



Highway 91/17 Upgrade Project

Submittal No.	PGC-SUB-000896.01	Document No.	H9117-EV-MRP-0013
Title	Environmental Monthly Report May 2021	Revision:	02
Date Submitted to MoTI	23 June 2021		
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REVISION LOG

Version #	Date	Revised By	Approved By	Revised Section
0	02 June 2021	Patty Burt, RP Bio, AQP		
1	07 June 2021	Patty Burt, RP Bio, AQP	Werner Beukes, RP Bio	Section 2.2: Provided by PGC Section 3.3: 21 May 2021 incident added. Section 4.6: Changed 5 locations to 7 Section 4.11: Changed suspected to confirmed contaminated soil. Table 4: 19 May 2021 added water data.
2	22 June 2021	Werner Beukes RP Bio		Section 3.3 NCR's 42 & 43 added Section 4.7 bycatch footnote added Acronym descriptions have been added to Appendix 3

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CONTENTS

1.0	Introduction	1
2.0	Construction Activities	2
2.1	Activities for this Period	2
2.2	Upcoming Activities	3
3.0	Environmental issues	4
3.1	Environmental Incidents	4
3.2	Non-Compliance.....	4
3.3	Non-Conformance	4
3.4	Opportunities for Improvement.....	5
3.5	Outstanding Environmental Issues	5
4.0	Environmental Monitoring and inspection Results	5
4.1	Air Quality and Dust Control.....	5
4.2	Noise and Vibration Management.....	6
4.3	Erosion and Sediment Control	7
4.4	Water Quality Management	7
4.5	Wildlife and Habitat Management	8
4.6	Vegetation Management	8
4.7	Fisheries Habitat Management	8
4.8	Concrete Works and Grouting Management	9
4.9	Waste Management	9
4.10	Emergency Response	10
4.11	Contaminated Sites Management.....	10
5.0	Environmental Permits	10
5.1	Status Update.....	10
5.2	Status of the Table of Commitments and Assurances.....	11
6.0	Concluding remarks.....	11
7.0	Site Photos.....	12

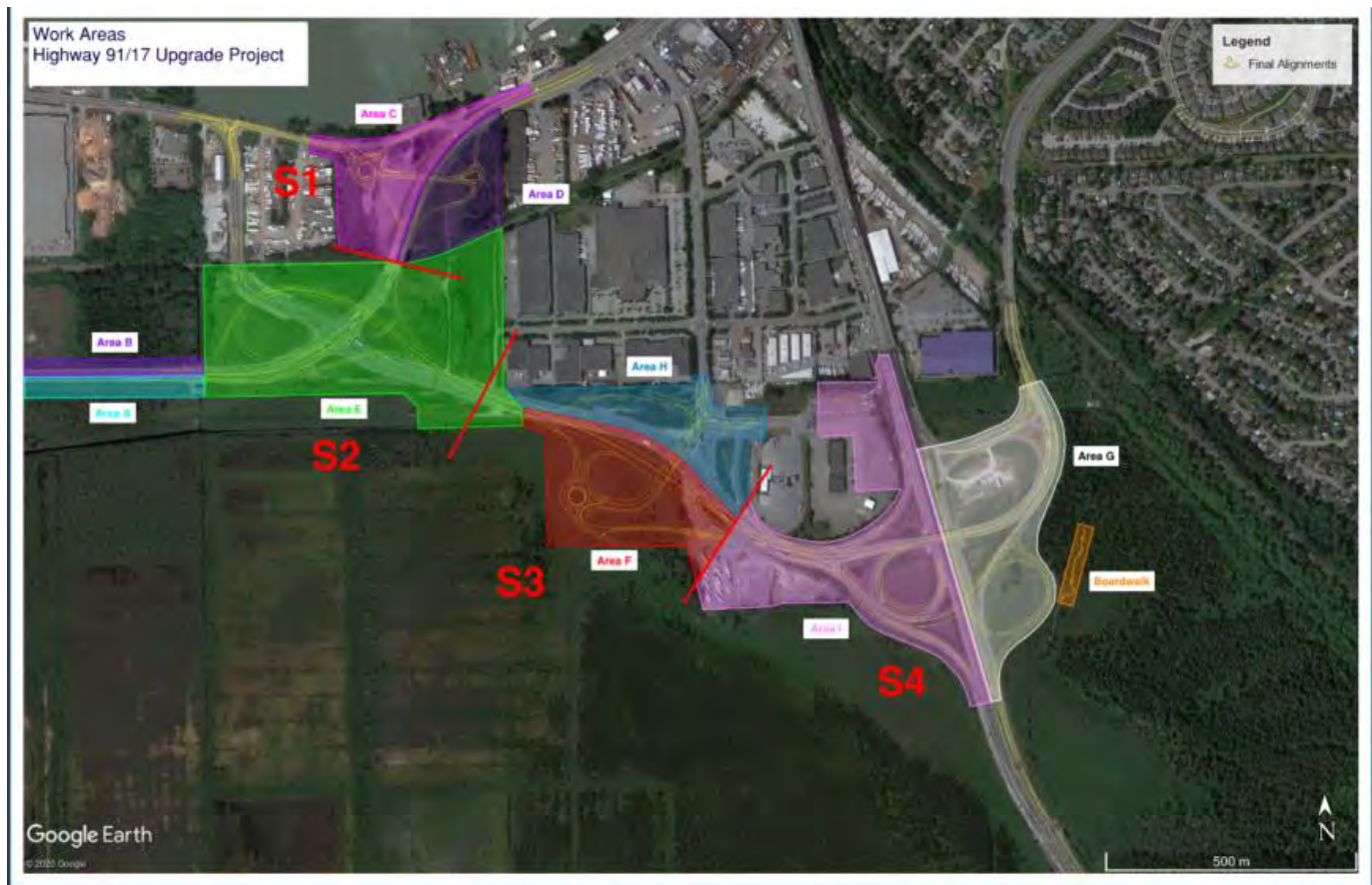
Appendices

- Appendix 1** Key Plan Drawing
- Appendix 2** Spill and Incident Tracker
- Appendix 3** Wildlife/Fish Salvage Results
- Appendix 4** Permit Tracker
- Appendix 5** Permit Conditions Tracker
- Appendix 6** Status of TOCA Commitments Table
- Appendix 7** Water Quality Data
- Appendix 8** Toolbox Training Records
- Appendix 9:** Incident Reports-Including Spills over 5 L

1.0 INTRODUCTION

This report covers all construction activities that had occurred from 01 to 31 May 2021 on the Highway 91 17 Upgrades project. During this period works occurred in Areas C, E, F, G, H, and I. For the purposes of this report, the following areas shall be defined as:

- Area C: Portion of River Road West of Highway 17 (Includes L250, L275, L325, L350, part of L375)
- Area E: Sunbury Mounds L500, L575 and L550
- Area F: MK Delta (L1150S/1160/1170/1400) and C01 detour
- Area H: L1300 Weigh Scale
- Area G: Delta Nature Reserve (L2300/2400)
- Area I: West side of Hwy 91, truck parking area, E02 and E04 Detour (L2100/L2200/L600E and W)



- A Key Plan has been included showing the project alignments (See **Appendix 1**).

2.0 CONSTRUCTION ACTIVITIES

2.1 Activities for this Period

The following works took place within Section 1 from 01 to 31 May 2021:

Area C

- Preload removal at L275 & L250 - material hauled to S3 parking lot. L350/L275 slopes are shaped to embankment design, continued progress of removal of sand and placement of Sub-Grade, Sub-Base lifts at these locations. Placed curbs along the L275, L325 and slopes nearing completion along the L250.
- Power pole relocation by BC Hydro and Telus relocating fibers.
- First concrete pour was completed at the Section 1 Bridge (west side). Jacob Brothers poured the bridge abutment on the North Wall and working on rebar installation on South wall stem wall which was completed later in the month (Photos 1 to 3).
- Load, hauled and placed surcharge along the L350 / L325 / L375.
- Subbase placement, curb, and gutter at the west roundabout on the below listed alignments, L350, L375, L325, L275, L250, L375.
- Installed CB 140 and its lead on River Road asphalt removal area and final preparation work below the sidewalk grade at the west roundabout on the Southwest side.
- PGC Environmental manager conducted a bird nest sweep before Triex trimmed trees for lighting installations. TWE installed light bases, electrical streetlamp vault and electrical connection at roundabout.
- SFPR basket wall was removed and backfilled.
- FRPD started pile driving for guide sign #42 and #50.

Area D

- No works were completed in Area D.
- General view of Silda Ditch conditions at low tide (Photo 4).

The following works took place within Section 2 from 01 to 31 May 2021:

Area A

- No works in Area A.

Area B

- No works in Area B.

Area E

- L575: Menard operations and installations ongoing, placed 6 out of 7 stone columns in test pad area (Photo 5), removed preload and temporary wire wall along 91C. Slope shaping along the L575 adjacent to the ditch line. Topsoil placement on north slopes, excavation of the crane pad-hauling material to stockpile north of L575 and continued with wet feed columns.
- L500: Removed preload and completed testing compaction, wildlife sweep was completed prior to geo-tech investigation (Photo 6).
- L550E: Mitigation of the steep slope to a flatter slope. The removal of sand that migrated from site (uphill) to an area near the bog watercourse (Photos 7 and 8). No instream works were done as no sand entered the watercourse. Removed wire baskets & the sand behind them from the temporary wire basket wall. Wildlife sweep completed prior to geo-tech investigation.
- Continued the wildlife crossing installation - Culvert 240 (Photos 9 and 10).
- Excavated suspect contaminated material North of IN240, placed on and covered with poly sheeting. Soil samples were sent to the lab for analysis.
- Old guide sign located at L500 by Silda Ditch was taken down to make room for Culvert 240.
- L500N excavated for the temporary detour CB lead, stripping adjacent to Silda Ditch for further excavation for STM 330 and breaking the concrete base of the guide sign that was taken down.

- Stormtec water treatment facility was used during the excavation of STM 330, suspected contaminated groundwater. Continued the installation of STM 255.

Hwy 99

- No works at Hwy 99.

The following works took place in Section 3 from 01 to 31 May 2021:

Area F

- L500E Lock block placement continued.
- L1150 and L1160 continued placing preload.
- Removal of asphalt at the old truck parking entrance
- Placement of peat for berm stabilization (Photo 11)

Area H

- Fish salvage completed on 04 May 2021 (Photo 12).

The following works took place in Section 4 from 01 to 31 May 2021:

Area I

- L2100 Placement of road plates downstream of Bog perimeter ditch (Photos 13 and 14). Infilling of ditch - PGC Environmental Representative did regular monitoring during this entire operation.
- L2100 Building wire wall, embankment filling and preload placement and row of baskets (Photos 15 to 18).
- L2200 Hauling preload sand to L2400 and installing culvert, installed lamp post base and backfilled.
- L600W Stone columns progressed and Menard preformed CPT tests
- L600 Completed preload placement up to north end of L600 alignment
- Wall 407 Completed mid-21st row out of total 24.
- Wall 405 Working on the 6th row of baskets.
- Filled in the shoulders against E04 barriers.

Area G

- Continue work on the L600 E wall with the installed seismic geogrid from L2100 tie-in and placement of basket rows.
- L2300 Placing preload.

New Truckstop B01 Detour Nordel Way

- No works at the New Truckstop.

2.2 Upcoming Activities

Section 1:

L325 - CB installations, subgrade preparation, install street lighting, placement of curbs and gutters, placement of topsoil. Install bioswales and spillways, hydro-seeding. Placement of barriers and line painting.

L350 - Subgrade preparation install street lighting, placement of topsoil. Install bioswales and spillways, hydro-seeding. Placement of barriers and line painting.

L375 - Curb and gutter work, completion of sidewalk, roundabout island landscaping. Complete shouldering activities, topsoiling, hydro-seeding, and line painting.

L275 - Complete sidewalks. S1 Bridge- Install Overhangs/Edges. Form, rebar, form, pour and cure diaphragm. Form, rebar, form, setup, pour, cure and strip deck. Form, guiding installations to continue.

Section 2:

L575 - Placement of SGSB & WGB, install street lighting and bases. Install rip rap end treatments at all culverts as well as swales, Complete streetlight poles & wiring. Guide sign removal, subgrade preparation and install CBs.

L550 - Complete STM 210 & culverts. Subgrade preparation (C03).

L400 - Surcharge preload fill placement.

L575 - Stone column installations to continue.

Section 3:

No activities planned

Section 4:

L600 E- Placement of surcharge fill.

L2200 Mill and overlay tie-ins, add shouldering material, install roadside barrier and eradicate old line painting. Complete STM 405. Remove detour electrical services, remove existing ramp, complete STM420, complete swales and ditching, hydroseed/planting.

3.0 ENVIRONMENTAL ISSUES

3.1 Environmental Incidents

5 May 2021: At approximately 20:25 a sand delivery truck and trailer had a mechanical failure and spilled approximately 2 L of hydraulic fluid onto placed preload. The spill was contained, and absorbent spill pads were placed on the surface to absorb any surface fluid. All the contaminated soil was dug out and sent to the PGC waste management for disposal by the sub-contractor. The used spill pads were properly disposed of at the Haz-Mat area by the office trailers.

3.2 Non-Compliance

No reportable non-compliance for this reporting period.

3.3 Non-Conformance

21 May 2021: L1400. During a site inspection, it was observed that construction materials (River Sand) have migrated into the water course area of the Burns Bog approximately 500 mm after an isolation road plate was removed. Upon further investigation it was found that the sand was within the extended WSA permit area. PGC has removed the excess sand from the bog-ditch area with a long reach excavator. Bog peat has been placed on the sides for stabilization

27 May 2021: During a Province audit conducted on March 19, 2021 (NCR 0042), it was discussed between the Province Representatives and PGC that the existing stockpiles of contaminated materials on the L550 location should have a poly protective covering over them. PGC has tasked their operations teams to complete the action of covering the in-situ stockpiles appropriately in accordance with the requirements of the applicable specifications. The teams used an impermeable 6 mil poly, that was installed over the entire stockpile(s) and weighted in place with sandbags, ensuring that the protective covering does not come off.

28 May 2021: During a Province inspection conducted on April 14, 2021 (NCR 0043), it was observed by the Province representative that Water was mixing with the sand and providing the opportunity the for introduction of water and sand that in not compatible with bog Vegetation (Mineralization and pH above bog levels). This is mostly in part because there is no barrier preventing surface water from flowing down through the sand and then into the bog. PGC acted by using a long-reach excavator to remove excess sand from the toe of the slope where the issue was witnessed. Slopes were packed with the back of the excavator bucket to stabilize the slopes. PGC has started with the placement of bog-peat on the slopes of the embankment fill. This is work in progress and will be completed shortly.

31 May 2021: A stockpile (excavated as part of STM 255) was located outside the allowable Project Limits on Vancouver Fraser Port Authority (VFPA) land, adjacent to the VFPA access road. STM 255 is located outside the known contaminated soil delineation boundaries and therefore the excavated soil was not contaminated. The PGC Environmental Representative responded immediately and inspected the incident. It was witnessed that the surrounding environment was not impacted with no signs of sediment migration into any waterbodies. Preparations were made and a crew was mobilized a crew to relocate the stockpile into the project right of way. (**Appendix 9** for the report).

3.4 Opportunities for Improvement

Toolbox training is staying relevant with the activities on site. Construction Superintendents are being reminded that works in and around environmentally sensitive areas require the presence of an AQP.

3.5 Outstanding Environmental Issues

The following ongoing monitoring is being conducted (**Table 1**):

Table 1: Environmental Issues Tracking Table

Item No	Date	Environmental Issue or Required Action	Corrective Action	Projected Closure Date	Open/ Closed	Comments
83	14-April	L1170. It was observed by the Province representative that placed preload sand has migrated from the embankment fill to the toe of the slope. Water was mixing with the sand and providing the opportunity for Mineralization	NCR 0043 was raised. PGC has commenced with work to remove sand from the toe of the slope with a long reach excavator and the placement of bog peat on the embankment slopes for stabilization.	11 June	Open	Work is currently underway to remove sand from the toe of the slope and to complete the placement of peat on the sides of the embankment fill.

4.0 ENVIRONMENTAL MONITORING AND INSPECTION RESULTS

Daily site inspections were held during the reporting period by PGC (a representative was available during the day and night shift, as applicable). PGC also conducted a 'Bird and Bat Awareness (5 and 14 May 2021), Stormwater Control Practices (5 May 2021), Spill Tray Use and Hazardous Materials Management/Hazardous Materials Storage (18 May 2021) and Dewatering (28 May 2021) Toolbox' trainings to remind crews on environmental practices (see **Appendix 8**). All operators and equipment were visited/inspected numerous times to ensure that all BMPs are adhered to. Regular equipment inspections are being done and kept on record by PGC.

MESL conducted field visits on the mornings of 5, 11, 19 & 26 May 2021. PGC had indicated that all equipment is checked prior to arriving onsite to ensure that each piece is free of excess grease, leaks, and foreign materials. Machinery is also checked to ensure they are equipped with a fully stocked spill kit, spill tray and fire extinguisher.

4.1 Air Quality and Dust Control

Water trucks are onsite and are put into use during drier periods for dust suppression. No issues were recorded during the month of May.

4.2 Noise and Vibration Management

Monthly noise monitoring was conducted over a 24-hour period on 20/21 May 2021 results are in **Table 2** below. Slightly higher readings for maximum results were observed during both shifts due to nearby construction activities however, all recorded values were within a 15% exceedance of the baseline data. The slight exceedances are anticipated and no cause for concern. The shading used in **Table 2** described as follows:

Grey shaded: New revised baseline data (PGC letter Rev01 PGC-COR-000174 to MoTI - dated April 28, 2021)

Green shaded: Noise monitoring data not exceeding 15% of the baseline data

Yellow shaded (not used): Noise monitoring data is between 15%-30% of the baseline data

Red shaded (not used): Noise monitoring data exceeds 30% of the baseline data

Table 2. Monthly Noise Monitoring Data.

Start time	Location	Description	Ambient noise	GPS, Lat Long	BASELINE (Night)			RESULTS (Night)		
					Avg. (dB)	Min. (dB)	Max. (dB)	Avg. (dB)	Min. (dB)	Max. (dB)
20 May 2021										
21:00:00	2	Sunbury Mounds (Section 2)	C03 construction. Menard activities at the L575	49°8'59.37"N; 122°57'23.23"W	60.5	51.9	74.9	62.7	52.9	72.8
21:40:00	4	Nordel underpass South (Section 4)	Construction of the L600E & L600W wall	49°8'37.41"N; 122°56'19.07"W	60.2	54.9	87.9	65.1	59	90
21 May 2021										
11:45:00	1	River Road West (Section 1)	Preparation work for pavement installation. Bridge construction.	49°9'9.58"N; 122°57'6.55"W	BASELINE (Day)			RESULTS (Day)		
					68.1	64.7	73.9	70.9	68.9	83.9
12:30:00	2	Sunbury Mounds (Section 2)	CO3 construction. Menard activities at the L575- Excavations at STM330	49°8'59.37"N; 122°57'23.23"W	73.6	65.8	86.7	75.7	70.1	90.9
13:45:00	4	Nordel underpass South (Section 4)	Construction of the L600E & L600Wwall	49°8'37.41"N; 122°56'19.07"W	68.1	64.7	73.9	73.3	69.9	84

4.3 Erosion and Sediment Control

Daily monitoring is done by PGC Environmental Representatives, Site Supervisors, and Foreman to ensure the installed sediment fences are fully functional in affected areas. Sediment control fences have been installed in active areas to prevent sediment run-off from clearing and grubbing activities in addition to containment of preload, stockpiles, and isolation of wildlife. Silt fencing has been kept in place and maintained to deter salvaged wildlife from reentering active construction areas. PGC continues to proactively inspect fencing and direct repairs as needed, as is a high priority activity.

Paved surfaces were observed in overall clean condition and TSI has been routinely observed at the site actively sweeping public roadways during night shifts. Most areas were relatively stable having been covered with preload sand which was generally absorbed the erosive forces of the rain and they drain well.

4.4 Water Quality Management

Water was monitored in the L2100 ditch before and after the installation of a road plate to block off the ditch for construction purposes on 05 May 2021. No significant change water parameters were recorded during or after the completion of the construction activity in this area. Water monitoring was conducted in Silda Ditch during low tide to investigate if tidal influence makes a difference in the turbidity of water in this ditch.

For the rest of the month, water monitoring was conducted in Silda Ditch during low tide to investigate if tidal influence makes a difference in the turbidity of water in this ditch. This data will be used as a baseline to compare in coming weeks and the tide timetables are being incorporated into this section (*Appendix 7*).



Figure 2: Current water sampling locations.

4.5 Wildlife and Habitat Management

No wildlife savages had been completed during the reporting period. The General Wildlife Permit for wildlife salvage (SU20-601719) has expired and PGC has applied to FLNRORD for a permit renewal. The renewal has not yet been received, FLNRORD has indicated that the time lag is anywhere from 30 to 60 days from 10 May 2021. The permit tracking table has been updated.

4.6 Vegetation Management.

PGC witnessed Japanese knotweed plants emerging in new areas and regrowth in areas that were previously infested. PGC contacted Diamond Head Consulting and herbicide treatment was applied at seven locations on 28 May 2021 (Photo 19).

4.7 Fisheries Habitat Management

PGC and MESL/Brybil completed the fish salvage¹ at Area H on 03/04 May 2021. In total there were 26 Northwestern salamanders (*Ambystoma gracile*), 439 three-spined stickleback (*Gasterosteus aculeatus*), one coho (*Oncorhynchus kisutch*), one green frog (*Lithobates clamitans*) and 8 bullfrogs (*Rana catesbeiana*) (**Appendix 3**).

¹ As bycatch under Condition 3 of the fish salvage permit which is held by a QEP, the non-fish and non-listed (red or blue listed) species were carefully returned to immediately adjacent suitable habitat (i.e. not translocated over kms or hours) outside of the area of construction.

4.8 Concrete Works and Grouting Management

PGC held a meeting with Jacob Brothers (PGC sub-contractor) who are responsible for concrete works at the Section 1 Bridge construction area. The meeting was to discuss the importance of the correct handling of concrete waste and wastewater. The first concrete pour was completed 6 May 2021 at the Section 1 Bridge by Jacob Brothers, who have been observed by a PGC representative following to steps that were outlined in the recent toolbox training and are adhering to the correct protocols for handling of concrete waste and wastewater. PGC has obtained a CO² bubbler for high pH water run-off mitigation and is on standby during all concrete pours. All concrete trucks are washed off site and all concrete mixes that do not meet the specified criteria are removed from site by the service provider. By the end of May it is estimated that approximately 40% of all concrete work at the west section of the bridge have been completed.

4.9 Waste Management

Yellow wheelie bins were readily available and fully stocked at each active work location while mobile equipment was also equipped with spill kits. PGC has provided checklists based on the CEMP (Rev 6) and ensures that any depleted supplies within these bins are restocked immediately (as per the inventory posted on the inside of the lid).

It is MESL understanding that mobile equipment is frequently moved, but extra drip trays have been observed in equipment storage locations. Crews are being reminded that drip trays are readily available should they encounter a piece of equipment that is missing one. Toolbox Training in this month focused on spill trays usage (**Appendix 8**). There has been an overall improvement and awareness on site with regards the use of drip trays.

Hydrocarbon wastes were neatly stored in labelled drums near the site office. The tent covering at the hazardous waste management area that was previously damaged by the wind in still functioning at intended and the secondary containment that was installed is being used. All drums are to be placed on plywood inside the secondary containment berm to prevent damage to the secondary containment liner.

Table 3: Hazardous Waste Storage and Disposal Tracking

Date (2020/21)	Location	Haz-Material Stored	Volume m ³	Comments	Date of Disposal
13 July 2020	PGC Site Office Yard	Spent absorbents	N/A	Approximately 2-3 L of diesel was spilled on the pavement. Spent absorbents to be collected by Tervita.	TBD
28 July 2020	L575 Preload Area	Spent absorbents	N/A	Less than 1L of oil to spill tray, absorbent pads used to mitigate spill to ground. Spent absorbent pads to be collected by Tervita.	TBD
17 Sept 2020	Burns Bog perimeter ditch	Spent Absorbents	N/A	~100 mL of engine oil to water. Spent absorbent pads to be collected by Tervita.	TBD
21 Sept 2020	Site office waste area	Spent Absorbents	N/A	Excess pads that were placed in spill trays. Spent absorbent pads to be collected by Tervita.	24 September 2020-3 barrels
24 Sept 2020	Site office waste area	Spent Absorbents	N/A	Excess pads that were placed in spill trays. Spent absorbent pads to be collected by Tervita.	24 September 2020-3 barrels
24 Sept 2020	Site office waste area	Used aerosols	N/A	Spray paint cans that had collected to date.	24 September 2020-3/4 of a bin
25 Oct 2020	PGC Site Office Yard	Used aerosol paint cans, contaminated	55 m ³	Spray paint cans that had collected to date, damaged drum with the soil and empty containers.	25 October 2020

		soil and plastic oil containers.			
3 Nov 2020	Site office waste area	Wood waste bin	N/A	Pallets and other wood by products	3 November 2020
2 Dec 2020	Site office waste area	Spent absorbents, drum contaminated soil, plastic oil containers, bags with contaminated soil.	1.7 m ³	Used spill response materials and contaminated soils.	02 December 2020
11 Feb 2021	PGC Site Office Yard	Used spill pads, used aerosols, oily plastics and contaminated soil	N/A	Aerosols taken to recycling depot by PGC, spill pads, oily plastic and soil removed from site by Tervita	11 February 2020
21 March 2021	PGC Site Office Yard	Hazardous Waste	N/A	All hazardous waste was removed from the site by Tervita: manifest #BC064745-5	21 March 2021

4.10 Emergency Response

No emergency responses were recorded during this reporting period.

4.11 Contaminated Sites Management

Suspected contaminated soils have been sampled and stored correctly while excavating the wildlife culvert. Poly sheeting is being used and monitored when covering confirmed contaminated soils (Photo 20). PGC is currently waiting for the Application in Principle (AiP) Approval from the Ministry of Environment and Climate Change to dispose of contaminated stockpiles as per the stipulated requirements.

Table 4: Contaminated Sites Tracking

Date	Soil	Water
Section 1		
	Nothing to report this period.	Nothing to report this period.
Section 2		
19 May 2021	Approximately 200 m ³ suspect contaminated soil excavated from wildlife culvert - Samples has been obtained. Suspect stockpile has been placed on poly sheeting and covered. Lab results indicated that the soils were <IL standards.	Water treatment plant samples from STM 330 excavation sent to the lab 31 May 2021 prior to discharge. Results are currently pending.
28 May 2021	80 m ³ suspect contaminated soil excavated from STM 255. Placed on poly and covered. Samples have been sent to the lab 31 May 2021 - Results are currently pending.	
Section 3		
	Nothing to report this period.	Nothing to report this period.
Section 4		
	Nothing to report this period.	Nothing to report this period.

5.0 ENVIRONMENTAL PERMITS

5.1 Status Update

A Permit Tracker is provided in **Appendix 4**. Still outstanding: Renewal of the FLNRORD wildlife salvage permit was submitted 31 March 2021. On 05 May 2021, FLNRORD informed Brybil that it could take up to 30-60 days for a permit based on COVID and as of 31 May 2021, it tracking number has not been assigned to anyone for review.

A Permit Conditions Tracker is included as **Appendix 5** outlining all DFO and WSA permit terms and conditions.

5.2 Status of the Table of Commitments and Assurances

The status of completed and ongoing commitments in the Table of Commitments and Assurances is provided in **Appendix 6**.

6.0 CONCLUDING REMARKS

Although minor deficiencies were noted and being communicated to the operational team so they can be addressed in a timely fashion and active construction areas were generally compliant with pertinent guidance documents and legislation. PGC continues to issue an internal tracking list that is related to the respective sections. This will provide information pertaining to all open issues on the respective work fronts. When new issues are highlighted this list and remaining pending items will be sent to each section's site superintendent for action. PGC has observed that this is an effective way to highlight open items to the responsible people on site.

7.0 SITE PHOTOS



Photo 1. Section 1 Bridge west (C), temporary waste concrete management area.



Photo 2. L275 (C), general site view of Section 1 bridge construction.



Photo 3. Section 1 Bridge (C), sand hauling and embankment fill placement.



Photo 4. L475 (D), general view Silda Ditch during low tide.



Photo 5. L575 (E), general view of Menard operations.



Photo 6. L500, (E), wildlife sweep completed prior to geo-technical drilling investigations.



Photo 7. L550 (E), mitigation of steep slope and removal of sand migration in close proximity to the broject boundary. No sand was found in the stream and no instream works were done. ESC fences were inspected and found to be fully functional and keyed in.



Photo 8. L550 (E), mitigation of steep slope and removal of sand migration in close proximity to the broject boundary. No sand was found in the stream and no instream works were done. ESC fences were inspected and found to be fully functional and keyed in.



49°8'50"N -122°56'35"W
Delta
HWY 91/17 Upgrade project
May 14, 2021 11:01:33 a.m.

Photo 9. L550 (E), wildlife sweep at the old wildlife culvert prior to closure of the entrance with geo-textile fabric.



49°8'56"N -122°57'2"W
Delta
HWY 91/17 Upgrade project
May 19, 2021 6:46:17 p.m.

Photo 10. L500/L575 (E), general view culvert installation (wildlife crossing).



HWY 91/17 Upgrade Project
Delta BC
N 49° 8' 43", W 122° 56' 50"
May 25, 2021 at 7:52:41 AM

Photo 11. L1170, (F), peat placement on the sides of the embankment fill for bank stabilization.



HWY 91/17 Upgrade Project
Highway 91 Connector
Delta BC
N 49° 8' 52", W 122° 56' 50"
May 3, 2021 at 1:58:23 PM

Photo 12. L1300 (H), electro-fishing fish salvage.



49°8'35"N -122°56'11"W
Delta
HWY 91/17 Upgrade project
May 6, 2021 4:30:31 p.m.

Photo 13. L2100 (I), view of ditch after road plate installed.



HWY 91/17 Upgrade Project
7601-7799 Highway 91 S
Delta BC
N 49° 8' 34", W 122° 56' 11"
May 6, 2021 at 8:53:39 AM

Photo 14. L2100 (I), obtaining baseline data prior to instream works at Bog perimeter ditch.



Photo 15. L2100 (I), general view of wire wall construction activities.



Photo 16. L2100 (I), general site view of temporary wall construction.



Photo 17. L2100 (I), general view of work activities.



Photo 18. L2100 (I), shaping the slopes of the preload.

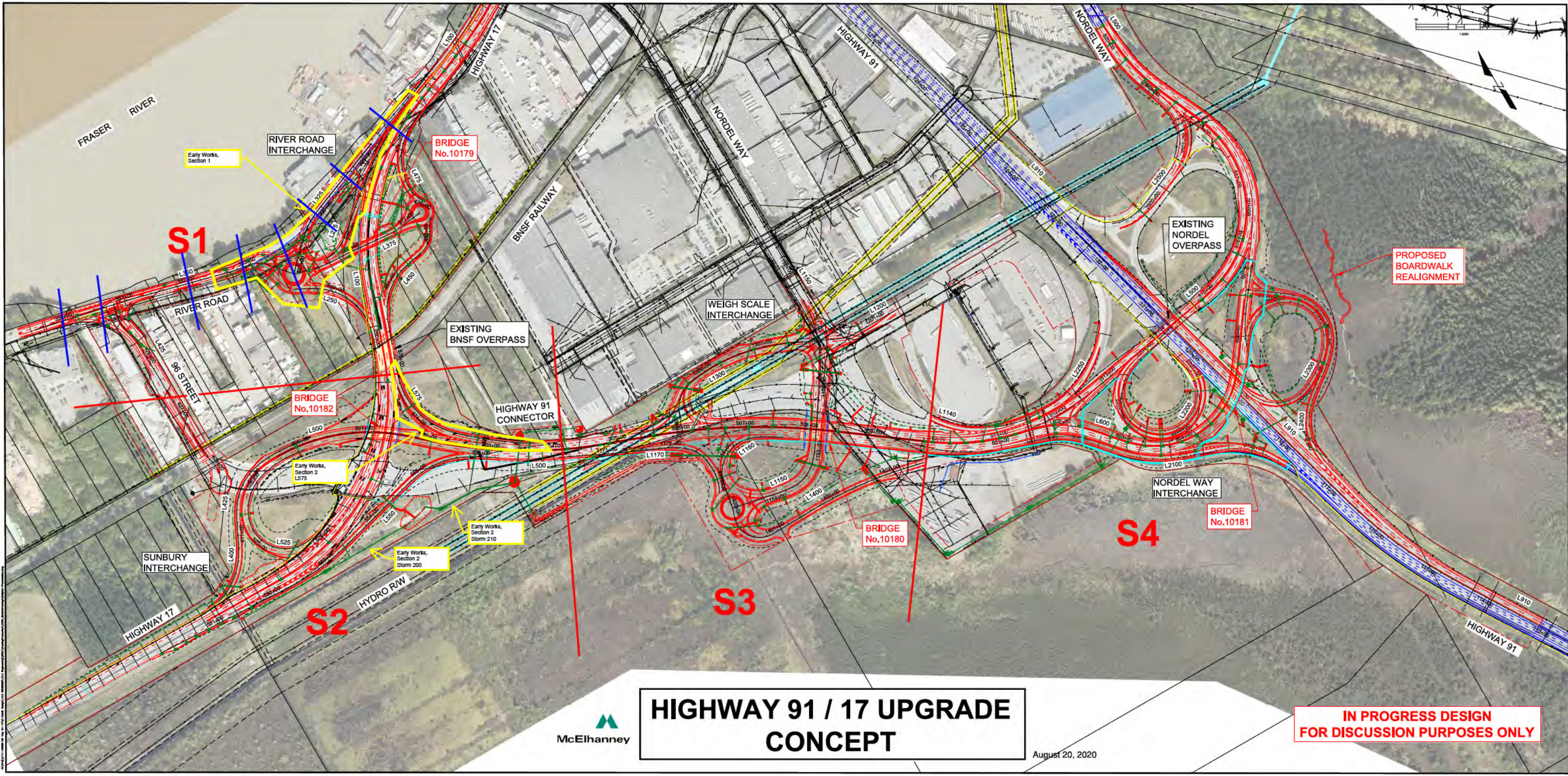


Photo 19. L550 (E), treatment of Japanese Knotweed plants done at 7 locations on site.



Photo 20. L550 (E), example of poly sheeting covering contaminated materials.

APPENDIX 1: KEY PLAN DRAWING



APPENDIX 2: SPILL AND INCIDENT TRACKER

HWY 91/17 S/E Environmental Spill and Incident Tracking																		
Incident #	Date Of Event	Date Reported	Date Initial Notification Issued	Shift	Approx Time	Contractor	Sub Contractor	Silo	Classification	Description of Event	Location	Fluid Amount (L)	Fluid type	Type of Equipment	Causal Factors	Action taken	Corrective Actions Date Complete	
21	~Jan-21	~Jan-21	5-Jan-21	Night	20:31-21:00	PGC	Delta Aggregate		Minor spill (<1L)	Hydraulic line broke	S3 L1 00	<500mL	Hydraulic fluid	Rock truck (Volvo T-13)	Normal wear and tear on moving machine parts (hydraulic line); unforeseen circumstances.	Leaking hydraulic line noticed during pre-shift inspection. Operator shut down the machine immediately and placed spill pads on the leak source and on the ground below the leak. Machine was parked with its box up how leak was found and in the locked position. A spill tray was placed below the leak, and contaminated pads and sand below were removed for disposal. Mechanic repaired the broken line in the morning (05 Jan 2021).		5-Jan-21
22	6-Jan-21	6-Jan-21	6-Jan-21	Day	9:01-9:30	PGC			Minor spill (<1L)	Hydraulic line broke	S2 L500 preload	<500mL	Hydraulic fluid	Excavator (CAT 320E)	Normal wear and tear on moving machine parts (hydraulic line); unforeseen circumstances.	Leaking hydraulic line noticed on boom during operation. Operator shut down the machine immediately and placed spill pads on the leak source and on the ground below the leak. Machine was taken out of service, and a spill tray was placed below the leak. Contaminated pads and sand below were removed for disposal. Mechanic repaired the broken line later in the day.		6-Jan-21
23	12-Jan-21	12-Jan-21		Night	00:01-00:30	PGC				Silty water released to 96th Street	S2 adjacent to 96th st ditch	unknown quantity of water	silty water		not allowing sit practices. No EM present. Working during heavy rain event	Work was immediately stopped and pumps turned off.	Jan 17 - EM will be present for operations to resume with a dewatering plan in place.	
2	1 ~Jan-21	1 ~Jan-21	1 ~Jan-21	Day	1 ~31-15:00	PGC			Spill (1.1 L - 5L)	Hydraulic hose broke	S2 L500 preload	<5L	Hydraulic fluid	Dump truck	Normal wear and tear on moving machine parts (hydraulic line); unforeseen circumstances.	Hydraulic line burst while raising box of dumptruck to off load sand. Machine was immediately turned off. Hydraulic fluid spilled onto machine and preload sand. Spill pads were applied to ground and machine. Contaminated sand that had absorbed oil was quickly removed and bagged for disposal. Oil was fully cleaned off machine and surrounding ground.	Trucking company took machine out of service and will complete repairs off site.	
25	10-Feb-21	10-Feb-21	11-Feb-21	Night	3:31 - :00	PGC	Nordel Trucking		Spill (1.1 L - 5L)	Tandem truck failed to over box causing collision with bridge	Underside of the Nordel Way overpass	3- L	Hydraulic fluid	Dump truck	Damage to the bridge and the fluid release	It is unclear at this point what immediate action was taken by the sub-contractor after the incident occurred. This incident is currently under investigation. The dayshift crew observed the spill on the asphalt and the road shoulder. A cleanup was initiated and approximately 2-3 m³ of contaminated soil was collected and placed into super sack bags. The bags were taken to the PGC waste management area and placed under polyethylene plastic. The removal of the contaminated soil by the PGC service provider has been requested.	Incident is currently under investigation	
26	16-Feb-21	16-Feb-21	16-Feb-21	Night	11:01-11:30	PGC	Delta Aggregate		Minor spill (<1L)	Mechanical failure caused oil to spill into spill tray	L1 00 pre-load	approx. 500ml	Engine oil	Rock truck (Volvo T-13)	Mechanical failure	At approximately 11:15 pm a small amount of engine oil spilled onto the placed preload sand. This was because of a mechanical failure of a stationary rock truck not in use. The oil was dripping into the drip tray and approximately 500 mm of oil was spilled on the preload surface.	Equipment maintenance	
27	17-Feb-21	17-Feb-21	17-Feb-21	Day	8:31-9:00	PGC	Norland		Minor spill (<1L)	Mechanical failure caused hydraulic oil to spill into excavator bucket	L-550 culvert installation	approx. 500ml	Hydraulic fluid	Excavator (CAT 328D)	Mechanical failure	At approximately 8:57 am a spill occurred during a bucket change on an excavator which resulted in less than 1L of hydraulic oil making contact with the ground. Luckily the excavator arm was above the bucket and the majority of the hydraulic oil dripped into the excavator bucket. Spill pads were immediately deployed, and the spill was cleaned up.	The Excavator was repaired	
28	23-Mar-21	23-Mar-21	23-Mar-21	Night	13:31-1 :00	PGC	Norland		Large Spill (5.1L - 99.9L)	Mechanical failure caused hydraulic oil to spill into asphalt	L-2 00 on the highway off ramp	approx. 10L	Hydraulic fluid	Haul truck	Mechanical failure	At approximately 13: :5 a spill occurred when a dump truck was unloading sand for preload placement. The hydraulic oil spill released approximately 10L to the asphalt. Luckily the asphalt was covered in fine sand which absorbed the spilled material. Spill pads were immediately deployed, and the contaminated sand was excavated by hand bagged and stored on site for later disposal to an appropriate off-site facility.	The Dump truck was removed from site and sent to a facility for repairs	
29	23-Mar-21	23-Mar-21	23-Mar-21	Night	21:31-22:00	PGC	Nordel Trucking		Spill (1.1 L - 5L)	Mechanical failure caused hydraulic oil to spill into asphalt	L-2 00 on the highway off ramp	3-5 L	Hydraulic fluid	Haul truck	Mechanical failure	At approximately 21: :5 a tandem truck was busy offloading preload sand- While lifting the load box a hydraulic line burst open causing approximately 3-5 L of hydraulic fluid to spill onto the asphalt area. Absorbent pads were placed at the spill area and all contaminated soils were removed. A hazardous waste pickup is scheduled by Tervita.	The Dump truck was removed from site and sent to a facility for repairs	
30	26-Mar-21	26-Mar-21	26-Mar-21	Day	16:01-16:30	PGC	Menard		Large Spill (5.1L - 99.9L)	Mechanical failure caused a diesel spill onto soil	L910 on the shoulder of the road	approx 10-20 L	Diesel Fuel	Dump Truck	Mechanical failure	At approximately 16:00 a spill occurred when a dump truck drove off the road. The spill released approximately 20L of diesel to the ground. The spill did not affect the nearby waterway and the spill was contained to the immediate area. Menard immediately responded to the incident and contained the spill. Spill pads, booms and a drip tray were immediately deployed, and the contaminated soil was excavated with a hydrovac and sent off-site for disposal to an appropriate off-site facility.	Truck immediately removed from site and will be repaired by a mechanic in the morning.	

HWY 91/17 SI E Environmental Spill and Incident Tracking																		
Incident #	Date Of Event	Date Reported	Date Initial Notification Issued	Shift	Approx Time	Contractor	Sub Contractor	Silo	Classification	Description of Event	Location	Fluid Amount (L)	Fluid Type	Type of Equipment	Causal Factors	Action Taken	Corrective Actions Date Complete	
31	1-Apr-21	1-Apr-21	1-Apr-21	Day	15:31-16:00	PGC	Delta Aggregate		Large Spill (5.1L - 99.9L)	Mechanical failure caused a hydraulic oil spill onto soil	L1 00 on the sand preoad haul road	approx 5- 10 L	Hydraulic fluid	Water Truck	Mechanical failure	At approximately 15:30 a spill occurred when a water truck experienced a mechanical failure while spraying water for dust suppression. The spill released approximately 10L of hydraulic fluid to the ground. The spill did not appear to affect any nearby waterways and the spill was contained to the immediate area. PGC immediately responded to the incident and initiated the spill response. The contaminated soil was excavated by hand with a shovel and placed into plastic hazardous waste bags before being stored into a contaminated soil waste bin. The soil will be sent off-site for disposal at an appropriate off-site facility on a later date.	The Water Truck was parked on site and the source of the leak was wrapped in spill pads to prevent more fluid from leaking out. The equipment will be repaired by a mechanic and released before putting back to service.	
32	18-Apr-21	18-Apr-21	18-Apr-21	Night	20:31-21:00	PGC	Menard		Large Spill (5.1L - 99.9L)	Improper fueling operations	L2300 and L600W	approx 10- 20 L	Diesel Fuel	Fuel Truck	Improper Fueling Procedure	At approximately 20:30 three spills were observed under various equipment on site which were not reported to the environmental department. Approximately 20L of Diesel fuel was expected to have been released to the ground and it does not appear to have affected any nearby waterways. The spill was observed to be contained to the immediate area. PGC contacted the responsible party the following morning when they were present on site to initiate the spill response. The contaminated soil was excavated by hand with a shovel and placed into plastic hazardous waste bags before being stored into a contaminated soil waste bin. The soil will be sent off-site for disposal at an appropriate off-site facility on a later date.	PGC will be issuing a spill response and refueling toolbox topic for the subcontractor to present to their employees which will be required to sign and acknowledge their environmental obligations on this site.	
33	20-Apr-21	20-Apr-21	20-Apr-21	Night	2:01-2:30	PGC	Pro Quip		Spill (1.1 L - 5L)	Improper fueling operations	Truck parking (odd)	approx 2L	Diesel Fuel	Excavator	Improper Fueling Procedure	Improper fueling practices at truck parking. Spill to asphalt- absorbent powder placed on spill- all contaminants scooped up with a shovel and taken to the Hazardous waste management area for proper disposal.	Easy to clean. Proquip refueling company to be reminded of proper fueling procedures.	
3	25-Apr-21	26-Apr-21	26-Apr-21	Night	2:01-2:30	PGC	Steamer Transport		Large Spill (5.1L - 99.9L)	Hydraulic line failure	L2200	10-15L	Hydraulic fluid	Gravel haul truck	Hydraulic mechanical failure	Contaminated sand removed. Spill contained. Absorbent pads placed on surface	At approximately... 2am one of the subcontractor gravel trucks hauling sand from the L2200, developed a leak while attempting to offload. (Steamer Transport, unit: 0, plate number MM 985). We estimate about 10 to 15 liters of hydraulic oil was spilled to ground. Immediate response was taken with absorbent pads put down. A visual inspection of the truck was done and determined it was a line coming from the trucks PTO. It was noticed that so if it remained disengaged there was no further chance of additional leakage, the truck was sent away for repairs. Pads were cleaned up and disposed of as to our process and the soil was removed and placed in a large to be and brought to our yard for disposal.	
	5-May-21	6-May-21	6-May-21	Night	20:01-20:30	PGC	Steamer Transport		Spill (1.1 L - 5L)	Mechanical failure- spill to preoad	L2300	2L	Hydraulic fluid	Sand delivery truck	Mechanical failure	At approximately 20:25 a Sand delivery truck and trailer had a mechanical failure and spilled approximately two liters of hydraulic fluid onto the placed preoad. The spill was contained, and absorbent spill pads were placed on the surface to absorb any surface fluid. All the contaminated soil was dug out and sent to the PGC waste management for disposal by the sub-contractor.	The spill was contained, and absorbent spill pads were placed on the surface to absorb any surface fluid. All the contaminated soil was dug out and sent to the PGC waste management for disposal by the sub-contractor.	

SUMMARY		
Totals	Unit/Value	Total
Total Volume	L	0
Total Spills	#	15
Classification		
		Total
Minor Spill (<1L)	#	4
Spill (1.1L-5L)	#	0
Large Spill (5.1L-99.9L)	#	5
Significant Spill (To water or >100L)	#	0
Total	#	9
Fluid Type		
		Total
Hydraulic	#	10
Anti freeze	#	0
Diesel	#	3
Oil	#	1
Gasoline	#	0
Black Water	#	0
Glycol	#	0
Unknown	#	0
Total	#	14

APPENDIX 3: WILDLIFE SALVAGE RESULTS

May 3 and 4 2021 Fish Salvage Results for Area H

Fish Salvage	NW Salamander	TSB	Coho	G Frog	Bull Frog
May 3					
Section 1 M	4	13			
Section 2 M	4	266	1	1	4
Section 3 M	3	85			1
Section 1 DN					
Section 2 DN	6	4			
Section 3 DN					
Section 1 E					
Section 2 E		1			
Section 3 E					
May 4					
Section 1 M	1	4			
Section 2 M	4	44			2
Section 3 M	4	22			1
Total	26	439	1	1	8

APPENDIX 4: PERMIT TRACKER

Environmental Permit and Approvals Tracking Sheet: For Information Only

Item #	Area Reference	Site Description	Work Description	Current Status	Target Submission Date to C.Y.	CY (Days)	Agency Submission Date	Agency Approval Process Item(s) *	Regulator - track log Number	Anticipated Approval Date	Revised Anticipated Approval Date**	Permit Number	Actual Approval Date	Enhancement Management Plan or Anticipated Submission Date	Enhancement Management Plan Anticipated Approval Date	Approval Expiration	Notes	
Sec 10 WSA Notification																		
1	A	2	96th St west D tch	No waste outfall south of Hwy 17	Onsite road	14-Feb-20	20-Feb-2020	21-Feb-2020	45	100310655	6-Apr-2020	1-Absy-2020	100310655	8-Aug-20	N/A	N/A	May 01, 2020-May 03, 2021	Please note that the site is date 1 May 2, 2020
2	C	1	E-west Road D tch	Culvert installation over (L210/L215)	Onsite road	14-Feb-20	20-Feb-2020	21-Feb-2020	45	100310653	6-Apr-2020	1-Absy-2020	100310653	8-Aug-20	N/A	N/A	May 01, 2020-May 03, 2021	Please note that the site is date 1 May 2, 2020
Sec 11 WSA Approval																		
3	B	2	96th St west D tch	Hwy 17 Culvert Extension on (L100/L400)	Under Regulatory Review - assigned to a Waste Off-site	14-Feb-20	20-Feb-2020	21-Feb-2020	140	100311219	15-Jul-2020	22-Aug-2020	2007795	23-Jun-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020. Date used to July 15, 2020. FUMORD Job # 114324
4	E	2	Side D tch and wetland	Culvert Extension on Downstream of Hwy 95C and east of it	Under Regulatory Review - assigned to a Waste Off-site	14-Feb-20	20-Feb-2020	21-Feb-2020	140	100311219	15-Jul-2020	22-Aug-2020	2007795	23-Jun-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020. Date used to July 15, 2020. FUMORD Job # 114324
5	D	1	Side D tch wetland	Roundabout Encasement (L375, L475, L485)	Under Regulatory Review - assigned to a Waste Off-site	21-Feb-20	20-Feb-2020	21-Feb-2020	140	100311219	15-Jul-2020	22-Aug-2020	2007795	23-Jun-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020. Date used to July 15, 2020. FUMORD Job # 114324
6	F	3	EW Bus on Blog Permits D tch	Block ng of the D tch, roundabout and new road n Blog (L3400, L3150, L3160, L3170)	Under Regulatory Review - assigned to a Waste Off-site	21-Feb-20	20-Feb-2020	28-Feb-2020	140	100311361	7-Nov-2020	27-Aug-2020	2007783	17-Aug-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020
7	H	3	West D tch/F239 and West Side Road	FC239 Offset d tches, west d tch and it want to S side D tch and road (L3300)	Under Regulatory Review - assigned to a Waste Off-site	11-Mar-20	16-Mar-2020	17-Mar-2020	140	100312729	6-Aug-2020	21-Aug-2020	2007751	21-Aug-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020
8	I	4	West D tch, West D tch, and unnamed d tches by FC239	Road and d tch along on EW co. no. of No del into change (L2100, L2200, L2250)	Under Regulatory Review - assigned to a Waste Off-site	5-Mar-20	9-Mar-2020	11-Mar-2020	140	100312676	29-Jul-2020	27-Aug-2020	2007776	20-Aug-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020
9	G	4	Delta Neta a River	Road and d tch along on DE co. no. of No del into change (L2300, L2400)	Under Regulatory Review - assigned to a Waste Off-site	21-Feb-20	26-Feb-2020	28-Feb-2020	140	100311393	17-Jul-2020	27-Aug-2020	2007743	17-Aug-20	6-Dec-20	2-Feb-21	31-Dec-31	P. n. by letter sent to FUMORD by the P. on Nov 14, 2020. B-Rad right p. oved HC Consultat on acc ds. Meet ng w th FUMORD May 20, 2020. Hold letter ac aved May 25, 2020 and exp d on June 8, 2020. Conf. met on of. new pt on June 15, 2020. Date used to July 15, 2020. FUMORD Job # 114324 Amendment sent to the state on September 9, 2020 and under review
10	A	2	96th St west D tch	No waste outfall south of Hwy 17	Letter to Auro d and M t gate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HFAC-00005	23-Apr-2020	15-Jun-2020	20-HFAC-00004	17-Jun-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
11	B	2	96th St west D tch	Hwy 17 Culvert Extension on (L100/L400)	Letter to Auro d and M t gate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HFAC-00004	23-Apr-2020	15-Jun-2020	20-HFAC-00004	17-Jun-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
12	C	1	E-west Road D tch	Culvert installation over (L210/L215)	Letter to Auro d and M t gate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HFAC-00004	23-Apr-2020	15-Jun-2020	20-HFAC-00004	17-Jun-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
13	D	1	Side D tch	Roundabout Encasement (L375, L475, L485)	Letter to Auro d and M t gate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HFAC-00004	23-Apr-2020	15-Jun-2020	20-HFAC-00004	17-Jun-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
14	D	1	Side D tch	Culvert Extension on Downstream of Hwy 95C	Letter to Auro d and M t gate	14-Feb-20	20-Feb-2020	21-Feb-2020	60	20-HFAC-00004	23-Apr-2020	15-Jun-2020	20-HFAC-00004	17-Jun-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
15	F	3	EW Bus on Blog Permits D tch	Block ng of the D tch, roundabout and new road n Blog (L3400, L3150, L3160, L3170)	Letter to Auro d and M t gate	21-Feb-20	26-Feb-2020	28-Feb-2020	60	20-HFAC-00005	26-Aug-2020	NA	20-HFAC-00005	3-Jul-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
17	H	3	West D tch/F239 and West Side Road	FC239 Offset d tches, west d tch and it want to S side D tch and road (L3300)	Letter to Auro d and M t gate	11-Mar-20	16-Mar-2020	17-Mar-2020	60	20-HFAC-00005	16-Aug-2020	NA	20-HFAC-00005	6-Aug-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
18	I	4	West D tch, West D tch, and unnamed d tches by FC239	Road and d tch along on EW co. no. of No del into change (L2100, L2200, L2250)	Letter to Auro d and M t gate	28-Feb-20	9-Mar-2020	11-Mar-2020	60	20-HFAC-00005	30-Aug-2020	NA	20-HFAC-00005	6-Aug-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
19	G	4	Delta Neta a River	Road and d tch along on DE co. no. of No del into change (L2300, L2400)	Letter to Auro d and M t gate	21-Feb-20	26-Feb-2020	28-Feb-2020	60	20-HFAC-00004	26-Aug-2020	NA	20-HFAC-00004	6-Aug-20	N/A	N/A	Dec-23	OFO has dele ned that the project submit on as equ s a mo v data led we we W l not be we we ng repa stly, they come de th s all one p object. Meet ng w th OFO on May 7, 2020 add t email info p oved by May 22. Recv d letter to Auro d and M t gate
DFO Authorization																		
20	A	2	96th St west D tch	No waste outfall south of Hwy 17	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on June 17, 2020 not need for an Author. act on
21	B	2	96th St west D tch	Hwy 17 Culvert Extension on (L100/L400)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on June 17, 2020 not need for an Author. act on
22	C	1	E-west Road D tch	Culvert installation over (L210/L215)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on June 17, 2020 not need for an Author. act on
23	D	1	Side D tch	Roundabout Encasement (L375, L475, L485)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on June 17, 2020 not need for an Author. act on
24	E	2	Side D tch	Culvert Extension on Downstream of Hwy 95C	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on June 17, 2020 not need for an Author. act on
25	F	3	EW Bus on Blog Permits D tch	Block ng of the D tch, roundabout and new road n Blog (L3400, L3150, L3160, L3170)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on June 17, 2020 not need for an Author. act on
26	H	3	West D tch/F239 and West Side Road	FC239 Offset d tches, west d tch and it want to S side D tch and road (L3300)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on August 6, 2020 not need for an Author. act on
27	I	4	West D tch, West D tch, and unnamed d tches by FC239	Road and d tch along on EW co. no. of No del into change (L2100, L2200, L2250)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on August 6, 2020 not need for an Author. act on
28	G	4	Delta Neta a River	Road and d tch along on DE co. no. of No del into change (L2300, L2400)	Pending outcome of DFO Request for Review-No Author. act on equ. ad	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	NA	See email letter to Auro d and M t gate on July 8, 2020 not need for an Author. act on
Scientific Collection/Fish Salvage Permits																		
29	A	2	96th St west D tch	No waste outfall south of Hwy 17	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
30	B	2	96th St west D tch	Hwy 17 Culvert Extension on (L100/L400)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
31	C	1	E-west Road D tch	Culvert installation over (L210/L215)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
32	D	1	Side D tch	Roundabout Encasement (L375, L475, L485)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
33	E	2	Side D tch	Culvert Extension on Downstream of Hwy 95C	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
34	F	3	EW Bus on Blog Permits D tch	Block ng of the D tch, roundabout and new road n Blog (L3400, L3150, L3160, L3170)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
35	H	3	West D tch/F239 and West Side Road	FC239 Offset d tches, west d tch and it want to S side D tch and road (L3300)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
36	I	4	West D tch, West D tch, and unnamed d tches by FC239	Road and d tch along on EW co. no. of No del into change (L2100, L2200, L2250)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
37	G	4	Delta Neta a River	Road and d tch along on DE co. no. of No del into change (L2300, L2400)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	FUMORD/DFO Sept 30, 2022	Submit under the FUMORD F antConcurse. webpags tal on ng AG account and faxed to DFO- see ned
Wildlife Salvage Permits																		
38	A	2	96th St west D tch	No waste outfall south of Hwy 17	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
39	B	2	96th St west D tch	Hwy 17 Culvert Extension on (L100/L400)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
40	C	1	E-west Road D tch	Culvert installation over (L210/L215)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
41	D	1	Side D tch	Roundabout Encasement (L375, L475, L485)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
42	E	2	Side D tch	Culvert Extension on Downstream of Hwy 95C	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
43	F	3	EW Bus on Blog Permits D tch	Block ng of the D tch, roundabout and new road n Blog (L3400, L3150, L3160, L3170)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
44	H	3	West D tch/F239 and West Side Road	FC239 Offset d tches, west d tch and it want to S side D tch and road (L3300)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
45	I	4	West D tch, West D tch, and unnamed d tches by FC239	Road and d tch along on EW co. no. of No del into change (L2100, L2200, L2250)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
46	G	4	Delta Neta a River	Road and d tch along on DE co. no. of No del into change (L2300, L2400)	Onsite road	27-Jan	30-Jan-2020	14	100308107 FUMORD	13-Feb-2020	NA	NA	NA	NA	N/A	N/A	6-Apr-21	Submit under the FUMORD F antConcurse. webpags tal on ng AG account. Renewal appl cat on submit tnd Ma ch 31, 2021.Based on COVID-19 t m ght take 30-60 days
Highway User / Traffic Control Permits for Site Investigations																		
47	1	1	Contain rated Soil and G. groundwater	Segment 1. No th and South					30									
Site Risk Classification																		
48	1	1	Contain rated Soil and G. groundwater	Segment 1. No th and South					4-									
49	1	1	Contain rated Soil and G. groundwater	Segment 1. No th and South					4-									
50	1	1	Contain rated Soil and G. groundwater	Segment 1. No th and South					4-									
Notice of Independent Remediation																		

Notes: * Agency approval timeline is a subjective and once a submission has been completed the projected timeline is actually obtaining the approvals based on third party reviews and is out of the Design's control.

This tracking Table will be updated frequently when new info must or is available from the regulators.

** This column is to be used for applications that require additional information by the regulator and if there is an impact to the Anticipated Approval Date.

APPENDIX 5: PERMIT CONDITIONS TRACKER

Conditions	Responsibility
1 The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2 Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3 If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:	PGC
a An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecraneng.html).	PGC/Brybil
d When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	PGC
4 Complete the works as quickly as possible once they are started.	PGC
5 Undertake works during dry weather and low water conditions.	PGC
6 Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	PGC
7 Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8 Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9 Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10 Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11 Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12 Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13 While the Program recommends works be conducted during the least risk to fish instream work window of August 1 – September 15 where possible. It is recognized instream works will be required to commence upland works. Therefore, if works are proposed for outside the least risk window, work should especially be conducted under the direction of an appropriately qualified professional as per item 12 above.	PGC
14 Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC, weekly audit MESL
15 If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume following implementation of appropriate mitigation measures and under the direction of an appropriately qualified professional.	PGC
16 Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC

Conditions		Responsibility
1	The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2	Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3	If instream works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:	PGC
a	An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b	Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c	Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecraneng.html).	PGC/Brybil
d	When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	PGC
4	Complete the works as quickly as possible once they are started.	PGC
5	Undertake works during dry weather and low water conditions.	PGC
6	Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	PGC
7	Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8	Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9	Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10	Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11	Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12	Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13	The Program recommends works within fish-bearing or potentially fish-bearing watercourses be completed during the least risk to fish instream work window of August 1 – September 15 where possible. However, it is recognized that there are proposed instream works outside this window. Therefore, if works are proposed for outside this time window, additional measures should be implemented under the direction of an appropriately qualified professional, as per item 12 above.	PGC
14	Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC, weekly audit MESL
15	If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume following implementation of appropriate mitigation measures and under the direction of an appropriately qualified professional.	PGC
16	Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
17	Use non-acid rock drainage and metal leaching (non-ARD/ML) riprap.	

DFO 20-HPAC-00304

Subject: Highway 91/17 – Site G – Wetland Infilling, Burns Bog, Delta - Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

Conditions	Responsibility
1 The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2 Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3 If works in the roadside ditches are not conducted in the dry, works are to be conducted in isolation of flow. When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	PGC
4 Complete the works as quickly as possible once they are started.	PGC
5 Undertake works during dry weather and low water conditions.	PGC
6 Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	PGC
7 Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8 Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9 Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	Brybil -develop PGC - lead and implement
10 Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11 Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC, weekly audit MESL
12 Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13 If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume under the direction of an appropriately qualified professional, as per Item 12 above, with the following measures in place: a Works are to be conducted in isolation of flow. An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. Use appropriate fish handling techniques and relocate salvaged fish to a nearby undisturbed location. In the event that isolation is breached, stop work and repeat fish salvage efforts. b Dewater the isolated area gradually to reduce the potential for stranding fish. Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html). c Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area. d Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses. e Ensure that flows are maintained to downstream fish habitat in East Ditch, West Ditch, Silda Ditch, and 96 Street Ditch.	PGC PGC Brybil PGC PGC, Brybil PGC PGC PGC
14 Use non-acid rock drainage and metal leaching (non-ARD/ML) riprap.	PGC

Conditions	Responsibility
1 The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	
2 Whenever possible, works are to be conducted when the watercourse is dry.	
3 If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented: An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and a seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts. b Dewater the isolated area gradually to reduce the potential for stranding fish. Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecraneng.html). When diverting watercourse flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat downstream of the isolated work area.	
4 Complete the works as quickly as possible once they are started.	
5 Undertake works during dry weather and low water conditions.	
6 Equipment is to be situated in the dry watercourse channel within the footprint of the works or operated from the top of the bank.	
7 For works in fish-bearing waters, fish passage is to be maintained through any culverts in fish-bearing waters upon completion of works.	
8 Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	
9 Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	
10 Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	
11 Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	
12 Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	
13 Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	
14 While the Program recommends works be conducted during the least risk to fish instream work window of August 1 – September 15 where possible. It is recognized that there are proposed instream works outside this window. Therefore, if works are proposed for outside the least risk window, work should especially be conducted under the direction of an appropriately qualified professional and additional measure should be implemented, as per item 13 above.	
15 Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area	
16 If fish are observed at the site, or upstream or downstream of the site, work should be halted. Works may only resume following implementation of appropriate mitigation measures and under the direction of an appropriately qualified professional.	
17 Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	
18 Use non-acid rock drainage and metal leaching (non-ARD/ML) riprap.	

DFO 20-HPAC-00349
 Highway 91/17 Upgrades – Site I, Nordel Ditches & West Ditch – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

Conditions	Responsibility
1 The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2 Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3 If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented	PGC/Brybil
a An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.	Brybil
b Dewater the isolated area gradually to reduce the potential for stranding fish.	PGC
c Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfompo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html).	PGC
d When diverting flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat, both upstream and downstream of the isolated work area.	PGC
4 Complete the works as quickly as possible once they are started.	PGC
5 Undertake works during dry weather and low water conditions.	PGC
6 Equipment is to be situated in the dry stream channel within the footprint of the works or operated from the top of the bank.	PGC
7 Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8 Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9 Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10 Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11 Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12 Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13 Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC
14 Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
15 Use non-acid rock drainage and metal leaching (non-ARD/ML) rip rap.	PGC

DFO 20-HPAC-00350
Highway 91/17 Upgrades – Site H, Unnamed Tributary Ditches to Silda Ditch – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

Conditions	Responsibility
1 The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.	PGC
2 Whenever possible, works are to be conducted when the watercourse is dry.	PGC
3 If works are not conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented: a An appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts. b Dewater the isolated area gradually to reduce the potential for stranding fish. c Ensure bypass pump intakes and outlets are located within the confines of the fish-isolated work area (i.e., to prevent fish impingement on pump intakes, and to prevent dewatering areas where fish may be present). Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfompo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html). d When diverting flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat, both upstream and downstream of the isolated work area.	PGC/Brybil Brybil PGC PGC PGC
4 Complete the works as quickly as possible once they are started.	PGC
5 Undertake works during dry weather and low water conditions.	PGC
6 Equipment is to be situated in the dry stream channel within the footprint of the works or operated from the top of the bank.	PGC
7 Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.	PGC
8 Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.	PGC
9 Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.	PGC
10 Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.	PGC
11 Develop and implement a response plan to avoid a spill of deleterious substances into the watercourse.	PGC
12 Works should be monitored full-time during start-up and any instream works or sensitive activity. The environmental monitor must be an appropriately qualified professional and ensure mitigation measures are implemented for the protection of fish and fish habitat.	PGC, weekly audit MESL
13 Monitor before, during, and after all phases of construction to ensure that fish do not become trapped/isolated, stranded, or entrained within the project area.	PGC
14 Ensure that when dewatering, site water is appropriately managed to prevent sediment laden water from entering downstream watercourses.	PGC
15 Use non-acid rock drainage and metal leaching (non-ARD/ML) rip rap.	PGC

WSA Notification 100310655
Notice to Habitat Officer / Changes in and about a Stream under Part 3 Water Sustainability Regulation

Conditions	Responsibility
1 Any work associated with the proposed changes in and about a stream must not cause stream channel instability or increase the risk of sedimentation into the stream.	PGC
2 During work onsite, erosion and sediment control materials must be available on site at all times and must be installed if sedimentation is likely to occur into the stream. A contingency plan must be developed outlining the measures to be taken by workers when carrying out any work to control erosion and sediment.	PGC
3 Soil disturbance must not occur in heavy rain conditions and any soil removed must be placed in a location that ensures that sediment or debris does not enter the stream.	PGC
4 Within a work area, water that contains sediment must be pumped to a vegetated area away from the stream where it can seep into the ground, or to a settling pond that is sufficiently far from the stream to allow sediment to settle out before the water returns to the stream.	PGC
5 The disturbance of stream bank vegetation must not occur or be minimized as much as possible.	PGC
6 Any areas that are disturbed during the work (such as exposed soil) must be promptly restored to a minimum to the pre-disturbance condition. Note: Guidance is provided in the Enhancement Section of the Best Management Practices Instream Works	PGC
7 If possible, work must be conducted on, and equipment located and operated from, dry land (no water present) and the worksite must be isolated from flowing water.	PGC
8 Any equipment used in conducting work must be in good mechanical condition and, when operating in close proximity to the wetted perimeter of a stream, the operator must prevent entry of any substance, sediment, debris or material (e.g., hydrocarbons, silt) into the stream so as to prevent harm to fish, wildlife or the aquatic ecosystem of a stream. Note that Section 46 of the Water Sustainability Act prohibits the introduction of foreign matter into a stream. Failure to comply may result in a remediation order and it is also an offence to do so.	PGC
9 The original rate of water flow in the stream (existing prior to commencing work) must be maintained upstream and downstream of the worksite during all phases of instream activity associated with the work.	PGC
10 When work requires de-watering or isolation of the worksite in the stream, a permit for the salvage of fish and wildlife must be obtained prior to commencing work. All required salvage permits must be obtained from Front Counter BC : http://www.frontcounterbc.gov.bc.ca/ . Any salvage must be carried out by a qualified environmental professional (such as an R.P.Bio.).	Brybil
11 Following de-watering or isolation of the worksite, stream flow must be returned gradually to the de-watered or isolated area within the stream and not in a single sudden rush so as to avoid erosion of the stream channel and sediment delivery to the stream.	PGC
12 The stream channel width must not change as a result of the work.	PGC
13 Any materials, such as riprap or gabion rock, placed within the stream must be clean and not contain substances that could be harmful to fish, wildlife or the aquatic ecosystem of the stream.	PGC
14 Any areas disturbed as part of the work must be restored as close as possible to their pre-disturbance condition. Any soil exposed at the worksite must be promptly re-vegetated.	PGC
15 Subject to section 16 and 17 below, the work must be completed during the timing window for the stream in respect of which the changes are proposed. The applicable timing window (by region and/or by stream) are specified in the following links (see below) and are designed to protect fish, wildlife or the aquatic ecosystem of a stream. To determine the timing window, please select the relevant region from the map: http://www.frontcounterbc.ca/pdf/RegionMap.pdf and then determine the applicable timing window: *Regional Timing Windows: http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows <for that region and for the stream where the proposed changes will be made. For projects proposed to take place outside these timing windows, please see section 16 and 17 below	PGC
16 In addition to the timing windows specified in section 15 above, work may be carried out during the following times provided these requirements are met when the changes are carried out: i. If the stream channel is naturally dry (no flow) or frozen to the bottom at the worksite and the instream work / activity associated with the proposed change will not adversely impact fish, wildlife or the aquatic ecosystem of the stream (e.g. not result in any substance, sediment, debris or other material entering or leaching into the stream that would adversely affect fish, wildlife or the aquatic ecosystem), ii. In the construction of a winter crossing, the stream channel is frozen to the bottom at the worksite and related work does not adversely impact the stream channel (including stream bed and banks), or fish, wildlife or the aquatic ecosystem of the stream, or impede their passage (in both directions) in the stream.	PGC PGC PGC
17 If your work is proposed outside of the timing window (as described in section 15 above), you must retain a qualified environmental professional (such as an R.P. Bio.). The professional will be responsible for providing a written technical rational that assesses and addresses the risks of the proposed changes in and about a stream, including proposing site specific mitigation (e.g. an Erosion Control Plan that identifies contingency measures and emergency procedures related to the proposal) and onsite monitoring of their implementation. This document must be submitted to the Habitat Officer via Front Counter B.C. with reference to your file number (shown on top of this document).	PGC

WSA Approval 2007795 Change Approval -Changes In and About 96th Street Ditch and Silda Ditch (Sites B, D, and E)

Legend
Difference between Approval 2007783 & 2007795
Difference between Approval 2007749 & 2007795
Difference between Approval 2007770 & 2007795
Difference between Approval 2007755 & 2007795

Conditions	Responsibility
If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	PGC, Brybil
d The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	PGC
e All works associated with the Environmental Enhancement Management Plan, as outlined in clause (m) and required in clause (oo) below, shall be completed on or before December 31, 2033 (based on 10 years).	PGC, Brybil - development of plan
f Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	PGC - implementation
1 Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 15; or	Brybil/MESL - provide input
2 Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	PGC
h Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train on site staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	PGC
i The works shall not result in depressions that have the ability to trap fish and other aquatic life.	PGC
j 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 the rights granted with this approval.	PGC
k Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	PGC
l All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize, and it shall be managed to avoid entry into any stream or watercourse.	PGC
m All works shall be completed in accordance with	PGC
1 ENG DWG Site E Culvert Plan and Profile, 2020-01-27	PGC
2 ENG DWG Site B Culvert Plan and Profile, 2020-01-27	PGC
3 ENG DWG Site D River Road Interchange Silda Wetland Encroachment, 2020-02-19	PGC
4 Report Section 11 Approval Application Highway 91/17 Upgrades, Section 1 And 2, By Brybil Projects Ltd., February 21, 2020	PGC
5 Stormwater Management Plan, McElhanney May 6, 2020	PGC
6 CEMP, 3rd Revision, May, 2020	PGC
7 Surface Water Quality & Sediment Control Plan (of CEMP)	PGC
8 Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	PGC
9 Environmental Enhancement Management Plan (CEMP), Brybil Projects Ltd., June 2020	PGC
10 Memo Additional FLNRO information, Dave Hayward, Brybil, June 8, 2020	PGC
n The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/in-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	PGC
o All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http://www.env.gov.bc.ca/wld/documents/bmp/ismwstdsbpsmarch2004.pdf .	PGC
p The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another	
July 23, 2020 Job Number 114324 File Number 20077955 of 10 Ministry of Forests, Lands, Natural Resource Operations, and Rural Development Water Management Mailing Address 200-10428 153 Street, Surrey BC V3R 1E1 Location 200-10428 153 Street, Surrey BC V3R 1E1 Phone (604) 586-4400 Fax (604) 586-4444 Web https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/qualified-professional . He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1 Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	PGC
2 Where applicable, assist in the isolation of the stream prior to the commencement of works.	PGC
3 Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	PGC
4 Supervise all instream works authorized under this Approval.	PGC
5 When the works involve temporary diversions to isolate the work site,	
i Monitor all diversion works daily to ensure pumps & flow by passes are in proper working condition;	PGC
ii Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	PGC
iii Ensure fish are prevented from entering the works.	PGC
6 When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	PGC, Brybil
ii Obtain any permits needed prior to undertaking the salvage(s); and	Brybil
iii Inspect the extraction area for fish stranding at least once after water levels have declined.	PGC, Brybil
7 In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	PGC
8 Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	PGC, MESL
q Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	PGC
r All equipment and machinery used in or near the stream channel	PGC
1 Must be in good operating condition and free of leaks, excess oil and grease;	PGC

2 Must have a spill containment kit readily accessible on-site;	PGC
3 May not be refuelled within 30 meters of any watercourse; and	PGC
4 Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	PGC
s Any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities must be reported to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	PGC
t Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	PGC
u Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	PGC
v Care shall be exercised during sediment screening so that fine size fractions are not introduced into wetted areas or left in dry areas of the stream channel following the completion of work.	PGC
w Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbidity-or.pdf) and/or the applicable Local Government Bylaw(s). Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24-hour period.	PGC
x All excavated material and debris shall be removed from the site or placed in a stable area above the high-watermark of the stream. Mitigative measures must be applied July 23, 2020 Job Number 114324 File Number 20077957 of Ministry of Forests, Lands, Natural Resource Operations, and Rural Development Water Management Mailing Address 200-10428 153 Street, Surrey BC V3R 1E1 Location 200-10428 153 Street, Surrey BC V3R 1E1 Phone (604) 586-4400 Fax (604) 586-4444 Web https://www2.gov.bc.ca/gov/content/environment/air-land-water/waterto protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	PGC
y All material utilized during construction shall be contained and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	PGC
z Measures must be taken to ensure that no harmful material (e.g. fuel and other hydrocarbons, soil, road fill, or sediment) which could adversely impact water quality, fish and other aquatic life, and/or fish habitat, be allowed to enter the wetted perimeter as a result of the project activities. All staff must be trained in handling and applying a spill kit appropriately to any spills/incidents.	PGC
aa Site preparation is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	PGC
bb The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	PGC
cc All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	PGC
dd Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.	PGC
ee All disturbed areas of the banks of the stream shall be restored to their original condition.	PGC
ff The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	MESL Design, PGC implementation
gg The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	MESL Design, PGC implementation
hh Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	PGC
ii All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.	PGC
jj Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	PGC
kk Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	PGC
l Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	PGC
1 Where possible and feasible, piles should be installed using a vibratory hammer.	PGC
2 Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).	PGC
3 Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	PGC
4 Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	PGC
5 Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	PGC
6 In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	PGC
mm The holder of this Approval shall be responsible for the repair, operation and maintenance of works to the satisfaction of the Water Manager.	PGC
nn The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSARreporting@gov.bc.ca . That report shall include a signed statement from an appropriately Qualified Professional summarizing	PGC
1 The in-stream works undertaken,	PGC
2 The timing of those works,	PGC
3 The total in-stream area directly affected,	PGC
4 The volume of gravel or sediment removed (if applicable),	PGC
5 The frequency of monitoring including who the QP or EM was;	PGC
6 The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),	PGC
7 Representative site photographs;	PGC
8 Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and	PGC
9 A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	PGC
oo The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. The effectiveness monitoring term required for this approval is 10 years, ending on Dec. 31, 2033, or 10 years following the completion of construction, whichever is later. Monitoring for riparian, instream, and wetland habitats should occur on years 1, 2, 3, 6, 7, and 10. Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSARreporting@gov.bc.ca , with the approval file number listed in the report and the subject line of the email. The reports shall include	Brybil Development, PGC Implementation
1 Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.	Province
2 Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.	Province

3 Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.	Province
4 Amphibian species presence by egg mass surveys,	Province
5 Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,	Province
6 Monitoring, maintenance and implementation of the above recommendations if required.	Province
7 Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	Province
pp To address the permanent in stream and riparian impacts associated with the project, the holder of this Approval must	
1 Retain one or more appropriately qualified professionals to develop an offsetting plan that includes	
i	
The creation of a minimum of 206 m2 of instream, 2,705 m2 of wetland, and 1,082 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.	Brybil/PGC
ii A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures.	Province
iii A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.	Province
2 Develop the offsetting plan in collaboration with interested First Nations and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.	Brybil/PGC
3 Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.	Brybil/PGC

WSA Approval 2007783
Change Approval - Changes in and About East West Perimeter Ditch and Burns Bog [Site F]

Legend
Difference between Approval 2007795 & 2007783
Difference between Approval 2007749 & 2007783
Difference between Approval 2007770 & 2007783
Difference between Approval 2007755 & 2007783

Conditions	Responsibility
If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
d The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	
e All works associated with the Environmental Enhancement Management Plan, as outlined in clause (m) and requirements in clause (jj) below, shall be completed on or before December 31, 2033 (based on 10 years).	
f Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1 Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 15; or	
2 Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	
h Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
i The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
j 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 the rights granted with this approval.	
k Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
l All material utilized during construction shall be contained and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
m All works shall be completed in accordance with	
1 Reference ENG DWGs Site F Key Plan/Drawing Index 2020-02-14; Plan 2020-02-14; Profiles 2020-02-14; Typical sections 2020-02-14; Culvert Plan and Profiles, 2020-02-14	
2 Report Section 11 Approval Application Highway 91/17 Upgrades, Section 3, Site F, By Brybil Projects Ltd., February 28, 2020	
3 Stormwater Management Plan, McElhanney May 6, 2020	
4 CEMP, 3rd Revision, May 2020	
5 Surface Water Quality & Sediment Control Plan (of CEMP)	
6 Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
7 Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
8 Memo Additional FLNRO information, Dave Hayward, Brybil, June 8, 2020	
The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic	
n Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/in-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
o All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf .	
p The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1 Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2 Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3 Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4 Supervise all instream works authorized under this Approval.	
5 When the works involve temporary diversions to isolate the work site,	
i Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii Ensure fish are prevented from entering the works.	
6 When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii Obtain any permits needed prior to undertaking the salvage(s); and	
iii Inspect the extraction area for fish stranding at least once after water levels have declined.	
7 In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8 Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
q Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
r All equipment and machinery used in or near the stream channel	
1 Must be in good operating condition and free of leaks, excess oil and grease;	
2 Must have a spill containment kit readily accessible on-site;	
3 May not be refuelled within 30 meters of any watercourse; and	
4 Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	

	<p>Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).</p>	
t	<p>Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.</p>	
u	<p>Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbidity-or.pdf) and/or the applicable Local Government Bylaw(s).</p> <p>Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.</p>	
v	<p>All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.</p>	
w	<p>All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.</p>	
x	<p>Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.</p>	
y	<p>The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.</p>	
z	<p>All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.</p>	
aa	<p>Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.</p>	
bb	<p>The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.</p>	
cc	<p>The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).</p>	
dd	<p>Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.</p>	
ee	<p>Treated wood products shall not be used in any construction below the high-water mark of the stream channel.</p>	
ff	<p>Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.</p>	
gg	<p>Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented</p> <ol style="list-style-type: none"> 1 Where possible and feasible, piles should be installed using a vibratory hammer. 2 Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa). 3 Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish. 4 Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area. 5 Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring. 6 In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed. 	
hh	<p>The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca.</p> <p>That report shall include a signed statement from an appropriately Qualified Professional summarizing</p> <ol style="list-style-type: none"> 1 The in-stream works undertaken, 2 The timing of those works, 3 The total in-stream area directly affected, 4 The volume of gravel or sediment removed (if applicable), 5 The frequency of monitoring including who the QP or EM was; 6 The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable), 7 Representative site photographs; 8 Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and 9 A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported. 	
ii	<p>The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. The effectiveness monitoring term required for this approval is 10 years, ending on Dec. 31, 2033, or 10 years following the completion of construction, whichever is later. Monitoring for riparian, instream, and wetland habitats should occur on years 1, 2, 3, 6, 7, and 10.</p> <p>Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email.</p> <p>The reports shall include</p> <ol style="list-style-type: none"> 1 Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively. 2 Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features. 3 Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel. 4 Amphibian species presence by egg mass surveys, 5 Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc., 6 Monitoring, maintenance and implementation of the above recommendations if required. 7 Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity. 	
jj	<p>To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must</p> <ol style="list-style-type: none"> 1 Retain one or more appropriately qualified professionals to develop an offsetting plan that includes <p>The creation of a minimum of 382 m2 of instream, 21,648 m2 of wetland, and 52 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and/or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.</p> <p>A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures. Monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Results of initial monitoring will determine how much further monitoring may be required until enhancement habitats are self-sustaining.</p>	

<p>iii A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.</p> <p>2 Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.</p> <p>3 Submit an amendment to this approval, or a new Change Approval or a Water license, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.</p>	
<p>kk Effectiveness monitoring must take place during the same time of year each year to provide comparable data.</p> <p>Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Targets include</p> <p>1 Plant survival is $\geq 80\%$; Tree survival rate of 100 %.</p> <p>2 Native plant cover is two thirds greater than invasive species cover within 5 years;</p> <p>3 Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools, creating cover for fish and habitat for amphibians; and</p> <p>4 Fish are present in instream areas and there are no new barriers to movement.</p>	

WSA Approval 2007749 Change Approval - Changes In and About a Stream (Site G)
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Legend
Difference between Approval 2007795 & 2007749
Difference between Approval 2007783 & 2007749
Difference between Approval 2007770 & 2007749
Difference between Approval 2007755 & 2007749

Conditions	Responsibility
if land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
d The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	
e All works associated with the Environmental Enhancement Management Plan, as outlined in clause (m) and requirements in clause (jj) below, shall be completed on or before December 31, 2033 (based on 10 years).	
f Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1 Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 15; or	
2 Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors); and	
ii The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	
h Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
i The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
j 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 the rights granted with this approval.	
k Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
l All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
m All works shall be completed in accordance with	
1 Reference ENG DWGs Site G Key Plan/Drawing Index 2020-02-14; Plan 2020-02-14; Profiles 2020-02-14; Typical sections 2020-02-14; Culvert Plan and Profiles, 2020-02-14	
2 Report Section 11 Approval Application Highway 91/17 Upgrades, Section 4, Site G, By Brybil Projects Ltd., February 28, 2020	
3 Stormwater Management Plan, McElhanney May 6, 2020	
4 CEMP, 3rd Revision, May 2020	
5 Surface Water Quality & Sediment Control Plan (of CEMP)	
6 Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
7 Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
8 Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020	
n The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
o All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf .	
p The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1 Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2 Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3 Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4 Supervise all instream works authorized under this Approval.	
5 When the works involve temporary diversions to isolate the work site,	
i Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii Ensure fish are prevented from entering the works.	
6 When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii Obtain any permits needed prior to undertaking the salvage(s); and	
iii Inspect the extraction area for fish stranding at least once after water levels have declined.	
7 In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8 Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
q Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
r All equipment and machinery used in or near the stream channel	
1 Must be in good operating condition and free of leaks, excess oil and grease;	
2 Must have a spill containment kit readily accessible on-site;	
3 May not be refuelled within 30 meters of any watercourse; and	
4 Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	

	<p>Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).</p>	
t	<p>Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.</p>	
u	<p>Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbidity-or.pdf) and/or the applicable Local Government Bylaw(s).</p> <p>Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.</p>	
v	<p>All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.</p>	
w	<p>All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.</p>	
x	<p>Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.</p>	
y	<p>The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.</p>	
z	<p>All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.</p>	
aa	<p>Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.</p>	
bb	<p>The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.</p>	
cc	<p>The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).</p>	
dd	<p>Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.</p>	
ee	<p>Treated wood products shall not be used in any construction below the high-water mark of the stream channel.</p>	
ff	<p>Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.</p>	
gg	<p>Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented</p> <ol style="list-style-type: none"> Where possible and feasible, piles should be installed using a vibratory hammer or helical (screw) method. Piles installed using an impact hammer must implement the following mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa) <ol style="list-style-type: none"> Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish. Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area. Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring. In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed. 	
hh	<p>The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAREporting@gov.bc.ca. That report shall include a signed statement from an appropriately Qualified Professional summarizing</p> <ol style="list-style-type: none"> The in-stream works undertaken, The timing of those works, The total in-stream area directly affected, The volume of gravel or sediment removed (if applicable), The frequency of monitoring including who the OP or EM was; The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable), Representative site photographs; Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported. 	
ii	<p>The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. The effectiveness monitoring term required for this approval is 10 years, ending on Dec. 31, 2033, or 10 years following the completion of construction, whichever is later. Monitoring for riparian, instream, and wetland habitats should occur on years 1, 2, 3, 6, 7, and 10. Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAREporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email. The reports shall include</p> <ol style="list-style-type: none"> Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively. Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features. Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel. Amphibian species presence by egg mass surveys, Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc., Monitoring, maintenance and implementation of the above recommendations if required. Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity. 	
jj	<p>To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must</p> <ol style="list-style-type: none"> Retain one or more appropriately Qualified Professionals to develop an offsetting plan that includes <ul style="list-style-type: none"> The creation of a minimum of, 7,617 m² of wetland habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and/or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines. A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures. A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program. Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development. 	

<p>Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.</p>	
<p>kk Effectiveness monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Targets include</p> <ol style="list-style-type: none"> 1 Plant survival is $\geq 80\%$; Tree survival rate of 100 %. 2 Native plant cover is two thirds greater than invasive species cover within 5 years; 3 Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools and creating cover for fish and habitat for amphibians; and 5 Fish are present in instream areas and there are no new barriers to movement 	

WSA Approval 2007770
Change Approval - Changes in and About a Stream (Site I)

Conditions	Responsibility
if land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
if it is possible amphibians may be present in the streams, such as Nordel Ditches, an amphibian salvage must be undertaken prior to works taking place.	
d The works authorized shall be completed on or before December 31, 2023.	
e All works associated with an authorized Environmental Enhancement Management Plan, as outlined in clause (n) and required in clause (ff) below shall be completed on or before December 31, 2033 (based on 10 years).	
f Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1 Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 30; or	
2 Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors; and	
ii The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g All works shall be completed in accordance with	
1 Reference ENG DWGs Site I Plan 2020-02-27, Profiles 2020-02-27, Culvert/ Storm Plans and Profiles 2020-02-27	
2 Report Section 11 Approval Application Highway 91/17 Upgrades, Section 4, Site I, By Brybil Projects Ltd., March 10, 2020	
3 Stormwater Management Plan, McElhanney May 6, 2020	
4 CEMP, 3rd Revision, May, 2020	
5 Surface Water Quality & Sediment Control Plan (of CEMP)	
6 Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
7 Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
8 Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020	
h The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/In-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
i All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http://www.env.gov.bc.ca/wld/documents/bmp/bswstdbbspmarch2004.pdf .	
j The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1 Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2 Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3 Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4 Supervise all instream works authorized under this Approval.	
5 When the works involve temporary diversions to isolate the work site,	
i Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii Ensure fish are prevented from entering the works.	
6 When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii Obtain any permits needed prior to undertaking the salvage(s); and	
iii Inspect the extraction area for fish stranding at least once after water levels have declined.	
7 In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8 Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
k All equipment and machinery used in or near the stream channel	
1 Must be in good operating condition and free of leaks, excess oil and grease;	
2 Must have a spill containment kit readily accessible on-site;	
3 May not be refuelled within 30 meters of any watercourse; and	
4 Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	
l Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
m Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
n Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	
o Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	
p All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	
q Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-quality/wqgs-wqos/approved-wqgs/turbidity-or-pdf) and/or the applicable Local Government bylaw(s).	

Legend
Difference between Approval 2007795 & 2007770
Difference between Approval 2007783 & 2007770
Difference between Approval 2007749 & 2007770
Difference between Approval 2007755 & 2007749

	Water quality monitoring must be conducted by an appropriately qualified professional or their designated Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.	
f	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 the rights granted with this approval.	
g	Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	
h	The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
i	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	
j	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	
k	Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
l	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	
m	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	
n	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	
o	All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.	
p	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	
q	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	
r	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	
s	1 Where possible and feasible, piles should be installed using a vibratory hammer.	
t	2 Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).	
u	3 Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	
v	4 Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	
w	5 Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	
x	6 In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	
y	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAREporting@gov.bc.ca. That report shall include a signed statement from an appropriately Qualified Professional summarizing	
z	1 The in-stream works undertaken, 2 The timing of those works, 3 The total in-stream area directly affected, 4 The volume of gravel or sediment removed (if applicable), 5 The frequency of monitoring including who the QP or EM was, 6 The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable), 7 Representative site photographs; 8 Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and 9 A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	
aa	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. The effectiveness monitoring term required for this approval is 10 years following the completion of construction of the offsetting habitat. Monitoring for riparian, instream, and wetland habitat should occur for 5 years, over a 10-year period following the completion of construction of the habitat offsetting unless a Qualified Professional deems the site functional prior to the end of the 5 years of monitoring. Monitoring must occur until the habitat is deemed functional at like for like or like for greater than the original habitat by a Qualified Professional. Effectiveness Monitoring reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAREporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email. The reports shall include	
ab	1 Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively. 2 Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features. 3 Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel. 4 Amphibian species presence by egg mass surveys, 5 Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc., 6 Monitoring, maintenance and implementation of the above recommendations if required. 7 Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	
ac	To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must	
ad	1 Retain one or more appropriately qualified professionals to develop an offsetting plan that includes	
ae	i The creation of a minimum of 1,310 m2 of instream, 2,274 m2 of wetland, and 743 m2 riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and/or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines. ii A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures. iii A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program. 2 Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development. Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.	
af	h) Effectiveness monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Results of initial monitoring will determine how much further monitoring may be required until enhancement habitats are self-sustaining. Targets include 1 Plant survival is ≥ 80%; Tree survival rate of 100 % 2 Native plant cover is two thirds greater than invasive species cover within 5 years; 3 Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools and creating cover for fish and habitat for amphibians; and 4 Fish are present in instream areas and there are no new barriers to movement	

WSA Approval 2007755 Change Approval - Changes in and About SFPR Offset site FC239, and drainage between SFPR Offset site FC239 and Silda Ditch (Site H)

Legend
Difference between Approval 2007795 & 2007755
Difference between Approval 2007783 & 2007755
Difference between Approval 2007749 & 2007755
Difference between Approval 2007770 & 2007755

Conditions	Responsibility
If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey must be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.	
d The work(s) authorized in this Approval shall be completed on or before Dec. 31, 2023.	
e All works associated with an Environmental Enhancement Management Plan, as outlined in clause (m) and requirements in clause (ii) below shall be completed on or before December 31, 2033 (based on 10 years).	
f Work in the stream and stream channel shall occur only during the periods outlined below, so that the fisheries interests are protected	
1 Instream work during the reduced risk instream work window shall occur during the period of August 1 to September 30; or	
2 Based on project justification and risk, instream work outside of the reduced risk instream work window (as stated above), subject to the following	
i An appropriately qualified professional shall provide advice to the holder of this Approval on the timing of the work based on the nature of the works, environmental values (including fish, amphibians, wildlife, any listed species present), water quality, channel stability, weather conditions, water levels, and any other relevant factors; and	
ii The Qualified Professional shall also provide additional construction mitigation advice to the holder of this Approval, and daily or full-time supervision of all work in or near the stream; and	
iii Work must be timed and planned appropriately, the stream must be completely dry or have marginal flows for the duration of the construction activities; and	
iv The advice of the Qualified Professional on construction timing (as per (i) above) and mitigation measures (as per (ii) above), as well as the timing of work and the presence of the Qualified Professional, must be documented in writing. This documentation must be submitted as part of the post construction reporting for this project.	
g All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.	
h Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.	
i The works shall not result in depressions that have the ability to trap fish and other aquatic life.	
j 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 the rights granted with this approval.	
k Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.	
l All material utilized during construction shall be contained and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
m All works shall be completed in accordance with	
1 ENG DWG Site H Key Plan/Drawing Index, by McElhanney, 2020-02-20	
2 ENG DWG Site H Plan, by McElhanney, 2020-02-20	
3 ENG DWG Site H Profile, by McElhanney, 2020-02-20	
4 ENG DWG Site H Typical Sections, by McElhanney, 2020-02-20	
5 ENG DWG Site H Culvert Plan and Profiles, by McElhanney, 2020-02-20	
6 Report Section 11 Approval Application Highway 91/17 Upgrades, Section 1 And 2, By Brybil Projects Ltd., February 21, 2020	
7 Stormwater Management Plan, McElhanney May 6, 2020	
8 CEMP, 3rd Revision, May 2020	
9 Surface Water Quality & Sediment Control Plan (of CEMP)	
10 Fisheries Habitat Mitigation and Compensation Plan (of CEMP)	
11 Environmental Enhancement Management Plan (EEMP), Brybil Projects Ltd., June 2020	
12 Memo Additional FLNRO Information, Dave Hayward, Brybil, June 8, 2020; and	
13 Any other documents related to the File No. 2007755.	
The holder of this approval must adhere to the standards of professional accountability, as signed off by Qualified Professional(s), Dave Hayward and Rob Hoogendorn on June 2, 2020, regarding the Key Aquatic	
n Habitat Questions for Qualified Professionals specific to Bank Erosion Protection and Stream Diversion/in-filling, on behalf of the holder of this approval. It is the responsibility of the holder of this Approval to retain an appropriately qualified professional(s) for the relevant duration of works in order to uphold this signed professional assessment.	
o All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf .	
p The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional must be an applied scientist or technologist, acting alone or together with another qualified professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall	
1 Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.	
2 Where applicable, assist in the isolation of the stream prior to the commencement of works.	
3 Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.	
4 Supervise all instream works authorized under this Approval.	
5 When the works involve temporary diversions to isolate the work site,	
i Monitor all diversion works daily to ensure pumps & flow bypasses are in proper working condition;	
ii Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and	
iii Ensure fish are prevented from entering the works.	
6 When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,	
i Attend the site prior to conducting any instream works to complete fish and wildlife search and salvages;	
ii Obtain any permits needed prior to undertaking the salvage(s); and	
iii Inspect the extraction area for fish stranding at least once after water levels have declined.	
7 In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, notify the Water Manager (SouthCoastWSAReporting@gov.bc.ca), within 24 hours.	
8 Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate (specified in writing) must be on site during all phases of construction in and around the stream to ensure this component is upheld.	
q Upon commencement of the project, the work shall be pursued to completion as quickly as possible.	
r All equipment and machinery used in or near the stream channel	
1 Must be in good operating condition and free of leaks, excess oil and grease;	
2 Must have a spill containment kit readily accessible on-site;	



3	May not be refuelled within 30 meters of any watercourse; and	
4	Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable.	
5	Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Standards and Best Practices for In-stream Works" (2004) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the British Columbia, 1993).	
t	Sediment removal boundaries must be clearly delineated prior to commencement of work. All sediment excavation for removal purposes shall be completed in isolation of the stream flows.	
u	Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines and https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/turbidity-or.pdf) and/or the applicable Local Government Bylaw(s).	
v	be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements should be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24 hour period.	
w	All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse. These measures may include covering the material with erosion blankets, seeding and planting with native vegetation, or as otherwise directed by a Qualified Professional.	
x	All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.	
y	Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.	
z	The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding.	
aa	All temporary works (including a ford, stream crossing and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.	
ab	Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.	
bb	The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.	
cc	The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200 year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).	
dd	Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.	
ee	All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.	
ff	Treated wood products shall not be used in any construction below the high-water mark of the stream channel.	
gg	Large woody debris and the stubs of large diameter trees must be left in place or retained on-site where it is safe to do so.	
hh	Care shall be exercised during pile driving to minimize potential adverse impacts to fish or wildlife. The following mitigation measures shall be implemented	
1	Where possible and feasible, piles should be installed using a vibratory hammer.	
2	Piles installed using an impact hammer must implement mitigation measures to reduce water pressure sound waves in excess of 30 kilopascals (kPa).	
3	Mitigation measures such as bubble curtains, double wall piles, or isolation methods shall be implemented to avoid adverse impacts to fish.	
4	Where water pressure sound waves may exceed 30 kPa, isolation methods must be implemented to prevent fish and wildlife from entering the work area.	
5	Monitoring underwater sound wave levels must be conducted continuously and within 10 meters of the pile being driven to ensure levels do not exceed 30 kPa. The construction with timber piles does not require underwater sound monitoring.	
6	In the event that distressed, injured or dead fish are observed following the initiation of pile driving, work shall halt immediately and the holder of this Approval or appropriate designate must contact the Water Manager as soon as practicable for additional requirements before work is resumed.	
ii	The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works were completed. The report must be labelled with this Approval file number and labelled in the subject line of the email and submitted to SouthCoastWSAReporting@gov.bc.ca. That report shall include a signed statement from an appropriately Qualified Professional summarizing	
1	The in-stream works undertaken,	
2	The timing of those works,	
3	The total in-stream area directly affected,	
4	The volume of gravel or sediment removed (if applicable),	
5	The frequency of monitoring including who the QP or EM was;	
6	The turbidity reporting and accompanying data along with a description of any levels higher than the authorization and what immediate steps were taken (if applicable),	
7	Representative site photographs;	
8	Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and	
9	A description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported.	
jj	The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. The effectiveness monitoring term required for this approval is 10 years following the completion of construction of the offsetting habitat. Monitoring for riparian, instream, and wetland habitat should occur for 5 years, over a 10-year period following the completion of construction of the habitat offsetting unless a Qualified Professional deems the site functional prior to the end of the 5 years of monitoring. Monitoring must occur until the habitat is deemed functional at like for like or like for greater than the original habitat by a Qualified Professional. Effectiveness Monitoring Reports shall be submitted no later than December 1 of each calendar year for the duration of monitoring. The reports shall be submitted via email to SouthCoastWSAReporting@gov.bc.ca, with the approval file number listed in the report and the subject line of the email. The reports shall include	
1	Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively.	
2	Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.	
3	Fish presence, species composition, and if fish stranding is occurring within the newly constructed channel.	
4	Amphibian species presence by egg mass surveys,	
5	Recommendations for adaptive management, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.,	
6	Monitoring, maintenance and implementation of the above recommendations if required.	
7	Water quality monitoring including temperature, pH, Dissolved Oxygen, and turbidity.	
kk	To address the permanent instream and riparian impacts associated with the project, the holder of this Approval must	
1	Retain one or more appropriately qualified professionals to develop an offsetting plan that includes	
i	The creation of a minimum of 406 m ² of instream, 702 m ² of wetland, and 5,495 m ² riparian habitat that is like for like, or like for better habitat, in terms of structure, functionality (e.g., flow regime), and target species. If the actual instream, wetland, and/or riparian impact area is larger than estimated in "Environmental Enhancement Management Plan Hwy 91/17 Upgrade Project, Delta, BC. Submitted to Pacific Gateway Constructors prepared by Brybil Projects Ltd. Dated June, 2020" the compensation works must offset the actual area lost using the above stated like for like or like for better guidelines.	



<p>A post-construction monitoring plan of the compensation works over 10 years following the completion of the offsetting measures. Monitoring must take place during the same time of year each year to provide comparable data. Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Results of initial monitoring will determine how much further monitoring may be required until enhancement habitats are self-sustaining.</p> <p>A commitment to prepare and submit annual post-construction monitoring reports at the end of every year of the monitoring program. A final monitoring report must be submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these were not met during the monitoring program.</p> <p>2 Develop the offsetting plan in collaboration with interested First Nations, local governments, and the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development.</p> <p>3 Submit an amendment to this approval, or a new Change Approval or a Water License, whichever is applicable to the offsetting proposal, to authorize the construction of the offsetting works. This application must be submitted to Front Counter BC and the tracking number must be provided to WaterActReferrals.LowerMainland@gov.bc.ca no later than December 31, 2020, unless otherwise specified in writing by the Water Manager.</p>	
<p>II Effectiveness monitoring must take place during the same time of year each year to provide comparable data.</p> <p>Monitoring of plant survival in riparian and wetland areas and of instream areas should be scheduled during the summer, during a period between high and low water (likely July). Targets include</p> <p>1 Plant survival is $\geq 80\%$; Tree survival rate of 100 %.</p> <p>2 Native plant cover is two thirds greater than invasive species cover within 5 years;</p> <p>3 Visual survey of LWD and boulders to confirm they are in place and intact, and that boulders are effectively creating riffles and pools, creating cover for fish and habitat for amphibians; and</p> <p>4 Fish are present in instream areas and there are no new barriers to movement</p>	

APPENDIX 6: STATUS OF TOCA COMMITMENTS TABLE

Ref	Objective Commitments & Assurances	Timing	Delivered By	Status Update	
				Ongoing	Complete
1.0 Responsible Environmental Management					
1.1	Develop, implement, and maintain an Environmental Management Plan (EMP) for the Project to demonstrate how the design, construction and operation, including maintenance, of the Project: - Will be carried out to avoid or mitigate negative impacts; - Will be carried out in an environmentally responsible manner, in accordance with DBSS 165 [Protection of the Environment]; - Will employ Best Management Practices (BMPs3); and - Will comply with federal and provincial legislation, permits, approvals and authorizations, including the Environmental Assessment Certificate (EAC).	All phases	Contractor	X	
1.2	Prepare and implement a Construction Environmental Management Plan (CEMP), (which is a component of the EMP), including relevant sub-plans, for the Project prior to the start of relevant construction activities.	Pre-construction	Contractor	X	
1.3	Obtain required statutory permits, approvals, and authorizations before proceeding with construction that requires such permits.	All phases	Contractor	X	
1.4	Adhere to the terms and conditions of the: EAC; federal screening report; the EMP; DBSS 165 [Protection of the Environment]; and any other applicable permits, licenses and approvals.	Pre-construction, construction	Contractor	X	
1.5	Establish an Inter-Agency Environmental Review Committee (IAERC), in accordance with the Terms of Reference developed during Application review, to provide for agency review and comment on plans and designs prior to construction, including but not limited to: - Detailed design of stormwater management infrastructure;	Pre-construction, construction	MOTI / Contractor	N/A	

	- Detailed vegetation and wildlife mitigation plans and mitigation monitoring plans; and - Environmental management plans.				
1.6	Provide all project related EMPs, including component EMPs, to applicable regulatory agencies in the IAERC for review and comment, at least 30 calendar days prior to the start of construction that requires such plans.	Pre-construction	Contractor	N/A	
1.7	Relevant sub-plans to be included in the CEMP will include those to address environmental issues identified in the Application and supporting documentation submitted to the EAO during the Application review, and described in the Application (Section 11, pg. 523), including but not limited to: - Agriculture Mitigation Plan; - Air Quality and Dust Control Plan; - Archaeological Mitigation / Monitoring Plan; - Construction and Hazardous Waste Management Plan; - Contaminated Sites Management Plan; - Contractor Awareness and Education Plan; - Environmental Monitoring Plan; - Fisheries Habitat Mitigation and Compensation Plan; - Health and Safety Plan; - Invasive Species Management Plan; - Noise and Vibration Management Plan; - Spill Management and Emergency Response Plan; - Surface Water Quality and Sediment Control Plan; - Wildlife and Habitat Management Plan.	Pre-construction	Contractor	X	
1.8	Manage contamination encountered during project development, regardless of the current assessment of potential contamination, in accordance with applicable regulatory requirements.	All phases	Contractor	X	
1.9	Prepare and implement an Operational Environmental Management Plan, prior to operation and maintenance activities. Provide the operational EMP to relevant reviewing and regulatory agencies, for review and comment, at least 30 calendar days prior to the onset of operation and maintenance activities.	Pre-construction	Contractor	TBD	
1.10	At a minimum, review the Wildlife and Habitat Management Plan and modify if required, three years post- construction and make a decision regarding the next review date and/or determine the closure date for the plan(s). The method for review, modification, and decision on closure of the plan(s) will be defined by the applicable regulatory agencies within the IAERC	Operations	Contractor	N/A	
2.0 Monitoring					
2.1	Ensure that environmental monitoring and reporting for the Project will be conducted, with respect to the terms and conditions of the EAC and other regulatory permits, approvals and authorizations as applicable.	Construction	Contractor	X	
2.2	Incorporate a monitoring component into all applicable sub-plans of the construction EMP developed for the construction phase of the Project.	Pre-construction	Contractor	X	
2.3	Outline in each of the sub-plans of the construction EMP: - Rationale for monitoring; - Parameters to be monitored;	Pre-construction	Contractor	X	

	- Monitoring program details; and - Required follow-up actions.				
2.4	The Owner will engage an Environmental Monitor for the construction phases of the Project to undertake environmental monitoring activities and oversee implementation of each of component plans of the EMP developed for the Project. The Environmental Monitor will monitor, evaluate, and report to the owner on construction activities and the effectiveness of the environmental management strategies and mitigation measures, with respect to the terms and conditions of the Application and other regulatory Permits, Approvals and Authorizations that may apply. The Monitor will be responsible for making onsite decisions and taking on-site action to avoid/respond to potential environmental effects which could include temporary stop work orders if necessary.	Construction	Contractor	X	
2.5	Implement environmental quality management program through monitoring, auditing and reporting activities for the Project with respect to the terms and conditions of the EAC and other regulatory permits, approvals and authorizations.	All phases	Contractor	X	
3.0 Incident Management					
3.1	Respond to environmental incidents, including spill incidents in accordance with the Emergency Response Plan to minimize effects and risks to the general public, on-site workers and the environment.	All phases	Contractor	X	
3.2	Include protocols, consistent with the BC Spill Reporting Regulation, for reporting spills to appropriate emergency response authorities, including; - The Provincial Emergency Program, in the case of any spills of reportable deleterious substances into waters frequented by fish, regardless of the amount of the spill; and - To adjacent property owners and occupiers, including local government, where utilities cross the highway and there is a potential for an incident to extend beyond the Project boundaries.	Pre-construction	Contractor	X	
3.3	Train all field Project personnel regarding implementation of the Construction and Hazardous Waste Management and Spill Management and Emergency Response Plans.	All phases	Contractor	X	
3.4	Incorporate relevant municipal contacts into the emergency contacts for the Construction and Hazardous Waste Management and Spill Management and Emergency Response Plans prepared for construction of the Project.	Pre-construction	Contractor	X	
3.5	Follow applicable DBSS 165 and Canadian Council of Ministers of Environment codes and procedures if temporary fuel storage/fueling facilities are required during construction. Where there is a difference in standards, the most stringent measure for environmental protection will take precedence.	Construction	Contractor	X	
4.0 Community Consultation					
4.1	Consult with local governments, stakeholders and the public during all stages of Project development.	Pre-construction; construction	MoT, Contractor	X	
4.2	Conduct community open houses and information sessions during the design review stage to obtain input on design refinements, during the preliminary and final design review stages.	Pre-construction	MoT, Contractor	N/A	
4.3	Provide regular public information updates on the progress of construction, the schedule, and upcoming milestones.	Construction	MoT, Contractor	X	

4.4	Consult with the Corporation of Delta (CoD) and the City of Surrey (CoS) during all stages of project development and construction.	Pre-construction; construction	Contractor	X	
4.5	Provide updated media information materials, as part of the Project commitment to making project information available to the public.	All phases	Contractor	X	
4.6	Track project enquiries and responses.	All phases	Contractor	X	
4.7	Discuss potential economic opportunities generated by the Project with participating First Nations throughout the Post-EA Certification, Design and Construction Phases of the Project.	Pre-construction; construction	MoT, Contractor	X	
4.8	Obtain input from participating First Nations to identify appropriate measures to mitigate potential project related impacts on their previously identified interests in relation to fisheries and habitat matters.	Pre-construction	Contractor	X	
5.0 Stormwater Management					
5.1	Ensure that the design, construction and maintenance of stormwater management infrastructure for the Project takes an integrated approach to stormwater management and contributes to maintaining, or improving, drainage and water quality conditions directly adjacent to the corridor.	All phases	Contractor	TBD	
5.2	Design, construct and maintain stormwater management infrastructure, such that it to meets the performance objectives outlined in the Stormwater Management Plan Outline (July, 2007) and the Application. Monitoring of the infrastructure will be undertaken to confirm performance objectives are met or, if necessary, additional steps are taken to ensure performance objectives are achieved.	All phases	Contractor	X	
5.3	Consult with municipalities adjacent to the new construction area such that the approach to the management of stormwater and drainage design is complementary to, and can be integrated with, adjacent municipal stormwater infrastructure.	Pre-construction	Contractor	TBD	
5.4	Provide final designs for stormwater management infrastructure to relevant First Nations and reviewing and regulatory agencies for review and comment at least 30 calendar days prior to relevant construction activities in order to verify that the proposed infrastructure achieves agreed upon performance measures identified in the Stormwater Management Plan Outline (July 2007).	Pre-construction	Contractor	TBD	
5.5	Drain stormwater and road runoff away from red and blue listed plant communities and do not construct integrated stormwater management infrastructure in such habitat areas.	Construction; operation	Contractor	TBD	
5.6	Obtain input from participating First Nations regarding mitigation measures outlined in the stormwater and drainage plan and effective integration of those measures into the design and operation of the Project.	Pre-construction	Contractor	TBD	
6.0 Agriculture					
6.1	Consult with the Agricultural Land Commission (ALC), Ministry of Agriculture and Lands (MAL), Delta Farmers' Institute (DFI), individual farm owners and the CoD, through all future stages of Project development, construction and operation, to ensure impacts to agricultural lands and operations are minimized where possible and appropriately addressed where impacts are unavoidable.	All phases	MoT, Contractor	X	
6.2	Obtain ALC approvals regarding areas within the Agricultural Land Reserve (ALR) required for the project, prior to construction.	Pre-construction	MoT, Contractor		X

6.3	Develop and implement an Agricultural Mitigation Plan as outlined in the Application that identifies potential impacts to agriculture as a result of project construction activities and measures for avoiding and addressing such impacts where possible. The scope will include those measures outlined in the Application and the Agricultural Enhancement Strategy (April 2008), including but not limited to mitigation measures focused on: - Road access; - Drainage and irrigation; - Utilities; and - Maintaining the agricultural land base.	Pre-construction	Contractor	X	
6.4	Finalize and implement specific agricultural enhancement initiatives, including but not limited to, compensation mechanisms focused on improving road access and drainage and irrigation, as part of the application process to the ALC and summarily as part of the Agricultural Enhancement Strategy (April 2008).	Pre-construction; construction	MoT	X	
6.5	Retain the services of a Professional Agrologist to: - Liaise with the owner, Design-Builder and farmer(s); - Oversee a consultation and dispute resolution process for individual farmers affected by the Project; and - Oversee monitoring and effectiveness of measures proposed to address impacts to agriculture during design, construction and operation.	All phases	MoT	X	
6.6	Avoid, to the extent possible, using agricultural lands outside of the Right-Of-Way (ROW), for staging areas. For all agricultural lands that are required for use as staging areas, implement construction BMPs (as noted in the Agriculture Mitigation Plan in the EMP) to manage potential construction related effects and restore lands to pre-construction condition, or better agricultural capability, upon completion of project works.	Pre-construction; construction	Contractor	X	
6.7	Consult with individual farm owners, as well as MAL, ALC, CoD, DFI and other stakeholders, to identify potential impacts to agricultural operations and infrastructure and ensure that such impacts are avoided, mitigated for, or appropriately addressed during future stages of design and construction of the Project. The scope of potential impacts to farm operations includes, but is not limited to: - Agricultural drainage; - Utilities; - Road Access; and - Pollinators.	Pre-construction; construction	MoT; contractor	X	
6.8	Undertake reasonable measures to facilitate the consolidation of parcels of isolated agricultural lands, to promote continued agricultural use of such lands.	All phases	MoT	X	
6.9	Undertake reasonable measure to minimize potential loss of ALR lands, including existing farm(s) by: - Refining the Project footprint where feasible; and - Optimizing use of existing ROW.	Pre-construction; construction	Contractor	X	
7.0 Air Quality					
7.1	Ensure that the construction works and operations for the Project are conducted in compliance with environmental permits and approvals and that all reasonable measures are taken to address project-related effects on air quality.	Construction, operation	Contractor	X	

7.2	Develop and implement an Air Quality and Dust Control Plan for the construction phase of the project. The plan will: - Include an air quality monitoring program with thresholds, which if exceeded, will trigger the implementation of additional mitigation and corrective measures; - Commit to the best available, known and effective, measures for mitigating construction related air emissions, including diesel particulate matter (PM), as identified by relevant regulatory agencies. This would include, where practical, the use of diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs) on all on-road and off-road project equipment in combination with use of a B20 biodiesel blend; - Include an anti-idling policy for construction equipment and other vehicles associated with construction related activities; - Commit to fugitive dust minimization strategies (e.g. wheel wash and sweeping), and dust suppression techniques (e.g. watering) on roads; and - Identify site specific considerations, where applicable, such as proximity to sensitive environmental or human receptors.	Pre-construction; construction	Contractor	X	
7.3	Provide the Air Quality and Dust Control Plan to Metro Vancouver, Environment Canada (EC), Ministry of Environment (MoE), Transport Canada, Health Canada (HC) and other relevant agencies for review and comment at least 30 calendar days prior to relevant construction activities.	Pre-construction	MoT, Contractor	X	
7.4	Avoid burning as a means for disposing of land clearing debris.	Construction	Contractor	X	
8.0 Traffic Management					
8.1	Ensure that the design of the Project is integrated with local road networks, and that construction of the proposed project includes measures for avoiding or minimizing impacts to local road networks.	Pre-construction; construction	MoT, Contractor	X	
8.2	Prepare and implement a Traffic Management Plan in coordination with CoS and CoD to address construction related traffic conditions.	Pre-construction; construction	Contractor	X	
8.3	Consult with the CoD, CoS, MoT district office, and other stakeholders to design and construct project infrastructure so that it is effectively integrated with existing and planned local road networks.	Pre-construction; construction	Contractor	X	
9.0 Noise and Vibration					
9.1	Ensure that potential noise impacts associated with the project are considered and mitigation provided for during design, construction and operation of the project.	All phases	Contractor	X	
9.2	Prepare and implement a Noise and Vibration Management Plan for the construction phase of the Project that will include specific mitigation measures, and locations where they will be applied to address construction related noise.	Pre-construction; construction	Contractor	X	
9.3	Prepare a noise complaint protocol as part of the CEMP Noise and Vibration Management Plan to respond in a timely manner to concerns and complaints raised by residents and take reasonable actions to reduce the Project-related construction noise in question.	Pre-construction	Contractor	X	
9.4	Provide the construction Noise and Vibration Management Plan to the CoS, CoD and other stakeholders for review and comment 30 calendar days prior to the onset of relevant construction activities.	Pre-construction	Contractor	X	

9.5	Design and construct mitigation measures to address potential operational noise impacts on residential areas as part of the project according to the MoT Noise Policy (1993) [referenced as the Noise Policy in this Agreement].	Pre-construction; construction	Contractor	TBD	
9.6	Conduct noise monitoring at the baseline sites during the first year after construction is complete to assess the effectiveness of mitigation measures, with a commitment to further mitigation if necessary, technically feasible and practical.	Operation	Contractor	TBD	
9.7	Consult with the CoD and CoS to look for opportunities to use tree planting and landscaping to mitigate potential visual, noise and air quality impacts.	Pre-construction; construction	Contractor		
9.8	Participate in meetings with affected communities and residents to address site-specific noise issues in the event that late evening or night time construction works prove necessary in the vicinity of residential areas.	Pre-construction; construction	Contractor	TBD	
9.10	Perform pre-condition surveys to document existing state of buildings and facilities in the vicinity of SFPR construction activities as per standard geotechnical BMPs. This will form the baseline conditions, against which post-construction condition surveys will be carried out to assess any vibration impacts to buildings and facilities as a result of Project construction.	Pre-construction	Contractor	X	
9.11	Monitor ground vibrations, as per standard geotechnical BMPs, adjacent to buildings to confirm that vibration levels are within ranges expected to avoid construction-related vibration.	Construction	Contractor	X	
10.0 Contaminated Sites and Property Acquisition					
10.1	Ensure that potential site contamination is investigated, and managed in compliance with the Contaminated Sites Regulation (Environmental Management Act), during all stages of project development including property acquisition, design and construction.	All phases	Contractor	X	
10.2	Assess all Tier 1 and Tier 2 properties required for the ROW for potential contamination prior to construction and take steps, as required, to investigate and address site contamination that may exist.	Pre-construction; construction	MoT; Contractor	X	
10.3	Manage any contaminated groundwater encountered in accordance with the requirements of the Environmental Management Act and associated regulations.	Pre-construction; construction	MoT; Contractor	X	
10.4	Undertake risk assessment and remediation activities, as required, and manage potential contamination in compliance with the provincial Environmental Management Act and Contaminated Sites Regulation.	Pre-construction; construction	MoT; Contractor	X	
10.5	Should contaminated groundwater be identified along the route, include measures to control/mitigate the potential for impacts to surface water in future stormwater design.	All phases	MoT; Contractor	X	
10.6	Notify MoE of potential migration of contaminants from known or identified Tier 1 off-corridor properties of concern discovered during supplementary investigations or Project-related activities and use information to manage and mitigate contaminated sites issues prior to construction.	Pre-construction	Contractor	X	
10.7	As part of the CEMP, the Contaminated Sites Management, Construction and Hazardous Waste Management and Spill Management and Emergency Response Plans, develop and implement a protocol for identifying and managing contaminated and potentially contaminated materials during the construction phase of the Project.	Pre-construction; construction	Contractor	X	
11.0 Fisheries					

11.1	Ensure that all works and activities associated with the construction, operation and maintenance of the project are conducted in compliance with the Fisheries Act. This includes implementing mitigation measures and best management practices to ensure that the project does not cause any unauthorized harmful alteration, disruption or destruction of fish habitat, that the project does not cause any harm or mortality to fish, and that the project does not cause or result in the deposit of a deleterious substance of any type, including sediment, into a watercourse that is frequented by fish.	All phases	Contractor	X	
11.2	Obtain an authorization under subsection 35(2) of the Fisheries Act for any unavoidable harmful alteration, disruption or destruction of fish habitat prior to relevant construction works or activities.	All phases	Contractor	X	
11.3	Develop and construct fish habitat compensation measures that offset all project impacts to fish habitat. These fish habitat compensation measures will be constructed by the proponent as directed by Fisheries and Oceans Canada and in accordance with any s. 35(2) Fisheries Act authorizations.	Pre-construction; construction	Contractor	X	
11.4	Implement appropriate measures to adequately mitigate the effects of the creation of impervious surfaces on volume of surface runoff, rate of runoff, and water quality. These will meet performance targets established in the Stormwater Management Plan Outline (July, 2007) for the project.	Pre-construction; construction; operation	Contractor	TBD	
11.5	Establish and maintain riparian setback areas from drainage channels and watercourses in accordance with regulatory requirements.	Pre-construction; construction; operation	Contractor	X	
11.6	Take all reasonable measures to prevent substances that may be harmful to fish from entering the aquatic environment at the construction sites in the proximity to fish and aquatic habitat, paying particular attention to discharges of suspended sediments, construction waste, handling of uncured concrete and other deleterious substances.	Construction	Contractor	X	
11.7	Construct bridges for watercourse crosses in the vicinity of Delta Ravines (i.e. Norum, McAdam, Collings, Nelson View and Gunderson Creeks), as shown in plans attached to the Application (Technical Volume 1) and over a minimum 450 m portion of the Fraser Heights Wetlands, using the design and the construction methods outlined in the draft Fraser Heights Wetlands Bridge Preliminary Design Report.	Pre-construction; construction	Contractor	N/A	
11.8	Obtain input from the Musqueam Indian Band and other participating First Nations to identify appropriate measures to mitigate potential project related impacts on the identified interests of the Musqueam Band in relation to fisheries and habitat matters. Identify potential opportunities for mutually agreeable opportunities to assist in advancing the fisheries interests of the Musqueam Indian Band or other participating First Nations.	All phases	MoT, contractor	X	
11.9	Review with the applicable regulatory agencies, including but not limited to DFO and MOE, proposals for compensation habitat, including opportunities for habitat to be constructed in advance of other Project construction (i.e. "habitat banking"), to determine the ratio of habitat types and to which drainage compensation will apply.	Pre-construction	Contractor	X	
11.10	Follow BMPs in the construction of all new ditches and stormwater watercourses.	Construction	Contractor	X	

11.11	Retain maintenance responsibility for compensation sites within the Project limits. For sites constructed in areas outside of the Project limits, establish site-specific agreements for access and maintenance with the relevant stakeholder/landowner.	Operations	Contractor		
12.0 Water Quality					
12.1	Ensure that the construction works and operations for the Project are conducted in compliance with environmental requirements and BMPs in order to avoid impacts to water quality.	All phases	Contractor	X	
12.2	Develop and implement a Surface Water Quality and Sediment Control Plan and provide the plan for review and comment by relevant environmental agencies at least 30 calendar days prior to the start of relevant construction activities.	Pre-construction	Contractor	X	
12.3	Sample water from potentially impacted drinking water wells to assess potential adverse effects to water quality associated with during construction and operation phases of the project. Provide sampling water quality data to the local health authority for review and comment.	Construction; operation	Contractor	TBD	
12.4	The Surface Water Quality and Sediment Control Plan will at a minimum: - Identify requirements for additional water quality monitoring prior to and during construction to ensure preventative and mitigation measures can be taken as appropriate, to avoid impacts to water quality; - Identify potential water quality contaminants of concern generated by construction activities and associated preventative and mitigative measures; - Include a BMP maintenance plan to ensure BMPs implemented are functioning as designed and corrective actions are taken when required; and - Be submitted to the applicable regulatory agencies at least 30 calendar days prior to start of construction activities for review.	Pre-construction; construction	Contractor	X	
13.0 Wildlife and Vegetation					
13.1	Ensure that the design, construction, and operation of the project, avoids where practical and technically feasible, impacts to vegetation and wildlife.	All phases	Contractor	X	
13.2	Prepare and implement a Wildlife and Habitat Management Plan to avoid and, where necessary, mitigate potential impacts to vegetation, wildlife and wildlife habitat. Provide the Plan to relevant regulatory and reviewing agencies for review and comment at least 30 calendar days prior to relevant construction activities beginning. The Wildlife and Habitat Management Plan will include best practices including but not limited to those identified in the Application (Table 7.717, draft Wildlife Mitigation Crossing Plan (April 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)], and Zones of Influence memo (July 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] in order to avoid, and where necessary, mitigate potential effects on vegetation and wildlife. This plan will also identify protocols for the survey and salvage of vegetation and wildlife as appropriate and required.	Pre-construction; construction	Contractor	X	
13.3	Develop and implement mitigation measures to avoid and minimize impacts to wildlife during construction and operation of the project including, but not limited to those measures identified in the Application (September, 2006), draft Wildlife Mitigation Crossing Plan (April 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] and Zones of Influence Assessment memo (July 2007) [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)].	Pre-construction; construction	Contractor	X	

13.4	During the design phase, MoT will finalize its determination of the type and location of sound barriers to be constructed along the perimeter of Burns Bog. For the south-western alignment (adjacent to Crescent Slough), this design will include the construction of a solid sound barrier or a barrier that will provide equivalent mitigation. MoT will ensure on-going consultation with TC, EC, MoE and other IAERC members as appropriate, during design regarding the proposed type and location of sound barriers to be installed around Burns Bog.	Pre-construction	MoT, Contractor	TBD	
13.5	Consult with the MoE and the Canadian Wildlife Service (CWS) of Environment Canada, to identify suitable compensation, including but not limited to that identified in the Wildlife and Habitat Management Plan and Habitat Compensation Plan (February, 2007) [replaced by Habitat Compensation Plan (May 2007)], to address residual effects on vegetation and wildlife as a result of the Project.	Pre-construction	Contractor	X	
13.6	Work with reviewing and regulatory agencies to develop and implement a comprehensive and long term Mitigation Monitoring Plan (MMP) [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan], based on the Vegetation and Wildlife Mitigation Monitoring Strategy (April 2007) [replaced by the SFPR Vegetation and Wildlife Mitigation Monitoring Plan], to monitor the effectiveness of proposed mitigation measures in addressing Project-related effects on vegetation and wildlife, including species at risk. Data collection and monitoring in support of the implementation of the MMP will begin prior to construction and continue for a period of time, to be determined with relevant regulatory agencies, during operation. Information collected in relation to the MMP will be used to guide detailed planning of mitigation, assess the effectiveness of such mitigation, and determine where additional measures may be required. The MMP will include scientifically defensible thresholds or performance measures to facilitate the evaluation of the effectiveness of mitigation.	All phases	Contractor	X	
13.7	Undertake site-specific vegetation surveys in accordance with the regionally supported Protocols for Rare Plants Surveys, to identify the presence and distribution of red- and blue-listed plants species prior to final design and construction. Provide information on the presence and distribution of such plants species to MoE for review and use the information to guide final design and construction to avoid or mitigate impacts to these species.	Pre-construction	Contractor	X	
13.8	Avoid direct impacts to sensitive red and blue listed plant communities where possible and adhere to construction exclusion windows determined by regulators.	Construction	Contractor	X	
13.9	Develop a plan for salvaging plants and seeds, for review by MoE, where impacts to red and blue listed plant species cannot be avoided, for replanting off-alignment.	Pre-construction	Contractor		
13.10	Make all reasonable efforts to avoid impacts to confirmed streambank lupine habitat and confirmed stream bank lupine seed banks in the project corridor, as identified in consultation with the Streambank lupine recovery team, during design construction and operation of the Project. Where impacts to such areas cannot be avoided, work with the Ministry of Environment and the Streambank Lupine Recovery team to identify and carry out appropriate mitigation measures including, but not limited to, the stockpiling of soil containing streambank lupine seeds.	Construction	Contractor	X	

13.11	Undertake pre-construction bird nest surveys and restrict clearing during the breeding season. Pre- construction bird nest surveys will include, but not necessarily be limited to the following: - Conduct pre-construction raptor, heron or any listed species nest and roost tree surveys, consistent with applicable BMPs, to determine presence of active/inactive raptor and heron nests in the corridor and work scheduling with respect to the nest locations and applicable timing restrictions; - Prepare pre-construction bird nest survey protocols should works include clearing of vegetation during the general bird breeding time period as determined by MOE; - Conduct pre-construction bird nest surveys to the satisfaction of the MOE should the Design-Builder intend to seek approval from the MOE for vegetation clearing within the bird breeding time period (defined by MOE) in any year during the Term.	Pre-construction	Contractor	X	
13.12	Consult with MoE on the development and implementation of an Invasive Species Management Plan to address potential effects of the project related to the spread of invasive plant and aquatic wildlife species within the project corridor.	Pre-construction; construction	Contractor	X	
13.13	Include large mammal crossings adjacent to the perimeter of Burns Bog. The final number and location of wildlife crossings will be identified in the Wildlife Mitigation Crossing Plan [replaced by the Wildlife and Wildlife Habitat Mitigation Plan (September 2008)] which will be finalized in consultation with MoE and EC.	Pre-construction	Contractor	X	
13.14	Follow the design criteria outlined in the MOT Manual of Aesthetic Design Practice and the MOT Landscape Policy and Design Standards that form the landscape and site restoration design criteria for the Project.	Pre-construction; construction	Contractor	X	
13.15	Use data collected through the MOT administered Wildlife Accident Reporting System to identify areas of increased wildlife collisions and to monitor direct effects on wildlife.	Operations	Contractor	TBD	
13.16	Identify the location of sensitive wildlife habitats, including but not limited to habitat for species at risk, red and blue listed plant communities and high biodiversity habitats, on detailed design drawings in order to avoid or minimize potential effects to these areas.	Pre-construction	Contractor	X	
14.0 Species at Risk					
14.1	Ensure that all reasonable measures are taken to avoid or lessen effects of the Project on listed wildlife species and their critical habitat and that potential effects that could occur are monitored. All mitigation and monitoring measures will be undertaken in a manner that is consistent with applicable recovery strategy and actions plans.	Pre-construction; construction	MoT, contractor	X	
14.2	Undertake a salvage program for Pacific water shrew from, at a minimum, high and moderate-rated habitat adjacent to the SFPR. Other areas potentially requiring salvage will include lower-rated habitat, connected to higher-rated habitat, and will be determined in consultation with MoE and the PWS Recovery Team.	Pre-construction; construction	Contractor	X	
14.3	Consult with MoE regarding the mitigation of potential effects on Pacific water shrew, and take all practical steps to apply the most recent Pacific water shrew best management practices to address potential effects, including identifying additional opportunities to avoid direct effects to areas, designated as critical habitat by the PWS Recovery Team, during design, construction and operation.	Pre-construction; construction	Contractor	TBD	

14.4	Consult with MOE to develop a mitigation and compensation strategy for Pacific water shrew, where opportunities are available, based on habitat quality and connectivity to surrounding habitat. Undertake sampling program, where required, to determine the presence and distribution of Pacific water shrew to support detailed design of mitigation.	Pre-construction; construction	MoT, Contractor	TBD	
14.5	Detailed design of wildlife crossing mitigation for southern red-backed vole (RBV) will be conducted assuming the presence of RBV in high and moderate rated habitat identified in the EA. Monitoring of the use of wildlife crossing structures will include provisions for assessing the use of such structures by RBV.	Pre-construction	Contractor	TBD	
14.6	Undertake a review of local museum specimens to confirm the distribution of <i>Sorex rowheri</i> within the Lower Fraser Valley. Where possible, use findings to support detailed design of mitigation.	Pre-construction	Contractor	TBD	
14.7	Use information obtained through the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)] to support detailed planning of mitigation to address potential noise, visual and collision effects of the project on barn owl. Undertake long term monitoring of the effectiveness of such mitigation as part of the implementation of the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)].	All phases	Contractor	TBD	
14.8	Use information obtained through the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)] to support detailed planning of mitigation, including pre-construction salvage where appropriate, to address potential effects of the project, including those related to collision and changes in hydrology, on red-legged frog and western toad. Undertake long term monitoring of the effectiveness of such mitigation as part of the implementation of the Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan (February 2008)].	All phases	Contractor	X	
14.9	Consult with MOE to plan and undertake at least one preconstruction, one construction and two operational inventories of at-risk aquatic insects in habitat known to or suspected of supporting such species and potentially affected by the project, including but not necessarily limited to the Fraser Heights Wetland, to confirm the findings of the environmental assessment and to monitor potential impacts of the project on aquatic insects.	All phases	Contractor	X	
14.10	Consult with the Canadian Wildlife Service to develop and implement a Mitigation Monitoring Plan [currently known as the SFPR Vegetation and Wildlife Mitigation Monitoring Plan] to monitor and assess the effectiveness of measures proposed to avoid or mitigate potential effects on Sandhill Crane. The Plan will identify: - species habitat requirements; - existing conditions in the project area; - potential project related effects and mitigation; - core indicators for assessing the effectiveness of mitigation; and - proposed study methodology and data interpretation and reporting protocols.	Pre-construction; construction	MoT	TBD	
15.0 Burns Bog					
15.1	Avoid potentially significant impacts to hydrological and ecological values associated with Burns Bog (i.e. alignment refinements to avoid ecological and hydrological values, development of hydrological mitigation that meet the hydrologic objectives identified).	All phases	MoT, Contractor	X	

15.2	Consult with the MV, CoD, MoE, EC, and the Burns Bog Management Planning Committee (BBMPC) and Scientific Advisory Panel (SAP) to ensure design, construction and operation of the Project complements long term management objectives established for the Burns Bog Ecological Conservation Area.	All phases	Contractor	TBD	
15.3	Consult with the reviewing agencies to finalize construction and post construction monitoring requirements related to Burns Bog including, but not limited to, those identified in the Vegetation and Wildlife Mitigation Monitoring Strategy (April 2007) [replaced by the SFPR Vegetation and Wildlife Mitigation Monitoring Plan]. Monitoring requirements with respect to Burns Bog will include but not be limited to those relating to: air quality, water quality, water levels, red-listed plant communities, and wildlife	Construction, operation	Contractor	X	
15.4	Share environmental data from Burns Bog collected as part of the development of the SFPR project, with agencies responsible for the management of the Burns Bog Ecological Conservancy Area in order to support the implementation of the long term management plan for the Bog.	All phases	Contractor	TBD	
15.5	Design, construct and operate hydrology mitigation infrastructure, to mitigate potential effects of the project on the hydrology of Burns Bog, in a way that meets the following performance objectives: - Site specific solutions – the design, construction and operation of hydrology mitigation will be based on, and take into account, site specific conditions. - Compatibility between highway water management and bog water management – Providing for active water level controls in the Bog that are independent of SFPR-related water management. - Prevention of mineral migration into the Bog. – Where indicated, providing a low permeability barrier between the SFPR highway ditch and the lagg ponds/ditches by: using material to construct the berm that supports appropriate vegetation on the berm and prevents the introduction of mineral material into the Bog; and maintaining hydraulic gradients so that Type 1 bog waters flow toward the highway at all times. - Resilience – Providing a design that is sufficiently robust to maintain and actively manage water levels under average and extreme conditions and if Bog conditions change. - Highway and mitigation construction does not preclude future restoration of Burns Bog – Providing flexibility of design that allows, for example, for future water control structures that allow for raising of water level as part of future bog restoration. - Holistic design – Hydrology mitigation concepts are designed in way that ensure they will be compatible with, and help achieve multiple, mitigation requirements. As the design of hydrology mitigation is advanced, it will be documented in a Hydrology Work Plan [currently known as Hydrology Workplan (Burns Bog)]. This document will be finalized prior to commencement of pre-load activities around Burns Bog.	All phases	MoT	TBD	
15.6	Pre-load activities around Burns Bog, including areas north of the Highway 99 interchange and west of Nordel Way, will not commence until TC (and other decision-making authorities as required) has reviewed and is satisfied with the final Hydrology Work Plan and the status of the hydrology mitigation design.	Pre-construction	MoT	TBD	

15.7	Provide opportunities for the active involvement of agencies responsible for the management of the Burns Bog Ecological Conservancy Area, and the Scientific Advisory Panel (SAP), in the design, construction and operation of project related works adjacent to Burns Bog including but not limited to those proposed as mitigation for potential project related effects.	All phases	MoT, contractor	TBD	
15.8	Consult with MV, CoD, EC and MoE on the development of a water balance model and a drainage model to support the design, construction and operation of hydrology mitigation infrastructure adjacent to Burns Bog and support implementation of the Burns Bog Ecological Conservancy Area Management Plan.	Pre-construction	Contractor	TBD	
15.9	Finalize an Air Quality Management Plan [currently known as SFPR Air Quality Management Plan (Burns Bog Segment)], in consultation with TC, EC and other IAERC members as appropriate, prior to commencing pre-loading activities around Burns Bog. This document will identify all technically and economically feasible mitigation measures to be implemented to prevent generation and transmission of dust during the pre-load and construction phases of the project.	Pre-construction	MoT, contractor		X
15.10	Collect a minimum of 4 months of baseline dust fall monitoring between June and September 2008. Following the collection of this information, the MoT will meet with TC and EC to discuss the baseline monitoring information collected and the approach for continued data collection, prior to the commencement of pre-loading activities around Burns Bog (i.e., north of the Highway 99 interchange and west of Nordel Way).	Pre-construction	MoT		X
15.11	Work co-operatively with the Tsawwassen First Nation to maintain appropriate access for TFN members to Burns Bog to facilitate TFN's harvesting rights pursuant to the Tsawwassen Final Agreement.	All phases	MoT, Contractor	TBD	
15.12	Ensure that the development and operation of Stormwater management infrastructure does not compromise the ability to achieve hydrology mitigation objectives adjacent to Burns Bog.	All phases	MoT, Contractor	TBD	
15.13	Implement the monitoring and follow-up activities identified in the Screening document, for a period of five years after the project has commenced operation, to ensure the effectiveness of mitigation measures related to aerial deposition, hydrology, and Sandhill crane in the vicinity of Burns Bog.	All phases	MoT, Contractor	TBD	

[illegible]

17.0 Heritage					
17.1	Ensure that the design, construction and operation of the proposed project is advanced in a way that avoids, or minimizes potential impacts to heritage buildings	All phases	MoT, contractor	X	
17.2	Consult with the Delta Heritage Advisory Commission and the Surrey Heritage Committee to define heritage interests and work with the Delta Museum and Archive to develop a photo record and inventory of potentially affected heritage houses.	Pre-construction, construction	Contractor	N/A	
17.3	Prior to construction, undertake pre-condition surveys with respect to heritage buildings, as further described in commitment 9.9.	Pre-construction	Contractor	N/A	
17.4	Avoid, where practical and technically feasible, direct impacts to heritage buildings.	All phases	Contractor	NA/	
18.0 Navigable Waters					
18.1	Obtain regulatory approval related to crossings of designated Navigable Waters pursuant to the Navigable Waters Protection Act (NWPA), including but not necessarily limited to, McAdam Creek, Collings Creek, Manson Canal, and Crescent Slough, prior to commencement of works.	Pre-construction, construction	MoT, Contractor	N/A	
19.0 Socio-economic					
19.1	Mitigate potential Project-related visual/lighting impacts through use of screening, fencing and landscaping in consultation with local government. Use dark-sky compliant lighting for the Project.	Pre-construction, construction	Contractor	TBD	
19.2	Manage potential impacts to emergency response services by: - Ensuring emergency response plans (including a Spill Response Management and Emergency Response Plan) are in place during the construction phase of the Project, and updated annually, at a minimum; - Consulting first responders in Traffic Management Plan development; and - Consulting with local fire departments to ensure adequate access.	Pre-construction, construction	Contractor	X	
20.0 Rail					
20.1	Avoid or minimize potential impacts from Project works and activities to rail corridors.	All phases	Contractor	X	
20.2	Notify Transport Canada of project works as required under the <i>Notice of Railway Works Regulations</i> . Notify the public and affected stakeholders in accordance with the <i>Railway Safety Act</i> .	All phases	Contractor	TBD	
20.3	Comply with Canadian transportation standards and regulations as well as the design specifications of the respective railway with regard to vertical and horizontal railroad clearance of new or upgraded infrastructure.	Pre-construction	Contractor	TBD	
20.4	Minimize railroad closures during construction.	Construction	Contractor	X	

APPENDIX 7: WATER QUALITY DATA

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-12	Fortis Culvert DS	02/11/2020	01:00	9.6	4.38	0.35	4.75	0.17	3.0	Sampling done during night shift
WQ-12	Fortis Culvert DS	02/11/2020	03:00	8.4	4.25	0.45	4.80	0.25	5.2	Sampling done during night shift
WQ-2	Silda DitchMS	02/11/2020	13:15	11.6	4.98	0.22	7.20	0.16	7.9	
WQ-3	Silda DitchDS	02/11/2020	13:20	11.7	6.77	0.16	6.91	0.09	12.1	
WQ-4	Fraser RrInlet	02/11/2020	13:00	11.4	8.37	0.26	7.84	0.13	92.8	High tide, coming in
WQ-11	Fortis Culvert US	02/11/2020	13:30	12.4	4.06	0.10	5.08	0.06	3.0	No instream works today
WQ-12	Fortis Culvert DS	02/11/2020	13:35	12.1	5.98	0.11	4.71	0.05	3.5	No instream works today.
WQ-11	Fortis Culvert US	03/11/2020	01:30	11.4	4.53	0.80	4.95	0.07	3.8	Nightshift- dewatering and instream works
WQ-12	Fortis Culvert DS	03/11/2020	01:00	11.5	4.09	0.73	4.85	0.11	5.9	Nightshift- dewatering and instream works
WQ-2	Silda DitchMS	03/11/2020	11:00	10.7	7.00	0.31	6.69	0.15	36.2	Heavy rain while sampling
WQ-12	Fortis Culvert DS	02/11/2020	01:00	9.6	4.38	0.35	4.75	0.17	3.0	Sampling done during night shift
WQ-3	Silda DitchDS	03/11/2020	10:50	10.6	6.99	0.32	6.67	0.16	64.5	Heavy rain while sampling. Sand washouts noticed ~6 m US. Observed turbidity passing through straw waddle into stream from washout direction. Dispatched crew to re- build washout, remove sediment in runoff path, and install ESC measures.
WQ-4	Fraser RrInlet	03/11/2020	10:00	10.6	8.77	0.16	8.00	0.08	95.5	High tide, going out. Heavy rain while sampling.
WQ-11	Fortis Culvert US	03/11/2020	10:30	9.6	5.60	0.10	5.32	0.05	8.5	Heavy rain while sampling. No instream works.
WQ-12	Fortis Culvert DS	03/11/2020	10:30	9.1	8.21	0.10	5.29	0.05	3.4	Heavy rain while sampling. No instream works.
WQ-2	Silda DitchMS	04/11/2020	13:05	10.9	4.23	0.28	6.73	0.12	19.8	Heavy rain during sampling and Fraser River high tide moving out had an impact on the turbidity as water levels were higher than normal.
WQ-3	Silda DitchDS	04/11/2020	13:00	11.1	6.17	0.22	6.82	0.16	25.6	Heavy rain during sampling and Fraser River high tide moving out had an impact on the turbidity as water levels were higher than normal.
WQ-4	Fraser RrInlet	04/11/2020	10:30	11.5	7.85	0.14	7.95	0.07	70.6	High tide, going out. Heavy rain while sampling.
WQ-11	Fortis Culvert US	04/11/2020	11:15	11.2	5.76	0.11	5.22	0.06	4.8	No instream works.
WQ-12	Fortis Culvert DS	04/11/2020	11:15	11.0	7.22	0.10	5.06	0.05	2.6	No instream works.
WQ-2	Silda DitchMS	05/11/2020	11:25	9.6	4.97	0.13	6.79	0.08	5.9	
WQ-3	Silda DitchDS	05/11/2020	11:30	9.5	5.21	0.13	6.92	0.08	7.1	Spillway installed at previous washouts on night shift prior to sampling
WQ-4	Fraser RrInlet	05/11/2020	10:30	9.2	8.49	0.04	7.59	0.04	70.6	High tide
WQ-11	Fortis Culvert US	05/11/2020	10:50	9.2	5.09	0.10	5.46	0.05	2.9	No instream works.
WQ-12	Fortis Culvert DS	05/11/2020	10:45	9.4	4.07	0.10	4.83	0.05	3.2	No instream works.
WQ-2	Silda DitchMS	06/11/2020	10:00	9.4	4.77	0.14	6.65	0.07	6.4	
WQ-3	Silda DitchDS	06/11/2020	10:05	9.2	5.96	0.16	6.68	0.08	6.8	
WQ-4	Fraser RrInlet	06/11/2020	10:20	9.2	8.49	0.04	7.59	0.04	1.8	High tide
WQ-11	Fortis Culvert US	06/11/2020	10:55	9.2	4.87	0.10	5.50	0.05	2.5	No instream works
WQ-12	Fortis Culvert DS	06/11/2020	11:00	9.5	3.59	0.09	4.65	0.04	1.4	No instream works
WQ-2	Silda DitchMS	08/11/2020	13:00	7.1	5.87	0.13	6.59	0.06	5.9	-
WQ-3	Silda DitchDS	08/11/2020	13:05	7.6	4.69	0.15	6.98	0.08	11.6	-
WQ-4	Fraser RrInlet	08/11/2020	12:00	8.9	9.12	0.06	7.94	0.05	92.4	High tide
WQ-11	Fortis Culvert US	08/11/2020	12:10	7.4	4.11	0.10	5.23	0.06	3.7	-
WQ-12	Fortis Culvert DS	08/11/2020	12:15	7.5	3.90	0.10	4.99	0.05	3.6	Sampling location in grass along bank
WQ-2	Silda DitchMS	09/11/2020	12:00	7.4	6.06	0.33	6.58	0.16	8.9	-
WQ-3	Silda DitchDS	09/11/2020	11:55	7.4	9.06	0.34	6.54	0.17	13.4	-

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
WQ-4	Fraser RrInlet	09/11/2020	10:45	8.7	9.54	0.14	7.23	0.07	80.2	Mid-tide, coming in
WQ-11	Fortis Culvert US	09/11/2020	11:15	7.4	5.59	0.10	5.20	0.05	4.1	-
WQ-12	Fortis Culvert DS	09/11/2020	11:10	6.7	5.22	0.09	4.71	0.05	1.8	Sampling location in grass along bank
WQ-2	Silda DitchMS	12/11/2020	12:25	6.9	6.57	0.29	6.42	0.16	12.4	Raining whilesampling
WQ-3	Silda DitchDS	12/11/2020	12:30	7.0	8.73	0.32	6.71	0.16	20.1	Raining whilesampling
WQ-4	Fraser RrInlet	12/11/2020	8:00	7.9	9.66	0.15	7.86	0.06	81.7	Low tide, coming in
WQ-2	Silda DitchMS	13/11/2020	14:55	9.1	7.77	0.16	6.46	0.08	12.2	Ditch runninghigh ~50mm of rain in 24 hr
WQ-3	Silda DitchDS	13/11/2020	15:00	10.3	6.73	0.15	6.41	0.07	14.3	Ditch runninghigh ~50mm of rain in 24 hr
WQ-4	Fraser RrInlet	13/11/2020	13:40	7.7	9.05	0.15	7.18	0.07	47.0	High tide, coming in
WQ-2	Silda DitchMS	16/11/2020	14:25	8.1	7.83	0.07	5.52	0.04	4.3	Ditch runninghigh, raining
WQ-3	Silda DitchDS	16/11/2020	14:30	8.7	6.73	0.08	5.66	0.04	5.2	Ditch runninghigh, raining
WQ-4	Fraser RrInlet	16/11/2020	13:30	8.9	9.14	0.19	7.04	0.10	27.3*	High-tide, coming in, raining
WQ-2	Silda DitchMS	17/11/2020	12:30	7.9	7.13	0.19	5.67	0.09	4.0	Ditch runninghigh, raining
WQ-3	Silda DitchDS	17/11/2020	12:25	8.2	5.84	0.18	5.92	0.09	5.8	Ditch runninghigh, raining
WQ-4	Fraser RrInlet	17/11/2020	12:15	8.4	8.99	0.24	7.26	0.12	43.8*	High-tide, coming in, raining
WQ-2	Silda DitchMS	18/11/2020	15:35	9.2	6.24	0.11	5.99	0.05	9.7	Ditch runninghigh, raining
WQ-3	Silda DitchDS	18/11/2020	15:30	9.5	6.39	0.12	6.23	0.06	14.2	Ditch runninghigh, raining
WQ-4	Fraser RrInlet	18/11/2020	14:00	8.1	8.16	0.15	6.91	0.07	23.3*	High tide, coming in, raining
WQ-2	Silda DitchMS	19/11/2020	14:40	9.0	6.03	0.11	5.95	0.06	9.2	-
WQ-3	Silda DitchDS	19/11/2020	14:35	9.6	4.51	0.12	6.17	0.06	6.9	-
WQ-4	Fraser RrInlet	19/11/2020	14:00	8.9	8.49	0.12	6.76	0.06	17.5*	High tidegoing out
WQ-2	Silda DitchMS	20/11/2020	11:45	8.6	6.27	0.11	6.01	0.06	9.7	-
WQ-3	Silda DitchDS	20/11/2020	11:50	8.4	5.12	0.11	6.12	0.05	8.7	-
WQ-4	Fraser RrInlet	20/11/2020	11:00	8.8	9.01	0.13	7.06	0.06	30.1*	Mid-tide, coming in
WQ-2	Silda DitchMS	23/11/2020	16:00	8.2	7.16	0.25	6.35	0.12	12.1	
WQ-3	Silda DitchDS	23/11/2020	16:05	8.7	5.38	0.24	6.28	0.12	8.3	
WQ-4	Fraser Rr Inlet	23/11/2020	12:30	8.4	4.03	0.13	7.05	0.07	20.4	High tide
WQ-3	West Ditch (Area I3)	23/11/2020	15:50	10.2	4.53	0.12	6.14	0.06	6.7	
WQ-2	Silda DitchMS	24/11/2020	13:20	8.9	3.95	0.24	6.33	0.12	11.0	
WQ-3	Silda DitchDS	24/11/2020	13:15	9.4	4.25	0.22	6.58	0.11	10.0	
WQ-4	Fraser RrInlet	24/11/2020	11:50	8.7	6.33	0.14	7.17	0.07	13.8	High tide coming in
WQ-2	Silda DitchMS	25/11/2020	9:00	8.7	4.12	0.24	6.29	0.13	7.6	
WQ-3	Silda DitchDS	25/11/2020	9:05	9.1	5.06	0.23	6.48	0.12	8.2	
WQ-4	Fraser RrInlet	25/11/2020	8:30	8.6	8.97	0.14	7.03	0.07	14.9	Mid-tide, coming in
WQ-2	Silda DitchMS	26/11/2020	14:40	10.1	9.24	0.23	6.13	0.11	8.3	Raining whilesampling
WQ-3	Silda DitchDS	26/11/2020	14:35	11.1	4.69	0.23	6.29	0.11	7.3	Raining whilesampling
WQ-4	Fraser River Inlet	26/11/2020	13:45	10.9	8.35	0.13	6.93	0.07	11.2	High tide coming in. Raining whilesampling.
WQ-2	Silda DitchMS	27/11/2020	7:45	8.8	4.59	0.24	6.24	0.12	7.6	
WQ-3	Silda DitchDS	27/11/2020	7:50	9.0	5.19	0.23	6.51	0.12	8.4	
WQ-4	Fraser RrInlet	27/11/2020	8:00	8.6	9.06	0.14	7.09	0.07	19.7	Mid-tide going out
WQ-2	Silda DitchMS	01/12/2020	9:45	8.8	4.59	0.24	6.24	0.12	7.6	
WQ-3	Silda DitchDS	01/12/2020	9:50	9.0	5.19	0.23	6.51	0.12	8.4	
WQ-4	Fraser RrInlet	01/12/2020	9:00	8.6	9.06	0.14	7.09	0.07	19.7	High tide coming in
WQ-2	Silda DitchMS	03/12/2020	11:15	8.6	4.61	0.23	6.16	0.12	7.1	
WQ-3	Silda Ditch DS	03/12/2020	11:20	8.5	5.94	0.24	6.43	0.12	7.9	
WQ-4	Fraser RrInlet	03/12/2020	10:45	8.7	8.77	0.13	7.39	0.07	22.5	Mid tide going out
WQ-2	Silda DitchMS	08/12/2020	14:40	10.1	9.24	0.23	6.13	0.11	8.3	-
WQ-3	Silda DitchDS	08/12/2020	14:35	11.1	4.69	0.23	6.29	0.11	7.3	-
WQ-4	Fraser RrInlet	08/12/2020	13:45	10.9	8.35	0.13	6.93	0.07	11.2	Mid tide going out
WQ-2	Silda DitchMS	10/12/2020	12:30	10.4	8.71	0.24	6.19	0.12	9.1	-
WQ-3	Silda DitchDS	10/12/2020	12:35	11.3	5.43	0.23	6.33	0.11	6.9	-
WQ-4	Fraser RrInlet	10/12/2020	13:15	11.2	9.12	0.14	6.98	0.07	13.9	High tide
WQ-2	Silda DitchMS	15/12/2020	15:10	9.4	6.69	0.30	6.41	0.15	10.9	
WQ-3	Silda DitchDS	15/12/2020	15:15	11.1	4.84	0.31	6.35	0.16	22.2*	Likely due to rain/wind with potentialto disturb sediment & turbid river athigh tide mixing at Siteinterface. No work occurring between mid-& DS locations.
WQ-4	Fraser RrInlet	15/12/2020	15:30	8.1	5.67	0.17	7.30	0.08	37.1*	High tide
WQ-2	Silda DitchMS	17/12/2020	13:45	10.2	7.12	0.20	6.34	0.10	11.1	
WQ-3	Silda DitchDS	17/12/2020	13:40	11.0	7.01	0.19	6.37	0.09	10.40	
WQ-4	Fraser RrInlet	17/12/2020	14:00	7.3	13.81	0.13	7.25	0.06	47.4*	Mid tide, inflow
WQ-2	Silda DitchMS	22/12/2020	12:40	6.9	12.28	0.15	6.31	0.08	3.8	
WQ-3	Silda Ditch	22/12/2020	12:35	7.2	6.92	0.26	6.44	0.13	7.77	

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
	DS									
WQ-4	Fraser Rrinlet	22/12/2020	12:10	7.3	8.34	0.13	6.50	0.06	11.2	High tide
2	Silda ditchMS	05/01/2021	10:45	7.0	9.63	0.12	6.77	0.06	8.7	
3	Silda ditch DS	05/01/2021	10:30	7.5	7.70	0.16	6.64	0.08	10.30	
4	Fraser River	05/01/2021	10:20	7.6	7.82	0.36	7.01	0.18	37.4	Mid tide coming in
-	S4 pump intake	06/01/2021	7:30	8.29	-	-	-	-	-	-
-	S4 pump discharge after passing through channel	06/01/2021	7:35		10.6	-	-	-	-	-
-	Cougar Creek US of effluent	06/01/2021	8:30		2.36	-	-	-	-	-
-	Cougar Creek DS of effluent	06/01/2021	9:00		3.60	-	-	-	-	-
2	Silda ditchMS	07/01/2021	13:35	7.2	4.99	0.14	6.93	0.07	42.2	High tide
3	Silda ditch DS	07/01/2021	13:30	7.9	5.82	0.18	6.71	0.09	7.94	
4	Fraser River	07/01/2021	13:00	7.6	8.71	0.34	6.86	0.17	9.21	High tide
2	Silda ditchMS	2021/01/12	9:00	7.2	3.67	0.12	6.58	0.06	10.4	
3	Silda ditch DS	2021/01/12	9:05	7.8	4.83	0.16	6.79	0.08	7.94	
4	Fraser River	2021/01/12	8:30	7.6	7.21	0.32	7.08	0.16	36.3	Mid tide going out
13	Cougar Creek US	2021/01/13	13:30	-	-	-	-	-	3.64	No pumping from S4 for past 48 hours
14	Cougar Creek DS	2021/01/13	13:40	-	-	-	-	-	2.04	no pumping from S4 for past 48 hours
N/A	96 Street US	17-JAN-21	20:00	9.2	6.25	0.19	6.23	0.25	2.8	Dewatering activities
N/A	96th Street DS	17-JAN-21	20:15	9.5	6.20	0.10	6.67	0.36	3.0	Dewatering activities
2	Silda DitchMS	18-JAN-21	10:00	6.4	6.67	0.37	6.50	0.18	8.36	-
3	Silda DitchDS	18-JAN-21	10:00	6.6	8.22	0.18	6.74	0.09	13.10	-
4	Fraser River	18-JAN-21	10:30	5.4	11.03	0.13	7.19	0.06	9.58	Mid-tide going out
5	96 Street US	18-JAN-21	11:15	6.4	7.12	0.03	4.51	0.02	1.30	No dewatering activities
6	96th Street DS	18-JAN-21	11:00	6.4	12.42	0.05	5.24	0.02	1.54	No dewatering activities
13	Cougar Creek US	18-JAN-21	10:15	6.8	9.64	0.20	6.98	0.10	1.34	No dewatering activities
14	Cougar Creek DS	18-JAN-21	10:20	6.9	9.24	0.21	7.02	0.11	2.24	No dewatering activities
TEMP	A	18-JAN-21	11:30	6.4	8.39	0.02	4.29	0.01	0.77	-
TEMP	B	18-JAN-21	11:20	6.8	4.85	0.21	5.57	0.10	6.02	-
TEMP	C	18-JAN-21	11:50	7.0	6.40	0.11	5.64	0.06	2.14	-
TEMP	D	18-JAN-21	11:55	6.7	9.27	0.10	5.72	0.05	5.66	-
TEMP	E	18-JAN-21	12:00	7.3	10.60	0.10	5.52	0.05	2.29	-
TEMP	F	18-JAN-21	12:30	7.6	3.36	0.14	5.72	0.07	3.38	-
TEMP	G	18-JAN-21	12:40	7.1	5.97	0.37	5.75	0.18	9.89	-
TEMP	H	18-JAN-21	13:00	9.2	6.36	0.19	5.81	0.09	7.83	-
TEMP	I	18-JAN-21	12:55	8.2	8.28	0.08	5.37	0.04	1.14	-
TEMP	J	18-JAN-21	13:30	8.0	6.43	0.06	5.34	0.03	1.14	-
TEMP	K	18-JAN-21	13:20	7.4	5.24	0.11	5.69	0.05	4.20	-
TEMP	L	18-JAN-21	13:40	7.9	3.72	0.04	3.94	0.02	1.74	-
TEMP	M	18-JAN-21	13:35	9.6	4.80	0.20	5.64	0.10	1.90	-
TEMP	N	18-JAN-21	14:00	8.5	5.63	0.09	5.31	0.05	1.02	-
N/A	96 Street US	18-JAN-21	23:30	4.8	6.66	0.85	6.63	0.15	3.6	Dewatering activities
N/A	96th Street DS	18-JAN-21	23:45	4.2	5.59	0.59	6.69	0.16	4.3	Dewatering activities
N/A	96 Street US	19-JAN-21	23:45	5.1	6.00	0.23	6.60	0.45	4.6	Dewatering activities
N/A	96th Street DS	19-JAN-21	23:15	5.3	5.23	0.22	6.45	0.46	7.3	Dewatering activities
N/A	Fraser River Inlet	20-JAN-21	10:20	6.9	5.29	0.13	6.91	0.06	8.78	-
N/A	Cougar Creek DS	20-JAN-21	10:20	8.8	6.93	0.22	6.64	0.11	1.38	No dewatering activities
N/A	Cougar Creek US	20-JAN-21	10:15	9.4	6.62	0.22	6.43	0.11	1.67	No dewatering activities
N/A	96th Street DS	20-JAN-21	13:30	7.3	0.48	0.04	5.50	0.02	0.96	-
N/A	96 Street US	20-JAN-21	13:45	7.4	0.24	0.04	5.12	0.02	0.93	-
N/A	Silda DitchMS	20-JAN-21	12:35	9.0	2.70	0.42	6.31	0.21	7.87	-
N/A	Silda Ditch DS	20-JAN-21	12:40	7.6	2.95	0.26	6.50	0.13	9.26	-
N/A	96 Street US	21-JAN-21	00:30	5.9	7.01	0.75	6.03	0.35	1.8	Dewatering activities
N/A	96 Street DS	21-JAN-21	00:55	4.7	6.25	0.34	6.17	0.46	1.3	Dewatering activities
N/A	96 Street US	21-JAN-21	21:30	3.8	3.45	0.95	5.67	0.32	1.90	Dewatering activities

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
N/A	96 Street DS	21-JAN-21	22:00	3.6	4.05	0.72	0.04	0.35	1.25	Dewateringactivities
NA	96 StreetUS	24-Jan-21	23:30	2.3	3.00	0.23	6.33	0.75	1.8	Dewateringactivities
NA	96 StreetDS	24-Jan-21	23:55	2.5	2.45	0.19	6.37	0.86	2.3	Dewateringactivities
NA	Silda DitchDS	25-Jan-21	11:05	6.8	6.01	0.51	6.39	0.26	9.27	
NA	Silda DitchMS	25-Jan-21	11:00	6.8	8.21	0.52	6.45	0.26	9.75	
NA	Fraser River Inlet	25-Jan-21	11:40	6.1	13.93	1.17	6.87	0.59	4.98	Mid-tide going out
NA	96 StreetDS	25-Jan-21	12:00	5.5	9.21	0.06	5.65	0.03	0.78	
NA	96 StreetUS	25-Jan-21	12:15	5.0	5.91	0.05	5.11	0.03	0.99	
NA	Cougar CkDS	25-Jan-21	10:35	7.5	13.25	0.43	6.56	0.21	4.46	
NA	Cougar CkUS	25-Jan-21	10:40	8.2	14.02	0.41	6.35	0.21	4.02	
NA	96 StreetUS	26-Jan-21	13:30	2.1	1.11	0.33	6.63	0.88	0.9	Dewateringactivities
NA	96 StreetDS	26-Jan-21	13:55	2.1	1.98	0.32	6.39	0.79	1.3	Dewateringactivities
NA	96 StreetDS	27-Jan-21	00:25	2.5	7.31	0.17	5.95	0.63	2.90	Dewateringactivities
NA	96 StreetUS	27-Jan-21	00:45	2.3	6.51	0.25	5.74	0.53	1.95	Dewateringactivities
NA	96 StreetDS	28-Jan-21	02:00	4.1	4.44	0.22	6.13	0.33	3.90	Dewateringactivities
NA	96 StreetUS	28-Jan-21	02:35	4.3	7.90	0.14	6.00	0.48	2.10	Dewateringactivities
NA	Silda Ditch DS	29-Jan-21	11:05	8.4	8.38	0.24	6.27	0.12	7.56	
NA	Silda DitchMS	29-Jan-21	11:10	7.7	3.28	0.50	6.30	0.25	15.60	
NA	Fraser Rrinlet	29-Jan-21	11:30	6.0	7.91	0.66	6.71	0.33	8.37	
NA	96 St DS	29-Jan-21	11:45	6.0	0.90	0.05	5.65	0.03	1.32	Dewateringactivities
NA	96 St DS	29-Jan-21	21:00	6.4	2.41	0.04	5.19	0.02	1.12	Dewateringactivities
NA	96 StreetDS	31-Jan-21	21:00	3.5	0.33	0.91	5.78	0.23	1.89	Dewateringactivities
NA	96 StreetUS	31-Jan-21	21:45	3.2	1.99	0.67	5.39	0.42	1.45	Dewateringactivities
NA	96 StreetUS	1-Feb-21	23:00	3.0	0.11	0.75	5.89	0.08	2.90	Dewateringactivities
NA	96 StreetDS	1-Feb-21	23:30	3.0	0.89	0.95	5.79	0.06	1.90	Dewateringactivities
NA	96 StreetUS	2-Feb-21	15:17	7.5	-	0.06	6.05	0.03	1.79	DO meter notrecording
NA	96 StreetDS	2-Feb-21	15:34	8	-	0.07	6.07	0.03	3.84	DO meter notrecording
NA	Silda DitchUS	3-Feb-21	12:20	8.9	3.37	0.3	6.49	0.15	9.72	Baseline
NA	Silda DitchDS	3-Feb-21	11:30	7.6	4.9	0.29	6.32	0.15	11.20	Baseline
NA	96 StreetUS	3-Feb-21	2:45	6.0	0.55	0.09	6.04	0.44	2.10	Dewateringactivities
NA	96 StreetDS	3-Feb-21	3:15	5.9	0.47	0.03	6.02	0.56	2.16	Dewateringactivities
NA	96 StreetUS	3-Feb-21	4:41	5.5	0.52	0.45	5.98	0.57	1.65	Isolated ditchtie in to 96 St ditch
NA	96 StreetDS	3-Feb-21	3:45	5.3	0.59	0.34	5.90	0.78	2.35	Isolated ditchtie in to 96 Street ditch
NA	L1300 US	3-Feb-21	22:00	6.2	1.15	0.14	6.37	0.14	25.35	Upcoming ditch infilling activities baseline data stagnantwater
NA	L1300 DS	3-Feb-21	22:30	6.2	1.28	0.59	6.25	0.59	28.00	Upcoming ditch infilling activities baseline data stagnant water
NA	Cougar Crk US	4-Feb-21	11:12	8.2	1.76	0.20	5.96	0.10	1.88	Institute sampling
NA	Cougar Crk DS	4-Feb-21	11:26	8.3	0.81	0.20	5.94	0.10	1.92	Institute sampling
NA	L2100 Road sideDitch US	2021-02-08	1:00	7.4	0.12	0.30	6.30	0.18	21.0	Installing road platesand access pad
NA	L2100 Road sideDitch DS	2021-02-08	12:45	7.4	0.13	0.34	6.25	0.20	25.23	Installing road platesand access pad
NA	L2100 Road sideDitch US	2021-02-08	2:00	6.9	0.10	0.28	6.60	0.17	21.0	Installing road platesand access pad - completed
NA	L2100 Road sideDitch DS	2021-02-08	2:15	6.5	0.12	0.29	6.75	0.25	23.5	Installing road platesand accesspad - completed
NA	L2100 Road sideDitch US	2021-02-09	21:00	6.8	0.12	0.45	6.78	0.18	21.45	Installing sand accesspad for culvert installation
NA	L2100 Road sideDitch DS	2021-02-09	21:15	6.9	0.34	0.25	6.34	.23	25.10	Installing sand accesspad for culvert installation
NA	L2100 Road sideDitch US	2021-02-09	23:00	2.4	0.11	0.35	6.30	0.20	21.39	Installing sand accesspad for culvert installation
NA	L2100 Road sideDitch DS	2021-02-09	23:15	2.5	0.10	0.27	6.44	0.34	22.90	Installing sand accesspad for culvert installation
NA	Silda DitchDS	2021-02-12	10:40	4.4	NA	0.35	6.79	0.18	9.04	-
NA	Silda DitchMS	2021-02-12	10:55	3.3	NA	0.47	6.73	0.23	8.91	-
NA	Fraser River Inlet	2021-02-12	9:40	4.2	NA	1.64	6.72	0.82	1.19	-
NA	96 th StreetDS	2021-02-12	8:30	3.8	NA	0.06	6.25	0.03	2.75	-
NA	Silda DitchUS	2021-02-12	8:45	0.7	NA	0.03	4.70	0.01	2.18	-

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	L100 DS	2021-02-12	8:50	0.3	NA	0.98	6.21	0.52	59.8	Broke ice to get sample. No works occurring. Resampling will occur when temperatures increase.
NA	L100 US	2021-02-12	9:00	2.1	NA	1.62	6.44	0.81	79.6	Broke ice to get sample. No works occurring. Resampling will occur when temperatures increase.
NA	Cougar Creek US	2021-02-12	13:33	4.9	NA	0.25	6.94	0.12	3.79	New gravel fill was placed on the trail next to the creek
NA	Cougar Creek 10 m	2021-02-12	13:40	3.0	NA	0.25	7.26	0.13	1.92	Discharge
NA	Cougar Creek 90 m	2021-02-12	13:50	2.7	NA	0.25	7.30	0.12	1.61	New gravel fill was placed on the trail next to the creek
NA	E04 wet area discharge L2100 (Pre work baseline)	2021-02-16	20:30	2.6	-	0.56	6.23	0.19	18.9	Baseline discharge area data
NA	E04 wet area discharge L2100	2021-02-16	21:45	2.4	-	0.45	6.45	0.18	22.3	Discharge to vegetation
NA	E04 wet area discharge L2100	2021-02-17	02:00	0.5	-	0.42	6.33	0.25	24.8	Discharge to sediment bag
NA	E04 wet area discharge L2100	2021-02-17	3:30	0.3	-	0.14	6.34	0.17	23.7	Discharge to sediment bag
NA	E04 wet area discharge L2100 (Pre work baseline)	2021-02-17	20:30	5.9	-	0.91	6.25	0.37	25.5	Discharge to sediment bag - low water levels at submersible pump
NA	E04 wet area discharge L2100	2021-02-18	02:30	2.4	-	0.14	6.34	0.17	23.7	Discharge to sediment bag - low water levels at submersible pump
NA	E04 wet area discharge L2100 (Pre work baseline)	2021-02-18	21:00	3.8	-	0.23	6.67	0.22	22.8	Baseline discharge area data
NA	E04 wet area discharge L2100	2021-02-19	03:00	3.2	-	0.45	6.53	0.36	23.7	Discharge to sediment bag - low water levels at submersible pump
NA	Cougar Creek - US	2021-02-19	09:50	8.4	-	0.49	6.38	0.24	3.60	Baseline
NA	Cougar Creek - 10m	2021-02-19	10:00	7.1	-	0.49	6.46	0.24	3.49	Baseline
NA	Cougar Creek - 90m	2021-02-19	10:10	6.2	-	0.48	6.60	0.24	3.20	Baseline
NA	Fraser River Inlet	2021-02-18	9:25	6.6	-	0.46	6.43	0.23	6.0	Baseline
NA	96 St DS	2021-02-18	9:35	3.7	-	0.04	6.25	0.03	1.75	Baseline
NA	96 St US	2021-02-18	9:45	3.2	-	0.05	6.04	0.02	1.00	Baseline
NA	Silda ditch upstream	2021-02-18	10:30	3.8	-	0.79	6.73	0.40	7.9	Baseline
NA	Silda ditch downstream	2021-02-18	10:45	5.6	-	0.81	6.5	0.41	11.90	Baseline
NA	E04 wet area discharge L2100	2021-02-21	21:15	8.78	-	0.56	6.62	0.34	11.8	Discharge to sediment bag - large pool of stagnant water from weekend rainfall
NA	E04 wet area discharge L2100	2021-02-21	02:30	7.23	-	0.45	6.53	0.36	12.7	Discharge to sediment bag - large pool of stagnant water from weekend rainfall
NA	E04 wet area discharge L2100	2021-02-23	21:45	7.22	-	0.45	6.23	0.23	10.9	Discharge to sediment bag - limited dewatering due to low levels of groundwater in trench
NA	E04 wet area discharge L2100	2021-02-23	01:30	7.05	-	0.67	6.11	0.39	11.2	Discharge to sediment bag - limited dewatering due to low levels of groundwater in trench
NA	E04 wet area discharge L2100	2021-02-23	22:30	7.05	-	0.67	6.11	0.39	11.2	Discharge to sediment bag - limited dewatering due to low levels of groundwater in trench

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	E04 wet area discharge L2100	2021-02-24	02:45	5.25	-	0.33	7.03	0.43	10.3	Discharge to sediment bag – limited dewatering due to low levels of groundwater in trench
NA	Fraser River Inlet	2021-02-24	9:25	7.0	-	0.24	6.79	0.12	13.80	-
NA	96 StreetDS	2021-02-24	12:30	6.7	-	0.05	4.73	0.03	2.20	-
NA	96 StreetUS	2021-02-24	12:45	6.3	-	0.04	4.70	0.02	0.75	-
NA	Silda DitchUS	2021-02-24	14:10	8.9	-	0.78	6.68	0.41	12.00	-
NA	Silda DitchDS	2021-02-24	14:20	8.4	-	0.71	6.52	0.35	13.30	-
NA	L100 DS	2021-02-24	13:10	7.0	-	0.83	6.13	0.42	48.70	-
NA	L100 US	2021-02-24	13:15	7.8	-	0.82	6.15	0.45	42.30	-
NA	Cougar Creek US	2021-02-24	14:40	7.8	-	0.32	7.16	0.16	1.37	-
NA	Cougar Creek 10m	2021-02-24	14:48	7.1	-	0.32	7.12	0.16	1.24	-
NA	Cougar Creek 90m	2021-02-24	14:54	7.4	-	0.32	7.12	0.16	1.20	-
NA	E04 wet area discharge L2100	2021-02-24	20:15	5.80	-	0.10	7.13	0.13	10.9	Discharge to sediment bag – limited dewatering due to low levels of groundwater in trench
NA	E04 wet area discharge L2100	2021-02-25	02:45	5.25	-	0.27	7.01	0.3	12.2	Discharge to sediment bag – limited dewatering due to low levels of groundwater in trench
NA	Fraser River Inlet	2021-03-02	09:25	7.8	-	3.43	6.68	1.71	16.40	Low Tide -2:27 High Tide -21:02
NA	96 StreetDS	2021-03-02	12:30	7.2	-	0.06	6.11	0.03	2.83	Low Tide -2:27 High Tide -21:02
NA	96 StreetUS	2021-03-02	12:45	7.8	-	0.06	5.27	0.03	1.29	Low Tide -2:27 High Tide -21:02
NA	L100 DS	2021-03-02	13:10	7.9	-	0.95	6.15	0.48	82.0	High turbidity recorded in ditch, water stagnant. Water quality tested in 96 th St Ditch and no issues observed. ESC measures being added to ditch.
NA	L100 US	2021-03-02	13:15	8.2	-	0.95	6.23	0.49	102.3	High turbidity recorded in ditch, water stagnant. Water quality tested in 96 th St Ditch and no issues observed. ESC measures being added to ditch.
NA	Cougar Creek US	2021-03-04	14:40	8.4	-	0.29	6.40	0.15	1.52	-
NA	Cougar Creek 10 m	2021-03-04	14:48	7.9	-	0.30	6.62	0.30	1.85	-
NA	Cougar Creek 90 m	2021-03-04	14:54	7.8	-	0.30	6.69	0.15	1.90	-
NA	Silda DitchUS	2021-03-04	14:10	7.7	-	0.23	6.18	0.14	6.43	Low tide -15:56 High tide -22:57
NA	Silda DitchDS	2021-03-04	14:20	7.7	-	0.18	6.14	0.09	5.64	Low tide -15:56 High tide -22:57
NA	Fraser River Inlet	2021-03-10	10:30	7.7	-	4.00	6.81	2.00	27.70	Low tide -10:30 High tide -14:57
NA	96 StreetDS	2021-03-10	10:40	8.0	-	0.12	6.28	0.06	4.70	-
NA	96 StreetUS	2021-03-10	10:50	7.9	-	0.04	5.47	0.02	0.98	-
NA	Silda DitchUS	2021-03-10	11:45	7.8	-	0.67	6.64	0.33	12.30	Low tide -10:30 High tide -14:57
NA	Silda DitchDS	2021-03-10	11:35	7.5	-	0.67	6.73	0.33	12.30	Low tide -10:30 High tide -14:57
NA	L100 DS	2021-03-10	11:35	7.5	-	0.94	6.30	0.47	99.30	High turbidity recorded in ditch, water stagnant. Water quality tested in 96 th St Ditch and no issues observed. ESC measures being added to ditch. Sediment fence added along the side of pre-load.
NA	L100 US	2021-03-10	11:10	8.0	-	1.06	6.31	0.53	80.20	-

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	Cougar Creek US	2021-03-10	11:20	10.1	-	0.26	6.61	0.13	2.38	-
NA	Cougar Creek 10 m	2021-03-10	13:45	8.3	-	0.26	6.86	0.14	2.07	-
NA	Cougar Creek 90 m	2021-03-10	13:50	8.9	-	0.26	6.97	0.13	1.65	-
NA	L	2021-03-10	14:05	8.9	-	-	-	-	-	-
NA	M	2021-03-10	14:30	-	-	0.45	6.05	0.20	-	-
NA	N	2021-03-10	14:35	-	-	-	-	-	-	-
NA	K	2021-03-10	14:40	-	-	3.86	7.48	1.98	-	-
NA	K	2021-03-10	14:45	-	-	0.11	6.02	0.06	-	-
NA	J	2021-03-10	14:50	-	-	0.12	5.82	0.06	-	-
NA	Fraser River Inlet	2021-03-17	10:30	6.1	11.62	0.90	7.20	0.45	11.50	High tide -8:57 Low tide -16:41
NA	96 StreetDS	2021-03-17	10:45	7.2	7.15	0.11	6.20	0.05	4.78	-
NA	96 StreetUS	2021-03-17	11:05	6.7	4.88	0.03	4.50	0.02	4.51	-
NA	Silda DitchUS	2021-03-17	9:50	6.5	11.40	0.32	7.21	0.16	12.50	High tide -8:57 Low tide -16:41
NA	Silda DitchDS	2021-03-17	10:10	7.7	4.80	0.72	6.44	0.36	22.00	High tide -8:57 Low tide -16:41
NA	L100 DS	2021-03-17	11:10	6.2	3.68	0.84	6.15	0.42	72.30	Stagnant ditch. ESC measures have been installed including sediment fence and straw wattles. Check dam in place at the inlet to 96 th ditch. No water quality issues observed in 96 th ditch.
NA	L100 US	2021-03-17	11:40	6.8	4.23	0.88	6.53	0.51	103.50	Stagnant ditch. ESC measures have been installed including sediment fence and straw wattles. Check dam in place at the inlet to 96 th ditch. No water quality issues observed in 96 th ditch.
NA	Cougar Creek US	2021-03-17	13:45	9.3	9.36	0.30	6.89	0.15	3.19	-
NA	Cougar Creek 10 m	2021-03-17	13:50	8.8	9.71	0.28	7.05	0.14	3.68	-
NA	Cougar Creek 90 m	2021-03-17	14:05	8.8	9.68	0.28	7.04	0.14	3.70	-
NA	Fraser River Inlet	2021-03-25	9:10	6.1	11.62	0.90	7.20	0.45	11.50	Low tide -10:02 High tide -16:27
NA	96 StreetDS	2021-03-25	9:40	8.1	6.13	0.25	6.31	0.12	5.24	
NA	96 StreetUS	2021-03-25	9:55	8.1	5.37	0.06	5.08	0.03	1.39	
NA	Silda DitchUS	2021-03-25	8:40	8.4	5.64	0.33	6.38	0.17	24.50	Low tide -10:02 High tide -16:27
NA	Silda DitchDS	2021-03-25	8:50	8.9	5.83	0.28	6.78	0.14	21.30	Low tide -10:02 High tide -16:27
NA	L100 DS	2021-03-25	10:00	7.9	4.89	0.76	6.36	0.38	71.30	
NA	L100 US	2021-03-25	10:15	8.3	5.44	0.78	6.53	0.36	88.60	
NA	Cougar Creek US	2021-03-25	14:00	10.7	9.43	0.20	7.00	0.10	8.52	
NA	Cougar Creek 10 m	2021-03-25	14:10	10.4	9.35	0.20	6.84	0.10	7.66	
NA	Cougar Creek 90 m	2021-03-25	14:20	10.4	9.68	0.20	6.88	0.10	7.23	
NA	Ditch dewatering for culvert 105 DS	30-Mar-21	9:30	8.3	5.83	0.13	6.94	0.32	322	Dewatering to the base of preload.
NA	Ditch dewatering for culvert 105 US	30-Mar-21	9:35	8.8	5.32	0.08	6.88	0.12	64.3	Dewatering to a storm water drain east of the ditch.

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	Ditch dewatering for culvert 105 DS	31-Mar-21	10:00	10.4		0.68	6.33	0.33	384	
NA	Ditch dewatering for culvert 105 US	31-Mar-21	10:25	10.3		0.45	6.27	0.24	3.10	
NA	Fraser River Inlet	31-Mar-21	10:15	9.4	10.58	0.17	7.03	0.08	30.50	
NA	96 Street DS	31-Mar-21	10:30	8.7	6.19	0.06	5.70	0.03	8.50	
NA	96 Street US	31-Mar-21	10:45	8.6	6.05	0.03	4.28	0.02	1.14	
NA	L100 DS	31-Mar-21	10:50	7.8	5.07	1.08	6.07	0.54	87.50	
NA	L100 US	31-Mar-21	11:05	8.5	5.83	1.88	6.13	0.75	103.2	
NA	Ditch dewatering for culvert 105 DS	01-April - 21	10:00	12.1	6.15	0.56	6.24	0.28	173	Dewatering to the base of preload.
NA	Ditch dewatering for Culvert 105 US	01-April - 21	10:25	10.3	6.23	0.45	6.27	0.24	116	Dewatering to a storm water drain east of the ditch
NA	Silda ditch US	1-Apr-21	9:15	7.7	4.87	0.17	6.18	0.09	5.64	High tide -7:25 Low tide -14:22
NA	Silda ditch DS	1-Apr-21	9:30	7.7	4.37	0.23	6.14	0.14	6.83	High tide -7:25 Low tide -14:22
NA	Cougar Creek - US	1-Apr-21	11:00	8.5	9.38	0.26	6.45	0.14	2.65	
NA	Cougar Creek - 10m	1-Apr-21	11:10	8.0	9.36	0.26	6.60	0.13	2.19	
NA	Cougar Creek - 90m	1-Apr-21	11:20	8.1	9.37	0.25	6.52	0.14	2.68	
NA	J - Off Site	8-Apr-21	1:00AM	7.9	4.76	0.13	5.92	0.07	4.37	
NA	K - Off Site	8-Apr-21	1:15AM	7.8	4.74	0.14	5.74	0.07	37.1	Stagnant water, no flows.
NA	L - Off Site	8-Apr-21	1:40AM	5.0	4.11	0.3	6.01	0.15	20.6	Stagnant water, no flows.
NA	M - Off Site	8-Apr-21	2:20AM	5.8	4.32	0.3	6.28	0.1	40.3	Stagnant water, no flows.
NA	N - Off Site	8-Apr-21	3:20AM	6.3	4.58	0.18	5.78	0.11	20.3	Stagnant water, no flows.
NA	K - On Site	8-Apr-21	1:20AM	7.8	9.6	4.24	7.64	2.12	3.03	Clear, transparent water
NA	O - On Site	8-Apr-21	2:35AM	5.8	6.33	0.28	7.08	0.07	16.4	Stagnant water, no flows.
NA	P - On Site	8-Apr-21	2:50AM	6.8	6.3	0.33	6.68	0.35	60.3	Turbid water with light brown color
NA	Fraser River Inlet	9-Apr-21	12:50	7.5	9.68	0.65	6.29	0.33	20.10	High tide -5:23 Low tide -11:48
NA	96 Street DS	9-Apr-21	1:05	9.0	8.44	0.07	6.01	0.03	4.43	
NA	96 Street US	9-Apr-21	1:20	8.8	6.38	0.08	6.03	0.03	2.21	
NA	Silda ditch US	9-Apr-21	1:50	8.7	7.37	0.77	6.31	0.38	28.50	High tide -5:23 Low tide -11:48
NA	Silda ditch DS	9-Apr-21	2:10	8.7	6.22	0.83	6.28	0.41	35.40	High tide -5:23 Low tide -11:48
NA	L100 DS	9-Apr-21	1:35	8.5	5.33	1.06	6.90	0.53	84.60	High tide -5:23 Low tide -11:48
NA	L100 US	9-Apr-21	1:45	8.3	4.21	3.21	6.77	0.72	82.10	High tide -5:23 Low tide -11:48
NA	Cougar Creek - US	9-Apr-21	2:45	8.7	9.74	0.36	7.93	0.16	3.84	
NA	Cougar Creek - 10m	9-Apr-21	2:55	8.6	9.92	0.36	7.88	0.16	1.97	
NA	Cougar Creek - 90m	9-Apr-21	3:05	8.6	9.86	0.36	7.88	0.16	1.60	
NA	Fraser River Inlet	15-Apr-21	14:18	11.7	9.36	0.88	7.36	0.44	67.30	High tide -7:33 Low tide -14:44
NA	96 Street DS	16-Apr-21	14:30	15.5	4.27	0.07	6.20	0.04	4.63	High tide -7:50 Low tide -15:16
NA	96 Street US	16-Apr-21	14:40	15.2	3.61	0.04	5.41	0.02	1.41	High tide -7:50 Low tide -15:16
NA	Silda ditch US	15-Apr-21	20:05	17.2	1.83	0.67	6.95	0.33	30.60	Low tide -14:44 High tide -21:49
NA	Silda ditch DS	15-Apr-21	19:50	16.2	2.02	0.71	6.34	0.35	67.30	Low tide -14:44 High tide -21:49 See second sentence in Section 4.5
NA	L100 DS	16-Apr-21	14:45	20.0	5.22	0.95	6.91	0.47	41.50	See first line in Section 4.5
NA	L100 US	16-Apr-21	14:55	21.3	6.14	1.37	6.92	0.51	71.40	See first line in Section 4.5

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	Cougar Creek - US	15-Apr-21	18:15	14.3	8.89	0.23	6.44	0.12	3.39	
NA	Cougar Ck - 10 m	15-Apr-21	18:25	14.0	8.28	0.24	6.60	0.12	3.46	
NA	Cougar Ck - 90 m	15-Apr-21	18:35	14.0	8.26	0.23	6.60	0.12	3.44	
NA	Fraser River Inlet	22-Apr-21	15:00	13.3	9.93	0.14	7.16	0.07	206.00	High tide -13:36 Low tide -20:16
NA	Silda ditch upstream	22-Apr-21	16:10	20.2	6.81	0.64	6.71	0.39	44.30	High tide -13:36 Low tide -20:16
NA	Silda ditchDS	22-Apr-21	16:00	20.9	7.36	0.72	6.76	0.36	57.90	High tide -13:36 Low tide - 20:16- HighNTU reading dueto Fraser River high NTU during high tide
NA	Cougar Creek - US	22-Apr-21	16:25	16.3	8.17	0.24	7.07	0.12	7.69	
NA	Cougar Creek - 10m	22-Apr-21	16:35	16.2	7.60	0.25	7.05	0.12	3.63	
NA	Cougar Creek - 90m	22-Apr-21	16:45	16.3	7.82	0.25	7.04	0.12	4.31	
NA	J - Off Site	22-Apr-21	6:30PM	18.1	2.8	0.26	5.79	0.13	14.3	Water contains orange tannins andfloating organics
NA	K - Off Site	22-Apr-21	6:40PM	18.1	3.67	0.1	6.13	0.19	16.8	Water contains orange tannins and floating organics
NA	L - Off Site	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The area isdry therefore no sample was collected
NA	M - Off Site	22-Apr-21	7:15PM	15.3	3.71	0.34	6.51	0.18	28.3	Water contains orange tannins andfine floating organics- mostly stagnant water
NA	N - Off Site	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The area isdry therefore no sample was collected
NA	K - On Site	22-Apr-21	6:50PM	18	5.74	5.58	7.48	2.8	5.62	Clear transparentwater
NA	O - On Site	22-Apr-21	6:55 PM	16.4	4.51	0.13	7.4	0.11	5.22	Transparent with yellow tannins
NA	P - On Site	22-Apr-21	7:30 PM	16.6	4.66	0.36	6.48	0.41	1.6	Turbid water with light brown tannins-Stagnant water- not flowing
NA	Fraser River Inlet	28-Apr-2021	14:40	10.3	10.28	0.93	7.06	0.68	29.20	Please refer to Table 5.1. Low tide moving out
NA	Silda ditchUS	28-Apr-2021	18:40	12.8	4.17	0.30	6.37	0.44	37.20	Please refer to Table 5.1. High tide moving in
NA	Silda ditchDS	28-Apr-2021	18:20	12.4	4.33	0.16	6.33	0.35	41.40	Please refer to Table 5.1. High tide moving in
NA	Cougar Creek - US	28-Apr-2021	18:55	10.8	9.76	0.22	6.93	0.18	5.13	
NA	Cougar Creek - 10m	28-Apr-2021	19:10	10.8	9.89	0.28	6.85	0.16	5.44	
NA	Cougar Creek - 90m	28-Apr-2021	19:20	10.6	9.25	0.28	6.84	0.16	3.38	
NA	L550 Ditch - US	5 May	7:49	13.5	1.88	0.34	6.50	0.44	17.5	The water has brown tannins but is mostly clear with small sized floating organics. No instream activities that will influence water quality
NA	L550 Ditch - DS	5 May	8:00	11.9	1.75	0.27	6.80	0.10	22.3	The water has brown tannins but is mostly clear with small sized floating organics. No instream activities that will influence water quality
NA	L550 Ditch - US	5 May	14:35	15.0	0.68	0.36	6.71	0.42	21.1	The water has brown tannins but is mostly clear with small sized floating organics. No instream activities that will influence water quality
NA	L2100 Ditch DS	6 May	07:30	14.7	4.18	0.80	6.50	0.40	31.2	DS baseline data- prior to road plate installation- Pre work baseline data.
NA	L2100 DS	6 May	12:00	17.0	4.18	0.77	7.19	0.39	11.2	Water has brown tannins and is transparent
NA	L2100 DS	6 May	16:30	15.2	8.92	0.76	7.28	0.38	10.9	Water has brown tannins and is transparent
NA	Silda Ditch Upper-US	6 May	11:30	14.7	1.27	0.71	6.33	0.35	32.40	Water is brown and turbid

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	Silda ditch US	6 May	11:45	13.6	2.68	0.73	6.58	0.37	31.20	Water is brown and turbid
NA	Silda ditch DS	6 May	11:55	13.8	7.53	0.72	7.01	0.35	20.80	Water is brownish grey and opaque
NA	Fraser River Inlet	7 May	7:16	9.1	10.81	0.13	7.73	0.06	111.00	
NA	Silda Ditch Upper-US	7 May	7:01	11.3	0.58	0.70	6.36	0.35	47.80	Water is brown and turbid
NA	Silda Ditch US	7 May	6:35	10.4	2.18	0.75	6.53	0.37	33.90	Water is brown and turbid
NA	Silda Ditch DS	7 May	6:10	8.8	10.07	0.16	7.54	0.08	74.50	Water is brownish grey and opaque. High NTU contributed to Fraser river water influx during high tide
NA	Cougar Ck – US	7 May	8:07	10.9	6.99	0.16	6.84	0.08	8.04	
NA	Cougar Ck – 10m	7 May	8:15	11.0	6.39	0.16	6.99	0.08	7.71	
NA	Cougar Ck – 90m	7 May	8:40	11.0	7.30	0.16	7.01	0.08	7.76	
NA	J – Off Site	6 May	9:35	12	2.65	0.15	6	0.08	7.97	Water contains orange tannins and floating organics
NA	K – Off Site	6 May	9:45	11.9	1.09	0.21	5.98	0.1	3.61	Water contains orange tannins and floating organics
NA	L – Off Site	6 May	10:05	11.2	2.83	0.86	6.63	0.43	13	Water is slightly grey with fine floating organics. Water was stagnant during monitoring
NA	M – Off Site	6 May	10:15	10.3	1.35	0.21	6.04	0.1	17.4	Water contains orange tannins and fine floating organics
NA	N – Off Site	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The area is dry therefore no sample was collected
NA	K – On Site	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The area is dry therefore no sample was collected
NA	O – On Site	6 May	10:00	12.5	2.91	0.2	6.32	0.1	4.21	Transparent with yellow tannins
NA	P – On Site	6 May	10:30	11.6	1.03	0.42	6.68	0.53	20.8	Turbid water with light brown tannins. Water was stagnant during monitoring
NA	Fraser River Inlet	13-May-21	17:40	17.2	9.10	0.25	7.00	0.13	67.80	Water is Brown/ grey and turbid
NA	Silda ditch Upper-US	13-May-21	15:40	16.5	8.94	0.78	6.46	0.39	68.2	Water is brown and turbid – Slow-flowing almost stagnant
NA	Silda ditch US	13-May-21	16:50	15.4	10.20	1.01	6.76	0.50	55.00	Water is brown and turbid
NA	Silda ditch DS	13-May-21	16:15	17.4	9.53	0.74	7.09	0.38	45.1	Water is brown and turbid
NA	Fraser River Inlet	18-May-21	17:35	14.6	8.60	0.29	5.78	0.14	68.80	Water is grey and turbid
NA	Silda Ditch Upper-US	18-May-21	18:40	16.7	9.10	0.70	6.60	0.35	69.70	Water is brown and opaque, stagnant
NA	Silda Ditch US	18-May-21	18:20	16.0	9.54	0.78	6.43	0.39	44.80	Water is brown and opaque
NA	Silda Ditch DS	18-May-21	18:10	17.4	7.30	0.62	6.77	0.31	29.70	Water is brown and opaque
NA	Nordel Ditches -east of Nordel Way	26-May-21	09:58	-	-	-	-	-	31.7	Additional monitoring done to determine high NTU readings in Silda ditch Upstream- Not associated with construction activities
NA	Silda ditch US	26-May-21	10:03	-	-	-	-	-	61.6	Additional monitoring done to determine high NTU readings in Silda ditch Upstream- Large pond area at the culvert inlet. Mostly stagnant water.
NA	Nordel weigh bridge ditches	26-May-21	10:10	-	-	-	-	-	17.7	Additional monitoring done to determine high NTU readings in Silda ditch Upstream. Stagnant water
NA	Nordel Ditch Tributary (Planet Ice)	26-May-21	10:36	-	-	-	-	-	29.1	Additional monitoring done to determine high NTU readings in Silda ditch Upstream. Mostly slow flowing water with high occurrences of ferrous oxide residue.
NA	Fraser River Inlet	28-May-21	12:30	17.3	10.42	0.88	7.15	0.56	108.00	Water is grey and turbid
NA	Silda ditch Upper-US	28-May-21	13:25	20.5	7.88	0.45	6.20	0.22	92.90	Water is brownish grey and turbid

Site Code	Site	Date	Time	Water Temp (°C)	DO (mg/L)	Conductivity (mS/cm)	pH	TDS (ppt)	Turbidity (NTU)	Comments
NA	Silda ditch US	28-May-21	13:15	22.0	4.74	0.53	6.21	0.27	102.00	Water is brownish grey and turbid
NA	Silda ditch DS	28-May-21	13:00	20.2	7.34	0.42	6.03	0.21	92.90	Water is brownish grey and turbid

* Tidal Chart data collected from: <https://www.tides.gc.ca/eng/station?sid=7654>

06 May 2021 Tidal Chart			07 May 2021 Tidal Chart			13 May 2021 Tidal Chart		18 May 2021 Tidal Chart		28 May 2021 Tidal Chart	
Time	Height		Time	Height		Time	Height	Time	Height	Time	Height
PDT	(m)	(ft)	PDT	(m)	(ft)	PDT	(m)	PDT	(m)	PDT	(m)
04:11	2.9	9.5	04:45	2.8	9.2	01:09	2.1	00:50	2.9	02:21	2.4
11:21	1.6	5.2	11:56	1.4	4.6	05:34	2.8	06:38	2.3	07:01	3.1
15:36	2.1	6.9	16:46	2.2	7.2	13:59	1.1	09:31	2.4	15:52	1.0
22:14	1.2	3.9	23:03	1.4	4.6	20:34	3.0	18:11	1.0	21:57	3.2
04:11	2.9	9.5	NA			NA		NA		NA	

APPENDIX 8: TOOLBOX TRAINING RECORDS

Daily Toolbox Talk

Crew: Wire Wall

Shift (circle): Day Night

Project Name: Highway 91/17 Upgrade

Superintendent: Shawn Parrell

Project #: 6218101 L2100

Foreman: Rob Rains

Proposed Scope of Work (Work Activities to be completed for the day)

- install wire wall baskets
- layout geo-grid 1x, 13x, 25x
- backfill lifts of sand
- load trucks, spot trucks
- Extend hand railing

First aid attendant

Rob

Muster Points

Foreman's truck

Work location

L2100

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

<p>WORK AT HEIGHTS</p>   <p>Fall Pro/ Dropped objects</p>	<p>HEAVY EQUIPMENT</p>  <p>Congestion/ Line of fire/ Overhead hazards</p>	<p>MOTOR VEHICLE</p>  <p>Spotters/ Traffic/ Line of Fire</p>
<p>MATERIAL HANDLING</p>   <p>Manual/ Equipment</p>	<p>CONFINED SPACE</p>  <p>Excavations/ Manholes/ culverts</p>	<p>HOISTING & LIFTING</p>  <p>Rigging/ Cranes/ suspended loads</p>
<p>GROUND DISTURBANCE & EXCAVATING</p>  <p>Underground Utilities/ Cave-in</p>	<p>WORKING ON LIVE SYSTEMS</p>  <p>Electrical/ Water/ Gas/ Equipment</p>	<p>HAZARDOUS ENERGY CONTROL</p>   <p>Stored Energy</p>

Critical Tasks	Hazards	Controls
1. backfill lifts of sand (heavy equipment)	- working around equipment	- Eye contact with operators
2. install baskets, geo-grid (Material handling)	- heavy lifting	- watch
3. excavate (ground disturbance)	- repetitive motion	- bend knees when lifting
	- digging around utilities	- stretch and flex before starting
Additional Hazards in the work area		- use spotters when digging / hot hole utilities

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

Birds:

- The breeding season for birds on this site is March 15 – August 15
- **No moving/removing nests or eggs. Contact the Environmental team if a nest or eggs are found**
- The Migratory Bird Convention Act protects migrating birds, their nests, eggs and habitat from destruction
- **REPORT ANY BIRDS STARTING A NEST BEFORE** they lay eggs (Bird nests cannot be disturbed after eggs have been laid and a 30m no entry buffer zone will be created to protect the nest)
- Some examples of birds at risk that you may encounter on this site could include Great blue herons, Falcons, Swans and Common Nighthawks

Bats:

- Active Bat Season is from April 15th to October 1st
- Species at Risk Bats are specially protected, and a buffer is required around a potential maternity roost.
- Half the bat species in BC are considered **species at risk** (vulnerable or threatened of becoming extirpated). With their important role in controlling nocturnal insect populations and cycling nutrients from wetlands to forests, bats are a critical part of our ecosystems.

Takeaways:

- Talk to your Superintendent and the Environmental Department prior to cutting any trees or vegetation
- Take extra precautions when working around trees
- Report any sightings or nesting activity
- If you see birds "hanging around" your work area or you see any nests/nesting activity in your work area, report it to Environment Department.
- Report any bird/bat sightings






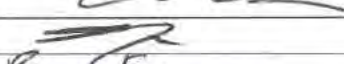
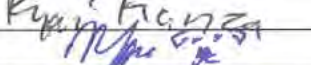
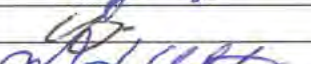



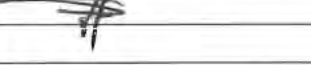

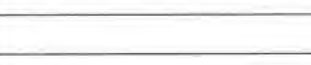



Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
---------------------------	--------------------------------------	--------------------------

Toolbox Sign On		
#	Print Name	Signature
1	Vance Laddell	
2	Ben Warner	
3	Scott Kelle	
4	Kayla d'Hagen	
5	Cam Jovanis	
6	Shawn Parrell	
7	Ryan Fianza	
8	Nate Earl ruffuff	
9	Cam Dombroski	
10	Mark Alton	
11	Jason Ponzetti	
12	R. Pines	
13	Daniela Htz	
14	Rodrigo Cortina	
15	Jose Siv	
16		
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24		

Additional Notes

Daily Toolbox Talk

Date: May 5th, 2021

Foreman's Initials: _____

Daily Debrief


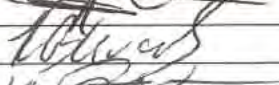
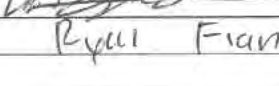
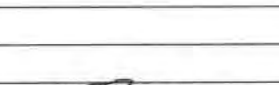
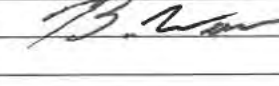
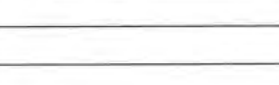
Foreman:

Time:

1.	All work areas are cleaned up?	Yes	No
2.	All work sites/equipment secured?	Yes	No
3.	All lockout/tagouts removed?	Yes	No
4.	All permits closed out?	Yes	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	No
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	No

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	RODRIGO CORTINA	
2	JOSE SIV	
3	YAN EVANS	
4	ANITA PEREZ	
5	RYAN FRANCA	
6	Calum	
7	Rob Mo	
8	Cameron	
9	Ben Warner	
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Daily Toolbox Talk

Crew: _____

Shift (circle): **Day** / Night

Project Name: Highway 91/17 Upgrade _____

Superintendent: Andrew K.

Project #: 6218101 _____

Foreman: Jerad Maki

Proposed Scope of Work (Work Activities to be completed for the day)

geo grid,
lock blocks
strapping

First aid attendant

Jerad

Muster Points

red board

Work location

SEG 3

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects MATERIAL HANDLING  Manual/ Equipment GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards CONFINED SPACE  Excavations/ Manholes/ culverts WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire HOISTING & LIFTING  Rigging/ Cranes/ suspended loads HAZARDOUS ENERGY CONTROL  Stored Energy
---	--	---

Critical Tasks	Hazards	Controls
1. material handling	heavy awkward lift crush points cut, laceration	mechanical advantage stay out of the line of fire
2. Heavy Equipment	Blind spots, swing zone human/machine interaction	spotters, signal person 50:10 rule 2020-2 Pre inspections
3. Hoisting & Lifting	rigging failure uncontrolled loads over head loads	Pre inspect rigging Tag line Never go under suspended load
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

Birds:

- The breeding season for birds on this site is March 15 – August 15
- **No moving/removing nests or eggs. Contact the Environmental team if a nest or eggs are found**
- The Migratory Bird Convention Act protects migrating birds, their nests, eggs and habitat from destruction
- **REPORT ANY BIRDS STARTING A NEST BEFORE** they lay eggs (Bird nests cannot be disturbed after eggs have been laid and a 30m no entry buffer zone will be created to protect the nest)
- Some examples of birds at risk that you may encounter on this site could include Great blue herons, Falcons, Swans and Common Nighthawks

Bats:

- Active Bat Season is from April 15th to October 1st
- Species at Risk Bats are specially protected, and a buffer is required around a potential maternity roost.
- Half the bat species in BC are considered **species at risk** (vulnerable or threatened of becoming extirpated). With their important role in controlling nocturnal insect populations and cycling nutrients from wetlands to forests, bats are a critical part of our ecosystems.

Takeaways:

- Talk to your Superintendent and the Environmental Department prior to cutting any trees or vegetation
- Take extra precautions when working around trees
- Report any sightings or nesting activity
- If you see birds "hanging around" your work area or you see any nests/nesting activity in your work area, report it to Environment Department.
- Report any bird/bat sightings



Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
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Toolbox Sign On		
#	Print Name	Signature
1	Jared	
2	John	
3	Trevor	
4	Mark	
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Additional Notes

Daily Toolbox Talk

Date: May 5th, 2021

Foreman's Initials: _____

Daily Debrief

Foreman:

MAKIS

Time:

1650

1.	All work areas are cleaned up?	Yes	No
2.	All work sites/equipment secured?	Yes	No
3.	All lockout/tagouts removed?	Yes	No
4.	All permits closed out?	Yes	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	No
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	No

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	Jessal M	
2	John J	
3	Trevor	
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Daily Toolbox Talk

Crew: CHRIS - NIBEL

Shift (circle): **Day** / Night

Project Name: Highway 91/17 Upgrade

Superintendent: JUSTIN KREYMER

Project #: 6218101

Foreman: CHRIS THOMPSON

Proposed Scope of Work (Work Activities to be completed for the day)

- INSTALL LAWN BASIN
- STRIP PRE-LOAD + HAUL OUT
- LOCK BLOCKS STOCK PILE
- STRIP BANKS.




First aid attendant NIBEL LUAS

Muster Points RED SIGN.

Work location RIVER RD.

Emergency number 911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects MATERIAL HANDLING  Manual/ Equipment GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards CONFINED SPACE  Excavations/ Manholes/ culverts WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire HOISTING & LIFTING  Rigging/ Cranes/ suspended loads HAZARDOUS ENERGY CONTROL  Stored Energy
---	--	---

Critical Tasks	Hazards	Controls
1. STRIP PRE-LOAD + HAUL OUT	- MOBILE TRUCKS + HEAVY EQUIPMENT - UNDERGROUND UTILITIES	- SPOTTERS. - PROPER DPE
2. INSTALL LAWN BASIN - SLOPING - ROUND ABOUT	- SOFT SLOPES - PINCH POINTS.	- JHA'S. - FLAGGERS.
3.	- CONTRACTORS	
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

Birds:

- The breeding season for birds on this site is March 15 – August 15
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Bats:

- Active Bat Season is from April 15th to October 1st
- Species at Risk Bats are specially protected, and a buffer is required around a potential maternity roost.
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- Report any sightings or nesting activity
- If you see birds "hanging around" your work area or you see any nests/nesting activity in your work area, report it to Environment Department.
- Report any bird/bat sightings



Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		X
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		X
Travelled outside the country?		X
Been in close contact with a person who recently travelled outside the country?		X
Been contacted by a health authority regarding close contact with a confirmed case?		X

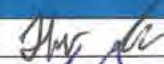




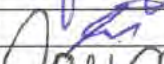
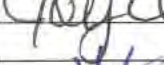

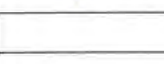
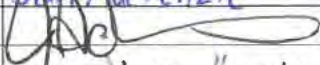


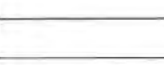
If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On

#	Print Name	Signature
1	Thomas Clayton	
2	Victor Adams	
3	Sam Adams	
4	DeLense #1	
5	Jeremy Jones	
6	Don Drury	
7	Paqueline Scherck	
8	STEFAN	
9	Don Mackenzie	
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11	Jimmy Howells	
12	Justin Keaney	
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Additional Notes

Daily Toolbox Talk

Crew: Harlon's

Shift (circle): Day / Night

Project Name: Highway 91/17 Upgrade

Superintendent: Jack M

Project #: 6218101

Foreman: Harlon Fair

Proposed Scope of Work (Work Activities to be completed for the day)

- Move concrete barriers, so Delta Agg. Rock Trucks can cross 91C

First aid attendant Terence J

Muster Points Crew Truck

Work location 91C

Emergency number 911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING  Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL  Stored Energy

Critical Tasks	Hazards	Controls
1. Moving barriers Place Traffic Barrels	Traffic Moving Equipment	lane Closed Flag person
2.	Blind spots Lifting / swing Radius	use spotter stand clear
3.	pinch / crush points poor lighting	Keep finger's feet away
Additional Hazards in the work area		check all Rigging light Tower

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

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- Report any bird/bat sightings



Daily Toolbox Talk

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In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<u>2</u>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<u>1</u>
Travelled outside the country?		<u>1</u>
Been in close contact with a person who recently travelled outside the country?		<u>1</u>
Been contacted by a health authority regarding close contact with a confirmed case?		<u>1</u>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES <u>1</u>	NO
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Toolbox Sign On		
#	Print Name	Signature
1	<u>Harlon Fair</u>	<u>HF</u>
2	<u>Terence Jeffers - Harris</u>	
3	<u>Joey Plamondon</u>	
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Additional Notes

Daily Toolbox Talk

Date: May 4th, 2021

Foreman's Initials: HF

Daily Debrief

Foreman: Harlon Fair

Time: 8:00

1.	All work areas are cleaned up?	Yes	No
2.	All work sites/equipment secured?	Yes	No
3.	All lockout/tagouts removed?	N/A	No
4.	All permits closed out?	N/A	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	No
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	No

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	Harlon Fair	
2	Joey Plamondon	
3	Terence Jeffers-Harris	
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Daily Toolbox Talk

Crew: Harlon's

Shift (circle): Day / **Night**

Project Name: Highway 91/17 Upgrade

Superintendent: Jack M

Project #: 6218101

Foreman: Harlon F

Proposed Scope of Work (Work Activities to be completed for the day)

place Sand - Geogrid
Were building wire wall Temp
compaction test

First aid attendant

Rick C

Muster Points

Red Sign info

Work location

91 N Exit 8

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING  Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL  Stored Energy

Critical Tasks	Hazards	Controls
1. loading Sand, Dumping/placing	Moving Equipment Blind Spots	stay Clear Equip. use spotter
2. handling Geogrid	poor lighting Heavy lifts	light Tower 2 man lift
3.	Loud Noise pinch Points	use proper gloves ear plugs
Additional Hazards in the work area	Cuts/ scrapers	Hand Signals Radio's

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

Birds:

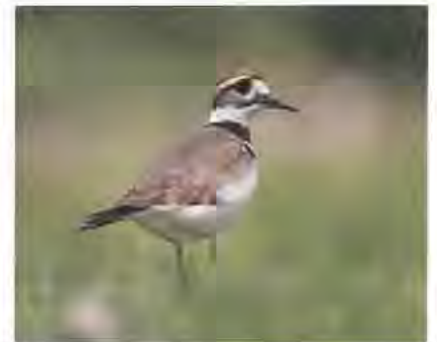
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Takeaways:

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- Take extra precautions when working around trees
- Report any sightings or nesting activity
- If you see birds "hanging around" your work area or you see any nests/nesting activity in your work area, report it to Environment Department.
- Report any bird/bat sightings



Daily Toolbox Talk

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In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES ☒

NO

Toolbox Sign On

#	Print Name	Signature
1	Harlon Fair	HE
2	Jack Wilson	Jack
3	Rick Carabatta	Rick
4	Jerena Butler	Jerena
5	C. Barry Gray	C. Barry Gray
6	J. McKenna	J. McKenna
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Additional Notes

Daily Toolbox Talk

Daily Debrief

Foreman: Harlon F

Time: 4:00

1.	All work areas are cleaned up?	<u>Yes</u>	No
2.	All work sites/equipment secured?	<u>Yes</u>	No
3.	All lockout/tagouts removed?	<u>N/A</u>	No
4.	All permits closed out?	<u>N/A</u>	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	<u>No</u>
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	<u>No</u>

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	<u>Harlon Fair</u>	<u>HF</u>
2	<u>Jack Willison</u>	
3	<u>Rick Cordella</u>	
4	<u>Jerome Butler</u>	
5	<u>Gary Patterson</u>	
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Daily Toolbox Talk

Crew: _____

Shift (circle): **Day** / Night

Project Name: Highway 91/17 Upgrade _____

Superintendent: RF

Project #: 6218101 _____

Foreman: TB

Proposed Scope of Work (Work Activities to be completed for the day)

RE GRADE SLOPE ALONG DITCH @ R06

First aid attendant

Muster Points

BULLETIN BOARD

Work location

17+910

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects MATERIAL HANDLING  Manual/ Equipment GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards CONFINED SPACE  Excavations/ Manholes/ culverts WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire HOISTING & LIFTING  Rigging/ Cranes/ suspended loads HAZARDOUS ENERGY CONTROL  Stored Energy
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Critical Tasks	Hazards	Controls
1. <u>RE GRADE SLOPE</u>	<u>BLIND SPOTS</u> <u>SLOPE STABILITY</u> <u>SEDIMENT CONTROL</u>	<u>STAY CLEAR</u> <u>COMMUNICATION</u> <u>STAY BACK FROM DITCH</u>
2.	<u>SLIP/ TRIPS</u> <u>CRUSH POINTS</u>	<u>CHOOSE PATH</u> <u>EYE CONTACT</u>
3.		
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

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Daily Toolbox Talk

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In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		✓
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		✓
Travelled outside the country?		✓
Been in close contact with a person who recently travelled outside the country?		✓
Been contacted by a health authority regarding close contact with a confirmed case?		✓

If anyone answered YES to *any of the questions above*, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On		
#	Print Name	Signature
1	T Bell	
2	C Kirby	
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Additional Notes

Daily Toolbox Talk

Date: May 5th, 2021

Foreman's Initials: _____

Daily Debrief

Foreman:

T BULL

Time:

3:00

1.	All work areas are cleaned up?	<u>Yes</u>	No
2.	All work sites/equipment secured?	<u>Yes</u>	No
3.	All lockout/tagouts removed?	Yes	No
4.	All permits closed out?	Yes	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	<u>No</u>
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	<u>No</u>

Comments or Employee Concerns:

End of Shift Sign Off		
#	Print Name	Signature
1	<i>T BULL</i>	
2	<i>C KIRBY</i>	
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Daily Toolbox Talk

Crew: Bel Kody's Crew

Shift (circle): Day / Night

Project Name: Highway 91/17 Upgrade

Superintendent: Jack

Project #: 6218101

Foreman: Kody

Proposed Scope of Work (Work Activities to be completed for the day)

- Remove Barriers
- Remove asphalt, Excavate for Cage and Pipe
- Place rock on ~~cloth~~ Cloth wrap and level coarse
- Install pipe Backfill and reinsert Barriers and asphalt.

First aid attendant Ryan / Jim

Muster Points FM truck

Work location L2200

Emergency number 911 / 778-813-8056

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING  Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL  Stored Energy

Critical Tasks	Hazards	Controls
1. - Remove Barriers and asphalt Excavate down to grade.	- Mobile Equipment - Low visibility - Lane Closure + Time limit.	- Live contact with p's stay out of blind spots and swing radius Wear head lamps H's Vis, set up light towers machine lights.
2. - Install shoring finish exc. filter cloth then clear level coarse then Layer in Pipe	- 6.0m Deep Excavation - Arch points - Rigging Heavy lifts.	- Lane closure is 10:15 - 4:45 (Max) 4-way + Beacon's, Buffer truck - Wear Colours Watch Body position
3. Install Pipe and Start Backfilling In lifts. Cold Patch then Barriers	- Slips or trips wet clay. - or clutter around holes.	- Inspect all rigging tags Detected Items check Det's + Tags. Know the weight of your lift
Additional Hazards in the work area	- Dumping trucks - Busy work area	- Keep site clear of tripping hazards - Share excavations have access + egress - Do not Rush around

Daily Toolbox Talk

Weather

Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
A few showers	Mainly clear	A mix of sun and clouds	A mix of sun and clouds
			
6°	2°	4°	8°

Daily Notices/ Alerts

Birds and Bats

Birds:

- The breeding season for birds on this site is March 15 – August 15
- **No moving/removing nests or eggs. Contact the Environmental team if a nest or eggs are found**
- The Migratory Bird Convention Act protects migrating birds, their nests, eggs and habitat from destruction
- **REPORT ANY BIRDS STARTING A NEST BEFORE** they lay eggs (Bird nests cannot be disturbed after eggs have been laid and a 30m no entry buffer zone will be created to protect the nest)
- Some examples of birds at risk that you may encounter on this site could include Great blue herons, Falcons, Swans and Common Nighthawks

Bats:

- Active Bat Season is from April 15th to October 1st
- Species at Risk Bats are specially protected, and a buffer is required around a potential maternity roost.
- Half the bat species in BC are considered **species at risk** (vulnerable or threatened of becoming extirpated). With their important role in controlling nocturnal insect populations and cycling nutrients from wetlands to forests, bats are a critical part of our ecosystems.

Takeaways:

- Talk to your Superintendent and the Environmental Department prior to cutting any trees or vegetation
- Take extra precautions when working around trees
- Report any sightings or nesting activity
- If you see birds "hanging around" your work area or you see any nests/nesting activity in your work area, report it to Environment Department.
- Report any bird/bat sightings



Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

☒ YES

☐ NO

Toolbox Sign On

#	Print Name	Signature
1	Katy M.	
2	Shawn	
3	Ken	
4	Kyle	
5	Ryan	
6	Brandon	
7	Jim	
8	Jack	
9	Danny H.	
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Additional Notes

Daily Toolbox Talk

Weather

Thu Evening	Thu Overnight	Fri Morning	Fri Afternoon
Sunny	Mainly clear	Sunny	Sunny
			
16°	9°	13°	20°

Daily Notices/ Alerts

BIRDS AND BATS

Birds:

- The breeding season for birds on this site is March 15 – August 15
- **No moving/removing nests or eggs. Contact the Environmental team if a nest or eggs are found**
- The Migratory Bird Convention Act protects migrating birds, their nests, eggs and habitat from destruction
- **REPORT ANY BIRDS STARTING A NEST BEFORE** they lay eggs (Bird nests cannot be disturbed after eggs have been laid and a 30m no entry buffer zone will be created to protect the nest)
- Some examples of birds at risk that you may encounter on this site could include Great blue herons, Falcons, Swans and Common Nighthawks

Bats:

- Active Bat Season is from April 15th to October 1st
- Species at Risk Bats are specially protected, and a buffer is required around a potential maternity roost.
- Half the bat species in BC are considered **species at risk** (vulnerable or threatened of becoming extirpated). With their important role in controlling nocturnal insect populations and cycling nutrients from wetlands to forests, bats are a critical part of our ecosystems.

Takeaways:

- Talk to your Superintendent and the Environmental Department prior to cutting any trees or vegetation
- Take extra precautions when working around trees
- Report any sightings or nesting activity
- If you see birds "hanging around" your work area or you see any nests/nesting activity in your work area, report it to Environment Department.
- Report any bird/bat sightings



Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		
Travelled outside the country?		
Been in close contact with a person who recently travelled outside the country?		
Been contacted by a health authority regarding close contact with a confirmed case?		

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES	NO
	<input checked="" type="radio"/>	<input type="radio"/>

Toolbox Sign On		
#	Print Name	Signature
1	Joyce Adams	
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		✓
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		✓
Travelled outside the country?		x
Been in close contact with a person who recently travelled outside the country?		✓
Been contacted by a health authority regarding close contact with a confirmed case?		✓

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On

#	Print Name	Signature
1	Salam Abdul	
2	Lucas Grace	
3	Chris Thomas	
4	Bill Bergman	
5	Jerry Xing	
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Additional Notes

Daily Toolbox Talk

Crew: _____

Shift (circle): **Day** / Night

Project Name: Highway 91/17 Upgrade

Superintendent: Nate Fair

Project #: 6218101

Foreman: Nate Fair

Proposed Scope of Work (Work Activities to be completed for the day)

fienza
remove lock blocks
pull sand away from edges

First aid attendant

Nate Fair

Muster Points

Foreman truck









Work location

L550

Emergency number

911 604 315 5540

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects MATERIAL HANDLING  Manual/ Equipment GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards CONFINED SPACE  Excavations/ Manholes/ culverts WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire HOISTING & LIFTING  Rigging/ Cranes/ suspended loads HAZARDOUS ENERGY CONTROL  Stored Energy
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Critical Tasks	Hazards	Controls
1. Remove lock blocks	<ul style="list-style-type: none"> heavy machinery swing zone hoisting & lifting 	<ul style="list-style-type: none"> worn out lifting points inspect lift points vis/verbal contact with op
2. Stack lock blocks	<ul style="list-style-type: none"> fortis gas line pinch points 	<ul style="list-style-type: none"> do not place blocks within 10m of gas main watch body placement
3. remove man hole risers	<ul style="list-style-type: none"> heavy lift swing zone 	
Additional Hazards in the work area		

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

The pictures below are examples of an area that needs sediment control. The dewatering hose that is discharging water is turbid and requires sediment control measures such as a silt bag must be used to ensure that the water becomes less turbid when draining into waterways. Please inspect your areas and consult the environmental department before discharging water.



Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
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Toolbox Sign On		
#	Print Name	Signature
1	Mark Altan	
2	Chad Kirby	
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Additional Notes

Daily Toolbox Talk

Daily Debrief

Foreman:

Time:

1.	All work areas are cleaned up?	<u>Yes</u>	No
2.	All work sites/equipment secured?	<u>Yes</u>	No
3.	All lockout/tagouts removed?	<u>Yes</u>	No
4.	All permits closed out?	<u>Yes</u>	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	<u>No</u>
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	<u>No</u>

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	Mark Alton	
2	Chad Kirby	
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Daily Toolbox Talk

Crew: NIBEL - CHRIS

Shift (circle): Day / Night

Project Name: Highway 91/17 Upgrade

Superintendent: JUSTIN KREMER

Project #: 6218101

Foreman: CHRIS THOMPSON

Proposed Scope of Work (Work Activities to be completed for the day)

- PLACE 3" LIFT ON 275
- REMOVE NO-POSTS + CUT ROAD PINS OFF STOCK PILE.

First aid attendant NIBEL LUCAS

Muster Points RED INFO SIGN

Work location RIVER RD.

Emergency number _____

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING  Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL  Stored Energy

Critical Tasks	Hazards	Controls
1. REMOVE NO POSTS, CUT ROAD PINS AND STOCK PILE	- OVERHEAD WIRES - UNDERGROUND UTILITIES - CONGESTED WORK AREA	- SPOTTERS - STAY CLEAR OF TRUCK PATH + SWING ZONE
2. PLACE 3" LIFT WATER PUMP.	- TRAFFIC - PINCH POINTS - OVERHEAD LOADS	- PROPER RIGGING - PROPER PPE
3.		
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

The pictures below are examples of an area that needs sediment control. The dewatering hose that is discharging water is turbid and requires sediment control measures such as a silt bag must be used to ensure that the water becomes less turbid when draining into waterways. Please inspect your areas and consult the environmental department before discharging water.



Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!



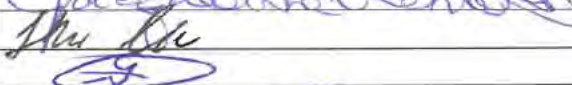




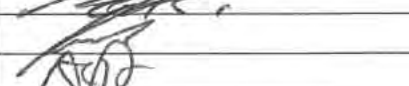

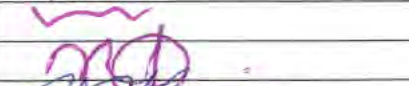
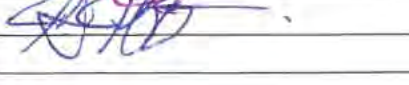




Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		X
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		X
Travelled outside the country?		X
Been in close contact with a person who recently travelled outside the country?		X
Been contacted by a health authority regarding close contact with a confirmed case?		X

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES	NO
	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Toolbox Sign On		
#	Print Name	Signature
1	Nicole Lukas	
2	Neel Lissu	
3	Lucas Crowe	
4	Jacqueline Schiestel	
5	Thomas Clayton	
6	Salam Abdul	
7	Alex Labale	
8	Felix Sosa	
9	Sammy Jones	
10	Coni Ruvich	
11	Jared Schneider	
12	Viktor Adams	
13	Justin Keenya	
14	Denis Labale	
15	MAX SPEDDING	
16	Sam Mackenich	
17	Adam Person	
18	Lincoln O'Brien	
19	Javier Jimeno	
20	Shannon P	
21	Nicole B	
22	J. JEFFAROS	
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Additional Notes

Daily Toolbox Talk

Crew: _____

Shift (circle): **Day** / Night

Project Name: Highway 91/17 Upgrade _____

Superintendent: Andrew K

Project #: 6218101 _____

Foreman: Jerrel Mah

Proposed Scope of Work (Work Activities to be completed for the day)

lock blocks
geo grid - strips
seismic grid
move milling pile

First aid attendant

Jerrel

Muster Points

red board




Work location

SEC 3

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects MATERIAL HANDLING  Manual/ Equipment GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards CONFINED SPACE  Excavations/ Manholes/ culverts WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire HOISTING & LIFTING  Rigging/ Cranes/ suspended loads HAZARDOUS ENERGY CONTROL  Stored Energy
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Critical Tasks	Hazards	Controls
1. Heavy Equipment	Blind spots, swing zone mechanical breakdown	Spotters, 50:10 rule 20/20/20 Preventive maintenance
2. material handling	Heavy awkward lifts crush pinch noise cuts flying debris	mechanical advantage stay out of the line of fire use task specific PPE
3. Hoisting & lifting	rigging failure overhead loads on controlled loads	Pre inspect rigging never go under live loads use tagline as needed
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

The pictures below are examples of an area that needs sediment control. The dewatering hose that is discharging water is turbid and requires sediment control measures such as a silt bag must be used to ensure that the water becomes less turbid when draining into waterways. Please inspect your areas and consult the environmental department before discharging water.



Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
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Toolbox Sign On		
#	Print Name	Signature
1	Jerald Mah	
2	John S.	
3	Trevor	
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Additional Notes

Daily Toolbox Talk

Daily Debrief

Foreman: MAKT

Time: 1630

1.	All work areas are cleaned up?	<u>Yes</u>	No
2.	All work sites/equipment secured?	<u>Yes</u>	No
3.	All lockout/tagouts removed?	<u>Yes</u>	No
4.	All permits closed out?	<u>Yes</u>	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	<u>No</u>
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	No <u>✓</u>

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	<u>Israd</u>	
2	<u>Trevor</u>	
3	<u>John</u>	
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Daily Toolbox Talk

Crew: _____

Shift (circle): **Day** / Night

Project Name: Highway 91/17 Upgrade _____

Superintendent: RF

Project #: 6218101 _____

Foreman: TR

Proposed Scope of Work (Work Activities to be completed for the day)

INSTALL COCOMAT, SILT FENCE + SNOW FENCE

First aid attendant

Muster Points

BULLETIN BOARD

Work location

*# 5, W OF INTERSECTION
17 + 91C*

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING  Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL  Stored Energy

Critical Tasks	Hazards	Controls
1. <i>INSTALL FENCING</i>	<ul style="list-style-type: none"> - SLIPS/TRIPS - AWKWARD POSITION - CUTS - OVER EXERCISE 	<ul style="list-style-type: none"> - CHOOSE PATH - GET HELP / STRATCH - PROPER PPE - MICRO BREAKS
2.	<ul style="list-style-type: none"> - REPETITIVE MOTIONS 	<ul style="list-style-type: none"> - COMMUNICATION - HYDRATE
3.		
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

The pictures below are examples of an area that needs sediment control. The dewatering hose that is discharging water is turbid and requires sediment control measures such as a silt bag must be used to ensure that the water becomes less turbid when draining into waterways. Please inspect your areas and consult the environmental department before discharging water.



Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
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Toolbox Sign On		
#	Print Name	Signature
1	T Bell	<i>T Bell</i>
2	Amie Baker	<i>Amie Baker</i>
3	B Warner	<i>B Warner</i>
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Additional Notes

Daily Toolbox Talk

Date: May 6th, 2021
Foreman's Initials: _____

Daily Debrief

Foreman:

T BELL

Time:

3:00

1.	All work areas are cleaned up?	<u>Yes</u>	No
2.	All work sites/equipment secured?	<u>Yes</u>	No
3.	All lockout/tagouts removed?	Yes	No
4.	All permits closed out?	Yes	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	<u>No</u>
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	<u>No</u>

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	T BELL	
2	A S PAGE	
3	B WARRER	
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Daily Toolbox Talk

Crew: Harlon's

Shift (circle): Day / Night

Project Name: Highway 91/17 Upgrade

Superintendent: Jack M

Project #: 6218101

Foreman: Harlon F

Proposed Scope of Work (Work Activities to be completed for the day)

Building wire Basket wall - Preload Sand

First aid attendant Rick C

Muster Points Recl info Sign

Work location 91N Exit 8

Emergency number 911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS   Fall Pro/ Dropped objects	HEAVY EQUIPMENT  ✓ Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING   ✓ Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL   Stored Energy

Critical Tasks	Hazards	Controls
1. <u>pre loading Sand</u> <u>wire Basket's</u>	<u>Moving Equipment</u> <u>Blind spots</u>	<u>use spotter</u> <u>Hand Signals/Radio's</u>
2. <u>Geo grid</u>	<u>pinch/Crush points</u> <u>Loud Noise</u>	<u>Keep Clear swing</u> <u>Radius</u>
3.	<u>poor lighting</u>	<u>Finger's, feet away</u> <u>wear ear plug's</u>
Additional Hazards in the work area		<u>use light tower</u>

Daily Toolbox Talk

Date: May 5th, 2021
Foreman's Initials: HF

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

The pictures below are examples of an area that needs sediment control. The dewatering hose that is discharging water is turbid and requires sediment control measures such as a silt bag must be used to ensure that the water becomes less turbid when draining into waterways. Please inspect your areas and consult the environmental department before discharging water.



Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<u>7</u>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<u>2</u>
Travelled outside the country?		<u>—</u>
Been in close contact with a person who recently travelled outside the country?		<u>—</u>
Been contacted by a health authority regarding close contact with a confirmed case?		<u>—</u>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES <u>/</u>	NO
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Toolbox Sign On		
#	Print Name	Signature
1	Harlon Fair	<u>HF</u>
2	Sack Wilson	<u>SW</u>
3	ANDREW LOGAN	<u>AL</u>
4	Rick Carabetta	<u>RC</u>
5	G. BARTON	<u>GB</u>
6	T. Jeffers-Harris	<u>TJH</u>
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Additional Notes

Daily Toolbox Talk

Date: May 5th, 2021
Foreman's Initials: HF

Daily Debrief

Foreman:

Time:

1.	All work areas are cleaned up?	Yes	No
2.	All work sites/equipment secured?	Yes	No
3.	All lockout/tagouts removed?	N/A	No
4.	All permits closed out?	N/A	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	No
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	No

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	Harlon F	
2	Andrew L	
3	Rick C	
4	Gary B	
5	Terence J	
6	Jack W	
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Daily Toolbox Talk

Crew: Bel Kody's Crew

Shift (circle): Day / **Night**

Project Name: Highway 91/17 Upgrade

Superintendent: Jack

Project #: 6218101

Foreman: Kody

Proposed Scope of Work (Work Activities to be completed for the day)

- Excavate + Install 1800 ϕ Storm
- Backfill in 200mm lifts

First aid attendant Ryan / Jim

Muster Points FM truck

Work location L2200

Emergency number 911 / 778-873-8086

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects MATERIAL HANDLING  Manual/ Equipment GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards CONFINED SPACE  Excavations/ Manholes/ culverts WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire HOISTING & LIFTING  Rigging/ Cranes/ suspended loads HAZARDOUS ENERGY CONTROL  Stored Energy
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Critical Tasks	Hazards	Controls
1. - Excavate + Install Storm	- Mobile Equipment - Excavators over 4ft	- Eye contact with operating stay out of blind spots swing radius - Slope 1:1 Replace unstable material with gravel. Make sure to have a ladder every 25ft - Watch for house keeping
2. - Filter Cloth Rock and Wrap	- Pinch points - Slip trips	- Inspect all rigging check tests + defects
3. - Backfill with 25mm in 200mm lifts to 95%	- Heavy lifts - Ladders	- Stand back, stay out of line of fire, tag lines.
Additional Hazards in the work area	- Rigging - Overhead power line	- Spotters with machine work working near overhead

Daily Toolbox Talk

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

The pictures below are examples of an area that needs sediment control. The dewatering hose that is discharging water is turbid and requires sediment control measures such as a silt bag must be used to ensure that the water becomes less turbid when draining into waterways. Please inspect your areas and consult the environmental department before discharging water.



Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		X
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		X
Travelled outside the country?		X
Been in close contact with a person who recently travelled outside the country?		X
Been contacted by a health authority regarding close contact with a confirmed case?		X

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES	<input checked="" type="radio"/> NO
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Toolbox Sign On		
#	Print Name	Signature
1	Kevin Kelly	
2	Shawn Holborn	
3	Phil W. W. W.	
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5	Key Rendell	
6	Jack McKenna	
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17	Sam McMillan	
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Additional Notes

Daily Toolbox Talk

Crew: Wall crew

Shift (circle): Day / Night

Project Name: Highway 91/17 Upgrade

Superintendent: Shawn Powell

Project #: 6218101 L2100

Foreman: Rob Davis

Proposed Scope of Work (Work Activities to be completed for the day)

- Backfill lifts of sand
- install wire wall baskets
- lay out geo grid, UX, BX, seismic
- grub out ~~for~~ south side, install road plates
- load trucks, spot trucks when dumping
- Remove old road plates, make a pad to sit on

First aid attendant

Rob

Muster Points

Foreman's truck



Work location

L2100

Emergency number

911

What are the top 3 LIFE CRITICAL TASKS for the scope. Discuss specific controls to add to FLHA

WORK AT HEIGHTS  Fall Pro/ Dropped objects	HEAVY EQUIPMENT  Congestion/ Line of fire/ Overhead hazards	MOTOR VEHICLE  Spotters/ Traffic/ Line of Fire
MATERIAL HANDLING  Manual/ Equipment	CONFINED SPACE  Excavations/ Manholes/ culverts	HOISTING & LIFTING  Rigging/ Cranes/ suspended loads
GROUND DISTURBANCE & EXCAVATING  Underground Utilities/ Cave-in	WORKING ON LIVE SYSTEMS  Electrical/ Water/ Gas/ Equipment	HAZARDOUS ENERGY CONTROL  Stored Energy

Critical Tasks	Hazards	Controls
1. Backfill lifts of sand (Heavy Equipment)	- working around equipment - blind spots, pinch points	- eye contact with operators - 50/10 rule
2. install wire baskets geo grid (material handling)	- sharp edges, repetitive motion - heavy lifting	- proper PPE - stretch and flex
3. excavate, grubbing ground disturbance	- digging around utilities	- spot hole utilities - use spotter when digging
Additional Hazards in the work area		

Daily Toolbox Talk

Weather

Wed Evening	Wed Overnight	Thu Morning	Thu Afternoon
Cloudy with sunny breaks	Cloudy with clear breaks	Mainly cloudy	Light rain
			
16°	12°	12°	16°

Daily Notices/ Alerts

STORM WATER CONTROL

Stormwater – Storm Response

Storm events involving rain or snow can create stormwater runoff. This runoff can result in pollutants leaving the jobsite and flowing into protected water bodies and communities. Stormwater Best Management Practices (BMPs) must be implemented before work begins to prevent stormwater runoff and sediment erosion. In the case of an event, the site and construction activities must be inspected within 24 hours if there are any signs of erosion or runoff present after an event.



Storm Response Inspection Procedures:

- Inspect Stormwater erosion and sediment control measures as necessary within 24 hours
- Document and keep record of any corrective actions
- Keep track of the weather
- Keep track of any pumping and notify the environmental department before you start

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Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.


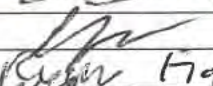
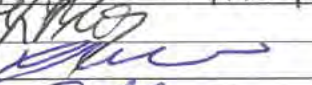


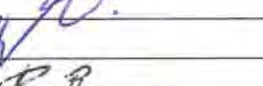

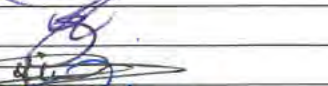

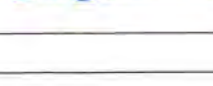
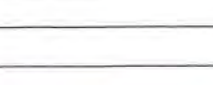

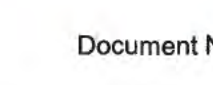

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On		
#	Print Name	Signature
1	St. Parry	
2	Kevin D. Hagan	
3	Ryan Fianza	
4	Ben Evans	
5	James Woodhill	
6	Travis Perry	
7	Ben Warner	
8	Scott Holde	
9	Brady	
10	Capt. Dymkowski	
11	Brad Ward	
12	Rafael Ramos	
13	Daniela Martinez	
14	Jorge Silva	
15	Warner Puentes	
16	Alvin	
17	Andree Felicio	
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Additional Notes

Daily Toolbox Talk

Date: May 6th, 2021

Foreman's Initials: [Signature]

Daily Debrief

Foreman:

[Signature]

Time:

3:30 / 5:00

1.	All work areas are cleaned up?	<u>Yes</u>	No
2.	All work sites/equipment secured?	<u>Yes</u>	No
3.	All lockout/tagouts removed?	<u>Yes</u>	No
4.	All permits closed out?	<u>Yes</u>	No
5.	Are there any injuries, suspected injuries, incidents, damages or deficiencies to report?	Yes	<u>No</u>
6.	Were there any wildlife sightings today? (Note species, number and location in comments below)	Yes	<u>No</u>

Comments or Employee Concerns:

End of Shift Sign Off

#	Print Name	Signature
1	Ryan Franza	<u>[Signature]</u>
2	Scott Holder	<u>[Signature]</u>
3	Rafael Ramos	<u>[Signature]</u>
4	Jose Siv	<u>[Signature]</u>
5	Lyn Evans	<u>[Signature]</u>
6	Calvin DAVLOS	<u>[Signature]</u>
7	Daniela Martinez	<u>[Signature]</u>
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Daily Toolbox Talk

Weather

	Tue Evening	Tue Overnight	Wed Morning	Wed Afternoon
	Chance of a shower	Chance of a shower	Chance of a shower	A mix of sun and clouds
				
	12°	8°	9°	16°

Daily Notices/ Alerts

HAZARDOUS MATERIALS STORAGE

The improper storage and disposal of hazardous materials can have adverse impacts on people and the environment. Please remember to take the time to place all contaminated materials and hazardous waste into the appropriate container. :

- Engine oil
- Grease tubes
- Used spill materials
- Solvents and paint
- Hydraulic oil
- Gasoline
- Diesel
- Concrete curing chemicals
- Prime coat
- Garbage
- Contaminates soils and
-



All hazardous substances on site should be stored at the yard, under the haz-waste tent, in the correct storage container. **Please remember to keep the haz-waste storage area clean and tidy.**

All Hazardous waste must be separated into the black drums provided at the PGC hazardous waste storage area in the Nordel Way laydown. Drums/bins are labelled and available for contaminated soil, used spill pads, oily rags & plastics, and used aerosols. All hazardous materials used or generated during the construction activities must be disposed of appropriately otherwise the disposal company will not take it.

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		X
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		X
Travelled outside the country?		X
Been in close contact with a person who recently travelled outside the country?		X
Been contacted by a health authority regarding close contact with a confirmed case?		X

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES	NO
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Toolbox Sign On		
#	Print Name	Signature
1	Harlan Fair	H Fair
2	Jack Willson	
3	Joey Plamandon	
4	Larry Batterson	
5	Rick Caberatta	
6	Terrence Harris	
7	Josie Siu	
8	Danielia Mtz	
9	Juan Sanchez	
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		/
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		/
Travelled outside the country?		/
Been in close contact with a person who recently travelled outside the country?		/
Been contacted by a health authority regarding close contact with a confirmed case?		/

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On

#	Print Name	Signature
1	Kevin O'Hara	
2	Adam Doherty	
3		Chris Lefter
4	Brandon Lavery	B. Lavery
5	Ryan Franzen	Ryan Franzen
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

☒ YES

☐ NO

Toolbox Sign On

#	Print Name	Signature
1	Jozel Mch	
2	Izzak	
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4	Chris L	
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		
Travelled outside the country?		
Been in close contact with a person who recently travelled outside the country?		
Been contacted by a health authority regarding close contact with a confirmed case?		

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES	NO

Toolbox Sign On		
#	Print Name	Signature
1	RANDALL GARRISON	RC
2	SUSAN CHERNIESKY	Susan Cherniesky
3	FAYVEN BROWN	
4	Rafael Rambo	R.R.
5	Dominic J. P.	D. P.
6	Patrick Zanda	P.
7	Jack Wilson	J. Wilson
8	Dwaine Vintura	D. Vintura
9	Thomas Clayton	T. Clayton
10	CHRIS BAUDER	C. Bauder
11	ROY FAIR	R. Fair
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<u>Y</u>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<u>Y</u>
Travelled outside the country?		<u>Y</u>
Been in close contact with a person who recently travelled outside the country?		<u>Y</u>
Been contacted by a health authority regarding close contact with a confirmed case?		<u>Y</u>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On

#	Print Name	Signature
1	<u>Chris Thompson</u>	<u>[Signature]</u>
2	<u>Nicole Lucas</u>	<u>[Signature]</u>
3	<u>Corey Davis</u>	<u>[Signature]</u>
4	<u>Jeremy Jones</u>	<u>[Signature]</u>
5	<u>Liz B</u>	<u>[Signature]</u>
6	<u>Salim Abder</u>	<u>[Signature]</u>
7	<u>Jared Schneider</u>	<u>[Signature]</u>
8	<u>Amul Pero 2</u>	<u>[Signature]</u>
9	<u>Alex Laballe</u>	<u>[Signature]</u>
10	<u>Joyce Adams</u>	<u>[Signature]</u>
11	<u>Sam Martini</u>	<u>[Signature]</u>
12	<u>JA/UNET Wamba</u>	<u>[Signature]</u>
13	<u>Dennis Laballe</u>	<u>[Signature]</u>
14	<u>MAX SPEDDING</u>	<u>[Signature]</u>
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		✓
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		✓
Travelled outside the country?		✓
Been in close contact with a person who recently travelled outside the country?		✓
Been contacted by a health authority regarding close contact with a confirmed case?		✓

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
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Toolbox Sign On		
#	Print Name	Signature
1	Anthony TAMKE	<i>Anthony Tamke</i>
2	DEREK PAUL	<i>Derek Paul</i>
3	Chris Puzey	<i>Chris Puzey</i>
4	AVINE L	<i>Avine L</i>
5	Jodi Larson	<i>Jodi Larson</i>
6	Matt JESSARI	<i>Matt Jessari</i>
7	Cam Dombrowski	<i>Cam Dombrowski</i>
8	Kenny Ponty	<i>Kenny Ponty</i>
9	BILL BERNICK	<i>Bill Bernick</i>
10	JORDAN JEFFARCS	<i>Jordan Jeffarcs</i>
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Additional Notes

Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.


In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		✓
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		✓
Travelled outside the country?		✓
Been in close contact with a person who recently travelled outside the country?		✓
Been contacted by a health authority regarding close contact with a confirmed case?		✓

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES

NO

Toolbox Sign On		
#	Print Name	Signature
1	Will Lawson	
2	Kam chung	
3	James Keathman	
4	San ko	
5	Matt Steele	
6	Vanessa	
7	Josh Deverts	
8	Carl Devert	
9	Darryl Cole	
10	Yang (Wood)	
11	Kris (give back)	
12	Bill Beswick	
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Additional Notes

Daily Toolbox Talk

Protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

the past 14 days; have you:

	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		<input checked="" type="checkbox"/>
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		<input checked="" type="checkbox"/>
Travelled outside the country?		<input checked="" type="checkbox"/>
Been in close contact with a person who recently travelled outside the country?		<input checked="" type="checkbox"/>
Been contacted by a health authority regarding close contact with a confirmed case?		<input checked="" type="checkbox"/>

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?

YES ☒

NO ☐

Toolbox Sign On

#	Print Name	Signature
1	Fallon Elkarson	
2	Janah Elkarson	
3	Paige Cunningham	
4	Stacie Harder	
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Additional Notes


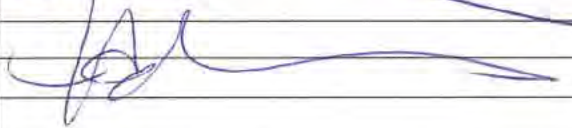
Daily Toolbox Talk

To protect the health and safety of yourself and your co-workers and to reduce the spread of COVID-19 on the project, all personnel must answer the following questions.

In the past 14 days; have you:	YES	NO
Experienced a fever, cough, difficulty breathing or cold and flu-like symptoms?		
Been in close contact with a person with COVID-19 (probable or confirmed) or who has symptoms compatible with COVID-19 (fever, cough, difficulty breathing)?		
Travelled outside the country?		
Been in close contact with a person who recently travelled outside the country?		
Been contacted by a health authority regarding close contact with a confirmed case?		

If anyone answered YES to any of the questions above, please isolate and contact site Health and Safety immediately

All workers fit for duty?	YES	NO
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Toolbox Sign On		
#	Print Name	Signature
1	Liz Bradley	
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3	Joyce Adams	
4		
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Additional Notes

Highway 91\17 Upgrade Project

Environmental Talk

Dewatering

Before You Pump

Please contact the environmental department and get approval for the dewatering activity.

All Dewatering on site **must be** directed through the Environmental department before starting to prevent impacts to the environment.

Unauthorised dewatering activities are not permitted on site.

Why?

- **avoid environmental harm:** high levels of silt suspended in water can suffocate fish by blocking their gills, can remove essential oxygen from the water, can kill plants, animals and insects living in the water by stopping sunlight reaching them
- **avoid environmental harm:** silt often combines with other contaminants such as oils and chemicals potentially causing greater pollution than silt alone
- **avoid prosecution:** because of the potential for harm, it is illegal to allow silt to enter a watercourse or drain. Silt pollution is easily traceable to the site from where it originated. In the past it has been a major cause of prosecution

Pump setup

-Place the pump into a gravel bed to prevent the pump from discharging coarse sediment from the bottom of the sump.

-Attach a dewatering silt bag at the end of the pipe to ensure that water is less turbid when draining into water ways.

Inspect

- Regularly Check the pump setup and ensure everything is working correctly
- Keep track of the weather quality if water quality gets worse contact the environmental department
- Keep track of any pumping and notify the environmental department before you start each day

Ask questions! If something does not look right let your PGC representative or your Supervisor know. We all need to help identify and address environmental concerns!



Daily Toolbox Talk

Toolbox Sign On

#	Print Name	Signature
1	Lincoln Grace	
2	Travis Way	
3	Bill Beshen	
4	Mentor	
5	Chris Brader	
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Additional Notes

Daily Toolbox Talk

Toolbox Sign On

#	Print Name	Signature
1	RANDALL CARLSON	K. Carlson
2	Dwain Wilson	D. Wilson
3	SUSAN OTERNESKY	Susan Oternesky
4	Mike Herr	Mike Herr
5	Patricia Sando	Patricia Sando
6	Darrell O. Patterson	D. O. Patterson
7	Rafael Ramos	R. Ramos
8	Gregory Hight	Gregory Hight
9	Tom Brown	Tom Brown
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Additional Notes

Daily Toolbox Talk

Toolbox Sign On		
#	Print Name	Signature
1	Thomas Clough	<i>[Signature]</i>
2	Scott Holden	<i>[Signature]</i>
3	Jeremy Friesen	<i>[Signature]</i>
4	Alfred Dizon	<i>[Signature]</i>
5	Ryan Kirby	<i>[Signature]</i>
6	Joe Sweeney	<i>[Signature]</i>
7	Sam McEwen	<i>[Signature]</i>
8	Adam Person	<i>[Signature]</i>
9	Jared Smides	<i>[Signature]</i>
10	Jeremy Jones	<i>[Signature]</i>
11	Shawn Cook	<i>[Signature]</i>
12	Kevin McIver	<i>[Signature]</i>
13	Austin Tulliani	<i>[Signature]</i>
14	THOMAS KAMBO	<i>[Signature]</i>
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Additional Notes



Daily Toolbox Talk

Toolbox Sign On		
#	Print Name	Signature
1	Jerad Mahu	
2	Chris Lafente	
3	Izzak Kelly	
4	Jake Johnson	
5	Dan Arnold	
6	Darren Ferguson	
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Additional Notes

Daily Toolbox Talk

Toolbox Sign On		
#	Print Name	Signature
1	Will Lawson	<i>[Signature]</i>
2	Kam chung	
3	Matt steele	
4	James heathman	
5	Vanessa H	
6	Darryl cole	
7	Werner Boukos	<i>[Signature]</i>
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Additional Notes

Daily Toolbox Talk

Toolbox Sign On		
#	Print Name	Signature
1	Joel Larson	Joel L
2	Chris Puzan	Chris Puzan
3	Bill Berman	Bill Berman
4	Prince Selman	Prince Selman
5	Kers Oebak	Kers Oebak
6	Vernon Lough	Vernon Lough
7	Deak Linn	Deak Linn
8	Mark Alton	Mark Alton
9	Kenny Ponto	Kenny Ponto
10	Charles O'Garra	Charles O'Garra
11	Arine	Arine
12	Adam Person 12/05	Adam Person
13	Will Lawson	Will Lawson
14	Jimmy Hards	Jimmy Hards
15	S. Farrell	S. Farrell
16	Larry Wang	Larry Wang
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Additional Notes

Daily Toolbox Talk

Toolbox Sign On		
#	Print Name	Signature
1	Brandon Laverdy	B-Laverdy
2	Calvin Dwyer	Calvin Dwyer
3	Kevin O'Hagan	Kevin O'Hagan
4	Ryan Finza	Ryan Finza
5	Ken Evans	Ken Evans
6	Chris Heaton	Chris Heaton
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Additional Notes

APPENDIX 9: INCIDENT REPORTS (*Including Spills larger than 5L*)



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Ministry of Transportation and Infrastructure
Highway 91/17 Upgrade Project

Health and Safety Management
Environmental Incident Report

Environmental Incident Report

General:

Project Name:	Highway 91/17 Upgrade Project		
Contractor:	Pacific Gateway Constructors		
Incident Location:	S2 near L575 next to the VFPA access road		
Internal Incident no.	033	Client incident no:	
Incident date:	31 May 2021	Incident time:	17:00 approximately
Reported by:	Jordan Jeffares	Reported to:	Werner Beukes
Supervisor:	Roy Fair	Witnesses:	N/A
Report date:	31 May 2021	Report Prepared By:	Andre Felicio

Incident Description:

Detailed Description (Who, What, Where, When, Why, How):

A stockpile (excavated as part of STM 255) was stockpiled outside the allowable Project Limits on VFPA land, adjacent to the VFPA access road. STM 255 is located outside the known contaminated soil delineation boundaries and therefore the excavated soil was not contaminated. The PGC Environmental Representative responded immediately and inspected the incident. It was witnessed that the surrounding environment was not impacted with no signs of sediment migration into any waterbodies. Preparations were made and a crew was mobilized a crew to relocate the stockpile into the project right of way.

Incident Types:

<input type="checkbox"/> Encroachment of Environmentally Sensitive Area	<input type="checkbox"/> Adverse Impacts to Fish/Wildlife	<input type="checkbox"/> Water Quality/Quantity
<input type="checkbox"/> Hazardous Materials Management	<input type="checkbox"/> Disturbance to archaeological / heritage site	<input type="checkbox"/> Air Quality
<input type="checkbox"/> Spills	<input type="checkbox"/> Unauthorized discharge	<input type="checkbox"/> Unauthorized clearing
<input type="checkbox"/> Waste Management	<input checked="" type="checkbox"/> Other:	

For Spills:

Quantity Released: Approximately Quantity Contained:

Type:

<input type="checkbox"/> Antifreeze	<input type="checkbox"/> Lube Oil	<input type="checkbox"/> Engine Oil	<input type="checkbox"/> Gasoline
<input type="checkbox"/> Hydraulic Fluid	<input type="checkbox"/> Diesel	<input type="checkbox"/> Transmission Oil	<input checked="" type="checkbox"/> Other



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Ministry of Transportation and Infrastructure
Highway 91/17 Upgrade Project

Health and Safety Management
Environmental Incident Report

Environmental Impact			
Type of Environmental Impact:	<input checked="" type="checkbox"/> Land <input type="checkbox"/> Watercourse <input type="checkbox"/> Air		
Details:	Approximately 40m3 of soil was placed outside of the allowable project limits on top of an existing berm.		
Incident Cause: Failure of mechanical equipment			
Causal Factor:			
<input checked="" type="checkbox"/> Failure to Follow Procedures/Site Practices		<input type="checkbox"/> Other (specify):	
<input type="checkbox"/> Inadequate Procedures/Site Practices		<input checked="" type="checkbox"/> To be determined/Under investigation	
<input type="checkbox"/> Equipment Failure (specify component): hydraulic line on excavator boom			
Describe What Caused the Incident:			
To be determined, currently under investigation			
Incident/ injury consequence and severity rating (act = actual, pot = potential)			
Environmental		ACT	POT
0 - Near Miss		<input type="checkbox"/>	<input type="checkbox"/>
1 - Easy to clean up		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2 - Inform Authority		<input type="checkbox"/>	<input type="checkbox"/>
3 - Potential Fine/Court		<input type="checkbox"/>	<input type="checkbox"/>
4 - Significant fine		<input type="checkbox"/>	<input type="checkbox"/>
5 - Major fine		<input type="checkbox"/>	<input type="checkbox"/>
Notification			
PGC Supervisor:	Roy Fair	Notified immediately:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



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Highway 91/17 Upgrade Project

Health and Safety Management
Environmental Incident Report

PGC Construction Manager:	Bill Beswick	Notified immediately:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
PGC Environmental Representative:	Andre Felicio	Notified immediately:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
MOTI Designate (if required):	Jordan Jeffares	Notified:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Environmental Authority (if required):		Notified:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Immediate Actions Taken:			
Description			
<p>The PGC Environmental Team responded immediately to inspect the incident. The PGC Environmental Coordinator noted that there were no signs of sediment migration into any waterbodies and no surrounding vegetation was permanently damaged during the removal of the stockpiled sand. PGC has met with the landowner to ensure good relations- no issues were noted by the landowner.</p> <p>Stockpiles were removed the next day (June 01, 2021) and all exposed surfaces were covered with coco-matting on all exposed surfaces to reduce the risk of sediment run-off after a rain event.</p> <p>This area will be hydroseeded during the landscaping phase to ensure slopes are stabilized.</p>			
Follow up Actions:			
Actions taken to prevent recurrence			
<p>PGC will be conducting an internal investigation to determine the cause of the incident and will develop a strategy to help prevent this incident from reoccurring. All project boundaries will be marked in the field to ensure that site crews are aware of the project boundary limits.</p>			
Key Learnings:			
Describe the key lessons identified from the incident:			
<p>All site crew foremen and site superintendents are responsible to work within the project boundaries. Project boundaries will be highlighted in the construction kick-off meetings going forward</p>			



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Ministry of Transportation and Infrastructure
Highway 91/17 Upgrade Project

Health and Safety Management
Environmental Incident Report

Signature:
Environmental Manager

Photos:



Photo 1: Excavated sand placed outside the project limits.



Photo 2: Excavated sand placed outside the project limits.



Ministry of Transportation and Infrastructure
Highway 91/17 Upgrade Project

Health and Safety Management
Environmental Incident Report



Photo 3: Excess material removed and exposed surfaces were stabilized with coco-matting



Photo 4: Vegetation inspected after material was relocated to see if any permanent damaged was caused