BRITISH COLUMBIA
The Best Place on Earth

February 25, 2009 File: A2005549

BC Transit
520 Gorge Rd East
Victoria BC V8W 2P3

Attention: Ron Harmer

Dear Mr. Harmer:

Re: Order for Changes In and About a Stream on Approval 2005549 on Unnamed Creek tributary to Alta Lake

Enclosed is a copy of an Order amending Clauses (n), (u) and adding additional Clauses (v) and (w) on Approval 2005549 on Unnamed Creek tributary to Alta Lake.

This new documentation should be attached to your copy of the approval.

All the other conditions of the original approval still apply.

If you have any questions or concerns please contact the Portfolio Administrator, Water Stewardship Division, at 604-582-5200.

Yours truly,

Tim Bennett, P.Eng.
Assistant Regional Water Manager

Enclosure

AU/klj

Ministry of Environment | **Water Stewardship Division Water Allocation** | **Mailing Address/Location** 10470 – 152nd Street, 2nd Floor Surrey BC V3R 0Y3 Telephone: 604-582-5200 Fax: 604-582-5235 | **Web Address:** http:\\www.env.gov.bc.ca

BRITISH COLUMBIA
The Best Place on Earth

Water Act

ORDER

Section 18 (1)

File No. A2005549

The Province of British Columbia *Water Act* having received an application to amend Approval 2005549 on Unnamed Creek tributary to Alta Lake, and being satisfied that no person's rights will be injuriously affected, I hereby amend Clauses (n) and (u) and add Clauses (v) and (w) of Approval 2005549 to read as follows:

(n) All works shall comply with AMEC Earth & Environmental's letter dated February 4, 2009 and attached drawings prepared by McElhanney Consulting Services.

(u) All works shall be carried out in accordance with the Ministry of Environment "Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia and can be found at the following link: http://www.env.gov.bc.ca/wld/BMP/herptile/bmpherptile.html

(v) The approval holder shall notify Sheldon Reddekopp, Environmental Stewardship Division at 604-582-5371, of any amphibian species in the project area and the salvage and mitigation techniques for managing species at risk.

(w) The approval holder shall submit to Sheldon Reddekopp, Environmental Stewardship Division, at the address listed below, copies of the detailed landscaping plans and Environmental Monitoring Reports for this project, within 30 days of completion of the project.

Dated at Surrey, British Columbia, this 25th day of February, 2009.

Tim Bennett, P.Eng.
Assistant Regional Water Manager
Water Stewardship Division

Ministry of Environment | **Water Stewardship Division** Water Allocation | **Mailing Address/Location** 10470 – 152nd Street, 2nd Floor Surrey BC V3R 0Y3 Telephone: 604-582-5200 Fax: 604-930-7119 | **Web Address:** http:\\www.env.gov.bc.ca

BRITISH COLUMBIA
The Best Place on Earth

WATER STEWARDSHIP REPORT ON AN AMENDMENT TO AN APPROVAL
(Changes in and about a Stream)

Water District:	New Westminster	Precinct:	20H - Kent	File No:	A2005549
Applicant:	BC Transit 520 Gorge Road East Victoria BC V8W 2P3		Att: Ron Harmer Email: ron_harmer@bctransit.com Phone: 250 995-5663		
Consultant:	AMEC Earth & Environmental 2227 Dough Road Burnaby BC V5C 5A9		Att: Season Snyder Email: season.snyder@amec.com Phone: 604 294-3811		
Name of stream(s):	Unnamed Creek		Tributary to: Alta Lake		

General Description of Amendment Request:

The amendment request comprised; reconfiguration of facility layout, relocation of the access road, location of one proposed culvert, relocation of the stormwater wetland, reconfiguration of the natural wetland (mitigation) complex.

Recommend that an Amendment be Granted:

☒	Recommend that the amendment be granted under Section 18 of the *Water Act.*
☒	Recommend Clause (n) be amended to read: ..... All works shall comply with AMEC Earth & Environmental letter dated February 04, 2009 and attached drawings prepared by McElhanney Consulting Services.
☒	Replace Clause (u) with "All works shall be carried out in accordance with the Ministry of Environment "Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia" and can be found at the following link : http://www.env.gov.bc.ca/wld/BMP/herptile/bmpherptile.html
☒	Add: The approval holder shall notify Sheldon Reddekopp , Environmental Stewardship Division at 604 582-5371 of any amphibian species in the project area and the salvage and mitigation techniques for managing species at risk.
☒	Add: The approval holder shall submit to Sheldon Reddekopp, Environmental Stewardship Division, at the address listed below, copies of the detailed landscaping plans and Environmental Monitoring Reports for this project, within 30 days of completion of the project.

Notes: *(include explanation if amendment request is refused)*

Referrals/Consultation:

Person/Agency	Date Referrals Sent	Date Reply Received	Comments
ESD - Fish, Wildlife & Habitat Protection	November 25, 2008	December 01, 2008	ESD provided some concerns and asked for more information. Further comments under notes.
Fisheries & Oceans Canada			As per technical report for the original application under the referral, there is no Salmon in the unnamed creek and DFO's interests are minimal or non existent. Also a clause was included in the approval document to protect DFO's interests if any. (Further

(Report signed by)

Municipality/Regional District			Resort Municipality of Whistler is in support of BC Transit facility (technical report for original application).
Provincial Government			
Integrated Land Mgmt Bureau			All works on BC Hydro's Right of Way and BC Hydro supports the facility on this site (July 29, 2009 letter on file).
Transport Canada, Navigable Waters Protection Division			Transport Canada's interests are minimal being a non navigable channel.
WSD - Flood Hazard Mgmt			
First Nations:			As per report for the original application, projects related to 2010 Winter Olympics not referred to FNs. The FNs fully participated in CEA review at both Provincial and Federal levels.
1.			
2.			
3.			
4.			
5.			
Other (specify):			
1. Potentially impacted stakeholders/ landowners			
2. Downstream licencees and/ or water users			
3. Complainants			
Note: Include reference to any downstream riparian land owners, or adjacent property owners impacted by RAR setback requirements.			

Notes:

The in-stream works authorized in the original Water Act section 9 approval (A2005549) comprised diverting the existing unnamed creek channel around the proposed facility footprint, infill of a portion of the creek, and install culvert crossings. According to the consultants (AMEC) submission provided with this Water Act section 9 amendment application, the transit site plan and engineering drawings were preliminary at the time of the original application submission. The proposed access road alignment and location of culvert crossings was not known at that time. Now with the progress of the facility works and advancement of detailed design some changes have occurred to the original layout of the facility.

In the changes the general description of in-stream works is same as in the original approval, with an additional 427 m^2 in-stream impacts as a result of relocation of access road. Road construction will also require the removal of an additional 4600 m^2 of riparian/upland habitat. The other changes associated with in-stream and riparian impacts include; relocation of storm water wetland and reconfiguration of the natural wetland (mitigation) complex.

ESD objected to the increased in-stream impacts and riparian/upland habitat footprint and advised the proponent for alternative designs and mitigative measures (December 01, 2008 letter on file). The proponent responded to the ESD's concerns and provided additional information in support of their proposed amendments. ESD has reviewed the consultants's response and has no objection to the proposed works subject to some terms and conditions (February 19, 2009 e-mail on file). These ESD's terms and conditions have been recommended as a part of the amendment.

Although the fish habitat value present in the unnamed creek at the BC Transit Facility site is minimal (consultant report on file), a clause was included in the original approval document to protect the DFO's interests, if any. Again, the changes are generally in relocation or reconfiguration but the description is same as in the original application.

RECOMMENDATION:

It is recommended that amendment be granted under Section 18 the *Water Act* amending the clause as mentioned above in the clauses section.

Report made by: _____ Date Report: February 20, 2009

Aman Ullah, P.Eng
Water Stewardship Officer

Site Inspected by: Not inspected Date Site Inspected: _____

Report Signed by: _____ Date signed: 02-20-09

Tim Bennett, P.Eng.
Assistant Regional Water Manager

BRITISH COLUMBIA
The Best Place on Earth

July 31, 2008

File: A2005549

BC Transit
520 Gorge Rd East
Victoria BC V8W 2P3

Attention: Ron Harmer

Re: Application for approval to make changes in and about Unnamed Creek tributary to Alta Lake - Approval 2005549

An approval for the proposed changes in and about Unnamed Creek tributary to Alta Lake has been granted, subject to the conditions noted on the attached Approval document 2005549.

Please be advised that applications for an approval can take up to 140 days to process. If possible, please provide future applications at least 45 days in advance of your proposed start date.

In addition, you are also advised that the works should adhere to the following guidelines:

1. Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia (MWLAP 2004).
2. Develop with Care: Environmental Guidelines for Urban and Rural Land Developments in British Columbia (MOE 2006).

If you have any questions or concerns, please contact the undersigned at 604-582-5227.

Yours truly,

Tim Bennett, P.Eng.
Assistant Regional Water Manager

Attachments

/klj

pc: Sheldon Reddekopp, Ministry of Environment

Ministry of Environment | **Water Stewardship Division** Water Allocation | **Mailing Address/Location** 10470 – 152nd Street, 2nd Floor Surrey BC V3R 0Y3 Telephone: 604-582-5200 Fax: 604-582-5235 | **Web Address:** http:\\www.env.gov.bc.ca

Johnson, Kym L ENV:EX

From: Johnson, Kym L ENV:EX
Sent: August 1, 2008 3:44 PM
To: XT:Harmer, Ron CASe:IN
Subject: Your Approval Documents 2005549 for Unnamed Creek tributary to Alta Lake

Attachments: A2005549.pdf

A2005549.pdf (107 KB)

Cheers,

Kym Johnson
Portfolio Administrator
Water Stewardship Division
Ministry of Environment
Phone: 604-582-5340 Fax: 604-582-5235
Kym.Johnson@gov.bc.ca

BRITISH COLUMBIA
The Best Place on Earth

ENGINEER'S REPORT ON AN APPROVAL APPLICATION
(Changes in and about a stream)

Water District: New Westminster Precinct: Kent File No: 2005549

Applicant: BC Transit Att: Ron Harmer

Address: 520 Gorge Road East Victoria B.C. V8W 2P3

Name of stream(s): Unnamed creek Tributary to: Alta Lake

I recommend that the Application be: ***granted***

Proposed Changes (include Works and Appurtenant Land)

Infilling a portion of the stream and wetted area and divert the stream around the project footprint, install culvert and construct mitigation/compensation works that includes creating a new wetland complex i.e. channel, pool, marsh and riparian habitat and also provide fish and wildlife habitat functions and values on the site within BC Hydro R/W, North Half of D.L.1758 N.W.D.

Conditions under which the Approval is to be: granted.

(a) This Approval does not authorize entry on privately held land .

(b) This Approval does not constitute authority of any other agency.

(c) The holder of this Approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of rights granted hereunder.

#1 Sept.30th. 2009, Portfolio Administrator Sandra Jensen 604 930 7107

#2 Sheldon Reddakopp ESD 5 days 604 582 5371

#6

#7

#8

#10

#13

#26

#41 Dwg. No. Sk#4-R1 by Omicron AEC Ltd and amec report of July 17th. 2008 # 46 #48

Additional Clauses from CIAS Template:

(b), # (c) (f) and (i)

For cover letter: please find enclosed a copy of the letter from Sheldon Reddekopp ESD dated July 28th. 2008 for information and compliance.

Report made by: Mohammed Alam
Service Contractor
Water Stewardship Division

Signed:

Tim Bennett, P.Eng.
Assistant Regional Water Manager

Report Date: July 29, 2008 Date (RM or DE):

Site Inspected by: Not Inspected Date Site Inspected: N/A

Referrals/Consultation:

Person/Agency	Date of Response	Comments
Environment Stewardship Division *(copy with covering letter)*	July 28th. 2008	No objections as long as approval holder follows instructions of ESD letter of July 28th. 2008.The copy of the letter is being forwarded to BC Transit
Fisheries & Oceans Canada *(copy with covering letter):*	The copy of application was hand delivered by Tim Bekhuys of Amec to Corino Salomi on July 18th. 2008	This is a part of winter 2010 Olympic facilities. The entire 2010 projects had gone through CEA review both Provincial and Federal. The certificate of approvals were signed by the respective Ministers. There is no Salmon in this stream or Alta Lake. The Fisheries and Oceans interests are very limited or non existent. I have included a clause to protect their interest if any.
Municipality/Regional District *(copy with covering letter):*	Not referred	Resort Municipality of Whistler is in support of BC Transit facility. They are working with the proponent for long time to find a site for the said facility.
I.L.M.B. *(copy with covering letter):*	Not referred	All works on BC Hydro R/W
Coast Guard (MOT) *(copy with covering letter):*	Not referred	Not a navigable stream
Engineering Section(WSD) *(copy with covering letter):*	Not referred	N/A
(bank protection clause in covering letter):	-	N/A
OTHER (*specify*): Indian Band: (1) Mount Currie I.R.	Not referred	We have not referred projects related to 2010 Winter Olympic to First Nation. The First Nation have fully supported all projects related to 2010 Olympic. They have fully participated in CEA review both Provincial and Federal. The Minister of Indian Affairs had signed the CEA certificate on behalf of all First Nations.

Notes: *(include reasons for refusal or cancellation):*

The proposed project site is a remnant of the historic Fitzsimmons Creek floodplain that was isolated by the establishment of Highway 99 and subsequent dyking of Fitzsimmons Creek. The unnamed creek runs along the western edge of the property at the base of a moderately steep slope composed of bedrock and overlain by weathered bedrock and colluvium. The creek flows from Nester's pond north through the development property, then into a adjacent highway ditch. The highway ditch flows north to Alta Creek. As per amec fish survey minimal fish habitat is present in the creek. The channel is undefined with little evidence of scour and no visible flow. The average channel width is 0.68 metre. The proposed site will accommodate a hydrogen fuelling station and bus depot in Whistler. BC Hydro has given permission to use the site. The letter is in file. Very soon lawyers for BC Transit and BC Hydro will prepare agreement that will be sent to MOE. The compensation and mitigation works will be improvement for fish habitat. The new channel and wet land will have added features for fish and habitat.

BRITISH COLUMBIA
The Best Place on Earth

Water Act

APPROVAL

WATER ACT - Subsection 9(1), Clauses (a), (b) and (c)
(Changes in and about a stream)

BC Transit
520 Gorge Rd East
Victoria BC V8W 2P3

is hereby authorized to make changes in and about a stream as follows:

(a) The name of the stream is **Unnamed Creek tributary to Alta Lake**, herein referred to as "the stream".

(b) The changes to be made in and about the stream are:

Infilling a portion of the stream and wetted area and divert the stream around the project footprint, install culvert and construct mitigation/compensation works that includes creating a new wetland complex, i.e. channel, pool, marsh and riparian habitat and also fish and wildlife habitat functions and values on the site within BC Hydro right of way, North Half of District Lot 1758, New Westminster District.

(c) This Approval does not authorize entry on privately held land or Crown land.

(d) This Approval does not constitute authority of any other agency.

(e) The holder of this Approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of rights granted hereunder.

(f) The work authorized shall be completed on or before **September 30, 2009**, and the holder of this approval shall advise the **Portfolio Administrator at 604-582-5340** when the changes have been completed.

(g) The holder of this approval shall advise **Sheldon Reddekopp, Ecosystems Biologist, Environmental Stewardship Division at 604-582-5371** five working days prior to commencement of construction of the works.

(h) All instream work shall be undertaken during low flows.

(i) Upon commencement of the project, the work shall be pursued to completion as quickly as possible.

(j) Any machinery operated in the stream shall be free of excess oil and grease.

(k) Care shall be exercised during all phases of the work to minimize siltation of the stream and to eliminate the release of any other debris or deleterious substances.

(l) Vegetation along the banks of the stream shall be disturbed as little as possible.

(m) On completion of the project, the stream bed shall be left in as smooth a condition as possible, with no depressions that could trap fish or initiate erosion of the stream bed.

(n) All works shall comply with Drawing No. SK#4-R1, prepared by Omicron AEC Ltd and amec report of July 17, 2008.

(o) Approval holder shall be responsible for repair, operation and maintenance of works to the satisfaction of the Assistant Regional Water Manager.

(p) Prior to carrying out any maintenance of the works authorized under this approval, the holder is to obtain the consent of the Assistant Regional Water Manager.

(q) Prior to the commencement of the works authorized under this approval, the approval holder shall have all the necessary permits from all the other agencies concerned.

(r) Prior to the commencement of the works authorized under this approval, the approval holder shall obtain authorization from Fisheries and Oceans Canada.

(s) The approval holder shall retain a qualified Environmental Monitor to supervise all in-stream works authorized under this approval.

(t) An erosion and sediment control plan shall be developed, and all work shall be carried out, in accordance with the Ministry of Environment's "*Standards and Best Practices for In-stream Works*" and the Department of Fisheries and Oceans Canada "*Land Development Guidelines for the protection of Aquatic Habitat*". The Ministry's guidance can be found at the following link: http://wlapwww.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.

(u) All works shall comply to amec's report entitled BC Transit – Whistler Facility, Application for Approval under Section 9 of the *Water Act*, dated July 17, 2008.

Tim Bennett, P.Eng.
Assistant Regional Water Manager

WATER APPROVAL & STU APPLICATION FLOWSHEET

Applicant: BC TRANSIT

Date Received: JUL 17, 2008 **Source:** UNNAMED TO ALTA CR

Date Accepted: JUL 17, 2008 **Source Location (City):** WHISTLER

Reception
- Stamps date received & routes package to NRO with photocopy of cheque

NRO

RUSH AS PER MOHAMED.

$ 130.00 total appn fee received Cheque # 192 BERTHUYS

- Review Application for completeness
  - ☑ Application fee
  - ☑ Application form
  - ☐ Landowner's consent checked off on application form
  - ☐ Key location map
  - ☐ Sketch plan (sufficient mapping to clearly show what's happening and where)
  - ☐ Professional Engineer drawings (only Bridge or Bank Protection works or other major works ie, creek diversion)

Date: JUL 17/08 NRO Name: Shane	☑ Accept Application SECTIONS 8 & 9: If SECTION 8, fill this:	Description of Works: STREAM DIVERSION Legal: N 1/2 DL 1758 NWD Purpose: _____ Quant: _____ Fee: _____ Section 8 fees: per appn fee sched for water licences plus one year rental
	☐ Return Application	☐ Write Disallowance Letter, outlining missing information ☐ Record as "returned" in Water Database, Cheque Log and ATS _____ _____ ☐ Add to Application Tracker Binder (send file to Referral Clerk)
	Referral Clerk:	☐ Retrieve cheque from safe and photocopy application package, mail cheque & originals to client ☐ Put p/c of package on File 76940/B001 held in NRO office

NRO

(Send to File Clerk to Create File)
- ☑ If an APPROVAL, invoice in WaRMS, if STU, fill out STU invoice request form & email to Krista.Brygidyr@gov.bc.ca INVOICE #: 923741 79345
- ☑ Email CSA to cash cheque. Print off the email, attach it to the cheque with a copy of the invoice and put it in the Application Fees to be Cashed folder/envelope
- ☑ Checkmark bottom right corner of pages to be sent to agencies
- ☑ Accept and Assign file # in Excel Water Database
- ☑ Print First Nations report AND map & put behind Ref. Checklist
- ☑ Put yellow transfer form on file
- ☑ ATS 19034 20035
- ☑ Enter into the Application Tracker Binder & put file in basket for transfer to MOE for map work, referral selection & downstream notification determination

PD near appn area: 43531 (for mapping purposes)

MOE

Precinct: 20H NW-Kent Map No.: 92 J 016 1.3

Water District: NWD

☐ **MOE to put copy of map on file that shows file #, PDs and works, update the Water Database w/ the Source, Precinct & Date Clearance completed info, then return file to FCBC REFERRAL CLERK, if required. If referrals and/or acknowledgement letter not required, please email FCBC to advise.**

Completed by: Kym Johnson Date: July 28/08

Referral Clerk

WHEN INFO RETURNED FROM MOE:
- ☐ Update Application Tracker Binder
- ☐ Send Acknowledgement Letter
- ☐ Prepare referrals & send out Date: _____
- ☐ Update Excel Water Database with Referral Dates
- ☐ Send file to MOE

May08 - SB

REF CHECKLIST for WATER STEWARDSHI ION

Local Government	Ministry of Agriculture and Lands	First Nations
☐ Abbotsford, City of	☐ Min. of Agriculture & Lands – Sales	☐ Cheam Band
☐ Anmore, Village of	☐ Min. of Agriculture & Lands (CLA – Surrey)	☐ Chehalis Indian Band
☐ Belcarra, Village of	☐	☐ Homalco Indian Band
☐ Bowen Island, Municipality of	**Ministry of Energy, Mines & Petroleum Resources**	☐ Hul'qumi'num Treaty Group
☐ Burnaby, City of	☐ Min. of Energy, Mines & Petroleum Resources - Maryann Bouffard	☐ In-SHUCK-ch Nation
☐ Chilliwack, City of	☐	☐ Katzie Indian Band
☐ Delta, Corporation of	**Ministry of Environment**	☐ Klahoose First Nation
☐ Gibsons, Town of	☐ MoE (Ecosystems Section, Environmental Stewardship) – Sheldon Reddekopp	☐ Kwantlen First Nation
☐ Harrison Hot Springs, Village of	☐ MOE (Parks) – Vicky Haberl	☐ Kwayhquitlum First Nation
☐ Hope, District of	☐ MoE (Flood Management) – John Pattle	☐ Leq'a:mel First Nation
☐ Kent, District of	☐	☐ Mount Currie Indian Band (Lil'wat Nation)
☐ Langley Township, Corp. of	**MoF Forest Districts**	☐ Musqueam Nation
☐ Langley, City of	☐ Campbell River Forest District – Rory Annett	☐ Nanwakolas Council
☐ Lillooet, Village of	☐ Chilliwack Forest District – Kerry Grozier	☐ N'Quatqua First Nation
☐ Lions Bay, Village of	☐ Squamish Forest District – Dave Hails	☐ Scowlitz First Nation
☐ Maple Ridge, District of	☐ Sunshine Coast Forest District – Brian Hawrys	☐ Sechelt Indian Band
☐ Mission, District of	☐	☐ Sliammon First Nation
☐ New Westminster, City of	**Ministry of Transportation**	☐ Squamish Nation
☐ North Vancouver, City of	☐ MoT – Chilliwack (Mike Neill)	☐ Sto:Lo Nation
☐ North Vancouver, District of	☐ MoT - Squamish + SunCoast (Shawna Heming)	☐ Sto:Lo Tribal Council
☐ Pemberton, Village of	☐ MoT – Vancouver (Jeff Moore)	☐ Tsawwassen First Nation
☐ Pitt Meadows, City of	☐	☐ Tsleil-Waututh Nation / Burrard Indian Band (Same)
☐ Port Coquitlam, City of	**Federal Government**	☐ Yale First Nation
☐ Port Moody, City of	☐ Environment Canada – Vivian Au	☐
☐ Powell River, City of		☐
☐ Richmond, City of	☐ Fisheries & Oceans Canada – FCBC to choose office: DELTA	☐
☐ Sechelt, District of		
☐ Squamish, District of	☐ Transport Canada (Navigable Waters Prot Div) – Jim Schellenberg	
☐ Surrey, City of	☐	
☐ Vancouver, City of	**Other**	
☐ West Vancouver, District of	☐ Agricultural Land Commission	
☐ Whistler, Resort Municipality of	☐ Archeological (Archer CRM Partnership)	
☐ White Rock, City of	☐ BC Hydro – Allison Baguley	
☐	☐ BC Rail	
Regional Districts	☐ Environmental Assessment Office (EAO)	
☐ Comox Strathcona Reg Dist	☐ Fraser River Estuary	
☐ Fraser Valley Reg Dist	☐ Health Board	
☐ Greater Vancouver Reg Dist	☐	
☐ Powell River Reg Dist		
☐ Squamish Lillooet Reg Dist		
☐ Sunshine Coast Reg Dist		Selected by:
☐		

Identify Results

Coordinate Position

BC Albers: 1217671, 573446
Geographic: 50° 8' 5" N, 122° 57' 14" W
UTM 10N: 503286, 5553603

First Nations Consultative Areas - Outlined

Boundary ID:	129
Feature Code:	FA92400000
Boundary Name:	Squamish Band
Contact Type:	PRIMARY
Contact Name:	Squamish Band
Contact Title:	Chief and Council
Contact Organization:	Squamish Band
Contact Address:	PO Box 86131 , 320 Seymour Blvd
Contact City:	North Vancouver
Contact Province:	BC
Contact Postal Code:	V7L 4J5
Contact Phone Number:	604-980-4553
Contact Fax Number:	604-980-4523
AREA:	6893117253.15405
LEN:	625781.763498595
Boundary ID:	86
Feature Code:	FA92400000
Boundary Name:	Mount Currie
Contact Type:	PRIMARY
Contact Name:	Mount Currie
Contact Title:	Chief and Council
Contact Organization:	Mount Currie
Contact Address:	PO Box 602
Contact City:	Mount Currie
Contact Province:	BC
Contact Postal Code:	V0N 2K0
Contact Phone Number:	604-894-6115
Contact Fax Number:	604-894-6841
Contact Email:	carrie_lestersmith@lilwatnation.com
AREA:	7796859858.10171
LEN:	557462.642903928

Regional Districts Tantalis - Outlined

REGIONAL_DISTRICT_NAME:	SQUAMISH-LILLOOET
CODE:	RD
FEATURE_CODE:	FA91800500
AREA:	16686756875.4968
LEN:	957126.69172703

Forest Districts - Outlined

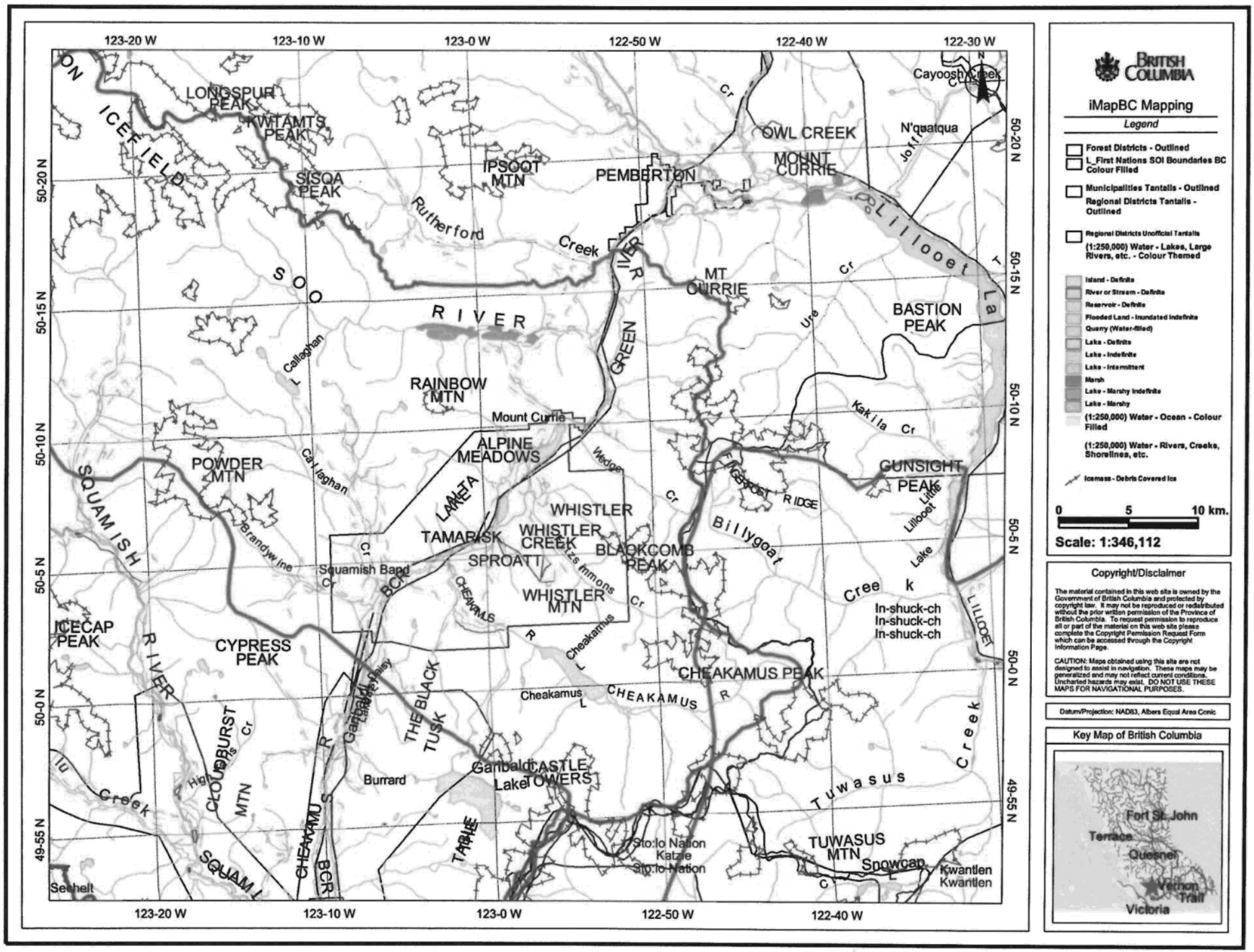
DISTRICT_NAME:	Squamish Forest District
ORG_UNIT:	DSQ
FEATURE_CODE:	FM90200000
AREA:	10985137734.1794
LEN:	1024655.85807473

Municipalities Tantalis - Outlined

MUNICIPALITY_NAME:	WHISTLER
CODE:	MU
FEATURE_CODE:	FA90100000
OBJECTID:	7537085
AREA:	243595678.8463
LEN:	73741.273125052

L_First Nations SOI Boundaries BC - Colour Filled

AREA: 5061516805.39083
LEN: 535292.425331998



BRITISH COLUMBIA

iMapBC Mapping

Legend

- Forest Districts - Outlined
- L_First Nations SOI Boundaries BC Colour Filled
- Municipalities Tantalis - Outlined
- Regional Districts Tantalis - Outlined
- Regional Districts Unofficial Tantalis
- (1:250,000) Water - Lakes, Large Rivers, etc. - Colour Themed
  - Island - Definite
  - River or Stream - Definite
  - Reservoir - Definite
  - Flooded Land - Inundated Indefinite
  - Quarry (Water-filled)
  - Lake - Definite
  - Lake - Indefinite
  - Lake - Intermittent
  - Marsh
  - Lake - Marshy Indefinite
  - Lake - Marshy
- (1:250,000) Water - Ocean - Colour Filled
- (1:250,000) Water - Rivers, Creeks, Shorelines, etc.
- Icemass - Debris Covered Ice

0 5 10 km.

Scale: 1:346,112

Datum/Projection: NAD83, Albers Equal Area Conic

Key Map of British Columbia

Bennett, Timothy A ENV:EX

From: Snyder, Season [Season.Snyder@amec.com]
Sent: Tuesday, April 21, 2009 9:18 PM
To: Bennett, Timothy A ENV:EX
Cc: Berardinucci, Julia F ENV:EX
Subject: Approval #2005549 and Consent under Section 215 Land Title Act
Attachments: Hydro Support Letter Feb 02 09.pdf; Land Title.pdf; February 25 2009 Section 9 Amendment.pdf; July 31, 2008 Section 9 Approval.pdf

Dear Mr. Bennett,

AMEC Earth & Environmental is writing on behalf of BC Transit who has received a Section 9 Approval (#2005549) for works in and about an unnamed creek at their Transit Facility Project site in Whistler, BC. BC Transit is constructing the facility on property owned by BC Hydro. BC Hydro has provided a written letter of support for the project, which was attached to the Section 9 application submitted to MOE.

The property title contains a Section 215 Restrictive Covenant initiated by MOE and BC Hydro and registered with Land Titles, which in summary states that development of the Hydro property for uses other than utility or communication purposes require consent from MOE for such other uses. In order to finalize their negotiations, both BC Transit and BC Hydro require written confirmation that the Section 9 Approval meets the requirement of consent under the restrictive covenant. BC Transit kindly requests that MOE confirm in writing that the consent required under the restrictive covenant is inherent in the Section 9 Approval issued for the project.

I have attached a copy of the Land Title, the Section 9 Approval and BC Hydro's letter of consent for your ease of review. BC Transit's new contact information for this project is:

David Leather, Project Director for BC Transit
520 Gorge Rd. East
Victoria BC V8W 2P3
Tel: 250-995-5697
Email: david.leather@bctransit.com

Please let me know if you have any questions or require any additional information.

Best Regards,

Season Snyder, Ph.D., R.P.Bio.
Environmental Scientist
AMEC Earth & Environmental
2227 Douglas Road
Burnaby, BC V5C 5A9
Phone (604) 294-3811
Fax (604) 294-4664
E-mail: season.snyder@amec.com
Web: www.amec.com

92 FEB 11 14 55 BF047386

LAND TITLE OFFICE
NEW WESTMINSTER/
VANCOUVER

1st NO FEE

Land Title Act FORM C Province of British Columbia

SURVEY DEPT

GENERAL DOCUMENT (If this area is for Land Title Office Use) 15-921-107

1. **APPLICATION:**
Mr. Scott E. Huyghebaert,
Stikeman, Elliott, Barristers & Solicitors
600 - 1090 West Pender Street,
Vancouver, B. C. V6E 2N7
Telephone: 631-1300

2. **PARCEL IDENTIFIER(S) AND LEGAL DESCRIPTION(S) OF LAND:**

NO PID The North 1/2 of District Lot 1758 Except Part in Reference Plan 1022 and Except part shown on subdivision plan prepared by Brian O. Brown, BCLS, the survey in respect of which was completed on June 18, 1991 and a photo-reduced copy of which is attached hereto as Schedule "A".

BFS9012

(called "the land" in the attached Terms of Instrument)

3. **NATURE OF INTEREST:**

Description	Document Reference	Person Entitled to Interest
Section 215 Restrictive Covenant	Entire Instrument Pages 2 to 6	Transferee

02/11/92 H9955f CHARGE 50.00

4. **TRANSFEROR(S):**

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

5. **TRANSFEREE(S):** (Including postal address(es) and postal code(s))

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA
as represented by the Minister responsible for Environment,
Parliament Buildings, Victoria, British Columbia, V8V 1X5

6. **EXECUTION(S):** By signing this document you are affecting the land in the manner described in Item 3 and your signature constitutes your Agreement to the contents of the Document ("Agreement" and "Document" are defined in the attached Terms of Instrument).

Officer Signature(s)	Execution Date Y M D	Party(ies) Signature(s)
	92 2 15	BRITISH COLUMBIA HYDRO AND POWER AUTHORITY by its Attorneys-in-fact:

LAND TITLE ACT
Form 1 (Section 36)
MEMORANDUM OF REGISTRATION
Registered on application received on the day and at the time written hereon
Registrar
New Westminster Land Title Office

Signature
LOU RILKOFF
Property Representative
B.C. Hydro and Power Authority
970 Burrard Street
Vancouver, B.C.
V6Z 1Y3
(As to all signatures)

HAJIME MAENO

DAMIAN JOSEPH DUNNE
(D.F. Number GB65674 as to both signatures)

A Commissioner for taking Affidavits within the Province of British Columbia

OFFICER CERTIFICATION:
Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the Evidence Act, RSBC 1979, c. 116, to take affidavits for use in British Columbia and certifies matters set out in Part 5 of the Land Title Act as they pertain to the execution of this instrument.

File No.: 187 BR Part I & 187 BR Part IA
Doc type: Section 215 Restrictive Covenant

Originator: Aki Lintunen Date: January 1992

APPROVED as to substance
Senior Land Solicitor
B.C. HYDRO

APPROVED as to form only
Solicitor
B.C. Hydro and Power Authority

REGISTERED 4000

A-088.L52

Date: 08/12/31 TITLE SEARCH PRINT - VICTORIA Time: 10:13:05
Requestor: (PG29382) PATTERSON ADAMS, BARRISTERS & SOLICITORS Page: 001
TITLE - BL422839

VANCOUVER LAND TITLE OFFICE TITLE NO: BL422839
FROM TITLE NO: BF59012

APPLICATION FOR REGISTRATION RECEIVED ON: 16 DECEMBER, 1997
ENTERED: 19 DECEMBER, 1997

REGISTERED OWNER IN FEE SIMPLE:
BRITISH COLUMBIA ELECTRIC COMPANY LIMITED
425 CARRALL STREET
VANCOUVER, BC

TAXATION AUTHORITY:
RESORT MUNICIPALITY OF WHISTLER

DESCRIPTION OF LAND:
PARCEL IDENTIFIER: 015-921-107
THE NORTH 1/2 OF DISTRICT LOT 1758 GROUP 1 NEW WESTMINSTER DISTRICT,
EXCEPT FIRSTLY: PART IN REFERENCE PLAN 1022 SECONDLY: PART IN PLAN LMP3329
THIRDLY: PART IN HIGHWAY PLAN 90

LEGAL NOTATIONS: NONE

CHARGES, LIENS AND INTERESTS:
NATURE OF CHARGE
CHARGE NUMBER DATE TIME

COVENANT
BF47386 1992-02-11 14:55
REGISTERED OWNER OF CHARGE:
HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA
BF47386
REMARKS: LTA SECTION 215

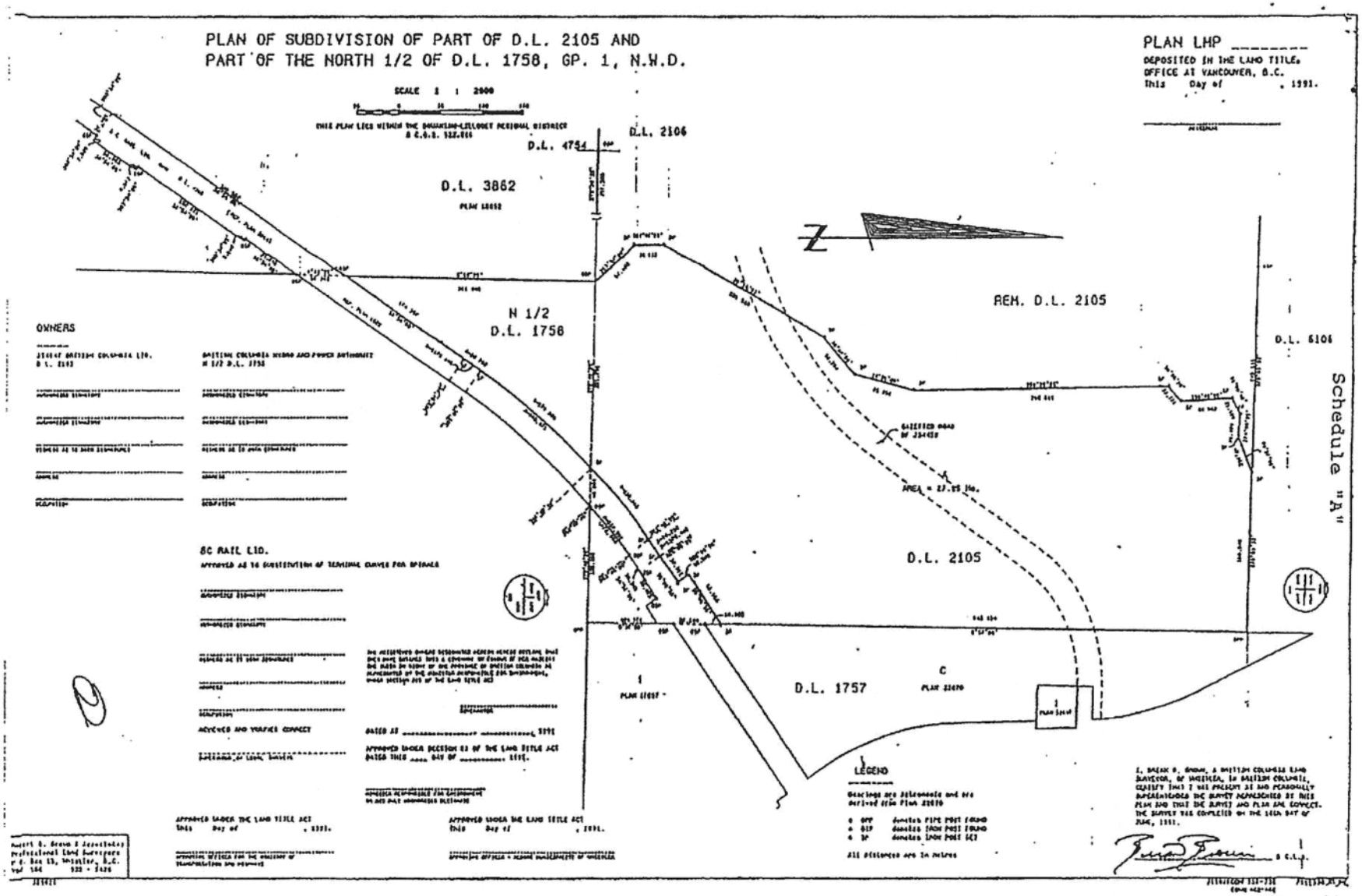
"CAUTION - CHARGES MAY NOT APPEAR IN ORDER OF PRIORITY. SEE SECTION 28, L.T.A."

DUPLICATE INDEFEASIBLE TITLE: NONE OUTSTANDING

TRANSFERS: NONE

PENDING APPLICATIONS: NONE

*** CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN ***



47386

IN WITNESS WHEREOF the parties hereto have executed this Agreement on the day and year first above written.

Signed on behalf of Her Majesty the Queen in Right of the Province of British Columbia as represented by the Minister Responsible for Environment or his duly authorized designate in the presence of:

Witness CAROL SMILEY, Commissioner for taking Affidavits for British Columbia 10334 - 152A Street Surrey, B.C. V3R 7P8

Address

Occupation

Minister Responsible for Environment or his duly authorized designate
Neil J. Peters, P.Eng.
Head, Engineering Section

SIGNED AND DELIVERED BY BRITISH COLUMBIA HYDRO AND POWER AUTHORITY in the presence of:

Tina DiPalma

970 Burrard Street

Vancouver, B.C. V6Z 1Y3

Legal Services Clerk

(Witness as to both signatures)

BRITISH COLUMBIA HYDRO AND AND POWER AUTHORITY by its Attorneys-in-fact:

HAJIME MAENO

DAMIAN JOSEPH DUNNE
(D.F. Number GB65674)

This is the instrument creating the condition or covenant entered into under Section 215 of the Land Title Act by the Grantor referred to herein and shown on the print and plan annexed hereto as Schedule "A and initialled by me.

Approving Officer

A-088.L52

THIS AGREEMENT is made as of the 13th day of DECEMBER, 1991.

BETWEEN:

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
of 1st Floor, 970 Burrard Street, in the
City of Vancouver, in the
Province of British Columbia,
V6Z 1Y3;

(hereinafter called the "Grantor")

OF THE FIRST PART

AND:

HER MAJESTY THE QUEEN IN RIGHT OF THE
PROVINCE OF BRITISH COLUMBIA, as represented
by the Minister Responsible for Environment,
of the Parliament Buildings, in the City
of Victoria, in the Province of British Columbia,
V8V 1X5;

(hereinafter called the "Grantee")

OF THE SECOND PART

WHEREAS:

A. The Grantor is the registered owner in fee simple of the following lands in the Province of British Columbia, more particularly known and described as:

Parcel Identifier: 015-921-107
The North 1/2 of District Lot 1758,
except part in Reference Plan 1022

(hereinafter called the "Lands);

B. The Grantor proposes to permit the subdivision of the Lands, according to a plan of subdivision completed and certified correct on the 18th day of June, 1991, by Brian O. Brown, British Columbia Land Surveyor (the "Plan"), a copy of which is attached hereto as Schedule "A", and consolidation of part of the subdivided Lands with that portion of District Lot 2105, except portions in (a) Reference Plan 1022 and (b) Plans 13275, 13276, 13277 and 17097, shown outlined on the Plan, thereby forming the following lots:

1. Lot A, District Lots 2105 and 1758, Plan LMP _____
(hereinafter called the "New Lot");

2. North 1/2 of District Lot 1758, Except part in Reference Plan 1022, and Except part shown on subdivision plan prepared by Brian O. Brown, BCLS, the survey in respect of which was completed n June 18, 1991 and a photo-reduced copy of which is attached hereto as Schedule "A".
(hereinafter called the "Remainder");

3. Remainder of District Lot 2105, ~~Plan LMP~~ _____ ...

C. A covenant under Section 215 of the Land Title Act is required as a condition of the consent to approval of the subdivision of the Lands by the Minister Responsible for Environment under Section 82 of the Land Title Act..

D. Section 215 of the Land Title Act provides that there may be registered as a charge against title to any land a covenant in favor of the Grantee that land is to be used in a particular manner or that land is not to be subdivided except in accordance with the covenant;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the sum of ONE DOLLAR ($1.00) of lawful money of Canada and other good and valuable consideration paid by the Grantee to the Grantor, the receipt of which is hereby acknowledged, the Grantor does hereby covenant and agree with the Grantee under Section 215 of the Land Title Act of the Province of British Columbia as follows:

1. The Grantor, on behalf of itself and its successors and assigns, hereby covenants and agrees with the Grantee that the Remainder, or portions thereof, shall not be used for purposes other than:

   (a) uses necessary for, or incidental or ancillary to, utility or communication purposes; or

   (b) uses not included in clause 1(a) above, which do not require the construction of one or more buildings,

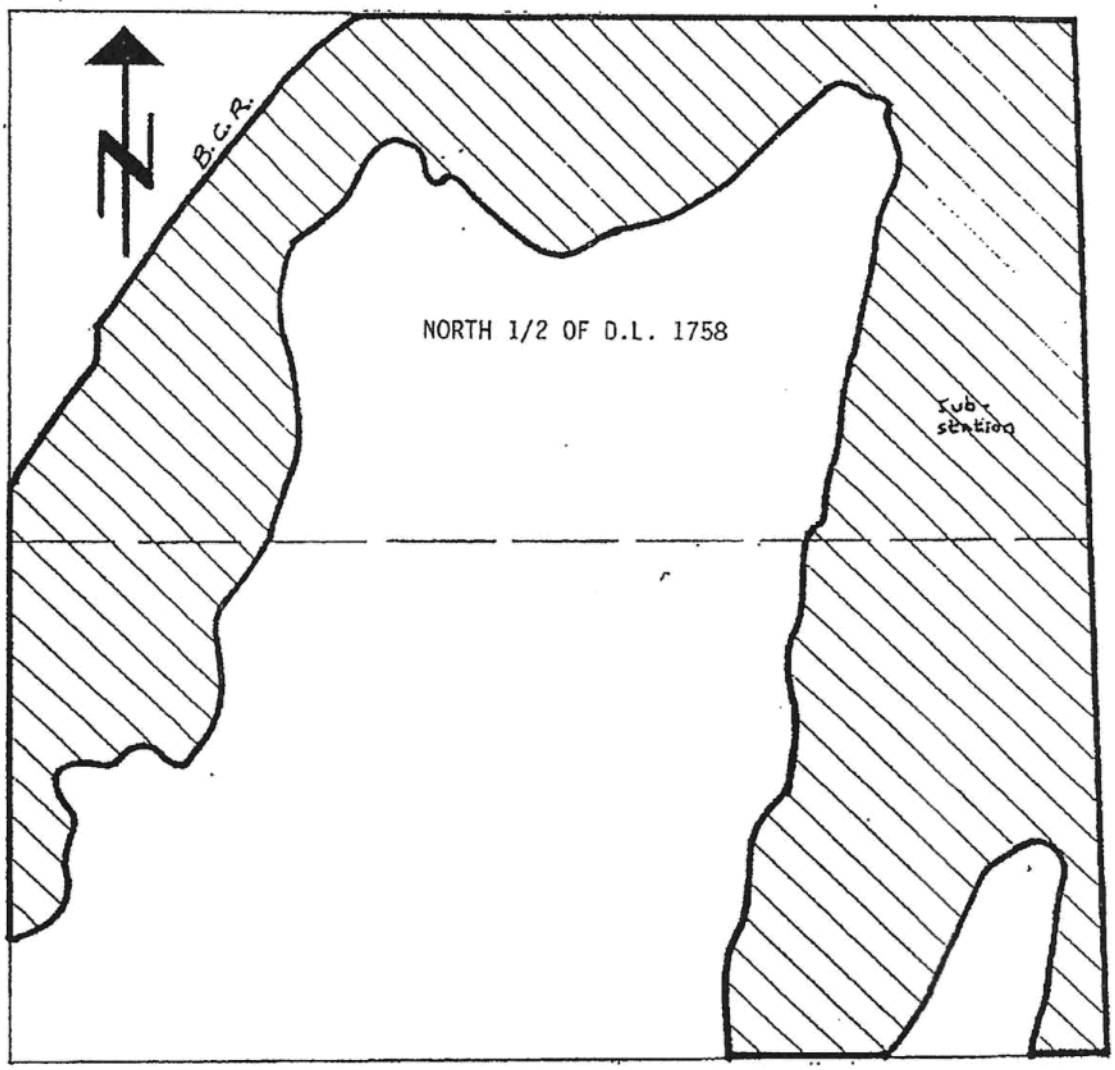
   unless the Minister of Environment, Lands and Parks consents to such other use or uses, who may require, as a condition of consent, floodproofing of new developments and registration of restrictive covenants.

2. Notwithstanding clause 1 above, the Grantee, on behalf of itself and its successors and assigns, hereby covenants that the consent required under clause 1 above, shall only be required for any new developments a portion of which is located in the areas of the North 1/2 of District Lot 1758 shown hatched on the attached sketch marked as Appendix "1", which forms a part hereof.

Personal only OK J.S.

APPENDIX I

47386 END



SCALE : 1:5000

50 0 50 100 150 200

METRES

Ullah, Aman ENV:EX

From: Reddekopp, Sheldon ENV:EX
Sent: Thursday, February 19, 2009 12:49 PM
To: Ullah, Aman ENV:EX
Subject: BC Whistler Facility
Attachments: BC Transit Whistler Facility - 2nd Amendment.pdf

Hi Aman,

Find my comments attached.

Thanks,
Sheldon

BRITISH COLUMBIA
The Best Place on Earth

February 19, 2009 FILE: **A2005549-2nd-Am**

Water Stewardship Division
Ministry of Environment
10470 – 152nd Ave
Surrey, BC V3R 0Y3

Dear Aman Ullah,

Re: BC Transit - Whistler Facility

Ecosystems has no objections to the proposed works subject to the following terms and conditions:

That the proponent adhere to the plans and project design outlined in the letter of February 4, 2009 from AMEC Earth and Environmental to the Water Stewardship Division. The proponent should adhere to the Best Management Practices for Amphibians and Reptiles in Urban and Rural BC.

The proponent should also keep project staff and Environmental Monitors informed of potential amphibian species in the project area and the salvage and mitigation techniques for managing at-risk species.

These species include, but are not limited to, Red Legged Frog individuals that may already be in breeding ponds in February and Western Toad individuals that are probably still in hibernation in terrestrial areas. Breeding individuals of newts, long-toed and northwestern salamanders may also be found in ponds in February and March.

ESD requests a copy of detailed landscaping plans developed for this project as well as any reports prepared by the Environmental Monitors for the proponent.

Sincerely,

Sheldon Reddekopp
Ecosystems Section
Environmental Stewardship

Ministry of Environment
Environmental Stewardship
Lower Mainland Region
Mailing/Location Address:
10470-152 Street
Surrey BC V3R 0Y3
Telephone: (604) 582-5222
Facsimile: (604) 930-7119
http://www.gov.bc.ca/
http://www.gov.bc.ca/env/

Ullah, Aman ENV:EX

From: Snyder, Season [Season.Snyder@amec.com]
Sent: Wednesday, February 18, 2009 8:52 AM
To: Ullah, Aman ENV:EX
Subject: RE: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

Hi Aman,

Further to our discussion yesterday, the landscape architects are currently working on the planting plan and I can report more detailed values for the stormwater wetland and riparian/upland habitat. In the report, we stated that the stormwater wetland provided approximately 1268 m2 of additional habitat - when planted we can achieve 898 m2 of marsh habitat and 488 m2 of open water habitat (for the total of 1386 m2, a little better). We also now know that the riparian banks and other upland areas will encompass approximately 10,298 m2 of native planting. The main channel habitat and off-channel marsh habitat are as reported.

Should you have any questions, please let me know.

Cheers,

Season Snyder, Ph.D.
Environmental Scientist
AMEC Earth & Environmental
2227 Douglas Road
Burnaby, BC V5C 5A9
Phone (604) 294-3811
Fax (604) 294-4664
E-mail: season.snyder@amec.com
Web: www.amec.com

From: Ullah, Aman ENV:EX [mailto:Aman.Ullah@gov.bc.ca]
Sent: Wednesday, February 04, 2009 4:24 PM
To: Snyder, Season
Subject: RE: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

Thanks Season for your e-mail (below) providing the proponent's response on thee Ministry's concerns. We would review the information and would get back to you if some clarification is necessitated.

Regarding you call tomorrow, please be informed that I am away from the office. You might check me after 3:00 PM.

Regards,

Aman Ullah

Water Stewardship Officer

Ministry of Environment

Water Stewardship Division

Lower Mainland Region

2nd Floor - 10470 - 152nd Street

Surrey BC V3R 0Y3

Phone: 604-582-5232 Fax: 604-582-5235

mailto:aman.ullah@gov.bc.ca

From: Snyder, Season [mailto:Season.Snyder@amec.com]
Sent: Wednesday, February 4, 2009 3:02 PM
To: Ullah, Aman ENV:EX
Cc: Reddekopp, Sheldon ENV:EX; Bekhuys, Timothy J
Subject: RE: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

Good afternoon Aman,

On behalf of BC Transit, AMEC is submitting the attached memorandum in response to the Ministry's comments on the Amendment to Approval #2005549 Application sent on October 28, 2008.

Please find the attached package that includes the memo, design drawings, and BC Hydro's support letter of the Transit Facility development on their property.

I will give you a call tomorrow to confirm you've received everything OK and to discuss any initial concerns, if necessary.

Best Regards,

Season Snyder, Ph.D.
Environmental Scientist
AMEC Earth & Environmental
2227 Douglas Road
Burnaby, BC V5C 5A9
Phone (604) 294-3811
Fax (604) 294-4664
E-mail: season.snyder@amec.com
Web: www.amec.com

From: Ullah, Aman ENV:EX [mailto:Aman.Ullah@gov.bc.ca]
Sent: Tuesday, December 02, 2008 5:24 PM
To: Snyder, Season
Cc: Reddekopp, Sheldon ENV:EX
Subject: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

Hi Season,

Environmental Stewardship Division (ESD) has reviewed the above noted submission as a part of our consultation process with other regulatory agencies and has provided some specific concerns with the proposed works:

The proposed amendment more than doubles the area of in-stream impacts and increases the removal of riparian/upland habitat by more than 25%. The stormwater retention wetland in the original application is now planned as a detention pond and as such offers significantly less in terms of ecological values.

The amended application now includes a converted stream crossing and apparently over 30 metres of channelized stream structures of unknown form. These design changes significantly reduce the fish and wildlife function and values discussed in the original application, which seems opposite the stated project objectives.

It is unclear from the application for amendment how the design changes, most notably those cited above, will result in reduced overall project footprint as was stated in the attached letter of October 28, 2008 from AMEC Earth & Environmental.

ESD recommends that the proponent consider alternative designs that will more likely succeed in meeting the mitigation objectives detailed in the original application.

The proponent had not indicated how they will adhere to the Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia available at:

http://www.env.gov.bc.ca/wld/BMP/herptile/HerptileBMP_final.pdf

A general layout of the facility has been attached with the application which doesn't provide the details of the proposed in-stream works. Please submit the drawings giving the details of the proposed works for proceeding further into the application for the Water Act amendment approval.

If you have any questions in this regard, please contact Sheldon Reddekopp, ESD at 604 582-5371.

Regards,

Aman Ullah
Water Stewardship Officer
Ministry of Environment
Water Stewardship Division
Lower Mainland Region
2nd Floor - 10470 - 152nd Street
Surrey BC V3R 0Y3
Phone: 604-582-5232 Fax: 604-582-5235
mailto:aman.ullah@gov.bc.ca

Ullah, Aman ENV:EX

From: Snyder, Season [Season.Snyder@amec.com]
Sent: Thursday, February 5, 2009 8:40 AM
To: Ullah, Aman ENV:EX
Subject: RE: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

Thanks Aman,

I see you got the file OK. BC Transit is very anxious to keep the ball rolling, as you know. We really appreciate you and Sheldon giving the file priority. Transit has let me know that in order to meet their construction schedule for operations during the Olympics, they need to get started next week. I understand this is short notice - so anything you need to help answer questions, etc. please don't hesitate to call me. I have a direct line - 604-473-5309 and cell - 778-999-0025 as well.

Thanks again!

Season Snyder, Ph.D.
Environmental Scientist
AMEC Earth & Environmental
2227 Douglas Road
Burnaby, BC V5C 5A9
Phone (604) 294-3811
Fax (604) 294-4664
E-mail: season.snyder@amec.com
Web: www.amec.com

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Regarding you call tomorrow, please be informed that I am away from the office. You might check me after 3:00 PM.

Regards,

Aman Ullah

Water Stewardship Officer

Ministry of Environment

Water Stewardship Division

Lower Mainland Region

2nd Floor - 10470 - 152nd Street

Surrey BC V3R 0Y3

Phone: 604-582-5232 Fax: 604-582-5235

mailto:aman.ullah@gov.bc.ca

From: Snyder, Season [mailto:Season.Snyder@amec.com]
Sent: Wednesday, February 4, 2009 3:02 PM
To: Ullah, Aman ENV:EX
Cc: Reddekopp, Sheldon ENV:EX; Bekhuys, Timothy J
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Phone (604) 294-3811
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E-mail: season.snyder@amec.com
Web: www.amec.com

From: Ullah, Aman ENV:EX [mailto:Aman.Ullah@gov.bc.ca]
Sent: Tuesday, December 02, 2008 5:24 PM
To: Snyder, Season
Cc: Reddekopp, Sheldon ENV:EX
Subject: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

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The amended application now includes a converted stream crossing and apparently over 30 metres of channelized stream structures of unknown form. These design changes significantly reduce the fish and wildlife function and values discussed in the original application, which seems opposite the stated project objectives.

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If you have any questions in this regard, please contact Sheldon Reddekopp, ESD at 604 582-5371.

Regards,

Aman Ullah
Water Stewardship Officer
Ministry of Environment
Water Stewardship Division
Lower Mainland Region
2nd Floor - 10470 - 152nd Street
Surrey BC V3R 0Y3
Phone: 604-582-5232 Fax: 604-582-5235
mailto:aman.ullah@gov.bc.ca

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Sent: Wednesday, February 4, 2009 4:24 PM
To: 'Snyder, Season'
Subject: RE: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

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Water Stewardship Officer

Ministry of Environment

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Sent: Tuesday, December 02, 2008 5:24 PM
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Subject: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

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Regards,

Aman Ullah
Water Stewardship Officer
Ministry of Environment
Water Stewardship Division
Lower Mainland Region
2nd Floor - 10470 - 152nd Street
Surrey BC V3R 0Y3
Phone: 604-582-5232 Fax: 604-582-5235
mailto:aman.ullah@gov.bc.ca

4 February 2009

AMEC File:VE51812

VIA Courier

FrontCounter BC
Lower Mainland Region
Suite 200-10428 153rd St
Surrey BC
V3R 1E1

Attention: Mr. Aman Ullah
Water Stewardship Officer
Ministry of Environment, Water Stewardship Division

Reference: **BC Transit – Whistler Facility**
Order for Amendment to Approval #2005549:
Response to Request for Additional Information

Dear Mr. Ullah,

AMEC Earth & Environmental (AMEC), on behalf of BC Transit, is submitting this memorandum in response to comments received from the Ministry of Environment (MOE) on the Order for Amendment to Approval #2005549 Application submitted on October 28, 2008. AMEC received comments from MOE via email on December 2, 2008, requesting additional information on site planning, potential environmental impacts and mitigation design. Please find herein a response to each comment, as well as detailed engineering drawings attached for your review and consideration.

Please note, the original approval #2005549 allowed for instream works required to infill a portion of the unnamed creek channel and to divert the existing creek around the project footprint. BC Transit has moved forward with the permitted works and a portion of the site has been preloaded this winter.

Comment #:

1) *The proposed amendment more than doubles the area of instream impacts and increases the removal of riparian/upland habitat by more than 25%. The stormwater retention wetland in the original application is now planned as a detention pond and as such offers significantly less in terms of ecological values.*

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The previous approval #2005549 permitted an instream impact area of approximately 240 square metres (m^2) and the removal of approximately 16,200m^2 of riparian habitat. As part of the current site plan attached, road construction and culvert installation will result in additional impacts to the unnamed creek and riparian habitat estimated to be 427m^2 of instream area and 4,600m^2 of riparian area.

The current site design presents an opportunity to mitigate the loss of 667m^2 of instream area with the creation of 1,335m^2 of open water aquatic habitat. This equates to a ratio of 2:1. This site plan also includes the creation of approximately 850m^2 of marsh habitat. The marsh habitat will consist of vegetation present where surface water persists and plants are occasionally to permanently inundated. The plant community will be dominated by grass-like species to help improve water quality and protect the banks of ponds and channels from erosion.

Opportunities to replace riparian habitat on the project site are few due to the development footprint. As such, the mitigative objective is to provide the highest quality habitat possible in the space available. This involves increasing habitat complexity through variations in topography, landscaping of all bank slopes and upland areas not required for facility operations with a diversity of native riparian and upland tree and shrub species, and incorporating wildlife enhancement structures. The site design endeavours to create contiguous aquatic and riparian habitat from the south end of the site to the north in order maintain habitat linkages between Nesters Pond and Nicklaus North Golf Course. Further, the current site design includes a reinstated stormwater retention wetland at the north end of the site, which offers an additional 1268 m^2 of wetland habitat.

A formal landscaping plan is currently being developed and will indicate the methods used to establish and maintain vegetation coverage, and will provide the ultimate areas to include wetland, riparian and upland plantings.

Habitat design is described in better detail in response numbers 5 and 6 below.

2) *The amended application now includes a culverted stream crossing and apparently over 30 metres of channelized stream structures of unknown form. These design changes significantly reduce the fish and wildlife function and values discussed in the original application, which seems opposite the stated project objectives.*

The site design includes two culverted stream crossings, one under the site's main access road and the other under the south east corner of the maintenance building. These two culverts are unavoidable given the size constraints of the site. However, the new channel design has now eliminated the need for an additional culvert and kept the channel open near the BC Hydro substation.

3) *It is unclear from the application for amendment how the design changes, most notably those cited above, will result in reduced overall project footprint as was stated in the attached letter of October 28, 2008 from AMEC Earth & Environmental.*

and

4) ESD recommends that the proponent consider alternative designs that will more likely succeed in meeting the mitigation objectives detailed in the original application.

The design changes that have resulted over the past several months of site planning were necessitated by various site constraints, including geotechnical, BC Hydro statutory right-of-ways, and the engineering safety and design requirements of such a facility. Various options to avoid and minimize impacts to the creek were considered. However, the location of the creek through roughly the center of the property seriously limited the feasibility and practically of certain design alternatives. Below is a list of the site constraints, in addition to the creek, that were considered during the site planning stage. Many of the constraints below are actually requirements for building on the property.

1) BC Hydro has a mandate for no structures to be built under the BC Hydro lines to the north and south, thus restricting buildings to the central portion of the property.
2) BC Hydro recommends that the buildings can not be parallel to the hydro lines.
3) Almost all of the developable area on the site is restricted to the central portion of the property, bound to the east by Hwy 99 and to the west by higher ground. The Hydro towers further restrict site development on the west side of the property.
4) BC Transit opted to develop the lower-lying area adjacent to Highway 99 and to restrict the building location to the west of the site, as far as possible. By doing this, a linear corridor of habitat could be maintained and/or enhanced along the east side of the site to provide connectivity between areas north and south of the property.
5) Hydrogen and diesel refuelling stations must be sited away from the hydro lines which affected the site layout.
6) The current site layout optimizes cut/fill quantity balance and shortens the construction schedule and ability to complete the facility before the Olympic Games.
7) The functional requirements of the site have ultimately determined the optimum size and layout of the facility, such as numbers and size of buses (50 buses that are 40 feet long), the bus turning circles, number of maintenance bays (6).

The overall project footprint was reduced compared to the design in the original application submission. The smaller footprint created additional area along the east boundary and north end of the property for the natural wetland complex and stormwater wetland. These areas are described in better detail in response number 6 below.

5) *The proponent has not indicated how they will adhere to the Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia.*

Prior to any instream activities, a salvage of fish and amphibians will be completed. However, the presence of adult amphibians, as well as other wildlife species, within or passing through the project site is not expected during winter months. An Environmental Monitor (EM) will be on-site during clear and grubbing activities and the EM is aware of all potential wildlife issues, including the presence of amphibians. The EM will advise site crews of the potential presence of wildlife and will record any observations on or near the site in monitoring reports.

The key document for managing impacts to amphibian and reptile populations and habitats is *Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia, Ministry of Water, Land and Air Protection, 2004.* This document describes Best Management Practices (BMPs) designed to help maintain the viability of native amphibian and reptile populations in areas subject to land development. These BMPs have been referenced for this project to provide guidance on wildlife habitat avoidance, mitigation and enhancement opportunities that can be incorporated during the construction and operational phases of the project. The following procedures specific to amphibian habitats will be employed, along with mitigation treatments and provisions:

Maintain wildlife habitat connectivity. Contiguous habitat will be created from the south to the north end of the project site as a series of channel, pond, wetland and riparian areas. The current wetland design maintains the pre-existing drainage pattern to the extent feasible, with the following changes:

- The new creek channel flows along the eastern boundary of the site from south to north, rather than through the centre of the site along the base of the hillslope.
- The new creek channel has a defined bed and bank through the entire site (the existing creek channel is not well defined through a majority of the site).
- The design includes native landscaping along the length of the channel corridor, and as part of the stormwater wetland.
- Wildlife enhancements such as coarse woody debris, nest boxes and bat houses will be constructed to enhance wildlife use of the site.
- The large stormwater wetland will include both deep and shallow pools and vegetated marsh habitat.
- Culverts are required at two locations, but have been designed for fish and wildlife passage and are as short as possible in length.

Limit wildlife mortality. The greatest ground disturbing activities have been scheduled for this winter (February/March 2009) when amphibians are least likely to use the habitat. The relocated channel will be operational in the spring in the event amphibians use the area during the breeding or aquatic phase of their lifecycle.

Isolate habitat and salvage individuals. Mitigation efforts will be made to isolate habitat, salvage and relocate any amphibians prior to site disturbance.

Monitor during key activity periods. The EM will monitor during animal activity periods when wildlife may be impacted by construction activities. The EM will ensure that all construction personnel are briefed on wildlife issues at the start of activities. All personnel will be required to report wildlife sightings that may impact or be impacted by the construction related activity.

Minimize clearing in suitable habitat. To the extent feasible, the project will minimize the amount of disturbance to moist or wet area and in the vicinity of substantial coarse woody debris. The limits

of work will be delineated prior to any clearing activities and the EM will be on site to inspect those limits prior to ground disturbance.

Salvage appropriate CWD. During clearing activities, a portion of coarse woody debris material will be set aside for use in amphibian habitat creation.

6) A general layout of the facility has been attached with the application which doesn't provide the details of the proposed instream works. Please submit the drawings giving the details of the proposed works for proceeding further into the application for the Water Act amendment approval.

Please see Figures 1A, 1B, 2, 3 and 4 for the attached engineering drawings that illustrate the proposed location of the relocated creek channel around the project footprint. This includes areas where the channel opens into ponds and areas proposed for wetland and marsh habitat complexing. Also included is the stormwater wetland at the north end of the site.

There are two proposed wetland systems to be created on the project site, one to receive and treat stormwater runoff and the other, a natural wetland to convey the existing unnamed creek around the project footprint. These two systems will be tied together at the north end of the site where treated stormwater will meet the natural wetland immediately prior to discharge to the adjacent property. The natural wetland complex is a series of ponds, channels, marsh, and riparian habitats. The stormwater wetland has been relocated to the north end of the site and is designed to meet municipal stormwater requirements and to accommodate projected site runoff estimates. The eastern and northern boundaries of the project site will be entirely comprised of this newly created habitat.

In general terms, habitat creation will involve the following:

- Creation of a relocated channel that will maintain a 3.0m width and either 2:1 or 3:1 bank slopes. There is one area, mid-site, where the channel width will decrease to 1.5m and the side slopes will comprise a rock wall.
- Creation of three pond and emergent marsh habitat areas.
- The ponds are designed to support submerged aquatic vegetation and floating vegetation. The marsh habitat will be complexed to support a variety of wetland plant species, to provide food and cover for wildlife, and to improve aesthetics.
- The side slopes separating the wetland from the surrounding development will support a variety of native riparian and upland tree, shrub and grass species. Special consideration will be given to those species having high wildlife value (e.g. berry producing plants). Vegetation will serve to provide food, cover and nesting habitat for wildlife.
- The large stormwater wetland is designed to provide additional habitat value to the site.
- A smaller stormwater treatment pond is located adjacent to the access road at the southern end of the site. The small pond will treat access road runoff prior to discharge into the natural wetland complex.

Figure 1A illustrates how the new channel will be diverted at the south end of the site where it will be conveyed under the proposed access road through a 26.82 meter box culvert (1800mm x 900mm) designed for fish and wildlife passage. At the culvert invert, water will flow into the first of four constructed ponds. The ponds will be complexed with emergent marsh habitat and CWD in an effort to enhance wildlife and macro-invertebrate habitat use. As the creek flows north, a second culvert is required to convey water under the Transit Facility footprint where the building is in very close proximity to an existing fence at the BC Hydro Rainbow Substation. This second culvert will convey the water 20m through a 1200mm diameter concrete pipe. This is a significant reduction from the previous site design which called for over 30m of culvert at this location.

Immediately downstream of the second culvert is another pond and emergent marsh area. The channel then flows parallel to the eastern site boundary for approximately 100m. The previous site design called for a culvert in this location given the narrow space to work within. However, the design has now been changed to keep the channel open. In order to achieve this, the channel width was decreased from 3.0m to 1.5m and the side slopes (at 0.5:1) will be rock walls for a short distance prior to entering a third, large pond and emergent marsh (Figure 1B). At the north end of the site, the creek channel opens into a large emergent marsh area prior to discharge off-site.

The stormwater wetland, Figure 2, has been moved to the north end of the site. This wetland is designed to temporarily store site runoff in a series of deep and shallow pools to promote the breakdown and removal of pollutants from the water before discharging off-site. It has been designed to accommodate site runoff estimated from paved surfaces and rooftops, and to meet municipal requirements for a 100 year storm event. Stormwater runoff will be conveyed to the wetland via a storm sewer main and first enter a sediment forebay designed to dissipate velocity and sediment loading. A series of berms or high marsh wedges are placed at regular intervals and right angles to the direction of flow. Between these wedges is open water habitat. Before exiting the pond, water will be retained in a micropool near the outlet. The pond outlet is designed to convey water from an outlet control plate with an orifice for flow restriction. The outlet structure will have an overflow to contend with a 100 year storm event and a removable plate for maintenance. Water will then exit in the north east corner of the site into the adjacent property only after significant sediment settling time has been achieved. Around the stormwater wetland, there will be maintenance access and a vegetated riparian buffer that will be planted with native trees and shrubs.

Closure

This memorandum is being submitted on behalf of BC Transit in support of an amendment to the Section 9 *Water Act* Approval #2005549 for construction of the Whistler Transit Facility and works in and about the unnamed creek tributary to Alta Lake. An Amendment for Approval Form and an application fee cheque for $100 payable to the Minister of Finance was enclosed with a previous memorandum dated October 28, 2008 to Front Counter BC from AMEC Earth & Environmental referencing the BC Transit – Whistler Facility Order for Amendment to Approval #2005549 under Section 9 of the *Water Act*.

A detailed landscaping plan is currently being designed by Tom Barratt Ltd. Upon request, a copy of the landscaping plans will be submitted to MOE.

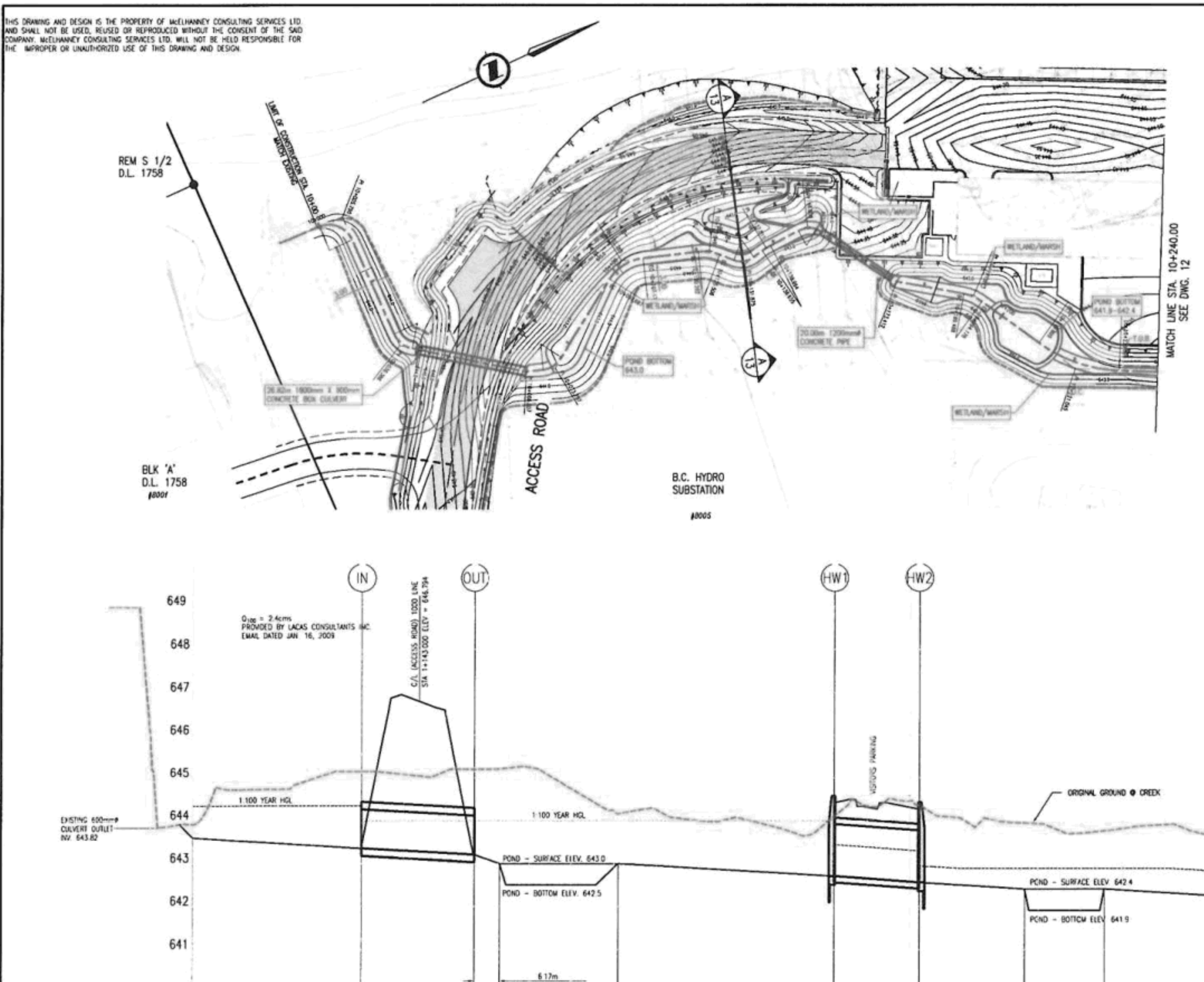
If you have any questions please contact the undersigned at 604-294-3811.

Respectfully Submitted,

Season R. Snyder, Ph.D.
Environmental Scientist

Tim Bekhuys, B.Sc., R.P.Bio., P.Biol.
Senior Environmental Scientist

DRAWINGS



PROPOSED STORM SEWER INVERTS, LENGTHS & GRADES	643.60	39.99m CREEK DIV. @ -0.63%	643.35	26.82m 1800x900mm CONC. BOX CULV. @ -0.56%	643.20	643.00	28.01m POND @ 0.00%	643.00	51.18m CREEK DIV. @ -0.59%	642.70

PROPOSED STORM SEWER INVERTS, LENGTHS & GRADES (cont.)	20.00m 1200mmø C76-III CONC. PIPE @ -0.75%	642.55	24.64m CREEK DIV. @ -0.61%	642.40	18.78m POND @ 0.00%	642.40	24.41m CREEK DIV. @ -0.60%	

ORIGINAL GROUND ELEVATION	643.91	644.74	645.16	645.16			645.25	644.24		644.00	643.80		644.34		644.08		643.92		643.81	643.66
CHAINAGE	10+000.00	10+020.00	10+039.895 / 10+040.00	10+060.00	10+066.807	10+072.974	10+080.00	10+100.00	10+100.987	10+120.00	10+140.00	10+152.163	10+160.00	10+172.163	10+180.00	10+196.807	10+200.00	10+215.588	10+220.00	10+240.00

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INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

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LEGAL DESCRIPTION OF PROPERTY
PLAN SHOWING TOPOGRAPHY AND SITE FEATURES
REM N 1/2, D.L. 1758
GP. 1, N.W.D.

BENCHMARKS
All elevations refer to Control Monument No. 1685
Located at LOCATED UNDER THE MONS OVERPASS
Elevation 640.702m.

McElhanney
McElhanney Consulting Services Ltd.
13160-88 Ave., Surrey, B.C. V3W 3K3
Tel. (604)596-0391 Fax(604)596-8853

Approved Seal

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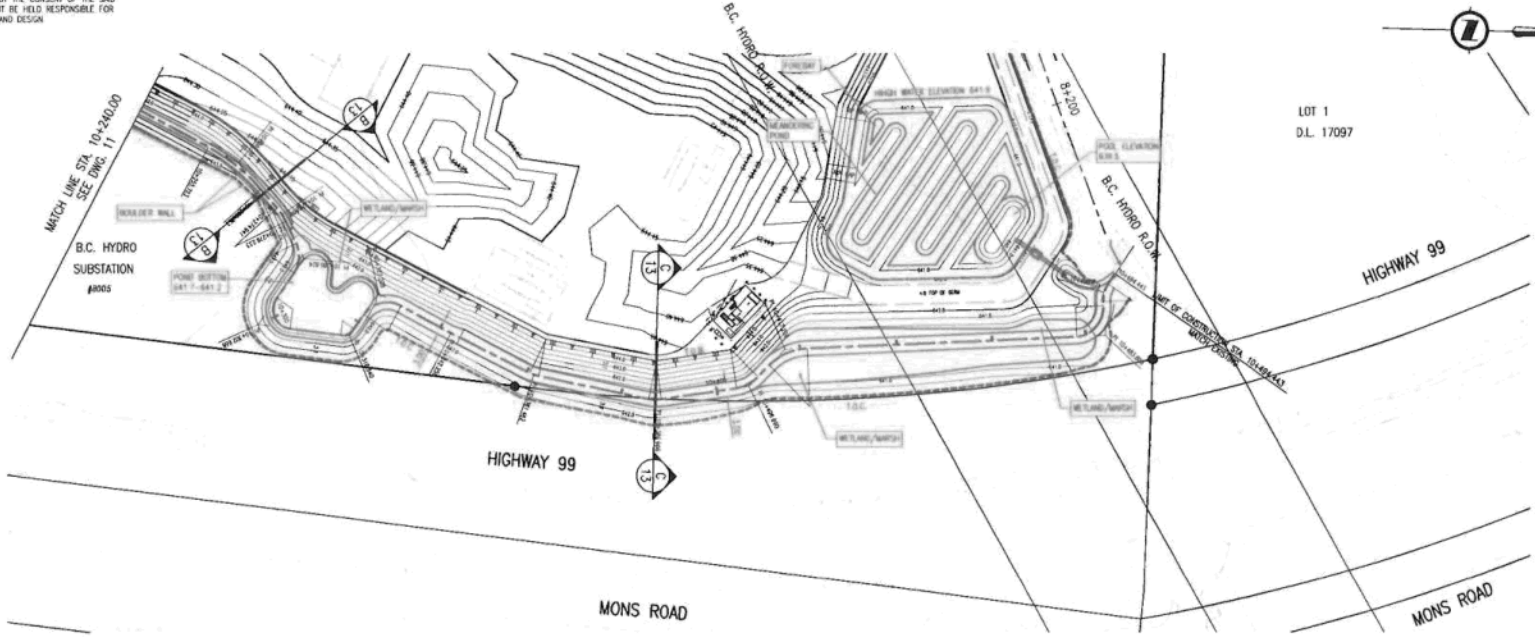
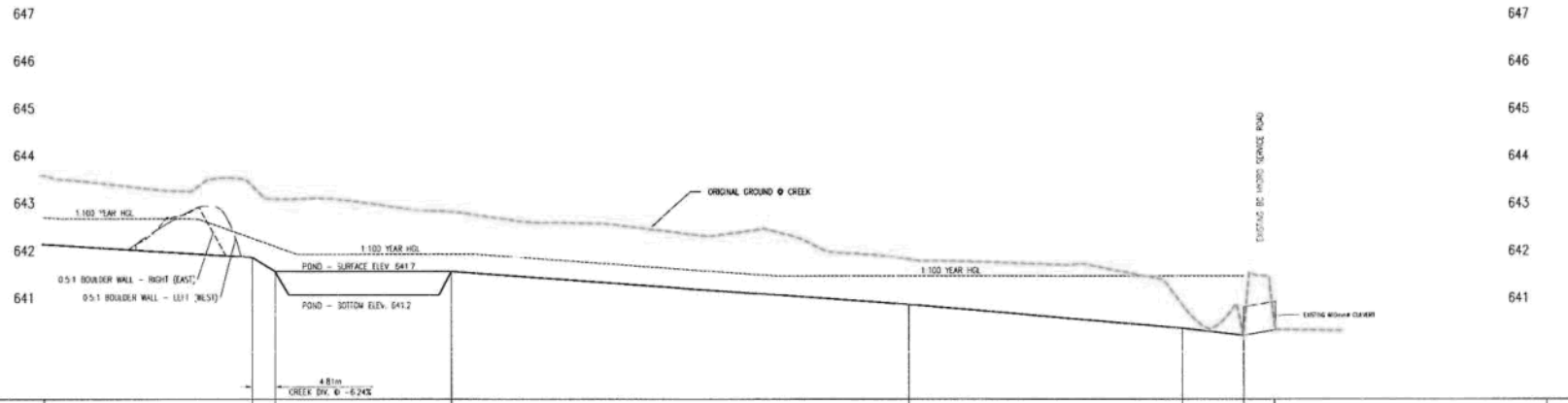
595 BURRARD STREET, VANCOUVER, B.C. V7X 1L4 TEL. 604-632-3350 - FAX 604-632-3351

NESTOR'S CREEK DIVERSION
10 000 LINE - STA. 10+000 TO STA. 10+240
BC TRANSIT FACILITY
8005 HWY. 99, WHISTLER, B.C.

Scale	H: 1:500 V: 1:50
Drawn	HR
Checked	JV
Designed	JV
Checked	JV
Approved	VS

City Project No. –
City Drawing No. –
Job No. 2111-02612-0
Date –
Drawing No. 11
of –
Revision –





CHAINAGE	ORIGINAL GROUND ELEVATION	PROPOSED STORM SEWER INVERTS, LENGTHS & GRADES
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10+260.00	643.44	
10+280.00	643.65	642.05
10+282.306		641.70
10+288.812		
10+300.00	643.22	
10+320.00	642.98	642.70
10+324.653		
10+340.00	642.75	
10+360.00	642.68	
10+380.00	642.44	
10+400.00	642.36	
10+420.00	642.00	641.00
10+422.541		
10+440.00	641.90	
10+460.00	641.86	
10+480.00	641.18	640.50
10+481.294		640.20
10+484.443	641.57	

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BENCHMARKS
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Located at LOCATED UNDER THE MONS OVERPASS
Elevation 640.702m

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8005 HWY. 99, WHISTLER, B.C.

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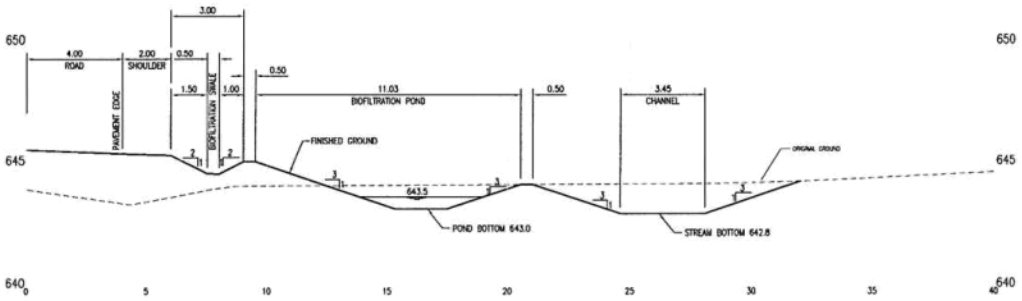
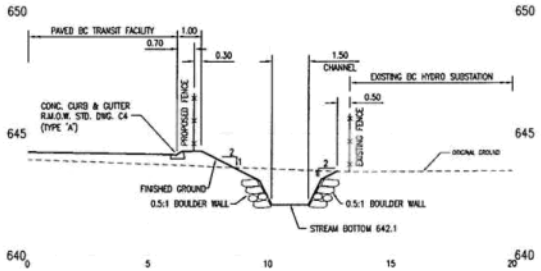
Designed	JV	Job No. 2111-02612-0
Checked	JV	Date -
Approved	VS	

Drawing No. 12 of -
Revision -



A/11 SECTION



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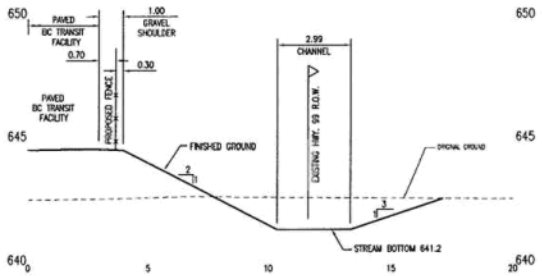

C/12 SECTION

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BENCHMARKS
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Located at LOCATED UNDER THE MONS OVERPASS
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CREEK SECTIONS
BC TRANSIT FACILITY
8025 HWY. 99, WHISTLER, B.C.

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Checked	JV
Designed	JV
Checked	JV
Approved	VS

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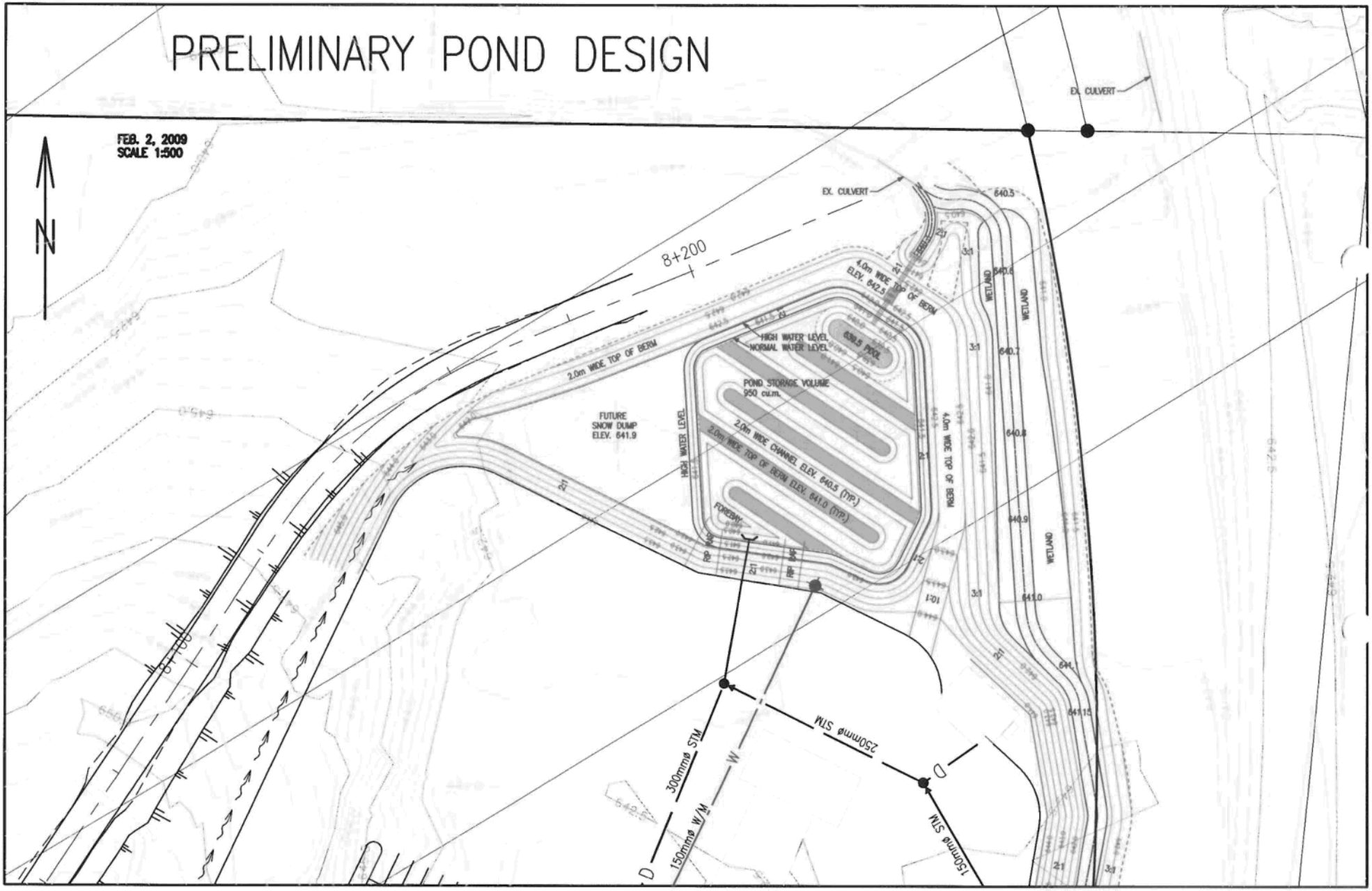
City Drawing No. -
Job No. 2111-02612-0
Date -

Drawing No. 13 of -
Revision -


PRELIMINARY POND DESIGN
FEB. 2, 2009
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EX. CULVERT
8+200
4.0m WIDE TOP OF BERM
ELEV. 642.5
HIGH WATER LEVEL
NORMAL WATER LEVEL
0.5m POOL
2.0m WIDE TOP OF BERM
POND STORAGE VOLUME
950 cu.m.
FUTURE
SNOW DUMP
ELEV. 641.9
HIGH WATER LEVEL
2.0m WIDE CHANNEL ELEV. 640.5 (TYP.)
2.0m WIDE TOP OF BERM ELEV. 641.0 (TYP.)
FOREBAY
RIP RAP
4.0m WIDE TOP OF BERM
WETLAND
640.5
640.6
640.7
640.8
640.9
641.0
641.15
3:1
2:1
10:1
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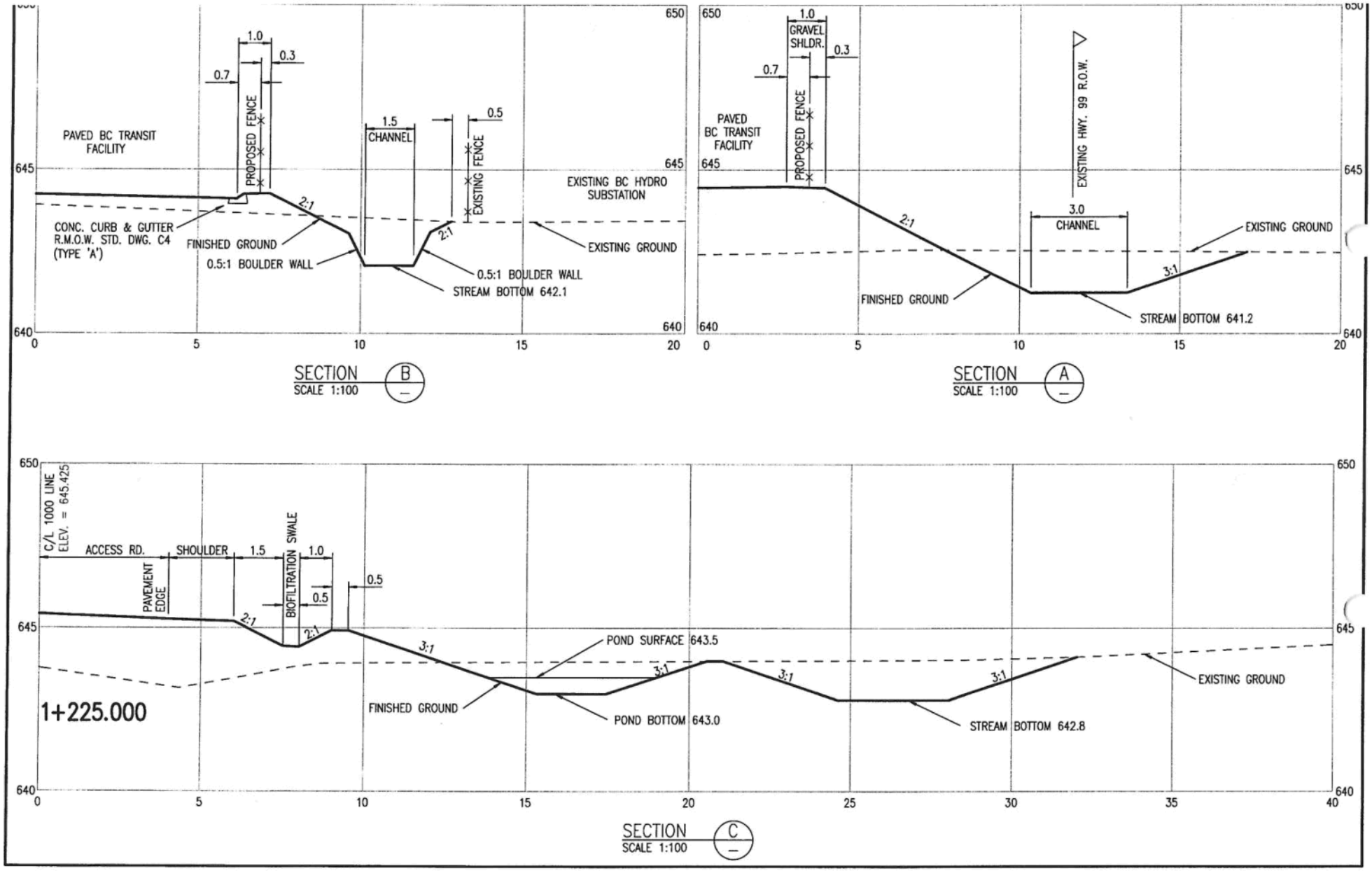
150mmø STM


650
645
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PROPOSED FENCE
1.5
CHANNEL
0.5
EXISTING FENCE
PAVED BC TRANSIT FACILITY
EXISTING BC HYDRO SUBSTATION
CONC. CURB & GUTTER R.M.O.W. STD. DWG. C4 (TYPE 'A')
FINISHED GROUND
0.5:1 BOULDER WALL
2:1
EXISTING GROUND
STREAM BOTTOM 642.1
SECTION B
SCALE 1:100
GRAVEL SHLDR.
EXISTING HWY. 99 R.O.W.
3.0
3:1
STREAM BOTTOM 641.2
SECTION A
SCALE 1:100
C/L 1000 LINE ELEV. = 645.425
ACCESS RD.
SHOULDER
BIOFILTRATION SWALE
PAVEMENT EDGE
POND SURFACE 643.5
POND BOTTOM 643.0
STREAM BOTTOM 642.8
1+225.000
25
30
35
40
SECTION C
SCALE 1:100

WHISTLER TRANSIT FACILITY

NESTORS CREEK RELOCATION (10000 LINE)

APPENDIX A
BC Hydro – Letter of Support

February 2, 2009

Season Snyder, Ph. D
Environmental Scientist
Amec Earth & Environmental
2227 Douglas Road
Burnaby, BC
V5C 5A9

Dear Season:

Re: Whistler Hydro Land Covenant

I refer to the discussions between Season Snyder (AMEC) and Aman Ullah (MOE) on January 28, 2009 regarding the future Transit Facility on Hydro property in Whistler.

I can confirm that BC Hydro is fully aware of, and supports the Transit Facility development on their property. The following documents are available in support of various agreements between Transit and Hydro:

1) Letter of Support from Hydro to MOE dated July 29, 2008 (copy attached).
2) License for Transit to enter Hydro property dated 12 August, 2008.
3) Memo of Understanding dated January 26, 2009 confirming the terms of a 60 year lease for the Transit Facility on Hydro property.

I trust this provides MOE with the necessary information requested but please do not hesitate to call if you need further information.

Sincerely,

David J. Leather, P. Eng.
BC Transit Owners Representative

Attachment

BC hydro

reliable power,
at low cost,
for generations

Tony Vanger
Consultant
Properties, Sales and Leasing
Phone: 604-623-3949
Fax: 604-623-3988
Email: Tony.Vanger@bchydro.com

July 29, 2008

Ministry of Environment
2nd Floor, 10470 152nd Street
Surrey, BC V3R 0Y3

Attention: Mr. Mohammed Alam

BC TRANSIT WHISTLER FACILITY – APPLICATION UNDER SECTION 9

Reference: Meeting with BC Transit Project Manager and Environmental Consultant, 16 July, 2008.

To follow-up on the referenced meeting, this letter is confirmation that BC Hydro is in negotiations with BC Transit for the lease to BC Transit of the BC Hydro property at the Rainbow site in Whistler as described in the subject application. BC Hydro supports the construction of the new Whistler Transit centre facility on this site.

Should you have any questions, please contact me at BC Hydro, (604) 623-3949 or at my email address tony.vanger@bchydro.com.

Yours truly,

Tony Vanger
Consultant, BC Hydro Properties Division
Sales and Leasing

Ullah, Aman ENV:EX

From: Ullah, Aman ENV:EX
Sent: Tuesday, December 2, 2008 5:24 PM
To: 'season.snyder@amec.com'
Cc: Reddekopp, Sheldon ENV:EX
Subject: BC Transit - Whistler Facility, Water Act Amendment Application - Our File No. A2005549

Hi Season,

Environmental Stewardship Division (ESD) has reviewed the above noted submission as a part of our consultation process with other regulatory agencies and has provided some specific concerns with the proposed works:

The proposed amendment more than doubles the area of in-stream impacts and increases the removal of riparian/upland habitat by more than 25%. The stormwater retention wetland in the original application is now planned as a detention pond and as such offers significantly less in terms of ecological values.

The amended application now includes a converted stream crossing and apparently over 30 metres of channelized stream structures of unknown form. These design changes significantly reduce the fish and wildlife function and values discussed in the original application, which seems opposite the stated project objectives.

It is unclear from the application for amendment how the design changes, most notably those cited above, will result in reduced overall project footprint as was stated in the attached letter of October 28, 2008 from AMEC Earth & Environmental.

ESD recommends that the proponent consider alternative designs that will more likely succeed in meeting the mitigation objectives detailed in the original application.

The proponent had not indicated how they will adhere to the Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia available at:

http://www.env.gov.bc.ca/wld/BMP/herptile/HerptileBMP_final.pdf

A general layout of the facility has been attached with the application which doesn't provide the details of the proposed in-stream works. Please submit the drawings giving the details of the proposed works for proceeding further into the application for the Water Act amendment approval.

If you have any questions in this regard, please contact Sheldon Reddekopp, ESD at 604 582-5371.

Regards,

Aman Ullah
Water Stewardship Officer
Ministry of Environment
Water Stewardship Division
Lower Mainland Region
2nd Floor - 10470 - 152nd Street
Surrey BC V3R 0Y3
Phone: 604-582-5232 Fax: 604-582-5235
mailto:aman.ullah@gov.bc.ca

Ullah, Aman ENV:EX

From: Reddekopp, Sheldon ENV:EX
Sent: Monday, December 1, 2008 4:42 PM
To: Ullah, Aman ENV:EX
Subject: Referral Responses

Attachments: A2005549-Amendment - BC Transit Whistler Facility.pdf; 2003069 - Madeira Park.pdf; 2003103 - Texada Isld WUC.pdf

Hi Aman,

Here are some responses.


A2005549-Amendment - BC Transi...


2003069 - Madeira Park.pdf (27...


2003103 - Texada Isld WUC.pdf ...

Thanks,
Sheldon

BRITISH COLUMBIA
The Best Place on Earth

December 1, 2008 FILE: **A2005549-Amendr**

Water Stewardship Division
Ministry of Environment
10470 – 152nd Ave
Surrey, BC V3R 0Y3

Dear Aman Ullah,

Re: BC Transit - Whistler Facility

Ecosystems has reviewed the submission and has the following specific concerns with the proposed works:

The proposed amendment more than doubles the area of in-stream impacts and increases the removal of riparian/upland habitat by more than 25%. The stormwater retention wetland in the original application is now planned as a detention pond and as such offers significantly less in terms of ecological value.

The amended application now includes a culverted stream crossing and apparently over 30 metres of channelized stream structures of unknown form. These design changes significantly reduce the fish and wildlife function and values discussed in the original application, which seems opposite the stated project objectives.

It is unclear from the application for amendment how the design changes, most notably those cited above, will result in reduced overall project footprint as was stated in the attached letter of Oct 28, 2008 from AMEC Earth & Environmental.

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The proponent has not indicated how they will adhere to the Best Management Practices for Amphbians and Reptiles in Urban and Rural Environments in British Columbia (http://www.env.gov.bc.ca/wld/BMP/herptile/HerptileBMP_final.pdf).

Sincerely,

Sheldon Reddekopp
Ecosystems Section
Environmental Stewardship

Ministry of Environment
Environmental Stewardship
Lower Mainland Region
Mailing/Location Address:
10470-152 Street
Surrey BC V3R 0Y3
Telephone: (604) 582-5222
Facsimile: (604) 930-7119
http://www.gov.bc.ca/
http://www.gov.bc.ca/env/

ATS · 22893-24111

BRITISH COLUMBIA
The Best Place on Earth

MINISTRY OF ENVIRONMENT
WATER STEWARDSHIP DIVISION

RECEIVED
NOV 19 2008
LOWER MAINLAND REGION

Application Form for Amendment to an Approval (Section 18) of the *Water Act*
for
Short Term Use of Water (Section 8) ☐ or Changes in and about a Stream (Section 9) ☒
$100.00 Amendment Fee

1. Applicant Information

Approval No. for amendment: A2005549	Approval Holder Name: BC Transit (Mr. Ron Harmer)	
Address: 520 Gorge Rd. East		
City: Victoria	Province: BC	Postal code: V8W 2P3
Phone: 250-995-5663	Fax: 250-995-5639	
E-mail: ron_harmer@bctransit.com		
Applicant Name, if different from the Approval Holder:		
Address:		
City:	Province:	Postal code:
Phone:	Fax:	
E-mail:		

2. Requested Amendment

Description of Change:
Please see attached documents and drawings.

FOR OFFICE USE ONLY

RECEIVED
Date Received:
OCT 29 2008
INTEGRATED LAND MANAGEMENT BUREAU
Ministry of Agriculture and Lands

Approval File Number:	A2-5549
Client Number:	79345
Amount Received:	$100.00
Invoice Number:	927650

Log No. 22370
chq 207

Submit to: Front Counter BC, Suite 200, 10428 153rd Street, Surrey BC V3R 1E1, Phone 604-586-4400/Fax 604-586-4434

s.22

207

VIP

DATE 2008 10 29
Y Y Y Y M M D D

PAY TO THE ORDER OF Minister of Finance

$ 100 —

One hundred /100 DOLLARS

Security features included. Details on back.

ROYAL BANK OF CANADA
MAIN BRANCH - ROYAL CENTRE
1025 W GEORGIA ST.
VANCOUVER, B.C. V6E 3N9

MEMO BC Transit Sec. 9

MP

s.21

RECEIVED
OCT 29 2008
$ 100.-
BY 136

NOTICE OF TRANSMITTAL

TO: Front Counter BC
Suite 200
10428 153rd Street
Surrey, BC
V3R 1E1

DATE: October 29, 2008

AMEC PROJECT NO.: VE51812

PROJECT NAME: BC Transit Whistler Facility

SUBMITTED BY: Season Snyder

ATTENTION: **Front Counter BC**

PLEASE CONFIRM RECEIPT OF ENCLOSED DOCUMENTS BY SIGNING AND RETURNING ONE COPY TO AMEC EARTH & ENVIRONMENTAL LIMITED

SIGNATURE: _____

THE ENCLOSED DOCUMENTS AND/OR DRAWINGS ARE SUBMITTED:

☒ FOR YOUR APPROVAL
☐ FOR YOUR INFORMATION
☐ AS REQUESTED
☐ FOR YOUR SIGNATURE
☐ FOR YOUR REVIEW AND COMMENT

NUMBER OF COPIES:	DESCRIPTION:
1	Application form for Amendment to an Approval under Section 9 of the *Water Act*.
1	Check for $100.

REMARKS: Please find the above referenced document. If you have any questions please contact me @ 604-294-3811.

Regards,
Season Snyder

AMEC Earth & Environmental
a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

28 October 2008

AMEC File:VE51812

VIA Courier

FrontCounter BC
Lower Mainland Region
Suite 200-10428 153rd St
Surrey BC
V3R 1E1

Attention: To Be Determined
Ministry of Environment, Integrated Land Management Bureau

Reference: BC Transit – Whistler Facility
Order for Amendment to Approval #2005549 under Section 9 of the *Water Act*

AMEC Earth & Environmental, on behalf of BC Transit, is submitting this memorandum in support of an amendment to the Section 9 *Water Act* Approval #2005549 for construction of the Whistler Transit Facility and works in and about the unnamed creek tributary to Alta Lake. Approval #2005549 allowed for in-stream works required to infill a portion of the unnamed creek channel, divert the existing creek around the project footprint and install culvert crossings. These works are currently in progress, as the transit facility footprint is being prepared for pre-loading this fall/winter. This memorandum serves to provide the Ministry of Environment (MOE) with updated project design information which includes those changes to the transit facility site plan that have resulted from detailed design advancement.

At the time of the original application submission, the transit facility site plan and engineering drawings were preliminary and it was noted that the proposed access road alignment and location of culvert crossings were not yet known. Since that time, a fixed site plan has been developed. The fixed site plan requires the same general description of in-stream works as stated above, however; there have been necessary changes to the layout of the transit facility and consequently, design of the proposed mitigation. In short, the final site plan includes:

- **Reconfiguration of facility layout**. The buildings, parking/shelters and the re-fuelling area have been rearranged to best accommodate the physical and geotechnical constraints of the site and to reduce the overall project footprint.
- **Relocation of the access road.** As a result of reconfiguring the site layout, the access road has been relocated from the western perimeter of the site to the south end of the site, also

AMEC Earth & Environmental
a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

reducing the overall project footprint. However, based on the final site plan, an additional 427 square metres (m^2) of in-stream impacts will occur as a result of access road construction. Road construction will also require the removal of an additional 4,600 m^2 of riparian/upland habitat.

- **Location of one (1) proposed culvert**. There is one culvert proposed where the access road crosses the creek at the south end of the site. The culvert will be designed to provide fish and wildlife passage. An oversized box culvert is currently proposed.
- **Relocation of the stormwater wetland**. The stormwater wetland has been relocated to the north end of the site and will now function as a detention pond. The detention pond will be designed to temporarily store and treat site runoff before it enters the unnamed creek at the Bailey property, north of the project site. The detention pond will be designed by the project civil engineer and consulting hydrological engineer.
- **Reconfiguration of the natural wetland (mitigation) complex**. The natural wetland complex has been extended at the south end of the site to include the additional portion of the unnamed creek to be re-directed around the access road. There are two (2) locations where a channelized structure is proposed to accommodate physical constraints. The nature of this structure is still to be determined. The wetland complex will be comprised of channel, pool, marsh and riparian habitats. The overall objectives of mitigation design remain the same - maintain site drainage, manage stormwater runoff and provide improved fish and wildlife habitat functions and values on the site. As described in detail in the original submission, mitigation will also include landscaping with native species, wildlife enhancements and a post-construction monitoring program.

Habitat mitigation planning has also advanced during the design phase, but remains on-going. Since the original application submission, BC Transit has conducted two public presentations of the project (August 18, 2008 and September 17, 200) and has committed to again engaging the public in certain design aspects of the mitigation over the winter. It is expected that over the winter months, detailed wetland design, development of construction and landscape specifications and costing will proceed to the final stages.

Please find the following supporting documents attached for your review and consideration:

Appendix A: Final Site Plan / Preliminary Mitigation Plan
Appendix B: Flood Control Report

Upon the request of MOE, a copy of this memorandum will be submitted to Fisheries and Oceans Canada (DFO). If you have any questions please contact the undersigned at 604-294-3811.

Respectfully Submitted,

Season R. Snyder, Ph.D.
Environmental Scientist

Tim Bekhuys, B.Sc., R.P.Bio., P.Biol.
Senior Environmental Scientist

APPENDIX A


PROPOSED VALLEY TRAIL
2 - 5000 STEEL CASING PIPES
Highway 99
Channelized Structure
BC HYDRO SUB STATION
Channelized Structure
Proposed Box Culvert
CONC BOX CULVERT INV ELEV = 642.02
MUNICIPAL WORKS YARD
Whistler Transit Facility
Preliminary Trail, Stormwater & Mitigation Wetland
TOM BARRATT LTD.

APPENDIX B

LaCas Consultants Inc.
Consulting Engineers - Hydrologists, Since 1991

Technical Memorandum

DATE: August 1, 2008

TO: **James Spiers,** Project Director, Associate
OMICRON
595 Burrard Street
Vancouver, BC
V7X 1L4

FROM: **Brian LaCas,** P.Eng., LEED A.P., Sr. Hydrological Engineer
LaCas Consultants Inc.

RE: **WHISTLER TRANSIT FACILITY – NORTH VANCOUVER**
Fitzsimmons Creek Floodplain - Flood Control Issues
LCI File 08.012

1. INTRODUCTION

This technical memorandum prepared by LaCas Consultants Inc. (LCI) for Omicron (the Client) for the proposed Whistler Transit Facility; is with respect to flood control issues within the Fitzsimmons Creek floodplain. The proposed Whistler Transit Facility (Property) along the western overbank of Fitzsimmons Creek within the Resort Municipality of Whistler (Figure 1). The legal description of the Property is as follows:

Parcel Identifier: 015-921-107
THE NORTH 1/2 OF DISTRICT LOT 1758 GROUP 1 NEW WESTMINSTER DISTRICT, EXCEPT FIRSTLY: PART IN REFERENCE PLAN 1022 SECONDLY: PART IN PLAN LMP3329 THIRDLY: PART IN HIGHWAY PLAN 90

The purpose of this technical memorandum is to provide hydrological engineering modeling and calculations to determine flood proofing for the Property within the Fitzsimmons Creek floodplain.

This assignment has the following scope of work:

- review present flooding aspects unique to the Property;
- review existing land survey work;
- liaise with land surveyor for hydrometric creek survey work;
- liaison with the Client and Civil Engineer;

- input hydrometric survey data into water surface profile model (US Army Corps of Engineers, HEC-RAS) and calibrate model;
- carry out water surface profile analysis using numerical open-channel water surface profile hydraulic modeling to determine the flood proofing for the Property;
- review general layout of buildings and access roads on the Property;
- discuss floodway routes through the Property;
- determine overland design velocities and recommend erosion and scour protection works where necessary;
- review transfer of flood risk to third parties due to development on the Property;
- prepare a technical memorandum addressing flood control issues.

2. MEMORANDA REVIEWED

The following memoranda were reviewed:

- mapping and location plans;
- review of engineering plans; and
- previous pertinent memoranda.

3. OBSERVATIONS

On June 18, 2008 a site reconnaissance of the Property was carried out by Brian LaCas, P.Eng. of LCI. These trips focused on the Property including upstream and downstream on Fitzsimmons Creek.

The Property is located within the floodplain and on the alluvial fan of Fitzsimmons Creek; therefore it is flood vulnerable and subject to the risks associated with flooding and alluvial fan deposition processes.

There are no adequately designed dykes or river training works for flood control between Fitzsimmons Creek and the Property. Since the road profile of Highway 99 adjacent to the Property is below the design flood level of Fitzsimmons Creek then it is likely that during a design flood event that floodwaters would cross Highway 99 and flood the lands east of the highway including the Property.

4. FITZSIMMONS CREEK

Fitzsimmons Creek is a steep mountain river with a watershed area of 93 km^2 with a extensive alluvial fan of about 3.4 km^2. The fan has developed as a result of historical floods and debris floods; hence it is considered a hazardous landform. Table 1 summarizes the current design flood flows for Fitzsimmons Creek.

Table 1. Fitzsimmons Creek Design Flood Flows

Location	Design Flood Flow (m^3/s) 200-Year Return Period
Downstream of Confluence with Blackcomb Creek	250

Extensive sediment deposition, severe erosion and debris impact associated with floods may compound flood damage. For example, in August 1991, a flood deposited about 128,000 m^3 of debris on the Fitzsimmons Creek fan, causing widespread damage. The return period of the 1991 flood was about 50 to 80 years.

A river sedimentation zone is located in the reach of Fitzsimmons Creek across the highway from the Property. If periodic and necessary gravel removal is not carried out the hydraulic capacity of the reach is diminished with rising creek bed levels. Rising creek bed levels could facilitate overbank flooding and in the worst case a channel avulsion. The Highway 99 grade should mitigate but not eliminate the avulsion risk.

5. HYDRAULIC MODELING AND FLOOD CONTRUCTION LEVELS

A land survey of the Property was completed in July 2008 by Doug Bush Land Survey Services Ltd. The land survey was used as a basis to update the creek channel and overbank topography and provide 23 cross sections through Fitzsimmons Creek and the overbank areas. The cross sections start about 240 m downstream of the Property on Fitzsimmons Creek and extend 560 m upstream of the Property bracketing the Property as shown in Figure 2. The cross sections, Manning's *n* roughness coefficient of 0.05 for the channel, 0.11 for the vegetated overbank areas and a design flow of 250 m^3/s was input into the US Army Corps of Engineer's HEC-River Analysis System along with the 23 creek cross sections. In addition, an average bedload allowance of 1 m was included for all creek sections.

The water surface profile in the vicinity of the Property was determined along with a 0.3 m freeboard to establish the FCL for the Property.

6. CONCLUSIONS

The proposed Whistler Transit Facility development is located on the floodplain and fan of Fitzsimmons Creek; hence it is considered a hazardous area therefore flood mitigation measures are required to protect the Property.

An existing dip in the Highway 99 road profile adjacent to the Property is a cause of concern since floodwaters could freely cross the highway and flood the Property and other lands on the west side of the highway. Although not part of the Property the off-site raising of Mons Road and a portion of the Valley Trail system along with rock armouring would provide many flood benefits to the Property and surrounding lands west of the highway.

Once the Property and other lands on the west side of highway are flooded the areas maybe flooded for an extended period until water drains through the CN Rail ROW eventually to draining to Green Lake; however some water may be permanently trapped in low areas restricting full access to the Property and other lands. There may be attendant safety and health risks with ponded water.

While gravel bed aggradation of approximately 1 m has been included in the hydraulic modeling of Fitzsimmons Creek this does not preclude periodic adequate flood control gravel removal within Fitzsimmons Creek which essential to mitigate the flood risk to the Property.

The hydraulic modeling results based on the stated assumptions in this technical memorandum provide a Flood Construction Level for areas of habitation, business and storage of goods; however it should be noted that under design flood event conditions there is a likelihood of flood damage to areas not flood proofed on the Property through overbank flooding and/or channel avulsion, deposition of logs and debris.

7. RECOMMENDATIONS

1. The top of concrete slab for habitation, business or storage of goods damageable by floodwaters including the fuel filling facility for the proposed Whistler Transit Facility shall be set at the Flood Construction Level based on the greatest of:
   - 644.0 m GSC NAD83; or
   - 1 m above the surrounding finished grade.

2. The foundations of all habitable areas and the fuel filling facility shall be protected from erosion and scour by floodwaters using concrete and/or Class 50 kg rock riprap (BC MOT Section 205 Specification) placed at 2 horizontal to 1 vertical slope (where applicable).

3. Parking areas are allowed in the floodplain however it is advisable to remove all vehicles prior to flooding and taking all reasonable measures to mitigate flood damage to the site.

4. Floodways using channels roadways; pedestrian ways should be incorporated into the Property to facilitate movement of water off the Property and not causing an exacerbation of flood levels to adjacent lands.

5. All areas below the designated Flood Construction Level shall not include an installation of heating, ventilating and air conditioning devices, mechanical equipment, major electrical switchgear or, other fixed equipment susceptible to damage by floodwaters unless an adequately flood proofed tank structure with access from above Flood Construction Level is certified by a qualified BC Registered Professional Engineer. Furthermore, a qualified BC Registered Professional Engineer shall certify that there are no openings or vents allowing floodwaters to enter electrical/mechanical rooms or storage areas, below the Flood Construction Level and that all ducts and pipes have been adequately sealed with no-shrink grout and that all walls and ceilings (below Flood Construction Level) are protected by the installation of an impermeable waterproof barrier. A qualified BC Registered Professional Engineer (Hydrogeotechnical) shall certify that the surface flooding up to 1 m in depth within the floodways around and surrounding the habitable structures will not cause groundwater hydrostatic pressure build-up during the design flood event for any areas susceptible to flood damage below the Flood Construction Level.

6. To mitigate the risk of floodwaters from Fitzsimmons Creek crossing Highway 99 and flowing through the Property the Client may consider entering in dialogue with the Resort Municipality of Whistler and other concerned agencies/landowners regarding the construction of a rock armoured river training berm between Fitzsimmons Creek and Highway 99.

7. All as-built architectural, engineering and landscape plans and certification letters shall be submitted to LaCas Consultants Inc. for final review with respect to flood control issues pertaining to this technical memorandum.

8. Prior to occupancy of the Whistler Transit Facility, a final occupancy letter shall be prepared by LaCas Consultants Inc. along with the Final Site Grading Record Drawing prepared by others.

9. Any future site grading alterations or obstructions affecting flood capacity, levels and velocities not shown on the record drawing shall not be permitted unless approved in writing by LaCas Consultants Inc. or certification by a qualified BC Registered Professional Engineer.

10. Even though it is not a requirement it is suggested that the original of this technical memorandum, the certification letter and the Final Site Grading Record Drawing be filed with the Resort Municipality of Whistler.

All elevations are geodetic based GSC NAD 83.

8. CLOSURE

It is hereby certified that the proposed Whistler Transit Facility within the Resort Municipality of Whistler maybe used safely for the use intended; subject to the recommendations provided in this technical memorandum. In this context, the term "safe" is restricted to the 200-year return period surface water flood on Fitzsimmons Creek.

Prepared by:

Brian David LaCas, P.Eng., Sr. Hydrological Engineer
LaCas Consultants Inc.

Statement of Limitations and Liability

This document has been prepared by LaCas Consultants Inc. for the Property described as the Whistler Transit Facility, Whistler, BC only; under its Standard Terms and Conditions for the exclusive use of the Client. No other party other than the Client, the Resort Municipality of Whistler or the BC Ministry of Environment is entitled to rely on any of the conclusions, data, opinions, or any other information in whole or in part which is contained in this document. In order to properly understand the suggestions, recommendations and opinions expressed in this document, reference must be made to the whole of the document. LaCas Consultants Inc. cannot be responsible for use by any party of portions of the document without reference to the whole document. This document represents LaCas Consultants Inc.'s best professional judgment based on the information available at the time of its completion and as appropriate for the project scope of work. Services performed in developing the content of this document have been conducted in a manner consistent with that level and skill ordinarily exercised by members of the engineering profession currently practising under similar conditions. A future uncertainty of global warming has not been taken into account in this document nor is an inadequate gravel removal program within Fitzsimmons Creek. No warranty, express or implied, is made. It is understood by LaCas Consultants Inc. that the Client is not legally bound by any RMOW bylaws pertaining to flood control. In accepting this report, the Client agrees notwithstanding the availability of any insurance that all claims which the Client may have against LaCas Consultants Inc., its employees, officers, agents, representatives, and sub-consultants in respect to the preparation of this document howsoever arising, whether in contract, tort, breach of statutory duty or based on any other cause of action, shall be absolutely limited, individually and in aggregate, to an amount equal to the amount of fees paid to LaCas Consultants Inc. for undertaking this work. The Client agrees that all liability of LaCas Consultants Inc., its employees, officers, agents, representatives, and sub-consultants shall expire two years after the date of the professional engineering seal on the original document. The Client further agrees that the employees, shareholders, officers and directors of LaCas Consultants Inc. shall have no personal liability to the Client in respect to any claim accordingly the Client agrees that it will bring no proceedings and take no action in any court of law against such individuals in their personal capacity. When LaCas Consultants Inc. submits both electronic file and hardcopies of this document including drawings and other documents and deliverables (LaCas Consultants Inc.'s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by LaCas Consultants Inc. with a red ink Professional Engineering Seal (not scanned) shall be the original documents of record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by LaCas Consultants Inc. shall be deemed to be the overall original for the project.

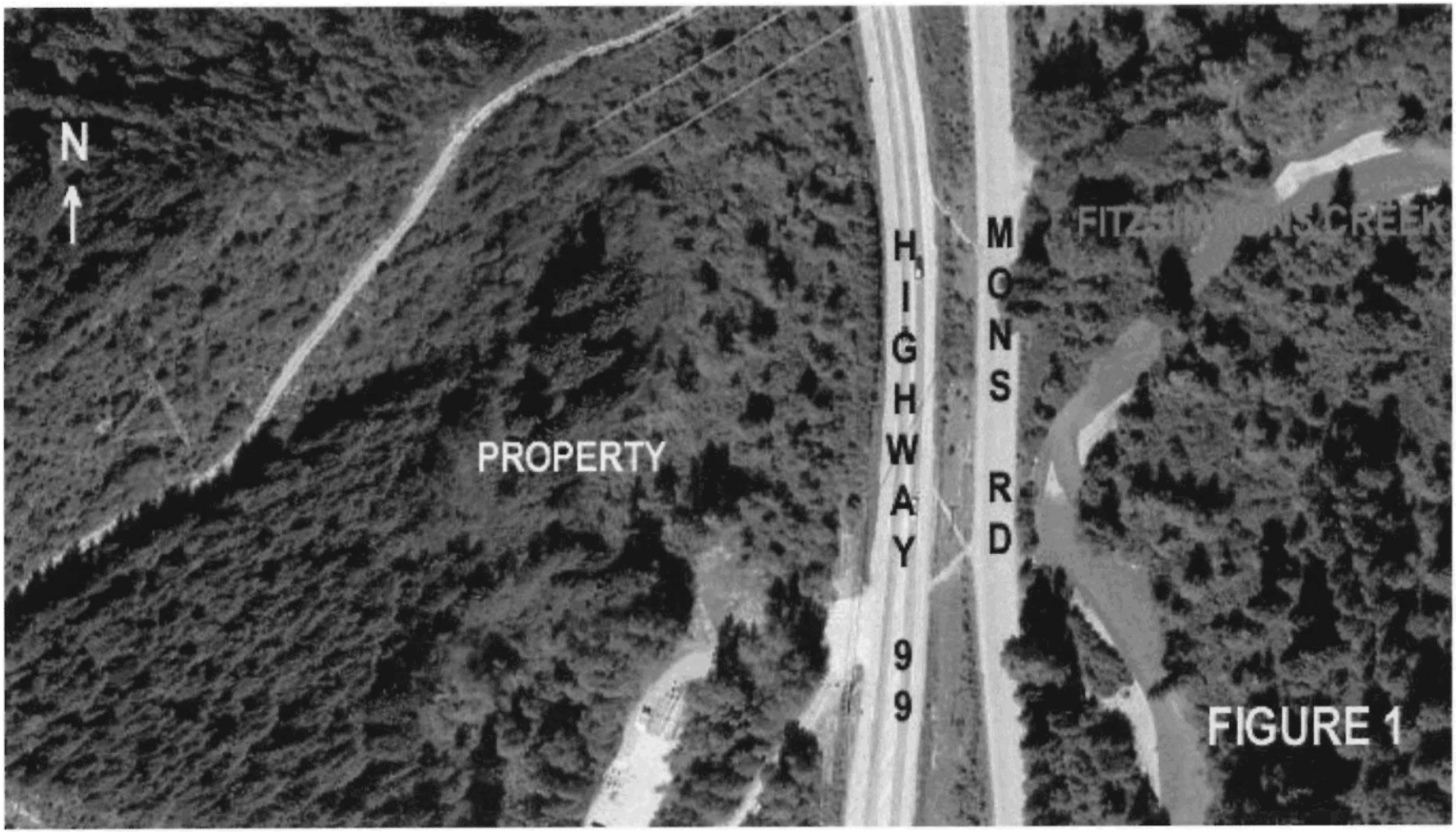


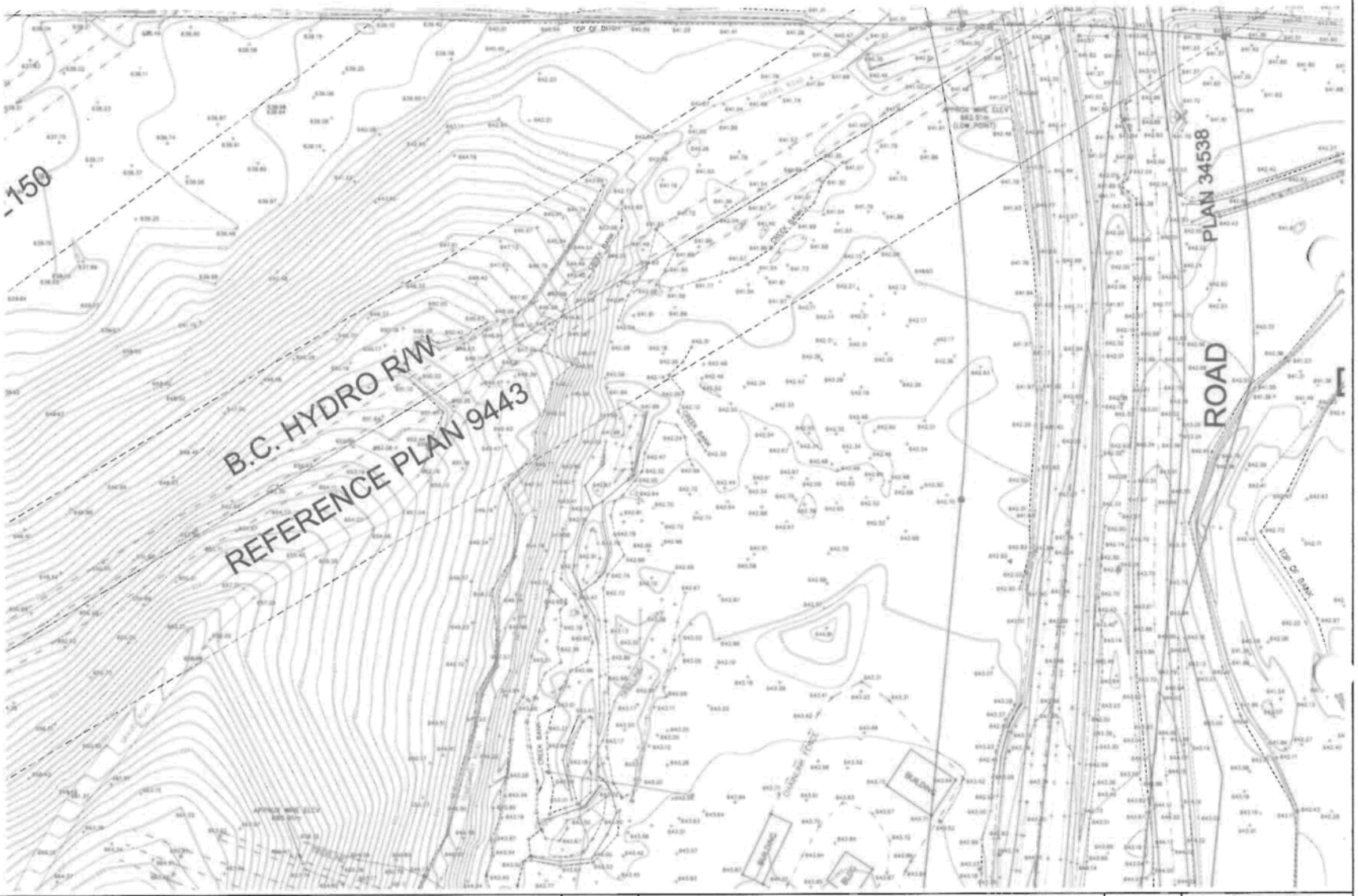
FIGURE 1

PLAN SHOWING TOPOGRAPHY, SITE FEATURES AND CROSS-SECTION LOCATIONS ON PORTIONS OF D.L. 1758 & LOT 1, D.L. 1757, GP. 1, N.W.D.

DOUG BUSH SURVEY SERVICES, LTD. Douglas J. Bush, ASoT, RSIS Applied Science Technologist Unit #18, 1370 Alpha Lake Road, Whistler, B.C. V0N 1B1 Phone 932-3314 or Fax: 932-3039 dougb@dbss.ca	LaCas CONSULTANTS INC. CONSULTING ENGINEERS & HYDROLOGISTS 1311 Howe Street, Suite 200 Vancouver, B.C. Canada V6Z 2P3 Tel: (604) 688-2535 E-mail: info@LaCas-Consultants.com Web: www.LaCas-Consultants.com	Notes: - ELEVATIONS ARE GEODETIC NAD83 DERIVED FROM WATER RESOURCES MONUMENT NO. 1885 LOCATED UNDER THE MONS OVERPASS ELEVATION = 640.702 METRES	Date: JULY 25, 2008 Files: 08182RD 08171TM	Client: Project: B.C. HYDRO LANDS	FIGURE 2	SCALE: Job No. J08171 Drawing No. FIGURE 2 - SHEET 2

PLAN SHOWING TOPOGRAPHY AND SITE FEATURES ON PORTIONS OF D.L. 1758 & LOT 1, D.L. 1757, GP. 1, N.W.D.

NOTE:
- BEARINGS ARE DERIVED FROM G.P.S. SURVEY
- FIELD SURVEY COMPLETED JUNE 20th, 2008
- CONTOURS ARE AT 0.5 METRE INTERVALS
- DENOTES SPOT ELEVATION
- DENOTES POWER POLE
- DENOTES POWER POLE ANCHOR



DOUG BUSH SURVEY SERVICES Ltd. Douglas J. Bush, AScT, RSIS Applied Science Technologist Unit 18, 1370 Alpha Lake Road, Whistler, B.C. V0N 1B1 Phone 932-3314 Fax: 932-3039 dougb@dbes.ca	Revisions:	Notes: - ELEVATIONS ARE GEODETIC NAD83 DERIVED FROM WATER RESOURCES MONUMENT NO. 1685 LOCATED UNDER THE MONS OVERPASS ELEVATION = 640.702 METRES	Date: JULY 30, 2008 Files: 08163CRD 08171TN6	Client: OMICRON Project: B.C. HYDRO LANDS	FIGURE 3	SCALE: GRAPHIC SCALE METRES 1 : 400 All distances are in metres Job No. J08171 Drawing No. FIGURE 3 sheet 1

amec

FAX

To	Shana Bow Front Counter BC	From	Season Snyder AMEC
Fax	604-586-4434	Fax	604-294-4664
AMEC File No.	VE51812	Pages	3
Fax Operator		Date	Nov. 17 2008
		cc	

Subject: Application for Amendment # 2005549

Dear Shana,

Please see the attached confirmation that AMEC has submitted the Amendment application + check to MOE on Oct 29 2008.

Please contact me with any questions.

Thanks,

Season

AMEC Earth & Environmental
a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V6C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

NOTICE OF TRANSMITTAL

TO: Front Counter BC
Suite 200
10428 153rd Street
Surrey, BC
V3R 1E1

DATE: October 29, 2008

AMEC PROJECT NO.: VE51812

PROJECT NAME: BC Transit Whistler Facility

SUBMITTED BY: Season Snyder

ATTENTION: **Front Counter BC**

PLEASE CONFIRM RECEIPT OF ENCLOSED DOCUMENTS BY SIGNING AND RETURNING ONE COPY TO AMEC EARTH & ENVIRONMENTAL LIMITED

SIGNATURE: _____

THE ENCLOSED DOCUMENTS AND/OR DRAWINGS ARE SUBMITTED:

☒ FOR YOUR APPROVAL ☐ AS REQUESTED ☐ FOR YOUR REVIEW AND COMMENT
☐ FOR YOUR INFORMATION ☐ FOR YOUR SIGNATURE

NUMBER OF COPIES:	DESCRIPTION:
1	Application form for Amendment to an Approval under Section 9 of the *Water Act*.
1	Check for $100.

REMARKS: Please find the above referenced document. If you have any questions please contact me @ 604-294-3811.

Regards,
Season Snyder

s.22

207

VJP DATE 2008/10/29 (Y Y Y Y M M D D)

PAY TO THE ORDER OF Minister of Finance $ 100

One hundred /100 DOLLARS

Security features included. Details on back.

ROYAL BANK OF CANADA
MAIN BRANCH - ROYAL CENTRE
1025 W GEORGIA ST.
VANCOUVER, B.C. V6E 3N9

MEMO BC Transit Sec 9

SP Snyder MP

s.21

AMEC Earth & Environmental
a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

NOTICE OF TRANSMITTAL

TO: Front Counter BC
Suite 200
10428 153rd Street
Surrey, BC
V3R 1E1

DATE: October 29, 2008

AMEC PROJECT NO.: VE51812

PROJECT NAME: BC Transit Whistler Facility

SUBMITTED BY: Season Snyder

ATTENTION: **Front Counter BC**

PLEASE CONFIRM RECEIPT OF ENCLOSED DOCUMENTS BY SIGNING AND RETURNING ONE COPY TO AMEC EARTH & ENVIRONMENTAL LIMITED

SIGNATURE: _____

THE ENCLOSED DOCUMENTS AND/OR DRAWINGS ARE SUBMITTED:

☒ FOR YOUR APPROVAL
☐ FOR YOUR INFORMATION
☐ AS REQUESTED
☐ FOR YOUR SIGNATURE
☐ FOR YOUR REVIEW AND COMMENT

NUMBER OF COPIES:	DESCRIPTION:
1	Application form for Amendment to an Approval under Section 9 of the *Water Act*.
1	Check for $100.

REMARKS: Please find the above referenced document. If you have any questions please contact me @ 604-294-3811.

Regards,
Season Snyder

RECEIVED

OCT 2 9 2008

INTEGRATED LAND MANAGEMENT BUREAU
Ministry of Agriculture and Lands
Log No. .....

AMEC Earth & Environmental
a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

00792▼1

Ministry of Environment
Water Management

WATER MANAGEMENT
I N V O I C E

Invoice No: 927650

Invoice Date: 2008/11/18

( ) - Please make cheques payable to Ministry of Finance

Client No: 79345

BC TRANSIT
520 GORGE ROAD EAST
VICTORIA BC
V8W 2P3

Page 1

LICENCE	FILE	SOURCE	PRECINCT	AMOUNT
A2-5549				
		AMENDMENT - SECTION 18		100.00

DUE: LAST BUSINESS DAY OF JAN/2009 INVOICE TOTAL: 100.00

Randhawa, Sukhdev ILMB:EX

From: Randhawa, Sukhdev ILMB:EX
Sent: Tuesday, November 18, 2008 2:38 PM
To: Craddock, Cynthia L ILMB:EX
Subject: Water Deposit

Hi Cynthia,

Please deposit the following cheque to Water Account:

Name on Cheq: s.22
Applicant: BC Transit
Cheq #: 207
Amount: $100.00
File: A2-5549 (amendment)
WRMS Inv # 927650

Thanks, Sukh

Ullah, Aman ENV:EX

From: Johnson, Kym L ENV:EX
Sent: Tuesday, November 4, 2008 2:18 PM
To: Ullah, Aman ENV:EX
Subject: A20005549 - Amendment coming in from FCBC

A2005549	Season Synder from AMEC would like to set-up a meeting once amendment has been received to discuss.	604-473-5309

Amec would like to set-up a meeting to discuss the changes on the amendment, they feel there will be questions from MoE in regards to engineering drawings, etc.

Cheers,

Kym Johnson
Portfolio Administrator
Water Stewardship Division
Ministry of Environment
Phone: 604-582-5340 Fax: 604-582-5235
Kym.Johnson@gov.bc.ca

Ullah, Aman ENV:EX

From: Ullah, Aman ENV:EX
Sent: Wednesday, October 29, 2008 9:47 AM
To: 'tim.bekhuys@amec.com'
Subject: FW: BC Transit Site - Whistler
Attachments: Amendment for Approval Form.doc

Hi Tim,

I am forwarding this as the e-mail (below) was not delivered probably, wrong e-mail address.

Aman

From: Ullah, Aman ENV:EX
Sent: Wednesday, October 29, 2008 9:38 AM
To: 'bekhuys@amec.com'
Cc: Johnson, Kym L ENV:EX
Subject: RE: BC Transit Site - Whistler

Hi Timothy,

We have reviewed your submission that indicates changes in the original Water Act approval document are involved, so an order for amendment is required. Please be advised to submit Water Act approval amendment application to Front Counter BC (FCBC). Approval amendment application form is attached.

Please don't hesitate to contact me if you need further assistance/clarification in this regard.

Aman Ullah

Water Stewardship Officer

Ministry of Environment

Water Stewardship Division

Lower Mainland Region

2nd Floor - 10470 - 152nd Street

Surrey BC V3R 0Y3

Phone: 604-582-5232 Fax: 604-582-5235

mailto:aman.ullah@gov.bc.ca

From: Johnson, Kym L ENV:EX
Sent: Tuesday, October 28, 2008 2:09 PM
To: Ullah, Aman ENV:EX
Subject: FW: BC Transit Site - Whistler

Aman, please review and advise Timothy Bekhuys, if an amendment order is required.

Pertains to Approval A2005549.

Kym Johnson
Portfolio Administrator
Water Stewardship Division
Ministry of Environment
Phone: 604-582-5340 Fax: 604-582-5235
Kym.Johnson@gov.bc.ca

From: Bekhuys, Timothy J [mailto:tim.bekhuys@amec.com]
Sent: Tuesday, October 28, 2008 2:01 PM
To: Johnson, Kym L ENV:EX
Cc: Snyder, Season; Ajay Shah
Subject: BC Transit Site - Whistler

Kym,

As discussed last week, please find attached a copy of the updated site plan and technical report for the BC Transit site near Whistler, BC.

The overall footprint and reconfiguration of the channel onsite has changed slightly. The primary change has been finalization of the road configuration providing access to the site which has been shortened and moved further east. This will lessen the overall footprint of the road access.

As mentioned, please review the attached and if required, we have a draft amendment application plus the required payment we can forward if an order for an amendment is required.

Regards,

Timothy J. Bekhuys
Senior Environmental Scientist
AMEC

Earth & Environmental
2227 Douglas Street, Burnaby, B.C., Canada V5C 5A9
Tel +01 (604)473 5320 Fax +01 (604)294 4664
Mobile +01(604)616 1772
mailto:tim.bekhuys@amec.com
www.amec.com

28 October 2008

AMEC File:VE51812

VIA EMAIL

FrontCounter BC
Lower Mainland Region
Suite 200-10428 153rd St
Surrey BC
V3R 1E1

Attention: Ms. Kym Johnson
Ministry of Environment, Integrated Land Management Bureau

Reference: BC Transit – Whistler Facility
Order for Amendment to Approval #2005549 under Section 9 of the *Water Act*

Dear Ms. Johnson:

AMEC Earth & Environmental, on behalf of BC Transit, is submitting this memorandum in support of an amendment to the Section 9 *Water Act* Approval #2005549 for construction of the Whistler Transit Facility and works in and about the unnamed creek tributary to Alta Lake. Approval #2005549 allowed for in-stream works required to infill a portion of the unnamed creek channel, divert the existing creek around the project footprint and install culvert crossings. These works are currently in progress, as the transit facility footprint is being prepared for pre-loading this fall/winter. This memorandum serves to provide the Ministry of Environment (MOE) with updated project design information which includes those changes to the transit facility site plan that have resulted from detailed design advancement.

At the time of the original application submission, the transit facility site plan and engineering drawings were preliminary and it was noted that the proposed access road alignment and location of culvert crossings were not yet known. Since that time, a fixed site plan has been developed. The fixed site plan requires the same general description of in-stream works as stated above, however; there have been necessary changes to the layout of the transit facility and consequently, design of the proposed mitigation. In short, the final site plan includes:

- **Reconfiguration of facility layout.** The buildings, parking/shelters and the re-fuelling area have been rearranged to best accommodate the physical and geotechnical constraints of the site and to reduce the overall project footprint.

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www.amec.com

- **Relocation of the access road.** As a result of reconfiguring the site layout, the access road has been relocated from the western perimeter of the site to the south end of the site, also reducing the overall project footprint. However, based on the final site plan, an additional 427 square metres (m^2) of in-stream impacts will occur as a result of access road construction. Road construction will also require the removal of an additional 4,600 m^2 of riparian/upland habitat.
- **Location of one (1) proposed culvert**. There is one culvert proposed where the access road crosses the creek at the south end of the site. The culvert will be designed to provide fish and wildlife passage. An oversized box culvert is currently proposed.
- **Relocation of the stormwater wetland**. The stormwater wetland has been relocated to the north end of the site and will now function as a detention pond. The detention pond will be designed to temporarily store and treat site runoff before it enters the unnamed creek at the Bailey property, north of the project site. The detention pond will be designed by the project civil engineer and consulting hydrological engineer.
- **Reconfiguration of the natural wetland (mitigation) complex**. The natural wetland complex has been extended at the south end of the site to include the additional portion of the unnamed creek to be re-directed around the access road. There are two (2) locations where a channelized structure is proposed to accommodate physical constraints. The nature of this structure is still to be determined. The wetland complex will be comprised of channel, pool, marsh and riparian habitats. The overall objectives of mitigation design remain the same - maintain site drainage, manage stormwater runoff and provide improved fish and wildlife habitat functions and values on the site.

Habitat mitigation planning has also advanced during the design phase, but remains on-going. Since the original application submission, BC Transit has conducted two public presentations of the project (August 18, 2008 and September 17, 200) and has committed to again engaging the public in certain design aspects of the mitigation over the winter. It is expected that over the winter months, detailed wetland design, development of construction and landscape specifications and costing will proceed to the final stages.

Please find the following supporting documents attached for your review and consideration:

Appendix A: Final Site Plan / Preliminary Mitigation Plan
Appendix B: Flood Control Report

Upon the request of MOE, a copy of this memorandum will be submitted to Fisheries and Oceans Canada (DFO). If you have any questions please contact the undersigned at 604-294-3811.

Respectfully Submitted,

Season R. Snyder, Ph.D.
Environmental Scientist

Tim Bekhuys, B.Sc., R.P.Bio., P.Biol.
Senior Environmental Scientist

APPENDIX A


PROPOSED VALLEY TRAIL
2 - 500Ø STEEL CASING PIPES
Highway 99
Channelized Structure
BC HYDRO SUB STATION
Channelized Structure
Proposed Box Culvert
MUNICIPAL WORKS YARD
Whistler Transit Facility
Preliminary Trail, Stormwater & Mitigation Wetland

APPENDIX B

LaCas Consultants Inc.
Consulting Engineers - Hydrologists, Since 1991

Technical Memorandum

DATE: August 1, 2008

TO: **James Spiers,** Project Director, Associate
OMICRON
595 Burrard Street
Vancouver, BC
V7X 1L4

FROM: **Brian LaCas,** P.Eng., LEED A.P., Sr. Hydrological Engineer
LaCas Consultants Inc.

RE: **WHISTLER TRANSIT FACILITY – NORTH VANCOUVER**
Fitzsimmons Creek Floodplain - Flood Control Issues
LCI File 08.012

1. INTRODUCTION

This technical memorandum prepared by LaCas Consultants Inc. (LCI) for Omicron (the Client) for the proposed Whistler Transit Facility; is with respect to flood control issues within the Fitzsimmons Creek floodplain. The proposed Whistler Transit Facility (Property) along the western overbank of Fitzsimmons Creek within the Resort Municipality of Whistler (Figure 1). The legal description of the Property is as follows:

Parcel Identifier: 015-921-107
THE NORTH 1/2 OF DISTRICT LOT 1758 GROUP 1 NEW WESTMINSTER DISTRICT, EXCEPT FIRSTLY: PART IN REFERENCE PLAN 1022 SECONDLY: PART IN PLAN LMP3329 THIRDLY: PART IN HIGHWAY PLAN 90

The purpose of this technical memorandum is to provide hydrological engineering modeling and calculations to determine flood proofing for the Property within the Fitzsimmons Creek floodplain.

This assignment has the following scope of work:

- review present flooding aspects unique to the Property;
- review existing land survey work;
- liaise with land surveyor for hydrometric creek survey work;
- liaison with the Client and Civil Engineer;

- input hydrometric survey data into water surface profile model (US Army Corps of Engineers, HEC-RAS) and calibrate model;
- carry out water surface profile analysis using numerical open-channel water surface profile hydraulic modeling to determine the flood proofing for the Property;
- review general layout of buildings and access roads on the Property;
- discuss floodway routes through the Property;
- determine overland design velocities and recommend erosion and scour protection works where necessary;
- review transfer of flood risk to third parties due to development on the Property;
- prepare a technical memorandum addressing flood control issues.

2. MEMORANDA REVIEWED

The following memoranda were reviewed:

- mapping and location plans;
- review of engineering plans; and
- previous pertinent memoranda.

3. OBSERVATIONS

On June 18, 2008 a site reconnaissance of the Property was carried out by Brian LaCas, P.Eng. of LCI. These trips focused on the Property including upstream and downstream on Fitzsimmons Creek.

The Property is located within the floodplain and on the alluvial fan of Fitzsimmons Creek; therefore it is flood vulnerable and subject to the risks associated with flooding and alluvial fan deposition processes.

There are no adequately designed dykes or river training works for flood control between Fitzsimmons Creek and the Property. Since the road profile of Highway 99 adjacent to the Property is below the design flood level of Fitzsimmons Creek then it is likely that during a design flood event that floodwaters would cross Highway 99 and flood the lands east of the highway including the Property.

4. FITZSIMMONS CREEK

Fitzsimmons Creek is a steep mountain river with a watershed area of 93 km^2 with a extensive alluvial fan of about 3.4 km^2. The fan has developed as a result of historical floods and debris floods; hence it is considered a hazardous landform. Table 1 summarizes the current design flood flows for Fitzsimmons Creek.

Table 1. Fitzsimmons Creek Design Flood Flows

Location	Design Flood Flow (m^3/s) 200-Year Return Period
Downstream of Confluence with Blackcomb Creek	250

Extensive sediment deposition, severe erosion and debris impact associated with floods may compound flood damage. For example, in August 1991, a flood deposited about 128,000 m^3 of debris on the Fitzsimmons Creek fan, causing widespread damage. The return period of the 1991 flood was about 50 to 80 years.

A river sedimentation zone is located in the reach of Fitzsimmons Creek across the highway from the Property. If periodic and necessary gravel removal is not carried out the hydraulic capacity of the reach is diminished with rising creek bed levels. Rising creek bed levels could facilitate overbank flooding and in the worst case a channel avulsion. The Highway 99 grade should mitigate but not eliminate the avulsion risk.

5. HYDRAULIC MODELING AND FLOOD CONTRUCTION LEVELS

A land survey of the Property was completed in July 2008 by Doug Bush Land Survey Services Ltd. The land survey was used as a basis to update the creek channel and overbank topography and provide 23 cross sections through Fitzsimmons Creek and the overbank areas. The cross sections start about 240 m downstream of the Property on Fitzsimmons Creek and extend 560 m upstream of the Property bracketing the Property as shown in Figure 2. The cross sections, Manning's *n* roughness coefficient of 0.05 for the channel, 0.11 for the vegetated overbank areas and a design flow of 250 m^3/s was input into the US Army Corps of Engineer's HEC-River Analysis System along with the 23 creek cross sections. In addition, an average bedload allowance of 1 m was included for all creek sections.

The water surface profile in the vicinity of the Property was determined along with a 0.3 m freeboard to establish the FCL for the Property.

6. CONCLUSIONS

The proposed Whistler Transit Facility development is located on the floodplain and fan of Fitzsimmons Creek; hence it is considered a hazardous area therefore flood mitigation measures are required to protect the Property.

An existing dip in the Highway 99 road profile adjacent to the Property is a cause of concern since floodwaters could freely cross the highway and flood the Property and other lands on the west side of the highway. Although not part of the Property the off-site raising of Mons Road and a portion of the Valley Trail system along with rock armouring would provide many flood benefits to the Property and surrounding lands west of the highway.

Once the Property and other lands on the west side of highway are flooded the areas maybe flooded for an extended period until water drains through the CN Rail ROW eventually to draining to Green Lake; however some water may be permanently trapped in low areas restricting full access to the Property and other lands. There may be attendant safety and health risks with ponded water.

While gravel bed aggradation of approximately 1 m has been included in the hydraulic modeling of Fitzsimmons Creek this does not preclude periodic adequate flood control gravel removal within Fitzsimmons Creek which essential to mitigate the flood risk to the Property.

The hydraulic modeling results based on the stated assumptions in this technical memorandum provide a Flood Construction Level for areas of habitation, business and storage of goods; however it should be noted that under design flood event conditions there is a likelihood of flood damage to areas not flood proofed on the Property through overbank flooding and/or channel avulsion, deposition of logs and debris.

7. RECOMMENDATIONS

1. The top of concrete slab for habitation, business or storage of goods damageable by floodwaters including the fuel filling facility for the proposed Whistler Transit Facility shall be set at the Flood Construction Level based on the greatest of:
   - 644.0 m GSC NAD83; or
   - 1 m above the surrounding finished grade.

2. The foundations of all habitable areas and the fuel filling facility shall be protected from erosion and scour by floodwaters using concrete and/or Class 50 kg rock riprap (BC MOT Section 205 Specification) placed at 2 horizontal to 1 vertical slope (where applicable).

3. Parking areas are allowed in the floodplain however it is advisable to remove all vehicles prior to flooding and taking all reasonable measures to mitigate flood damage to the site.

4. Floodways using channels roadways; pedestrian ways should be incorporated into the Property to facilitate movement of water off the Property and not causing an exacerbation of flood levels to adjacent lands.

5. All areas below the designated Flood Construction Level shall not include an installation of heating, ventilating and air conditioning devices, mechanical equipment, major electrical switchgear or, other fixed equipment susceptible to damage by floodwaters unless an adequately flood proofed tank structure with access from above Flood Construction Level is certified by a qualified BC Registered Professional Engineer. Furthermore, a qualified BC Registered Professional Engineer shall certify that there are no openings or vents allowing floodwaters to enter electrical/mechanical rooms or storage areas, below the Flood Construction Level and that all ducts and pipes have been adequately sealed with no-shrink grout and that all walls and ceilings (below Flood Construction Level) are protected by the installation of an impermeable waterproof barrier. A qualified BC Registered Professional Engineer (Hydrogeotechnical) shall certify that the surface flooding up to 1 m in depth within the floodways around and surrounding the habitable structures will not cause groundwater hydrostatic pressure build-up during the design flood event for any areas susceptible to flood damage below the Flood Construction Level.

6. To mitigate the risk of floodwaters from Fitzsimmons Creek crossing Highway 99 and flowing through the Property the Client may consider entering in dialogue with the Resort Municipality of Whistler and other concerned agencies/landowners regarding the construction of a rock armoured river training berm between Fitzsimmons Creek and Highway 99.

7. All as-built architectural, engineering and landscape plans and certification letters shall be submitted to LaCas Consultants Inc. for final review with respect to flood control issues pertaining to this technical memorandum.

8. Prior to occupancy of the Whistler Transit Facility, a final occupancy letter shall be prepared by LaCas Consultants Inc. along with the Final Site Grading Record Drawing prepared by others.

9. Any future site grading alterations or obstructions affecting flood capacity, levels and velocities not shown on the record drawing shall not be permitted unless approved in writing by LaCas Consultants Inc. or certification by a qualified BC Registered Professional Engineer.

10. Even though it is not a requirement it is suggested that the original of this technical memorandum, the certification letter and the Final Site Grading Record Drawing be filed with the Resort Municipality of Whistler.

All elevations are geodetic based GSC NAD 83.

8. CLOSURE

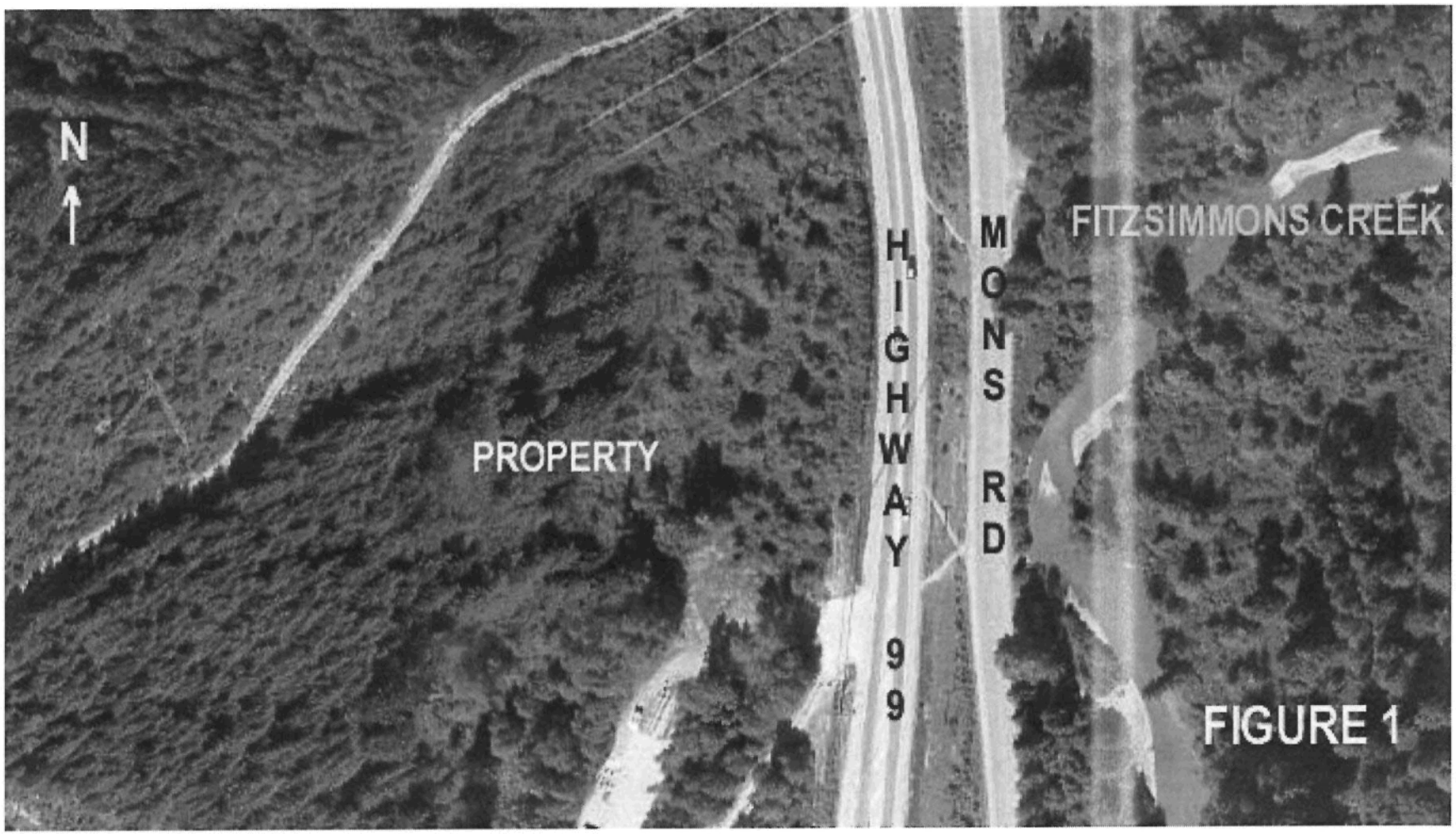
It is hereby certified that the proposed Whistler Transit Facility within the Resort Municipality of Whistler maybe used safely for the use intended; subject to the recommendations provided in this technical memorandum. In this context, the term "safe" is restricted to the 200-year return period surface water flood on Fitzsimmons Creek.

Prepared by:

Brian David LaCas, P.Eng., Sr. Hydrological Engineer
LaCas Consultants Inc.

Statement of Limitations and Liability

This document has been prepared by LaCas Consultants Inc. for the Property described as the Whistler Transit Facility, Whistler, BC only; under its Standard Terms and Conditions for the exclusive use of the Client. No other party other than the Client, the Resort Municipality of Whistler or the BC Ministry of Environment is entitled to rely on any of the conclusions, data, opinions, or any other information in whole or in part which is contained in this document. In order to properly understand the suggestions, recommendations and opinions expressed in this document, reference must be made to the whole of the document. LaCas Consultants Inc. cannot be responsible for use by any party of portions of the document without reference to the whole document. This document represents LaCas Consultants Inc.'s best professional judgment based on the information available at the time of its completion and as appropriate for the project scope of work. Services performed in developing the content of this document have been conducted in a manner consistent with that level and skill ordinarily exercised by members of the engineering profession currently practising under similar conditions. A future uncertainty of global warming has not been taken into account in this document nor is an inadequate gravel removal program within Fitzsimmons Creek. No warranty, express or implied, is made. It is understood by LaCas Consultants Inc. that the Client is not legally bound by any RMOW bylaws pertaining to flood control. In accepting this report, the Client agrees notwithstanding the availability of any insurance that all claims which the Client may have against LaCas Consultants Inc., its employees, officers, agents, representatives, and sub-consultants in respect to the preparation of this document howsoever arising, whether in contract, tort, breach of statutory duty or based on any other cause of action, shall be absolutely limited, individually and in aggregate, to an amount equal to the amount of fees paid to LaCas Consultants Inc. for undertaking this work. The Client agrees that all liability of LaCas Consultants Inc., its employees, officers, agents, representatives, and sub consultants shall expire two years after the date of the professional engineering seal on the original document. The Client further agrees that the employees, shareholders, officers and directors of LaCas Consultants Inc. shall have no personal liability to the Client in respect to any claim accordingly the Client agrees that it will bring no proceedings and take no action in any court of law against such individuals in their personal capacity. When LaCas Consultants Inc. submits both electronic file and hardcopies of this document including drawings and other documents and deliverables (LaCas Consultants Inc.'s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by LaCas Consultants Inc. with a red ink Professional Engineering Seal (not scanned) shall be the original documents of record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by LaCas Consultants Inc. shall be deemed to be the overall original for the project.


N
PROPERTY
HIGHWAY 99
MONS RD
FITZSIMMONS CREEK
FIGURE 1

PLAN SHOWING TOPOGRAPHY, SITE FEATURES AND CROSS-SECTION LOCATIONS ON PORTIONS OF D.L. 1758 & LOT 1, D.L. 1757, GP. 1, N.W.D.

DOUG BUSH SURVEY SERVICES, LTD.
Douglas J. Bush, ASoT, RSIS
Applied Science Technologist
Unit #16, 1370 Alpha Lake Road, Whistler, B.C. V0N 1B1
Phone 932-3314 or Fax 932-3039 dough@dbss.ca

LACAS CONSULTANTS INC.
CONSULTING ENGINEERS & HYDROLOGISTS
1311 Howe Street, Suite 200
Vancouver, B.C. Canada V6Z 2P3
Tel: (604) 688-2535
E-mail: info@LaCas-Consultants.com Web: www.LaCas-Consultants.com

Notes:
- ELEVATIONS ARE GEODETIC NAD83 DERIVED FROM WATER RESOURCES MONUMENT NO. 1685 LOCATED UNDER THE MONS OVERPASS ELEVATION = 640.700 METRES

Date: JULY 25, 2008

Files: 08163CAD 08171TAB

Client:

Project: B.C. HYDRO LANDS

FIGURE 2

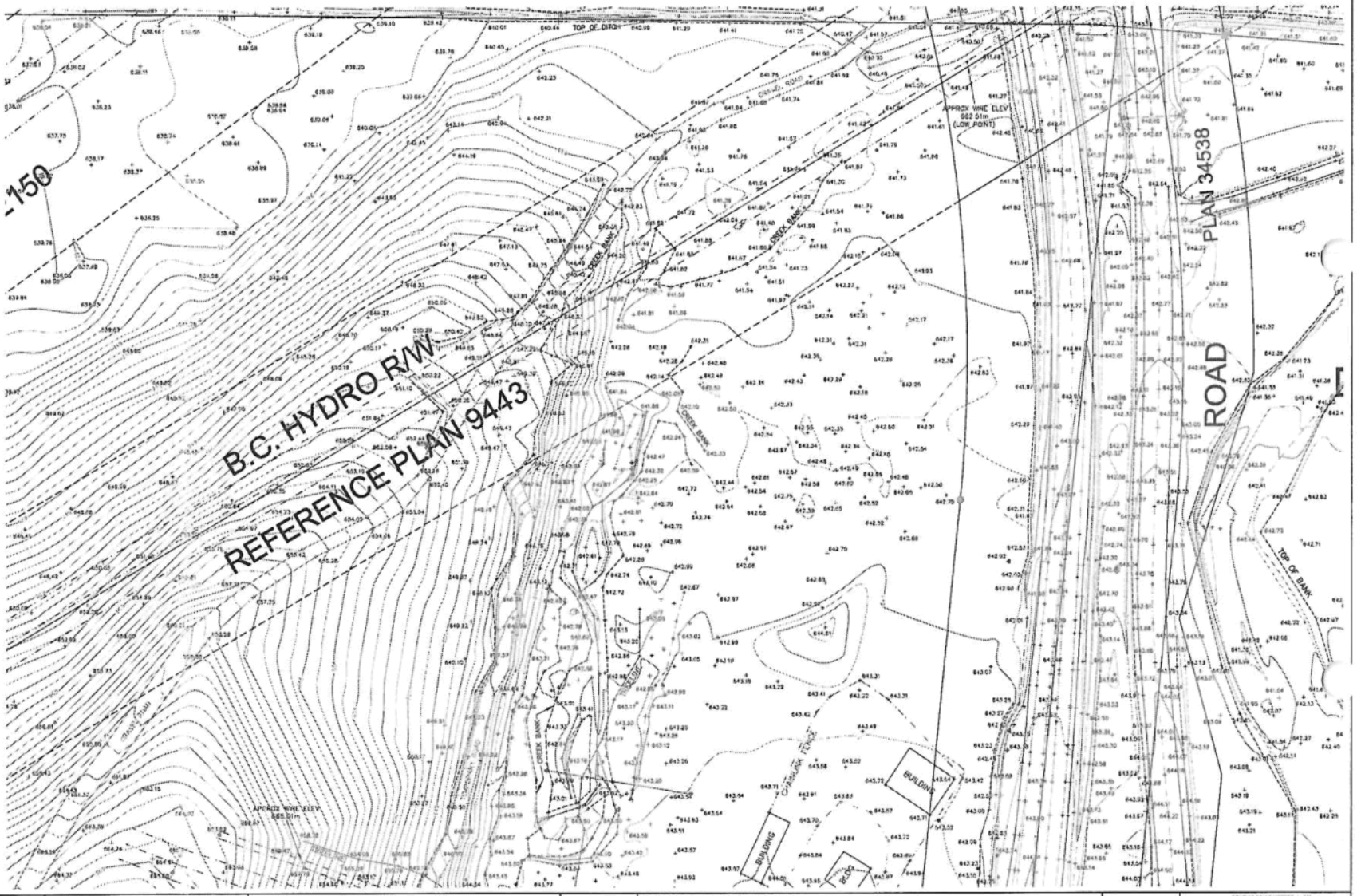
SCALE: GRAPHIC SCALE METRES 1 : 1000 AS ORIGINALLY DRAWN ON A1 PAPER

Job No. J08171

Drawing No. FIGURE 2 - SHEET 2

PLAN SHOWING TOPOGRAPHY AND SITE FEATURES ON PORTIONS OF D.L. 1758 & LOT 1, D.L. 1757, GP. 1, N.W.D.

NOTE:
- BEARINGS ARE DERIVED FROM G.P.S. SURVEY
- FIELD SURVEY COMPLETED JUNE 20th, 2008
- CONTOURS ARE AT 0.5 METRE INTERVALS
- + DENOTES SPOT ELEVATION
- ⊕ DENOTES POWER POLE
- △ DENOTES POWER POLE ANCHOR



DOUG BUSH SURVEY SERVICES Ltd. Douglas J. Bush, AScT, RSIS Applied Science Technologist Unit 18, 1370 Alpha Lake Road, Whistler, B.C. VON 1B1 Phone 932-3314 Fax: 932-3039 dougb@dbss.ca	Revisions:	Notes: - ELEVATIONS ARE GEODETIC NAD83 DERIVED FROM WATER RESOURCES MONUMENT NO. 1685 LOCATED UNDER THE MONS OVERPASS ELEVATION = 640.702 METRES	Date: JULY 30, 2008 Files: 08163CRD 08171TN6	Client: OMICRON Project: B.C. HYDRO LANDS	FIGURE 3	SCALE: GRAPHIC SCALE METRES 1 : 500 All distances are in metres Job No. J08171 Drawing No. FIGURE 3 sheet 1

28 October 2008

AMEC File:VE51812

VIA EMAIL

FrontCounter BC
Lower Mainland Region
Suite 200-10428 153rd St
Surrey BC
V3R 1E1

Attention: Ms. Kym Johnson
Ministry of Environment, Integrated Land Management Bureau

Reference: BC Transit – Whistler Facility
Order for Amendment to Approval #2005549 under Section 9 of the *Water Act*

Dear Ms. Johnson:

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At the time of the original application submission, the transit facility site plan and engineering drawings were preliminary and it was noted that the proposed access road alignment and location of culvert crossings were not yet known. Since that time, a fixed site plan has been developed. The fixed site plan requires the same general description of in-stream works as stated above, however; there have been necessary changes to the layout of the transit facility and consequently, design of the proposed mitigation. In short, the final site plan includes:

- **Reconfiguration of facility layout**. The buildings, parking/shelters and the re-fuelling area have been rearranged to best accommodate the physical and geotechnical constraints of the site and to reduce the overall project footprint.

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a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

- **Relocation of the access road.** As a result of reconfiguring the site layout, the access road has been relocated from the western perimeter of the site to the south end of the site, also reducing the overall project footprint. However, based on the final site plan, an additional 427 square metres (m^2) of in-stream impacts will occur as a result of access road construction. Road construction will also require the removal of an additional 4,600 m^2 of riparian/upland habitat.
- **Location of one (1) proposed culvert**. There is one culvert proposed where the access road crosses the creek at the south end of the site. The culvert will be designed to provide fish and wildlife passage. An oversized box culvert is currently proposed.
- **Relocation of the stormwater wetland**. The stormwater wetland has been relocated to the north end of the site and will now function as a detention pond. The detention pond will be designed to temporarily store and treat site runoff before it enters the unnamed creek at the Bailey property, north of the project site. The detention pond will be designed by the project civil engineer and consulting hydrological engineer.
- **Reconfiguration of the natural wetland (mitigation) complex**. The natural wetland complex has been extended at the south end of the site to include the additional portion of the unnamed creek to be re-directed around the access road. There are two (2) locations where a channelized structure is proposed to accommodate physical constraints. The nature of this structure is still to be determined. The wetland complex will be comprised of channel, pool, marsh and riparian habitats. The overall objectives of mitigation design remain the same - maintain site drainage, manage stormwater runoff and provide improved fish and wildlife habitat functions and values on the site.

Habitat mitigation planning has also advanced during the design phase, but remains on-going. Since the original application submission, BC Transit has conducted two public presentations of the project (August 18, 2008 and September 17, 200) and has committed to again engaging the public in certain design aspects of the mitigation over the winter. It is expected that over the winter months, detailed wetland design, development of construction and landscape specifications and costing will proceed to the final stages.

Please find the following supporting documents attached for your review and consideration:

Appendix A: Final Site Plan / Preliminary Mitigation Plan
Appendix B: Flood Control Report

Upon the request of MOE, a copy of this memorandum will be submitted to Fisheries and Oceans Canada (DFO). If you have any questions please contact the undersigned at 604-294-3811.

Respectfully Submitted,

Season R. Snyder, Ph.D.
Environmental Scientist

Tim Bekhuys, B.Sc., R.P.Bio., P.Biol.
Senior Environmental Scientist

APPENDIX A


PROPOSED VALLEY TRAIL
Highway 99
Channelized Structure
BC HYDRO SUB STATION
Channelized Structure
Proposed Box Culvert
MUNICIPAL WORKSYARD
Whistler Transit Facility
Preliminary Trail, Stormwater & Mitigation Wetland

APPENDIX B

LaCas Consultants Inc.
Consulting Engineers - Hydrologists, Since 1991

Technical Memorandum

DATE: August 1, 2008

TO: **James Spiers,** Project Director, Associate
OMICRON
595 Burrard Street
Vancouver, BC
V7X 1L4

FROM: **Brian LaCas,** P.Eng., LEED A.P., Sr. Hydrological Engineer
LaCas Consultants Inc.

RE: **WHISTLER TRANSIT FACILITY – NORTH VANCOUVER**
Fitzsimmons Creek Floodplain - Flood Control Issues
LCI File 08.012

1. INTRODUCTION

This technical memorandum prepared by LaCas Consultants Inc. (LCI) for Omicron (the Client) for the proposed Whistler Transit Facility; is with respect to flood control issues within the Fitzsimmons Creek floodplain. The proposed Whistler Transit Facility (Property) along the western overbank of Fitzsimmons Creek within the Resort Municipality of Whistler (Figure 1). The legal description of the Property is as follows:

Parcel Identifier: 015-921-107
THE NORTH 1/2 OF DISTRICT LOT 1758 GROUP 1 NEW WESTMINSTER DISTRICT, EXCEPT FIRSTLY: PART IN REFERENCE PLAN 1022 SECONDLY: PART IN PLAN LMP3329 THIRDLY: PART IN HIGHWAY PLAN 90

The purpose of this technical memorandum is to provide hydrological engineering modeling and calculations to determine flood proofing for the Property within the Fitzsimmons Creek floodplain.

This assignment has the following scope of work:

- review present flooding aspects unique to the Property;
- review existing land survey work;
- liaise with land surveyor for hydrometric creek survey work;
- liaison with the Client and Civil Engineer;

- input hydrometric survey data into water surface profile model (US Army Corps of Engineers, HEC-RAS) and calibrate model;
- carry out water surface profile analysis using numerical open-channel water surface profile hydraulic modeling to determine the flood proofing for the Property;
- review general layout of buildings and access roads on the Property;
- discuss floodway routes through the Property;
- determine overland design velocities and recommend erosion and scour protection works where necessary;
- review transfer of flood risk to third parties due to development on the Property;
- prepare a technical memorandum addressing flood control issues.

2. MEMORANDA REVIEWED

The following memoranda were reviewed:

- mapping and location plans;
- review of engineering plans; and
- previous pertinent memoranda.

3. OBSERVATIONS

On June 18, 2008 a site reconnaissance of the Property was carried out by Brian LaCas, P.Eng. of LCI. These trips focused on the Property including upstream and downstream on Fitzsimmons Creek.

The Property is located within the floodplain and on the alluvial fan of Fitzsimmons Creek; therefore it is flood vulnerable and subject to the risks associated with flooding and alluvial fan deposition processes.

There are no adequately designed dykes or river training works for flood control between Fitzsimmons Creek and the Property. Since the road profile of Highway 99 adjacent to the Property is below the design flood level of Fitzsimmons Creek then it is likely that during a design flood event that floodwaters would cross Highway 99 and flood the lands east of the highway including the Property.

4. FITZSIMMONS CREEK

Fitzsimmons Creek is a steep mountain river with a watershed area of 93 km^2 with a extensive alluvial fan of about 3.4 km^2. The fan has developed as a result of historical floods and debris floods; hence it is considered a hazardous landform. Table 1 summarizes the current design flood flows for Fitzsimmons Creek.

Table 1. Fitzsimmons Creek Design Flood Flows

Location	Design Flood Flow (m^3/s) 200-Year Return Period
Downstream of Confluence with Blackcomb Creek	250

Extensive sediment deposition, severe erosion and debris impact associated with floods may compound flood damage. For example, in August 1991, a flood deposited about 128,000 m^3 of debris on the Fitzsimmons Creek fan, causing widespread damage. The return period of the 1991 flood was about 50 to 80 years.

A river sedimentation zone is located in the reach of Fitzsimmons Creek across the highway from the Property. If periodic and necessary gravel removal is not carried out the hydraulic capacity of the reach is diminished with rising creek bed levels. Rising creek bed levels could facilitate overbank flooding and in the worst case a channel avulsion. The Highway 99 grade should mitigate but not eliminate the avulsion risk.

5. HYDRAULIC MODELING AND FLOOD CONTRUCTION LEVELS

A land survey of the Property was completed in July 2008 by Doug Bush Land Survey Services Ltd. The land survey was used as a basis to update the creek channel and overbank topography and provide 23 cross sections through Fitzsimmons Creek and the overbank areas. The cross sections start about 240 m downstream of the Property on Fitzsimmons Creek and extend 560 m upstream of the Property bracketing the Property as shown in Figure 2. The cross sections, Manning's n roughness coefficient of 0.05 for the channel, 0.11 for the vegetated overbank areas and a design flow of 250 m^3/s was input into the US Army Corps of Engineer's HEC-River Analysis System along with the 23 creek cross sections. In addition, an average bedload allowance of 1 m was included for all creek sections.

The water surface profile in the vicinity of the Property was determined along with a 0.3 m freeboard to establish the FCL for the Property.

6. CONCLUSIONS

The proposed Whistler Transit Facility development is located on the floodplain and fan of Fitzsimmons Creek; hence it is considered a hazardous area therefore flood mitigation measures are required to protect the Property.

An existing dip in the Highway 99 road profile adjacent to the Property is a cause of concern since floodwaters could freely cross the highway and flood the Property and other lands on the west side of the highway. Although not part of the Property the off-site raising of Mons Road and a portion of the Valley Trail system along with rock armouring would provide many flood benefits to the Property and surrounding lands west of the highway.

Once the Property and other lands on the west side of highway are flooded the areas maybe flooded for an extended period until water drains through the CN Rail ROW eventually to draining to Green Lake; however some water may be permanently trapped in low areas restricting full access to the Property and other lands. There may be attendant safety and health risks with ponded water.

While gravel bed aggradation of approximately 1 m has been included in the hydraulic modeling of Fitzsimmons Creek this does not preclude periodic adequate flood control gravel removal within Fitzsimmons Creek which essential to mitigate the flood risk to the Property.

The hydraulic modeling results based on the stated assumptions in this technical memorandum provide a Flood Construction Level for areas of habitation, business and storage of goods; however it should be noted that under design flood event conditions there is a likelihood of flood damage to areas not flood proofed on the Property through overbank flooding and/or channel avulsion, deposition of logs and debris.

7. RECOMMENDATIONS

1. The top of concrete slab for habitation, business or storage of goods damageable by floodwaters including the fuel filling facility for the proposed Whistler Transit Facility shall be set at the Flood Construction Level based on the greatest of:
   - 644.0 m GSC NAD83; or
   - 1 m above the surrounding finished grade.

2. The foundations of all habitable areas and the fuel filling facility shall be protected from erosion and scour by floodwaters using concrete and/or Class 50 kg rock riprap (BC MOT Section 205 Specification) placed at 2 horizontal to 1 vertical slope (where applicable).

3. Parking areas are allowed in the floodplain however it is advisable to remove all vehicles prior to flooding and taking all reasonable measures to mitigate flood damage to the site.

4. Floodways using channels roadways; pedestrian ways should be incorporated into the Property to facilitate movement of water off the Property and not causing an exacerbation of flood levels to adjacent lands.

5. All areas below the designated Flood Construction Level shall not include an installation of heating, ventilating and air conditioning devices, mechanical equipment, major electrical switchgear or, other fixed equipment susceptible to damage by floodwaters unless an adequately flood proofed tank structure with access from above Flood Construction Level is certified by a qualified BC Registered Professional Engineer. Furthermore, a qualified BC Registered Professional Engineer shall certify that there are no openings or vents allowing floodwaters to enter electrical/mechanical rooms or storage areas, below the Flood Construction Level and that all ducts and pipes have been adequately sealed with no-shrink grout and that all walls and ceilings (below Flood Construction Level) are protected by the installation of an impermeable waterproof barrier. A qualified BC Registered Professional Engineer (Hydrogeotechnical) shall certify that the surface flooding up to 1 m in depth within the floodways around and surrouuding the habitable structures will not cause groundwater hydrostatic pressure build up during the design flood event for any areas susceptible to flood damage below the Flood Construction Level.

6. To mitigate the risk of floodwaters from Fitzsimmons Creek crossing Highway 99 and flowing through the Property the Client may consider entering in dialogue with the Resort Municipality of Whistler and other concerned agencies/landowners regarding the construction of a rock armoured river training berm between Fitzsimmons Creek and Highway 99.

7. All as-built architectural, engineering and landscape plans and certification letters shall be submitted to LaCas Consultants Inc. for final review with respect to flood control issues pertaining to this technical memorandum.

8. Prior to occupancy of the Whistler Transit Facility, a final occupancy letter shall be prepared by LaCas Consultants Inc. along with the Final Site Grading Record Drawing prepared by others.

9. Any future site grading alterations or obstructions affecting flood capacity, levels and velocities not shown on the record drawing shall not be permitted unless approved in writing by LaCas Consultants Inc. or certification by a qualified BC Registered Professional Engineer.

10. Even though it is not a requirement it is suggested that the original of this technical memorandum, the certification letter and the Final Site Grading Record Drawing be filed with the Resort Municipality of Whistler.

All elevations are geodetic based GSC NAD 83.

8. CLOSURE

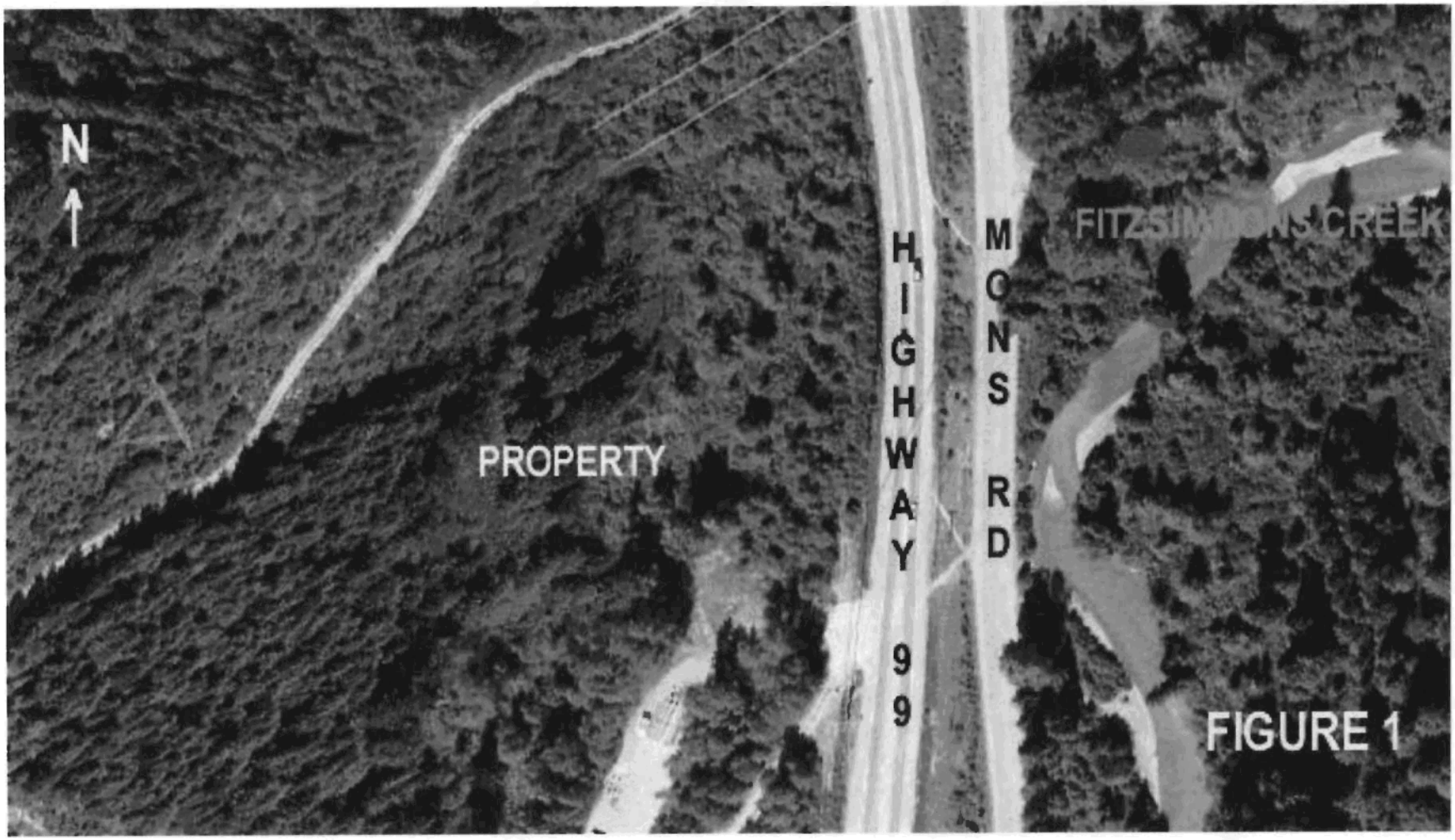
It is hereby certified that the proposed Whistler Transit Facility within the Resort Municipality of Whistler maybe used safely for the use intended; subject to the recommendations provided in this technical memorandum. In this context, the term "safe" is restricted to the 200-year return period surface water flood on Fitzsimmons Creek.

Prepared by:

Brian David LaCas, P.Eng., Sr. Hydrological Engineer
LaCas Consultants Inc.

Statement of Limitations and Liability

This document has been prepared by LaCas Consultants Inc. for the Property described as the Whistler Transit Facility, Whistler, BC only; under its Standard Terms and Conditions for the exclusive use of the Client. No other party other than the Client, the Resort Municipality of Whistler or the BC Ministry of Environment is entitled to rely on any of the conclusions, data, opinions, or any other information in whole or in part which is contained in this document. In order to properly understand the suggestions, recommendations and opinions expressed in this document, reference must be made to the whole of the document. LaCas Consultants Inc. cannot be responsible for use by any party of portions of the document without reference to the whole document. This document represents LaCas Consultants Inc.'s best professional judgment based on the information available at the time of its completion and as appropriate for the project scope of work. Services performed in developing the content of this document have been conducted in a manner consistent with that level and skill ordinarily exercised by members of the engineering profession currently practising under similar conditions. A future uncertainty of global warming has not been taken into account in this document nor is an inadequate gravel removal program within Fitzsimmons Creek. No warranty, express or implied, is made. It is understood by LaCas Consultants Inc. that the Client is not legally bound by any RMOW bylaws pertaining to flood control. In accepting this report, the Client agrees notwithstanding the availability of any insurance that all claims which the Client may have against LaCas Consultants Inc., its employees, officers, agents, representatives, and sub-consultants in respect to the preparation of this document howsoever arising, whether in contract, tort, breach of statutory duty or based on any other cause of action, shall be absolutely limited, individually and in aggregate, to an amount equal to the amount of fees paid to LaCas Consultants Inc. for undertaking this work. The Client agrees that all liability of LaCas Consultants Inc., its employees, officers, agents, representatives, and sub-consultants shall expire two years after the date of the professional engineering seal on the original document. The Client further agrees that the employees, shareholders, officers and directors of LaCas Consultants Inc. shall have no personal liability to the Client in respect to any claim accordingly the Client agrees that it will bring no proceedings and take no action in any court of law against such individuals in their personal capacity. When LaCas Consultants Inc. submits both electronic file and hardcopies of this document including drawings and other documents and deliverables (LaCas Consultants Inc.'s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by LaCas Consultants Inc. with a red ink Professional Engineering Seal (not scanned) shall be the original documents of record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by LaCas Consultants Inc. shall be deemed to be the overall original for the project.

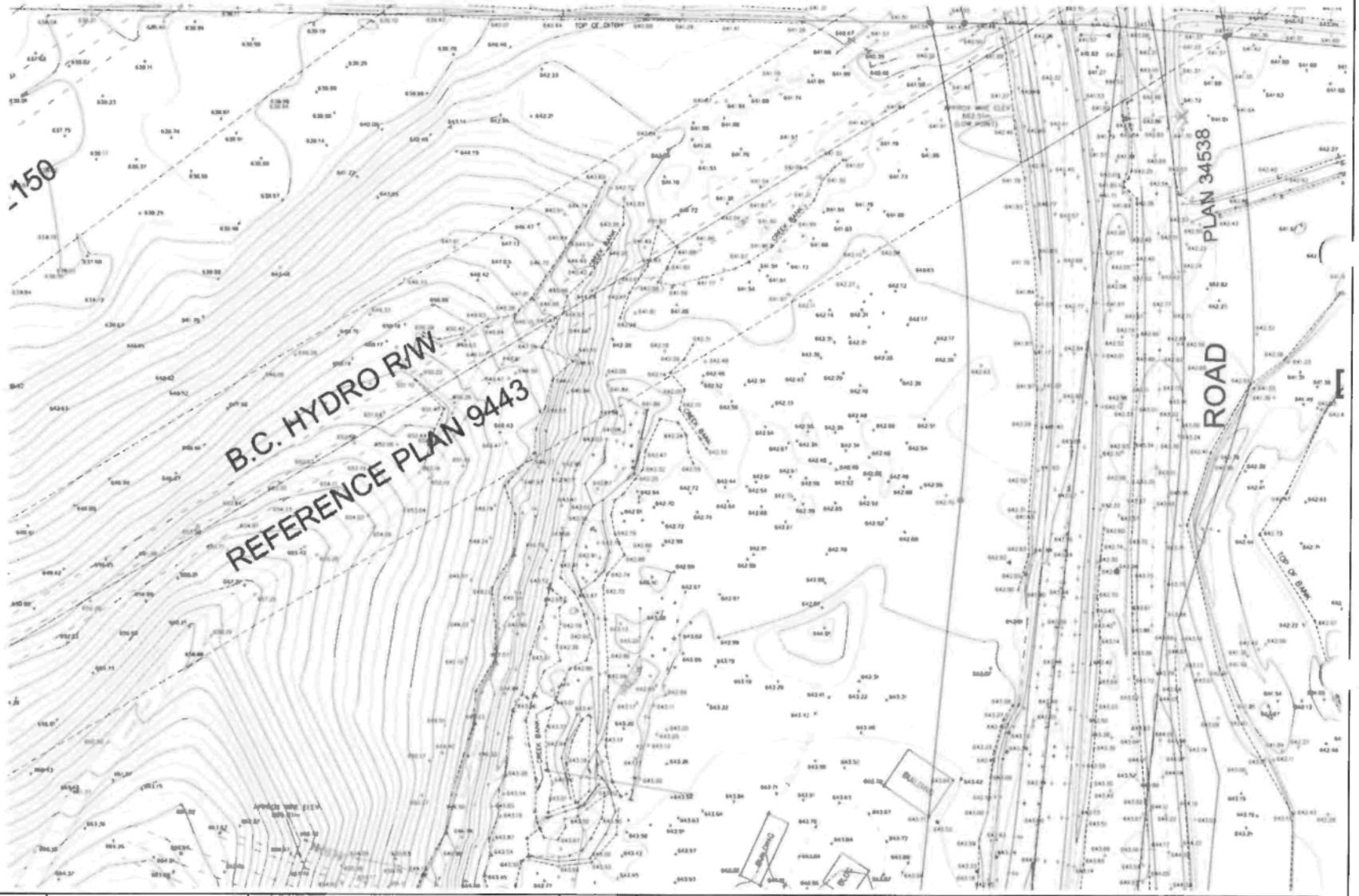

N
PROPERTY
HIGHWAY 99
MONS RD
FIGURE 1

PLAN SHOWING TOPOGRAPHY, SITE FEATURES AND CROSS-SECTION LOCATIONS ON PORTIONS OF D.L. 1758 & LOT 1, D.L. 1757, GP. 1, N.W.D.

RVEY SERVICES, LTD. , ASCT, RSS Technologist Road, Whistler, B.C. V0N 1B1 932-3039 dougb@dbsw.ca	LaCas CONSULTANTS INC. CONSULTING ENGINEERS & HYDROLOGISTS 1311 Howe Street, Suite 200 Vancouver, B.C. Canada V6Z 2P3 Tel: (604) 688-2535 E-mail: info@LaCas-Consultants.com Web: www.LaCas-Consultants.com	Notes: - ELEVATIONS ARE GEODETIC NAD83 DERIVED FROM WATER RESOURCES MONUMENT NO. 1685 LOCATED UNDER THE MONS OVERPASS ELEVATION = 640.702 METRES	Date: JULY 29 2019 Files: DESIGNED DRAFTED	Client: Project: B.C. HYDRO LANDS	FIGURE 2	SCAL Job N Drawi

PLAN SHOWING TOPOGRAPHY AND SITE FEATURES ON PORTIONS OF D.L. 1758 & LOT 1, D.L. 1757, GP. 1, N.W.D.

NOTE:
- BEARINGS ARE DERIVED FROM G.P.S. SURVEY
- FIELD SURVEY COMPLETED JUNE 20th, 2008
- CONTOURS ARE AT 0.5 METRE INTERVALS
- * DENOTES SPOT ELEVATION
- ☼ DENOTES POWER POLE
- ⚓ DENOTES POWER POLE ANCHOR



DOUG BUSH SURVEY SERVICES Ltd. Douglas J. Bush, AScT, RSIS Applied Science Technologist Unit 18, 1370 Alpha Lake Road, Whistler, B.C. V0N 1B1 Phone 932-3314 Fax: 932-3039 dougb@dbss.ca	Revisions:	Notes: - ELEVATIONS ARE GEODETIC NAD83 DERIVED FROM WATER RESOURCES MONUMENT NO. 1685 LOCATED UNDER THE MONS OVERPASS ELEVATION = 640.702 METRES	Date: JULY 30, 2008 Files: 06153CRD 08171TN5	Client: OMICRON Project: B.C. HYDRO LANDS	FIGURE 3	SCALE: GRAPHIC SCALE METRES 1 : 500 Job No. J08171 Drawing No. FIGURE 3 sheet 1

Berardinucci, Julia F ENV:EX

From: Mattison, Jim ENV:EX
Sent: Thursday, August 14, 2008 3:58 PM
To: Berardinucci, Julia F ENV:EX
Subject: FW: Transit Hub in Whistler on Red listed Wetland

Importance: High

From: Gilmore, Dan PAB:EX
Sent: Thursday, August 14, 2008 3:04 PM
To: Mattison, Jim ENV:EX
Subject: FW: Transit Hub in Whistler on Red listed Wetland
Importance: High

Jim,
Is there any way to track down any approval that MOE would have granted for this project? This line is way down in this story. Thanks!

Dan

B.C. Transit received approval from the Ministry of Environment late last week to make these changes to the property.

B.C. Transit to clear red-listed wetland next week

Final approvals almost in place for agency to build new transit hub on B.C. Hydro's land

By Claire Piech

Page 114 to/à Page 115

Withheld pursuant to/removed as

Copyright

BC hydro

reliable power,
at low cost,
for generations

Tony Vanger
Consultant
Properties, Sales and Leasing
Phone: 604-623-3949
Fax: 604-623-3988
Email: Tony.Vanger@bchydro.com

July 29, 2008

Ministry of Environment
2nd Floor, 10470 152nd Street
Surrey, BC V3R 0Y3

Attention: Mr. Mohammed Alam

BC TRANSIT WHISTLER FACILITY – APPLICATION UNDER SECTION 9

Reference: Meeting with BC Transit Project Manager and Environmental Consultant, 16 July, 2008.

To follow-up on the referenced meeting, this letter is confirmation that BC Hydro is in negotiations with BC Transit for the lease to BC Transit of the BC Hydro property at the Rainbow site in Whistler as described in the subject application. BC Hydro supports the construction of the new Whistler Transit centre facility on this site.

Should you have any questions, please contact me at BC Hydro, (604) 623-3949 or at my email address tony.vanger@bchydro.com.

Yours truly,

Tony Vanger
Consultant, BC Hydro Properties Division
Sales and Leasing

BRITISH COLUMBIA
The Best Place on Earth

July 28, 2008 FILE: **A2005449**

Water Stewardship Division
Ministry of Environment
10470 – 152nd Ave
Surrey, BC V3R 0Y3

Dear Mohammad Alam,

Re: BC Transit - Whistler Facility

Ecosystems has no objections to the proposed works subject to the following terms and conditions:

That the proposed works follow the plan outlined by Amec on behalf of BC Transit in their letter of July 17, 2008. In addition the works should adhere to the folowing guidelines:

- Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia (MWLAP 2004)

- Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (MOE 2006)

And that an Erosion and Sediment Control Plan be developed and implemented by the proponent that adheres to the best management practices in the Land Development Guidelines for the Protection of Aquatic Habitat (DFO, 1992) and Standard and Best Management Practices for Instream Works (MWLAP, 2004).

Sincerely,

Sheldon Reddekopp
Ecosystems Section
Environmental Stewardship

Ministry of Environment
Environmental Stewardship
Lower Mainland Region
Mailing/Location Address:
10470-152 Street
Surrey BC V3R 0Y3
Telephone: (604) 582-5222
Facsimile: (604) 930-7119
http://www.gov.bc.ca/
http://www.gov.bc.ca/env/

File A2005549
File sent for Transfer to MOE
July 21, 2008

Decision is required regarding:

- Water Officer – Mohammed Alam

- Is a Downstream Owner Notification Required?
  Yes _____ No ✓

- Are referrals required?
  _____ Yes – (please check off appropriate agencies from Referral Checklist behind flowsheet)

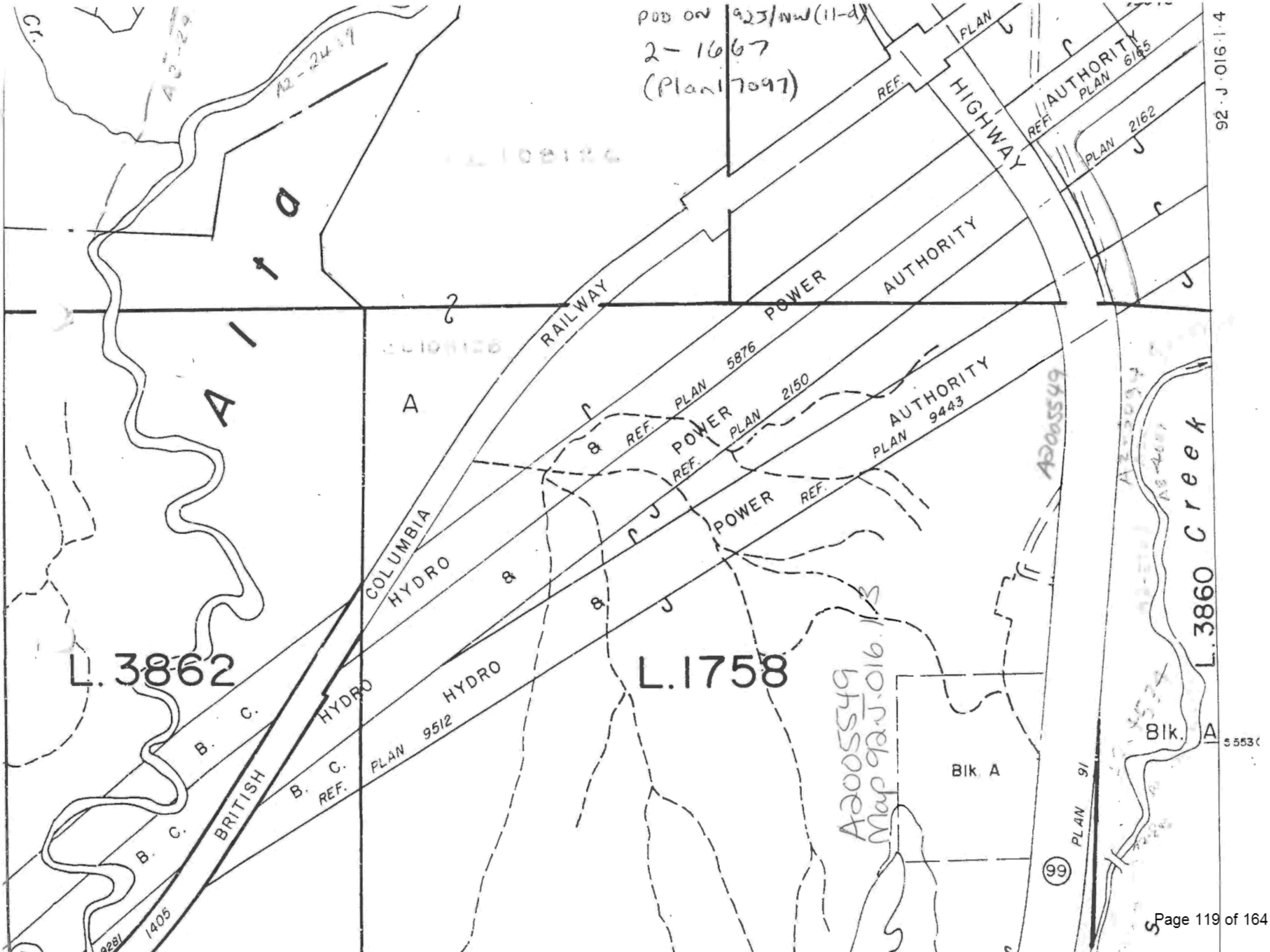
  ✓ No
  - if no, is an Acknowledgement Letter Required? Yes _____ No ✓

If Referrals and/or Acknowledgement Letter required, please return file to FCBC

If neither Referrals nor Ackn. Letter required, please advise FCBC that file is not being returned.

1. Sent to DFO by applicant
2. Given to Sheldon by hand.
3. No need to refer to FIRST NATION CEA Certificate for 2010 OLYMPIC issued in 2003. FIRST NATION supporting the game

Malen
July 25/08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(Plan 17097)
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A2-2419
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PLAN 2162
REF.
PLAN
RAILWAY
POWER
AUTHORITY
PLAN 5876
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POWER
PLAN 2150
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AUTHORITY
PLAN 9443
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REF.
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Alta
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COLUMBIA
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PLAN 91
L.3860
Creek
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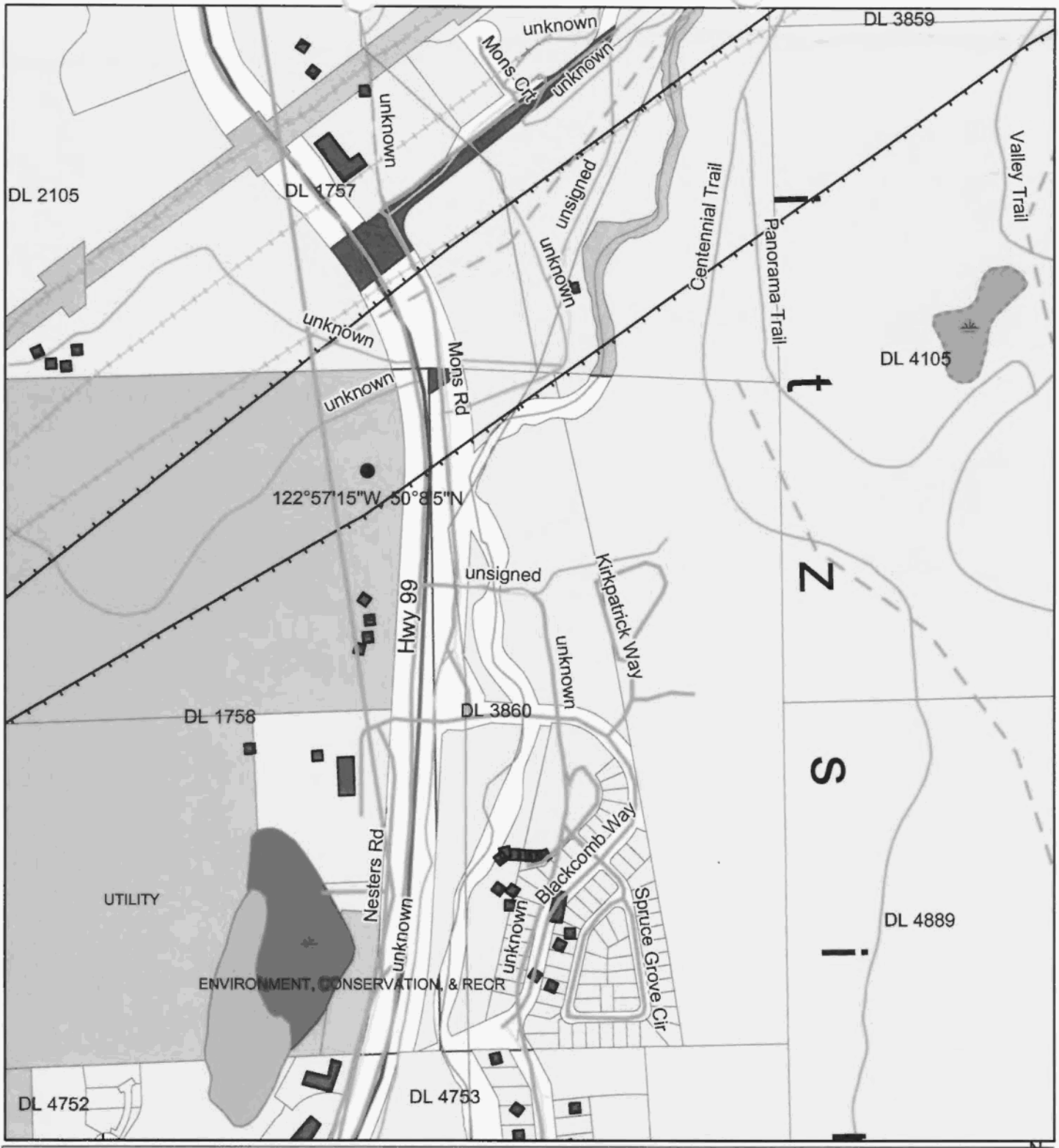


Kilometers
0 0.025 0.05 0.1 0.15 0.2

SCALE: 1:6,251

N

WATER DISTRICT: NWD
PRECINCT: 20H - Kent
MAP NUMBER: 5732C
FILE: A2005549
APP NUMBER: 2005549

Point of Diversion: ●	Indian Reserve:
Powerhouse: ■	Active Water Licence: ●
Works or Penstock: -·-·-	Active Application: ●
PCL: ------	Inactive Water Licence: ●

Map Prepared by: Kym Johnson *Date:* July 28, 2008

Ministry of Environment
Water Management

WATER MANAGEMENT
I N V O I C E

Invoice No: 923741

Invoice Date: 2008/07/21

( ) - Please make cheques payable to Ministry of Finance

Client No: 79345

BC TRANSIT
520 GORGE ROAD EAST
VICTORIA BC
V8W 2P3

LICENCE	FILE	SOURCE	PRECINCT		
A2-5549					
PURPOSE OR USE				QUANTITY UNITS	AMOUNT
		CHANGES IN & ABOUT ST			130.00

DUE: LAST BUSINESS DAY OF SEP/2008 INVOICE TOTAL: 130.00

Ministry of Environment
Water Management

WATER MANAGEMENT
I N V O I C E

Invoice No: 923741

Invoice Date: 2008/07/21

( ) - Please make cheques payable to Ministry of Finance

Client No: 79345 BC TRANSIT
520 GORGE ROAD EAST
VICTORIA BC
V8W 2P3

LICENCE	FILE	SOURCE	PRECINCT		
A2-5549					
PURPOSE OR USE				QUANTITY UNITS	AMOUNT
		CHANGES IN & ABOUT ST			130.00

DUE: LAST BUSINESS DAY OF SEP/2008 INVOICE TOTAL: 130.00

July 16/2008

Hideki,

Please rush this approval. We met with B.C. Transit & Amex. This is 2010 Olympic Sole. Any Question please call me on Sandra.
If you can open the file immediately & call me I can collect file from you.
Thanks.

Mohamed.

File Note

File: A2005549

July 16, 2008

10:00 am meeting held at the Ministry of Environment office between Ron Harmer (VP BC Transit)k, Timothy Bekhuys (AMEC), Mohammed Alam (Ministry contractor), Timothy Bennett (Section Head), Sandra Jensen (Portfolio Administrator), to review the application and discuss the timeframe.

17 July 2008

AMEC File:VE51812

VIA COURIER

FrontCounter BC
Lower Mainland Region
Suite 200-10428 153rd St
Surrey BC V3R 1E1
Tel: (604) 586-4400

Attention: To Be Determined
Ministry of Environment
Integrated Land Management Bureau

Reference: BC Transit – Whistler Facility
Application for Approval under Section 9 of the *Water Act*

1.0 INTRODUCTION

BC Transit has proposed the development of a hydrogen fuelling station and bus depot in Whistler, BC. This application for approval under Section 9 of the *Water Act* is being submitted on behalf of BC Transit for construction of the transit facility, which includes works in and around an unnamed creek that runs along the western edge of the development property. Proposed in-stream works include the infilling of a portion of the unnamed creek channel, existing wetted areas and riparian habitat within the project footprint, removal of riparian habitat along the proposed road corridor, and installation of culvert crossings. To mitigate for the loss of in-stream and riparian habitat, BC Transit will re-direct the unnamed creek around the project footprint and create a new wetland complex (i.e. channel, pool, marsh and riparian habitat) designed to maintain site drainage, manage stormwater runoff and provide improved fish and wildlife habitat functions and values on the site. A description of the proposed works, including preliminary drawings and landscape plans are provided herein. The BC Ministry of Environment (MOE) Section 9 *Water Act* Application form is attached in Appendix A. A copy of this application has also been submitted to Fisheries and Oceans Canada (DFO).

2.0 LOCATION

The proposed in-stream works are located immediately north of the BC Hydro Rainbow Sub-station, near Nesters Road in Whistler, BC (Figures 1 & 2). The site is owned by BC Hydro and represents a portion of the Remnant of the North Half of District Lot 1758, N.W.D. (N1/2 DL 1758, N.W.D.). BC Hydro has granted approval to BC Transit for the proposed development on the site.

3.0 DESCRIPTION OF THE PROJECT

BC Transit's Whistler Transit Facility is being developed to meet the following two major objectives:

- Accommodate the growth of the Whistler fleet and new technologies that reduce environmental impact; and
- Accommodate the implementation of hydrogen fuel buses, including fuel storage (liquid & gaseous), compression and dispensing systems.

The secondary objectives of the proposed project are to:

- Accommodate the long term infrastructure capacity for 50 conventional transit buses;
- Reduce or mitigate environmental risk;
- Reduce or minimize the cost of obtaining and implementing infrastructure; and
- Construct the facility to LEED standards (preferably Gold).

The Transit Facility will include administrative, operations, maintenance and storage areas. Other areas of the site will house covered open bus storage shelters for up to 50, 41 foot long buses, a hydrogen fuelling facility (to be built by the fuel supplier) and requisite site utilities and services. The preliminary site plan for the Transit Facility is provided in Appendix B.

4.0 FISHERIES AND AQUATIC RESOURCES

The proposed project site is a remnant of the historic Fitzsimmons Creek floodplain that was isolated by the establishment of Highway 99 and subsequent dyking of Fitzsimmons Creek (Appendix C). The property is characterized by soft alluvial soils. Vegetation represents the Southern Moist Submaritime Coastal Western Hemlock Variant (CWHms1). Dominant species include Western hemlock (*Tsuga heterophylla*), Western redcedar (*Thuja plicata*), Amabilis fir (*Abies amabilis*) and Engelmann x Sitka spruce (*Picea engelmannii* x *sitchensis*). Black cottonwood (*Populus balsamifera*), Red-osier dogwood (*Cornus stolonifera*) and Red alder (*Alnus rubra*) are also common. In the understory, salmonberry (*Rubus spectabilis*), black twinberry (*Lonicera involucrata*) and skunk cabbage (*Lysichiton americanum*) are present.

The unnamed creek runs along the western edge of the property at the base of a moderately steep slope composed of bedrock and overlain by weathered bedrock and colluvium. The creek flows from Nester's Pond (south of the site) north through the development property, then into an adjacent highway ditch. The highway ditch flows north, potentially to Alta Creek and then into Green Lake. Previous reports prepared for the property also describe the creek as flowing northwest at the Bailey property towards the BC Rail tracks and Nicklaus North Golf Course, which eventually flows to Alta Creek (Environmental Inventory and Assessment of the BC Hydro Lands near Nesters, in Whistler, B.C. Cascade Environmental Resource Group, March 22, 1999).

AMEC conducted a fisheries site survey on June 20, 2008 to determine the fish bearing status of the unnamed creek (Appendix D). Minimal fish habitat value is present in the unnamed creek. Where the facility footprint is planned, the creek consists primarily of intermittent pools. The channel is undefined, with little evidence of scour and no visible flow. Portions of the creek are dewatered and the substrate consists of fines and organics. The average channel width (where

defined) is 0.68 metre (m) and average depth (where water present) is 0.14 m. Overall fisheries habitat quality was rated poor for all species, due to the lack of a defined channel and water. There were also no fish present. However, this portion of the creek could provide valuable nutrient input to other areas, specifically near the Rainbow Sub-station and public works yard. In these locations, the creek is more defined with visible channel banks and an increase in channel depth. Rearing habitat quality in this area is rated moderate for salmonids due to the deep pools and presence of cover. No spawning or overwintering habitat is present. Threespine stickleback are present in this location.

4.0 DESCRIPTION OF WORKS

4.1 Works In and Around a Stream

Construction of the proposed project requires the infilling of a portion of the unnamed creek channel, existing wetted areas and riparian habitat on the project site. There will be additional disturbance to riparian habitat as a result of road construction and culvert installation. The road alignment and location of culvert crossings is not yet known. However, the culverts will be designed to provide fish and wildlife passage.

Major works associated with in-stream and riparian impacts include:

- Vegetation clearing
- Pre-loading
- Grading and contouring

It is anticipated that mitigation for these impacts will be undertaken before and/or concurrent to the site preparation activities stated above.

4.1.1 Summary of Habitat Impacts and Creation

Based on the preliminary site plan, construction will require the infilling of existing wetted areas resulting in a total in-stream impact area of approximately 240 square metres (m^2). Construction will also require the removal of riparian habitat resulting in a total riparian impact area of approximately 16,200 m^2.

Habitat creation is still in the early design phases, but will include new stream channels, pools and marsh and riparian habitat. The overarching goal of the design is to best use the available space to meet the specific objectives of habitat creation described below. As the design advances, estimates of created habitat will be provided.

5.0 HABITAT CREATION

The specific objectives of habitat creation are to:

- Maintain surface drainage flows / hydrologic cycles through the creation of a variety of wetland habitats on the site;

- Provide high quality habitat that is representative of the character of the pre-developed site and surrounding areas;
- Provide habitat suitable to support a diversity of plant and wildlife species;
- Maintain habitat linkages between Nesters Pond to the south and Nicklaus North Golf Course to the north; and
- Enhance the aesthetic value of the developed site, so that it may be tied into the proposed Valley Trail network.

5.1 Wetland Design

There will be two separate wetland systems created on the project site, one to receive and treat stormwater runoff and the other, a natural wetland to convey the existing unnamed creek around the project footprint. These two systems will be tied together at the south end of the site where treated stormwater flows into the natural wetland to form the wetland complex. The wetland complex is a series of pools, channels and marsh and riparian habitats. This newly created habitat will comprise the entire southern and eastern boundaries of the project site.

Accepted standards and design criteria for constructed wetlands will be used for this project. The following guidance documents will be referenced during design development:

- Guiding Principles for Constructed Treatment Wetlands: Providing for Water Quality and Wildlife Habitat. U.S. Environmental Protection Agency, October 2000.
- Design of Stormwater Wetland System: Guidelines for Creating Diverse and Effective Stormwater Wetlands in the Mid-Atlantic Region. T.R. Schueler, Metropolitan Washington Council of Governments, Washington, DC. October, 1992.
- Virginia Stormwater Management Handbook, Vol. 1 & 2. Virginia Department of Conservation and Recreation, First Edition 1999.
- Minnesota Urban Small Sites BMP Manual. Prepared for Metropolitan Council by Bar Engineering Co. July 2001.

General criteria and recommendations for wetland creation are provided below. A preliminary design is provided in Appendix B. Design details are subject to change as more information on site soils and post-development hydrology is obtained.

5.1.1 Stormwater Wetland

The stormwater wetland will be designed to temporarily store site runoff in a series of deep and shallow pools to promote the breakdown and removal of pollutants from the water before entering the natural wetland. The stormwater wetland will be designed to accomodate site runoff estimated from paved surfaces and rooftops. Stormwater runoff will be conveyed to the wetland via a swale and first enter a sediment forebay designed to decrease velocity and sediment loading. The forebay will contain at least 10 percent of the wetland's treatment volume and will be 1.2 to 1.8 m deep. The forebay will be separated from marsh habitat by gabions or an earthen berm. A series of berms or high marsh wedges will be placed at regular intervals and right angles to the direction of flow. Between these wedges will be low marsh habitat. Before the outlet, a deep (1.2 – 1.8 m) micropool will be designed. The minimum dry weather flow path will be 2:1 (length to width) from

inflow to outlet across the wetland. A reverse slope pipe or broad crested weir will be designed at the outlet to control flow into the natural wetland.

Around the stormwater wetland, there will be maintenance access and a vegetated riparian buffer. The buffer will be planted with native trees and shrubs.

5.1.2 Natural Creek/ Wetland Complex

The natural wetland is designed to re-direct the unnamed creek around the project footprint. A variety of habitat-types will be created, including deepwater (includes forebays, micropools and channels), shallow water (low marsh and high marsh), and riparian and upland buffer zones. Water will be discharged from the site to a highway ditch at the northeast corner of the property. There may also be an opportunity to recharge groundwater through an existing seep at this location.

Habitat-types are described as follows:

Deepwater Zone (forebays, micropools and channels) – This zone is submerged beneath 0.8 to 1.8 m of water. It will support submerged aquatic vegetation and floating vegetation.

Shallow Water Zone (low marsh and high marsh) - This zone is 0 to 0.8 m in normal depth and is the primary area for the establishment of emergent wetland plants. This zone is divided into low-marsh and high-marsh habitats.

- **Low Marsh Zone** - From 0.2 to 0.8 m below the normal permanent pool or water surface elevation.
- **High Marsh Zone** – From 0 to 0.2 m below the normal permanent pool or water surface elevation.

Vegetation in this zone will serve to reduce flow velocities, increase the rate of sediment deposition, enhance nutrient uptake, provide food and cover for wildlife, and improve aesthetics.

Shoreline Fringe Zone – Area above the normal water surface elevation that is inundated during large storm events. Plants must be tolerant of periodic drying. This zone will support wetland, riparian and grass species. Vegetation will serve to stabilize the shoreline, provide food, cover and nesting habitat for wildlife and improve aesthetics.

Buffer Zone – Area separating the wetland from the surrounding land and development. A minimum buffer of 15 m is recommended. The buffer will be contiguous and planted with a variety of native riparian and upland tree and shrub species. Special consideration will be given to those species having high wildlife value (e.g. berry producing plants). Vegetation will serve to provide food, cover and nesting habitat for wildlife.

5.2 Landscaping

Plant species selected for landscaping will be those that typically characterize each habitat- type and compliment preserved areas adjacent to the site. Those species naturally occurring within the project area (on-site and areas near the BC Hydro Sub-station) may be a source of plant material

for landscaping through plant salvage or cuttings. Preliminary thoughts on plant species selection, methods of establishment, planting locations and wildlife enhancement are described below. A formal landscaping plan will be developed that indicates the methods used to establish and maintain vegetation coverage.

A preliminary species list is provided in Table 1. Any of the species may be appropriate for landscaping.

Table 1. Plant Species Suitable for Wetland and Riparian Landscaping

Common Name	Scientific Name	Habitat-Type
Yellow water lily	*Nuphar polysepalum*	Submerged
Sago pondweed	*Potamogoton pectinatus*	Submerged
Wild celery	*Vallisneria americana*	Submerged
Sedges	*Carex* sp.	Low / High marsh
Rushes	*Juncus* sp.	Low / High marsh
Bulrush	*Scirpus* sp.	Low/ High marsh
Spikerush	*Eleocharis* sp.	Low/ High marsh
Skunk cabbage	*Lysichiton americanum*	Low / High marsh
Water plantain	*Alisma plantago-aquatica*	Low/ High marsh
Arrowhead	*Sagittaria latifolia*	Low/ High marsh
June grass	*Koeleria macrantha*	Fringe
Bluejoint	*Calamagrostis canadensis*	Fringe
Tufted hairgrass	*Deschampsia cespitosa*	Fringe
Salmonberry	*Rubus spectabilis*	Fringe / Riparian
Black twinberry	*Lonicera involucrata*	Fringe / Riparian
Devil's club	*Oplopanax horridus*	Fringe / Riparian
Hardhack	*Spiraea douglasii*	Fringe / Riparian
Willow	*Salix* sp.	Fringe / Riparian
Paper birch	*Betual papyrifera*	Fringe / Riparian
Black cottonwood	*Populus balsamifera*	Fringe / Riparian
Trembling aspen	*Populus tremuloides*	Fringe / Riparian
Elderberry	*Sambucus racemosa*	Fringe / Riparian
Red-osier dogwood	*Cornus stolonifera*	Fringe / Riparian
Douglas maple	*Acer circinatum*	Riparian / Upland
Sitka mountain ash	*Sorbus sitchensis*	Riparian / Upland
Salal	*Gaultheria shallon*	Riparian / Upland

Common Name	Scientific Name	Habitat-Type
Western redcedar	*Thuja plicata*	Riparian / Upland
Saskatoon	*Amelanchier alnifolia*	Upland
Wild rose	*Rosa nutkana*	Upland
Englemann x Sitka spruce	*Picea engelmannii x sitchensis*	Upland
Western Hemlock	*Tsuga heterophylla*	Upland
Sitka spruce	*Picea sitchensis*	Upland
Douglas fir	*Pseudotsuga menziesii*	Upland
Amabilis fir	*Amabilis fir*	Upland

5.2.1 Plant Procurement and Installation

A variety of plant materials and planting methods may be used in habitat creation, including seed, plugs, container-grown plants and cuttings. For all types of plant materials, planting locations will be staked/marked in the field prior to the start of revegetation efforts. For plugs, container-grown plants and cuttings, they will be randomly staggered within their respective planting zones to create naturally appearing plant associations. Any adjustments to the planting design will be as necessary to meet field conditions.

5.3 Topsoil Salvage

During grading operations, topsoil will be stockpiled on-site and used later in habitat creation. There are several benefits to using the existing topsoil, namely it's appropriateness to support the target plant species. Topsoil stockpiled at depths no greater than 1 metre is known to maintain its biological activity and provide a valuable source of vegetative plant material (i.e. seeds, roots and plant parts).

Prior to planting, it is recommended that a physical and chemical analysis of stockpiled soils be conducted. Soil will be tested for texture, bulk density, organic matter content and plant nutrient availability (N, P and K). Results of these tests will help determine potential limiting factors for plant growth and establishment, and the necessity to include soil amendments as part of revegetation.

5.4 Wildlife Enhancements

Structures that enhance or facilitate wildlife use of the site will be constructed for birds and other terrestrial and aquatic species. Structures will include nest boxes, platforms, coarse woody debris, submerged logs, brush piles and bat boxes. These structures are known to attract diverse wildlife.

5.4.1 Nest boxes

Cavity nesters will be accommodated with nest boxes. Nest boxes will be mounted on trees, or if required, on poles. Different bird species have different box requirements. Nest box specifications for cavity nesters observed in the Whistler Region is provided in Appendix E. The number, type and placement of nest boxes will be subject to field verification.

5.4.2 Nest platforms

Raptors and waterfowl will use and benefit from nest platforms. Platforms for waterfowl will be floated and anchored in the water. On the platforms, a nest box will be placed in the centre, filled with leaf litter and screened with brush. Platforms for raptors, specifically Osprey, will either be secured to poles near or above water, or secured to the top of a larger tree near the water. As with nest boxes, the number, type and placement of nest boxes will be subject to field verification.

5.4.3 Coarse Woody Debris

Coarse woody debris (CWS) includes sound and rotting logs and stumps, and coarse roots in all stages of decay, that provide habitat for plants, animals and insects and a source of nutrients for soil structure and development. In terrestrial systems, CWD provides sites for nests, dens and burrows, food, cover and pathways to cross streams, the forest floor and snow. In aquatic environments, CWD provides structure to slow stream flow and create pools, cover, rearing and refuge habitat for fish and amphibians, and basking areas for reptiles and other species.

CWS will be salvaged from the project site during vegetation clearing. This will include salvage of tree trunks (logs/snags), stumps (root balls in tact), and branches (slashed material). CWS will be placed in upland areas as brush piles and within pools as submerged logs. The number and placement of CWS will be subject to field verification.

Brush Piles

Near the water, CWS debris piles will be created by piling slashed material and placing cast-off logs on top. The size and placement is contingent upon the mobility of the anticipated wildlife species use. Species expected to use the piles include dark-eyed juncos, white crown sparrow, grouse, shrews and voles. Minimum dimensions are estimated to be 2-3 m in diameter and 1 meter high.

Submerged logs

Within the pools or channels, submerged logs and branches will be placed horizontally into the water and anchored securely to the bank. Species expected to use submerged logs and CWD at the shoreline include the long-toed salamander, northwest salamander, Pacific treefrog, red-legged frog, western toad, garter snake and western garter snake.

5.4.4 Bat Houses

Bat houses provide artificial roosting structures used by at least a dozen of the more common and abundant bat species. Bats use roosts for many different reasons: as hibernacula, maternity (nursery) roosts, bachelor roosts, night roosts, and migratory stopovers. At a minimum, two (2) bat boxes will be placed on-site. Manufactured houses will meet Bat Conservation International's approved specifications.

5.4.5 Wildlife Passage/ Culverts

Culverts will be designed to provide small mammal movement and habitat connectivity from adjacent woodlots. The number and location of culverts is not yet determined, but these culverts will be designed to meet standards as described in:

- Land Development Guidelines for the Protection of Aquatic Habitat. DFO, May 1992;

- Standards and Best Management Practices for Instream Works. Ministry of Water, Land and Air Protection (MWLAP), March 2004; and
- Forest Practices Code of British Columbia - Fish-stream Crossing Guidebook. Ministry of Forests, MWLAP and Ministry of Energy and Mines, March 2002.

5.5 Maintenance

The stormwater wetland will require routine maintenance, especially while vegetation is being established (usually the first 3 years). This is likely to include removal of invasive species, replanting native species, and removing trash. Dredging accumulated sediments in the forebay should not be required until approximately 5 to 10 years after construction.

5.6 Monitoring

A monitoring program will be conducted by a qualified professional Biologist to assess the performance of created habitats. Monitoring will begin the first year after completion of landscaping until performance criteria have been met for two consecutive years having no human intervention (i.e. corrective or remedial action). Standardize procedures will be used. Corrective or remedial actions will be undertaken if success criteria are not obtained.

5.6.1 Vegetation

Vegetation will be monitored during the spring in years 1, 2, and 3. An acceptable percent survival of plants will be determined in consultation with resource agencies. However, 85 percent annually is a reasonable performance measure. Monitoring will include visual and photographic assessment of the habitat.

5.6.2 Fish and Wildlife

Observations of wildlife and their signs (eg. tracks and scat) will be recorded during vegetation surveys. Nest boxes, platforms and other enhancement features will be monitored for their use. Fish surveys will also be conducted to determine fish presence/absence in newly created habitat.

5.6.3 Hydrologic Conditions

The success of habitat creation will depend on maintenance of these anticipated water levels. Monitoring of hydrologic conditions will be conducted in early summer and will consist of observing ponding or evidence of seasonal inundation of the wetland/riparian plantings. Monitoring the hydrologic conditions in the wetlands in relationship to observed survival, growth, and reproduction of specific species will help ascertain the effects of hydrologic conditions on the survival of the planted and colonizing vegetation, and the potential need to implement corrective or remedial actions.

5.6.4 Water Quality

Water quality measurements will be taken in the field with certified and calibrated equipment. Samples will be analyzed for field pH, electrical conductivity, dissolved oxygen, temperature and turbidity. If determined necessary, total suspended solids (TSS) will be measured in the laboratory. Performance criteria for water quality parameters will meet the stormwater management guidelines cited by the Whistler Environmental Strategy (Approved and Working Criteria for Water Quality as published by Ministry of Environment, Lands and Parks, Water Management Branch, March 1989

and Urban Runoff Quality Control Guidelines for British Columbia as published by Waste Management Groups, British Columbia Research Corporation, June 1992).

6.0 CONSTRUCTION BEST MANAGEMENT PRACTICES

To avoid and minimize potential environmental impacts during construction, best management practices such as those described below will be implemented.

6.1 Vegetation Clearing

Prior to vegetation clearing, the limits of construction will be staked or flagged to prevent accidental encroachment into preserved areas. Large trees to be retained on-site will also be clearly marked to prevent their removal. Large woody debris and the stubs of large diameter trees will be salvaged and used for enhancement of fish and wildlife habitat. Trees will be felled away from the creek channel. Removal of the felled trees and woody debris will be completed in a manner that does not damage the bed and bank of the creek.

6.2 Nesting Birds

Vegetation clearing will be scheduled outside the breeding bird season to avoid disturbance or destruction to active bird nests. If clearing activities cannot be scheduled outside the breeding season, a qualified biologist will conduct a pre-clearing survey for the presence of nesting birds. Observed nests and an appropriate buffer area will be protected until the nest is no longer occupied or the young have fledged.

6.3 Water Quality Mitigation

To protect water quality, in-stream works for the proposed culverts and infilling of creek channels will be constructed in isolation of flow using steel plates across the channel upstream and downstream of the wetted work area. A pump with fish screen will be used to dewater the in-stream work area, discharging sediment laden water to an upland, vegetated area away from the creek. Silt fencing along the channel and sand bag headwalls will be installed at the culvert inlet and outlet to prevent sediment from entering the creek.

During routine construction activities, it is envisioned that a variety of erosion and sediment control measures will be implemented to protect aquatic habitat. An Erosion and Sediment Control Plan will be prepared for the proposed project.

6.4 Fish and Wildlife Mitigation

A fish and amphibian salvage will be conducted prior to infilling the creek and installing culverts. Fish exclusion stop nets will be installed approximately 10 m upstream and downstream of the in-stream work area to conduct the salvage and provide a fish free zone prior to undertaking construction activities.

7.0 CONSTRUCTION MONITORING AND REPORTING

Construction activities will be monitored by a qualified Environmental Monitor (EM) on a full-time basis during project initiation and during any in-stream works. Monitoring frequency will likely vary

as construction progresses and there are fewer potential environmental risks. The EM will document compliance with plans and drawings, regulatory permits and Best Management Practices. The EM will also be granted authority to modify or halt any construction activity if it is deemed necessary to do so for the protection of fish and wildlife, or their habitats. The EM will complete and submit written monitoring reports to the permitting agencies.

8.0 CONCLUSION

This application report is being submitted on behalf of BC Transit for Approval under Section 9 of the *Water Act* for proposed works in and around an unnamed creek at the proposed Whistler Transit Facility Site in Whistler, BC.

A Section 9 Approval application form and application fee cheque for $130 payable to the Minister of Finance is enclosed (Appendix A).

If you have any questions please contact the undersigned at 604-294-3811.

Respectfully,

Season R. Snyder, Ph.D.
Environmental Scientist

Reviewed by:

Tim Bekhuys, B.Sc., R.P.Bio., P.Biol.
Senior Environmental Scientist

List of Attachments

Item	Title
Figures	Regional Project Location Local Project Site
Appendix A	Approval Application Form for Changes in and About a Stream Under Section 9 of the Water Act with $130 fee payment cheque payable to Minister of Finance
Appendix B	Drawings
Appendix C	Floodplain Map
Appendix D	Fish Report
Appendix E	Nest Box Specifications

APPENDIX A

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Environment

Approval Application or Notification
for Changes In and About a Stream
Under Section 9 of the *Water Act* and Part 7 of the Water Act Regulations

Incomplete or inaccurate forms do not constitute ***Notification*** *& will not be accepted.*
Proceeding with works after submission of an incomplete or inaccurate form would be a violation of the Water Regulation

☒ **APPROVAL APPLICATION** ☐ **NOTIFICATION[1] (see USERS' GUIDE)**

1. Applicant Information

Name: BC Transit (Contact: Mr. Ron Harmer, VP Technical Services)		
Address: 520 Gorge Road East		
City: Victoria	Province: B.C.	Postal code: V8W 2P3
Phone: 250-995-5663	e-mail: ron_harmer@bctransit.com	

2. Location of Works

Street Address of Works (or nearest town): Immediately north of the BC Hydro Rainbow Sub-station, Whistler BC		
Stream Name: Unnamed Creek	Flows Into: Highway ditch, potentially to Alta Creek.	
Location on Stream: Bed, bank and riparian of creek at project footprint, northwest corner of N 1/2 DL 1758, N.W.D		
Reference Landmarks: BC Hydro Rainbow Sub-station		Amount of disturbance in m^2: Approx. 16,400
Multiple Sites: YES / NO: No		Number of sites: 1
Latitude:122° 57"15'	Longitude: 50° 8' 5"	Elevation: Approx. 640 m
Legal description of property where work is proposed: N 1/2 DL 1758, N.W.D		

3. Drawing, Plan and Site Map

1. Attach drawing showing lot boundaries, location of buildings and of proposed works, stream direction and flow.
2. Attach a key map at an appropriate scale showing the location of the site.
3. Attach engineering drawings (may be required for works identified with [E] under **Requires Approval** section below).

4. Proposed Timing for Work

Start (day/month/year): 01/08/2008	Finish (day/month/year): 01/08/2009

FOR OFFICE USE ONLY

Date Received: **RECEIVED** JUL 17 2008 INTEGRATED LAND MANAGEMENT BUREAU Ministry of Agriculture and Lands Log No.	Water File Number:
	Client Number:
	Application Number:
	Amount Received:
	Receipt Number:

5. Type of Works

Requires Approval:

- ☐ Bank Erosion Protection [E]
- ☐ Bridge Installation/maintenance/removal (other than clear span) [E]
- ☐ Stream Diversion [QP] Diversion berm structure plan required
- ☐ Large Debris Removal – by machine [QP] plan required
- ☐ Gravel Removal [QP]
- ☒ Other: Provide details in space below

*Provide culvert dimensions:

Length:

Width:

Diameter:

[E] Professional Engineer may be required
[QP] Qualified Professional may be required

Requires Notification:

- ☐ Installation*/maintenance/removal of road crossing **culvert** (*follow Forest Practices Code Stream Crossing Guidebook)
- ☐ Construction/maintenance/removal of a **clear span bridge**
- ☐ Construction/maintenance of a **pipeline crossing**
- ☐ Construction/maintenance/removal of a **pier or wharf**
- ☐ Cutting of **annual vegetation** in a stream channel
- ☐ Repair/maintenance of existing **dike** or **erosion protection works**
- ☐ Construction/maintenance of **storm water outfalls**
- ☐ Control of **Eurasian Watermilfoil** or other **aquatic vegetation**
- ☐ Construction/maintenance of **ice bridge, winter ford or snowfall**
- ☐ Maintenance of minor and routine nature by a public utility
- ☐ Removal of a **beaver dam** (As authorized under the Wildlife Act)
- ☐ Small debris removal – by hand
- ☐ Construction of a **temporary ford**
- ☐ Construction of a **temporary diversion** around a worksite

The following require Notification and may only be undertaken by the Crown in right of either Canada or British Columbia, or their Agents:

Federal/Provincial

- ☐ Construction/maintenance/removal of a flow or water level **measuring device**
- ☐ Construction/removal of a **fish fence** or **screen, fish or game guard**
- ☐ Restoration/maintenance of **fish habitat**

The following require Notification and may only be undertaken by the Crown in right of either British Columbia, or a Municipality, or their Agents:

Provincial/Municipal

- ☐ Restoration/maintenance of a **stream channel**
- ☐ Clearing of an obstruction from a bridge or culvert during a flood emergency[1]
- ☐ Construction or placement of **erosion protection works or flood protection** works during a flood emergency[2]

[1] Some activities fitting the description for Notification may be reviewed by Ministry/Agency staff, who may decide that an Approval is required.

[2] Must be completed under direction of the Crown. No notification is required prior to undertaking works, but a description of changes must be submitted to a habitat officer within 72 hours of the change.

[QP] QP means a professional who through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within their area of expertise.

Detailed Description of Work to be Performed (continue on next page):

Please see separate document attached.

Detailed Description of Work to be Performed, continued (attach a separate document if more space is required):

6. Land Ownership

Please check one of the following:

☐ The applicant is the owner of the property.

☐ The property is Crown land. Tenure/licence number:

☒ The property is owned by the following Landowner (i.e. Landowner is different from applicant):

Landowner's Name: Tony Vanger, Properties, Corporate Services, BC Hydro		
Address: 12 – 333 Dunsmuir Street		
City: Vancouver	Province: BC	Postal code:V6B5R3
Phone: (604) 623-3949	e-mail: tony.vanger@bchydro.com	

Do you have the Landowner's written approval to enter the land(s) to complete the works? ☐ Yes ☐ No

Note: a) Ownership of all parcels of land on which the proposed works will occur must be identified, b) do not attach the written approval with the application, but keep it for your files as you may be asked to produce it during an inspection or audit.

7. Who is doing the Work?

Contact information for company designing and supervising construction of the work (if different from applicant):

Company Name: BC Transit		
Contact Name: Ron Harmer, VP Technical Services	Professional Affiliation:	
Address: 520 Gorge Road East		
City: Victoria	Province: BC	Postal Code:V8W2P3
Phone: 250-995-5663	e-mail: ron_harmer@bctransit.com	

Contact information for company undertaking the construction (if different from applicant):

Company Name: To be determined.		
Contact Name: To be determined.		
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

8. Statement of Intent

By submitting this application form, I declare that the information contained on this form is complete and accurate information. I have read, understood and will meet the requirements to construct works and changes in and about a stream in accordance with Section 9 of the *Water Act* and Part 7 Water Act Regulations including, for Notifications, **Terms and Conditions** as specified by a Habitat Officer of the Ministry of Environment.

Signed: C.A.R. Lythgo for BC Transit

Application Date: 17 June 08 (day/month/year)

9. Submission Instructions

Send the completed form along with the following attachments to the local office in which the proposed works are located. Addresses for local offices are listed on the instruction sheet. **Please note that the Approval application fee of $130 is non-refundable.** If the proposed works require an Approval, prior to proceeding further with this application please ensure that this project will be able to proceed under the Federal *Fisheries Act.*

☒ Sketch plan (mandatory)

☒ Key location map (mandatory)

☒ Engineering drawing (mandatory for works requiring approval noted with [E])

☒ For works requiring an Approval, a cheque or money order for $130 payable to: Minister of Finance. The fee is non-refundable.

10. Responsibilities

You are required to comply with all applicable federal, provincial and municipal laws and regulations. If you anticipate that the planned work may result in harmful alteration, disruption or destruction of fish habitat you should send a copy of your completed Notification/Approval Application directly to the nearest office of Fisheries and Oceans Canada. Review and comment by DFO may necessitate changes to the proposed works.

Has a copy of this notification/approval application been sent to Fisheries and Oceans Canada (check one)?
YES ☒ NO ☐

If YES, indicate the DFO office that the notification/approval application has been sent (for DFO offices, see Users' Guide):

Vancouver (Regional HQ)
Suite 200 - 401 Burrard Street
Vancouver, BC V6C 3S4

Instructions and Guidelines
For Completing the Approval Application and Notification Form

Please fill in all sections of the form.

Incomplete forms do not constitute notification and will not be accepted.

Applications must be submitted to the appropriate office prior to commencement of any work, and must accommodate local fish timing windows.

After reading *"A Users Guide to Working In and Around Water" and the Water Regulation Part 7, Section 36 to 44,* by checking one of the boxes, indicate at the top of the form whether you are submitting an Approval Application or making Notification.

1. **Applicant Information**

   Enter your name, mailing address, telephone number, and e-mail address.

2. **Location of Works**

   - Identify the street address of works and the name and location of the stream/lake on which you intend to carry out the proposed works. If works occur on more than one property all properties must be identified.
   - Indicate what stream, river or lake the stream flows into.
   - Specify where on the stream/lake the works are to take place. Be as specific as possible (e.g. provide the distance from road crossing or confluence with another stream) and reference landmarks were available.
   - Indicate the latitude, longitude and elevation of the site.
   - Indicate the location of works if different from your mailing address.
   - Enter a complete legal description of the property on which the works are to be carried out (e.g. Lot 1 of Section 31, Township 20, Range 2, Coast District, Plan 18411). This information is listed on your annual assessment or land tax notice, or you may obtain it by requesting a copy of your Certificate of Title from the appropriate Land Title Office.

3. **Drawing, Plan and Site Map**

   Attach a drawing or map, which clearly shows:
   - The total amount of disturbance (m^2), including multiple sites if applicable
   - A key map showing the general location of the proposed work site
   - The lot boundaries of where the works are to take place
   - The exact location of proposed works
   - The stream and direction of flow
   - The location of house/buildings/other works
   - The approximate scale (e.g. 1 cm = 10 m)

   A copy of part of a cadastral or topographic map or legal plan, at a reasonable scale, may be used for the drawing, including photographs of the site is beneficial.

4. **Proposed Timing for Work**

   Indicate proposed start and finish date of the works (day/month/year).

   For instream work window times for your area, check the Ministry of Environment regional websites.

5. **Type of Works**

Identify the nature of the works by checking one of the boxes. Also, note the dimensions of the works and list length, width and diameter where appropriate.

Provide a detailed description of the work to be performed and specify the maximum total area expected to be disturbed by the proposed works.

Only the types of works described under Section 44(1) in Part 7 of the Water Regulation may proceed by notification and without an approval under the Water Act.

Note that the following items do not require notification or approval, but must be carried out in accordance with the regulation:

- Installation or cleaning of drain tile outlets
- Repair/maintenance of superstructure of bridge
- Installation/repair/maintenance/removal of fences

6. **Land Ownership**

- If you own the land on which the works are to be carried out, check the first box and go to section 7 of the form.
- If you are not the owner of the land, indicate whether the land is privately owned or owned by the Crown.
- For all private lands, you must have the landowner's written approval. The application form must contain the landowners address, telephone number and postal code. Do not attach the landowner's written approval with the application, but keep it in your files as you may be asked to produce it during an inspection or audit.
- If you have Tenure or License on Crown Land, please include the Tenure or License number on your application.

7. **Who is Doing the Work?**

If you are not carrying out the work, indicate contractor/company's name, professional affiliation, mailing address, postal code and telephone numbers. If a different company is designing and supervising the work, please include this information as well.

It is the applicants responsibility to ensure that any contractor working on your behalf reads and understands the Approval, "A Users' Guide to Working In and Around Water"; the Water Regulation Part 7, Sec. 36 - and/or terms and conditions specified by a Habitat Officer under Section 42 and/or recommended by your Qualified Professional as related to the protection of habitat.

8. **Statement of Intent**

Make sure each section of the form is filled out and that the information is accurate and complete. After you have read and understood the conditions outlined in the Section 7 Water Act Regulation and ensured that your project meets all requirements and will comply with Section 9 of the Water Act or part 7 of the Water Act Regulations (including, for Notifications, Terms and Conditions specified by the Habitat Officer, Ministry of Environment), please sign and date the form.

9. **Submission Instructions**

When your form is complete, send it, along with the appropriate attachments to the offices located in section 11. In many locations, FrontCounter BC will accept your application and forward your proposal to the Ministry of Environment office. Approval applications will be adjudicated by a Water Stewardship Officer; Notifications will be reviewed by a Habitat Protection Officer.

NOTIFICATIONS

You must submit a notification form **prior to** starting proposed changes in and about a stream. Regional requirements such as Terms and Conditions and guidance material such as best management practices and useful local information are located on regional MoE web pages. Additional terms and/or conditions related to the protection of habitat may also be specified by a Habitat Officer.

It is the applicant's responsibility to ensure that all sections of the notification form are complete. Submission of an incomplete form **does not** constitute notification. For notifications, if you agree to all the requirements, including the Habitat Officers Terms and Conditions, you may proceed with your proposed changes without waiting for a formal response from MoE. Notifications received by regional offices of MoE will be used to plan and carry out on-site inspections and monitoring during and after the changes in and about a stream.

10. **Responsibilities**

You are required to comply with all applicable federal, provincial and municipal laws and regulations.

The federal *Fisheries Act* states "no person shall carry on any work or undertaking that results in harmful alteration, disruption or destruction of fish habitat" and "no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish". Failure to show due diligence in the protection of fish and fish habitat could result in violations of the *Fisheries Act*.

If installing a culvert, you must use the Forest Practices Code: Fish Stream Crossing Guidebook, 1998, prepared by MOF and MoE or you must contact Fisheries and Oceans Canada.

Many instream works also require approval under the Navigable Waters Protection Act.

Also, it is strongly recommended that "Standards and Best Practices for Instream Works" be used, where applicable, when working in and around streams.

The Provincial Water Act and Regulation.

11. Where to Submit my Application, Office Locations

Water Approvals and Notifications must be submitted to the FrontCounter BC office nearest to the proposed works. FrontCounterBC will review your proposal and forward it to the Ministry of Environment (to Water Stewardship for Approvals or Environmental Stewardship for Notifications). For general information about FrontCounter BC, please visit the website: http://www.frontcounterbc.gov.bc.ca/ or try the toll free number at 1-877-855-3222.

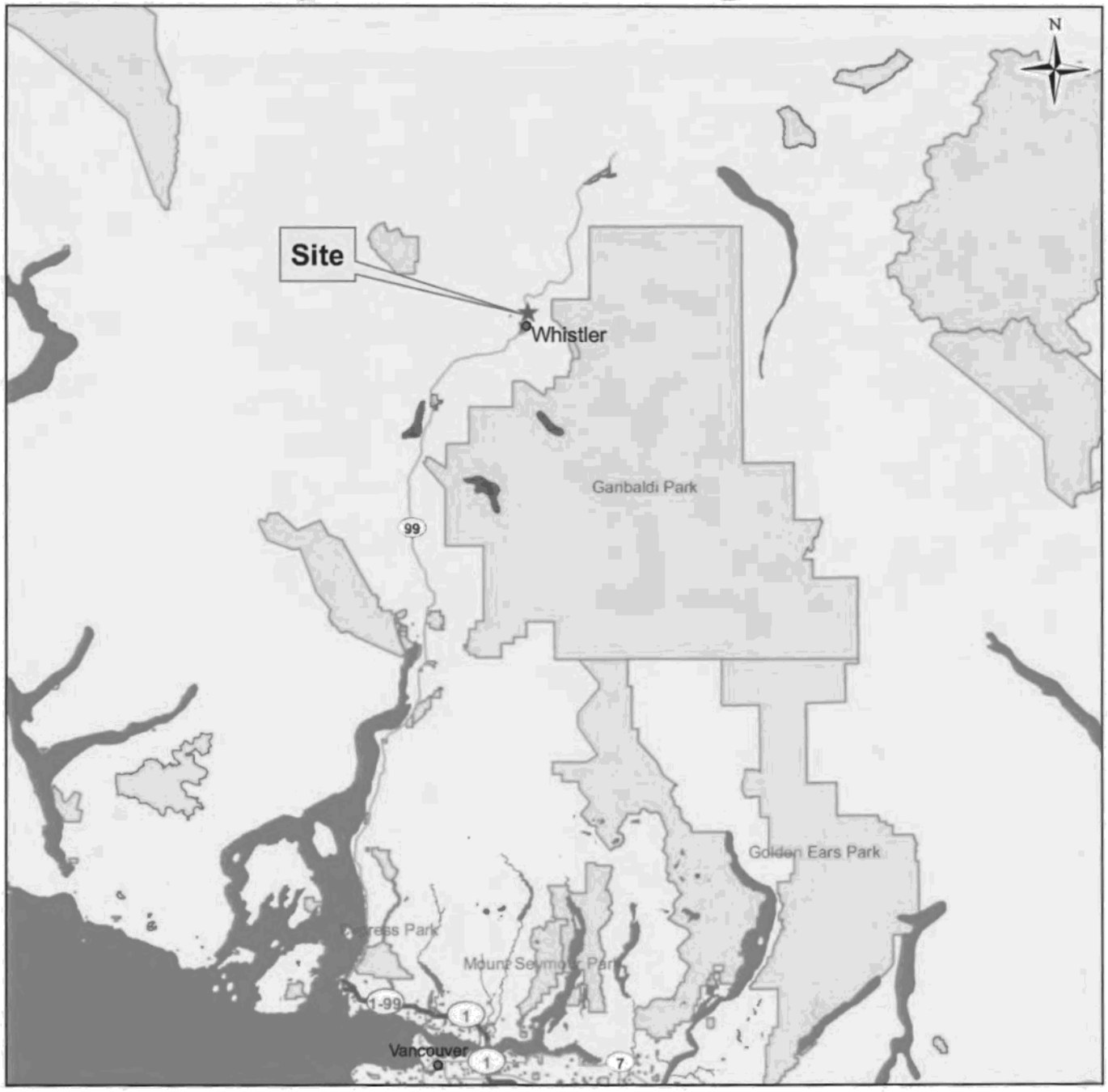
Vancouver Island	Lower Mainland	Southern Interior Thompson Nicola and Okanagan
Nanaimo Centre	**Surrey Centre**	**Kamloops Centre**
Suite 142, 2080 Labieux Road Nanaimo, BC V9T 6J9	Suite 200, 10428 153rd St. Surrey, BC V3R 1E1	Suite 210 - 301 Victoria St. Kamloops BC V2C 2A3
Phone: (250) 751-7220 Fax: (250) 751-7224	Phone: (604) 586-4400 Fax: (604) 586-4434	Phone (250) 372-2127 Fax: (250) 377-2150

Cariboo	Kootenays
Williams Lake Centre	**Cranbrook**
#201 – 172 North 2nd Ave Williams Lake, BC V2G 1Z6	1902 Theatre Road Cranbrook BC V1C 7G!
Phone: (250) 398-4574 Fax: (250) 398-4836	Phone: (250) 426-1766 Fax: (250) 426-1767

Peace Peace River, Liard	Omineca	Skeena
Fort St. John Centre	**Prince George Centre**	**Smithers Centre**
Suite 100-10003 110th Ave Fort St John BC V1J 6M7	Suite 200, 1488 4th Ave 200-1488 4th Avenue Prince George, BC V2L 4Y2	Box 5000 3726 Alfred Ave. Smithers, BC V0J 2N0
Phone: (250) 787-3415 Fax: (250) 787-3219	Phone: (250) 565-6779 Fax: (250) 565-6941	Phone: (250) 847-7356 Fax: (250) 847-7556

APPENDIX B

FIGURES



Legend

- Site
- Major Cities
- Water Areas
- Expressway
- Primary Highway
- Parks & Recreation

Reference
TRIM scale 1:500,000.

Scale: 1:750,000

10 5 0 10 20
Kilometers

CLIENT:	Omicron AEC Ltd.
PROJECT:	Whistler
	Project Location Map
DATE: July 08, 2008	ANALYST: MY
	Figure 1
JOB No: VE51812	QA/QC: MY
	PDF FILE: locationmap2008_0708_750k.pdf
GIS FILE: locationmap2008_0708b.mxd	
PROJECTION: UTM Zone 10	DATUM: NAD83

amec

Y:\GIS\Projects\VE\VE51812_Whistler\Mapping\MXD_Working\locationmap2008_0708b.mxd

Legend

- Site
- Highway
- Road
- Trail
- Railway and Transit Lines
- Water Lines
- Parks & Recreation

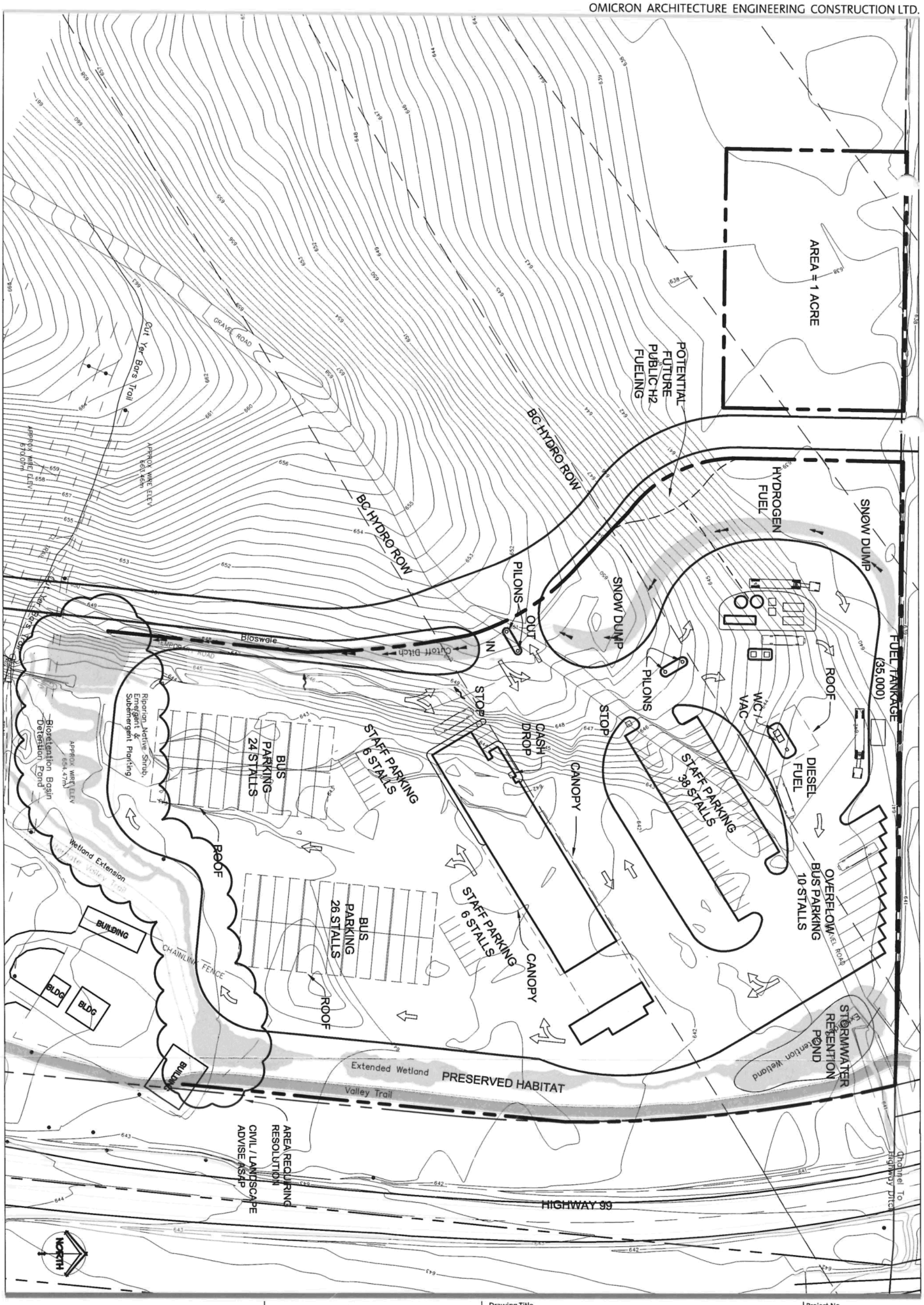
Scale: 1:20,000

250 125 0 250 500
Meters

Reference
TRIM scale 1:20,000.
Imagery authorized from Whistler.ca

CLIENT: Omicron AEC Ltd.		
PROJECT: Whistler		
Project Location Map		
DATE: July 08, 2008	ANALYST: MY	**Figure 2**
JOB No: VE51812	QA/QC: MY	PDF FILE: locationmap2008_0708_20k.pdf
GIS FILE: locationmap2008_0708.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE51812_Whistler\Mapping\MXD_Working\locationmap2008_0708.mxd



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Drawing Title: SITE PLAN CONCEPT

Project: Whistler Transit Facility

Ref.

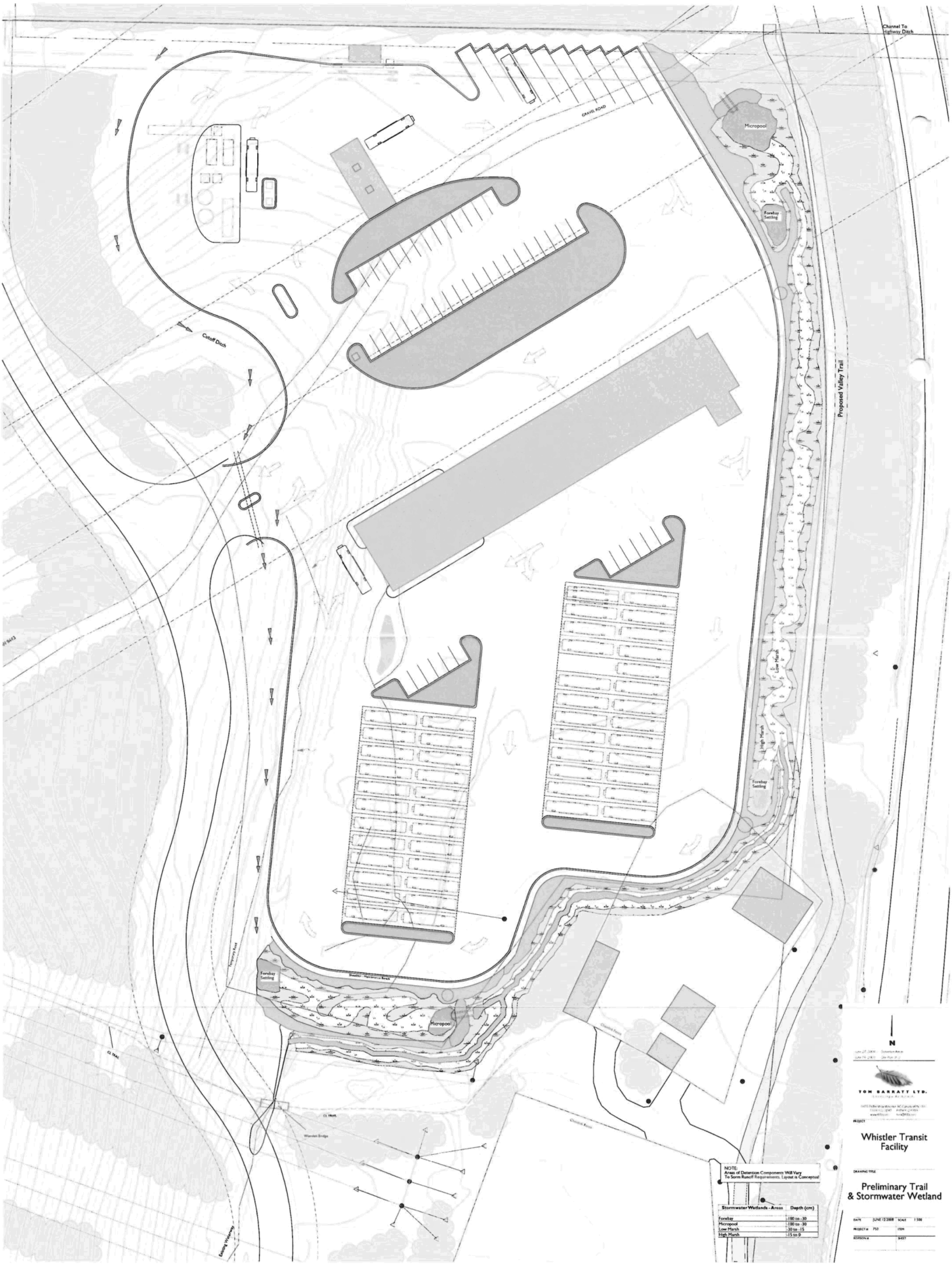
Date: June 26, 2008

Scale: 1:1000

Drawn: EV | Design: GM | Check

Project No.: 10-08-097

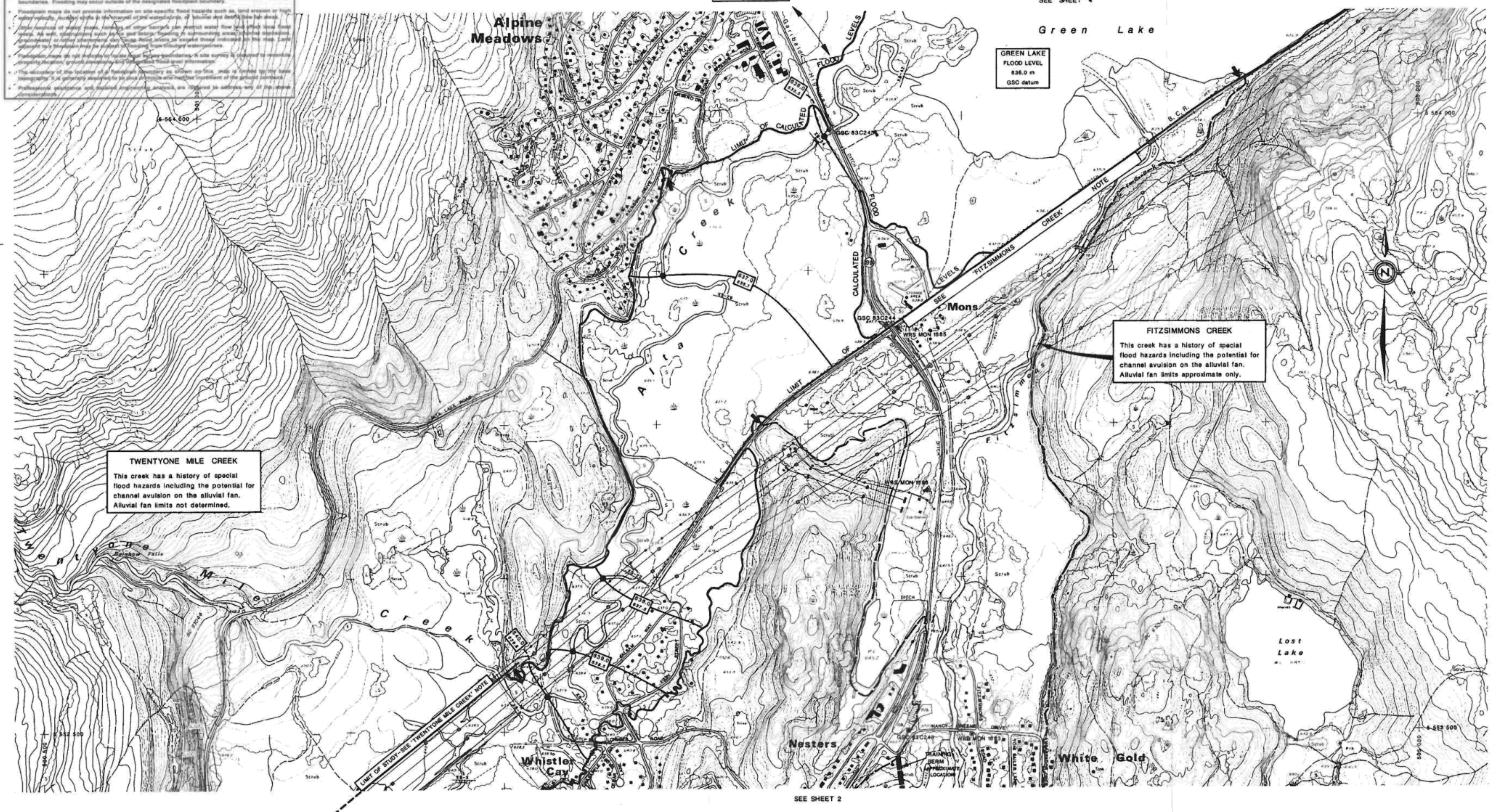
Drawing No.: SK #4-R1


Channel To Highway Ditch
GRAVEL ROAD
Micropool
Forebay Settling
Proposed Valley Trail
Cutoff Ditch
Low Marsh
High Marsh
Forebay Settling
Micropool
CL TRAIL
Wanden Bridge
Existing Waterway
NOTE:
Areas of Detention Components Will Vary To Storm Runoff Requirements. Layout is Conceptual
Stormwater Wetlands - Areas
Depth (cm)
Forebay -180 to -30
Micropool -180 to -30
Low Marsh -30 to -15
High Marsh -15 to 0
N
TOM BARRATT LTD.
PROJECT
Whistler Transit Facility
DRAWING TITLE
Preliminary Trail & Stormwater Wetland
DATE JUNE 12 2008
SCALE 1:500
PROJECT # 753
ITEM
REVISION #
SHEET

APPENDIX C

Use and Limitations of Floodplain Maps

- Users must note the dates of base mapping, aerial photography, river surveys and issue of mapping relevant to dates of development in the map area. Subsequent developments or changes within the floodplain or channel (natural or constructed) will affect flood levels and render site-specific map information obsolete.
- Floodplain maps are administrative tools which depict minimum flood elevations and floodplain boundaries. Flooding may occur outside of the designated floodplain boundary.
- Floodplain maps do not provide information on site-specific flood hazards such as, land erosion or high water velocity, sudden shifts in the channel of the watercourse, or alluvial and debris flow fan areas.
- Other sources of water, roads, railways or other barriers can restrict water flow and affect local flood levels. As well, obstructions such as ice and debris, flooding in surrounding areas, channel deposition, groundwater or other phenomena can cause flood levels to exceed those indicated on the map. Land adjacent to a floodplain may be subject to flooding from tributary watercourses.
- Floodplain maps do not indicate or locate legal survey boundaries. A site survey is required to reconcile property location, ground elevations, and designated flood level information.
- The accuracy of the location of a floodplain boundary as shown on this map is limited by the base topography. It is generally assumed to be plus or minus one-half the increment of the ground contours.
- Professional assistance and detailed engineering analysis are required to address any of the above considerations.



NOTES

Produced by: British Columbia Water Management Branch, Special Projects Section, Floodplain Mapping Program.

Survey: River survey done by Surveys Section, Water Management Branch, Project 84FDC-2, 1984 and Project 88FDC-2, 1988.
a) Horizontal control based on provincial network.
b) Elevations are in metres and are referred to Geodetic Survey of Canada datum. (indicates Survey Monument).

Mapping: Base mapping done by Map Production Division, Surveys and Resource Mapping Branch, Project 83-127, Air Photos Aug. 1983.
a) Contour interval 2 metre and greater; spot elevations shown to 0.1 metres, with accuracy to ± 0.6 metres, except where noted.
b) Grid origin referred to U.T.M. Projection Zone 10.

FLOODPLAIN DATA

1. The floodplain areas as depicted on this map have been interim designated pursuant to the Canada/British Columbia Floodplain Mapping Agreement (1988) by the Minister of the Environment for Canada and the Minister of Environment for British Columbia.

   Flooding may still occur outside of the interim designated floodplain areas. The Ministers do not assume any liability by reason of the interim designation or failure to interim designate areas on this map.
2. The Designated Flood has a statistical frequency of occurrence of once every 200 years.
3. The flood levels were computed using a standard step method modelling technique, assuming open water flow conditions.
4. The floodplain limits assume the absence of all dykes.
5. The floodplain limits and flood levels include an allowance for freeboard.
6. The floodplain limits are not established on the ground by legal survey.
7. The floodplain limits are not delineated for side streams and tributaries.
8. The required setback of buildings from the natural boundaries of lakes and watercourses to allow for the passage of floodwaters and possible bank erosion is not shown. This information is available either through local municipalities or the Ministry of Environment.
9. MAPS AVAILABLE FROM THE MINISTRY OF CROWN LANDS, SURVEYS AND RESOURCE MAPPING BRANCH, MAPS B.C., MAP AND AIR PHOTO SALES, VICTORIA, B.C.

LEGEND

DESIGNATED FLOODPLAIN LIMIT

FLOOD LEVEL

451.0 / 450.7 — 200 Year Frequency / 20 Year Frequency

RIVER

(METRES G.S.C. DATUM)

KEY MAP

REVISIONS

No.	DESCRIPTION	DATE
1	REPLACES WHISTLER AREA FLOOD LEVELS, DWG. No. 84-40-1, DATED JULY 1984 AND FITZSIMMONS CREEK FLOODPLAIN MAPPING, DWG. No. A5175, SHEETS 1 TO 3, DATED OCTOBER 1976.	

ISSUE OF MAPPING
DATE

ENVIRONMENT CANADA INLAND WATERS / ENVIRONNEMENT CANADA EAUX INTÉRIEURES

BRITISH COLUMBIA MINISTRY OF ENVIRONMENT / COLOMBIE-BRITANNIQUE MINISTÈRE DE L'ENVIRONNEMENT

CANADA BRITISH COLUMBIA FLOODPLAIN MAPPING AGREEMENT / L'ACCORD CANADA COLOMBIE-BRITANNIQUE SUR LA CARTOGRAPHIE DES PLAINES D'INONDATION

DRAWN T. C. E.
CHECKED
RIVER SURVEY T. M. D.
DESIGNED B. B.

FLOODPLAIN MAPPING

RESORT MUNICIPALITY OF WHISTLER

100m 0 100 200 300 400 500m
Scale in metres

ENGINEER [signature] RECOMMENDED [signature] APPROVED [signature]

FILE No. 01-4300-S.1
N.T.S.MAP No. 92J/2, 3
SCALE 1:5 000
NEGATIVE No.
DRAWING No. 89-16-3
REV.
SHEET 3 of 4

DDfImg

APPENDIX D

MEMO

To	Norm Laube		
	Jim Spiers		
From	Kourtney Bradley		
Tel	604 294 3811	**AMEC File No.**	VE51812.100.2
Fax	604 294 4664	**cc**	Tim Bekhuys
Date	June 24, 2008		Season Snyder

Subject Summary of Fisheries Site Survey –BC Transit Facility Site, Whistler BC

1.0 INTRODUCTION

A fisheries site survey was conducted at the proposed Whistler Transit Facility Site in Whistler, BC, on June 20, 2008. The purpose of this survey was to determine fish presence/absence in the unnamed stream located on the western edge of the site and provide an overview of available fisheries habitat. Details on the survey methods and results are presented below.

2.0 METHODS

Two AMEC employees arrived on site in the morning. Nine Gee-style minnow traps were set in the unnamed stream. The traps were checked and removed after four hours of fishing time each. Any fish captured were identified and lengths recorded. One fish was retained for confirmation of species identification. The crew walked the length of the unnamed stream and assessed the fisheries habitat available according to provincial standards (BC RISC, 2001). Fish habitat quality was rated as poor, moderate or good for salmonid species. A site map outlining the survey results is provided as Attachment 1.

3.0 RESULTS

3.1 Fisheries Habitat Survey

At the north end of the site, the stream consisted of intermittent pools. Any water that was present was rust coloured. The channel was undefined, with little evidence of scour and no visible flow. The stream was dewatered in some areas and the substrate consisted of fines and organics. Average channel width (where defined) in this area was 0.68 metre (m) and average depth (where water present) was 0.14 m (Photo 1). Overall fisheries habitat quality in this area

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a division of AMEC Americas Limited
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Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

was rated as poor for all species due to the lack of a defined channel and dewatering of the stream at the time of survey.

Photo 1. Upstream view of representative section of unnamed stream.

The stream followed the toe of the slope on the western edge of the property. Moving south the stream became more defined, with visible channel banks, but still consisted of isolated pools and was detwatered in areas. Approximately 40 m north of the Rainbow Sub-station powerline right-of-way, the stream channel became defined and channel depth increased. Average channel width was 3.5 m and depth was 0.3 m. Rearing habitat quality in this area was rated as moderate for salmonids due to the deep pools and presence of cover. No spawning or overwintering habitat was present.

Continuing south the stream widened to a relatively large pond. The pond width was approximately 5 m and depth was 0.4 m. The stream then narrowed and the survey was terminated at a box culvert at the edge of the public works yard (Photo 2). The pond and

channel had good cover in the form of emergent grasses, along with woody debris and overhanging vegetation. The stream also possessed relatively deep pools. Rearing habitat quality in this area was also rated as moderate for salmonids due to the deep pools and presence of cover. No spawning or overwintering habitat was present.

Photo 2. Upstream view of unnamed stream at the box culvert.

3.2 Fisheries Presence/Absence Sampling

Two minnow traps were set in the northern area of the site where there was sufficient water depth in the stream channel. No fish were captured or observed.

Seven minnow traps were set in unnamed stream in the defined channel and pond area in the vicinity of the Rainbow Sub-station and public works yard. Eight threespine stickleback (*Gasterosteus aculeatus*) were captured. The threespine stickleback ranged in size from 27 to

50 mm. Threespine stickleback are common to coastal British Columbia and are often found in streams, lakes, ponds and ditches (McPhail, 2007). The deep pools and abundant vegetation in the channel and pond provided suitable habitat for threespine stickleback.

4.0 SUMMARY

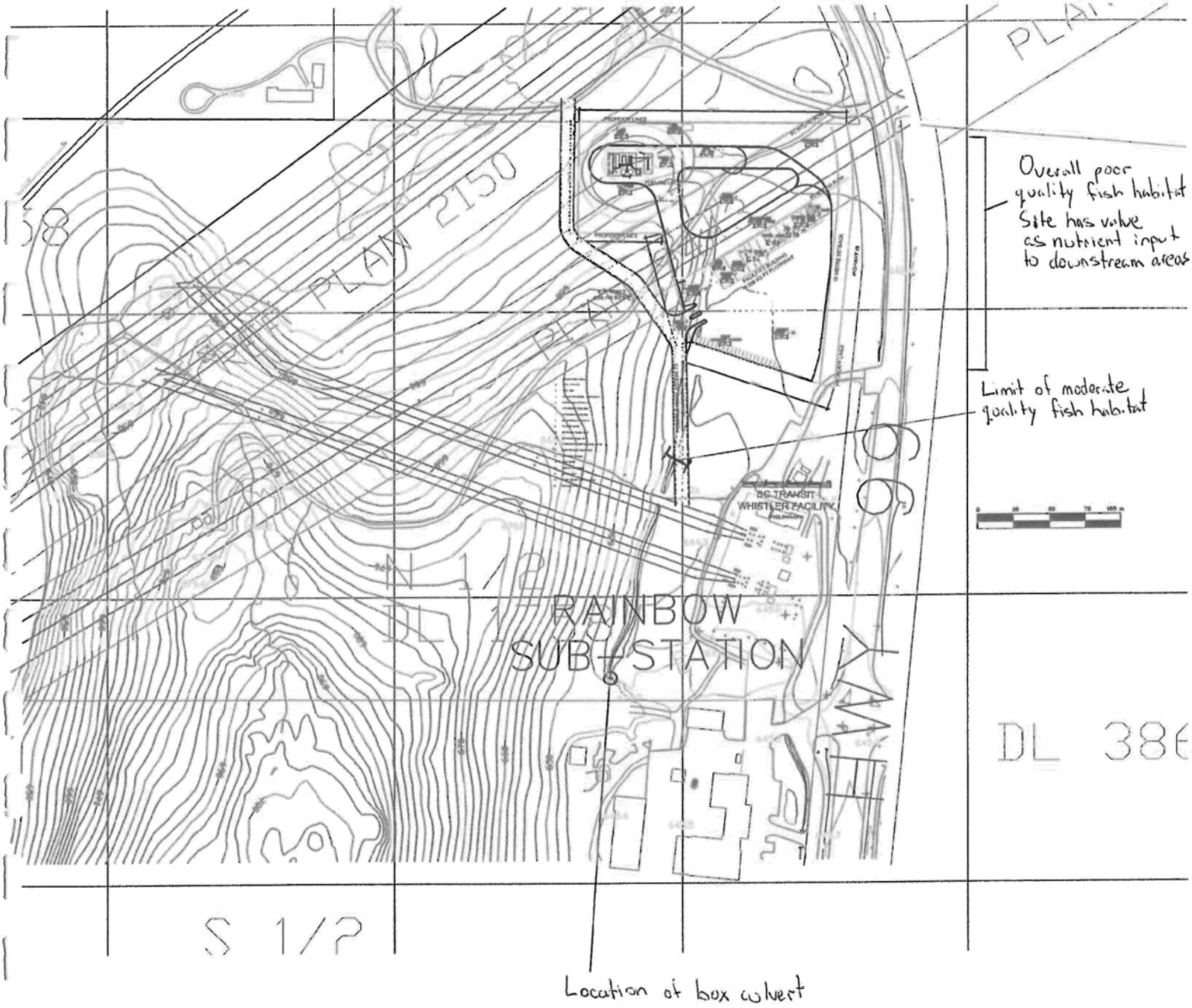
Minimal fish habitat value was present in the unnamed stream at the BC Transit Facility Site. Where the proposed footprint of the facility is planned, the unnamed stream was intermittent and undefined, and sections were dewatered at the time of the survey. However, this portion of the stream would provide valuable nutrient input to downstream areas, specifically near the Rainbow sub-station and public works yard. In these areas, the stream was defined and rearing habitat quality was rated as moderate. Threespine stickleback were captured in this location.

5.0 REFERENCES

BC Resource Standards Inventory Committee (BC RISC). 2001. Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Standards and Procedures. The Province of British Columbia.

McPhail, J.D. 2007. The Freshwater Fishes of British Columbia. The University of Alberta Press, Edmonton, AB.

Attachment 1 – Site Map


Overall poor quality fish habitat
Site has value as nutrient input to downstream areas
Limit of moderate quality fish habitat
BC TRANSIT WHISTLER FACILITY
RAINBOW SUB-STATION
PLAN 2150
DL 386
S 1/2
Location of box culvert

APPENDIX E

Nestbox Specifications for Target Bird Species Observed in the Whistler Region.

Common Name	Floor Size	Depth of Box	Height of Box	Entrance Hole	Height to Hole	Height Above Ground
American robin	7x8"	16-18"	18"	3"	9-12"	10-30"
Chickadees	4x4"	8-10"	12"	1 1/8"	7"	4-15"
Downy Woodpecker	4x4"	8-10"	12"	1 1/4"	6-8"	6-20"
Hairy Woodpecker	6x6"	12-14"	14"	1 1/2"	8-12"	12-20"
Northern flicker	7x7"	16-18"	18"	2 1/2"	12-16"	15-20"
Pileated Woodpecker	12x12"	16-18"	24"	4"	14-16"	15-25"
Red-breasted Nuthatch	4x4"	8-10"	12"	1 1/4"	7"	8-20"
Saw-whet Owl	7x7"	10-12"	12"	2 1/2"	8-10"	10-20"
Violet-green Swallow	5x5"	6"	10"	1 1/2"	4-5"	4-8"
Winter Wren	4x4"	6-8"	12"	1 1/4"	4-6"	6-10"
Yellow-bellied Sapsucker	5x5"	12-15"	12"	1 1/2"	12-16"	15-20"
Osprey	48x48"	na	Platform	3 sides	na	na
Wood duck	12x12"	20-22"	24"	4"	12-16"	8-30"

Source: http://www.birdnature.com/nestbox.html

s.22

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