

Thompson Okanagan Region

Qualified Professional Checklist for Environmental Values

Forward

The following Qualified Professional Checklist for Environmental Values (the Checklist) is to be submitted by a Qualified Professional (QP) when requested by the approving agency. The Checklist is required to provide additional information to Thompson Okanagan Region (TOR) Ecosystems biologists who have reviewed a proposal and determined that there are known or potential environmental values present that could be impacted by the proposed activities. The Checklist provides a clear summary of the environmental values present at the proposed project location and the potential for direct and/or indirect impacts to those values. TOR Ecosystems biologists require this information to provide inclusive recommendations for a proposed project.

The submitted checklist must be based on the final development proposal. Ecosystems biologists may have discussion with the QP in order to fully understand the values present and/or potential impacts. In rare instances a more detailed environmental impact assessment (EIA) may be required based on the Ecosystems biologists' review of the completed checklist.

Environmental Values provided by TOR Ecosystems Biologists

Known (i.e., mapped) environmental values identified by Ecosystems biologists that should be considered in the completed checklist:	Spadefoot Toads Rare Plants Rare Plant Communities
Note: The completed checklist should include <u>all environmental values</u> that could occur within the proposed project footprint (See Part B #2 below)	

Checklist

Part A: General Project Information

Approving Agency	Ministry of Forests, Land, Natural Resources and Rural Development
Approving Agency File #	TN100187989
Project Name	Mineral Water Bottling Plant.
Proponent Name and Contact	Clinton Hongyang Zhengong International Investments Inc Jane Wang springapple99@hotmail.com

	1-778-323-8987			
Location	Zone 10U	NAD	Easting 598401	Northing 5659380
Location Description	Duck Lakes – 1.3 km south of Clinton, BC along Hwy 97			
Property Description	PID Number 024-938-734 012-066-249 024-938-726 024-938-777		Legal Description (if no PID #) ☐ private ☐ crown	
BEC Subzone and Variant	IDF _{xw}			
Size of Project Footprint (ha)	18.3			
Time to Complete Works	Construction Start Date: April 2020, Bottling Commences: 2022 (estimated).			
Project Description Included with Application (Yes/No). If no, provide here	Yes			

Part B: Biological Assessment Information

The Qualified Professional Confirms that:	Yes, No, or N/A	Explanation
General/Background Information		
1) The proposal conforms to all Federal and Provincial legislation and regulation (e.g., <i>Migratory Birds Convention Act</i> , <i>Wildlife Act</i> , <i>Water Sustainability Act</i>)	Yes	Should have no impact to Migratory Birds or any other wildlife habitat.
2) The QP has a general knowledge of local environmental values including Species and Ecosystems at Risk (SEAR) in project footprint (e.g., Develop with Care Sec. 5.7, Land and Resource Management Plans, etc.)	Yes	1. Biologist with 25 years experience. Provincial training in SEAR. 2. Biologist with 15 years experience. M.Sc., one of most experienced Great

		Basin Spadefoot biologist in province.
3) A review of known /potential environmental values within the project footprint has occurred (See Table 1 for data sources). Provide a list of all values identified.	Yes	<p><u>Conservation Data Center</u> – American Badger polygon #11263</p> <p><u>Species at Risk Explorer</u></p> <ul style="list-style-type: none"> • 7 Ecological Communities at Risk within criteria – all were dry slope or within spruce ecosystems. • 1 Riparian Forest plant at risk within criteria – Upswept Moonwort. Closest CDC mapped location is Clearwater. • 1 Riparian Herbaceous plant at risk within criteria – Porcupine Sedge. Closest CDC mapped location is Adams Lake. <p><u>iMapBC</u></p> <ul style="list-style-type: none"> • Thompson Wildlife Management Unit 3-17 • No Lake Surveys completed • No Bird Data <p><u>Habitat Wizard</u> - no fish species identified within Duck Lakes</p>
4) Local “fact sheets” and Best Management Practices (BMPs) were used if applicable (See Table 2 for BMP sources)	Yes	<p>Best Management Practices for Amphibians and Reptiles: Guidelines for Reptile and Amphibian Conservation during Urban and Rural Development in British Columbia (2014).</p> <p>Interim Guidelines for Wetland Protection and Conservation in British Columbia (2009).</p>

			Standards and Best Management Practices for Instream Works (2004)
Biological Field Assessment			
5) A biological field assessment occurred within the project footprint. Provide dates.		Yes	Rare plant and plant communities assessment: May 14, 2019 Great Basin Spadefoot assessments: May 7, May 22 and June 12, 2019 (see attachment)
6) Inventories were conducted following provincial standards (e.g., RISC) to confirm presence/absence of environmental values identified above in #3. List any deviations. Provide list of all values inventoried for.		Yes	Inventoried for: Species at risk Rare plants Rare plant communities Spadefoot toads
7) Have any of the following been identified within or adjacent to (within 200 m) the project footprint. Or around the margin of Duck Lake	Federal or Provincial SEAR (list all identified)	Yes	American Badger den UTM: 598633m E/5659329m N
	Habitat Features: (e.g., burrow, den, nest, lek, mineral lick, wildlife tree)	Yes	4 nest areas: 1 Canada goose nest on ground (UTM 598597m E/5659285m N) 1 Stick nest (UTM 598584m E/5659360m N) 1 Raptor nest (UTM 598352m E/5659878m N) Swallow nests – species not observed (UTM 598644m E/5659321m N)
	Sensitive Ecosystems (SEI Inventory)	No	
	Rocky Outcrops or Talus Slopes	No	
	Cottonwood /Aspen Stands	Yes	2 immature trembling aspen stands to east and west of Duck Lake. No cottonwood stands observed.

	Riparian communities (List all communities identified)	Yes	Black hawthorn/rose Trembling aspen Drummond willow Pacific willow
	Streams, lakes, wetlands (including ephemeral wetlands)	Yes	Main Duck Lake and 3 smaller lakes to south-west
8) SEAR findings have been provided to the WSI and CDC in an appropriate data submission format.		Yes	Will provide information of badger den and swallow colony to CDC. Swallow activity information has been given to landowner.
Impact Assessment			
9) A map is provided showing all environmental values identified in #6 and #7. The map depicts the location of all proposed activities relative to the values.		Yes	2 maps provided.
10) Pictures are provided of all environmental values found in #6 and #7.		No	Pictures of American Badger den provided. Picture of swallow cavities provided. GPS coordinates of Canada goose nest and stick nest provided. Mapped coordinates of trembling aspen areas provided.
11) Can direct and/or indirect impacts to environmental values be avoided? Provide brief explanation.		Yes	Devise and adhere to a lake water quantity and quality monitoring schedule. Notify surrounding property owners and supply them with contact names and phone numbers. Be aware of wildlife timing windows and patterns. Follow Best Management Practices. Use only existing roads.
12) Can direct or indirect impacts to environmental values be minimized, mitigated, or restored on-site? If yes, provide suggested mitigation below (Part C). Use hierarchy and procedures from the		Yes	<u>Avoid:</u>

Environmental Mitigation Policy (See Table 2 for source)		<p>Devise and adhere to a lake water quantity and quality monitoring schedule.</p> <p>Be aware of wildlife timing windows and patterns.</p> <p>Be aware of bird nesting periods.</p> <p>Be aware of amphibian timing windows.</p> <p>Use existing roads</p> <p><u>Minimize:</u></p> <p>Minimize vegetation removal.</p> <p>Notify surrounding property owners and supply them with contact names and phone numbers.</p> <p>Follow Best Management Practices for Amphibians, Reptiles, Birds</p> <p><u>Restore</u></p> <p>No restoration should be needed as no vegetation will be removed. If vegetation compensation is required, then involve a biologist trained in compensation plans.</p>
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Part C: Proposed Mitigation

Please provide the measures that in the QP's professional opinion will contribute to the avoidance, mitigation, or restoration of direct and/or indirect impacts from the proposed activities on environmental values identified in Part B. Ecosystems biologists will determine which mitigation measures are provided to the decision maker and may provide additional measures if deemed applicable.

Mitigation

A) Production range limited to annual average of 10% Sustainable Aquifer Yield.

The Well License application was made on 7th November 2016. Pumping tests and aquifer study reports from 2015 to 2019, define a sustainable pumping volume that has been limited in the license application to 316,224 m³ per annum. The Lowen Hydrogeology Consulting Report "Updated Aquifer Recharge Estimates for Clinton Bottling Plant Well (Well ID #39845), Clinton, B.C", dated 23rd April 2019, further establishes for the proposed production volume an upper average annual limit, which is equivalent to 10% of the sustainable aquifer yield. The proposed production ranges from 6.8% to 20% of sustainable aquifer yield, depending on time of year.

B) Monitoring**Hy-Geo Report (5th December 2019) recommends monitoring as follows: -**

1. Given some potential variability of the water quality among the CHZ wells, frequent monitoring (e.g. monthly) of the water quality should be considered during any production pumping.
2. Monitoring of water levels in all CHZ wells and Duck Lake during ice-free periods, utilizing pressure transducers should be undertaken to obtain a record of water level trends with time. This data would be particularly important for assessing when any well maintenance may be required to maintain the well efficiency of the production well.
3. Periodic monitoring of the water quality of Duck Lake should be undertaken in the event it becomes necessary to maintain lake levels by pumping groundwater into the lake.

A Memorandum of Understanding was signed with the Village of Clinton in 2015 as part of the DP approval for the proponent to provide an annual hydrogeological report to the Village and a permanent monitoring location at an artesian existing well on Village property at Reg Conn Park, adjacent to Cut-off Creek.

Summary of Pumping Test and Aquifer Study Hydrogeology Reports

Reports issued to MFLNRO for review as part of Well License Application (November 2016) are as follows:

Hydrogeology Report Title	Author	Report Date
Well 41015 Assessment – Proposed Mineral Water Bottling Facility, Clinton, BC	Matt Sarkor P.Eng, Hydrogeologist , Kamloops BC	03-07-2015
Well Drilling, Construction, Pumping Test (8" well 39845)	Dennis Lowen P.Eng P,Geo, Lowen Hydrogeology Consulting Ltd, Victoria BC	12-01-2016
Request for information from FLNRO regarding Crystal Clinton Bottling Plant Well	Dennis Lowen P.Eng P,Geo, Lowen Hydrogeology Consulting Ltd	11-07-2018
Assessments of Potential Recharge and Hydrochemical Characteristics of Aquifer 0921 at Clinton, British Columbia	Alan Kohut P.Eng, Senior Hydrogeologist , Hy-Geo Consulting	05-12-2018
Follow-up Analyses of Potential Pumping Impacts and Sustainability Regarding the Clinton Bottling Plant Well (Well ID #39845), Clinton, B.C.	Dennis Lowen P.Eng P,Geo, Lowen Hydrogeology Consulting Ltd	18-12-2018
Conceptual Characterization of Aquifer 921 at Clinton, British Columbia	Alan Kohut P.Eng, Senior Hydrogeologist	29-01-2019

	, Hy-Geo Consulting	
Assessments of Potential Recharge of Aquifer 0921 at Clinton, British Columbia	Alan Kohut P.Eng, Senior Hydrogeologist , Hy-Geo Consulting	18-04-2019
Updated Aquifer Recharge Estimates for Clinton Bottling Plant Well (Well ID #39845), Clinton, B.C.)	Dennis Lowen P.Eng P,Geo, Lowen Hydrogeology Consulting Ltd,	25-04-2019

Part D: Risk Assessment on Final Submission

This assessment requires the professional judgment of the QP. It requires a complete understanding of the environmental values and the project scope. The risk assessment as determined by the QP will provide valuable environmental information necessary to provide inclusive recommendations to the decision maker.

The Qualified Professional Confirms that:	Yes, No, or N/A	Explanation
In the QP's professional opinion, will the proposed mitigation maintain the integrity of the environmental value?	Yes	
Are there residual impacts after avoidance, mitigation, and restoration have been applied as in the Environmental Mitigation Policy? If yes, provide details.	No	
In the QP's professional opinion, is the mitigation not sufficient or likelihood of success unclear?	No	Mitigation is sufficient. Mitigation and monitoring also outlined in hydrogeologist report.

☒ All information provided in this checklist is to the best of my professional knowledge true and complete.

Name of Qualified Professional: Bill Rublee

Professional Association and Number: R.P. Bio #573

Date: June 24, 2019

Data Sources for SEAR and BMPs

Table 1. Data sources for Environmental Values

Environmental Values	Available Data Sources
Conservation Data Centre (CDC) Species at Risk	BC Species and Ecosystems Explorer: http://www.env.gov.bc.ca/atrisk/toolintro.html Habitat Wizard: http://www.env.gov.bc.ca/habwiz/ DataBC Catalogue: http://catalogue.data.gov.bc.ca/dataset?download_audience=Public DataBC iMapBC: http://www.data.gov.bc.ca/dbc/geographic/view_and_analyze/imapbc/index.page
Wildlife Species Inventory (WSI) Species at Risk Data	WSI Homepage: http://www.env.gov.bc.ca/wildlife/wsi/index.html Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Conservation Lands	Information Page and Maps: http://www.env.gov.bc.ca/fw/habitat/conservation-lands/ Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Kamloops, Lillooet and Okanagan Land and Resource Management Plans (LRMP)	Kamloops: https://www.for.gov.bc.ca/tasb/slrp/plan46.html Okanagan: https://www.for.gov.bc.ca/tasb/slrp/plan70.html Lillooet: https://www.for.gov.bc.ca/tasb/slrp/plan58.html Spatial Layers: DataBC Catalogue, DataBC iMapBC: See links above
Approved Ungulate Winter Ranges (UWR)	Orders and Maps: http://www.env.gov.bc.ca/wld/frpa/uwr/index.html Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Approved Wildlife Habitat Areas (WHA)	Orders and Maps: http://www.env.gov.bc.ca/wld/frpa/iwms/wha.html Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Old Growth Management Areas (OGMA)	Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Environment and Climate Change Canada: Critical Habitat in BC	http://donnees.ec.gc.ca/data/species/developplans/critical-habitat-for-species-at-risk-british-columbia/?lang=en
Fisheries and Aquatic Species Information	Fisheries Information Summary System: http://www.env.gov.bc.ca/fish/fiss/index.html Flood Plain Mapping: http://www.env.gov.bc.ca/wsd/data_searches/fpm/reports/region3.html Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Terrestrial Ecosystem Mapping (TEM)	Information Page: http://www.env.gov.bc.ca/ecology/tem/manuals.html Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Sensitive Ecosystems Inventory (SEI)	http://www.env.gov.bc.ca/sei/

	Spatial Layers: Habitat Wizard, DataBC Catalogue, DataBC iMapBC: See links above
Other Resources for All Values:	Ecological Reports Catalogue: Ecocat http://www.env.gov.bc.ca/ecocat/ Biogeoclimatic Ecosystem Classification: https://www.for.gov.bc.ca/hre/becweb/ E-fauna: http://ibis.geog.ubc.ca/biodiversity/efauna/ E-flora: http://ibis.geog.ubc.ca/biodiversity/eflora/

Table 2. Sources of Provincial BMPs and Guidance Documents

Provincial BMPs & Guidance Documents	Source
Provincial guidelines and BMP documents.	http://www.env.gov.bc.ca/wld/BMP/bmpintro.html#first_
RISC Standards	https://www.for.gov.bc.ca/hts/risc/pubs/
Develop with Care Environmental Guidelines	http://www.env.gov.bc.ca/wld/documents/bmp/devwit/hcare/index.html
Environmental Mitigation Policy for BC	http://www.env.gov.bc.ca/emop
Riparian Area Regulation	http://www2.gov.bc.ca/gov/content/environment/plant-s-animals-ecosystems/fish/riparian-areas-regulation
Working Around Water	http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water
Standards & Best Practices for Instream Works	http://www.env.gov.bc.ca/wld/documents/bmp/iswstd/sbpsmarch2004.pdf
Shoreline Management Guidelines for Shuswap Lake Area	http://www.fraserbasin.bc.ca/_Library/TR_SLIPP/SLIPP_Shoreline_Mgmt_Guidelines_Shuswap_Mara_Lakes.pdf
Instream Works Timing Windows	http://www.env.gov.bc.ca/wld/instreamworks/regional/timingwindows.htm

Table 3. Sources for Local Government Guidelines

Guidance Document	Source
TNRD Lakeshore Development Guidelines	https://tnrd.civicweb.net/document/17913/Lakeshore%20Development%20Guidelines.pdf
Shuswap Watershed Mapping	http://www.csr.bc.ca/services/development-planning/maps

Table 4. DFO and other Federal Resources

Guidance Description	Source
Fisheries & Oceans Canada - projects near water	http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

Environment and Climate Change Canada: Critical Habitat in BC	http://donnees.ec.gc.ca/data/species/developplans/critical-habitat-for-species-at-risk-british-columbia/?lang=en
Water Survey Canada - hydrometric data	http://www.ec.gc.ca/rhc-wsc/default.asp?lang=En
Species at Risk Public Registry	https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1
Incidental Take of Migratory Birds	https://www.ec.gc.ca/paom-itmb/

UTM Points of Interest - May 14, 2019

Species		Easting	Northing		Easting	Northing	Comments
American badger den	10U	598633	5659329				
Canada goose nest	10U	598597	5659285				
Stick nest	10U	598584	5659360				
Raptor nest	10U	598352	5659278				
Trembling aspen community #1	10U	598654	5659211		598642	5659176	between these points
Trembling aspen community #2	10U	598126	5659275		598170	5659314	between these points



Sources and Disclaimer

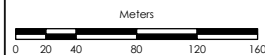
1. Base map Image: ESRI World Imagery
2. Disclaimer: This map is a visual aid only to be used together with the accompanying report, including and incorporating any disclaimer contained therein. This map has been prepared to illustrate the results of Triton Environmental Consultants Ltd. work, and is **not intended to be used for navigational purposes**. Information displayed on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.

Duck Lakes Environmental Values Review

Figure 1 - Duck Lakes Environmental Values Review Map

Legend

- American Badger Den
- Stick Nest
- Canada Goose Nest
- Raptor Nest
- Trembling Aspen Community
- ~ Watercourse



File Path:

N:\ACTIVE\10331_DuckLake_EnvironmentalChecklist\ArcProProject\10331_ArcProProject_20190604.aprx

Project No:

10331

Date:

Jun 04, 2019

Scale:

1:5,000

Map Datum:

NAD 1983 UTM Zone 10N

TRITON
Environmental Consultants



Photograph 1. East view of Main Duck Lake. May 14, 2019



Photograph 2. West view of Main Duck Lake. May 14, 2019



Photograph 3. West view of Duck Lake #2. May 14, 2019



Photograph 4. West view of Duck Lake #3. May 14, 2019



Photograph 5. View of trembling aspen stand between Lakes 2 and 3. May 14, 2019.

June 17, 2019

Attn: Ian Chadwick, P. Eng, EHD Engineering

Re: Duck Lakes Spadefoot Assessment

Dear Mr. Chadwick,

Spea Environmental Ltd. was contacted by Triton Environmental Consultants Ltd. (Triton) to conduct Great Basin Spadefoot (*Spea intermontana*) surveys at Duck Lakes near Clinton, BC (the Project). This memo outlines relevant background information, survey methodology and results, and incidental wildlife observations.

Species Background and Regulatory Context

Great Basin Spadefoots are listed as 'Threatened' on Schedule 1 of the Federal *Species at Risk Act* (SARA) and are considered Special Concern (blue-listed) in British Columbia (B.C. Conservation Data Centre 2019). Spadefoots are found throughout the arid regions of BC's southern interior, from Osoyoos up to the 70 Mile House area. The closest known spadefoot occurrence to Duck Lakes is 20 km to the north (Province of British Columbia 2019).

Various types of water bodies can support Great Basin spadefoot breeding, including lakes, ponds, flooded fields, puddles, cattle dugouts, ditches, and artificial water features (COSEWIC 2007, Garner and Packham 2011). Of these, a preference for ephemeral sites with shallow water has been observed. Breeding sites are found within bunchgrass grasslands, shrub-steppe, and open pine and Douglas-fir forests (Southern Interior Reptile and Amphibian Working Group 2016).

Spadefoots are fossorial, they spend the majority of time in self-dug underground burrows and small mammal burrows (Sarell 2004). Soil conditions must permit burrowing to support a spadefoot population. Most often this species is found in areas with deep, loose and friable soils, although the ability to burrow into relatively fine and compacted soils has been observed (J. Garner, pers. obs., Southern Interior Reptile and Amphibian Working Group 2016).

Survey Methodology and Results

Nocturnal auditory surveys were conducted May 7 and 22, 2019. The surveys were conducted at five stations at Duck Lakes. The stations were chosen such that calling from all five ponds could be detected (Figures 1-6). Calibration surveys at the closest known spadefoot breeding site were also conducted on both nights to confirm correct timing of surveys¹. Surveys began 30 mins after sunset. The surveyor listened for 15 minutes per site and recorded the following information for each survey: surveyor location (UTM), site number, survey start/end times, air temperature, wind speed, relative humidity, elevation, cloud cover, moon phase, and current/recent precipitation status. No spadefoot calling, or that of other

¹ The timing of spadefoot calling can be variable across years as onset of breeding season is largely dependent on environmental conditions (i.e. spring rains and warm evenings).

amphibian species, was detected during auditory surveys at Duck Lakes. Both spadefoots and Western Toads (*Anaxyrus boreas*) were detected at the calibration site on May 7 and 22.

Visual encounter searches were conducted for egg masses and larval amphibians on June 12, 2019. The surveyor walked the perimeter of each pond scanning the shallow water zones for egg masses or larval amphibians. The non-forested perimeter of the main pond was searched, as were the perimeters of ponds 2-4. A small section of pond 5 was searched, but the survey was cut short to give a black bear and her two cubs space (Figure 7). No evidence of amphibian presence was observed during larval searches.

Habitat assessment was also conducted during all three visits. While the ponds themselves may be suitable breeding habitat, the soil/substrates in the surrounding terrestrial habitat do not appear to be suitable for spadefoots. There is a high component of gravel in the soils, especially evident in the area to the north and east of the main lake, which would inhibit burrowing.

Note that all surveys were conducted according to RISC standards (Resources Inventory Committee 1998) by a Qualified Environmental Professional (QEP) experienced in amphibian surveys.

Wildlife Observations

Several observations of wildlife and wildlife habitat features were made throughout the surveys, observations of note are summarized in Table 1 and shown on Figure 1.

Table 1. Wildlife observations of note from Duck Lakes in May/June 2019.

Species	Location (Zone 10)	Comments
American Badger (<i>Taxidea taxus</i>)	598633 m E 5659329 m N	This burrow (Figure 8) does not look recently used (no fresh diggings and plants are growing at the entrance); however, it may be re-used in the future (likely by males travelling through the area). Badgers are Red-listed in BC and listed as Endangered on Schedule 1 of the Federal <i>Species at Risk Act</i> (SARA).
American Black Bear (<i>Ursus Americanus</i>)	597837 m E 5659268 m N	A sow with two cubs was observed on the northwest edge of pond 5 (Figure 7).
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	598374 m E 5659237 m N	A pair was observed in and around the nest on May 22. The birds were heard but not seen on June 12.
Swallow Nest Colony	598644 m E 5659321 m N	A colony of swallows is nesting in a steep bank within 35 m of the southeast edge of the main pond (Figure 9). Further investigation is required to determine species between Bank Swallow (<i>Riparia riparia</i>), which is listed as Threatened on Schedule 1 of SARA, and Northern Rough-winged Swallow (<i>Stelgidopteryx serripennis</i>).

Summary and Recommendations

In summary, no Great Basin Spadefoots were detected during auditory and larval surveys at Duck Lakes while they were detected at the calibration site thereby indicating that timing of surveys was correct. Habitat suitability for this species in the Duck Lakes area is low due to the composition of soils in the surrounding terrestrial habitat.

It is recommended that **NO FURTHER EXCAVATION** is conducted in the area with the badger burrow and swallow nests. Any excavation in the bank with the swallows will be in contravention of federal and provincial legislation as the federal *Migratory Birds Convention Act* and provincial *BC Wildlife Act* prohibit the disruption and/or destruction of active breeding bird nests. Excavation may be resumed once the nests have been vacated for the season; this will likely occur by August 15, however, a QEP can confirm this with a site visit.

Should you require more information please do not hesitate to contact the undersigned.

Sincerely,



Jocelyn Garner, MSc, RPBio
250.572.2994
jgarner@speaenvironmental.ca

Literature Cited

- B.C. Conservation Data Centre. 2019. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. <<http://a100.gov.bc.ca/pub/eswp/>>.
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- Sarell, M. 2004. Great Basin Spadefoot, *Spea intermontana*. Identified Wildlife Management Strategy, Accounts and Measures for Managing Identified Wildlife, Version 2004. Ministry of Water, Land and Air Protection, Victoria, BC.
- Southern Interior Reptile and Amphibian Working Group. 2016. Recovery plan for the Great Basin Spadefoot (*Spea intermontana*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 40 pp. <<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/species-ecosystems-at-risk/recovery-planning/recovery-planning-documents/recovery-planning-documents>>.

Site Map and Photos



Figure 1. Map of the project area showing amphibian auditory stations and incidental wildlife and wildlife habitat observations. B-BAEA = Bald Eagle nest; B-SW sp. = Swallow nest colony; M-TATA = American Badger burrow; M-URAR = Black Bear sow with two cubs.



Figure 2. View of the main Duck Lake (DL pond 1) facing south.



Figure 3. View of the main Duck Lake (DL pond 1) facing northeast.



Figure 4. Photo of DL pond 2.



Figure 5. Photo of DL pond 3.



Figure 6. Photo of DL pond 4.



Figure 7. Black Bear sow with two cubs observed on the north shore of DL pond 5.



Figure 8. American Badger burrow (within red circle) found near the SE corner of the main lake (DL pond 1).



Figure 9. Steep bank with several swallow nests (within red circle) found near the SE corner of the main lake (DL pond 1).