Development Permit Application

Referral Form – RDCK File DP2302A

Date: March 07, 2023

You are requested to comment on the attached DEVELOPMENT PERMIT for potential effect on your agency's interests. We would appreciate your response WITHIN 30 DAYS (PRIOR TO April 04, 2023). If no response is received within that time, it will be assumed that your agency's interests are unaffected.

LEGAL DESCRIPTION & GENERAL LOCATION:

10377 Highway 3A, Sanca
Lot 2 District Lot 4595 Kootenay District Plan 4523 (PID: 010-421-874)
Electoral Area A

PRESENT USE AND PURPOSE OF PERMIT REQUESTED:

The subject property is located along the east shore of Kootenay Lake. It is 1.21 hectares in size and is used for residential purposes.

The property and is divided by Highway 3A into two parts; an eastern portion and a western portion. This application is only concerned with the western portion of the lot which is located along the waterfront. This portion of the property is roughly 0.18 hectares in size. It has a lower and upper portion which is divided by a 30m cliff. The existing home is located on the upper portion of the lot.

The property owner has applied for an accretion, which would legitimize the uses currently in place on the lower waterfront portion of the property. It will also increase the size of that portion of private property.

In 2021, the owners applied for an Environmentally Sensitive Development Permit (ESDP) to install a funicular (cable and rail system) to connect the upper and lower portions of the property. The application was also to install a floating dock which would extend from a gangway secured into the bedrock along the western shoreline. This ESDP was issued in February 2022 based of the Qualified Environmental Professional's (QEP) Riparian Area Assessment (RAA).

After the initial ESDP was issued, the QEP supplied the owner with an updated Riparian Area Management Plan (RAMP) for construction activities. In March 2022, the QEP monitored construction activities per the RAMP and found activities to comply with the plan. However, additional works took place beyond the scope of this plan as well. Concerns about these works were raised by the Ministry of Forests (MoF), the Department of Fisheries and Oceans Canada (DFO) and the Ktunaxa Nation Council (KNC). In response, the MoF issued the property owners a Stop Work Order. In response, the QEP authored a Remediation Plan (RP) in November 2022 to address these activities.

The RP outlined the extent of the unauthorized works including works above the natural boundary of the lake. These included the creation of a machine path, tree and vegetation removal, removal of rocks and the creation of a rock berm. These works necessitate the requirement for a new ESDP to assess the impact of the disturbance that occurred as well as for any future disturbance that would arise as part of the remediation. The purpose of this new ESDP application is to do this. The RP and RAA have been submitted in conjunction to satisfy the requirements of this new ESDP.

AREA OF PROPERTY AFFECTED	ALR STATUS	ZONING	OCP
0.18 hectare	N/A	Country Residential (R2)	Comprehensive Land Use Bylaw No. 2315 Country Residential (RC)

Nelson Office: Box 590, 202 Lakeside Drive, Nelson, BC. V1L 5R4
Phone: 250.352.6665 | Toll Free: 1.800.268.7325 (BC) | Email: info@rdck.ca | Fax: 250.352.9300

APPLICANT:
Bevan and Rhonda May

OTHER INFORMATION: ADVISORY PLANNING COMMISSION PLEASE NOTE:
If your Advisory Planning Commission plans to hold a meeting to discuss this Development Permit application, please note that the applicants must be provided with an opportunity to attend such meeting, in accordance with Section 461, subsection (8) of the *Local Government Act*, which reads as follows:

"If the commission is considering an amendment to a plan or bylaw, or the issue of a permit, the applicant for the amendment or permit is entitled to attend meetings of the commission and be heard."

Please fill out the Response Summary on the back of this form. If your agency's interests are 'Unaffected' no further information is necessary. In all other cases, we would appreciate receiving additional information to substantiate your position and, if necessary, outline any conditions related to your position. Please note any legislation or official government policy which would affect our consideration of this permit.

SADIE CHEZENKO, PLANNER
REGIONAL DISTRICT OF CENTRAL KOOTENAY

☒ MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE ☒ HABITAT BRANCH (Environment) ☒ FRONTCOUNTER BC (MFLNRORD) ☐ AGRICULTURAL LAND COMMISSION ☐ REGIONAL AGROLOGIST ☐ ENERGY & MINES ☐ MUNICIPAL AFFAIRS & HOUSING ☒ INTERIOR HEALTH, HBE TEAM ☐ KOOTENAY LAKES PARTNERSHIP (FORESHORE DEVELOPMENT PERMITS) ☐ SCHOOL DISTRICT NO. ☐ WATER SYSTEM OR IRRIGATION DISTRICT ☒ UTILITIES (FORTIS, BC HYDRO, NELSON HYDRO, COLUMBIA POWER)	REGIONAL DISTRICT OF CENTRAL KOOTENAY DIRECTORS FOR: ☒ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H ☐ I ☐ J ☐ K ALTERNATIVE DIRECTORS FOR: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H ☐ I ☐ J ☐ K ☐ APHC AREA ☒ RDCK FIRE SERVICES ☒ RDCK EMERGENCY SERVICES ☒ RDCK BUILDING SERVICES ☐ RDCK UTILITY SERVICES ☐ RDCK RESOURCE RECOVERY ☐ RDCK REGIONAL PARKS INSERT COMMENTS ON REVERSE . . .

The personal information on this form is being collected pursuant to *Regional District of Central Kootenay Planning Procedures and Fees Bylaw No. 2457, 2015* for the purpose of determining whether the application will affect the interests of other agencies or adjacent property owners. The collection, use and disclosure of personal information are subject to the provisions of FIPPA. Any submissions made are considered a public record for the purposes of this application. Only personal contact information will be removed. If you have any questions about the collection of your personal information, contact the Regional District Privacy Officer at 250.352.6665 (toll free 1.800.268.7325), info@rdck.bc.ca, or RDCK Privacy Officer, Box 590, 202 Lakeside Drive, Nelson, BC V1L 5R4.

RESPONSE SUMMARY
FILE: DP2302A APPLICANT: BEVAN AND RHONDA MAY

Name: **Date:**

Agency: **Title:**

RETURN TO: SADIE CHEZENKO, PLANNER
DEVELOPMENT AND COMMUNITY SUSTAINABILITY SERVICES
REGIONAL DISTRICT OF CENTRAL KOOTENAY
BOX 590, 202 LAKESIDE DRIVE
NELSON, BC V1L 5R4
Ph. 250-352-1536
Email: plandept@rdck.bc.ca

RDCK Map

REGIONAL DISTRICT OF CENTRAL KOOTENAY
Box 590, 202 Lakeside Drive,
Nelson, BC V1L 5R4
Phone: 1-800-268-7325 www.rdck.bc.ca
maps@rdck.bc.ca

Legend

- Electoral Areas
- RDCK Roads
- Cadastre
- Civic Address

Map Scale:

1:4,514

Date: February 1, 2023

RDCK Map

REGIONAL DISTRICT OF CENTRAL KOOTENAY
Box 590, 202 Lakeside Drive,
Nelson, BC V1L 5R4
Phone: 1-800-268-7325 www.rdck.bc.ca
maps@rdck.bc.ca

Legend

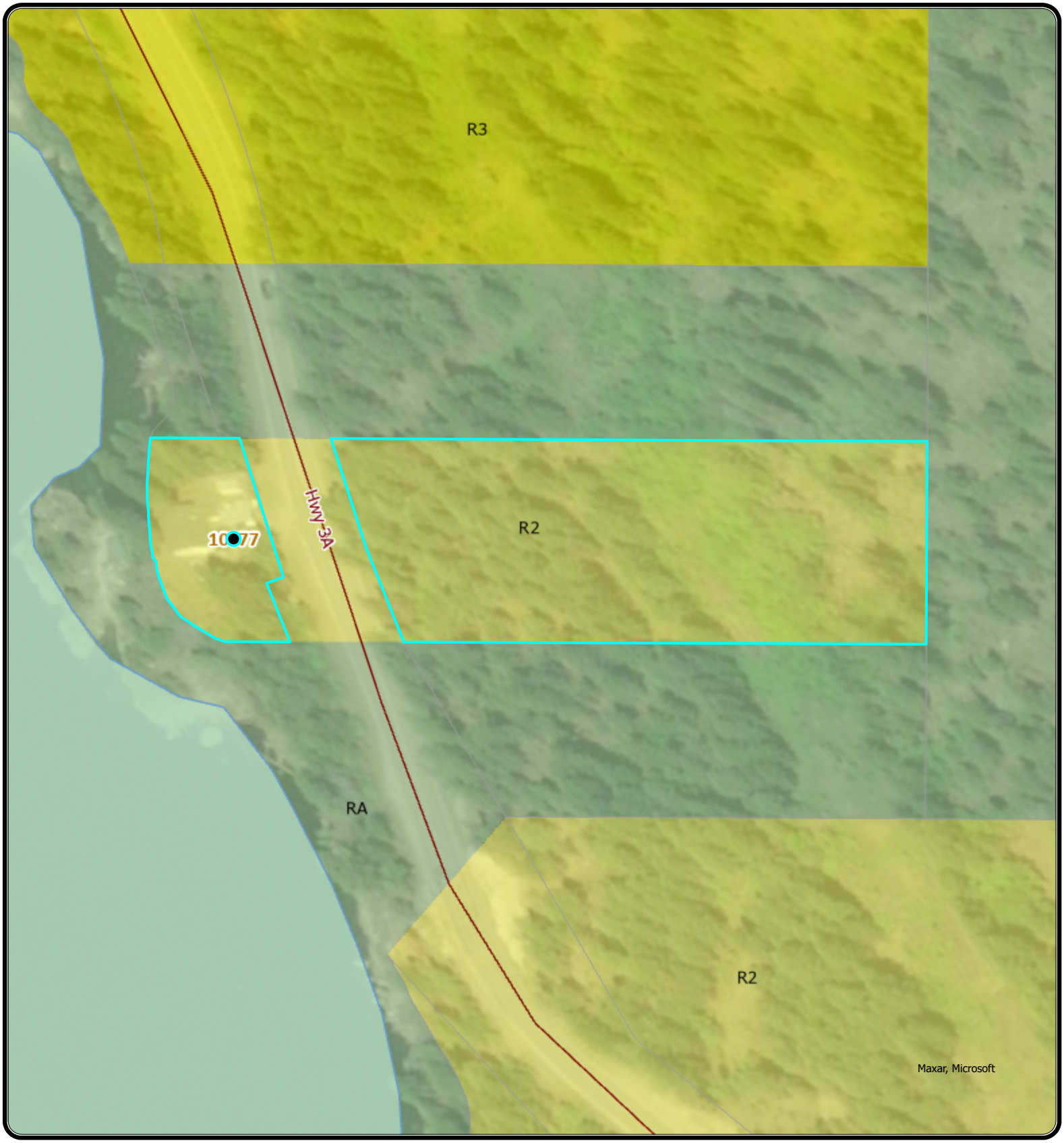
- Flood Construction Levels - 1990
- Lakes and Rivers
- Streams and Shorelines
- Electoral Areas
- RDCK Roads
- Cadastre
- Civic Address

Map Scale:

1:2,257

Date: February 1, 2023

RDCK Map



REGIONAL DISTRICT OF CENTRAL KOOTENAY
Box 590, 202 Lakeside Drive,
Nelson, BC V1L 5R4
Phone: 1-800-268-7325 www.rdck.bc.ca
maps@rdck.bc.ca

Zoning Class

- Residential 2
- Residential 3
- Resource Area
- Lakes and Rivers

Legend

- Streams and Shorelines
- Electoral Areas
- RDCK Roads
- Cadastre
- Civic Address

Map Scale:

1:2,257

Date: February 1, 2023

RDCK Map

REGIONAL DISTRICT OF CENTRAL KOOTENAY
Box 590, 202 Lakeside Drive,
Nelson, BC V1L 5R4
Phone: 1-800-268-7325 www.rdck.bc.ca
maps@rdck.bc.ca

Official Community Plan

- Country Residential
- Resource Area
- Rural Residential

Legend

- Lakes and Rivers
- Streams and Shorelines
- Electoral Areas
- RDCK Roads
- Cadastre
- Civic Address

Map Scale:

1:2,257

Date: February 1, 2023

SKETCH PLAN TO ACCOMPANY ACCRETION APPLICATION FOR LOT 2 DISTRICT LOT 4595 KOOTENAY DISTRICT PLAN 4523

SCALE 1:200

0 4 8 12 16 20

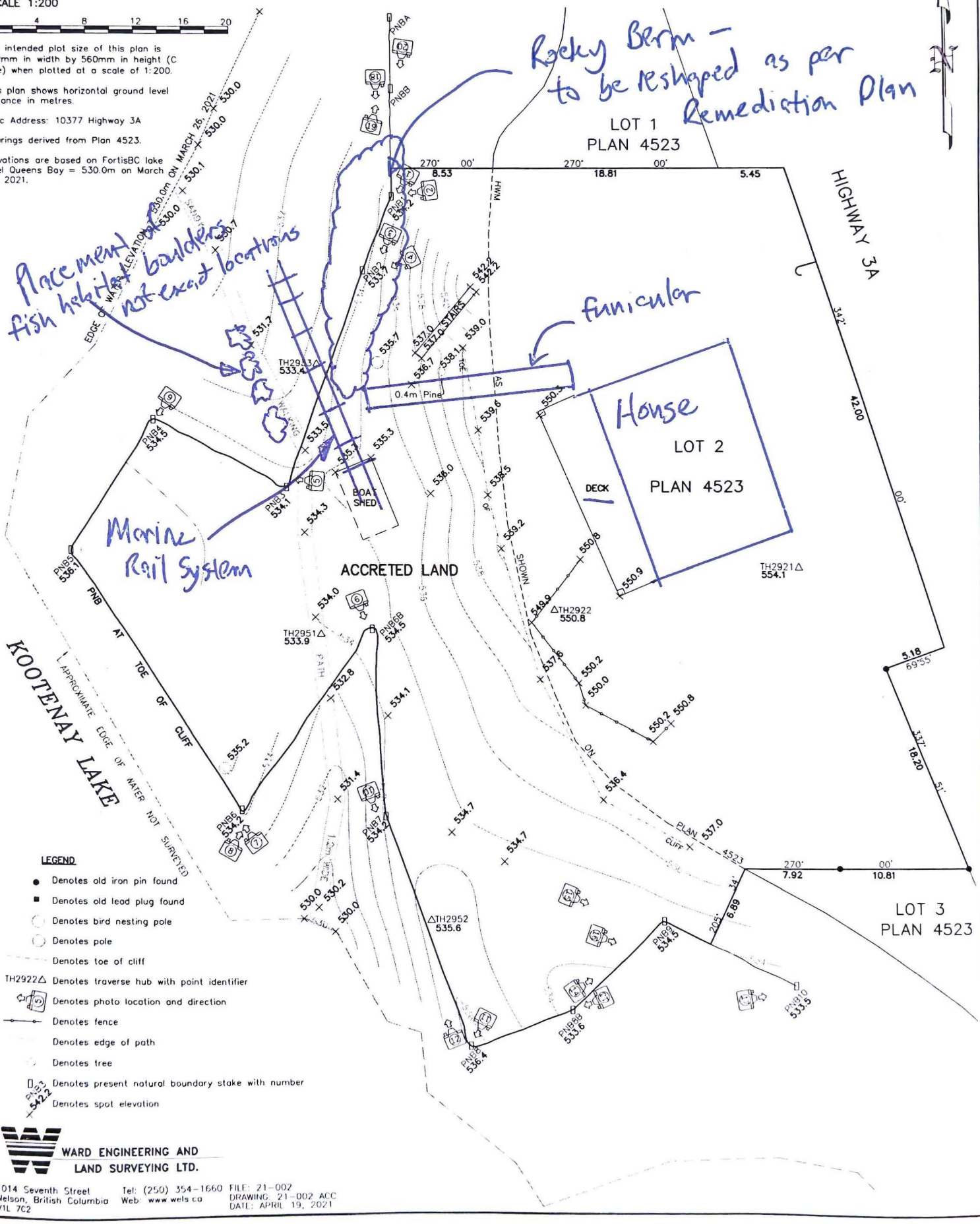
The intended plot size of this plan is 432mm in width by 560mm in height (C Size) when plotted at a scale of 1:200.

This plan shows horizontal ground level distance in metres.

Civic Address: 10377 Highway 3A

Bearings derived from Plan 4523.

Elevations are based on FortisBC lake level Queens Bay = 530.0m on March 26, 2021.



LEGEND

- Denotes old iron pin found
- Denotes old lead plug found
- Denotes bird nesting pole
- Denotes pole
- Denotes toe of cliff
- TH2922△ Denotes traverse hub with point identifier
- Denotes photo location and direction
- Denotes fence
- Denotes edge of path
- Denotes tree
- Denotes present natural boundary stake with number
- Denotes spot elevation

WARD ENGINEERING AND LAND SURVEYING LTD.

1014 Seventh Street
Nelson, British Columbia
V1L 7C2

Tel: (250) 354-1660
Web: www.wels.ca

FILE: 21-002
DRAWING: 21-002 ACC
DATE: APRIL 19, 2021

16.0 DEVELOPMENT PERMIT AREAS

Background

The OCP may designate Development Permit Areas under the authority of local government legislation. Unless otherwise specified, a development permit must be approved by the Regional Board, or delegate of the Board, prior to any development or subdivision of land within a designated Development Permit Area.

Development Permit Areas allow for implementation of special guidelines for the protection of the natural environment, protection from hazardous conditions, for revitalization of designated areas, or to guide the form and character of development within the Plan Area. Development Permit Areas can also be used to meet targets for carbon emission reductions and energy and water conservation.

Where land is subject to more than one Development Permit Area designation, a single development permit is required. The application will be subject to the requirements of all applicable Development Permit Areas, and any development permit issued will be in accordance with the guidelines of all such Areas.

Development Permit Area #1: Environmentally Sensitive Development Permit (ESDP) Area

Category

The ESDP area is designated under Section 488.1(1) (a) of the *Local Government Act* for the protection of the natural environment, its ecosystems and biological diversity.

Justification

The primary objective of this Development Permit Area designation is to regulate development activities in watercourses, lakes and wetlands and their adjacent riparian areas so as to protect aquatic habitat; and to conserve, enhance and, where necessary, restore watercourses and their riparian areas.

Area

The ESDP area is comprised of:

1. Riparian assessment areas (Figure 1) for fish and wildlife habitat and drinking water, including:
    a. All areas within 15 metres of the high water mark of a watercourse, including the natural boundary of a lake;
    b. within 15 metres of the top of the ravine bank in the case of a ravine less than 60 metres wide; and
    c. within 5 metres of the top of the ravine bank in the case of a wider ravine that links aquatic to terrestrial ecosystems and includes both existing and potential riparian

vegetation and existing and potential upland vegetation that exerts an influence on the watercourse.

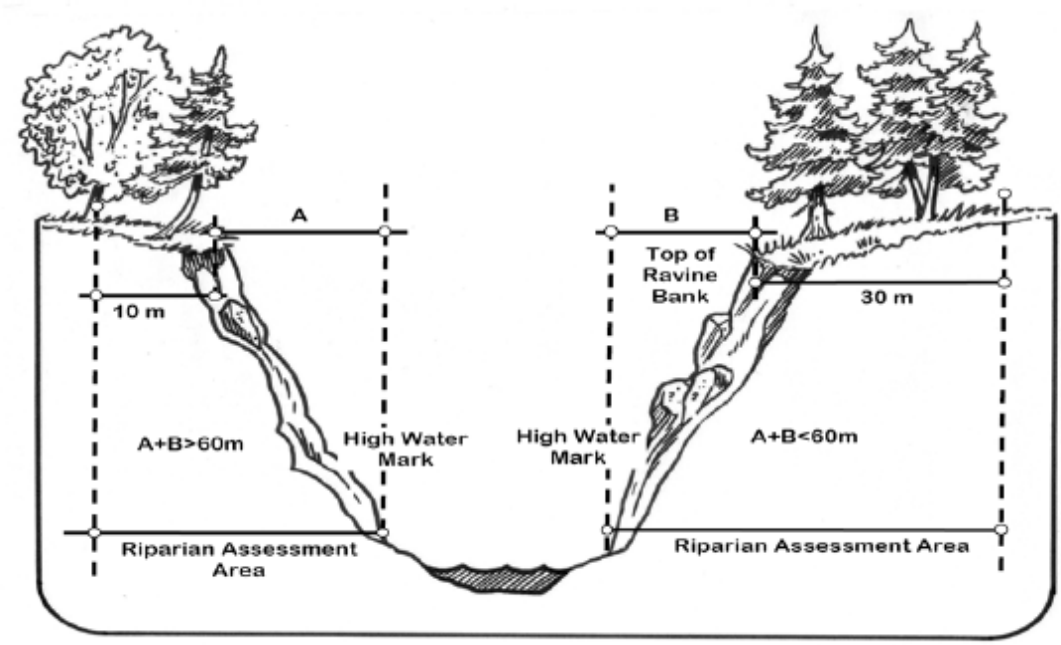


FIGURE 1: (for illustrative purposes only) RIPARIAN ASSESSMENT AREA: means the area within 15 m of the high water mark of a watercourse; within 15 m of the top of the ravine bank in the case of a ravine less than 60 m wide; and within 5 m of the top of the ravine bank in the case of a wider ravine that link aquatic to terrestrial ecosystems and includes both existing and potential riparian vegetation and existing and potential upland vegetation that exerts an influence on the watercourse. This DPA applies only to residential, commercial and industrial designations.

Source: British Columbia Ministry of Environment, *Riparian Areas Regulation Implementation Guidebook,* March 2005

Where the following definitions apply:

High water mark means the visible high water mark of a watercourse where the presence and action of the water are so common and usual, and so long continued in all ordinary years, as to mark on the soil of the bed of the watercourse a character distinct from that of its banks, in vegetation, as well as in the nature of the soil itself, and includes the active floodplain.

Lake means any area of year round open water covering a minimum of 1.0 hectares (2.47 acres) of area and possessing a maximum depth of at least 2.0 metres. Smaller and shallower areas of open water may be considered to meet the criteria of a wetland.

Top of ravine bank means the first significant break in a ravine slope where the break occurs such that the grade beyond the break is greater than 3:1 for a minimum distance of 15 m measured perpendicularly from the break, and the break does not include a bench within the ravine that could be developed.

Watercourse means any natural or man-made depression with well-defined banks and a bed 0.6 metres (2.0 feet) or more below the surrounding land serving to give direction to a current of water at least six months of the year and/or having a drainage area of two square kilometres (0.8 square miles) or more upstream of the point of consideration.

Wetland means any areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

Guidelines

A development permit is required, except where specified under the exemptions section, for development or land alteration on land identified as a riparian assessment area within the ESDP Area. Where not exempt, development requiring a development permit includes any of the following associated with or resulting from residential, commercial or industrial activities or ancillary activities to the extent that they are subject to local government powers under local government legislation or when triggers by the requirements of a building permit or subdivision approval:

a. removal, alteration, disruption or destruction of vegetation;
b. disturbance of soils;
c. construction or erection of buildings and structures;
d. creation of non-structural impervious or semi-impervious surfaces;
e. flood protection works;
f. construction of roads, trails, docks, wharves and bridges;
g. provision and maintenance of sewer and water services;
h. development of drainage systems;
i. development of utility corridors; and
j. subdivision as defined in section 455 of the *Local Government Act*;

Development shall be in accordance with the following guidelines:

2. All development proposals subject to this permit will be assessed by a Qualified Environmental Practitioner (QEP) or Registered Professional Biologist (RP Bio) in accordance with the Riparian Areas Regulation established by the Provincial and/or Federal governments as used elsewhere in the Province;
3. An ESDP shall not be issued prior to the RDCK ensuring that a QEP or RP Bio has submitted a report certifying that they are qualified to carry out the assessment, that the assessment methods have been followed, and provides in their professional opinion that a lesser setback will not negatively affect the functioning of a watercourse or

riparian area and that the criteria listed in the Riparian Areas Regulation has been fulfilled, and;

4. The Riparian Areas Regulation implemented through the ESDP does not supersede other Federal, Provincial and or local government requirements, including that of other development permit areas, building permits, flood covenants, Federal or Provincial authorization. Land subject to more than one development permit area designation must ensure consistency with the guidelines of each development permit area, to provide comprehensive stewardship of both fish and wildlife habitat.

Exemptions

The ESDP area does not apply to the following:

5. existing construction, alteration, addition, repair, demolition and maintenance of farm buildings and agricultural activities including clearing of land for agricultural purposes;
6. existing institutional development containing no residential, commercial or industrial aspect;
7. construction, renovation, or repair of a permanent structure if the structure remains on its existing foundation. Only if the existing foundation is moved or extended in to a riparian assessment area would a ESDP be required; and
8. an area where the applicant can demonstrate that the conditions of the ESDP Area have already been satisfied or a development permit for the same area has already been issued in the past and the conditions in the development permit have all been met, or the conditions addressed in the previous development permit will not be affected.

Development Permit Area #2: Residential Cluster Development Permit (RCDP) Area

Designation

The RCDP area is designated under Section 488.1(1) (a) and (e) of the *Local Government Act* for protection of the natural environment, its ecosystems and biological diversity and the establishment of objectives for the form and character of intensive residential development.

Area

The RCDP Area is comprised of all privately owned or leased lands designated as Suburban Residential (RS), Country Residential (RC), Multi-Family Residential (RM), and Mixed Use Residential (RMU) on Schedule 'A.1'.

Justification

The intent of the RCDP Area is to ensure that intensive residential development is completed in a manner that is sensitive to the rural character of the Plan area, adjoining lands, the natural environment, and achieves a high standard of appearance. Lands in the Plan Area have not been studied to a high level for their ability to sustain intense development over the long term. It is therefore desirable to allow development to occur in a manner which allows for efficient

March 6, 2023

Prepared for: Sadie Chezenko
Planner, Regional District of Central Kootenay

Prepared by: Keefer Ecological Services Ltd.

RE: Riparian Area Assessment – 10377 Highway 3A, Gray Creek, BC

This notice is to inform the RDCK that the Remediation Plan (RP), submitted on November 21, 2022 to the RDCK, is to be considered in conjunction with the Riparian Area Assessment Report (RAAR) [see Appendix B of the RP], for the purposes of a development permit application at 10377 Highway 3A.

The RAAR followed the criteria described in the Riparian Areas Protection Regulation (RAPR). The RP was prepared post-construction, following exceedances in the original RDCK development permit. Both the RP and RAAR have been prepared and signed by a Qualified Environment Professional (QEP).

Aside from the details outlined in the RP, no other conditions within the RAAR were altered. Therefore, we believe that the combination of the RP and RAAR provide adequate information to be considered compliant with the RDCK's terms of reference and development permit application guidelines

Sincerely,

Michael Keefer, PAg

Remediation Plan

10377 Highway 3A, Gray Creek, BC

Michael Keefer, MSc, PAg; Baylie Sjodin, MEP, EPt; Brenley Yuan, MSc, RPBio

November 21, 2022

Keefer Ecological Services Ltd.
220 Cobham Ave W
Cranbrook, BC V1C 6T3
(250) 489-4140
www.keefereco.com

Background

In March 2021, Keefer Ecological Services Ltd. (KES) conducted a riparian area assessment (RAA) at 10377 Highway 3A in Sanca, B.C. (Appendix B). The Qualified Environmental Professional (QEP), Jessica Lowey, MSc, PAg, used the Riparian Areas Protection Regulation (RAPP) simple assessment method to calculate a Stream Protection and Enhancement Area (SPEA) of 15 m from the natural lake boundary (i.e., high-water mark).

The RAA's primary purpose was to propose management and mitigation measures for constructing a funicular, dock, and gangway for an Environmentally Sensitive Develop Permit (ESDP) through the Regional District of Central Kootenay (RDCK) Land Use Bylaw (No. 2315, 2015). All activities were proposed to occur within the SPEA and below the natural lake boundary. Upon receiving the ESDP, the QEP supplied the property owner with an updated Riparian Area Management Plan for construction activities (Appendix C). In March 2022, a QEP monitored construction activities per the Riparian Area Management Plan and found activities to comply with the plan. This remediation plan is in response to works that exceeded the scope outlined in the Riparian Area Management Plan, which occurred outside QEP monitoring.

In June 2022, the Ministry of Forests (MoF), the Department of Fisheries and Oceans Canada (DFO), and the Ktunaxa Nation Council (KNC) raised concerns about the activities that occurred at the site. Concerns from the above governing bodies included:

- The location of a fuel tank near the lakeshore,
- Excessive altering of fish habitat and the riparian zone, and
- The creation of a rock berm with the potential to trap fish.

Michael Keefer, a Professional Agrologist (PAg), has acted as the QEP for developing the remediation plan for this property. Michael is in good standing with the British Columbia Institute of Agrologists (BCIA) in the practice of ecological restoration. Michael is supported by Brenley Yuan, a Registered Professional Biologist (RPBio) with a background in fish habitat restoration. In the professional opinion of the QEPs, if the remediation outlined below is implemented as proposed by this plan, there will be no foreseeable harmful alteration, disruption or destruction of natural features, functions, and conditions that support fish life processes in the riparian assessment area.

Timeline of Activities

Construction began on March 4, 2022, and continued until April 30, 2022. Planned activities during this time included removing the existing boathouse, marine railway, and several large boulders for the foundation of the funicular, the safe operation of machinery, and future boat access. KES monitored one day of construction on March 14, 2022, to ensure compliance with the management and mitigation plans. All other activities have been self-reported by the property owner. Future construction will include the installation of the funicular in spring 2023.

Table 1. A daily log of construction activities on site

Date	Actions
March 4, 2022	● Excavator unloaded on-site (Appendix A: Figure 1) ● Fuel tank secured near shore ● Note to move large boulders coming up the shore for the machine to pass before the fuel tank can be relocated away from the water
March 5, 2022	● Begin breaking large boulders up the shoreline ○ Sufficient to allow machinery to pass
March 11, 2022	● Breaking and removal of the boulder at the apex of the peninsula ○ Boulder was precluding clearing stone from away from boathouse base) ○ Clearing revealed that the boathouse foundation was poor, and dismantling was required ○ Further removing boulders on the south side of the boathouse required ● Set up dust control water pump
March 13, 2022	● Cleared machine pathway of rubble (Appendix A: Figure 2 & Figure 3) ○ Through the south channel and up to the boathouse ○ The path was widened for the passage of the machine, so the material removed could be placed higher
March 14, 2022	● KES QEP and a KES staff member arrive on site (Jessica Lowey & Danielle Smart) ○ QEP observes work to date ● QEP observes the hammering of large boulders and the funicular base area with and without a water system ○ QEP recommends using a water system for dust control ● QEP reviewed invasive species present on-site and a management plan ● QEP departs ● Continue to remove boulders from around the south side of the boathouse ● Material from around the boathouse was distributed along the south channel ● Clearing around the north channel to facilitate proper further cleanup and removal of prominent large boulders (Appendix A: Figure 4) ● Job is 80% complete
March 15, 2022	● Remaining residual hammering pile on the west side of the north channel ● Job is 98% complete
March 16 – 27, 2022	● Minor cleanup and smoothing (Appendix A: Figure 5, Figure 6, & Figure 7)
March 30, 2022	● Dismantled boathouse (Appendix A: Figure 8)
April 24, 2022	● Continued rock removal from near water edge to ensure safe boating operations (Appendix A: Figure 9)
April 25 – 30, 2022	● Removal of stones impacting marine railway

Regulatory Notice

On June 21, 2022, an email from the Ministry of Forests was sent to the property owner with an immediate Stop Work Order. Construction activities have halted until remediation requirements have been met. The email highlighted the following concerns with the Provincial permit approval:

- The location of the fuel tank within the restricted 30 m of the lakeshore (per Clause N)

- The removal of excess boulders from below the high-water mark to above the high-water mark (per Clause G)
- The approval and registration of an accretion survey (per Clause D)

Current Conditions

On June 20, 2022, the property owner contacted the QEP via email. In the email, the proposed construction activities were cited to be complete for 2022. It was noted that more materials had been moved on the foreshore than initially estimated. The property owner requested that the QEP visit the site for an evaluation of works completed and any recommendations before the scheduled departure of the machinery in September 2022. Correspondence regarding the concerns mentioned above was also shared with the QEP.

On June 30, 2022, QEP Michael Keefer and Baylie Sjodin visited the site with the property owner. The water level on Kootenay Lake was 533.10 m, slightly less than the peak level of 533.89 m on June 15, 2022 (FortisBC, n.d.).

Terrestrial

Machine Path

Terrestrial conditions were assessed as those above the natural lake boundary (i.e., high-water mark). A path approximately 10 m wide was observed from north to south connecting the two channels on-site (Appendix A: Figure 10). The path was predominantly sand with minimal coarse rock fragments and no coarse woody debris above the natural lake boundary (Appendix A: Figure 11). No vegetation was seen growing in the sandy area.

Tree Removal

The property owner reported removing three ponderosa pine (*Pinus ponderosa*) and three Douglas fir (*Pseudotsuga menziesii*) trees on-site due to damage from a storm during the 2021-2022 winter. The QEP confirmed the location along the north channel's eastern shore (Appendix A: Figure 12). No other vegetation was observed to be removed along the shoreline during construction.

Rock Bern

A rock berm approximately 1-2 m tall, 25 m long, and 5-10 m wide was observed along the eastern shore of the north channel (Appendix A: Figure 13). The berm was built of rock material removed during construction ranging from 10-100 cm in diameter at an approximate 75% (or 36°) slope. The berm covered a stretch of natural vegetation approximately 1 m wide along the shoreline. One young paper birch (*Betula papyrifera*) appeared unharmed by the surrounding rock fragments (Appendix A: Figure 14). No vegetation appeared to be growing on the berm at the time of the site visit, other than the birch sapling.

Boathouse

Rocks along the west and south perimeter of the dismantled boathouse were removed and appear to be added to the rock berm. Rock fragments along the dismantled boathouse's east perimeter appeared undisturbed (Appendix A: Figure 15).

Invasive Species

Spotted knapweed (*Centaurea stoebe*) and downy brome (*Bromus tectorum*) were observed on-site along the footpath leading from the house to the site, beginning approximately 10 m north-east of the dismantled boathouse (Appendix A: Figure 16).

Aquatic

Foreshore

The foreshore was assessed as the area between the high- and low-water mark, starting at the natural lake boundary for approximately 25 m north. All rock fragments under 15 cm in diameter appeared to be removed along the northern channel's foreshore (Appendix A: Figure 9). Some coarse woody debris was observed to have been deposited with the receding lake level.

The rock berm was observed to cover a 1-5 m wide foreshore section along the north channel's eastern edge. Rock fragments in the foreshore varied from 10-100 cm in diameter. The northern portion of the rock berm gradually slopes downward to meet the natural ground of the foreshore. During high water levels, there is a potential for water to pool behind the rock berm and trap fish. Woody debris was observed to have collected behind the rock berm during the peak high-water levels in early June, providing evidence for the potential for fish entrapment (Appendix A: Figure 17). No vegetation appeared to be growing on the berm foreshore at the time of the site visit.

Fish Habitat

All rock fragments under 15 cm in diameter appear to be removed in the northern channel spanning an approximate distance of 10 m wide and 25 m long north of the natural lake boundary (Appendix A: Figure 9). As determined in the RAA report, previous site conditions held the potential for juvenile fish rearing habitat (Appendix B). Consequently, the removal of all rock fragments may impact fish rearing habitat on-site by:

- reducing habitat complexity,
- reducing benthic macroinvertebrate foraging opportunities,
- destabilizing foreshore sediments,
- burying food organisms,
- and altering normal shoreline currents, deposition patterns, plankton, and fish movements (Fisheries and Oceans Canada, 2002; Randall et al., 2011; Schleppe & Arsenault, 2006).

Furthermore, adding a hard, steepened shoreline by the rock berm further reduces habitat complexity and alters energy dissipation dynamics, possibly leading to instability (Kahler et al., 2000; Schleppe & Arsenault, 2006).

No vegetation appeared to be growing on the foreshore. Minimal coarse woody debris has collected along the foreshore and at the lake's edge (Appendix A: Figure 11).

Remediation

The overall goals of the remediation plan for the assessed property are modification of the topography to support the establishment of native species and the restoration of juvenile fish rearing habitat. It is recommended that the property owner remediate the impacts of construction activities above and below the natural lake boundary. Detailed actions are described below and include plans to:

- Reduce the height and slope of the rock berm while creating suitable microsites for the installation of native plants,
- Eliminate the potential for fish entrapment potential behind the rock berm,
- Plant vegetation on and around the levelled rock berm, and
- Redistribute larger rock fragments below the natural lake boundary for fish habitat.

Rock Berm

The rock berm should be reprofiled to the natural, pre-construction foreshore geometries (reduced height and more gradual slope), using past photos and the surrounding shoreline as a guide. Larger rocks (>40 cm) should be returned to the foreshore for fish habitat to mimic pre-construction site conditions, while smaller rocks can be stored above the high-water mark by creating a talus-like habitat area for revegetation. Special care should be taken to eliminate existing fish stranding opportunities and prevent new ones from being created. Specifically, the northern end of the berm should be levelled with the eastern shoreline to eliminate the potential for fish entrapment during high water in the spring.

During construction, a path should be created at the southern end of the berm by pulling rock fragments from the top portion down to allow access for the machine to ascend the rock berm (Appendix A: Figure 18). Once stably on top, the machine should safely deconstruct the pile by moving rocks to the eastern side of the berm and stockpiling rocks to be returned to the foreshore. When placing rocks around the birch tree, care must be taken to ensure its continued survival (Appendix A: Figure 14). If the removal of the birch is necessary for safe rock removal, then birch plugs must be planted in replacement (see the Vegetation section below).

Fish Habitat

The area below the natural lake boundary should be restored to its natural state as much as possible (according to a QEP) while maintaining reasonable navigability. This would result in select areas of the altered foreshore being returned to cobble substrate, occasionally interspersed with larger boulders (diameters 30 cm or greater) at a minimum frequency of one boulder per 0.5 m^2 where possible. The total remediation area substrate composition and frequency of large boulders should mimic pre-construction conditions (while maintaining navigability), using past photos and surrounding shorelines as a guide. Before remediation construction begins, we recommend a QEP conduct a site assessment to evaluate whether cobble substrate management will be required beyond the natural accumulation that

has occurred since construction activities ceased. Above the high-water mark, a channel no greater than 3 m wide can remain clear of rock fragments.

Given the previous conditions of the foreshore and the need to maintain a navigable channel, placing coarse woody debris that can be dislodged in high waters is not recommended.

Vegetation

To facilitate the restoration process, the following revegetation plan is recommended. It should be noted that the site will be deliberately over-planted to account for the expected mortality of juvenile plants. After re-grading the rock berm, topsoil should be placed in locations (determined by the QEP) between and under the rock fragments. Kinnikinnick (*Arctostaphylos uva-ursi*) plugs should be planted at one plug per square meter. The character of the rock berm will be modified through the removal of larger rock pieces (>40 cm), an activity that will reduce the height of the berm and make it more stable in the long term, as well as make it suitable for planting.

Atop the rock berm, twelve trees (six ponderosa pine and six Douglas fir) should be planted at a 2 m spacing to replace the trees removed during construction. If the birch sapling is harmed during the recontouring of the rock berm, then two birch trees should be planted in replacement to maintain adequate microsites. The total number of trees is inflated to account for a 50% survival rate following planting. The juvenile trees should be planted as container stock in the spring of 2023. In addition, any added topsoil should be covered with mulch to prevent erosion and maintain sufficient soil moisture.

Invasive species plant management should continue per the Riparian Area Management Plan in January 2022 (Appendix C).

Monitoring

We recommend that a QEP visit the site pre-construction, during, and post-construction. It is recommended to have a QEP on-site at least once during the rock berm works to direct the selection and placement of rock for fish habitat on the foreshore. If construction is expected to take longer than five days, a second site visit is recommended to ensure remediation activities are still on track before completion.

Post-completion monitoring of the site is recommended for two growing seasons following revegetation. It should consist of one site assessment by a QEP each spring/summer.

Monitoring for invasive species will also take place. The absence of Scotch broom and spotted knapweed is a priority as they can negatively affect the establishment of the targeted native plant species. Species identification support and removal processes have been provided to the property owner via the Riparian Area Management Plan in January 2022 (Appendix C).

Offsetting

To help ensure that riparian and fish habitat productivity lost at the property is restored to an equivalent or higher level, a donation of $1,170.00 should be made to the Nature Conservancy of Canada (NCC), or an equivalent organization, to aid in Kootenay Lake riparian habitat restoration efforts. The cost was calculated based on information provided by NCC, indicating that restoration of high-quality riparian habitat costs about $5.85 per m^2.

Costs

Below is a summary of estimated costs associated with the remediation plan, including costs for post-construction monitoring in years two and three.

Activity	Estimated timeline	Estimated cost
Earthworks	Spring 2023	$ 6,200.00
Construction monitoring by a QEP	Spring 2023	$ 8,700.00
Container plant stock & topsoil	Spring 2023	$ 600.00
Offsetting donation	Winter 2022	$ 1,170.00
Annual Inspection for years 1-3 by a QEP	Summer 2023 - 2025	$ 3,600.00
TOTAL		$ 20,270.00

Note: Costs are an estimate based on foreseeable work. Actual costs may differ pending on timelines, supplies, or altered work plans.

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Appendix A: Site Photos

Figure 1. Excavator and fuel tank are unloaded on the north shore from a barge.

Image was taken on March 11, 2022

Figure 2. Overhead view of the south channel after the path was widened and cleared of debris.

Image was taken on March 13, 2022

Figure 3. Overhead view of the north channel after the path was widened and cleared of debris.

Image was taken on March 13, 2022

Figure 4. Cleaning the north channel to remove large boulders.

Image was taken on March 14, 2022

Figure 5. Northern shoreline facing west following boulder and rock removal.

Image was taken on March 18, 2022

Figure 6. Northern shoreline facing east following boulder and rock removal.

Image was taken on March 19, 2022

Figure 7. Overhead view of the south channel following boulder and rock removal.

Image was taken on March 27, 2022

Figure 8. Overhead view showing the location of the dismantled boathouse.

Image was taken on April 1, 2022

Figure 9. Overhead view of the north channel showing foreshore cleared of boulders and debris.

Image was taken on April 9, 2022

Figure 10. Overhead view of the site following construction activities.

Imagine was taken on June 30, 2022, by KES

Figure 11. The north channel facing west with sand above the natural lake boundary and coarse fragments on the foreshore.

Image was taken on June 30, 2022, by KES

Figure 12. The eastern shoreline of the north channel where trees were removed.

Image was taken on June 30, 2022, by KES

Figure 13. Rock berm along the eastern shore of the north channel.

Image was taken on June 30, 2022, by KES

Figure 14. A young paper birch tree unharmed by the rock berm.

Image was taken on June 30, 2022, by KES

Figure 15. Rock fragments along the eastern perimeter of the dismantled boathouse.

Image was taken on June 30, 2022, by KES

Figure 16. Spotted knapweed manually removed by KES during the June 30 site visit.

Image was taken on June 30, 2022, by KES

Figure 17. The northern end of the rock berm displaying a collection of woody debris deposited behind during high-water levels.

Image was taken on June 30, 2022, by KES

Figure 18. Location of the recommended construction of a machine access slope.

Image was taken on June 30, 2022, by KES

Appendix B: Riparian Area Assessment Report

Riparian Area Assessment Report

10377 Highway 3A, Gray Creek, BC

Jessica Lowey, MSc, PAg

January 13, 2022

Keefer Ecological Services Ltd.
3816 Highland Road
Cranbrook, BC V1C 6X7
(250) 489-4140
www.keefereco.com

Executive Summary

The assessed property is located at 10377 Highway 3A in Gray Creek, BC, on the east shore of Kootenay Lake. This report has been prepared for the Regional District of Central Kootenay (RDCK) as a pre-condition of the issuance of a building permit. This report is included as part of a Development Permit, as required under section 920 of the Local Government Act, and will be filed on the title of the assessed property. The report has been prepared for and at the expense of the owner of the assessed property. The authoring Qualified Environmental Practitioner (QEP) has not acted for or as an agent of the RDCK.

The assessment followed the Simple Assessment methodology as described in the Riparian Areas Protection Regulation (BC Reg. 178/2019). The SPEA width for this Simple Assessment is 15 m, given the vegetation category, fish-bearing status and permanence of Kootenay Lake. Existing and proposed development falls within the SPEA and below the TOB at the assessed property; however, the potential for adverse effects as a result of the proposed development is low. To address the potential for adverse effects to occur through uncontrolled works, the current owner of the assessed property has committed to developing and implementing a Mitigation Plan that is intended to ensure that there is no net loss to aquatic habitat productivity. The Mitigation Plan will be developed to include the management and mitigation measures presented herein.

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Property Description

The assessed property is approximately 3 hectares (ha) and is located at 10377 Highway 3A, Gray Creek, BC, on the east shore of Kootenay Lake. The legal description for the assessed property is Lot 2 Plan NEP4523 District Lot 4595 Land District 26 (Kootenay). The Parcel Identification number (PID) is 010-421-874. The current owner of the assessed property is Bevan May who purchased the property in 2021.

Existing and Planned Development

A two-storey house on a concrete foundation currently exists on the upper portion of the assessed property, immediately west of Highway 3A. The house was constructed in 1963 and has likely experienced several renovations since that time. On the south side of the house is a small greenhouse and the septic field. On the north side of the house, a wooden staircase connects the upper portion of the assessed property to the lower portion where a boat house, rail system, deck and storage shed are located. A cliff approximately 30 meters (m) in height separates the upper and lower portions of the assessed property. Other existing infrastructure found in the lower portion of the assessed property includes a decommissioned hydro pole and scrap wiring, other decommissioned electrical equipment (e.g., light on the shoreline), and several water lines that run from the waters edge up the cliff to the house above (Figure 1).

Figure 1. Existing development of the assessed property.

The proposed development includes the installation of a funicular (a cable and rail system) intended to connect the upper and lower portions of the assessed property from a point on the western edge of the upper portion to a point above the high water mark in the lower portion (Figure 2), and a floating dock extending from gangway secured into the bedrock along the western shoreline, where a non-permanent deck area built of wood currently exists (Figure 3).

Figure 2. Top (left) and bottom (right) points of the proposed funicular.

Figure 3. Location of proposed floating dock and gangway.

The proposed development does not include the removal of trees or soil materials from the assessed property, nor does it potentially increase the overall risk of erosion and sedimentation at the site. The

proposed installation of a funicular will require the removal or relocation of boulders at the base of the cliff, and the removal of a small area (approximately 5 square meters (m^2)) of shrubs (saskatoon (*Amelanchier alnifolia*)) and overburden (forest litter on top of bedrock) at the top of the cliff. The installation of the gangway will require no vegetation removal or earthworks, rather the securing of the gangway into the exposed bedrock along the western shoreline.

Riparian Area Assessment

Qualifications of the Assessor

Ms. Lowey is a registered Professional Agrologist in good standing with the British Columbia Institute of Agrologists (BCIA) in the practice areas of environmental impact assessment and mitigation planning; soil and land conservation, reclamation planning and management; and, vegetation identification, assessment and management. As of the date of this report, Ms. Lowey has conducted several Riparian Area Assessments following the methodology detailed below. She has successfully led projects into compliance with applicable Regulation, including others within the jurisdiction of the Regional District of Central Kootenay (RDCK). At KES, Ms. Lowey has access to a variety of technical experts, including other Professional Agrologists, Professional Foresters, and Professional Biologists.

Methodology

The assessment followed the Simple Assessment methodology as described in the Riparian Areas Protection Regulation (BC Reg. 178/2019). The Simple Assessment establishes Streamside Protection and Enhancement Area (SPEA) widths based on certain stream characteristics – fish-bearing status, nature of stream flows, and the status of streamside vegetation. These widths have been established for the protection of fish habitat while taking into consideration existing development (i.e., permanent structures).

1. Determining Vegetation Category

The vegetation category is assessed within a 30 m wide area starting from the middle of the assessed property and going 200 m both upstream and downstream along the bank where the development will occur. Within the 30 m and 200 m assessment boundaries, the distance from the top of bank (TOB) to the first permanent structure was estimated at 40 m intervals (Figure 4). An air photo was used to undertake this measurement prior to inspecting the site in person. While on site, KES utilized a drone to improve the quality of the available aerial photos of the site for the purposes of this assessment.

2. Determining Fish Bearing Status

Fish bearing streams are ones in which fish are present or potentially present if introduced obstructions could be made passable. Using publicly available information on the waterbody, the fish bearing status of Kootenay Lake was confirmed. The following sources of information were consulted:

- iMapBC Fresh Water Atlas
- BC Habitat Wizard
- Kootenay Lake Shoreline Inventory Mapping

3. Determining Stream Permanence

Stream flow permanence is a factor only in determining a SPEA on non-fish-bearing streams. Kootenay Lake is a permanent water feature, that does not dry up.

Figure 4. Riparian area assessment boundaries.

4. Calculating SPEA Width

Using the three aforementioned characteristics, SPEA width is determined using Figure 5. The Riparian Areas Protection Regulation (BC Reg. 178/2019) defines the TOB for a floodplain area not contained within a ravine as the edge of the active floodplain of a stream where the slope of the land beyond the edge is flatter than 3:1 at any point for a minimum distance of 15 m measured perpendicularly from the edge. This definition of the TOB is suitable for the assessed property; however, the alternative definition for TOB applies for the areas 200 m up and downstream of the assessed property. In these areas, the TOB is defined as a break in the slope of the land such that the grade beyond the break is flatter than 3:1 at any point for a minimum distance of 15 m measured perpendicularly from the break.

<table>
<tr><th rowspan="2">Vegetation Category</th><th rowspan="2">Existing or potential streamside vegetation conditions</th><th colspan="3">Streamside Protection and Enhancement Area Width*</th></tr>
<tr><th>Fish bearing</th><th colspan="2">Non-Fish bearing</th></tr>
<tr><th></th><th></th><th></th><th>Permanent</th><th>Non Permanent</th></tr>
<tr><td>1</td><td>Continuous areas ≥30 m or discontinuous but occasionally > 30 m to 50 m</td><td colspan="2">30 m</td><td>Minimum 15 m
Maximum 30m
Refer to Figure 2-2</td></tr>
<tr><td>2</td><td>Narrow but continuous areas = 15 m or discontinuous but occasionally > 15 m to 30 m</td><td>Minimum 15
Maximum 30
Refer to Figure 2-2</td><td colspan="2">15 m</td></tr>
<tr><td>3</td><td>Very narrow but continuous areas up to 5 m or discontinuous but occasionally > 5 m to 15 m</td><td>15 m</td><td colspan="2">Minimum 5m
Maximum 15 m
Refer to Figure 2-3</td></tr>
</table>

Figure 5. Determining SPEA widths for the Simple Assessment.

Fisheries Resource Values

Kootenay Lake is a fish bearing waterbody that is managed for angler use. Kootenay Lake supports many different fish species, both native and invasive. Species present include longnose dace, torrent sculpin, rainbow trout, kokanee, slimy sculpin, brook trout, mountain whitefish, redside shiner, peamouth chub, northern pikeminnow, bull trout, white sturgeon, pygmy whitefish, yellow perch, burbot, westslope cutthroat trout, longnose sucker, leopard dace, largescale sucker, prickly sculpin, bridgelip sucker, lake whitefish, dolly varden, carp, pumpkinseed, and largemouth bass. Known key fish habitat present in Kootenay Lake includes spawning, rearing, living and foraging, and migration corridors.

The shoreline at the assessed property is rocky. There was no woody debris observed along the shoreline below the HWM. This observation is consistent with adjacent properties. Above the HWM extensive amounts of woody debris were observed, naturally accumulating in pools/bays along the shoreline both up and downstream of the assessed property. There were no turbulent water features (e.g., riffles, cascades), undercut banks or in-stream vegetation overserved along the shoreline of the assessed property or adjacent properties. The Kootenay Lake Shoreline Guidance Document (Kootenay Lake Partnership, 2020) assessed the same segment of shoreline as having no evidence or low potential for aquatic habitat for the species listed in Table 1, with the exception of juvenile rearing habitat. Bird habitat potential was also observed. The field assessment did not yield any evidence of nests, although tree nesting habitat exists up and downstream of the assessed property. No evidence of raptors was

observed through the field assessment, although raptor breeding occurrence in the Kootenay/Boundary region does not typically commence until April (Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 2013).

Table 1. Kootenay Lake shoreline habitat assessment summary (Kootenay Lake Partnership, 2021).

Habitat Assessed	Habitat Potential	Habitat Assessed	Habitat Potential
White sturgeon spawning	No	Red- or Blue-listed species	Yes
Bats	No	Fish staging	No
Raptors	Yes	Fish migration	No
Heron	No	Salmon spawning	No
Nests	Yes	Juvenile rearing	Moderate
Amphibians	No	Kokanee spawning	No

The riparian area vegetation of the assessed property and adjacent properties is predominantly dry conifer forest (ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*)) which sometimes extends to the HWM but does not overhang the waterbody. Much of the vegetation is contained to the TOB as the exposed bedrock cliffs between the TOB and the HWM are steep and free of soil materials, with the exception of the assessed property. Very little of the riparian area vegetation on the assessed property and neighbouring properties has been modified through clearing activities or other anthropogenic factors. Other species observed include saskatoon, Oregon grape (*Mahonia aquifolium*), common juniper (*Juniperus communis*), Wood's rose (*Rosa woodsii*), yarrow (*Achillea millefolium*), round-leaved alumroot (*Heuchera cylindrica*), and falsebox (*Pachistima myrsinites*). Two invasive plant species were observed on and adjacent the assessed property, including spotted knapweed (*Centaurea stoebe*) and scotch broom (*Cytisus scoparius*).

Determination of SPEA Width

The vegetation category was determined to be 3 (Figure 5), based on the details provided in This assessment was difficult given the irregular shape of the shoreline and the steep slopes up and downstream of the assessed property. Within the assessed property, the TOB lies outside the 30 m area used for determining the vegetation category in two instances (segments 5 and 6). This is attributed to the irregular shape of the shoreline in those segments (Figure 7). In the areas up and downstream of the assessed property, the shoreline rises steeply away from the HWM, unlike at the assessed property (Figure 6). This resulted in the TOB moving eastward towards the highway (the TOB is located alongside the highway, where the slope breaks). Using the determined vegetation category, fish-bearing status of Kootenay Lake and its permanence, KES has determined that the SPEA width for the assessed property is 15 m (Figure 5; Figure 7).

Table 2. This assessment was difficult given the irregular shape of the shoreline and the steep slopes up and downstream of the assessed property. Within the assessed property, the TOB lies outside the 30 m

area used for determining the vegetation category in two instances (segments 5 and 6). This is attributed to the irregular shape of the shoreline in those segments (Figure 7). In the areas up and downstream of the assessed property, the shoreline rises steeply away from the HWM, unlike at the assessed property (Figure 6). This resulted in the TOB moving eastward towards the highway (the TOB is located alongside the highway, where the slope breaks). Using the determined vegetation category, fish-bearing status of Kootenay Lake and its permanence, KES has determined that the SPEA width for the assessed property is 15 m (Figure 5; Figure 7).

Table 2. Site-specific determination of SPEA width (assessed property segments highlighted).

Segment Assessed	Distance to First Permanent Structure
1	5 m
2	4 m
3	3.5 m
4	20 m
5	6.5 m
6	6 m
7	12 m
8	15 m
9	4.5 m
10	5.5 m
11	5 m
Average	**8 m**

Figure 6. Upstream (left) and downstream (right) shorelines outside the assessed property.

Figure 7. SPEA determination for the assessed property.

Discussion of Existing and Potential Impacts

Existing disturbances were observed to be stable. No evidence of erosion or sedimentation was observed to be associated with the existing disturbances within 30 m of the high water mark, including within the SPEA. Soils of the upper portion of the assessed property are shallow and well vegetated with either grass, ornamental plants or native tress and shrubs. Limited soil resources (e.g., predominantly sand) and considerable amounts of exposed bedrock exist throughout the lower portion of the assessed property. Where soil or vegetation exists in the lower portion, they were observed to be stable. Two invasive plant species (spotted knapweed and scotch broom) were observed in the lower potion of the assessed property, likely a result of encroachment from the roadside, as well as within 200 m up and downstream of the assessed property.

Disturbances within 30 m of the high-water mark include:

- Lower portion of the assessed property:
    - Deck
    - Rail system
    - Boathouse
    - Storage shed
    - Fire pit
    - Water lines
    - Decommissioned electrical supply
    - Staircase
- Upper portion of the assessed property:
    - Staircases
    - House
    - Garage / Carport
    - Driveway
    - Greenhouse
    - Septic field

Vegetation within the riparian area includes:

- Ponderosa pine (*Pinus ponderosa*)
- Douglas fir (*Pseudotsuga menziesii*)
- Oregon grape (*Mahonia aquifolium*)
- Common juniper (*Juniperus communis*)
- Wood's rose (*Rosa woodsii*)
- Yarrow (*Achillea millefolium*)
- Round-leaved alumroot (*Heuchera cylindrica*)
- Falsebox (*Pachistima myrsinites*)
- Spotted knapweed (*Centaurea stoebe*; invasive)
- Scotch broom (*Cytisus scoparius*; invasive)

All of the proposed development (funicular, dock and gangway) is located within 15 m of the high water mark, or the Environmentally Sensitive Development Permit (ESDP) Area, as defined by the RDCK Land Use Bylaw (No. 2315, 2015). The upper portion of the assessed property is estimated at 30 m elevation (vertical distance) above the high water mark and greater than 15 m from the HWM (horizontal distance). Thus, the potential impacts of the proposed development work in this portion of the assessed property are not expected to cause adverse effects to terrestrial or aquatic habitats, or drinking water quality. The proposed funicular installation requires minor amounts of forest floor materials to be removed from the top of the cliff where two rods/pilings will be bored into bedrock. The forest floor materials in this location were observed to be very shallow, predominantly consisting of pine needle litter, and directly on top of exposed bedrock. The clearing in this area will also require that one cluster of saskatoon shrubs are removed. Neither of these tasks require the removal of mature trees from the assessed property. All proposed work in the upper portion of the assessed property is greater than 15 m from the high water mark; thus, falling outside the ESDP Area.

The base of the funicular, as well as the proposed dock and gangway, occur within 15 m of the highwater mark in the lower portion of the assessed property. The construction of the base of the funicular requires that three large pieces of dislodged bedrock are moved or crushed into smaller pieces. The base of the funicular will be secured directly into bedrock at the base of the cliff (Figure 2). The base of the funicular is situated immediately above the high water mark. The dock and associated gangway, located along the western shoreline of the assessed property, will also require direct securement into the exposed bedrock in this location (Figure 3). The top of the gangway will be secured in place above the high water mark. The dock will be a floating structure secured to the end of the gangway. No disturbance of soil or vegetation is required for the proposed work in the lower portion of the assessed property, within the ESDP Area.

Proposed Management and Mitigation Measures

The following proposed management and mitigation measures are intended to ensure no adverse effects to the terrestrial or aquatic habitat, or drinking water quality, through the work. These management and mitigation measures will be implemented throughout the proposed work by the property owner with assistance from a QEP.

1. Communication Plan

All site personnel will be informed of their obligation to protect the terrestrial, aquatic and drinking water values at the assessed property through the proposed work. This includes limiting disturbance footprints within the SPEA, and operating from above the TOB whenever practicable. For the proposed dock work, a barge will be used and work conducted from the water. Spill response, if required, will follow provincial guidelines.

2. Equipment

Cleaning procedures will be implemented for all incoming equipment, including footwear, to avoid the introduction of both terrestrial and marine invasive plant species. Equipment will not be permitted to perform work on the assessed property if it is not free from mud, debris, vegetation, etc.

3. Vegetation Removal

Vegetation removal will be minimal and only as required for the installation of the top of the funicular. This is expected to include the removal of one group of saskatoon shrubs from the western edge of the cliff in the upper portion of the assessed property. No mature trees are scheduled to be removed. Along with the vegetation removal, the area will be stripped of all forest litter that lies on top of exposed bedrock. This removal of material will occur in a controlled manner and will not be pushed down the cliff to the lower portion of the assessed property. All removed materials will be stockpiled on the upper portion of the assessed property, away from the cliff edge, until otherwise disposed of or managed per the approved best management practices for instream works (Province of BC, 2004).

4. Invasive Plant Control

Two invasive plant species were observed on the assessed property and are presumed to have originated from populations along the side of the highway (Figure 8). These species were also observed 200 m up and downstream of the assessed property. Spotted knapweed (*Centaurea stoebe*) should be manually removed and chemically controlled, with extra care taken in its application given the proximity to the high water mark. Existing spotted knapweed skeletons should be carefully removed in such a manner that reduces the likelihood of spreading seeds in the process. Scotch broom (*Cytisus scoparius*) should also be removed through manual and chemical means. Plants should be dug or pulled, taking care to remove as much of the root as possible. Scotch broom may also be controlled via chemical means in the spring.

Figure 8. Invasive plant species found within the assessed property boundaries.

5. Dust Control

Where concrete or bedrock is cut, drilled or sanded, care will be taken to ensure that airborne dust or fine dust accumulating in water used as a lubricant (if used) is not allowed to adversely impact the surrounding terrestrial or aquatic habitat. The amount of dust anticipated through the proposed work is minimal, but controls should be in place as part of the owner/contractor's due diligence. Approved best management practices for instream works (Province of BC, 2004) provide details for the use of erosion and sediment control measures that would be applicable for this work, including the construction of diversions within the work area so that sediment-laden water does not directly enter the stream.

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