were not implemented due to various resource and timing constraints.
- The Partners will work with EKISC to identify representative plots across the Complex in 2025-26.

Data Entry (InvasivesBC):

- The contract stipulated that all treatment and inventory data be inputted into InvasivesBC by December 1, 2024, as required by the Province.
- This was deliverable was met, and an InvasivesBC extract was shared with NTBC, including newly surveyed infestations and treatment data.

Final Report:

- EKISC delivered a final report summarizing all project activities completed under the contract (Figure 4). The report included inventory and treatment metrics and maps, tables and monitoring results. Other deliverables included: spatial data, photos and InvasivesBC treatment and inventory extracts.

ISMP:

- EKISC staff compiled and wrote an Invasive Species Management Plan in draft (Figure 5) using a template similar to other ISMPs developed within the region (i.e. Wycliffe Conservation Complex).
- ISMP was informed in large part by inventory activities that were completed over the 2024 field season and included protected and conserved areas managed by the Partners (WLRS, NCC, KNC, NTBC, BC Parks).
- ISMP provides a description of the current conditions across Kinq̓uq̓anki, establishes goals and objectives, notes treatment targets, outlines species-specific treatment strategies and provides wide-ranging recommendations for a fully integrated pest management plan.
- ISMP draft is expected to be finalized in May 2025 after additional Partner (incl. new partners) feedback and revisions are completed.
- ISMP has been developed to be in effect until 2030, at which time it will be revisited.

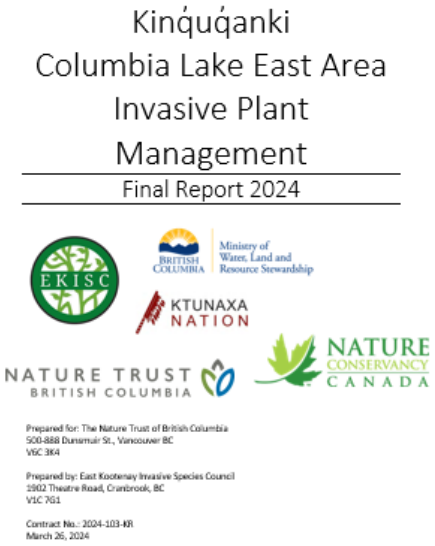

Figure 4: A screenshot of the 2024 final report that EKISC produced to summarize invasive plant management efforts across kinq̓uq̓anki

Figure 5: A screenshot of the ISMP draft for kinq̓uq̓anki

4. CONTRACT REPORTING DELIVERABLES:

This report satisfies the requirement of a Summary Report, as per NTBC's Contribution for 2024/25 Kootenay Connect funding. A separate Results Report (At-a-Glance Summary) has also been produced and shared by NTBC. Meanwhile, just one interim report was submitted in November, as the project had not yet been initiated at the August interim reporting period.

NTBC Kootenay Connect Year 6 deliverables as laid out in Schedule A of KCFA Service Contract 2024/25–CL–NTBC-01, have been shared with Marcy Mahr using a file-sharing service. These include:

- Interim Report (previously shared – November 2024)
- Results Report compiled and written by NTBC for Kootenay Connect
- Summary Report compiled and written by NTBC for Kootenay Connect
- Data extracts for inventory/observations & treatments (InvasivesBC)
- EKISC Final Report detailing treatment and monitoring activities
- Relevant maps and some spatial data (inventory points & polygons)
- Various project photos of inventory and invasive plants

5. PROJECT FINANCIALS:

Documents related to project finances have been shared through an online file-sharing service also. They include:

- Invoice to Kootenay Centre for Forestry Alternatives/Kootenay Connect from NTBC;
- In-kind and cash declaration form from the Partners;

6. CONCLUDING REMARKS:

The Partners wish to thank Environment and Climate Change Canada and its Canada Nature Fund: Community Nominated Priority Places for Species at Risk for making this project possible in 2024-25.

The Partners also wish to recognize the Ministry of Water, Land and Resource Stewardship for its leadership, and funding provided to NTBC and WLRS by the Habitat Conservation Trust Foundation through its Conservation Lands Operations and Maintenance Program. We also wish to thank each of the Partners plus, ʔakisq̓nuk First Nation, BC Parks and Wildsight-Invermere for their contributions.

Thank you to the Kootenay Centre for Forestry Alternatives for its role as the fiscal sponsor of the Kootenay Connect initiative. We also appreciate the commitment and efforts by the East Kootenay Invasive Species Council and its sub-contractor RMC Enterprises Ltd., who carried out work across the Complex during the 2024 field season. Finally, a very big thanks to the Kootenay Conservation Program, particularly Michael Proctor and Marcy Mahr for their vision of Kootenay Connect! The on-the-ground results over the past six years have been impressive, both at Columbia Lake and the other focal areas.

We trust that this report satisfies all reporting requirements to Kootenay Connect. If there are questions that arise from this report, please reach out.

Chris Bosman
NTBC Kootenay Conservation Land Manager
The Nature Trust of British Columbia

March 26, 2025