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Davidson Project

Smithers, British Columbia

Davidson Environmental Assessment Fish Habitat Addendum Report

April 2009

Prepared by:
Rescan™ Environmental Services Ltd.
Vancouver, British Columbia

DAVIDSON PROJECT

Environmental Assessment: Fish Habitat Addendum Report

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1. INTRODUCTION

1. Introduction

This report describes baseline studies of fish habitat conducted in the Davidson Project (the Project) area in 2007 and 2008. The objectives of these studies were to 1) assess fish habitat and classify watercourses along the proposed northern haul road, and 2) evaluate fish presence and habitat quality at the proposed diffuser site in the Bulkley River. This report is an addendum to previous aquatic resources baseline reports (Rescan 2007; Rescan 2006) for the Project.

2. STREAM CROSSING HABITAT ASSESSMENT ALONG THE PROPOSED NORTHERN HAUL ROAD

2. Stream Crossing Habitat Assessment along the Proposed Northern Haul Road

2.1 Fish Habitat Assessment Methods

Surveys of fish habitat were conducted according to the Reconnaissance 1:20,000 Fish and Fish Habitat Inventory: Standards and Procedures (RISC 2001). Stream reach classifications were assigned based upon the *Riparian Management Area Guidebook* (BC Ministry of Forests 1995) and *Fish Stream Identification Guidebook* (BC MOF 1998). A detailed evaluation of fish habitat was conducted at each proposed stream crossing (Table 2-1) to characterize channel morphology, stream features, stream flow, and overall habitat quality. Watercourses crossing the proposed northern haul road route were surveyed in August or October, 2007. Crews walked the proposed road route and classified the mapped drainages. Drainages and watercourses were classified as streams if they had a continuous, defined channel for at least 100 m with evidence of mineral substrate and alluvial scour. Watercourses with partial or discontinuous channelization were categorized as "non-classified drainages" (NCDs) and were not considered fish habitat. Sites where water seeped overland or pooled at the proposed road crossing without channelization or no evidence of water flow was found, were classified as "no visible channel" (NVC). NCD and NVC sites were noted, upstream and downstream photos were taken and GPS coordinates were recorded.

Stream crossings were sampled with electrofishing gear to determine the presence or absence of fish, species diversity, and the extent of fish use. Electrofishing was initially conducted within a 100 m section of the proposed stream crossing site and, if no fish were caught, sampling continued up and downstream for several hundred meters until either a fish was captured or a barrier to fish passage was encountered (RISC 2001; BC MOF 1998). Fish-bearing classifications of sampled reaches were based upon the connectivity of the watercourse to fish-bearing waterbodies, stream morphology, habitat quality, and the total amount and efficiency of fishing effort exerted on the stream. Captured fish were identified to species, measured, weighed, and released at the capture site. At sites with an average channel width greater than 3.0 m, additional information and photos were gathered to determine the navigability of each stream.

2.2 Results

Definitions used in the presentation of fish habitat data are shown in Appendix 2-1. Fish habitat data for each station are presented in Appendix 2-2, and stream morphology data are listed in Appendix 2-3. Fish habitat site cards and photographs are presented in Appendix 2-4. Fish species presence and fish habitat use are displayed in Figure 2-1.

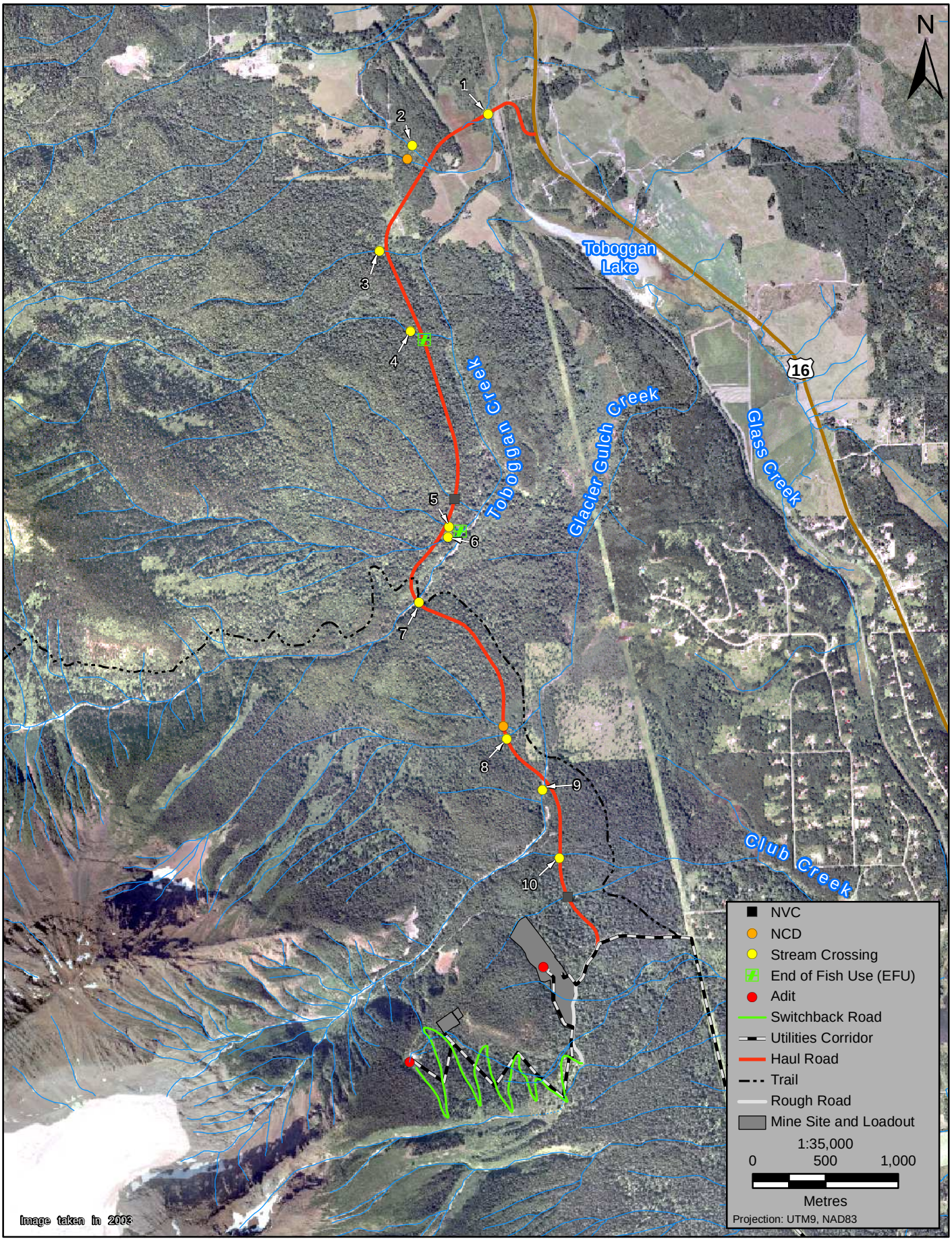
2.2.1 Stream Crossing 1 – Lower Toboggan Creek

Fish habitat was surveyed at Toboggan Creek just upstream of the railway crossing. This reach of Toboggan Creek was classified as S2 with a 6 to 8 m wide channel and confirmed fish-bearing status. The stream was 7 m average channel width and a 6 m average wetted width, with an

Table 2-1
Watercourses Crossing the Proposed Northern Haul Road, Davidson Project, 2007

Stream	Stream Crossing #	UTM Location		EFU		Fish-bearing (Y/N)	Stream Class
		Easting	Northing	Easting	Northing		
Lower Toboggan Creek	1	611473	6082731	u/s		Y	S2
Toboggan Creek Tributary 1	2	610952	6082516	u/s		Y	S3
unnamed	NCD 1	610920	6082424	–	–	N	NCD
Toboggan Creek Tributary 2	3	610727	6081825	u/s		Y	S3
Toboggan Creek Tributary 3	4	610941	6081241	611045	6081180	N	S6 u/s, S4 d/s
unnamed	–	611243	6080090	–	–	–	NVC
Toboggan Creek Tributary 4	5	611205	6079900	100 m d/s of site		N	S6
Toboggan Creek Tributary 5	6	611199	6079831	–	–	Y	S4
Upper Toboggan Creek	7	611000	6079383	–	–	Y	S2
Glacier Gulch Tributary 2	NCD 2	611600	6078550	–	–	N	NCD
Glacier Gulch Tributary 1	8	611578	6078535	–	–	Y	S4
Glacier Gulch Creek	9	611850	6076100	–	–	Y	S2
Club Creek	10	611964	6077631	–	–	Y	S3
unnamed	–	612020	6077364	–	–	–	NVC

Dashes indicate no data collected.
NVC = no visible channel; NCD = non-classified drainage
u/s = upstream, d/s = downstream



Watercourses Crossing the Proposed Northern Haul Road, Davidson Project, 2007

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FIGURE 2-1

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average gradient of 1.5%. Cover for fish was abundant, consisting of overhanging vegetation (dominant), undercut banks, and deep pools (sub-dominant), with woody debris and a trace amount of in-stream vegetation. Stream morphology was riffle-pool with bed materials consisting of gravel (dominant) and fine sediment (sub-dominant). Habitat for all fish life stages (e.g., rearing, spawning, and overwintering) were rated as good. Rearing habitat was provided by deep pools and runs with abundant cover. Spawning habitat for salmonids was provided by gravel in the tailouts of pools and overwintering habitat was provided by deep pools. Overall, the habitat at and adjacent to the proposed crossing was categorized as critical spawning habitat. Subsequent observations in October 2007 confirmed the presence of spawning coho salmon (*Oncorhynchus kisutch*) using this reach from the existing wooden bridge (situated 50 m upstream of the proposed crossing) and downstream for 150 m.

2.2.2 Stream Crossing 2 – Toboggan Creek Tributary 1

This watercourse was previously assessed in 2006 as Station TC4 (see Rescan 2007, Appendix 3.2-8, Site 6). This reach was classified as S3 (1.6 m average channel width, fish-bearing). Rearing habitat was good due to the presence of abundant cover. Spawning and overwintering habitat were poor due to lack of suitable substrates and deep pools, respectively. This stream reach may also be vulnerable to warming in the summer (17ºC at time of survey in August of 2006). Cover for fish was abundant, consisting of overhanging vegetation (dominant), small woody debris and undercut banks (sub-dominant). Stream morphology was classified as riffle-pool, with a 0.8% gradient, and fine materials (dominant) and gravel (sub-dominant) composing the bed material. Cutthroat and rainbow trout were captured from this reach in 2006, and the site also has good potential to support coho salmon rearing. Fish habitat at this site was examined briefly in 2007 and no changes from the original habitat assessment were apparent.

2.2.3 Stream Crossing 3 – Toboggan Creek Tributary 2

Fish habitat was assessed at stream crossing site 3, a tributary of Toboggan Creek. This tributary stream was classified as S3 with 2.4 m average channel width and confirmed fish presence. Stream morphological measurements included an average channel width of 2.4 m, average wetted width of 1.5 m, and average gradient of 7.5%. Stream morphology was riffle-pool with bed materials consisting of gravel (dominant) and fine sediment (sub-dominant). Cover for fish was abundant, consisting of overhanging vegetation (dominant), small and large woody debris (both sub-dominant), and undercut banks (trace). Rearing habitat for fish was fair, with abundant overhanging vegetation, and small and large woody debris in shallow pools. Spawning habitat was fair for resident Dolly Varden (*Salvelinus malma*) and cutthroat trout (*Oncorhynchus clarki*) due to small, pea-size gravel substrate. Spawning habitat was not suitable for adult, anadromous salmonids due to the lack of holding areas and depth. Overwintering habitat was poor due to shallow water depth. Overall, this stream crossing site was rated as important habitat. Two fry, either rainbow (*Oncorhynchus mykiss*) or cutthroat trout, were captured at this site in 184 seconds of electrofishing. The presence of young-of-the-year trout indicate that adult trout likely utilize this stream reach as spawning habitat.

2.2.4 Stream Crossing 4 – Toboggan Creek Tributary 3

A third Toboggan Creek tributary was assessed at stream crossing site 4. Reach 2 is upstream of the crossing and was classified as S6 with 1.3 m channel width. No fish were captured by electrofishing. Reach 1, immediately downstream of the crossing, was classified as S4 and fish-bearing. Average morphological measurements of the S6 reach included a 1.3 m channel depth, a 1.1 m wetted depth, and a gradient of 3.5%. The stream morphology was riffle-pool with substrate consisting of gravel (dominant) and fines (sub-dominant). Cover for fish was moderate, consisting of small woody debris (dominant), large woody debris, undercut banks, overhanging vegetation (all sub-dominant), and in-stream vegetation (trace). Rearing habitat was fair due to the abundance of cover. Spawning habitat was fair, with occasional patches of gravel; however, fine silt and sand was observed in this stream. Overwintering habitat was poor due to a lack of pools greater than 0.5 to 1 m in depth. Overall, habitat at this site was rated as important. Although fish habitat was important, this stream crossing location was found to be non-fish-bearing due to a 1.4 m chute and 0.75 m cascade located at the proposed crossing site, representing the end-of-fish-use (EFU) and a reach break for this stream (Figure 2-1). No fish were captured upstream of this EFU at the stream crossing site in 536 seconds of electrofishing, but fish have access into Reach 1 of this tributary from Toboggan Creek.

2.2.5 Stream Crossing 5 – Toboggan Creek Tributary 4

A fourth tributary of Toboggan Creek was assessed at stream crossing 5. This stream was classified as S6 (average channel width 1.2 m, non-fish-bearing). Stream morphology was riffle-pool with fines as the dominant substrate material. Average channel width, wetted width, and gradient was 1.2 m, 0.84 m, and 3%, respectively. Cover for fish was abundant, consisting of overhanging vegetation (dominant), small woody debris and large woody debris (sub-dominant), and undercut banks (trace). Rearing habitat was very poor because pools were not present and the stream was nearly dry. The channel was intermittent upstream of the proposed crossing. No spawning or overwintering habitat was present in this short ephemeral channel. Overall, fish habitat was rated as marginal due to the lack of physical features required by fish. No fish were captured in 203 seconds of electroshocking. Approximately 100 m downstream of this site, the stream disperses across the floodplain and lacked a defined channel. Fish access was not possible from Toboggan Creek (Figure 2-1).

2.2.6 Stream Crossing 6 – Toboggan Creek Tributary 5

Fish habitat was assessed at a fifth tributary of Toboggan Creek - stream crossing 6. This stream was classified as S4 (fish-bearing with 1.8 m average channel width). Stream morphology was riffle-pool with substrate consisting of gravel (dominant) and fines (sub-dominant). Average channel width, wetted width, and gradient measured 1.8 m, 1.3 m, and 3.5%, respectively. Cover for fish was moderate, consisting of overhanging vegetation (dominant), large and small woody debris (sub-dominant), and undercut banks (trace). Rearing habitat was fair due to the overhanging cover, but the channel lacked pools as habitat for juvenile fish. Spawning and overwintering habitat was poor due to the lack of gravel substrate and deep pools, respectively. Overall, fish habitat at this site was categorized as marginal. Dolly Varden and a young-of-the-

year of an unidentified species (likely cutthroat trout) were captured by electrofishing. Fish access to the crossing area from Toboggan Creek is possible.

2.2.7 Stream Crossing 7 – Upper Toboggan Creek

A second crossing of the Toboggan Creek mainstem was assessed at stream crossing 7. This site is the existing ford along the Silvern Lakes access trail. The stream banks at the ford were riprapped and the site was examined from upstream of the ford and downstream for 150 m where it flows across an alluvial fan. This upper section of Toboggan Creek was classified as S2 (fish-bearing, 16 m average channel width). Stream morphology was cascade-pool with substrate consisting of cobble (dominant) and boulders (sub-dominant). Average stream morphological measurements included a 16 m channel width, 9.5 m wetted width, and 5.3% gradient. Cover for fish was moderate, consisting of boulders (dominant), large woody debris, and overhanging vegetation (sub-dominant), small woody debris and few deep pools. Rearing habitat was fair due to cover provided by sparse large woody debris and cobble; however, this section is a fast cascade with few plunge pools which is less preferred by juvenile fish. Spawning habitat was poor since boulders and cobble are the dominant substrate type, with only occasional gravel patches in the area. Overwintering habitat was poor because of the relatively shallow depth and fast flow. Overall, fish habitat was rated important because it is typical of the habitat along this alluvial fan reach.

2.2.8 Stream Crossing 8 – Glacier Gulch Creek Tributary 1

Fish habitat was assessed at stream crossing 8, a tributary of Glacier Gulch Creek. This tributary stream was classified as S4 (1.4 m average channel width and assumed fish-bearing due to access from the mainstem). Stream morphology was riffle-pool with gravel and fines comprising the dominant and sub-dominant substrate, respectively. Average stream morphological measurements included 1.4 m channel width, 1.3 m wetted width, and 4% gradient. Cover for fish was abundant, consisting of overhanging vegetation (dominant), large woody debris and undercut banks (sub-dominant), and small woody debris (trace). Rearing habitat for juvenile fish was fair because the stream had abundant cover but few pools deeper than 0.2 m. Spawning habitat was poor; however, small patches of fine gravel may be suitable for Dolly Varden. Overwintering habitat was poor because deep pools were not present. Overall, fish habitat was categorized as marginal.

2.2.9 Stream Crossing 9 – Glacier Gulch Creek

The mainstem of Glacier Gulch Creek was assessed at stream crossing 9 situated approximately 150 m upstream of the existing bridge made of an old rail car at the Silvern Lakes trail. Glacier Gulch Creek was classified as an S2 stream (known fish presence and 16.5 m average channel width). Stream morphology was categorized as cascade-pool with cobble and boulders representing the dominant and sub-dominant substrate, respectively. Cover for fish was moderate, consisting of boulders (dominant), overhanging vegetation and large woody debris (sub-dominant), and undercut banks (trace). Rearing habitat was fair due to the fast, cascading flow but it lacked deep pools. Spawning and overwintering habitat was not observed along this reach. Overall, fish habitat for spawning and overwintering was categorized as marginal; however, due to the presence of rearing habitat for Dolly Varden, habitat at this site may be important for juvenile fish rearing.

2.2.10 Stream Crossing 10 – Club Creek

Fish habitat was assessed at the proposed crossing at Club Creek situated approximately 350 m uphill from the Silvern Lakes trail. Club Creek receives water from a diversion out of Glacier Gulch Creek approximately 50 m upstream of the proposed crossing. This reach was classified S3 (3.7 m average channel width, fish-bearing). Stream morphology was cascade-pool with cobble and boulders as the dominant and sub-dominant substrate, respectively. Average measurements included a 3.7 m channel width, 2.8 m wetted width, and 4.5% gradient. Cover for fish was moderate, consisting of overhanging vegetation (dominant), large woody debris, boulders, and undercut banks (sub-dominant). Rearing habitat was fair due to the moderate cover for juvenile fish. Overwintering habitat was poor due to the lack of deep pools and fast, cascading flow. Spawning habitat was not present at this site. Overall, fish habitat was categorized as marginal.

2.2.11 Summary

In summary, ten crossing sites were assessed for fish habitat and classified as stream reaches, while two NCDs and one NVC were noted along the proposed northern haul road (Table 2-2). Of the classified crossings, eight were either confirmed or default fish-bearing reaches that provide marginal, important or potentially critical fish habitat (i.e., Lower Toboggan Creek crossing 1). The eight fish-bearing stream reaches were classified as S2 to S4, while two non-fish-bearing stream reaches were classified as S6. Overall, the larger (S2) streams provided important to potentially critical fish habitat, while the smaller (S4 to S6) reaches provided marginal fish habitat. The majority of streams provided fair to good rearing habitat, while spawning and overwintering habitat was generally poor to nonexistent at tributary stream sites. Spawning and overwintering habitat was also present in lower Toboggan Creek. Stream crossing 4 is crossed by the proposed road at the reach break between a downstream S4 reach and upstream S6 reach.

In addition, two NCDs and one NVC site were noted along the proposed route. The NVC site was a mapped drainage; however, a Hatch Engineering survey crew did not find a watercourse in the field near the proposed location. The two NCD sites were assessed by Rescan fisheries biologists at mapped drainages (Figure 2-1); however, they were discontinuous or seepage channels that did not contain fish habitat. Hatch crews found other seepages and NCDs along the proposed route but these were not assessed by Rescan fisheries biologist because they had no potential as defined reaches or fish habitat.

Table 2-2
Summary of Fish Habitat at Streams Crossing the Proposed Northern Haul Road, Davidson Project, 2007

Stream	Stream Crossing #	Fish-bearing	Mean Channel Width (m)	Stream Class	Habitat Ratings				Fish Species Composition
					Overall	Spawning	Rearing	Overwintering	
Lower Toboggan Creek	1	Y	7	S2	Critical	G	G	G	spawning CO observed
Toboggan Creek Tributary 1	2	Y	1.6	S3	Marginal	P	G	P	RB, CT, CO
Toboggan Creek Tributary 2	3	Y	2.4	S3	Important	F (for resident species only)	F	P	RB/CT
Toboggan Creek Tributary 3	4	N	1.3	S6 u/s S4 d/s	Important	F	F	P	–
Toboggan Creek Tributary 4	5	N	1.2	S6	Marginal	N	P	N	–
Toboggan Creek Tributary 5	6	Y	1.8	S4	Marginal	P	F	P	DV, RB/CT
Upper Toboggan Creek	7	Y	16	S2	Important	P	F	P	–
Glacier Gulch Tributary 1	8	Y	1.4	S4	Marginal	P	F	P	–
Glacier Gulch Creek	9	Y	16.5	S2	Marginal, possibly important	N	F	N	–
Club Creek	10	Y	3.7	S3	Marginal	N	F	P	–

Note: NCD and NVC sites not included due to lack of fish habitat.
NVC = no visible channel; NCD = non-classified drainage.
Fish Habitat Ratings: G = Good, F = Fair, P = Poor, N = None.
Fish Species Codes: CT = cutthroat trout, CO = coho salmon, DV = Dolly Varden, RB = rainbow trout

3. FISH HABITAT ASSESSMENT OF DIFFUSER SITE ON THE BULKLEY RIVER

3. Fish Habitat Assessment of Diffuser Site on the Bulkley River

A reconnaissance level fish habitat assessment and snorkel survey was conducted by Rescan fisheries biologists at the proposed diffuser location on the Bulkley River. The main objectives of the survey were to:

- describe physical habitat features (e.g., stream morphology, substrate, riparian vegetation, cover for fish) at the proposed diffuser site;
- evaluate habitat quality and suitability for various fish species and their life stages (e.g., spawning, rearing, and overwintering habitats, with emphasis on steelhead habitat requirements);
- observe steelhead utilizing the proposed diffuser site as overwintering habitat; and
- evaluate the presence of potentially critical fish habitat (e.g., spawning habitat).

This survey was conducted in the afternoon of November 13, 2008. The survey began approximately 400 m upstream of the existing Town of Smithers sewage outfall at a gravel bar on the left bank (Plate 3-1). Biologists floated downstream approximately 4 m and 8 m from the left bank, respectively. Underwater visibility was approximately 1 m, which was poor for viewing fish at a distance greater than 0.5 m. The snorkel survey terminated approximately 200 m downstream of the proposed diffuser site. River depth and flow was typical for the fall low-flow period.

The bankfull width along most of the snorkelled section was approximately 120 m and wetted width was approximately 110 m. The left bank was mostly vertical, composed of cobble, gravel, and sand (Plate 3-2). At the proposed diffuser site, the depth drops off sharply from the shoreline to approximately 1.2 m, then becomes gradually deeper. The depth at the deepest part of the thalweg is approximately 1.5 to 1.8 m. Depth in this section was estimated due to the swift flow. The right bank is mostly sloping, and is also composed of cobble, gravel, and sand. The river bottom slopes gently away from the right bank. The runs and pools up and downstream of the existing outfall were noted by a local guide as popular steelhead angling locations.

Substrate at the upstream portion of the snorkelled section was primarily cobble and gravel; however, large cobbles and boulders became the dominant substrate in the deeper section approximately 200 m upstream of the sewage outfall (Plate 3-3). The thalweg (i.e., main flow) was located along the left bank for most of the distance snorkelled, and flows in this area were relatively swift. Downstream of the sewage outfall, substrate became progressively larger; composed of approximately 60% large cobble and 40% boulder. Large boulders created occasional eddies downstream of the sewage outfall, but otherwise cover for fish was low throughout the reach.

The riparian vegetation on the left bank was dominated by sparse to dense patches of mature cottonwood and spruce trees between 10 and 20 m in height, with a sparse brush understory of red osier dogwood and berry bushes (Plate 3-4). On the right bank, a farmer's field comes right

Plate 3-1. Sample reach looking downstream from the start of the snorkel survey. The existing sewage outfall is located on the left of the photo, approximately 400 m downstream.

Plate 3-2. Proposed diffuser location (looking upstream). Note the steep bank and the coarse bank texture.

Plate 3-3. Cobble-boulder substrate near the proposed diffuser site. Photo taken approximately 3 m from the left bank of the river along the bed at the existing sewage outfall.

Plate 3-4. Left bank riparian vegetation, looking upstream from the end of the snorkel survey (approximately 300 m downstream of the existing sewage outfall).

to the river bank with a thin row of mature cottonwood trees lining the river bank. Further upstream, the right bank is dominated by mature spruce and pine trees.

Rearing habitat for juvenile fish was poor throughout this reach due to swift flow, large substrate and absence of cover. Anadromous steelhead and larger resident fish may use the deeper sections of this reach for holding during migration and possibly for overwintering. A local guide also indicated that winter steelhead hold in areas upstream and downstream of the sewage outfall and near the proposed diffuser site. Fish were not observed during the snorkel survey. Spawning habitat was not observed along the left bank; however, the right bank, which was not assessed in detail, may provide smaller substrates due to the reduced flow.

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APPENDIX 2-1
FISH HABITAT INVENTORY DEFINITIONS, DAVIDSON PROJECT, 2007

Appendix 2-1
Fish Habitat Inventory Definitions, Davidson Project, 2007

Cover:	SWD = small woody debris, LWD = large woody debris, B = boulders U = undercut banks, DP = deep pools, OV = overhanging vegetation, IV = instream vegetation AMT = amount, N = none, T = trace, S = sub-dominant, D = dominant LOC = location, P = primary channel, S = secondary channel, O = off channel A = all channels
Total cover:	N = none, T = trace, M = moderate, A = abundant
Functioning LWD:	Pres. = presence, N = none, F = few, A = abundant Dist. = distribution, C = clumped, E = even
Instream Vegetation:	V = vascular plants, M = mosses, A = algae, N = none
Bank Shape:	U = undercut banks, V = vertical, S = sloping, O = overhanging
Bank Texture:	F = fines, G = gravel, C = cobble, B = boulder, R = bedrock, A = anthropogenic
Riparian Vegetation:	N = none, G = grass, S = shrub, C = coniferous forest, D = deciduous forest M = mixed C & D forest, W = wetland
Vegetation Stage:	INIT = initial, SHR = shrub, PS = post-sapling, YF = young forest, MF = mature forest
Flood Signs:	MC = multiple channels, RD = rafted debris, BS = bed scour, VS = vegetation staining
D95:	The diameter of the bed material that is larger than 95% of the materials in the stream channel
D:	Represents the size of the largest particle on the channel bed that will be moved at channel forming flow levels
Disturbance Indicators:	O1 = beaver dam, B1 = abandoned channels, B2 = eroding banks, B3 = avulsions D1 = SWD, D2 = LWD, D3 = debris jams, C1 = extensive riffles or cascades, C2 = minimal pool area, C3 = elevated mid-channel bars, C4 = multiple channels or braids, C5 = disturbed stone lines, S1 = homogeneous bed texture S2 = sediment fingers, S3 = sediment wedges, S4 = extensive bars, S5 = extensively scoured zones
Pattern:	TM = tortuous meanders, ME = regular meanders, IM = irregular meandering IR = irregular wandering, SI = sinuous, ST = straight
Islands:	N = none, O = occasional, I = irregular, F = frequent, S = split, AN = anastomising
Bars:	N = none, SIDE = side bars, DIAG = mid-stream bars (diagonal), MID = mid-stream bars (parallel), SPAN = continuous along sides, BR = braided
Coupling:	DC = decoupled, PC = partially coupled, CO = coupled
Confinement:	EN = entrenched, CO = confined, FC = frequently confined, OC = occasionally confined, UN = unconfined

APPENDIX 2-2
STREAM FISH HABITAT INVENTORY SUMMARY, PROPOSED NORTHERN HAUL ROAD, DAVIDSON PROJECT, 2007

Appendix 2-2
Stream Fish Habitat Inventory Summary, Proposed Northern Haul Road, Davidson Project, 2007

	Stream	Cover															Functioning		
	Crossing	SWD		LWD		B		U		DP		OV		IV		Total	Crown	LWD		Inst.
Site Name	#	AMT	LOC	AMT	LOC	AMT	LOC	AMT	LOC	AMT	LOC	AMT	LOC	AMT	LOC	Cover	Closure	Pres.	Dist.	Veg
Lower Toboggan Creek	1	T	P	T	P	N	–	SD	P	SD	P	D	P	T	P	Ab	21-40%	Functioning	–	Veg
Toboggan Creek Tributary 1	2	SD	P	N	–	N	–	SD	P	N	–	D	P	N	–	Ab	21-40%	N	–	N
Toboggan Creek Tributary 2	3	SD	P	SD	P	N	–	T	P	N	–	D	P	N	–	Ab	> 90%	A	C	N
Toboggan Creek Tributary 3	4	D	P	SD	P	N	–	SD	P	N	–	SD	P	T	P	M	71-90%	A	E	M
Toboggan Creek Tributary 4	5	SD	P	SD	P	N	–	T	P	N	–	D	P	N	–	Ab	1-20%	A	E	N
Toboggan Creek Tributary 5	6	SD	P	SD	P	N	–	T	P	N	–	D	P	N	–	M	41-70%	A	C	M
Upper Toboggan Creek	7	T	P	SD	P	D	P	N	–	T	P	SD	P	N	–	M	1-20%	Functioning	C	N
Glacier Gulch Tributary 1	8	T	P	SD	P	N	–	SD	P	N	–	D	P	N	–	Ab	41-70%	Functioning	E	M
Glacier Gulch Creek	9	N	–	SD	P	D	P	T	P	N	–	SD	P	N	–	M	1-20%	A	C	N
Club Creek	10	N	–	SD	P	SD	P	SD	P	N	–	D	P	N	–	M	–	Functioning	E	–

Dashes indicate data were not collected. **(continued)**

LB = left bank, RB = right bank.

n/a = not applicable.

Appendix 2-2
Stream Fish Habitat Inventory Summary, Proposed Northern Haul Road, Davidson Project, 2007 (continued)

Site Name	Stream Crossing #	Bank		Bank texture		Riparian Vegetation		Vegetation Stage		Temp.	pH	Cond.	Turb.	Flood signs	Bed Material		D95 (cm)	D (cm)
		LB	RB	LB	RB	LB	RB	LB	RB						Dominant	Subdominant		
Lower Toboggan Creek	1	U	U	F,G	F,G	D	C	PS	PS	–	–	–	L	Flood plain for 40+m on either side	Gr	F	10	3
Toboggan Creek Tributary 1	2	U	S	F,G	F,G	M	M	MF	MF	17	7.7	130	C	–	F	Gr	1	1
Toboggan Creek Tributary 2	3	V	S	F,G	F,G	D	D	PS	PS	5	7.8	100	C	Rafted debris	Gr	F	15	5
Toboggan Creek Tributary 3	4	U	S	F	F	M	M	MF	MF	6	7.6	110	C	–	Gr	F	25	2
Toboggan Creek Tributary 4	5	S	S	F	F	S	S	NA	SHR	6	7.8	110	C	–	F	–	5	<1
Toboggan Creek Tributary 5	6	V	S	F	F	S,M	M	YF	YF	6	7.8	120	C	–	Gr	F	10	2
Upper Toboggan Creek	7	S	S	F,G,C	F,G,C	M	M	MF	MF	–	–	–	C	Silt and channel erosion	Cb	B	–	–
Glacier Gulch Tributary 1	8	S	S	F	F	M	M	MF	MF	–	–	–	C	–	Gr	F	15	1
Glacier Gulch Creek	9	V	V	F,G,C,B	F,G,C,B	M	M	PS,YF	PS,YF	–	–	–	L	Overbank cobble deposits	Cb	B	–	–
Club Creek	10	S	U	F,G,C	F,C	C	C	YF	YF	–	–	–	L	Alluvial fan	Cb	B	–	–

Dashes indicate data were not collected.

(continued)

LB = left bank, RB = right bank.

n/a = not applicable.

Appendix 2-2
Stream Fish Habitat Inventory Summary, Proposed Northern Haul Road, Davidson Project, 2007 (completed)

Site Name	Stream Crossing #	Disturbance Indicators	Pattern	Islands	Bars	Coupling	Confinement
Lower Toboggan Creek	1	–	IR	N	SIDE	DC	UN
Toboggan Creek Tributary 1	2	–	SI	N	SIDE	DC	OC
Toboggan Creek Tributary 2	3	–	SI	N	SIDE	DC	UN
Toboggan Creek Tributary 3	4	–	SI	N	N	DC	FC
Toboggan Creek Tributary 4	5	–	SI	N	N	DC	UN
Toboggan Creek Tributary 5	6	–	SI	N	N	DC	OC
Upper Toboggan Creek	7	B1, B2, B3, D3, C3, S3	SI	N	SIDE, DIAG, MID	PC	FC
Glacier Gulch Tributary 1	8	–	SI	N	N	DC	OC
Glacier Gulch Creek	9	–	SI	N	SIDE, DIAG, MID, SPAN	PC	EC
Club Creek	10	B3	ST	N	N	DC	OC

Dashes indicate data were not collected.

LB = left bank, RB = right bank.

n/a = not applicable.

APPENDIX 2-3
STREAM CHANNEL MORPHOLOGY SUMMARY, PROPOSED NORTHERN HAUL ROAD, DAVIDSON PROJECT, 2007

Appendix 2-3
Stream Channel Morphology Summary, Proposed Northern Haul Road, Davidson Project, 2007

Site Name	Stream Crossing #	Channel Width (m) Bankfull Mean ± SE	Channel Width (m) Wetted Mean ± SE	Wetted Depth (m) Mean ± SE	Residual Pool Depth (m) Mean ± SE	Gradient (%) Mean ± SE
Lower Toboggan Creek	1	7 ± 1.0	6 ± 1.0	1 ± 0	–	1.5 ± 0.5
Toboggan Creek Tributary 1	2	1.6 ± 0.09	1.4 ± 0.06	0.3 ± 0	0.11 ± 0.02	0.75 ± 0.3
Toboggan Creek Tributary 2	3	2.4 ± 0.2	1.5 ± 0.1	0.35 ± 0.05	0.09 ± 0.02	7.5 ± 2.5
Toboggan Creek Tributary 3	4	1.3 ± 0.1	1.1 ± 0.1	0.4 ± 0.06	0.15 ± 0.02	3.5 ± 0.5
Toboggan Creek Tributary 4	5	1.2 ± 0.2	0.8 ± 0.1	0.18 ± 0.03	0.06 ± 0	3 ± 1
Toboggan Creek Tributary 5	6	1.8 ± 0.2	1.3 ± 0.1	0.28 ±0.02	0.17 ± 0.02	3.5 ± 0.5
Upper Toboggan Creek	7	16 ± 1.0	9.5 ± 1.5	1 ± 0	0.66 ± 0.06	5.3 ± 1.1
Glacier Gulch Tributary 1	8	1.4 ± 0.2	1.3 ± 0.2	0.25 ± 0.03	–	4 ± 1
Glacier Gulch Creek	9	16.5 ± 1.5	6 ± 1.0	1.15 ± 0.05	–	4.5 ± 0.6
Club Creek	10	3.7 ± 0.9	2.8 ± 0.3	0.73 ± 0.18	–	4.5 ± 0.5

SE: Standard error of the mean.

Dashes indicate data not avaiable.

APPENDIX 2-4
FISH HABITAT SITE CARDS AND PHOTOGRAPHS, DAVIDSON PROJECT, 2007

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	.1	093L.084	99	1

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK
Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name:
Local Name: Site 1, 0+488? M alignment
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 99 NID Map #: NID #: Reach #: .1 Site #: 1
Field UTM (Z.E.N): 9.611473.6082731 Method: GP3 Site Lg: 150 Method: GE Access: V2
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/08/02 Time: 12:15 Agency: C660 Crew: SJ GN Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	GE	6.00	8.00									7.00
Wetted Width (m):	GE	5.00	7.00									6.00
Pool Depth (m):												0.00

	Gadient %		Mtd	Avg
Method I:	2.0	1.0	GE	1.50
Method II:				

Wb Depth:	1.0		

Avg: 1.00 Method: GE Stage: L ☐ M ☑ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	T	N	S	S	D	T
Loc: P/S/O:	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☑☐☐	☑☐☐	☑☐☐

CROWN CLOSURE
2 21-40%
INSTREAM VEG: N ☐ A ☐ M ☐ V ☑

LWD: F DIST: C

LB SHP: U
Texture: F ☑ G ☑ C ☐ B ☐ R ☐ A ☐
RIP: D
STG: PS

RB SHP: U
Texture: F ☑ G ☑ C ☐ B ☐ R ☐ A ☐
RIP: C
STG: PS

WATER

EMS:
Temp: Method:
pH: Method:
Flood Signs: 40+m eitherside Method: GE

Req #:
Cond.: Method:
Turb.: T ☐ M ☐ L ☑ C ☐ Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F
D95: 10.0 D (cm): 3.00 Morph: RP
Pattern: IR
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N☐ SIDE☑ DIAG☐ MID☐ SPAN☐ BR☐

HABITAT QUALITY

Name	Comments
Other	habitat category - Important, potentiallly critical if known or observed spawn site
OverWinter Habitat	goog - good pools and deep eddies to hide in
Spawning Habitat	Good - nice gravel/sand in tailouts and runs
Rearing Habitat	Good - lots of cover, deep pools and shallow runs with abundant coho fry, good undercut banks

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	6108	F:	6111		NS	Photos 6108 to 6111, Toboggan ck at rail crossing with lots of fry and good spawning gravel

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	.1	093L.084	99	1

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 6112 F: 6121		NS	photos 6112 to 6121 pink crossing at 20 to 30m upstream proposed alignment cast approach and views.

COMMENTS

Section	Comments
CHANNEL	checked north approach for FSZ - just one channel - see drawing
CHANNEL	key is to put wingwalls with lock block to minimize footprint and also put food peller culverts
CHANNEL	18m span = 16m clear = 4m riparian vegetation preserved either site of channel edge
SITE CARD	Not specified if LWD was Clumped or Evenly distributed
SITE CARD	Channel Width is 6 to 8m at crossing, wetted width is 5 to 7m

Site 1

Plate 1. Toboggan Creek, upstream of existing railroad bridge.

Plate 2. Toboggan Creek, upstream view at proposed road crossing.

Plate 3. Dominant gravel substrate at Toboggan Creek, Site 1.

Plate 4. Glide habitat downstream of proposed crossing at Site 1.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	1010	3

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 3, 1+724m, wpt 006
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 1010 NID Map #: 093L.084 NID #: 1 Reach #: 1.0 Site #: 3
Field UTM (Z.E.N): 9.610727.6041825 Method: GP3 Site Lg: 200 Method: GIS Access: FT
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/10/11 Time: 14:30 Agency: C660 Crew: SJ Fish Crd?: ☑ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	3.40	2.10	2.50	2.00	2.30	2.20					2.42
Wetted Width (m):	MS	1.20	1.60	1.40	1.40	1.60	1.50					1.45
Pool Depth (m):	MS	0.09	0.05	0.07	0.16							0.09

	Gadient %		Mtd	Avg
Method I:	5.0	10.0	C	7.50
Method II:				

Wb Depth:	.3	.4	

Avg: 0.35 Method: MS Stage: L ☑ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	S	N	T	N	D	N
Loc: P/S/O:	☑☐☐	☑☐☐	☐☐☐	☐☐☐	☐☐☐	☑☐☐	☐☐☐

CROWN CLOSURE
5 >90%
INSTREAM VEG: N ☐ A ☐ M ☐ V ☐

LWD: A DIST: C

LB SHP: V
Texture: F ☑ G ☑ C ☐ B ☐ R ☐ A ☐
RIP: D
STG: PS

RB SHP: S
Texture: F ☑ G ☑ C ☐ B ☐ R ☐ A ☐
RIP: D
STG: PS

WATER

EMS: Req #:
Temp: 5 Method: NS Cond.: 100 Method: NS
pH: 7.8 Method: NS
Turb.: T ☐ M ☐ L ☐ C ☑ Method: GE
Flood Signs: rafted debris at BFD Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F
D95: 15.0 D (cm): 5.00 Morph: RP
Pattern: SI
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N☐ SIDE☑ DIAG☐ MID☐ SPAN☐ BR☐

HABITAT QUALITY

Name	Comments
Other	Habitat Category - Important
OverWinter Habitat	Poor - too shallow
Spawning Habitat	Fair - For resident DV/CT only - sandy pea gravel - but pool for large fish since no holding areas
Rearing Habitat	Fair - abundant overhanging vegetation with small shallow pools with LWD/SWD cover

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	DIG	F:	8386		X	card
R:	DIG	F:	8389		X	card

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	1010	3

PHOTOS

Photo	Foc Lg	Dir	Comments
R: DIG F: 9084		U	LT. Bucket and brushy channel
R: DIG F: 9185		D	LT. Channel with 100% overvegetation and SJ
R: DIG F: 9282		X	Gravel substrate

COMMENTS

Section	Comments
CHANNEL	S3 class
CHANNEL	toboggan creek - 225 m d/s
CHANNEL	recommend fix obstruction
CHANNEL	old spur road makes partial obstruction to prevent small fish from ascending
CHANNEL	2 CT/RBT fry caught upstream spur road - indicates trout spawning somewhere in reach
CHANNEL	stream flows across alluvia fan in this section
CHANNEL	old spur road (75 m downstream UTM)

Site 3

Plate 1. Upstream view of Toboggan Creek tributary at proposed stream crossing 3.

Plate 2. Downstream view of Toboggan Creek tributary at proposed stream crossing 3. Note the dominant overhanging vegetation.

Plate 3. Dominant gravel substrate at proposed stream crossing 3.

Plate 4. Juvenile rainbow or cutthroat trout captured by electrofishing at proposed stream crossing 3.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	3.0	093L.084	1000	4

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 4, 2+341m xing, wpt 2
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 1000 NID Map #: NID #: Reach #: 3.0 Site #: 4
Field UTM (Z.E.N): 9.610941.6081241 Method: GP3 Site Lg: 300 Method: HC Access: FT
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/10/07 Time: 17:00 Agency: C660 Crew: SJ Fish Crd?: ☑ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	1.10	0.90	1.70	1.40	0.90	1.30					1.22
Wetted Width (m):	MS	1.10	0.70	1.30	1.20	1.10	1.10					1.08
Pool Depth (m):	MS	0.15	0.10	0.15	0.20							0.15

	Gadient %		Mtd	Avg
Method I:	4.0	3.0	C	3.50
Method II:				

Wb Depth:	.4	.5	.3

Avg: 0.40 Method: MS Stage: L ☑ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	D	S	N	S	N	S	T
Loc: P/S/O:	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐	☑☐☐	☑☐☐

CROWN CLOSURE
4 71-90%
INSTREAM VEG: N ☐ A ☐ M ☑ V ☐

LWD: A DIST: E

LB SHP: U
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: M
STG: MF

RB SHP: S
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: M
STG: MF

WATER

EMS:
Temp: 6 Method: NS
pH: 7.6 Method: NS
Flood Signs: none Method: GE

Req #:
Cond.: 110 Method: NS
Turb.: T ☐ M ☐ L ☐ C ☑ Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F
D95: 25.0 D (cm): 2.00 Morph: RP
Pattern: SI
Islands: N
Coupling: DC
Confinement: FC
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N ☑ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

FEATURES

NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)	Method
093L.084	9021	C					R: 8384 F: 1	L: #:	..	
Comments: all fish < 30cm - WPT 3										
093L.084	9020	C	.8	MS			R: 8383 F: 1	L: #:	..	
Comments: cascade obstruction										

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	3.0	093L.084	1000	4

FEATURES

NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)	Method
093L.084	9011	C	1.4	MS			R: 8372 F: 1	L: #:	..	
Comments:	chute at WPT 002 EFU - 150m u/s Toboggan creek									
NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)	Method
093L.084	9010	C	1.4	MS			R: 8371 F: 1	L: #:	..	
Comments:	photos of flag and chute									

HABITAT QUALITY

Name	Comments
Cover	S6 Class
Other	Habitat Category - Important
OverWinter Habitat	Poor - no pools > 0.5m
Spawning Habitat	Fair - occassional patches of gravel but silty. Few pools
Rearing Habitat	Fair - lots of cover, few pools

PHOTOS

Photo	Foc Lg	Dir	Comments
R: DIG F: 8371		D	gully downstream UTM near crossing
R: DIG F: 8373		X	card
R: DIG F: 8374		U	brushy channel
R: DIG F: 8375		U	brushed over channel
R: DIG F: 8376		D	1 m wide channel
R: DIG F: 8385		D	sheldon in 2m channel width upstream of proposed crossing

COMMENTS

Section	Comments
CHANNEL	hiked/shocked for 300 m upstream EFU at Chute
CHANNEL	fair quality but few pools - mostly shallow riffle - run with 1.5 to 2.0 m channel width at 2%
CHANNEL	reach 3 habitat is better
CHANNEL	Terminate survey at WPT 200 - upstream end

Site 4

Plate 1. Heavily vegetated stream channel at proposed stream crossing 4.

Plate 2. 1 m wide channel at proposed stream crossing 4.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	13	5

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 5, 3+694, wpt 008
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 13 NID Map #: NID #: Reach #: 1.0 Site #: 5
Field UTM (Z.E.N): 9.611205.6079900 Method: GP3 Site Lg: 200 Method: GE Access: FT
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/10/11 Time: 17:00 Agency: C660 Crew: SJ Fish Crd?: ☑ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	2.00	1.30	1.10	0.50	1.20	1.00					1.18
Wetted Width (m):	MS	1.20	0.90	0.90	0.35	1.10	0.60					0.84
Pool Depth (m):	MS	0.60										0.60

	Gadient %		Mtd	Avg
Method I:	4.0	2.0	C	3.00
Method II:				

Wb Depth:	.2	.2	

Avg: 0.20 Method: MS Stage: L ☑ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☑ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	S	N	T	N	D	N
Loc: P/S/O:	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐

CROWN CLOSURE
1 1-20%
INSTREAM VEG: N ☑ A ☐ M ☐ V ☐

LWD: A DIST: E

LB SHP: S
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: S
STG: NA

RB SHP: S
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: S
STG: SHR

WATER

EMS:
Temp: 6 Method: NS
pH: 7.8 Method: NS
Flood Signs: none Method: GE

Req #:
Cond.: 110 Method: NS
Turb.: T ☐ M ☐ L ☐ C ☑ Method: GE

MORPHOLOGY

Bed Material: Dominant: F Subdom:
D95: 5.00 D (cm): 1.00 Morph: RP
Pattern: SI
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N ☑ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Other	Habitat category - Marginal
OverWinter Habitat	None
Spawning Habitat	None
Rearing Habitat	Poor - no pools, open channel

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	DIG	F:	8396		NS	card
R:	DIG	F:	8397		D	sheldon and channel

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	13	5

PHOTOS			
Photo	Foc Lg	Dir	Comments
R: DIG F: 8398		U	devils club channel

COMMENTS	
Section	Comments
CHANNEL	no defined channel about 100m downstream site UTM since subsides into floodplain
CHANNEL	see SJ notes regarding lack of downstream connectivity
SITE CARD	D(cm) is actually <1

Site 5

Plate 1. Heavily vegetated stream channel at proposed stream crossing 5.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	14	6

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 6, 3+844m? WPT 009
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 14 NID Map #: NID #: Reach #: 1.0 Site #: 6
Field UTM (Z.E.N): 9.611199.6079831 Method: GP3 Site Lg: 200 Method: GE Access: FT
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/10/11 Time: 18:00 Agency: C660 Crew: SJ Fish Crd?: ☑ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	1.40	1.80	1.20	1.80	1.90	2.40					1.75
Wetted Width (m):	MS	1.20	1.10	1.00	1.60	1.20	1.80					1.32
Pool Depth (m):	MS	0.15	0.15	0.20								0.17

	Gadient %		Mtd	Avg
Method I:	3.0	4.0	C	3.50
Method II:				

Wb Depth:	.3	.3	

Avg: 0.30 Method: MS Stage: L ☑ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	S	N	T	N	D	N
Loc: P/S/O:	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐

CROWN CLOSURE
3 41-70%
INSTREAM VEG: N ☐ A ☐ M ☑ V ☐

LWD: A DIST: C

LB SHP: V
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: M
STG: YF

RB SHP: S
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: M
STG: YF

WATER

EMS:
Temp: 6 Method: NS
pH: 7.8 Method: NS
Flood Signs: none Method: GE

Req #:
Cond.: 120 Method: NS
Turb.: T ☐ M ☐ L ☐ C ☑ Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F
D95: 10.0 D (cm): 2.00 Morph: RP
Pattern: SI
Islands: N
Coupling: DC
Confinement: OC
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N ☑ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	Poor - no deep areas
Spawning Habitat	Poor - occassional micropatches
Rearing Habitat	Fair - few pools, good cover

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	DIG	F:	8399		X	LT. card
R:	DIG	F:	8405		D	channel
R:	DIG	F:	8406		U	channel

Site 6

Plate 1. Downstream view of tributary creek at stream crossing 6.

Plate 2. Upstream view of tributary creek at stream crossing 6.

Plate 3. 117 mm Dolly Varden captured by electrofishing at stream crossing 6.

Plate 4. 55 mm juvenile fish captured by electrofishing at stream crossing 6.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	.1	093L.084	98	7

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 7, 4+200m
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 98 NID Map #: NID #: Reach #: .1 Site #: 7
Field UTM (Z.E.N): 9.611000.6079383 Method: GP3 Site Lg: 100 Method: GE Access: V4
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/08/01 Time: 11:30 Agency: C660 Crew: SJ Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	HC	15.00	17.00									16.00
Wetted Width (m):	HC	11.00	8.00									9.50
Pool Depth (m):	NS	72.00	60.00									66.00

	Gadient %		Mtd	Avg
Method I:	3.0	4.0	GE	5.25
Method II:	6.0	8.0	GE	

Wb Depth:	1.0		

Avg: 1.00 Method: GE Stage: L ☐ M ☑ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	S	D	N	T	S	N
Loc: P/S/O:	☑☐☐	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☑☐☐	☐☐☐

CROWN CLOSURE
1 1-20%
INSTREAM VEG: N ☑ A ☐ M ☐ V ☐

LWD: F DIST: C

LB SHP: S
Texture: F ☑ G ☑ C ☑ B ☐ R ☐ A ☐
RIP: M
STG: MF

RB SHP: S
Texture: F ☑ G ☑ C ☑ B ☐ R ☐ A ☐
RIP: M
STG: MF

WATER

EMS: Req #:
Temp: Method: Cond.: Method:
pH: Method: Turb.: T ☐ M ☐ L ☐ C ☑ Method: GE
Flood Signs: channel erosion and. Method: GE

MORPHOLOGY

Bed Material: Dominant: C Subdom: B
D95: D (cm): Morph: CP
Pattern: SI
Islands: N
Coupling: PC
Confinement: FC
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☑	☑	☑	☐	☐	☑

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☑	☐	☐	☐	☐	☑	☐	☐

Bars: N ☐ SIDE ☑ DIAG ☑ MID ☑ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Other	Habitat Category - Important - likely typical of the alluvial fan reach
OverWinter Habitat	Poor - Few deep pools - mostly fast flow
Spawning Habitat	Poor - only occassional micropatch and mostly cobble boulder substrates
Rearing Habitat	Fair - Fast cascade mostly, few plunge pools and good LWD cover upstream in jams

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	6014	F:	6046		NS	photos 6014 to 6046. 100m section from existing ford downstream to unstable section downstream of proposed alignment.

FDIS Site Card

	Reach #	ILP Map #	ILP #	Site
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	.1	093L.084	98	7

COMMENTS	
Section	Comments
CHANNEL	Steep fan gradients on south side.
CHANNEL	existing ford is near apex (upstream end) of alluvial fan of 75 to 125m wide through site.
CHANNEL	No spawning habitat in segment examined
CHANNEL	T2 (second channel and wetted width) At ford disturbed RIPrad on south side. 60m fan (toe to toe)
CHANNEL	T1 also 75m wide from toe to toe including south road route
CHANNEL	orange flag trail - 50 m downstream ford (T1 - first channel and wetted width lengths)
CHANNEL	Flood signs - abundant overbank silt and channel erosion
CHANNEL	Fan and Floodplain

Site 7

Plate 1. Upper Toboggan Creek at proposed stream crossing 7.

Plate 2. Upper Toboggan Creek at proposed stream crossing 7.

Plate 3. Upper Toboggan Creek at proposed stream crossing 7.

Plate 4. Plunge pool with large woody debris at proposed stream crossing 7

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	1000	8

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 8, Creek 100
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 1000 NID Map #: NID #: Reach #: 1.0 Site #: 8
Field UTM (Z.E.N): 9.611600.6078550 Method: O Site Lg: 100 Method: GE Access: V4
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/08/01 Time: 14:30 Agency: C660 Crew: SJ DG Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	GE	1.00	1.70	1.30	1.60							1.40
Wetted Width (m):	GE	0.80	1.50	1.30	1.40							1.25
Pool Depth (m):	GE											0.00

	Gadient %		Mtd	Avg
Method I:	3.0	5.0	GE	4.00
Method II:				

Wb Depth:	.3	.3	.2

Avg: 0.27 Method: GE Stage: L ☑ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	S	N	S	N	D	N
Loc: P/S/O:	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐

CROWN CLOSURE
3 41-70%
INSTREAM VEG: N ☐ A ☐ M ☑ V ☐

LWD: F DIST: E

LB SHP: S
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: M
STG: MF

RB SHP: S
Texture: F ☑ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: M
STG: MF

WATER

EMS: Req #:
Temp: Method: Cond.: Method:
pH: Method: Turb.: T ☐ M ☐ L ☐ C ☑ Method:
Flood Signs: none Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F
D95: 15.0 D (cm): 1.00 Morph: RP
Pattern: SI
Islands: N
Coupling: DC
Confinement: OC
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N ☑ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Cover	S4 Class
Other	Habitat Category = Marginal
OverWinter Habitat	poor - no deep pools
Spawning Habitat	potential dolly varden spawing in fine gravels but poor pool development
Rearing Habitat	Fair - Lots of cover but few pools and none deeper than 0.2m

PHOTOS

Photo	Foc Lg	Dir	Comments
R: DIG F: 6054		NS	photos 6054 to 6060 (Card, upstream, downstream, substrate and riparian veg - ALL Dev Club)

FDIS Site Card

	Reach #	ILP Map #	ILP #	Site
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	1.0	093L.084	1000	8

COMMENTS	
Section	Comments
CHANNEL	small S4 which is about 5% at crossing of blue flag - likely 1500 m embedded CV
CHANNEL	hiked downstream of old blue 'north route' flagging for 75m and joins creek 101 - dry.
SITE CARD	Guess at GIS Field point. Not written on data card.

Site 8

Plate 1. Upstream view of proposed stream crossing site 8.

Plate 2. Substrate observed at proposed stream crossing site .

Plate 3. Downstream view of proposed stream crossing site 8.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	3.0	093L.084	15	9

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 9, xing is 150m u/s ford
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 15 NID Map #: NID #: Reach #: 3.0 Site #: 9
Field UTM (Z.E.N): 9.611850.6076100 Method: O Site Lg: 100 Method: GE Access: V4
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/08/01 Time: 16:00 Agency: C660 Crew: SJ AND DS Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	GE	15.00	18.00									16.50
Wetted Width (m):	GE	7.00	5.00									6.00
Pool Depth (m):	GE											0.00

	Gadient %		Mtd	Avg
Method I:	5.0	6.0	GE	4.50
Method II:	3.0	4.0	GE	

Wb Depth:	1.2	1.1	

Avg: 1.15 Method: GE Stage: L ☐ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	N	S	D	T	N	S	N
Loc: P/S/O:	☐☐☐	☑☐☐	☑☐☐	☑☐☐	☐☐☐	☑☐☐	☐☐☐

CROWN CLOSURE
1 1-20%
INSTREAM VEG: N ☑ A ☐ M ☐ V ☐

LWD: A DIST: C

LB SHP: V
Texture: F ☑ G ☑ C ☑ B ☑ R ☐ A ☐
RIP: M
STG: YF

RB SHP: V
Texture: F ☑ G ☑ C ☑ B ☑ R ☐ A ☐
RIP: M
STG: YF

WATER

EMS: Req #:
Temp: Method: Cond.: Method:
pH: Method: Turb.: T ☐ M ☐ L ☑ C ☐ Method: GE
Flood Signs: see comment Method: GE

MORPHOLOGY

Bed Material: Dominant: C Subdom: B
D95: D (cm): Morph:
Pattern: SI
Islands: N
Coupling: PC
Confinement: FC
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N ☐ SIDE ☑ DIAG ☑ MID ☑ SPAN ☑ BR ☐

HABITAT QUALITY

Name	Comments
Other	Habitat Category - marginal, but important for only dolly varden/ST rear for most.
OverWinter Habitat	poor
Spawning Habitat	none
Rearing Habitat	Fair - no pools, mostly continous cascade run

COMMENTS

Section	Comments
CHANNEL	North side is more in fill out relic channel

FDIS Site Card

	Reach #	ILP Map #	ILP #	Site
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	3.0	093L.084	15	9

COMMENTS	
Section	Comments
CHANNEL	Possible fill onto medium bench terrace on south side from shift downstream 10m from blue
CHANNEL	28 m span on lock blocks
CHANNEL	Abundant cobble bar over banks.
CHANNEL	Reach upstream of ford is active channel on steep alluvial fan with 5 to 10 year old jams and sediment wedges breaking down.
CHANNEL	Floodsigns - Abundant overbank cobble deposits
CHANNEL	Gradient - Downstream is 5 to 6%, upstream is 3 to 4%
CHANNEL	GPS [point not entered - is a guess from map.

Site 9

Plate 1. Upstream view of Glacier Gulch Creek at proposed stream crossing site 9.

Plate 2. Downstream view of Glacier Gulch Creek at proposed stream crossing site 9.

Plate 1. Cobble and boulder substrate observed at proposed stream crossing site 9.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	.1	093L.084	1020	10

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site 10, Club Creek 6+450m
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 1020 NID Map #: NID #: Reach #: .1 Site #: 10
Field UTM (Z.E.N): 9.611964.6077631 Method: GP3 Site Lg: 100 Method: GE Access: V4
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/08/01 Time: 18:00 Agency: C660 Crew: SJ DS Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	GE	3.00	5.50	2.50								3.67
Wetted Width (m):	GE	2.50	3.50	2.50								2.83
Pool Depth (m):												0.00

	Gadient %		Mtd	Avg
Method I:	4.0	5.0	GE	4.50
Method II:				

Wb Depth:	.8	1.0	.4

Avg: 0.73 Method: GE Stage: L ☐ M ☑ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:		S	S	S	N	D	N
Loc: P/S/O:	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐

CROWN CLOSURE

INSTREAM VEG: N ☐ A ☐ M ☐ V ☐

LWD: F DIST: E

LB SHP: S
Texture: F ☑ G ☑ C ☑ B ☐ R ☐ A ☐
RIP: C
STG: YF

RB SHP: U
Texture: F ☑ G ☐ C ☑ B ☐ R ☐ A ☐
RIP: C
STG: YF

WATER

EMS: Req #:
Temp: Method: Cond.: Method:
pH: Method: Turb.: T ☐ M ☐ L ☑ C ☐ Method: GE
Flood Signs: alluvial fan Method: GE

MORPHOLOGY

Bed Material: Dominant: C Subdom: B
D95: D (cm): Morph: CP
Pattern: ST
Islands: N
Coupling: DC
Confinement: OC
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☑	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N ☑ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Other	Default S3 class
OverWinter Habitat	Poor - no deep pools
Spawning Habitat	None - observed no substrate
Rearing Habitat	Fair - feww pools, fast continuous cascades and moderate cover

COMMENTS

Section	Comments
CHANNEL	no spawning habitat visible in lightly turbid moderate flows and cascade pool

FDIS Site Card

	Reach #	ILP Map #	ILP #	Site
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	.1	093L.084	1020	10

COMMENTS	
Section	Comments
CHANNEL	no problems - 0.5 to 1.0 m high banks.
CHANNEL	crossing at pink mcellhaney line is 3 m channel width and slight skew.
SITE CARD	see photos, both crossings

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	12	11

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: Site NCD1, 1+073, wpt 7
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 12 NID Map #: NID #: Reach #: 1.0 Site #: 11
Field UTM (Z.E.N): 9.610920.6082424 Method: GP3 Site Lg: 100 Method: GE Access: FT
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/10/11 Time: 16:00 Agency: C660 Crew: SJ Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):												0.00
Wetted Width (m):												0.00
Pool Depth (m):												0.00

	Gadient %		Mtd	Avg
Method I:				0.00
Method II:				

Wb Depth: | Avg: 0.00 | Method: | Stage: L ☐ M ☐ H ☐ | No Vis.Ch.: ☐ | Intermittent: ☐ | Dw: ☐ | Tribs.: ☐

COVER Total:

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:							
Loc: P/S/O:	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐

CROWN CLOSURE

INSTREAM VEG: N ☐ A ☐ M ☐ V ☐

LWD: DIST:

LB SHP: RB SHP:
Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐ Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐
RIP: RIP:
STG: STG:

WATER

EMS: Req #:
Temp: Method: Cond.: Method:
pH: Method: Turb.: T ☐ M ☐ L ☐ C ☐ Method:
Flood Signs: Method:

MORPHOLOGY

Bed Material: Dominant: Subdom:
D95: D (cm): Morph:
Pattern:
Islands:
Coupling:
Confinement:
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N☐ SIDE☐ DIAG☐ MID☐ SPAN☐ BR☐

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	DIG	F:	8393		NS	card
R:	DIG	F:	8394		D	brush NCD
R:	DIG	F:	8395		U	brush NCD

COMMENTS

Section	Comments
CHANNEL	Not a defined channel. Moist wet ground.

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	101	12

PROJECT

Project Name: Davidson
Stream Name (gaz.): TOBOGGAN CREEK
Project Code: 18755
Project Watershed Code: 460-242900-00000-00000-0000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name:
Local Name: Site NCD2, Road Station 5+381 - Hach Design
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000
ILP Map#: 093L.084 ILP #: 101 NID Map #: NID #: Reach #: 1.0 Site #: 12
Field UTM (Z.E.N): 9.611600.6078550 Method: GP3 Site Lg: 100 Method: GE Access: FT
GIS UTM (Z.E.N): .. Ref. Name:
Date: 2007/08/01 Time: 12:00 Agency: C660 Crew: SJ DG Fish Crd?: ☐ Incomplete: ☑

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):												0.00
Wetted Width (m):												0.00
Pool Depth (m):												0.00

	Gadient %		Mtd	Avg
Method I:	5.0	10.0	GE	7.50
Method II:				

Wb Depth: Avg: 0.00 Method: Stage: L ☐ M ☐ H ☐
No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total:

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:							
Loc: P/S/O:	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐

CROWN CLOSURE
INSTREAM VEG: N ☐ A ☐ M ☐ V ☐

LWD: DIST:

LB SHP:
Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐
RIP:
STG:

RB SHP:
Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐
RIP:
STG:

WATER

EMS: Req #:
Temp: Method: Cond.: Method:
pH: Method:
Turb.: T ☐ M ☐ L ☐ C ☐ Method:
Flood Signs: Method:

MORPHOLOGY

Bed Material: Dominant: Subdom:
D95: D (cm): Morph:
Pattern:
Islands:
Coupling:
Confinement:
FSZ: ☐

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars: N☐ SIDE☐ DIAG☐ MID☐ SPAN☐ BR☐

HABITAT QUALITY

Name	Comments
Other	Watercourse is ephemeral (dry today) and discontinuous channel with evidence of overland seepage.

PHOTOS

Photo				Foc Lg	Dir	Comments
R:	DIG	F:	6050	STD	NS	NCD located 50m downstream skid trail and 50m upstream of ILP 100-
R:	DIG	F:	6051	STD	NS	NCD located 50m downstream skid trail and 50m upstream of ILP 100-
R:	DIG	F:	6052	STD	NS	NCD located 50m downstream skid trail and 50m upstream of ILP 100-
R:	DIG	F:	6062	STD	NS	NCD photos at trail crossing gully
R:	DIG	F:	6063	STD	NS	NCD photos at trail crossing gully

FDIS Site Card

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093L.084	101	12

PHOTOS						
Photo				Foc Lg	Dir	Comments
R:	DIG	F:	6064	STD	NS	NCD photos at trail crossing gully
R:	DIG	F:	6065	STD	NS	NCD photos at trail crossing gully
R:	DIG	F:	6066	STD	NS	NCD photos at trail crossing gully

COMMENTS	
Section	Comments
SITE CARD	Called stream H on Steve Jenning's route map.
SITE CARD	Map UTM - No field GPS reading
CHANNEL	No scour.
CHANNEL	No alluvial substrate - mostly moss on rocks and topsoil.