REGIONAL DISTRICT OF CENTRAL KOOTENAY

DEVELOPMENT PERMIT

DP2208Hn (WELLS)

Date: May 24, 2023

Issued pursuant to Sections 490 and 491 of the Local Government Act

1. This Development Permit is issued to Diane Wagner Wells, Douglas Dwight Wells, Ryan Douglas Wells and Jason Todd Wells of Dover, Idaho as the registered owners (hereinafter called the "Permittees") and shall only apply to those lands within the Regional District of Central Kootenay, in the Province of British Columbia legally described as LOT 1 DISTRICT LOT 6521 KOOTENAY DISTRICT PLAN NEP19527 (PID: 017-493-536) as shown on the attached Schedules 1 and 2, forming part of this Permit, referred to hereafter as the "said lands".

2. This Development Permit is issued subject to compliance with all of the bylaws of the Regional District of Central Kootenay applicable thereto, except as specifically varied or supplemented by this Permit.

3. This Development Permit shall not have the effect of varying the use or density of land as specified in the applicable Zoning Bylaw of the Regional District of Central Kootenay, nor a Floodplain Specification under Section 524 of the Local Government Act.

4. The said lands have been designated 'Rural Residential' (R3) and are located within a Watercourse Development Permit (WDP) Area pursuant to the *Slocan Lake North Portion of Electoral Area 'H' Official Community Plan Bylaw No. 1967, 2009,* as amended.

5. The Permittee has applied to the Regional District of Central Kootenay to construct a one-family dwelling, water supply line, wastewater infrastructure. The proposed development also involves clearing and restoring a "construction access path" through the Development Permit Area (hereinafter called the "Works"). Pursuant to this Development Permit and subject to the terms and conditions herein contained, as well as all other applicable Regional District Bylaws, the Regional District of Central Kootenay hereby authorizes the use of the said lands for the aforementioned Works.

6. The Permittee is required to obtain approval in writing from the Regional District of Central Kootenay prior to any further disturbance, construction of any new buildings, external additions to existing buildings or for any deviation from the development authorized under Section 5 and Schedule 2 of this Development Permit. Furthermore, the Permittees are hereby advised of the following requirements:

   6.1 Development is authorized in accordance with the terms described in the report titled "Wells Glass Cabin, Slocan Lake Riparian Assessment Report (V2.1)" dated February 7, 2023 and attached to this permit as Schedule 3. Conditions of the permit are identified in Section 6 of the report and summarized as follows:

   6.1.1 The development authorized by this permit shall be substantially in accordance with "Site Plan – A1.0" drawn by Andrew V. and checked by Marc Brillon, revision no. 3 dated January 19, 2023.

   6.1.2 Measures to protect the integrity of SPEA for the project include scheduling of environmentally sensitive activities, protection of existing vegetation, hazard tree removal, erosion and sediment control, concrete management, water quality, management of equipment and fuel/lubricant materials, spill response procedures, construction waste

management, wildlife management and site restoration.

6.1.2.1 Danger Trees: An RPF was not retained to assess hazard trees; however, a quick assessment for potential hazard trees was conducted by the QEP. A few standing dead deciduous trees were identified to be removed within and directly adjacent to the proposed building footprint as well as directly in front of the cabin within SPEA.

6.1.2.2 Windthrow: An RPF was not retained to assess potential windthrow since minimal clearing is proposed within the SPEA.

6.1.2.3 Slope Stability: The Qualified Environmental Professional (QEP) reviewed the slope stability field indicators as listed in Table 3.8 of the RAPR while on site to identify the presence of any potential indicators. No slope stability indicators were observed by the QEP. However, this does not confirm the absence of terrain stability issues as a geotechnical assessment was not completed by a P.Geo. or P.Eng.

6.1.2.4 Protection of Trees and Vegetation: The proposed work will require some clearing of vegetation prior to the commencement of work to accommodate construction activities, as well as cutting of tree roots for . The following mitigation measures will be implemented to protect existing vegetation within the SPEA:

- Clearing of vegetation will be kept to the minimum possible area required for access, staging, construction works, and safety considerations.
- Snow fencing will be installed at a minimum along the 10 m setback line from the creek to protect the riparian vegetation.
- The boundaries of the project site will be clearly marked before the crews arrive. All vegetation outside of these boundaries will be retained.
- Align waterline to avoid and minimize impacts to tree roots, as much as possible.
- Prior to excavation, carefully remove moss along waterline trench alignment, and replace once backfilling is complete.
- If practicable, salvaged top soil, plants and coarse woody debris are to be retained and re-located to a preferred area within the 15 m setback for restoration.
- A designated construction access path will lead from the beach to the proposed cabin siting which will be used for foot traffic and small machinery (Appendix 3).

6.1.2.5 Encroachment: Encroachment into the SPEA is limited to the access trail from the beach to the cabin and waterline installation. Further development beyond the access trail and restoration areas is discouraged to preserve the function of the riparian vegetation, and to promote re-establishment of vegetation within the restoration area.

6.1.2.6 Erosion and Sediment Control: In order to prevent sediment from entering Slocan Lake and minimize potential impacts to fish habitat, exposed soils will be minimized with respect to extent and duration. The contractor will ensure that there are sufficient materials (silt fences, straw bales, polyethylene plastic, filter cloth and tarps) available onsite for emergency protection measures when required during adverse weather conditions.

6.1.2.7 Stormwater Management: The proposed development may result in an increase in the total impervious area of the property. The following mitigation measures will help decrease stormwater impacts:

- Downspouts from house should direct rainwater into suitable

landscape features which can absorb and utilize runoff.

- Stormwater discharges must adhere to the *Water Sustainability Act* or any other application legislation.

6.1.2.8 Protection of Wildlife Habitat: Best management practices developed to protect nesting birds include the following:

- Wildlife snags should be retained with the SPEA, unless considered a hazard. These trees serve as wildlife perch trees and potential nesting and roosting sites for raptors. They also provide food for woodpeckers, who in turn create nest cavities for other birds.
- Any mature hazard trees (>300 mm diameter at breast height (DBH)), as deemed by an arborist or RPF and proposed for removal within the SPEA should be cut at minimum 3.3 m (10 ft) in height from the ground and left as a wildlife snag.
- Any clearing of trees and vegetation should be conducted outside of the songbird breeding season (early-April 1 to mid-August). If clearing is to occur during the songbird breeding season a QEP should be retained to evaluate the presence of any active nests within areas to be cleared and propose measures to protect these nests.
- Follow the Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (MOE 2013) if any active raptor nests are discovered within 100 m of the subject property. Active raptor nests are legally protected at all times of the year and some inactive nests (ex: Bald Eagle nests) are similarly protected. A QEP should be retained to determine the appropriate mitigation measures to protect raptors and their habitat.

6.1.2.9 Protection of Fish Habitat: Protection of fish habitat shall be implemented by:

- Limit beach modification for installation of waterline to permitted areas and preserve foreshore vegetation and boulders which provide fish habitat during periods of inundation.
- Adhere to sediment, stormwater, and waste management best practices outlined in this report to ensure that there is no release of deleterious materials into Kootenay Lake.

6.1.2.10 Concrete Management: The following precautions will be taken when handling concrete to ensure the protection of adjacent waterbodies:

- Concrete mixing will be conducted above the HWM.
- Washing of equipment used during concrete work will occur at a designated location at least 30 m away from Slocan Lake where wash water will not drain directly into the Lake.

6.1.2.11 Management of Equipment and Fuel/Lubricant Materials: Construction activities require the use of machinery and equipment that use fuels, oils, lubricants, and hydraulic fluids. These materials are hazardous to the surrounding terrestrial and aquatic environments and must be managed properly. To reduce the risk of fluid leaks and spills the following measures will be implemented:

- Equipment will not be operated in the lake.
- Machinery will arrive on site in a clean condition free of fluid leaks, excess oil or grease, mud, sediment, invasive species, and noxious weeds or seeds.
- All equipment will be regularly inspected for leaks at the start and end of each working day. Leaking equipment will be removed from

the worksite and repaired in a designated area at least 15 m away from a watercourse or waterbody. Secondary containment will be placed under machinery parked overnight within 30 m of the watercourse to detect and contain minor leaks.

- A designated staging area for fueling and maintenance will be clearly marked on site at a location positioned 15 m away from Slocan Lake and the unnamed watercourse. Re-fuelling of all construction or heavy equipment will be completed within the staging area.
- Equipment will be stored in the staging area overnight.
- An emergency spill response kit and spill reporting procedures (Section 4.8) will be posted at the staging area. The spill response kit will be inspected regularly and replenished as necessary.
- Smoking will not be permitted within the staging area.
- If emergency repairs are required, spill pads will be used to capture any drips.
- No large quantities of fuel will be stored on site overnight.
- Small containers of fuel and oil will be stored in appropriate secondary containment within the staging area to minimize the effect of a spill.
- Any refuse contaminated with fuel, oil, grease, lubricants, or hydraulic fluid generated during repairs or servicing of equipment will be collected in polyethylene lined, covered, containers. This waste will be disposed of at a registered or licensed facility.
- Any small equipment including generators, pumps, and light towers located on site will be placed in secondary containment basins to contain any fuel leaks.

6.1.2.12 Invasive Species Management: Construction activities can potentially increase prevalence of invasive plant species which can outcompete native riparian vegetation, causing damage to habitat and ecosystem function. The following mitigation measures are recommended to reduce the establishment and proliferation of invasive plant species on site:

- All equipment should be thoroughly washed and inspected before entering the project site to prevent the import of new invasive plant seeds and root fragments.
- Amount of soil disturbance should be minimized.
- All exposed soils should be re-vegetated immediately following construction.

6.1.2.13 Revegetation Plan: To mitigate for the loss of the four live trees and disturbance of groundcover within the SPEA, the proposed construction access path has been identified for enhancement through replanting of native species (64 m2; see Table 5 and Appendix 3 of the Riparian Assessment Report V2.1). Planting shall be completed in the spring or fall, once construction is complete.

6.1.2.14 General Planting and Maintenance Guidelines:

- Planting should not occur during periods of hot dry weather unless they are irrigated daily.
- Trees shall be spaced at >3 m apart and shrubs spaced >1m apart.
- Locally adapted native plants are preferable to those collected or grown outside the region. The species listed in Table 5 are available from Sagebrush Nursery in Oliver https://sagebrushnursery.com, or Tipi Mountain Native Plants http://tmnp.tipimountain.com/ near

Kimberley.

- Planting holes shall be a minimum of 3 times the size of the pot.
- Use transplant fertilizer (ie. Mykes Mycorrhizae Tree and Shrub or similar) as per manufacturers specifications in each planting hole.
- Plantings which do not survive should be replaced to ensure complete establishment of native plants, and exclusion of exotic plants.
- Ensure the objective of the restoration is to naturalize the riparian area and not create a landscaped garden.
- Regularly irrigate new plantings during the plant establishment period for a minimum of 5 years and thereafter as required.
- Pull any invasive weeds on a yearly basis prior to going to seed.

6.1.2.15 Environmental Monitoring: The anticipated effort for environmental monitoring and professional guidance on this project includes the following:

- QEP will conduct a post construction site visit once planting is complete to assess compliance and completion of the project.
- QEP will prepare an environmental summary report and submit to the RDCK.

7. A building permit shall be required prior to any construction involving land in this location at which time the Permittees shall be required to address sewage disposal issues to the satisfaction of the Interior Health Authority and Regional District of Central Kootenay Senior Building Official.

7.1 Prior to issuance of a building permit, the Building Official may require the property owner to provide a building location certificate, survey or other information in order to confirm that the proposed dwelling complies with the RDCK Floodplain Management Bylaw No. 2080.

7.2 A geotechnical report pursuant to Section 56 of the Community Charter may also be required prior to issuance of a building permit.

8. As a condition of the issuance of this Permit, the Regional District shall hold an irrevocable Letter of Credit or certified cheque submitted by the Permittee in the amount of $13,610.20 to ensure the landscaping requirements as set forth in Section 6 are completed and in accordance with the following provisions:

8.1 A condition of the posting of the Letter of Credit is that should the Permittee fail to carry out the works and services as herein above stated, according to terms and conditions of this permit within the time provided, the Regional District may use the Letter of Credit to complete these works or services by servants, agents or contractors, and any surplus shall be paid over to the Permittee. If the amount of funds is insufficient to cover the actual cost of completing the works, then the Permittee shall pay such deficiency to the Regional District immediately upon receipt of the Regional District's bill for same.

8.2 The Permittee shall complete the landscaping works required by this Permit prior to April 5, 2025. Within this time period the required landscaping must be inspected by the Qualified Environmental Professional who will then send confirmation to the Regional District of Central Kootenay that the work has been done in accordance to their specifications.

8.3 If the landscaping is not approved within this time period, the Regional District has the option of continuing to renew the Letter of Credit until the required landscaping is completed or has the option of drawing from the Letter of Credit to complete the required landscaping. In this event, the Regional District or its agents have the irrevocable right to enter into the property to undertake the required landscaping for which the Letter of Credit was submitted.

8.4 If the landscaping is approved within this time period without the Regional District having to draw the on the Letter of Credit, 90% of the original amount of the Letter of Credit shall be returned to the Permittee.

8.5 A hold back of 10% of the original amount of the Letter of Credit shall be retained until a final

inspection is undertaken within 12 months of the date of the original inspection and approval was given to the landscaping. If the landscaping receives approval at final inspection, the 10% hold back will be returned to the Permittee. If after the final inspection, approval of the landscaping is not given, the Regional District has the option of continuing to renew the Letter of Credit until the required landscaping is approved or has the option of drawing on the Letter of Credit the funds to complete the required landscaping. In this event, the Regional District or its agents have the irrevocable right to enter onto the property to undertake the required landscaping for which the Letter of Credit was submitted.

9. The said lands shall be developed strictly in accordance with the terms and conditions of this Development Permit and the requirements of all applicable Regional District Bylaws as well as any plans and specifications which may, from time to time, be attached to this Permit shall form a part thereof.
10. In accordance with the Local Government Act, if the development authorized by this Development Permit is not commenced within two years of the date of this Permit, this Permit shall lapse.
11. In accordance with the Local Government Act, 'Notice' shall be filed in the Land Title Office that the said lands are subject to this Development Permit.
12. The terms of this Development Permit including subsequent amendments, are binding on all persons who acquire an interest in the said lands associated with this Permit.
13. This Development Permit does not constitute an authorization under the *Water Sustainability Act*, *Land Act, Fisheries Act*, *Public Health Act* or any other relevant Provincial or Federal Legislation.
14. It is understood and agreed that the Regional District has made no representations, covenants, warranties, guarantees, promises, or agreement (verbal or otherwise) with the Permittees other than those in this Development Permit. It is solely the responsibility of the Permittees to ensure that the requirements of all other applicable government agencies are satisfied.
15. This Development Permit does not constitute a building permit.
16. This Development Permit shall come into force and effect 14 days after the date of issuance unless a Waiver of Appeal is received from the Permittees at which time the Development Permit shall be deemed to be issued upon receipt of the Waiver of Appeal. OR If a Notice of Appeal is received the Development Permit shall be suspended until such time as the Board of the Regional District of Central Kootenay has decided the Appeal.

S Sudan

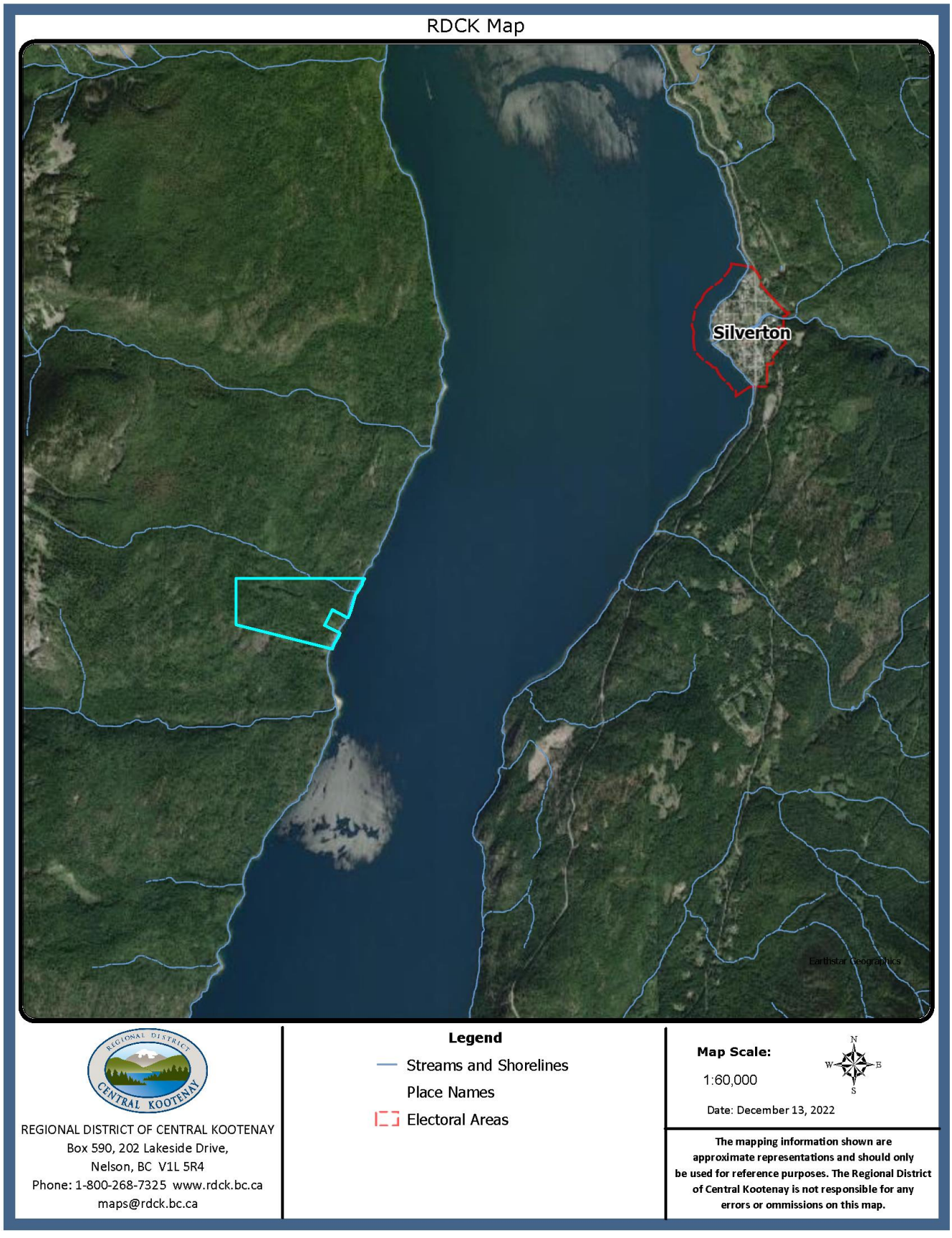
Sangita Sudan, General Manager of Development Services

May 26, 2023

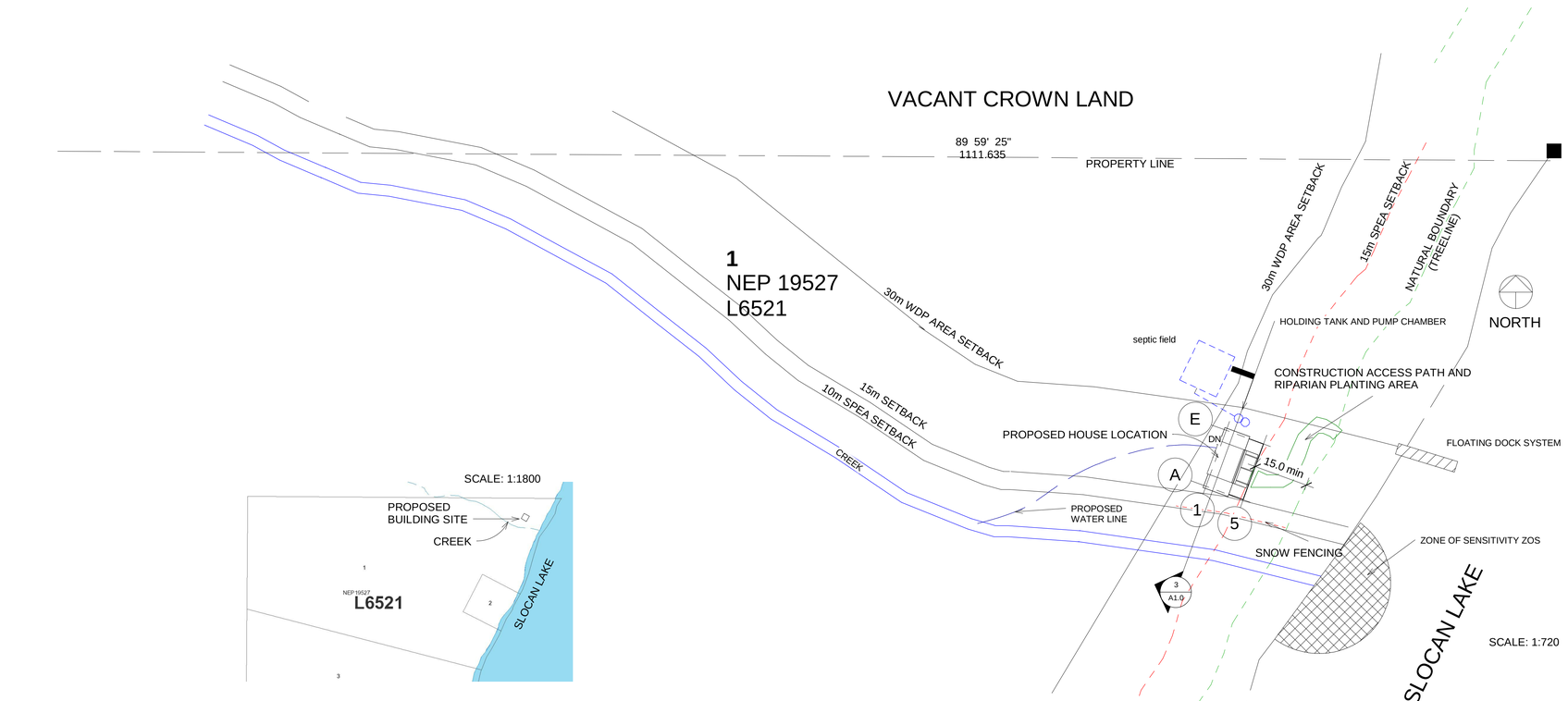
Date of Approval

Date of Issuance

Schedule 1: Location Map



Schedule 2: “Site Plan – A1.0” drawn by Andrew V. and checked by Marc Brillon, revision no. 3 dated January 19, 2023.



3 Section 5

1" = 10'-0"

PID: 017-493-536

ELLENWOOD HOMES

LEGAL DESCRIPTION:
LOT 1
DISTRICT LOT 6521
PLAN NEP19527

PID 017-493-536

No.	Description	Date
2	Issued for Development Permit	06 Oct 22
3	Reissued for Development Permit	19 Jan 23

Wells

Slocan Residence

SITE PLAN

Project number	1601
Date	24 April 2022
Drawn by	Andrew V.
Checked by	Marc B.
	A1.0
Scale	As indicated

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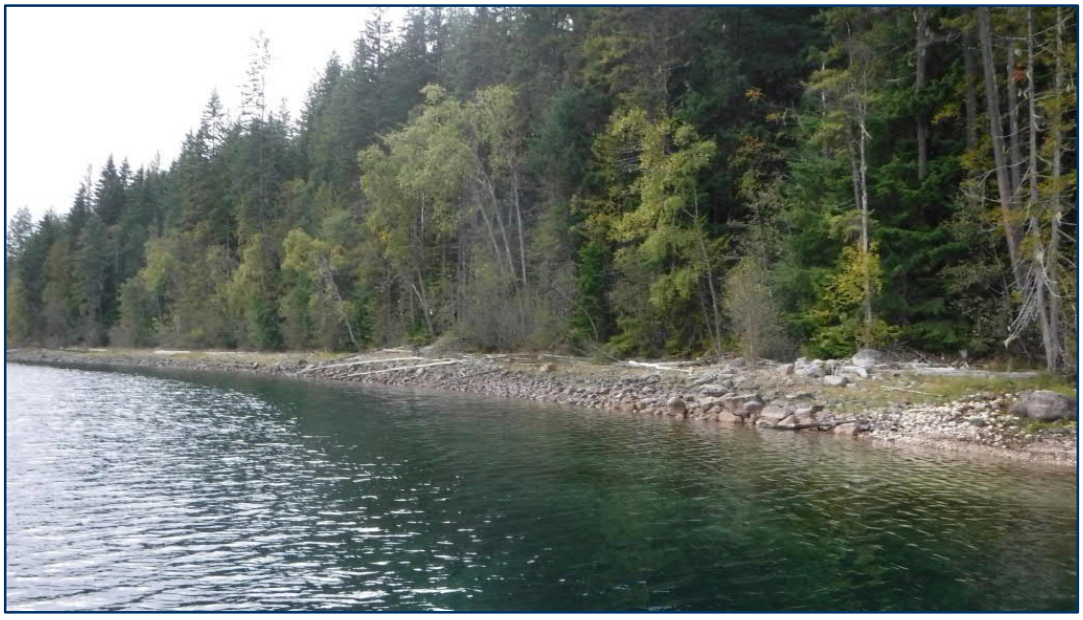
Schedule 3: “Wells Glass Cabin, Slocan Lake Riparian Assessment Report (V2.1)” dated February 7, 2023

Wells Glass Cabin, Slocan Lake
Riparian Assessment Report (V2.1)



Prepared for:

Regional District of Central Kootenay

202 Lakeside Drive

Nelson, BC, V1L 5R4

February 7 2023

Prepared by:
Masse Environmental Consultants
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Project Number 2015-487

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1 INTRODUCTION

Masse Environmental Consultants Ltd. (Masse) was retained by Marc Brillon, building contractor for the Well's cabin development at Lot 1, DL6521, Plan NEP19527 on Slocan Lake (Appendix 1), across from Silverton, to provide environmental consulting services in support of the proposed construction of a cabin on Slocan Lake. The previously approved cabin development as per the Environmental Assessment Report (Masse 2015) was not completed. The original cabin design was a single level cabin with wrap around deck (11 m x 11 m), elevated off the ground and sat on nine posts with a total footprint area of 120 m^2. The revised cabin design has two levels, with a wrap around deck (16.5 m x 11 m) and has a total footprint area of 181.5 m^2. The proposed siting of the cabin is mostly the same; however, does extend 5.5 m further north due to the increased footprint.

In 2022, Living Lakes Canada published the Slocan Lake Foreshore Development Guide (FDG; Wood 2022) to provide foreshore inventory mapping information and recommended development guidelines, aimed at protecting sensitive fish and wildlife species and their habitats. To reflect the cabin design changes and include information from the FDG, the environmental assessment report has been revised.

A site visit was conducted on September 15, 2015 by Fiona Lau, AScT to assess the impact of the proposed cabin on the riparian area within the 30 meter watercourse development permit (WDP) area. This assessment evaluated the existing conditions of the foreshore and riparian areas, identified important habitat values, assessed the existing environmental impacts, and recommends measures to protect environmentally sensitive areas for future development. It is based on the following regulatory framework and best management practices documents:

- Slocan Lake North Portion of Electoral Area 'H' Official Community Plan Bylaw No. 1967, 2009.
- British Columbia Riparian Areas Protection Regulation (RAPR)
- British Columbia Water Sustainability Act
- General BMPs and Standard Project Considerations (Ministry of Environment)
- On the Living Edge: Your Handbook for Waterfront Living
- Develop with Care. Environmental Guidelines for Urban and Rural Land Development in British Columbia

This report has been prepared by Fiona Lau, AScT. and reviewed by Sylvie Masse., RPBio. I, Fiona Lau, hereby certify that:

a) I am a Qualified Environmental Professional (QEP), as defined in Section 21 of the Riparian Areas Protection Regulation made under the Riparian Areas Protection Act;

b) I am qualified to carry out the assessment of the proposal made by the developer (Aurora North Developments Ltd.), which is described in Section 2.3 of this Assessment Report (the "development proposal");
c) I have carried out an assessment of the development proposal, and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the specifications of the Riparian Areas Protection Regulation and assessment methodology set out in the Minister's manual.

2 PROJECT OVERVIEW

2.1 Location

The subject property (122 acres) is located on the west shore of Slocan Lake (WC 340-047200) across from Silverton (UTM 11U 5497943.5495899) (Appendix 1). The property is partially surrounded by Valhalla Provincial Park along the north and west boundaries. Slocan Lake lies on a north-south axis between the Selkirk and the Valhalla Mountain ranges. The lake drains south into the Slocan River, which flows into the Kootenay River. A small unnamed watercourse flows from west to east through the subject property adjacent to proposed development.

The project area is within the Interior Cedar Hemlock moist warm variant 2 (ICHmw2) biogeoclimatic subzone (MacKillop and Ehman 2016) at 550 m elevation. This moist climatic region is characterized by cool, wet winters and warm dry summers. This zone is one of the wettest in the interior of the province and with a mean annual precipitation of 500-1200 mm, 25-50% of which falls in snow. The greater snow melt contributes considerably to the hydrologic regime; thereby minimizing summer soil moisture deficits.

2.2 Existing Site Conditions

The subject property is located on the west shore of Slocan Lake and is mostly undeveloped with exception of an existing residence located at the south-east corner of the property. There are two main grade changes which occur within the riparian area of the lake foreshore. The first grade change occurs at the top of bank (1.3 m above the high water mark (HWM) where the grade changes to 24% and then at ~15 m from the HWM where the grade steepens to 30%.

During the site visit the HWM, also known as the natural boundary of Slocan Lake along the foreshore was confirmed to be at an elevation of ~545 m, as shown on the legal survey completed in 1980 by Gordon Stein (Appendix 2). The HWM along the unnamed stream was surveyed by Fiona Lau and Marc Brillon on site and is mapped on the proposed site plan (Appendix 3). Based on the definition of HWM (Section 3.1),

the natural boundary shown on the survey will be used as the HWM from which the streamside protection area setbacks will be determined as per the Riparian Area Protection Regulation.

Photo 1. View of foreshore area looking north from creek mouth.

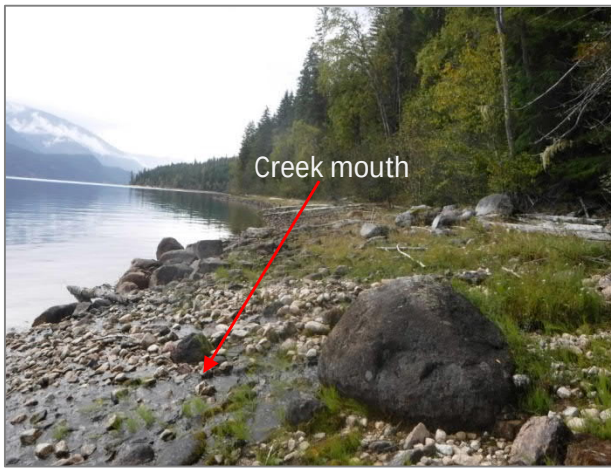

Photo 2. View of foreshore area looking south from creek mouth.

Photo 3. View of riparian area and foreshore from proposed cabin siting.

Photo 4. View of proposed cabin siting within 30 m lake setback.

2.3 Development Proposal

The proposed development within the 30 m WDP area includes:

- Construction of a new cabin (181.5 m^2) at the north-east corner of the property, which includes the wrap around deck at an elevation of ~550 m.
- Riparian vegetation removal including removal of up to 25 trees ranging from 25-210 mm diameter at breast height (DBH) to accommodate development.
- Temporary construction access path (3 m wide) from the foreshore to the cabin siting (~96 m^2).

- New walking path (~1.0 m wide) from foreshore up to the cabin, located within construction access path footprint (~32 m^2).
- Installation of new waterline hand trenched from proposed cabin to unnamed stream.
- Installation of new septic line from proposed cabin to septic field, located outside of the 30 m WDP area.
- Revegetation along the temporary construction access path to mitigate for riparian vegetation removal (~64m^2).

The proposed siting of the cabin is located within an area where the least amount of large trees is required for removal. Most of the trees are located between the 15 m and 30 m setback with only four trees identified for removal within the 15 m setback from the lake. Refer to Section 7 and Appendix 3 for proposed site and mitigation plan.

3 REGULATORY REVIEW

3.1 Streamside Protection and Enhancement Area (SPEA)

To determine whether the 30 m WDP setback from the HWM of Slocan Lake and the unnamed watercourse aligns with Riparian Area Protection Regulation (RAPR) criteria, a detailed assessment of the subject property was conducted to calculate the Streamside Protection and Enhancement Area (SPEA) setbacks. Results for the Zones of Sensitivity (ZOS) and SPEA are presented in Table 1 and Appendix 2. The SPEA was calculated to be 15 m along the foreshore of Slocan Lake and 10 m along the unnamed stream.

The BC Riparian Areas Protection Regulation (BC 2019) defines "High Water Mark" and "Stream" as follows:

"High Water Mark" means the visible high water mark of a stream 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 stream 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."

"Stream" includes any of the following that provides fish habitat[1]:

[1] A stream is any watercourse providing fish habitat, natural or human-made that contains water on a perennial or seasonal basis and is scoured by water or contains observable deposits of mineral alluvium; or has a continuous channel bed including a watercourse that is obscured by overhanging or bridging vegetation or soil mats. A stream may not be currently inhabited by fish, but may provide water, food and nutrients to other streams that do support fish. (BC 2019)

(a) a watercourse, whether it usually contains water or not;

(b) a pond, lake, river, creek or brook;

(c) a ditch, spring or wetland that is connected by surface flow to something referred to in paragraph (a) or (b).

Table 1. Results of detailed assessment.

Feature Type	SPVT	Zones of Sensitivity			SPEA
		LWD	Litter fall	Shade	
Lake	TR	15 m	15 m	0 m	15 m
Stream (North side)	TR	10 m	10 m	7 m	10 m
Stream (South side)	TR	10 m	10 m	7 m	10 m

SPVT- site potential vegetation type (TR-tree)

LWD- large woody debris

SPEA- streamside protection and enhancement area

3.2 Slocan Lake Foreshore Development Guide

The Slocan Lake Foreshore Development Guide (Wood 2022) was used to help determine site specific risk for aquatic and riparian habitat, Okanagan Nation Alliance (ONA) and Syilx Natural Resources cultural values along the shoreline. The property is within Foreshore Inventory Mapping (FIM) segment 26.4 and indicates that it has a high ecological rank due to the high value fish and wildlife habitat. A Zone of Sensitivity (ZOS) located at the confluence of the unnamed stream and Slocan Lake recommends that no permanent development is located within or adjacent to the mapped polygons. A buffer of 20 m around the ZOS, as shown in Figure 1 is recommended (Wood 2022).

Figure 1. Slocan Lake FIMP showing project location along shoreline.

4 RESOURCES

4.1 Fish and Fish Habitat

The foreshore area of Slocan Lake is gently sloped for approximately 20 m from the HWM towards the water where then it drops significantly in elevation. Substrate material consists predominantly of cobble and sand (Photo 5). Rearing habitat for fry and juveniles is considered good in this area due to habitat complexity from the cobble substrate and its proximity to the creek mouth. The quality and quantity of kokanee spawning habitat in Slocan Lake is mostly unknown; however, Andrusak, a local fish biologist speculates that "Slocan Lake contains good spawning, rearing and overwintering habitats, cover and food sources given its size and pristine condition" (Galena Environmental 2011). No aquatic vegetation was observed instream along the foreshore of the property. Slocan Lake supports a variety of fish species (Table 2), including several species of regional interest, such as rainbow trout, bull trout, kokanee, white sturgeon, Westslope cutthroat trout, and burbot. In May of 2021, the Okanagan Nation Alliance released 10,000 sockeye salmon (Oncorhynchus nerka) fry into Slocan Lake in an effort to restore sockeye salmon to the upper systems of the Columbia River watershed (Wood Canada Ltd. 2022).

The unnamed stream is a permanent watercourse which runs year-round, has step pool habitat and is approximately 3 km long (Photo 6). The watercourse is most likely non-fish bearing since the average gradient upstream of the mouth of the creek is 28% within the first 50 m and a 1 m potential barrier to fish is located approximately 5 m upstream of the stream mouth (Photo 7). The average width of the stream within the project area is 2.3 m.

Table 2. Fish species present in Slocan Lake.

Species	Scientific Name	BC Provincial Conservation Status	Federal Species-At-Risk Act (SARA) Status
Bull Trout	Salvelinus confluentus	Blue	
Burbot	Lota lota		
Dace spp.	Rhinichthys spp		
Eastern Brook Trout	Salvelinus fontinalis	Introduced species	
Kokanee	Oncorhynchus nerka		
Lake Chub	Couesius plumbeus		
Largescale Sucker	Catostomus macrocheilus		
Longnose Dace	Rhinichthys cataractae		
Mountain Whitefish	Prosopium williamsoni		
Northern Pikeminnow	Ptychocheilus oregonensis		
Peamouth Chub	Mylocheilus caurinus		
Prickly Sculpin	Cottus asper		
Rainbow Trout	Oncorhynchus mykiss		
Redside Shiner	Richardsonius balteatus		
Sculpin spp.	Cottus spp.		

Species	Scientific Name	BC Provincial Conservation Status	Federal Species-At-Risk Act (SARA) Status
Shorthead Sculpin	Cottus confusus	Blue	Special Concern
Torrent Sculpin	Cottus rhotheus		
Westslope Cutthroat Trout	Oncorhynchus clarki lewisi	Blue	Special Concern
White Sturgeon	Acipenser transmontanus	Red	Endangered

Photo 5. View of Slocan Lake aquatic habitat in front of proposed cabin.

Photo 6. Upstream view of unnamed tributary next to proposed cabin.

Photo 7. Upstream view of 1 m barrier located on unnamed stream, ~5 m upstream of mouth.

4.2 Riparian Vegetation

The riparian habitat is undisturbed conifer forest and falls under one of the four common site associations in the ICH, Western hemlock- Red cedar- Falsebox-Feathermoss (Ketcheson et al). Table 3 provides a list of the plants encountered within the riparian area.

Table 3. Riparian plant species.

Species	Scientific Name
Trees	
Interior Douglas fir	Pseudotsuga menziesii
Western hemlock	Tsuga heterophylla
Western red cedar	Thuja plicata
Paper birch	Betula papyrifera
Shrubs	
Red osier dogwood	Cornus stolonifera
Sitka alder	Alnus crispa ssp. sinuata
Princes pine	Chimaphila umbellata
Oregon grape	Mahonia aquifilium
Devil's club	Oplopanax horridus
Spiny wood fern	Dryopteris expansa
Herbs and forbes	
Queen's cup	Clintonia uniflora
Clasping twisted stalk	Streptopus amplexifolius
Fringed grasses of parnassus	Parnassia fimbriata
Pipecleaner moss	Rhytidiopsis robusta
Red stemmed feathermoss	Pleurozium schreberi

Photo 8. HWM and riparian habitat at Slocan Lake foreshore in front of proposed cabin.

Photo 9. Riparian area within 15 m of lake HWM.

Photo 10. Riparian area near mouth of unnamed tributary.

Photo 11. Riparian area of unnamed tributary adjacent to proposed cabin location.

4.3 Wildlife

4.3.1 Reptiles and Amphibians

The property provides potential habitat for northern alligator lizard (Elgaria coerulea), Coeur d'Alene salamander (Plethodon idahoensis) and garter snakes (Thamnophis spp.).

4.3.2 Birds

No birds or nests were observed during the survey; however, the subject property is likely visited by songbirds, waterfowl, and raptors. Mature paper birch and Western red cedar trees provide potential nesting and feeding habitat for sapsuckers and cavity dwellers.

4.3.3 Mammals

Mammals that are expected to use the foreshore area around the subject property include American black bear (Ursus americanus), and mule deer (Odocoileus hemionus); however bobcat (Lynx rufus), wolverine (Gulo gulo), cougar (Puma concolor), coyote (Canis latrans), elk (Cervus elaphus), grizzly bear (Ursus arctos), moose (Alces alces) may also frequent this area. The riparian area provides browse, cover, and fishing opportunities, especially at the creek mouth. Bats are expected to frequent the property and utilize the large trees for roosting, as well as other small mammals. .

4.4 Species at Risk

A 10 km buffer around the subject property was used to query BC Conservation Data Center records using the CDC iMap tool. Based on this query, five species at risk occurrence is known within 10 km of the project area (Table 4).

Table 4. Species at Risk confirmed within 10 km of the subject property

Species	Latin Name	BC List[1]	COSEWIC[2] / SARA[3]
Bull Trout	Salvelinus confluentus	blue	
Great Blue Heron	Ardea herodias herodias	blue	Not at risk
Shorthead Sculpin	Cottus confusus	blue	Special Concern
Western Toad	Anaxyrus boreas	yellow	Special Concern/Special Concern
White Sturgeon (Upper Columbia River pop.)	Acipenser transmontanus pop. 2	red	Endangered/ Endangered

1 BC Conservation Status (CDC): Red = extirpated, endangered, or threatened. Blue = special concern. Yellow = secure. 2COSEWIC/SARA: Endangered (E) = Facing imminent extirpation or extinction. Threatened (T) = Likely to become endangered. Special concern (SC) = May become a threatened or an endangered. Species listed on Schedule 1, SARA are legally protected

4.5 Archaeological and Heritage Resources

Slocan Lake is part of the traditional territory of the Ktunaxa, Sinixt and Syilx Okanagan First Nations and archaeological evidence is documented at multiple shoreline sites. A review of archaeological resources on this property is outside the scope of this report. Archaeological Chance Find Procedures are provided in Appendix 4 for guidance on protocols to follow in the event of a chance archaeological find, to ensure that archaeological sites are documented and protected as required for compliance with the BC Heritage Conservation Act.

5 IMPACT ASSESSMENT

The proposed works were assessed based on current site conditions and proposed construction activities within the SPEA. The proposed siting of the cabin is 15 m from the lake HWM and 15 m from the stream HWM, meeting the 15 m SPEA setback and 15 m floodplain setback.

Environmental impacts associated with the proposed development within the SPEA includes the removal of four trees; temporary soil disturbance and groundcover removal; and cutting of some tree roots from trenching activities. Removal of riparian vegetation impacts the function of the riparian area by reducing large woody debris recruitment, shade potential, water temperature regulation, nutrient input including litter fall and insect drop and removal of potential wildlife habitat. Soil disturbance can potentially cause increased erosion and invasive weed prevalence. Mitigation measures to protect existing terrestrial habitat during and post construction will be implemented and are described in Sections 6.4, 6.5, 6.6, and 6.9. The revegetation plan is described in Section 7.

No aquatic impacts are expected from the proposed development, since all works are proposed above the HWM. Mitigation measures to protect aquatic habitat during construction will be implemented and are described in Sections 6.6, 6.7, 6.11 and 6.12.

6 MEASURES TO PROTECT THE INTEGRITY OF SPEA

Measures to protect the integrity of SPEA for the project include scheduling of environmentally sensitive activities, protection of existing vegetation, hazard tree removal, erosion and sediment control, concrete management, water quality, management of equipment and fuel/lubricant materials, spill response procedures, construction waste management, wildlife management, and site restoration.

6.1 Danger Trees

An RPF was not retained to assess hazard trees; however, a quick assessment for potential hazard trees was conducted by the QEP. A few standing dead deciduous trees were identified to be removed within and directly adjacent to the proposed building footprint as well as directly in front of the cabin within SPEA.

6.2 Windthrow

An RPF was not retained to assess potential windthrow since minimal clearing is proposed within the SPEA.

6.3 Slope Stability

The Qualified Environmental Professional (QEP) reviewed the slope stability field indicators as listed in Table 3.8 of the RAPR while on site to identify the presence of any potential indicators. No slope stability indicators were observed by the QEP. However, this does not confirm the absence of terrain stability issues as a geotechnical assessment was not completed by a P.Geo. or P.Eng.

6.4 Protection Trees and Vegetation

The proposed work will require some clearing of vegetation prior to the commencement of work to accommodate construction activities, as well as cutting of tree roots for . The following mitigation measures will be implemented to protect existing vegetation within the SPEA:

- Clearing of vegetation will be kept to the minimum possible area required for access, staging, construction works, and safety considerations.
- Snow fencing will be installed at a minimum along the 10 m setback line from the creek to protect the riparian vegetation.
- The boundaries of the project site will be clearly marked before the crews arrive. All vegetation outside of these boundaries will be retained.
- Align waterline to avoid and minimize impacts to tree roots, as much as possible.
- Prior to excavation, carefully remove moss along waterline trench alignment, and replace once backfilling is complete.

- If practicable, salvaged top soil, plants and coarse woody debris are to be retained and re-located to a preferred area within the 15 m setback for restoration.
- A designated construction access path will lead from the beach to the proposed cabin siting which will be used for foot traffic and small machinery (Appendix 3).

6.5 Encroachment

Encroachment into the SPEA is limited to the access trail from the beach to the cabin and waterline installation. Further development beyond the access trail and restoration areas is discouraged to preserve the function of the riparian vegetation, and to promote re-establishment of vegetation within the restoration area.

6.6 Erosion and Sediment Control

In order to prevent sediment from entering Slocan Lake and minimize potential impacts to fish habitat, exposed soils will be minimized with respect to extent and duration. The contractor will ensure that there are sufficient materials (silt fences, straw bales, polyethylene plastic, filter cloth and tarps) available on-site for emergency protection measures when required during adverse weather conditions.

6.7 Stormwater Management

The proposed development may result in an increase in the total impervious area of the property. The following mitigation measures will help decrease stormwater impacts:

- Downspouts from house should direct rainwater into suitable landscape features which can absorb and utilize runoff.
- Stormwater discharges must adhere to the Water Sustainability Act or any other application legislation.

6.8 Floodplain Concerns

The proposed house is located outside the 15 meter floodplain setback of Slocan Lake and the unnamed stream. There were no floodplain concerns observed on the subject property.

6.9 Protection of Wildlife Habitat

Best management practices developed to protect nesting birds include the following:

- Wildlife snags should be retained within the SPEA, unless considered a hazard. These trees serve as wildlife perch trees and potential nesting and roosting sites for raptors. They also provide food for woodpeckers, who in turn create nest cavities for other birds.

- Any mature hazard trees (>300 mm diameter at breast height (DBH)), as deemed by an arborist or RPF and proposed for removal within the SPEA should be cut at minimum 3.3 m (10 ft) in height from the ground and left as a wildlife snag.
- Any clearing of trees and vegetation should be conducted outside of the songbird breeding season (early-April 1 to mid-August). If clearing is to occur during the songbird breeding season a QEP should be retained to evaluate the presence of any active nests within areas to be cleared and propose measures to protect these nests.

Follow the Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (MOE 2013) if any active raptor nests are discovered within 100 m of the subject property. Active raptor nests are legally protected at all times of the year and some inactive nests (ex: Bald Eagle nests) are similarly protected. A QEP should be retained to determine the appropriate mitigation measures to protect raptors and their habitat.

6.10 Protection of Fish Habitat

The site will be accessed by boat and barge. There may be minor disturbance to the substrate on the beach from boats coming on and off the shore; however, it is not expected to cause any permanent impacts.

Protection of fish habitat shall be implemented by:

- Limit beach modification for installation of waterline to permitted areas and preserve foreshore vegetation and boulders which provide fish habitat during periods of inundation.
- Adhere to sediment, stormwater, and waste management best practices outlined in this report to ensure that there is no release of deleterious materials into Kootenay Lake.

6.11 Concrete Management

Concrete will be mixed on site for the construction of the concrete footings. Fresh concrete and concrete laden water are caustic and toxic to aquatic organisms. The following precautions will be taken when handling concrete to ensure the protection of adjacent waterbodies:

- Concrete mixing will be conducted above the HWM.
- Washing of equipment used during concrete work will occur at a designated location at least 30 m away from Slocan Lake where wash water will not drain directly into the Lake.

6.12 Management of Equipment and Fuel/Lubricant Materials

Construction activities require the use of machinery and equipment that use fuels, oils, lubricants, and hydraulic fluids. These materials are hazardous to the surrounding terrestrial and aquatic environments and must be managed properly. To reduce the risk of fluid leaks and spills the following measures will be implemented:

- Equipment will not be operated in the lake.
- Machinery will arrive on site in a clean condition free of fluid leaks, excess oil or grease, mud, sediment, invasive species, and noxious weeds or seeds.
- All equipment will be regularly inspected for leaks at the start and end of each working day. Leaking equipment will be removed from the worksite and repaired in a designated area at least 15 m away from a watercourse or waterbody. Secondary containment will be placed under machinery parked overnight within 30 m of the watercourse to detect and contain minor leaks.
- A designated staging area for fueling and maintenance will be clearly marked on site at a location positioned 15 m away from Slocan Lake and the unnamed watercourse. Re-fuelling of all construction or heavy equipment will be completed within the staging area.
- Equipment will be stored in the staging area overnight.
- An emergency spill response kit and spill reporting procedures (Section 4.8) will be posted at the staging area. The spill response kit will be inspected regularly and replenished as necessary.
- Smoking will not be permitted within the staging area.
- If emergency repairs are required, spill pads will be used to capture any drips.
- No large quantities of fuel will be stored on site overnight.
- Small containers of fuel and oil will be stored in appropriate secondary containment within the staging area to minimize the effect of a spill.
- Any refuse contaminated with fuel, oil, grease, lubricants, or hydraulic fluid generated during repairs or servicing of equipment will be collected in polyethylene lined, covered, containers. This waste will be disposed of at a registered or licensed facility.
- Any small equipment including generators, pumps, and light towers located on site will be placed in secondary containment basins to contain any fuel leaks.

6.13 Invasive Species Management

Construction activities can potentially increase prevalence of invasive plant species which can out-compete native riparian vegetation, causing damage to habitat and ecosystem function. The following mitigation measures are recommended to reduce the establishment and proliferation of invasive plant species on site:

- All equipment should be thoroughly washed and inspected before entering the project site to prevent the import of new invasive plant seeds and root fragments.
- Amount of soil disturbance should be minimized.
- All exposed soils should be re-vegetated immediately following construction.

7 REVEGETATION PLAN

To mitigate for the loss of the four live trees and disturbance of groundcover within the SPEA, the proposed construction access path has been identified for enhancement through replanting of native species (64 m^2; Table 5 and Appendix 3). Planting shall be completed in the spring or fall, once construction is complete.

Table 5. Recommended native plant species.

Species	Scientific Name	Quantity	Pot Size
Interior douglas fir	Pseudotsuga menziesii	3	#2
Red cedar	Thuja plicata	3	#2
Douglas maple	Acer glabrum	3	#2
Red osier dogwood	Cornus stolonfera	3	#2
Falsebox	Pachistima myrsinites	10	#1
Oval leaved blueberry	Vaccinium ovalifolium	10	#1
Tall Oregon Grape	Mahonia aquifolium	10	#1

General Planting and Maintenance Guidelines

- Planting should not occur during periods of hot dry weather unless they are irrigated daily.
- Trees shall be spaced at >3 m apart and shrubs spaced >1m apart.
- Locally adapted native plants are preferable to those collected or grown outside the region. The species listed in Table 5 are available from Sagebrush Nursery in Oliver https://sagebrushnursery.com , or Tipi Mountain Native Plants http://tmnp.tipimountain.com/ near Kimberley.
- Planting holes shall be a minimum of 3 times the size of the pot.
- Use transplant fertilizer (ie. Mykes Mycorrhizae Tree and Shrub or similar) as per manufacturers specifications in each planting hole.
- Plantings which do not survive should be replaced to ensure complete establishment of native plants, and exclusion of exotic plants.
- Ensure the objective of the restoration is to naturalize the riparian area and not create a landscaped garden.
- Regularly irrigate new plantings during the plant establishment period for a minimum of 5 years and thereafter as required.
- Pull any invasive weeds on a yearly basis prior to going to seed.

- Replanting of riparian vegetation around buildings should adhere to principles of rural residential fire protection (for more information see the FireSmart Homeowner's Manual MFLNRO N.D.).

8 Environmental Monitoring

The anticipated effort for environmental monitoring and professional guidance on this project includes the following:

- QEP will conduct a post construction site visit once planting is complete to assess compliance and completion of the project.
- QEP will prepare an environmental summary report and submit to the RDCK.

9 Conclusion

The proposed development is sited within the WDP area; however permanent structures are sited outside of the 15 m SPEA, minimizing impacts to the riparian area. The removal of trees within the WDP area and the temporary creation of construction access paths within the SPEA will be restored by replanting native plants within disturbed areas.

10 Closure

We, Fiona Lau and Sylvie Masse, certify that we are qualified to carry out this assessment; and that the assessment methods under the Regulation have been followed; and that, in our professional opinion:

(i) if the development is implemented as proposed, or

(ii) if the streamside protection and enhancement areas identified in the report are protected from the development, and

(iii) if the developer implements the measures identified in the report to protect the integrity of those areas from the effects of the development,

then there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area.

If you have any comments or questions, please do not hesitate to contact the undersigned.

Sincerely,

Fiona Lau, AScT, BTech.
fiona@masseenvironmental.com

Reviewed by:

Sylvie Masse, RPBio, MSc.
Masse Environmental Consultants

References

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[RDCK] Regional District of Central Kootenays. 2009. Slocan Lake North Portion of Electoral Area 'H' Official Community Plan Bylaw No. 1967, 2009.

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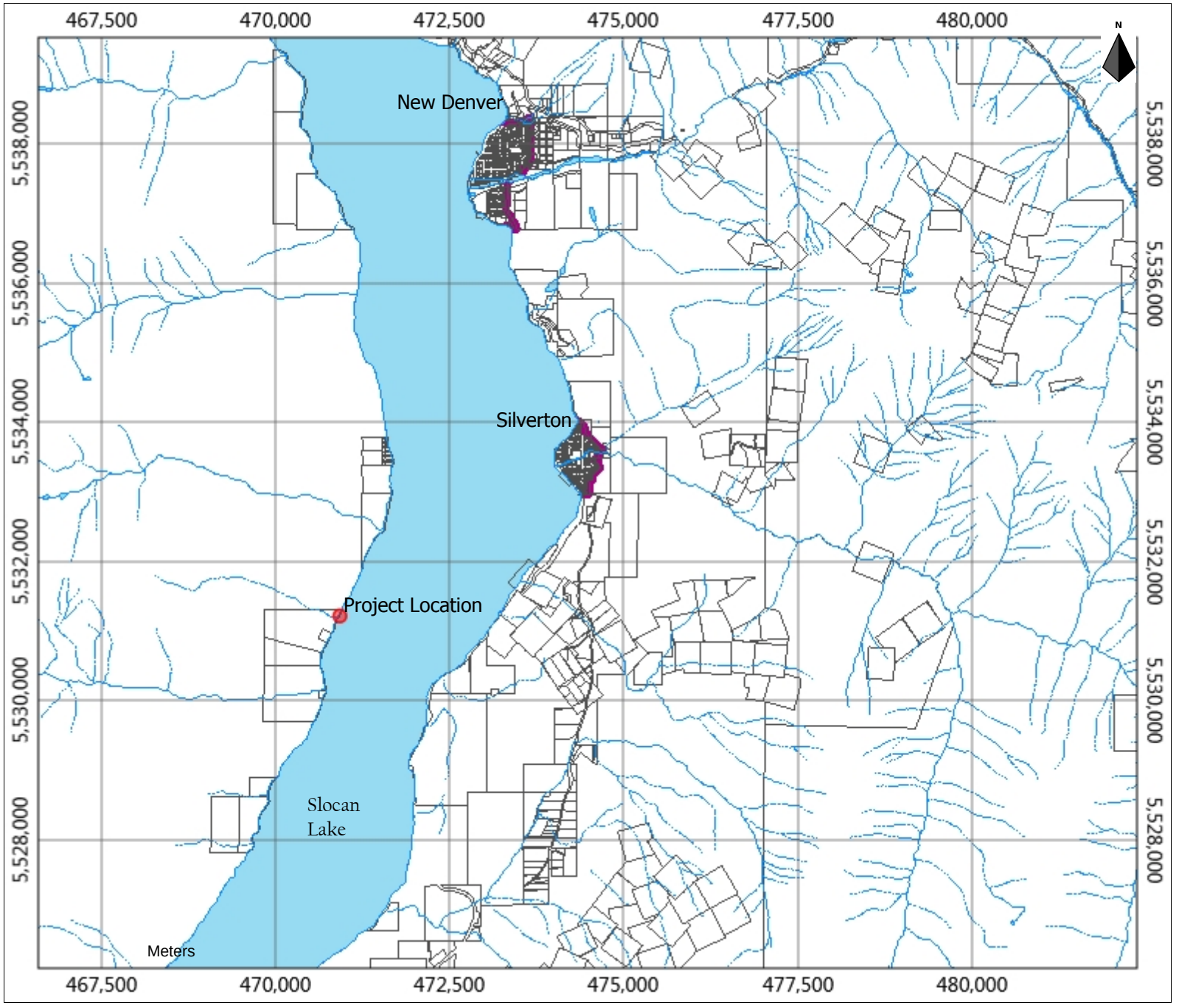
APPENDIX 1

LOCATION MAP



Project Location

Legend

- Streams
- Cadastre / Property Lines
- Lakes (Mid Scale)
- Electoral Boundaries (Large Sc

Notes

District Lot 6521

202 Lakeside Drive
Nelson, BC
1-800-268-7325
http://www.rdck.ca

0 8,000.00 m 10cm

1 : 80,000.00

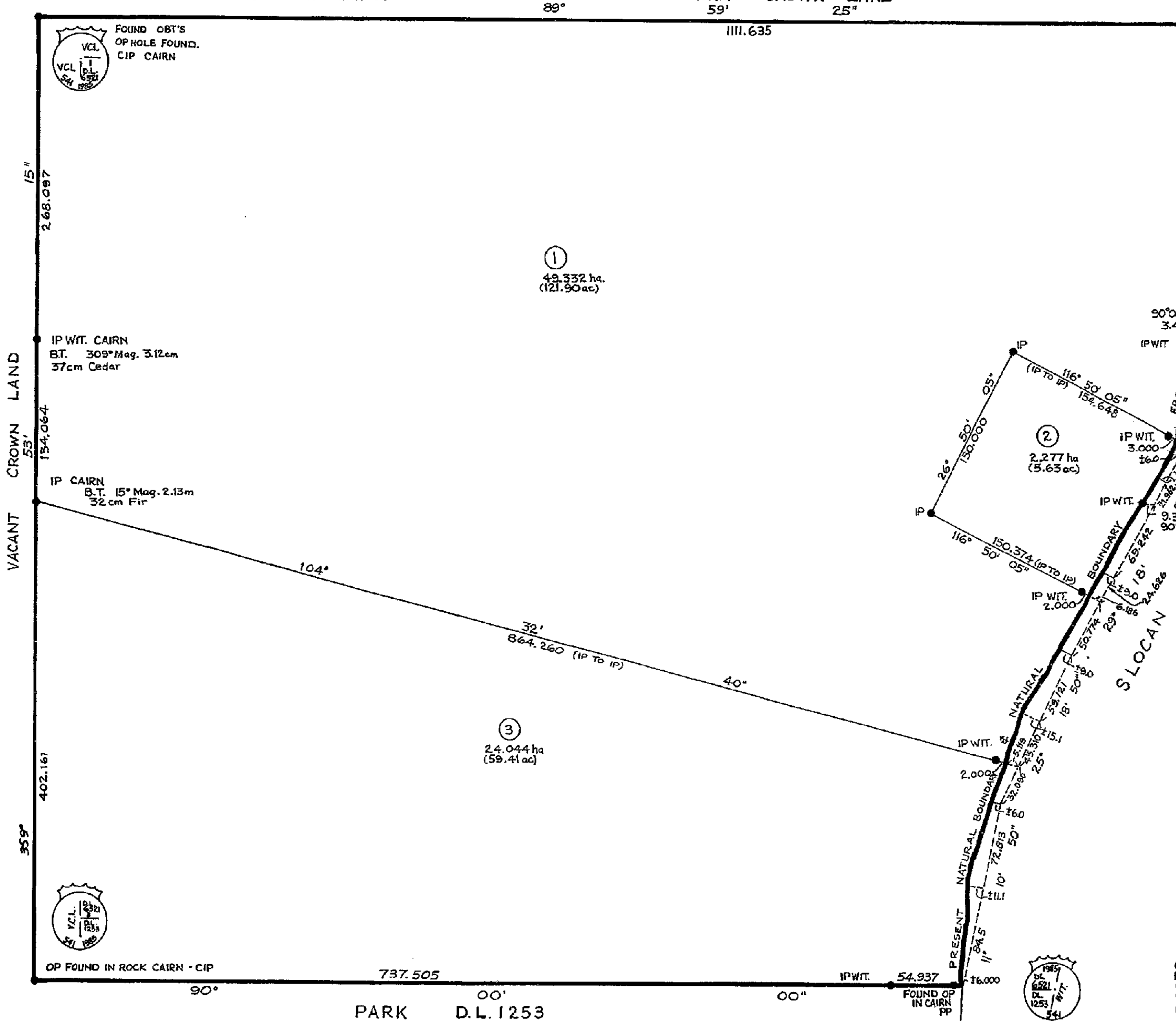
Date Plotted: 9/28/2015

APPENDIX 2

LEGAL SURVEY

OP DENOTES OLD POST.
● PP DENOTES PIPE POST.
WIT. DENOTES WITNESS.
OBT DENOTES OLD BEARING TREE.
BT DENOTES BEARING TREE.
● CIP DENOTES CAPPED IRON POST.
● IP DENOTES STANDARD IRON POST SET.

XE-23694-6



Cleo Wauline Neugebauer
CLEO WAULINE NEUGEBAUER (OWNER)

Mary A Jones
WITNESS: MARY A JONES
PO BOX 3
COEUR D ALENE, ID 8
ADDRESS - WITNESS
BANKING
OCCUPATION - WITNESS

Ernest H Wells
ERNEST H. WELLS (OWNER) (Deceased)

WITNESS: R.M. NASMYTH (Mike)
Box 50 Nelson. B.C.
ADDRESS - WITNESS
Solicitor.
OCCUPATION - WITNESS

Lalla L. Smith
LALLA L. SMITH (OWNER)

WITNESS: WILLIAM D. COOK
P.O. Box 110233
ANCHORAGE, AK
ADDRESS - WITNESS
ATTORNEY - AT - LAW
OCCUPATION - WITNESS

ACCESS BY WATER ONLY

APPROVED UNDER THE LAND TITLE ACT
THIS 22 DAY OF AUGUST, 1991.

APPROVING OFFICER
MINISTRY OF TRANSPORTATION
AND HIGHWAYS
SEE B.C. REG. 334/79 SEC. 10.

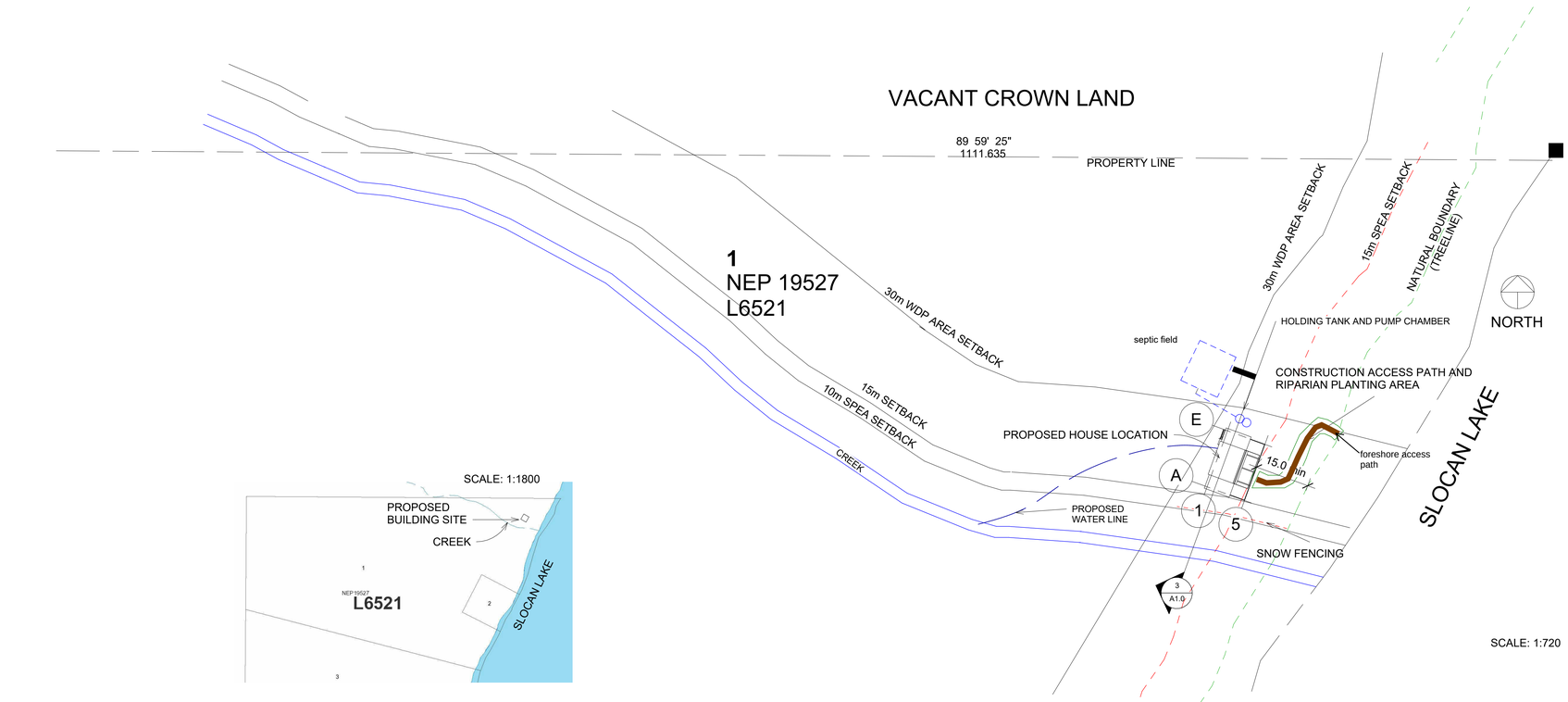
I, GORDON STEIN, A BRITISH COLUMBIA LAND SURVEYOR OF NELSON IN BRITISH COLUMBIA CERTIFY THAT I WAS PRESENT AT AND PERSONALLY SUPERINTENDED THE SURVEY REPRESENTED BY THIS PLAN AND THAT THE SURVEY AND PLAN ARE CORRECT. THE SURVEY WAS COMPLETED ON THE 26th DAY OF JULY, 1990.

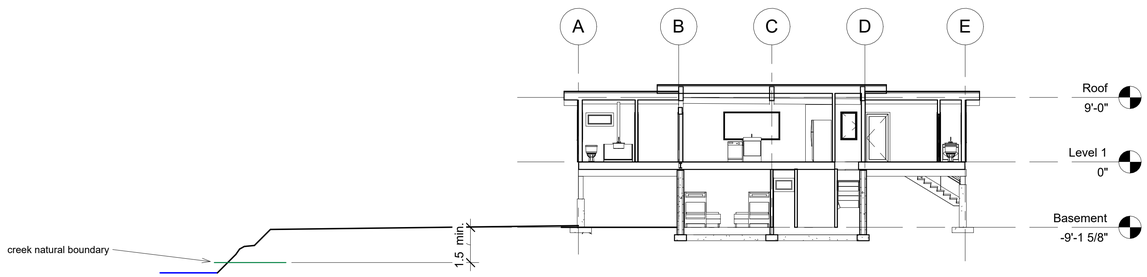
G. Stein B.C.L.S.

THIS PLAN LIES WITHIN THE CENTRAL KOOTENAY REGIONAL DISTRICT.

APPENDIX 3

SITE PLAN





3 Section 5
1" = 10'-0"

PID: 017-493-536

ELLENWOOD
HOMES

LEGAL DESCRIPTION:
LOT 1
DISTRICT LOT 6521
PLAN NEP19527

PID 017-493-536

No.	Description	Date
2	Issued for Development Permit	06 Oct 22
3	Reissued for Development Permit	19 Jan 23

Wells

Slocan Residence

SITE PLAN

Project number	1601
Date	24 April 2022
Drawn by	Andrew V.
Checked by	Marc B.
	A1.0
Scale	As indicated

2023-01-19 8:21:13 PM

APPENDIX 4
ARCHAEOLOGICAL CHANCE FIND PROCEDURES

KTUNAXA NATION

Ktunaxa Nation Council
7825 Mission Road
Cranbrook, BC V1C 7E5
tel: 250-489-2464
fax: 250-489-2438

visit us at:
www.ktunaxa.org

Chance Find Procedures for Archaeological Material

This document provides information on how a developer and/or their contractor(s) can manage for potential archaeological material discoveries while undertaking construction and/or maintenance activities. This document can provide assistance to in-field contractors in the identification of archaeological remains and the procedures to follow if a discovery is made. The discovery of human remains initiates a different course of action and is outlined separately.

Under the provincial *Heritage Conservation Act (HCA)*, archaeological sites that pre-date 1846 are automatically protected whether on public or private land. Protected sites may not be damaged, altered or moved in any way without a Section 12 or 14 Permit as issued through the *HCA*. It is illegal to collect or remove any heritage object from an archaeological site unless authorized to do so under permit.

1. Activities occurring outside of known Archaeological Sites:

When archaeological material is encountered outside of known archaeological site areas work in the vicinity must stop immediately no matter what type of material or feature has been identified. Alteration to an archaeological site can only occur under a Section 12 (Site Alteration Permit) or Section 14 (Heritage Inspection Permit) *Heritage Conservation Act* permit. Such permit applications should be prepared by a professional archaeologist.

If archaeological material is discovered during the course of construction activities:

1.1 **Stop Work:** Halt all work in the area of the discovery and safely secure the area. Contact the project manager or site foreman.

1.2 **Contact an Archaeologist:** An archaeologist should be contacted as soon as possible. For a list of qualified archaeologists in the area, the proponent is directed to the BC Association of Professional Consulting Archaeologists website: www.bcapa.ca. The proponent may also wish to contact the Ktunaxa Nation Council's Archaeology Technician Nathalie Allard for direction (1-250-426-9549; nallard@ktunaxa.org).

1.3 **Archaeologist provides guidance:** The archaeologist will direct the proponent on the next courses of action, which will include notifying the Archaeology

Branch and First Nations with interest in the area.

2. Activities Occurring within Known Archaeological Site Boundaries:
Land altering activity within a previously recorded archaeological site must be conducted under a Section 12 HCA Site Alteration Permit (SAP), in some cases with an onsite archaeological monitor. It is common for additional archaeological material and features to be encountered during activities occurring within previously recorded archaeological sites. Minor finds (lithic flakes, diffuse charcoal or fire altered rock) may not require work to stop, however significant finds require a level of assessment by a professional archaeologist, and it is up to the onsite project manager to determine the level of significance based on criteria presented below.

2.1 Significant Cultural Finds that Require a Professional Archaeologist (described in detail in Section 4)

- Intact archaeological features, which can include but are not limited to hearths, cultural depressions (e.g. cache pits, house depressions) and rock alignments or forms (e.g. tipi rings, cairns, blinds)
- Significant archaeological materials, which include but are not limited to, the presence of formed lithic tools (e.g. projectile point, microblade core, scraper), a dense concentration of lithic waste flakes, or artistic items
- Human Remains (described in detail in Section 3)

2.2 Archaeological Site Management Options

2.2.1 **Site Avoidance**: If the boundaries of a site have been delineated, redesign the proposed development to avoid impacting the site. Avoidance is normally the fastest and most cost effective option for managing archaeological sites. Site avoidance could also be achieved through minimizing ground disturbance by looking for alternative constructive methods.

2.2.2 **Mitigation**: If it is not feasible to avoid the site through project redesign, it is necessary to conduct systematic data collection and analysis within the site prior to its loss. This could include surface collection and/or excavation. This work can be time-consuming and therefore expensive to conduct.

2.2.3 **Protection**: It may be possible to protect all or portions of the site which will be impacted through installation of barriers during the development period and possibly for a longer period of time. Methods for barrier construction could include fencing around site boundaries or applying

geotextile to the ground surface and capping it with fill. The exact method used would be site-specific.

3. Chance Find Procedures for Identified Human Remains

Procedures in the event of the discovery of human remains during construction are covered in depth by an Archaeology Branch Policy Statement, found on their website at www.for.gov.bc.ca/archaeology, and are summarized below.

3.1 Stop all construction activities immediately in the area of found or suspected human remains and contact the RCMP and/or Office of the Coroner.

3.2 The coroner must determine whether the remains are of contemporary forensic concern or archaeological/aboriginal.

3.3 If the remains are found to be of aboriginal ancestry then the next step involves the relevant First Nations collaboratively determining the appropriate treatment of those remains.

The key to respectfully dealing with ancient aboriginal remains is to involve the appropriate First Nations as early as possible in the process. However this must be done in a manner that does not interfere with the coroner's office ability to conduct their business in the manner that they see fit.

4. Site Identification Guide

The following are characteristics typical to site types found within the Ktunaxa Traditional Territory.

4.1 Artifact Scatters

Lithic (stone) scatters from the production and maintenance of stone tools are the most common type of archaeological site found in the region. Other materials that may be represented in artifact scatters are Fire Broken Rock (FBR), bone, antler and tooth.

Lithics: What to look for

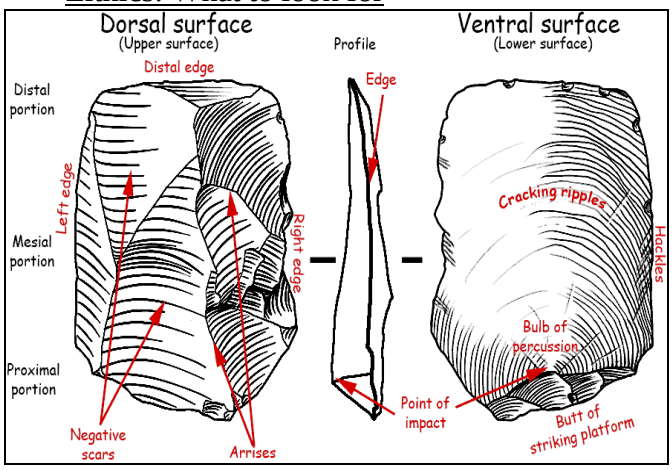


Image 1: Basic flake morphology

Image 2: Examples of lithic flakes

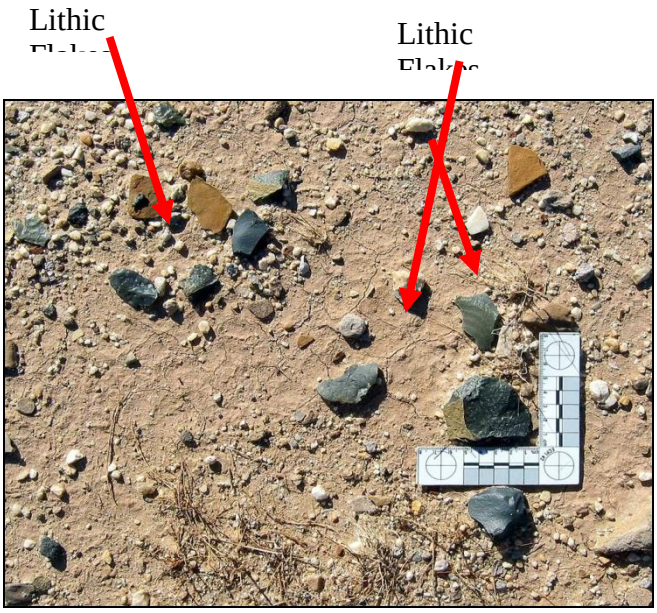


Image 3: Example of lithic scatter found on ground surface

Image 4: Example of formed lithic artifacts

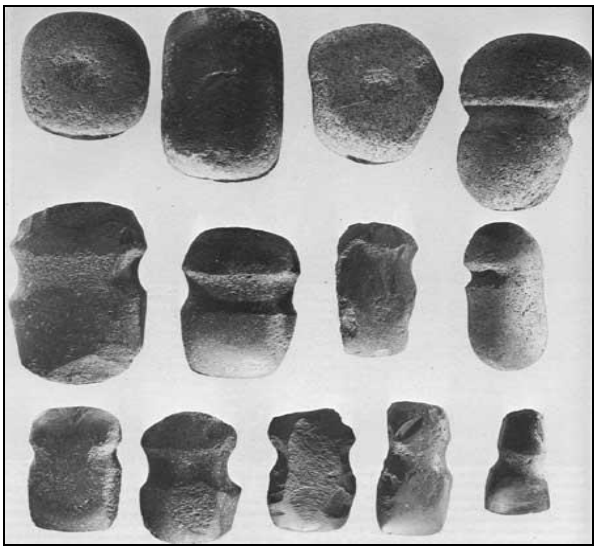


Image 5: Ground stone artifacts

Bone, Tooth and Antler Artifacts: What to Look For

- Obvious shaping
- Incising
- Unnatural holes

Image 6: Bone and Antler artifacts

4.2 Fire Broken Rock and Hearths

Fire-broken rock (FBR) results from the use of fire during cooking, heating and processing activities. FBR is often associated with other features including hearths and cultural depressions, but can also be thinly scattered in concentrations away from the features with which they were first associated.

When looking for FBR, note concentrations of roughly fractured rock from rapid heating and cooling, rock showing signs of burning or oxidation and/or reddening or blackening of surrounding matrix.

Image 7: Example of FBR; note the zig/zag pattern of breakage common to FBR

A hearth feature is evidence of a fire pit or other fireplace feature of any period. Hearths were used for cooking, heating, and processing of some stone, wood, faunal, and floral resources and may be either lined with a wide range of materials like stone or left unlined. Occasionally site formation processes (e.g., farming or excavation) deform or disperse hearth features, making them difficult to identify without careful study.

Hearths: What to look for

- FBR
- reddening or blackening of the associated soil/sediment
- charcoal
- layering of FBR and charcoal, and
- depressions in the earth associated with FBR, reddened or blackened matrix and charcoal.

Image 8: Example of a hearth uncovered along the wall of an excavation unit

4.3 Cultural Depressions

Any depression seen on the ground surface that appears to have been excavated by man can be a cultural depression and have archaeological significance. These "pits" were dug for a variety of reasons such as for food storage, cooking or as a base for a dwelling. They can range in size from 1m across to 7-10m across, and are usually found associated with other artifacts such as FBR and lithic scatters.

To identify a cultural depression, look for:

- Subtle to deep scours on the ground surface that are circular to rectilinear in shape
- A raised rim along the edge of a depression
- Depressions associated with artifacts and FBR
- Depressions associated with fire reddening and blackening of the matrix

Image 9: Example of a large cultural depression in a natural setting

4.6 Rock Alignments

There are several types of rock alignments that occur within the culture area, which include tipi rings, medicine wheels, cairns and blinds. When attempting to identify rock alignments, look for a group of rocks that look purposefully placed as in a circle, pile or line; isolated groups of rock that do not seem to belong to that landscape; and/or rocks which form a pattern.

Image 10: Example of a Cairn or piling of rocks

Image 11: Example of a tipi ring in a natural setting