KINDER MORGAN CANADA

Transmittal

To:	Water Information Technician Water Stewardship Division, Ministry of Environment	Date: From:	February 17, 2012 Jason Turner
Re:	Coquihalla Crossings 2 & 4	MOE File:	A2005827

To Whom It May Concern,

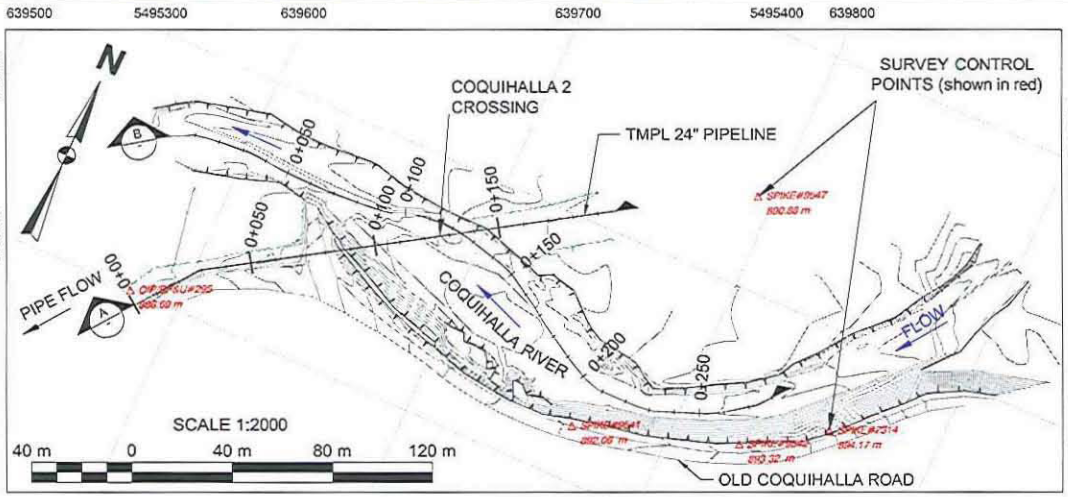
Attached are two sets of As-Built survey drawings for our sites at Coquihalla Crossing 2 and 4. Survey works were completed in fall 2011. I apologize for the delay of the post construction report, we were waiting for these drawings to include but made the decision last week to submit without. However, they were then available this week, hopefully I haven't caused too much confusion with filing on your end?

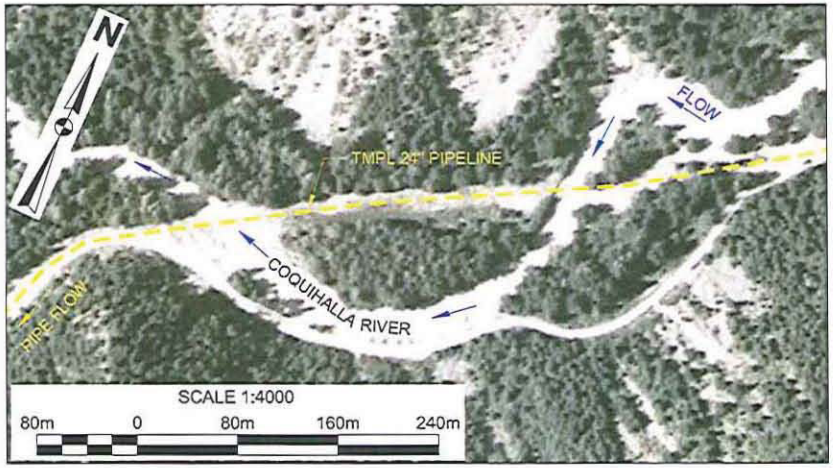
Regards, Jason.

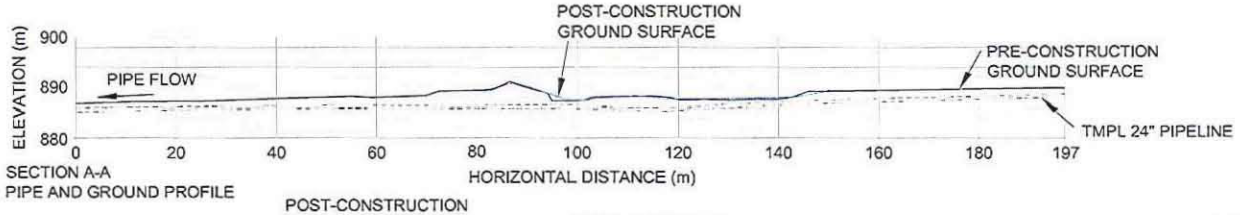
Jason Turner, ***R.P.Bio., B.Sc.***
Environmental, Health & Safety Coordinator

Direct: (250) 371-4017
S22

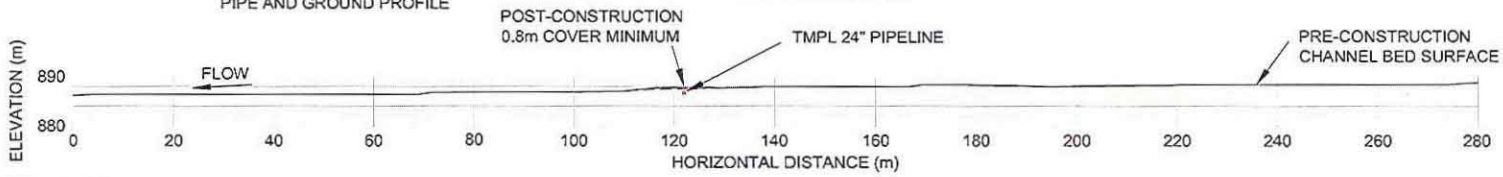
Web: www.kindermorgan.com/pipelinesafety
Call Before You Dig BC One Call: 1.800.474.6886 or cell *6886







SECTION A-A
PIPE AND GROUND PROFILE



SECTION B-B
LONGITUDINAL CHANNEL PROFILE

SCALE 1:1000
20m
0
20m
40m
60m
METRES

NOTES:
1. Contours (Plan View) are in 0.5 m elevation intervals, created from topographic survey data. The survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd. Topographic control stations were established July 19-20, 2010 and are shown in red in Drawing 1 (Plan View) and a table of control point coordinates is presented in Drawing 4 (Table 1).
2. Satellite image (Plan View) taken March 5, 2005, from Google Earth (2010).
3. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
4. Ground surfaces on Section A-A and Section B-B were generated from the topographic survey data (KWL, 2010).

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE: AS SHOWN
DATE: AUG 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

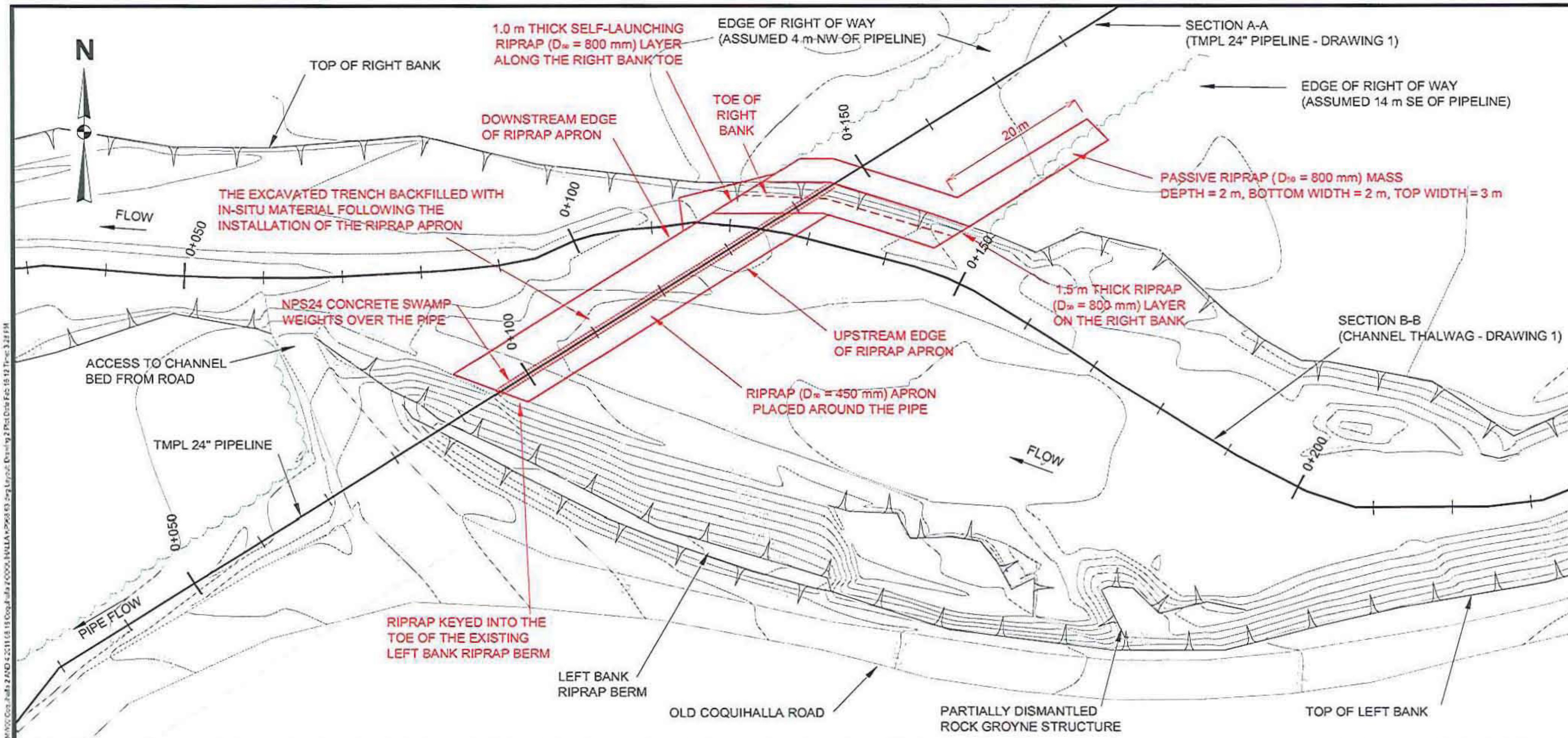
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

TITLE: PRE-CONSTRUCTION SITE PLAN, PIPE AND GROUND PROFILE, AND CHANNEL PROFILE

PROJECT No.:	DWG No.:	REV.:
0095-105-05	1	1

DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011


N
TOP OF RIGHT BANK
1.0 m THICK SELF-LAUNCHING RIPRAP (D_{50} = 800 mm) LAYER ALONG THE RIGHT BANK TOE
EDGE OF RIGHT OF WAY (ASSUMED 4 m NW OF PIPELINE)
SECTION A-A (TMPL 24" PIPELINE - DRAWING 1)
EDGE OF RIGHT OF WAY (ASSUMED 14 m SE OF PIPELINE)
TOE OF RIGHT BANK
DOWNSTREAM EDGE OF RIPRAP APRON
0+150
20 m
PASSIVE RIPRAP (D_{50} = 800 mm) MASS DEPTH = 2 m, BOTTOM WIDTH = 2 m, TOP WIDTH = 3 m
THE EXCAVATED TRENCH BACKFILLED WITH IN-SITU MATERIAL FOLLOWING THE INSTALLATION OF THE RIPRAP APRON
0+100
FLOW
0+050
0+150
1.5 m THICK RIPRAP (D_{50} = 800 mm) LAYER ON THE RIGHT BANK
NPS24 CONCRETE SWAMP WEIGHTS OVER THE PIPE
0+100
UPSTREAM EDGE OF RIPRAP APRON
SECTION B-B (CHANNEL THALWAG - DRAWING 1)
ACCESS TO CHANNEL BED FROM ROAD
RIPRAP (D_{50} = 450 mm) APRON PLACED AROUND THE PIPE
TMPL 24" PIPELINE
FLOW
0+200
0+050
PIPE FLOW
RIPRAP KEYED INTO THE TOE OF THE EXISTING LEFT BANK RIPRAP BERM
LEFT BANK RIPRAP BERM
OLD COQUIHALLA ROAD
PARTIALLY DISMANTLED ROCK GROYNE STRUCTURE
TOP OF LEFT BANK

SCALE 1:500

10 m 0 10 m 20 m 30 m

NOTES:
1. Contours are in 0.5 m elevation intervals, created from topographic survey data. Survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd.
2. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	AUG 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

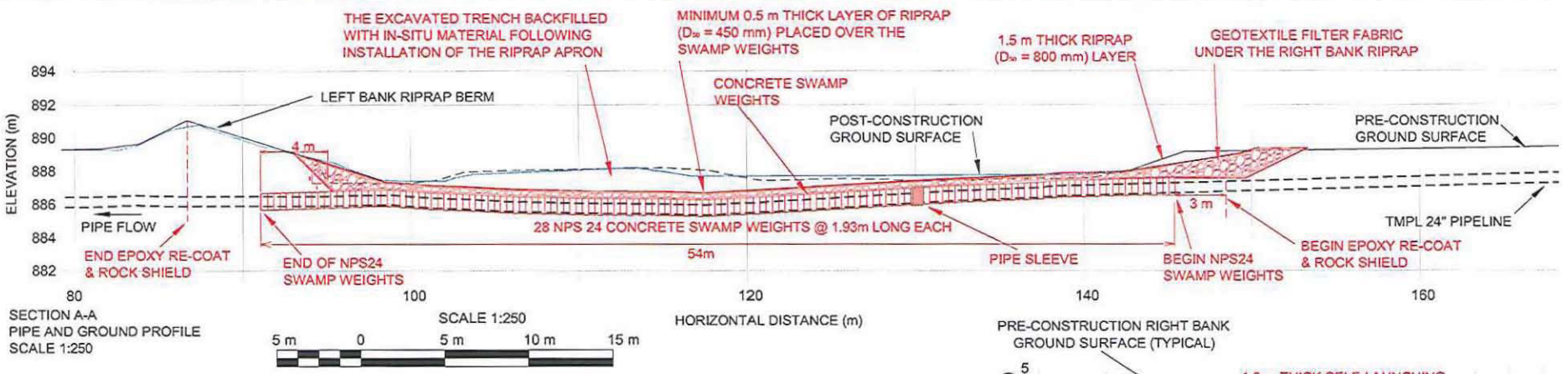
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

TITLE: ENGINEERING MITIGATION DESIGN SITE PLAN

PROJECT No.:	DWG No.:	REV.:
0095-105-05	2	1

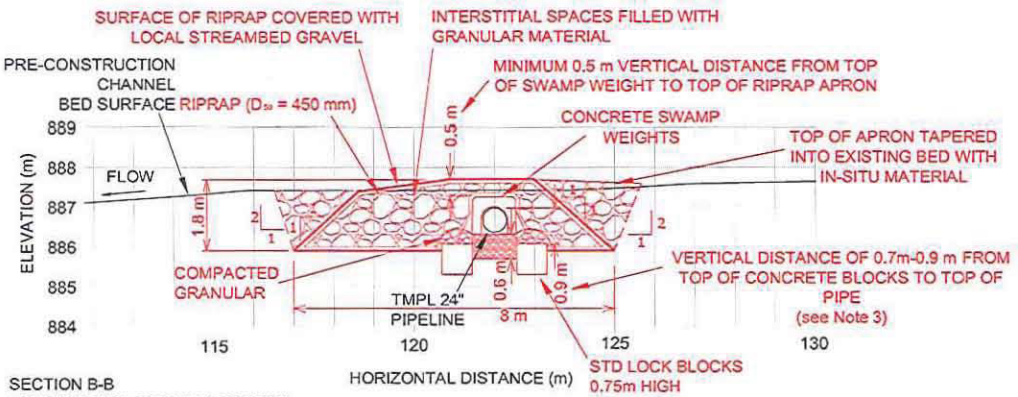
DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011



SECTION A-A
PIPE AND GROUND PROFILE
SCALE 1:250

SCALE 1:250

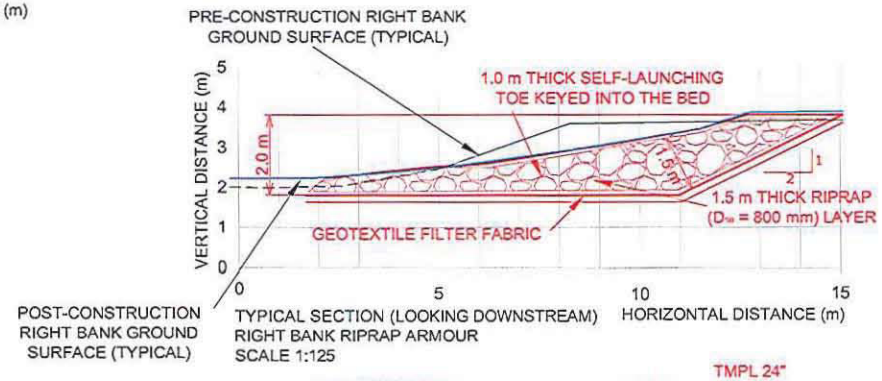
5 m 0 5 m 10 m 15 m



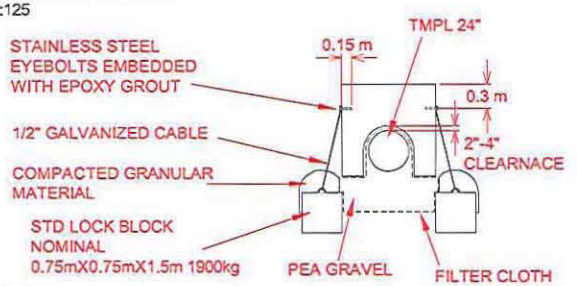
SECTION B-B
LONGITUDINAL CHANNEL PROFILE
SCALE 1:125

SCALE 1:125

2.5 m 0 2.5 m 5 m 7.5 m



TYPICAL SECTION (LOOKING DOWNSTREAM)
RIGHT BANK RIPRAP ARMOUR
SCALE 1:125



TYPICAL ARRANGEMENT OF SWAMP LOCK BLOCKS OVER NPS24 PIPELINE
SCALE 1:75

NOTES:
1. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
2. Ground surfaces on Section A-A, Section B-B, and Section C-C were generated from the topographic survey data (KWL, 2010).
3. Method of placement of swamp weights, concrete blocks, and bedding around the pipeline shall be de determined by KMC.
4. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	BZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	BZ	

SCALE: AS SHOWN
DATE: AUG 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

TITLE: ENGINEERING MITIGATION DESIGN SECTIONS A-A, B-B, and TYPICAL LEFT BANK

PROJECT No.:	DWG No.:	REV.:
0095-105-05	3	1

DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011

Survey Control Points

Survey control stations were established on July 19-20, 2010 by Kerr Wood Leidal Associates Ltd. using survey grade GPS equipment. UTM NAD83 Zone 10N coordinates were derived based on GPS data. Topographic control points at the project site are presented in Table 1.

Table 1. Topographic Survey Control Stations

Description	Northing	Easting	Elevation (m)
OIP/BF&U/295	5,495,199.451	639580.286	886.694
SPIKE#2314	5,495,260.963	639,857.912	894.173
SPIKE#9541	5,495,221.012	639,763.403	892.056
SPIKE#9542	5,495,241.306	639,827.357	893.322
SPIKE#9547	5,495,335.757	639,793.808	890.882

Material and Quantities

1. Specific gravity of all rocks used in the construction is to be greater or equal to 2.65 t/m^3. Rock source to be approved by the engineer. Stone used for rock riprap should be hard, angular in shape, resistant to weathering and water action, free from overburden, spoil, silt and clay or organic material. The rock should be free from seams, cracks, cleavage plains and laminations.
2. Riprap material should consist of blasted, angular rock. Riprap quantities are presented Table 2. Riprap gradation is provided in Table 3.
3. Granular filter may be necessary along the armoured banks under the riprap to provide compatibility between the riprap and the underlying material. Filter quanities are provided in Table 2. Gradation was selected assuming the underlying bank is composed of well graded sand with fine gravels. Gradation is presented in Table 3. Alternatively, non-woven geotextile filter fabric could be used in place of granular filter. Mirafi 1160N or similar with minimum grab strength >1300 N, puncture strength >820 N, burst strength 4500 kPa, apparent opening size (AOS) 0.12 mm to 0.20 mm.
4. Epoxy SPEC Poly - SP2888 Brush Grade
5. Rock Shield Tuff N Nuff - ⅜" thick
6. Steel Sleeve Petro-Line, Petro NPS24 0.500WT x 36
7. Lock Block Concrete 750 x 750 x 1500, 1900kg
8. NPS 24" Swamp Weight NPS24 1930 x 1135 x 789h, 3065kg
9. Eyebolts SS Threaded ½" x 6"

Table 2. Material Quantities

Material	Unit	Quantity	Application
riprap	m^3	400	pipe protection on bed (apron)
riprap	m^3	220	right bank armour
riprap	m^3	100	right bank passive riprap mass
granular filter	m^3	30	bank armour
swamp weights	ea.	28	pipeline cover
concrete blocks	ea.	56	pipeline cover anchors
steel sleeve	ea.	1	pipe reinforcement

Table 3. Riprap and Filter Gradation (mm nominal rock diameter)

Material	D_{15}	D_{50}	D_{85}
riprap (apron)	200	450	600
riprap (right bank)	400	800	1000
granular filter	25	50	75

Timing, Site Access and Preparation

1. The pipeline crossing is located approximately 66 km southwest of Merritt, 40 km northeast of Hope on the Coquihalla River. GPS coordinates for the crossing are Latitude 49°35'38" (49.59393), Longitude -121°4'1" (-121.06689) (UTM 10U 5495279N, 639699E, WGS84) at an elevation of approximately 885 m. The site can be accessed from the Coquihalla Highway via a locked gate at the Coquihalla Lakes exit, 55 km (by road) northeast of Hope, B.C. and 8.5 km southwest along the gravel road (Old Coquihalla Road) that follows the abandoned Kettle Valley Railway grade.
2. Isolate the worksite from any flow that is present in the channel. KMC to specify the method of diversion or other dewatering.
3. Low flow conditions are ideal for conducting in-stream works since diversion of flow and other dewatering issues will be minimized. Average daily flows from 1965 to 2008 for WSC station 08MF062 - Coquihalla River below Needle Creek were prorated based on relative drainage basin areas (WSC Station basin area = 85.5 km ^{2}, Coquihalla 2 basin area = 43.7 km ^{2}) and presented in Figure 1. The data illustrate the relative annual distribution of flows expected to be present at the Coquihalla 2 crossing. It is noteworthy that flow at Coquihalla 2 typically flows subsurface from early August to mid October.

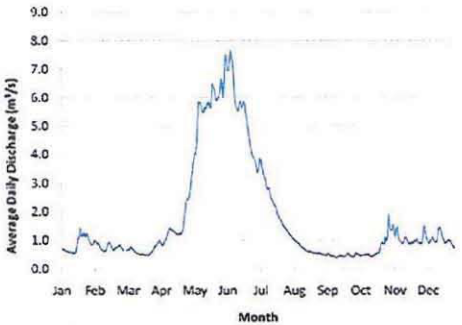


Figure 1. Average daily flow estimate for Coquihalla 2, data was taken from WSC station 08MF062 - Coquihalla River below Needle Creek, 1965 - 2008.

Construction Sequence

1. **Prepare Working Surface.** Strip banks and excavate material to the limits of the designed structures. Clearing and grubbing should be kept to a minimum required to meet the specifications shown on the design drawings, with slopes left free of brush, trees, stumps or other objectionable materials and dressed to a smooth surface. Banks are to be trimmed uniform slope, as indicated on drawings. Loose, soft or spongy material, and large rocks projecting through the slope shall be removed and the resulting minor potholes filled with selected non-cohesive materials and compacted as desired. In-situ material excavated from the channel bed is to be stockpiled.
2. **Pipeline Protection.** Expose the pipeline for a horizontal distance (in the longitudinal pipe direction) of approximately 50 m as shown in Section A-A, Drawing 3. Hand excavation may be required in the immediate vicinity of the pipeline to avoid damage due to machine impact on the pipeline. Install concrete blocks ("Lock Blocks" or similar) parallel to the the exposed length of pipe, on each side of the pipe. Concrete blocks to have dimensions 1.5 m (length) x 0.75 m (width) x 0.375 m (height). The top elevation of the concrete blocks should be 0.9 m below the top elevation of the pipe. Install precast concrete swamp weights over the pipeline along the length of exposed pipe, forming a protective shield around the pipe. Top elevation of precast concrete swamp weights not to exceed 0.3 m above the crest elevation of the pipe. Connect the concrete weights to the concrete blocks with 5/8" high tensile strength galvanized steel cable. 2 cables are to be used per 1.9 m length of concrete swamp weight. The lock blocks and cable system will anchor the concrete swamp weights in place.
3. **Riprap Apron.** Install a minimum 1.8 m thick layer of D_{50} 450 mm riprap for a length of approximately 50 m along the channel bed along the pipeline as shown in Section B-B, Drawing 3. The top surface elevation of the riprap will be minimum 0.5 m higher than the top of the concrete swamp weights. The apron will extend minimum 3 m upstream and 5 m downstream from the pipe centreline. The footprint of the apron is presented in Drawing 2. Where the top of the finished riprap apron is lower than the exisitng bed elevation, in-situ material is to be placed on the bed over the riprap apron to match existing channel bed surface elevation.
4. **Right Bank Armouring.** Slope/regrade the right bank at 2(H):1(V). Depending on the gradation of the underlying material, a layer of granular filter may be required between the substrate and the riprap layer. If necessary, install a minimim 0.15 m thick layer of granular filter on the prepared right bank. Install a 1.5 m thick layer of riprap over the granular filter material on the prepared banks. Bank riprap shall have a D_{50} of 800 mm. Depending on the riparian re-vegetation prescription, it may be necessary to fill the riprap voids with soils while installing the riprap to create habitable conditions for riparian vegetation.
5. **Right Bank Passive Riprap Mass.** A 20 m long mass of riprap will be buried along the upstream (south) inside edge of the right of way as a passive measure to protect the pipeline from right bank lateral shifting. The mass will be 2 m deep, with a top width of 3 m and bottom width of 2 m. The footprint of the proposed mass is presented in Drawing 2.
6. **Left Bank Armouring.** A minimum horizontal length 1.5 m of pipeline will be exposed into the existing left bank riprap berm to install the concrete swamp weights. The existing left bank material is to be stockpiled and replaced after installation of the swamp weights and riprap apron. Care should be taken to interlock the re-installed left bank material with the surrounding left bank material, and with the installed apron material on the bed.

Construction Notes

1. All work should be done by an experienced operator and supervised by a qualified professional engineer.
2. The rock is to be transported and placed by methods that avoid segregation. Care should be taken to prevent cracking or breaking of rock riprap by crushing under machine tracks. Each truckload of rock brought to the site should provide a complete range of the rock sizes in the gradation.
3. Large stones to be placed at the toe of slopes or distributed evenly throughout the mass. Clusters of small or large stones are to be avoided.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	AUG 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: KINDER MORGAN

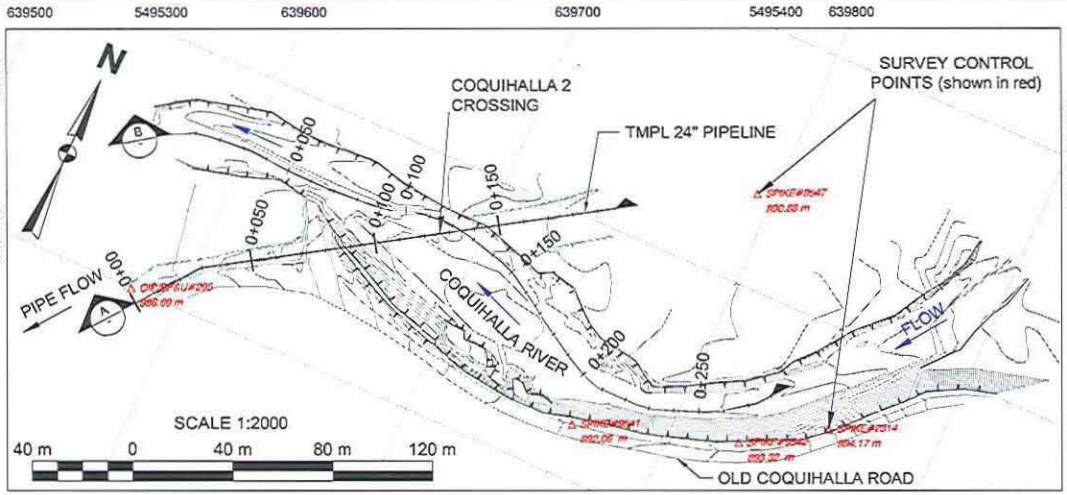
PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

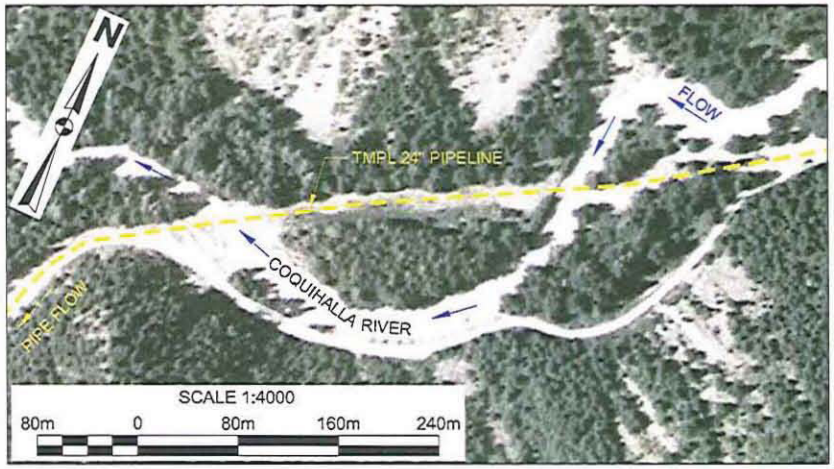
TITLE: ENGINEERING NOTES TO ACCOMPANY DRAWINGS 1, 2 AND 3

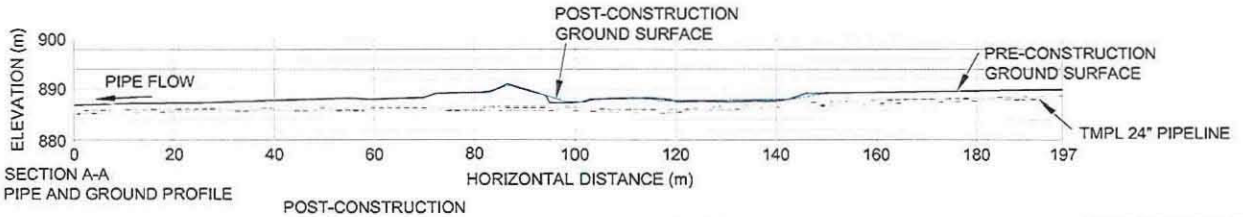
PROJECT No.:	DWG No.:	REV.:
0095-105-05	4	1

DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011

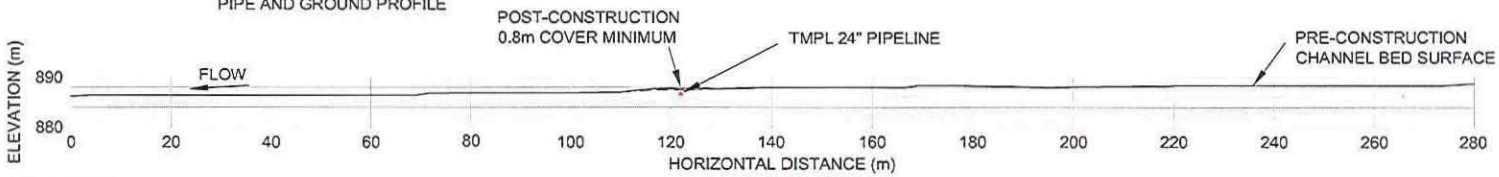
E:\EPT Eng\work\g Groups\Engineering\Drafting\CAD_PROJECTS\TRANSMOUNTAIN\MAPS\Coquihalla 2 AND 4_2011\15 Coquihalla 2\COQUIHALLA KP968.63 Eng Layout Drawing 1.Plot Date Feb 15 12 Time 3:29 PM







SECTION A-A
PIPE AND GROUND PROFILE



SECTION B-B
LONGITUDINAL CHANNEL PROFILE

SCALE 1:1000
20m 0 20m 40m 60m
METRES

NOTES:

1. Contours (Plan View) are in 0.5 m elevation intervals, created from topographic survey data. The survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd. Topographic control stations were established July 19-20, 2010 and are shown in red in Drawing 1 (Plan View) and a table of control point coordinates is presented in Drawing 4 (Table 1).
2. Satellite image (Plan View) taken March 5, 2005, from Google Earth (2010).
3. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
4. Ground surfaces on Section A-A and Section B-B were generated from the topographic survey data (KWL, 2010).

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	AUG 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

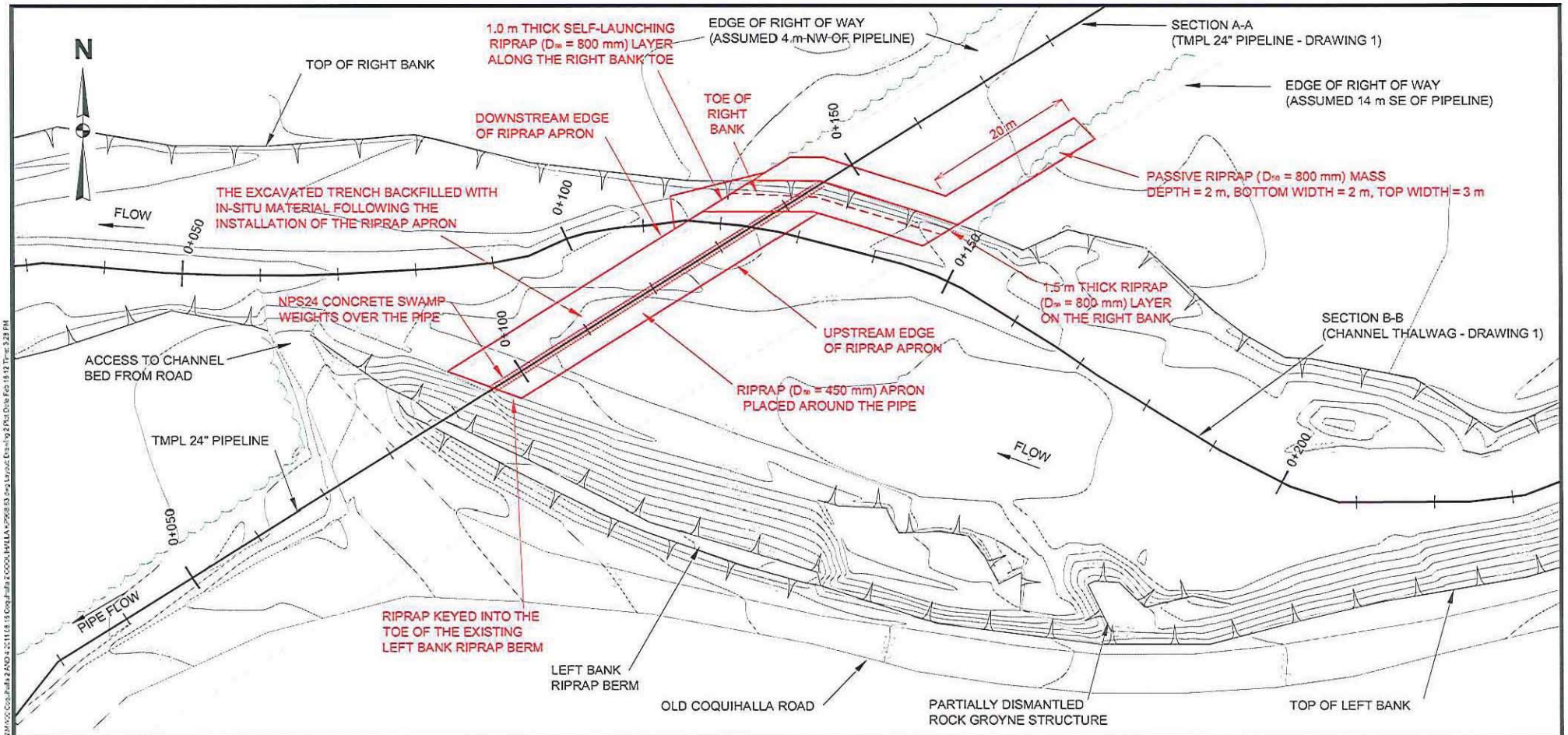
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

TITLE: PRE-CONSTRUCTION SITE PLAN, PIPE AND GROUND PROFILE, AND CHANNEL PROFILE

PROJECT No.:	DWG No.:	REV.:
0095-105-05	1	1

DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011



SCALE 1:500

10 m 0 10 m 20 m 30 m

NOTES:
1. Contours are in 0.5 m elevation intervals, created from topographic survey data. Survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd.
2. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	BZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	BZ	

SCALE:	AS SHOWN
DATE:	AUG 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

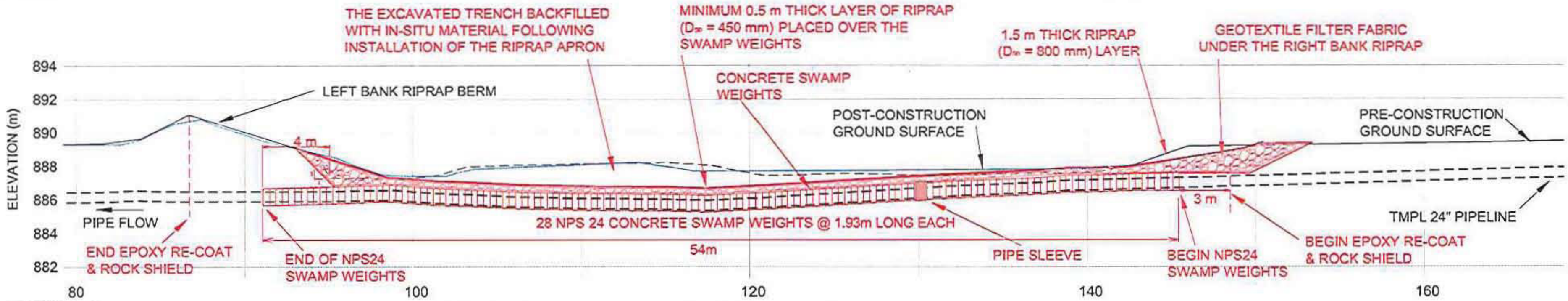
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

TITLE: ENGINEERING MITIGATION DESIGN SITE PLAN

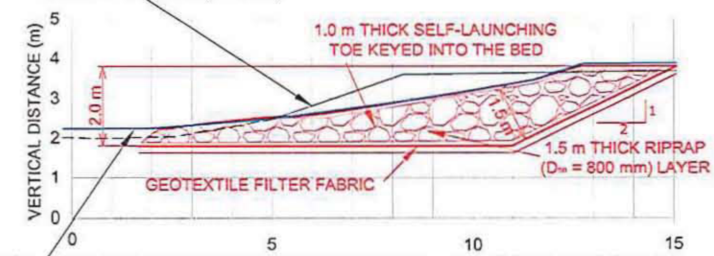
PROJECT No.:	DWG No.:	REV.:
0095-105-05	2	1

DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011



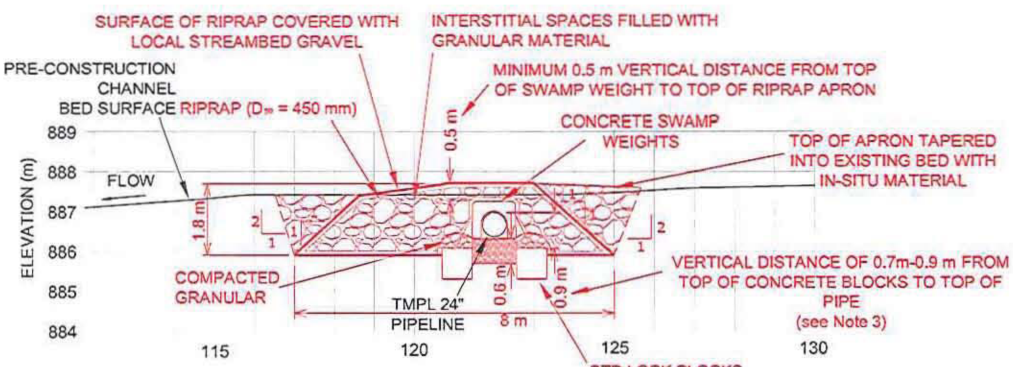
SECTION A-A
PIPE AND GROUND PROFILE
SCALE 1:250

SCALE 1:250
5 m 0 5 m 10 m 15 m



POST-CONSTRUCTION RIGHT BANK GROUND SURFACE (TYPICAL)

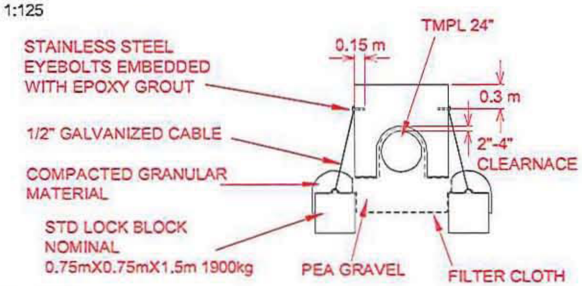
TYPICAL SECTION (LOOKING DOWNSTREAM)
RIGHT BANK RIPRAP ARMOUR
SCALE 1:125



SECTION B-B
LONGITUDINAL CHANNEL PROFILE
SCALE 1:125

SCALE 1:125
2.5 m 0 2.5 m 5 m 7.5 m

NOTES:
1. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
2. Ground surfaces on Section A-A, Section B-B, and Section C-C were generated from the topographic survey data (KWL, 2010).
3. Method of placement of swamp weights, concrete blocks, and bedding around the pipeline shall be de determined by KMC.
4. Items in red are components of the proposed mitigation design.



TYPICAL ARRANGEMENT OF SWAMP LOCK BLOCKS OVER NPS24 PIPELINE
SCALE 1:75

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	AUG 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

TITLE: ENGINEERING MITIGATION DESIGN SECTIONS A-A, B-B, and TYPICAL LEFT BANK

PROJECT No.:	DWG No.:	REV.:
0095-105-05	3	1

DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011

Survey Control Points

Survey control stations were established on July 19-20, 2010 by Kerr Wood Leidal Associates Ltd. using survey grade GPS equipment. UTM NAD83 Zone 10N coordinates were derived based on GPS data. Topographic control points at the project site are presented in Table 1.

Table 1. Topographic Survey Control Stations

Description	Northing	Easting	Elevation (m)
OIP/BF&U/295	5,495,199.451	639580.286	886.694
SPIKE#2314	5,495,260.963	639,857.912	894.173
SPIKE#9541	5,495,221.012	639,763.403	892.056
SPIKE#9542	5,495,241.306	639,827.357	893.322
SPIKE#9547	5,495,335.757	639,793.808	890.882

Material and Quantities

1. Specific gravity of all rocks used in the construction is to be greater or equal to 2.65 t/m^3. Rock source to be approved by the engineer. Stone used for rock riprap should be hard, angular in shape, resistant to weathering and water action, free from overburden, spoil, silt and clay or organic material. The rock should be free from seams, cracks, cleavage plains and laminations.
2. Riprap material should consist of blasted, angular rock. Riprap quantities are presented Table 2. Riprap gradation is provided in Table 3.
3. Granular filter may be necessary along the armoured banks under the riprap to provide compatibility between the riprap and the underlying material. Filter quanities are provided in Table 2. Gradation was selected assuming the underlying bank is composed of well graded sand with fine gravels. Gradation is presented in Table 3. Alternatively, non-woven geotextile filter fabric could be used in place of granular filter. Mirafi 1160N or similar with minimum grab strength >1300 N, puncture strength >820 N, burst strength 4500 kPa, apparent opening size (AOS) 0.12 mm to 0.20 mm.
4. Epoxy SPEC Poly - SP2888 Brush Grade
5. Rock Shield Tuff N Nuff - 3/8" thick
6. Steel Sleeve Petro-Line, Petro NPS24 0.500WT x 36
7. Lock Block Concrete 750 x 750 x 1500, 1900kg
8. NPS 24" Swamp Weight NPS24 1930 x 1135 x 789h, 3065kg
9. Eyebolts SS Threaded ½" x 6"

Table 2. Material Quantities

Material	Unit	Quantity	Application
riprap	m^3	400	pipe protection on bed (apron)
riprap	m^3	220	right bank armour
riprap	m^3	100	right bank passive riprap mass
granular filter	m^3	30	bank armour
swamp weights	ea.	28	pipeline cover
concrete blocks	ea.	56	pipeline cover anchors
steel sleeve	ea.	1	pipe reinforcement

Table 3. Riprap and Filter Gradation (mm nominal rock diameter)

Material	D_{15}	D_{50}	D_{85}
riprap (apron)	200	450	600
riprap (right bank)	400	800	1000
granular filter	25	50	75

Timing, Site Access and Preparation

1. The pipeline crossing is located approximately 66 km southwest of Merritt, 40 km northeast of Hope on the Coquihalla River. GPS coordinates for the crossing are Latitude 49°35'38" (49.59393), Longitude -121°4'1" (-121.06689) (UTM 10U 5495279N, 639699E, WGS84) at an elevation of approximately 885 m. The site can be accessed from the Coquihalla Highway via a locked gate at the Coquihalla Lakes exit, 55 km (by road) northeast of Hope, B.C. and 8.5 km southwest along the gravel road (Old Coquihalla Road) that follows the abandoned Kettle Valley Railway grade.
2. Isolate the worksite from any flow that is present in the channel. KMC to specify the method of diversion or other dewatering.
3. Low flow conditions are ideal for conducting in-stream works since diversion of flow and other dewatering issues will be minimized. Average daily flows from 1965 to 2008 for WSC station 08MF062 - Coquihalla River below Needle Creek were prorated based on relative drainage basin areas (WSC Station basin area = 85.5 km², Coquihalla 2 basin area = 43.7 km²) and presented in Figure 1. The data illustrate the relative annual distribution of flows expected to be present at the Coquihalla 2 crossing. It is noteworthy that flow at Coquihalla 2 typically flows subsurface from early August to mid October.

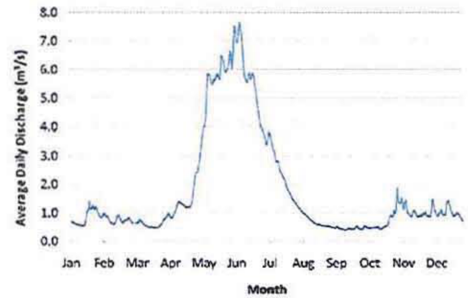


Figure 1. Average daily flow estimate for Coquihalla 2, data was taken from WSC station 08MF062 - Coquihalla River below Needle Creek, 1965 - 2008.

Construction Sequence

1. **Prepare Working Surface.** Strip banks and excavate material to the limits of the designed structures. Clearing and grubbing should be kept to a minimum required to meet the specifications shown on the design drawings, with slopes left free of brush, trees, stumps or other objectionable materials and dressed to a smooth surface. Banks are to be trimmed uniform slope, as indicated on drawings. Loose, soft or spongy material, and large rocks projecting through the slope shall be removed and the resulting minor potholes filled with selected non-cohesive materials and compacted as desired. In-situ material excavated from the channel bed is to be stockpiled.
2. **Pipeline Protection.** Expose the pipeline for a horizontal distance (in the longitudinal pipe direction) of approximately 50 m as shown in Section A-A, Drawing 3. Hand excavation may be required in the immediate vicinity of the pipeline to avoid damage due to machine impact on the pipeline. Install concrete blocks ("Lock Blocks" or similar) parallel to the the exposed length of pipe, on each side of the pipe. Concrete blocks to have dimensions 1.5 m (length) x 0.75 m (width) x 0.375 m (height). The top elevation of the concrete blocks should be 0.9 m below the top elevation of the pipe. Install precast concrete swamp weights over the pipeline along the length of exposed pipe, forming a protective shield around the pipe. Top elevation of precast concrete swamp weights not to exceed 0.3 m above the crest elevation of the pipe. Connect the concrete weights to the concrete blocks with 5/8" high tensile strength galvanized steel cable. 2 cables are to be used per 1.9 m length of concrete swamp weight. The lock blocks and cable system will anchor the concrete swamp weights in place.
3. **Riprap Apron.** Install a minimum 1.8 m thick layer of D_{50} 450 mm riprap for a length of approximately 50 m along the channel bed along the pipeline as shown in Section B-B, Drawing 3. The top surface elevation of the riprap will be minimum 0.5 m higher than the top of the concrete swamp weights. The apron will extend minimum 3 m upstream and 5 m downstream from the pipe centreline. The footprint of the apron is presented in Drawing 2. Where the top of the finished riprap apron is lower than the exisitng bed elevation, in-situ material is to be placed on the bed over the riprap apron to match existing channel bed surface elevation.
4. **Right Bank Armouring.** Slope/regrade the right bank at 2(H):1(V). Depending on the gradation of the underlying material, a layer of granular filter may be required between the substrate and the riprap layer. If necessary, install a minimim 0.15 m thick layer of granular filter on the prepared right bank. Install a 1.5 m thick layer of riprap over the granular filter material on the prepared banks. Bank riprap shall have a D_{50} of 800 mm. Depending on the riparian re-vegetation prescription, it may be necessary to fill the riprap voids with soils while installing the riprap to create habitable conditions for riparian vegetation.
5. **Right Bank Passive Riprap Mass.** A 20 m long mass of riprap will be buried along the upstream (south) inside edge of the right of way as a passive measure to protect the pipeline from right bank lateral shifting. The mass will be 2 m deep, with a top width of 3 m and bottom width of 2 m. The footprint of the proposed mass is presented in Drawing 2.
6. **Left Bank Armouring.** A minimum horizontal length 1.5 m of pipeline will be exposed into the existing left bank riprap berm to install the concrete swamp weights. The existing left bank material is to be stockpiled and replaced after installation of the swamp weights and riprap apron. Care should be taken to interlock the re-installed left bank material with the surrounding left bank material, and with the installed apron material on the bed.

Construction Notes

1. All work should be done by an experienced operator and supervised by a qualified professional engineer.
2. The rock is to be transported and placed by methods that avoid segregation. Care should be taken to prevent cracking or breaking of rock riprap by crushing under machine tracks. Each truckload of rock brought to the site should provide a complete range of the rock sizes in the gradation.
3. Large stones to be placed at the toe of slopes or distributed evenly throughout the mass. Clusters of small or large stones are to be avoided.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	AUG 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

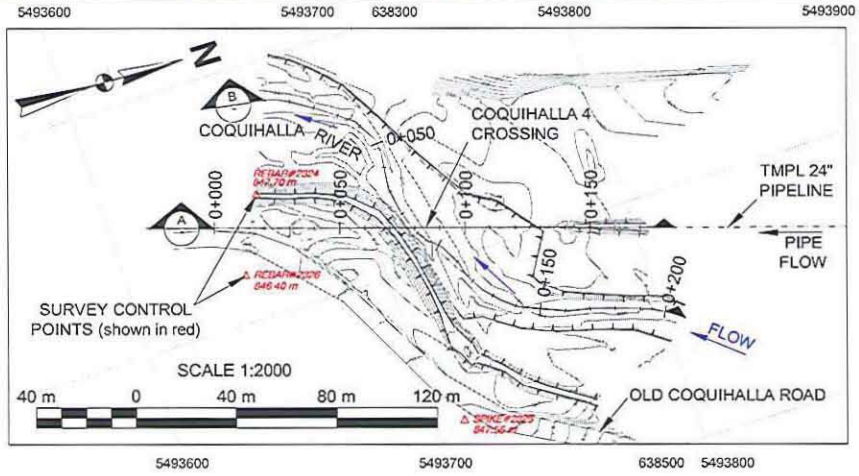
CLIENT: KINDER MORGAN

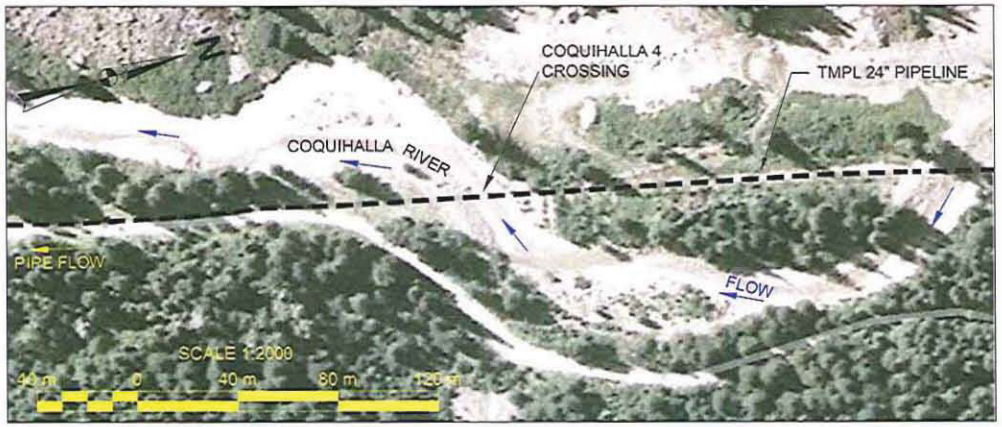
PROJECT: COQUIHALLA 2 (KP 968.63) MITIGATION

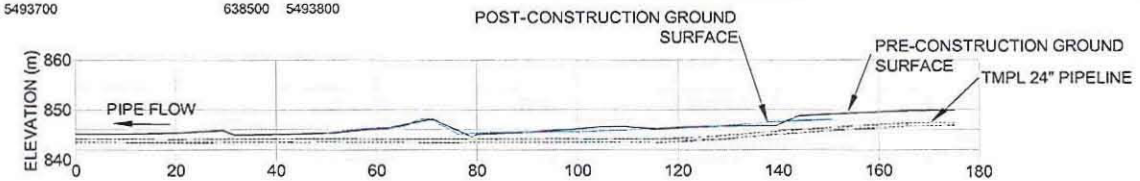
TITLE: ENGINEERING NOTES TO ACCOMPANY DRAWINGS 1, 2 AND 3

PROJECT No.:	DWG No.:	REV.:
0095-105-05	4	1

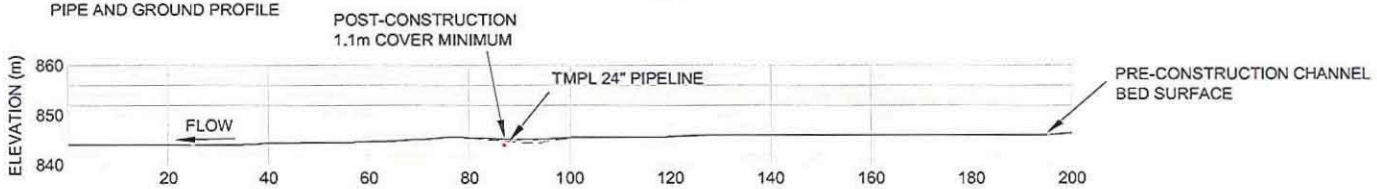
DWG TO BE READ WITH BGC MEMO TITLED "ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 2 PIPELINE CROSSING, TMPL 24", KP 968.63" DATED AUG 2011







SECTION A-A
PIPE AND GROUND PROFILE



SECTION B-B
LONGITUDINAL CHANNEL PROFILE

SCALE 1:1000
20m 0 20m 40m 60m

NOTES:
1. Contours (Plan View) are in 0.5 m elevation intervals, created from topographic survey data. The survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd. Topographic control stations were established July 19-20, 2010 and are shown in red in Drawing 1 (Plan View) and a table of control point coordinates is presented in Drawing 4 (Table 1).
2. Satellite image (Plan View) taken March 5, 2005, from Google Earth (2010).
3. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
4. Ground surfaces on Section A-A and Section B-B were generated from the topographic survey data (KWL, 2010).

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	BZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	BZ	

SCALE: AS SHOWN
DATE: AUGUST 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

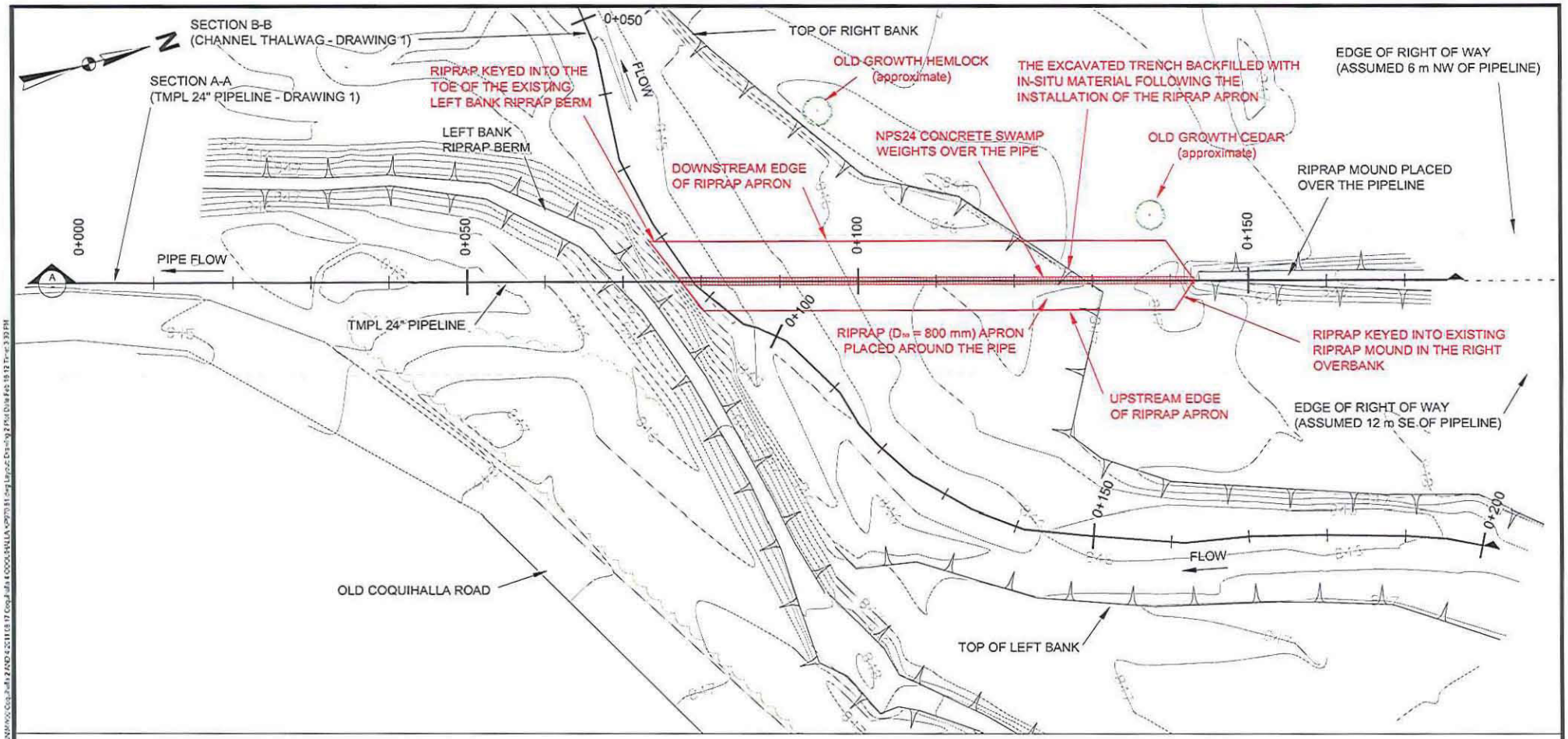
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: PRE-CONSTRUCTION SITE PLAN, PIPE AND GROUND PROFILE, AND CHANNEL PROFILE

PROJECT No.: 0095-106-05
DWG No.: 1
REV.: 1

DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011



SCALE 1:500

10m 0 10m 20m 30m

NOTES:
1. Contours are in 0.5 m elevation intervals, created from topographic survey data. Survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd.
2. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	BZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	BZ	

SCALE: AS SHOWN
DATE: AUGUST 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

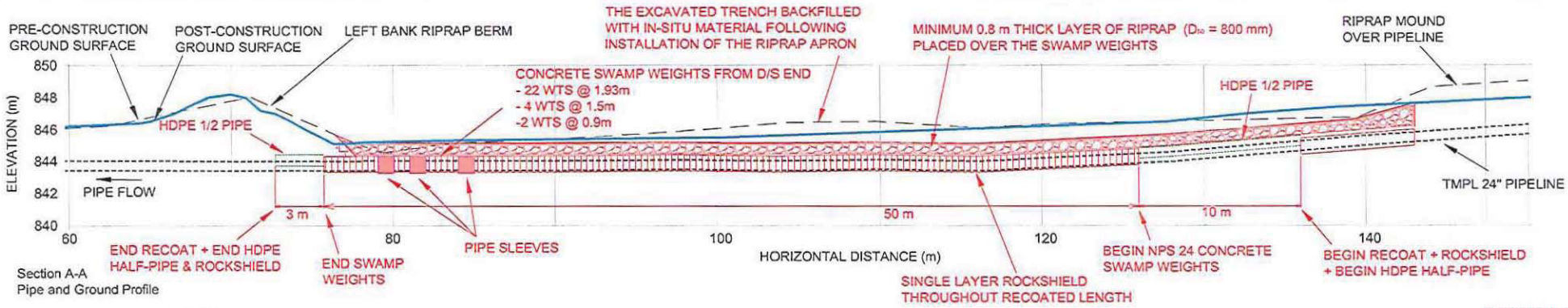
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: BASIC ENGINEERING MITIGATION DESIGN SITE PLAN

PROJECT No.: 0095-106-05 | 2 | REV.: 1

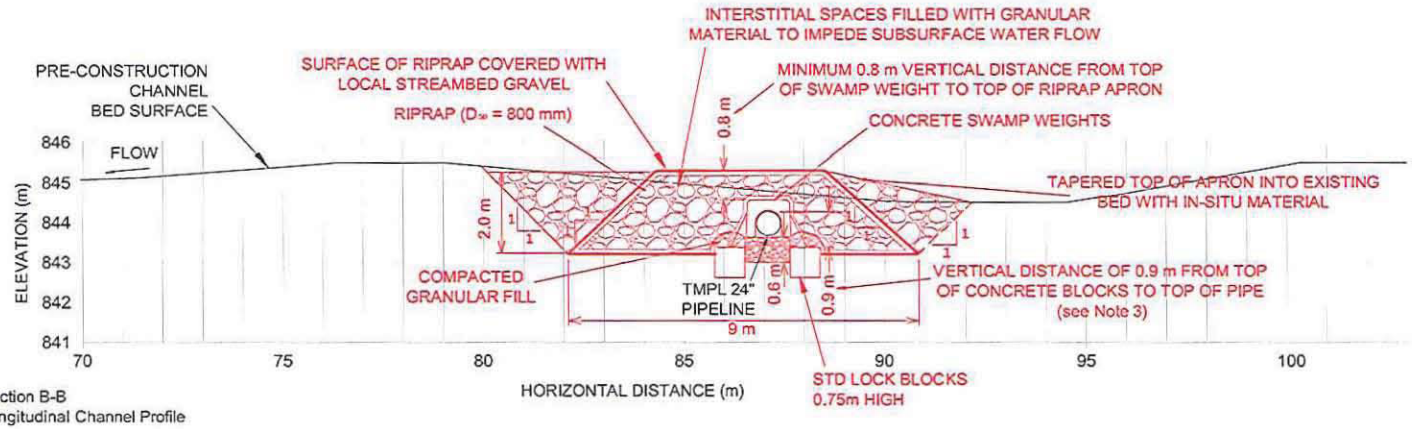
DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011



Section A-A
Pipe and Ground Profile

SCALE 1:250

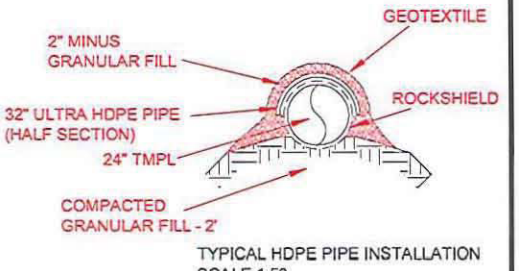
5 m 0 5 m 10 m 15 m



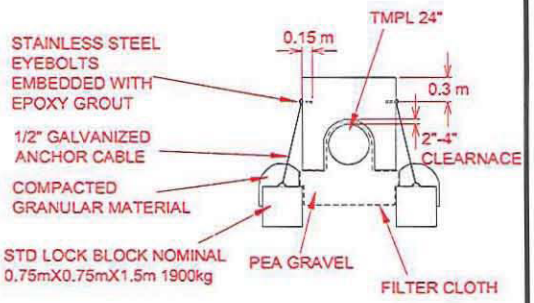
Section B-B
Longitudinal Channel Profile

SCALE 1:125

2.5 m 0 m 2.5 m 5.0 m 7.5 m



TYPICAL HDPE PIPE INSTALLATION
SCALE 1:50



TYPICAL ARRANGEMENT OF SWAMP LOCK BLOCKS OVER NPS24 PIPELINE
SCALE 1:75

NOTES:
1. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
2. Ground surfaces on Section A-A and Section B-B were generated from the topographic survey data (KWL, 2010).
3. Method of placement of swamp weights, concrete blocks, and bedding around the pipeline shall be de determined by KMC.
4. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/16	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE: AS SHOWN
DATE: AUGUST 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: BASIC ENGINEERING MITIGATION DESIGN SECTIONS A-A' and B-B'

PROJECT No.: 0095-106-05
DWG No.: 3
REV.: 1

DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011

Survey Control Points

Survey control stations were established on July 19-20, 2010 by Kerr Wood Leidal Associates Ltd. using survey grade GPS equipment. UTM NAD83 Zone 10N coordinates were derived based on GPS data. Topographic control points at the project site are presented in Table 1.

Table 1. Topographic Survey Control Stations

Description	Northing	Easting	Elevation (m)
REBAR#2324	5,493,660.746	638,351.403	847.698
SPIKE#2325	5,493,711.320	638,463.479	847.550
REBAR#2326	5,493,646.613	638,381.315	846.403

Material and Quantities

1. Specific gravity of all rocks used in the construction is to be greater or equal to 2.65 t/m³. Rock source to be approved by the engineer. Stone used for rock riprap should be hard, angular in shape, resistant to weathering and water action, free from overburden, spoil, silt and clay or organic material. The rock should be free from seams, cracks, cleavage plains and laminations.
2. Riprap material should consist of blasted, angular rock. Riprap quantities are presented Table 2. Riprap gradation is provided in Table 3.
3. Granular filter may be necessary along the armoured banks under the riprap to provide compatibility between the riprap and the underlying material. Filter quanities are provided in Table 2. Gradation was selected assuming the underlying bank is composed of well graded sand with fine gravels. Gradation is presented in Table 3. Alternatively, non-woven geotextile filter fabric could be used in place of granular filter. Mirafi 1160N or similar with minimum grab strength >1300 N, puncture strength >820 N, burst strength 4500 kPa, apparent opening size (AOS) 0.12 mm to 0.20 mm.
4. Epoxy SPEC Poly - SP2888 Brush Grade
5. Rock Shield Tuff N Nuff - 3/8" thick
6. Steel Sleeve Petro-Line, Petro NPS24 0.500WT x 36
7. Lock Block Concrete 750 x 750 x 1500, 1900kg
8. NPS24" Swamp Weight NPS24 1930 x 1135 x 789h, 3065kg
9. Eyebolts SS Threaded ½" x 6"

Table 2. Material Quantities

Material	Unit	Quantity	Application
riprap	m³	800	pipe protection on bed (apron)
swamp weights	ea.	28	pipeline cover
concrete blocks	ea	56	pipeline cover anchors
ruff n nuf	3/8" x 36" x 30'		rock shield roll
spec poly	2.0L SP-2888 R.G.		kit coating epoxy spc
spec poly	50ml SP-2888 R.G.		cartridge mini repair
steel sleeve	ea.	3	pipe reinforcement

Table 3. Riprap Gradation (mm nominal rock diameter)

Material	D_{15}	D_{50}	D_{85}
riprap (apron)	400	800	1000

Timing, Site Access and Preparation

1. The pipeline crossing is located approximately 68 km southwest of Merritt, 38 km northeast of Hope on the Coquihalla River. GPS coordinates for the crossing are Latitude 49°34'49" (49.58020), Longitude -121°5'8" (-121.08564) (UTM 10U 5493717N, 638384E, WGS84) at an elevation of approximately 845 m. The site can be accessed from the Coquihalla Highway via a locked gate at the Coquihalla Lakes exit, 55 km (by road) northeast of Hope, B.C. and 10.7 km southwest along the gravel road (Old Coquihalla Road) that follows the abandoned Kettle Valley Railway grade.
2. Isolate the worksite from any flow that is present in the channel. KMC to specify the method of diversion or other dewatering.
3. Low flow conditions are ideal for conducting in-stream works since diversion of flow and other dewatering issues will be minimized. Average daily flows from 1965 to 2008 for WSC station 08MF062 - Coquihalla River below Needle Creek were prorated based on relative drainage basin areas (WSC Station basin area = 85.5 km ², Coquihalla 4 basin area = 60.7 km ²) and presented in Figure 1. The data illustrate the relative annual distribution of flows expected to be present at the Coquihalla 4 crossing.

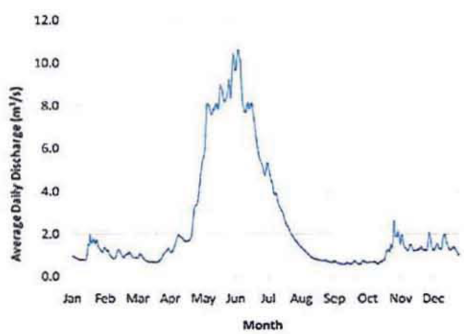


Figure 1. Average daily flow estimate for Coquihalla 4, data was taken from WSC station 08MF062 - Coquihalla River below Needle Creek, 1965 - 2008.

Construction Sequence

1. **Prepare Working Surface.** Strip banks and excavate material to the limits of the designed structures. Clearing and grubbing should be kept to a minimum required to meet the specifications shown on the design drawings, with slopes left free of brush, trees, stumps or other objectionable materials and dressed to a smooth surface. Banks are to be trimmed uniform slope, as indicated on drawings. Loose, soft or spongy material, and large rocks projecting through the slope shall be removed and the resulting minor potholes filled with selected non-cohesive materials and compacted as desired. In-situ material excavated from the channel bed is to be stockpiled.
2. **Pipeline Protection.** Expose the pipeline for a horizontal distance (in the longitudinal pipe direction) of approximately 65 m as shown in Section A-A, Drawing 3. Hand excavation may be required in the immediate vicinity of the pipeline to avoid damage due to machine impact on the pipeline. Install concrete blocks ("Lock Blocks" or similar) parallel to the the exposed length of pipe, on each side of the pipe. Concrete blocks to have dimensions 1.5 m (length) x 0.75 m (width) x 0.375 m (height). The top elevation of the concrete blocks should be 0.9 m below the top elevation of the pipe. Install precast concrete swamp weights over the pipeline along the length of exposed pipe, forming a protective shield around the pipe. Top elevation of precast concrete swamp weights not to exceed 0.3 m above the crest elevation of the pipe. Connect the concrete weights to the concrete blocks with 5/8" high tensile strength galvanized steel cable. 2 cables are to be used per 1.9 m length of concrete swamp weight. The lock blocks and cable system will anchor the concrete swamp weights in place.
3. **Riprap Apron.** Install a minimum 2.0 m thick layer of D 50 800 mm riprap for a length of approximately 65 m along the channel bed along the pipeline as shown in Section B-B, Drawing 3. The top surface elevation of the riprap will be minimum 0.8 m higher than the top of the concrete swamp weights. The apron will extend minimum 4 m upstream and 5 m downstream from the pipe centreline. The footprint of the apron is presented in Drawing 2. Where the top of the finished riprap apron is lower than the exisitng bed elevation, in-situ material is to be placed on the bed over the riprap apron to match existing channel bed surface elevation.
4. **Left Bank Armouring.** A minimum horizontal length 2.5 m of pipeline will be exposed into the existing left bank riprap berm to install the concrete swamp weights. The existing left bank material is to be stockpiled and replaced after installation of the swamp weights and riprap apron. Care should be taken to interlock the re-installed left bank material with the surrounding left bank material, and with the installed apron material on the bed.

Construction Notes

1. All work should be done by an experienced operator and supervised by a qualified professional engineer.
2. The rock is to be transported and placed by methods that avoid segregation. Care should be taken to prevent cracking or breaking of rock riprap by crushing under machine tracks. Each truckload of rock brought to the site should provide a complete range of the rock sizes in the gradation.
3. Large stones to be placed at the toe of slopes or distributed evenly throughout the mass. Clusters of small or large stones are to be avoided.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	NOV 2010
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

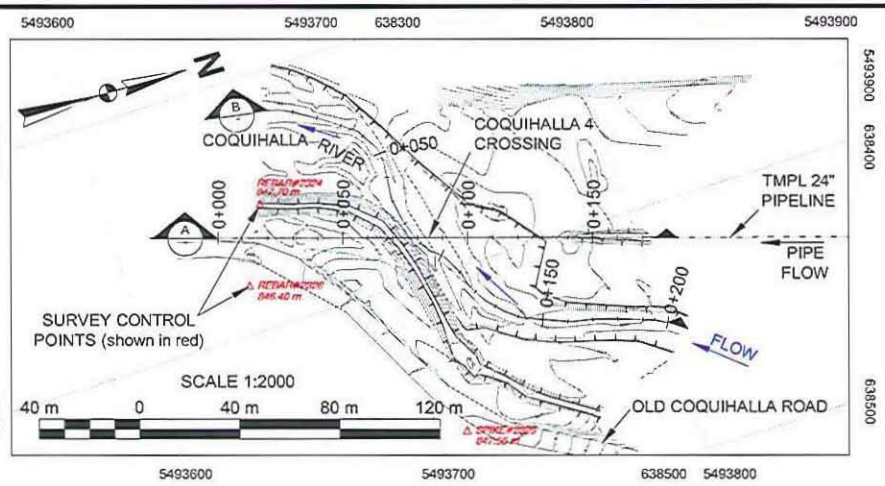
CLIENT: KINDER MORGAN

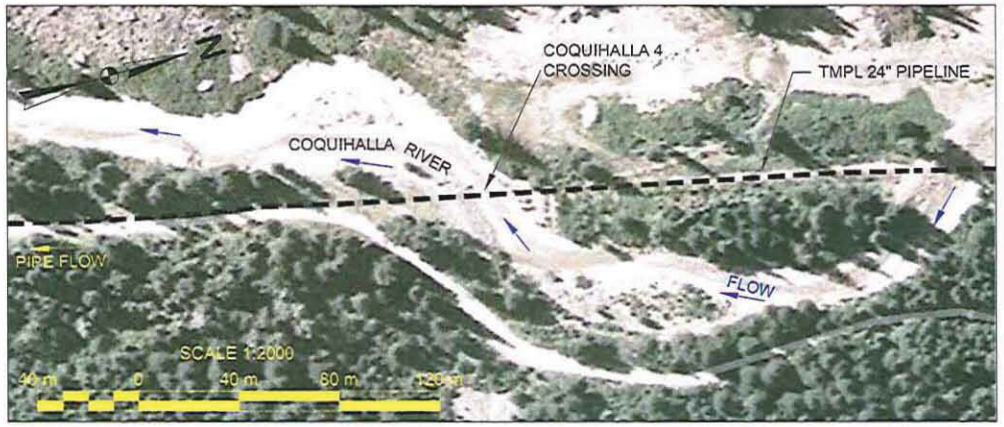
PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

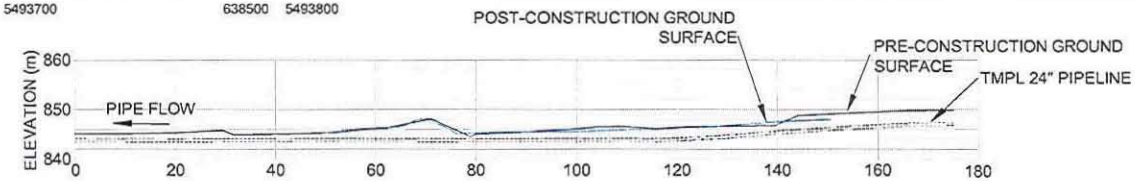
TITLE: BASIC ENGINEERING NOTES TO ACCOMPANY DRAWINGS 1, 2 AND 3

PROJECT No.:	DWG No.:	REV.:
0095-106-05	4	1

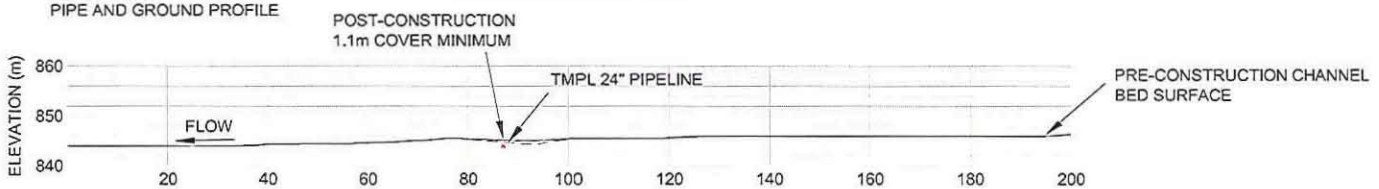
DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011







SECTION A-A
PIPE AND GROUND PROFILE



SECTION B-B
LONGITUDINAL CHANNEL PROFILE

SCALE 1:1000
20m 0 20m 40m 60m

NOTES:
1. Contours (Plan View) are in 0.5 m elevation intervals, created from topographic survey data. The survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd. Topographic control stations were established July 19-20, 2010 and are shown in red in Drawing 1 (Plan View) and a table of control point coordinates is presented in Drawing 4 (Table 1).
2. Satellite image (Plan View) taken March 5, 2005, from Google Earth (2010).
3. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
4. Ground surfaces on Section A-A and Section B-B were generated from the topographic survey data (KWL, 2010).

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE: AS SHOWN
DATE: AUGUST 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

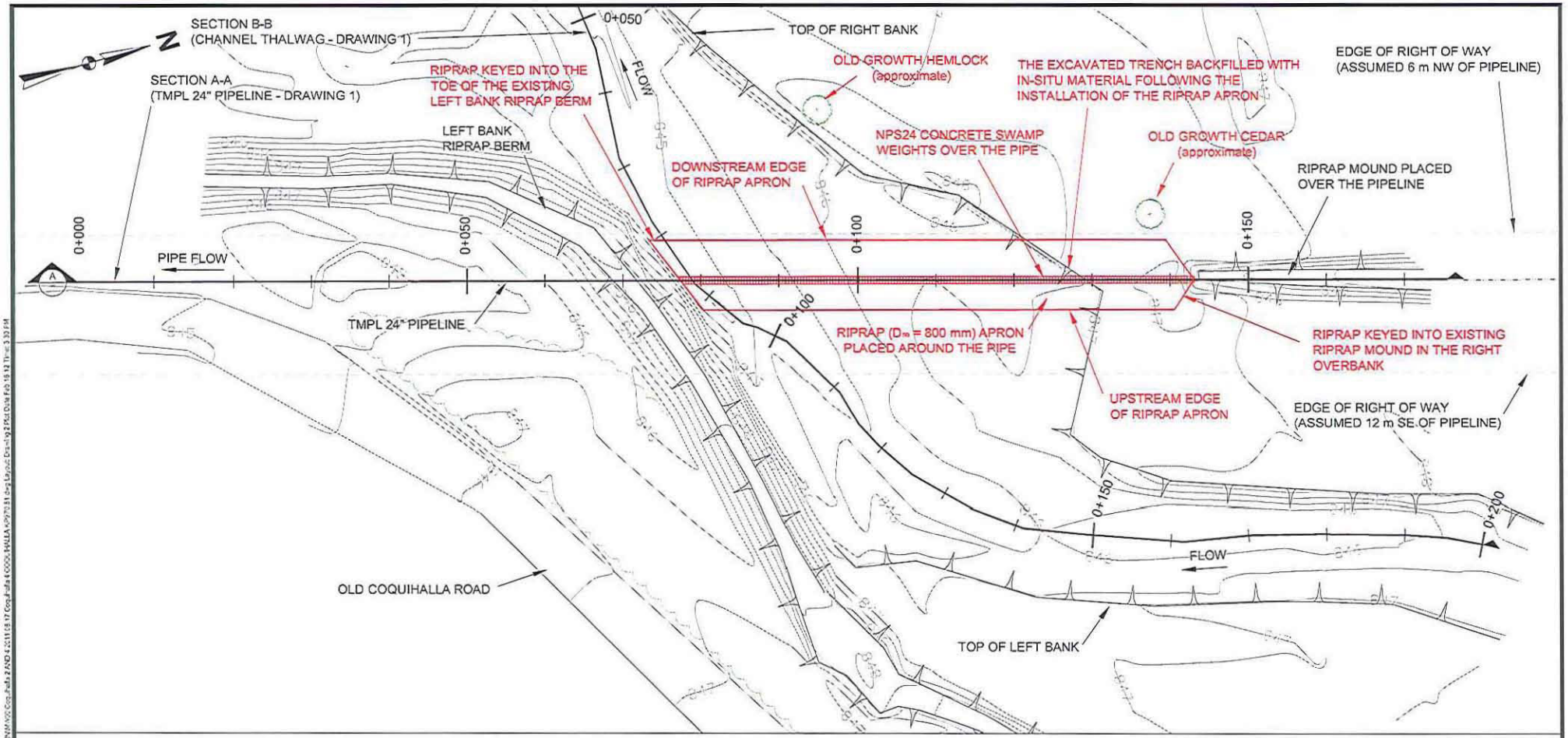
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: PRE-CONSTRUCTION SITE PLAN, PIPE AND GROUND PROFILE, AND CHANNEL PROFILE

PROJECT No.:	DWG No.:	REV.:
0095-106-05	1	1

DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011



SCALE 1:500

10m 0 10m 20m 30m

NOTES:

1. Contours are in 0.5 m elevation intervals, created from topographic survey data. Survey was carried out on August 11-12, 2010 by Kerr Wood Leidal Associates Ltd.
2. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	BZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	BZ	

SCALE: AS SHOWN
DATE: AUGUST 2011
DRAWN: RG
DESIGNED: RG
CHECKED: HW
APPROVED: HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

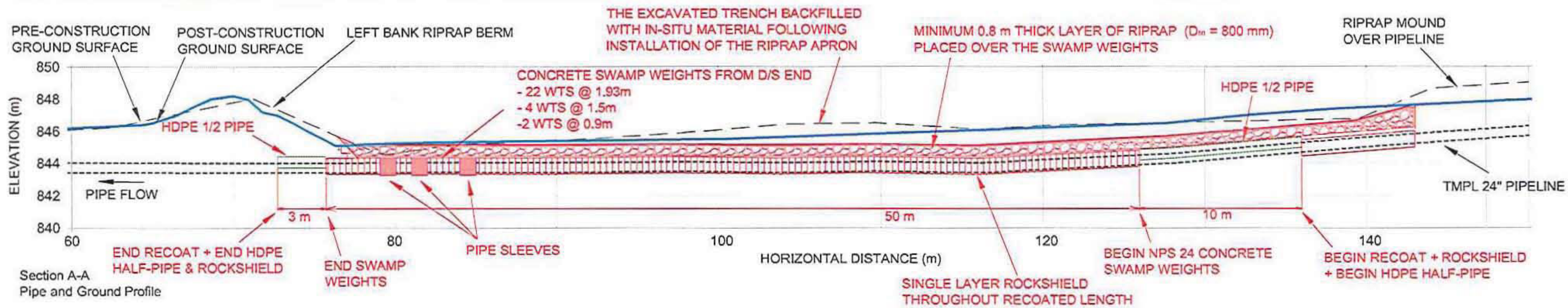
CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: BASIC ENGINEERING MITIGATION DESIGN SITE PLAN

PROJECT No.: 0095-106-05 | 2 | REV.: 1

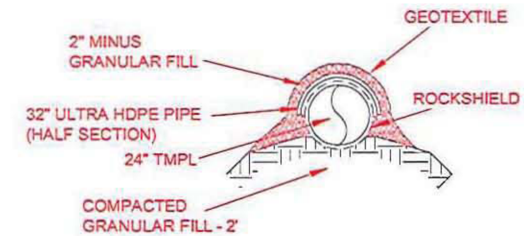
DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011


PRE-CONSTRUCTION GROUND SURFACE
POST-CONSTRUCTION GROUND SURFACE
LEFT BANK RIPRAP BERM
THE EXCAVATED TRENCH BACKFILLED WITH IN-SITU MATERIAL FOLLOWING INSTALLATION OF THE RIPRAP APRON
MINIMUM 0.8 m THICK LAYER OF RIPRAP (D50 = 800 mm) PLACED OVER THE SWAMP WEIGHTS
RIPRAP MOUND OVER PIPELINE
CONCRETE SWAMP WEIGHTS FROM D/S END
- 22 WTS @ 1.93m
- 4 WTS @ 1.5m
-2 WTS @ 0.9m
HDPE 1/2 PIPE
HDPE 1/2 PIPE
ELEVATION (m)
850
848
846
844
842
840
PIPE FLOW
TMPL 24" PIPELINE
3 m
50 m
10 m
60
80
100
120
140
HORIZONTAL DISTANCE (m)
END RECOAT + END HDPE HALF-PIPE & ROCKSHIELD
END SWAMP WEIGHTS
PIPE SLEEVES
SINGLE LAYER ROCKSHIELD THROUGHOUT RECOATED LENGTH
BEGIN NPS 24 CONCRETE SWAMP WEIGHTS
BEGIN RECOAT + ROCKSHIELD + BEGIN HDPE HALF-PIPE

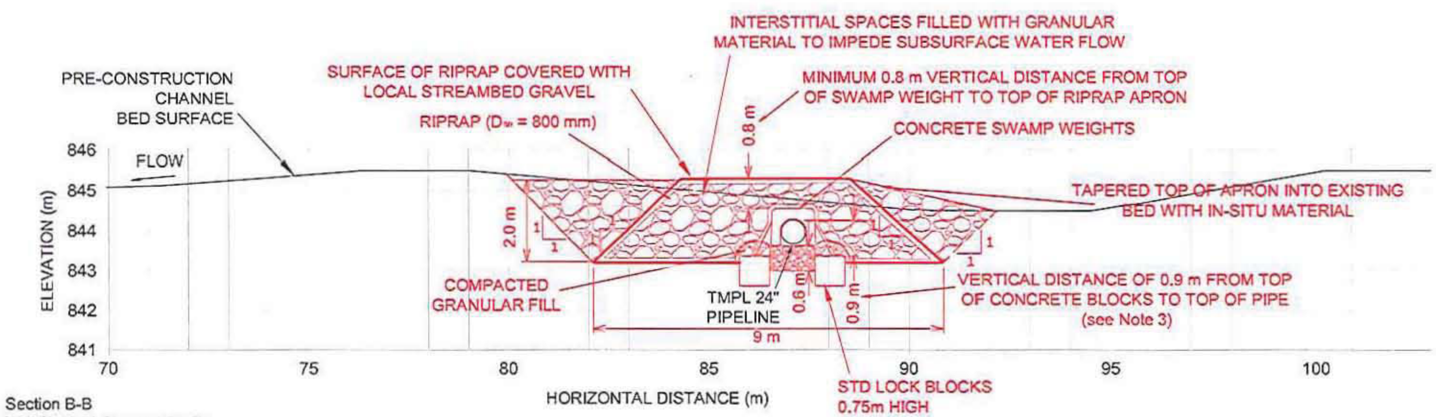
Section A-A
Pipe and Ground Profile

SCALE 1:250

5 m 0 5 m 10 m 15 m



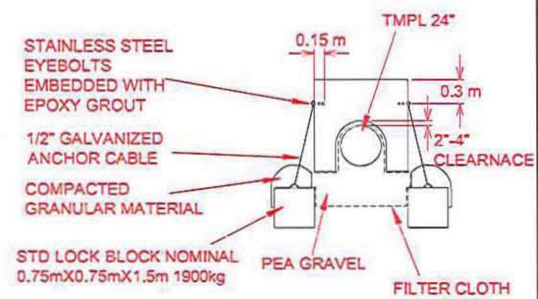
TYPICAL HDPE PIPE INSTALLATION
SCALE 1:50


INTERSTITIAL SPACES FILLED WITH GRANULAR MATERIAL TO IMPEDE SUBSURFACE WATER FLOW
PRE-CONSTRUCTION CHANNEL BED SURFACE
SURFACE OF RIPRAP COVERED WITH LOCAL STREAMBED GRAVEL
MINIMUM 0.8 m VERTICAL DISTANCE FROM TOP OF SWAMP WEIGHT TO TOP OF RIPRAP APRON
RIPRAP (D50 = 800 mm)
0.8 m
CONCRETE SWAMP WEIGHTS
FLOW
ELEVATION (m)
846
845
844
843
842
841
2.0 m
TAPERED TOP OF APRON INTO EXISTING BED WITH IN-SITU MATERIAL
COMPACTED GRANULAR FILL
TMPL 24" PIPELINE
0.6 m
0.9 m
VERTICAL DISTANCE OF 0.9 m FROM TOP OF CONCRETE BLOCKS TO TOP OF PIPE (see Note 3)
9 m
70
75
80
85
90
95
100
HORIZONTAL DISTANCE (m)
STD LOCK BLOCKS 0.75m HIGH

Section B-B
Longitudinal Channel Profile

SCALE 1:125

2.5 m 0 m 2.5 m 5.0 m 7.5 m



TYPICAL ARRANGEMENT OF SWAMP LOCK BLOCKS OVER NPS24 PIPELINE
SCALE 1:75

NOTES:
1. Pipe burial depth (Section A-A) was measured by BGC during the August 11-12, 2010 topographic survey.
2. Ground surfaces on Section A-A and Section B-B were generated from the topographic survey data (KWL, 2010).
3. Method of placement of swamp weights, concrete blocks, and bedding around the pipeline shall be de determined by KMC.
4. Items in red are components of the proposed mitigation design.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/16	AS-BUILT FOR REVIEW	JJK	DZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	DZ	

SCALE:	AS SHOWN
DATE:	AUGUST 2011
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: KINDER MORGAN

PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: BASIC ENGINEERING MITIGATION DESIGN SECTIONS A-A' and B-B'

PROJECT No.:	DWG No.:	REV.:
0095-106-05	3	1

DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011

Survey Control Points

Survey control stations were established on July 19-20, 2010 by Kerr Wood Leidal Associates Ltd. using survey grade GPS equipment. UTM NAD83 Zone 10N coordinates were derived based on GPS data. Topographic control points at the project site are presented in Table 1.

Table 1. Topographic Survey Control Stations

Description	Northing	Easting	Elevation (m)
REBAR#2324	5,493,660.746	638,351.403	847.698
SPIKE#2325	5,493,711.320	638,463.479	847.550
REBAR#2326	5,493,646.613	638,381.315	846.403

Material and Quantities

1. Specific gravity of all rocks used in the construction is to be greater or equal to 2.65 t/m³. Rock source to be approved by the engineer. Stone used for rock riprap should be hard, angular in shape, resistant to weathering and water action, free from overburden, spoil, silt and clay or organic material. The rock should be free from seams, cracks, cleavage plains and laminations.
2. Riprap material should consist of blasted, angular rock. Riprap quantities are presented Table 2. Riprap gradation is provided in Table 3.
3. Granular filter may be necessary along the armoured banks under the riprap to provide compatibility between the riprap and the underlying material. Filter quanities are provided in Table 2. Gradation was selected assuming the underlying bank is composed of well graded sand with fine gravels. Gradation is presented in Table 3. Alternatively, non-woven geotextile filter fabric could be used in place of granular filter. Mirafi 1160N or similar with minimum grab strength >1300 N, puncture strength >820 N, burst strength 4500 kPa, apparent opening size (AOS) 0.12 mm to 0.20 mm.
4. Epoxy SPEC Poly - SP2888 Brush Grade
5. Rock Shield Tuff N Nuff - 3/8" thick
6. Steel Sleeve Petro-Line, Petro NPS24 0.500WT x 36
7. Lock Block Concrete 750 x 750 x 1500, 1900kg
8. NPS24" Swamp Weight NPS24 1930 x 1135 x 789h, 3065kg
9. Eyebolts SS Threaded 1/2" x 6"

Table 2. Material Quantities

Material	Unit	Quantity	Application
riprap	m³	800	pipe protection on bed (apron)
swamp weights	ea.	28	pipeline cover
concrete blocks	ea	56	pipeline cover anchors
ruff n nuf	3/8" x 36" x 30'		rock shield roll
spec poly	2.0L SP-2888 R.G.		kit coating epoxy spc
spec poly	50ml SP-2888 R.G.		cartridge mini repair
steel sleeve	ea.	3	pipe reinforcement

Table 3. Riprap Gradation (mm nominal rock diameter)

Material	D_{15}	D_{50}	D_{85}
riprap (apron)	400	800	1000

Timing, Site Access and Preparation

1. The pipeline crossing is located approximately 68 km southwest of Merritt, 38 km northeast of Hope on the Coquihalla River. GPS coordinates for the crossing are Latitude 49°34'49" (49.58020), Longitude -121°5'8" (-121.08564) (UTM 10U 5493717N, 638384E, WGS84) at an elevation of approximately 845 m. The site can be accessed from the Coquihalla Highway via a locked gate at the Coquihalla Lakes exit, 55 km (by road) northeast of Hope, B.C. and 10.7 km southwest along the gravel road (Old Coquihalla Road) that follows the abandoned Kettle Valley Railway grade.
2. Isolate the worksite from any flow that is present in the channel. KMC to specify the method of diversion or other dewatering.
3. Low flow conditions are ideal for conducting in-stream works since diversion of flow and other dewatering issues will be minimized. Average daily flows from 1965 to 2008 for WSC station 08MF062 - Coquihalla River below Needle Creek were prorated based on relative drainage basin areas (WSC Station basin area = 85.5 km ², Coquihalla 4 basin area = 60.7 km ²) and presented in Figure 1. The data illustrate the relative annual distribution of flows expected to be present at the Coquihalla 4 crossing.

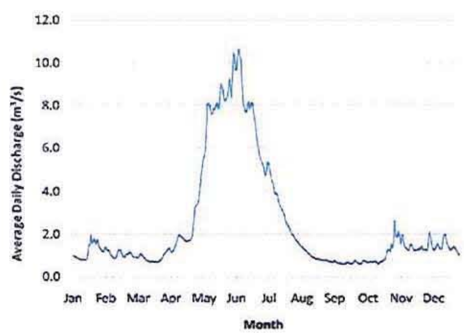


Figure 1. Average daily flow estimate for Coquihalla 4, data was taken from WSC station 08MF062 - Coquihalla River below Needle Creek, 1965 - 2008.

Construction Sequence

1. **Prepare Working Surface.** Strip banks and excavate material to the limits of the designed structures. Clearing and grubbing should be kept to a minimum required to meet the specifications shown on the design drawings, with slopes left free of brush, trees, stumps or other objectionable materials and dressed to a smooth surface. Banks are to be trimmed uniform slope, as indicated on drawings. Loose, soft or spongy material, and large rocks projecting through the slope shall be removed and the resulting minor potholes filled with selected non-cohesive materials and compacted as desired. In-situ material excavated from the channel bed is to be stockpiled.
2. **Pipeline Protection.** Expose the pipeline for a horizontal distance (in the longitudinal pipe direction) of approximately 65 m as shown in Section A-A, Drawing 3. Hand excavation may be required in the immediate vicinity of the pipeline to avoid damage due to machine impact on the pipeline. Install concrete blocks ("Lock Blocks" or similar) parallel to the the exposed length of pipe, on each side of the pipe. Concrete blocks to have dimensions 1.5 m (length) x 0.75 m (width) x 0.375 m (height). The top elevation of the concrete blocks should be 0.9 m below the top elevation of the pipe. Install precast concrete swamp weights over the pipeline along the length of exposed pipe, forming a protective shield around the pipe. Top elevation of precast concrete swamp weights not to exceed 0.3 m above the crest elevation of the pipe. Connect the concrete weights to the concrete blocks with 5/8" high tensile strength galvanized steel cable. 2 cables are to be used per 1.9 m length of concrete swamp weight. The lock blocks and cable system will anchor the concrete swamp weights in place.
3. **Riprap Apron.** Install a minimum 2.0 m thick layer of D_{50} 800 mm riprap for a length of approximately 65 m along the channel bed along the pipeline as shown in Section B-B, Drawing 3. The top surface elevation of the riprap will be minimum 0.8 m higher than the top of the concrete swamp weights. The apron will extend minimum 4 m upstream and 5 m downstream from the pipe centreline. The footprint of the apron is presented in Drawing 2. Where the top of the finished riprap apron is lower than the exisitng bed elevation, in-situ material is to be placed on the bed over the riprap apron to match existing channel bed surface elevation.
4. **Left Bank Armouring.** A minimum horizontal length 2.5 m of pipeline will be exposed into the existing left bank riprap berm to install the concrete swamp weights. The existing left bank material is to be stockpiled and replaced after installation of the swamp weights and riprap apron. Care should be taken to interlock the re-installed left bank material with the surrounding left bank material, and with the installed apron material on the bed.

Construction Notes

1. All work should be done by an experienced operator and supervised by a qualified professional engineer.
2. The rock is to be transported and placed by methods that avoid segregation. Care should be taken to prevent cracking or breaking of rock riprap by crushing under machine tracks. Each truckload of rock brought to the site should provide a complete range of the rock sizes in the gradation.
3. Large stones to be placed at the toe of slopes or distributed evenly throughout the mass. Clusters of small or large stones are to be avoided.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.
0	2011/12/14	AS-BUILT FOR REVIEW	JJK	BZ	
1	2012/02/15	AS-BUILT PER MARK-UPS	YL	BZ	

SCALE:	AS SHOWN
DATE:	NOV 2010
DRAWN:	RG
DESIGNED:	RG
CHECKED:	HW
APPROVED:	HW

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

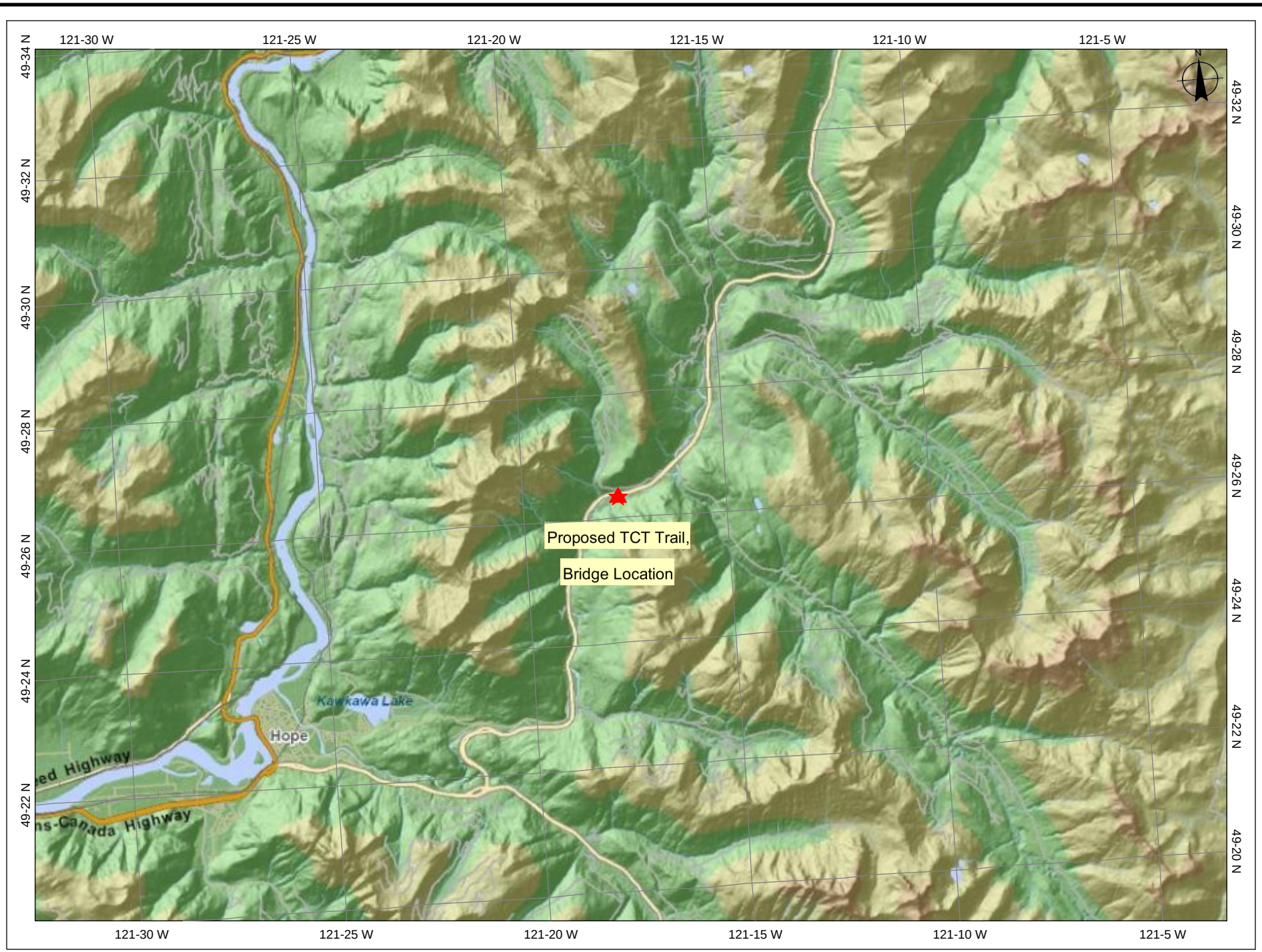
CLIENT: KINDER MORGAN

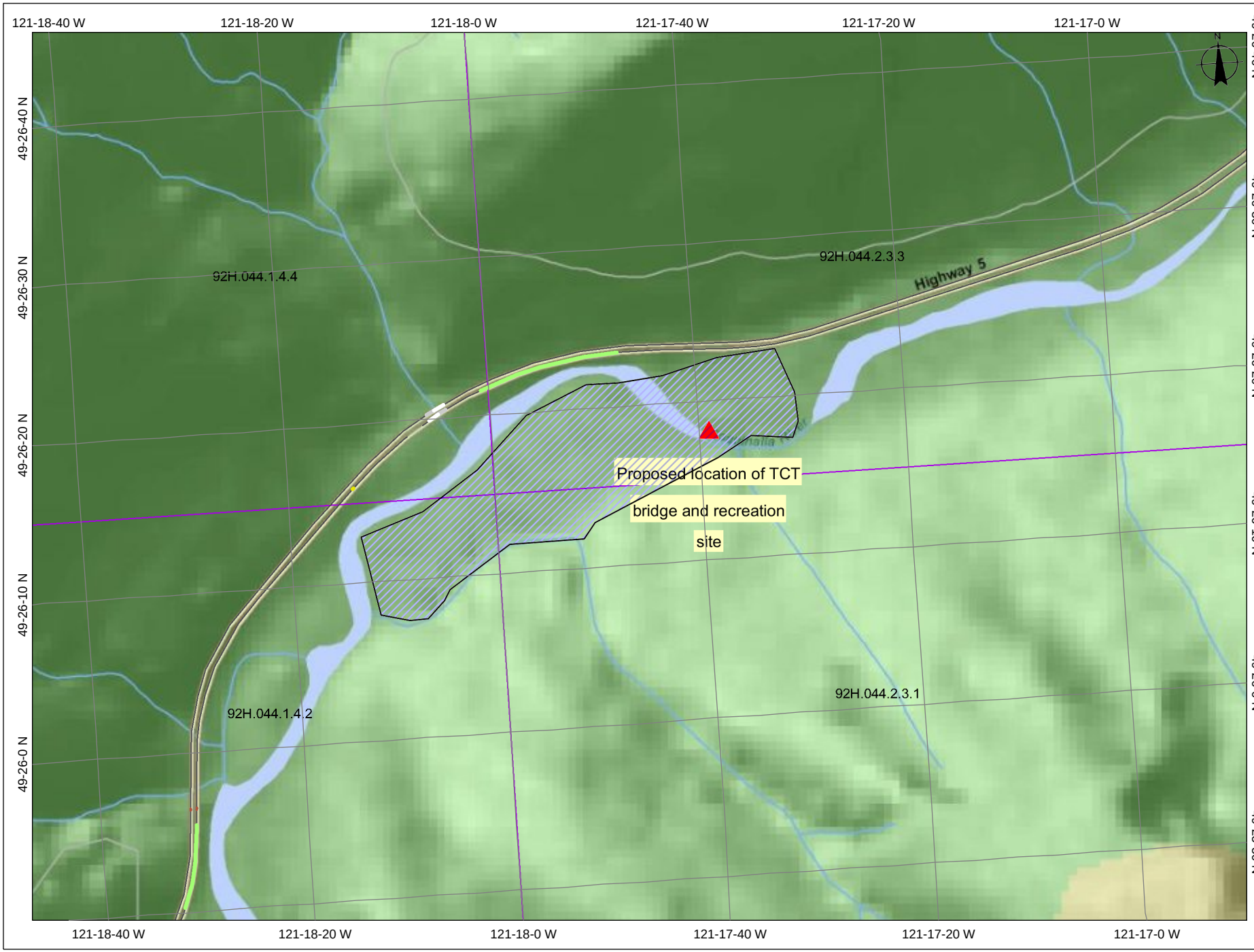
PROJECT: COQUIHALLA 4 (KP 970.81) MITIGATION

TITLE: BASIC ENGINEERING NOTES TO ACCOMPANY DRAWINGS 1, 2 AND 3

PROJECT No.:	DWG No.:	REV.:
0095-106-05	4	1

DWG TO BE READ WITH BGC MEMO TITLED "BASIC ENGINEERING MITIGATION DESIGN OF THE COQUIHALLA 4 PIPELINE CROSSING, TMPL 24", KP 970.81" DATED AUGUST 2011


121-30 W
121-25 W
121-20 W
121-15 W
121-10 W
121-5 W
49-34 N
49-32 N
49-30 N
49-28 N
49-26 N
49-24 N
49-22 N
49-20 N
Proposed TCT Trail,
Bridge Location
Kawkawa Lake
Hope
ed Highway
ns-Canada Highway
N

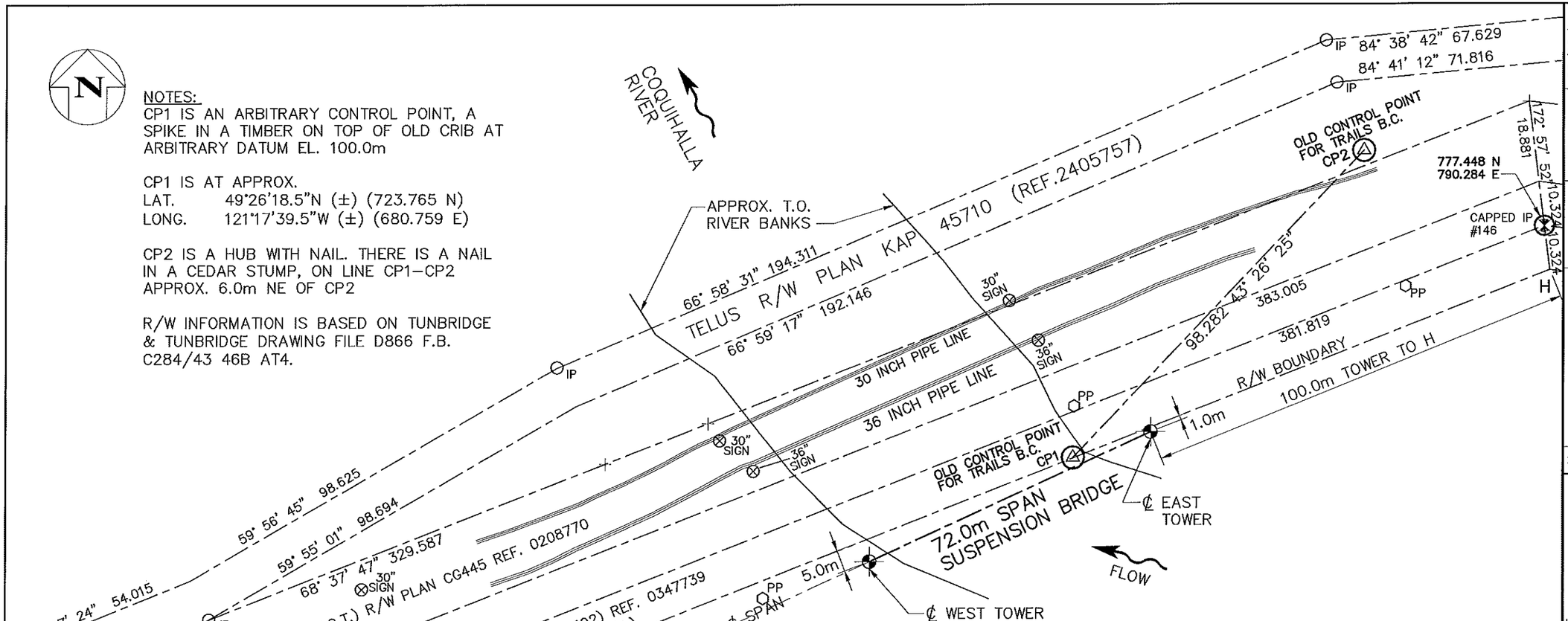

121-18-40 W
121-18-20 W
121-18-0 W
121-17-40 W
121-17-20 W
121-17-0 W
49-26-40 N
49-26-30 N
49-26-20 N
49-26-10 N
49-26-0 N
49-25-50 N
92H.044.1.4.4
92H.044.2.3.3
Highway 5
Proposed location of TCT
bridge and recreation
site
92H.044.1.4.2
92H.044.2.3.1

NOTES:
CP1 IS AN ARBITRARY CONTROL POINT, A SPIKE IN A TIMBER ON TOP OF OLD CRIB AT ARBITRARY DATUM EL. 100.0m

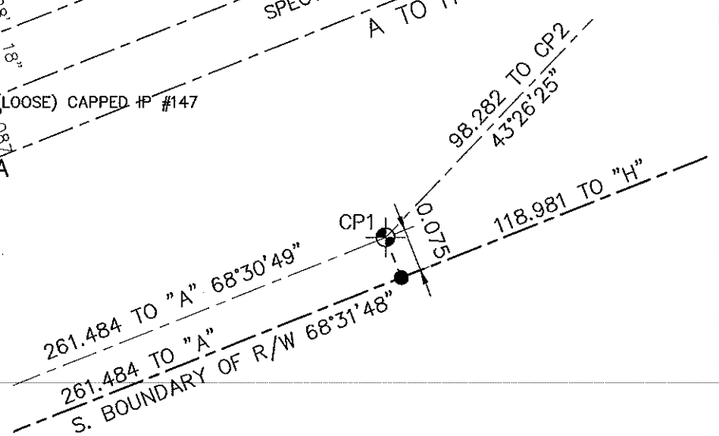
CP1 IS AT APPROX.
LAT. 49°26'18.5"N (±) (723.765 N)
LONG. 121°17'39.5"W (±) (680.759 E)

CP2 IS A HUB WITH NAIL. THERE IS A NAIL IN A CEDAR STUMP, ON LINE CP1–CP2 APPROX. 6.0m NE OF CP2

R/W INFORMATION IS BASED ON TUNBRIDGE & TUNBRIDGE DRAWING FILE D866 F.B. C284/43 46B AT4.



LOCATION PLAN
1:1000



DETAIL AT CONTROL POINT CP1
1:10

DESIGN SPECIFICATION

DESIGN LOADS:
LIVE LOAD: L = 2.6 kPa

SNOW: Ss = 3.3 kPa @ 285m
Sr = 0.70 kPa
WIND: Q50 = 0.63 kPa
WIND SKEW ANGLE COEFF. = 0.66
SEISMIC: Za = 3
Zv = 3
v = 0.15
DESIGN TEMPERATURE RANGE
MAX. = 29°C + 25°C = 54°C
MIN. = −19°C + −15°C = −34°C
RAILINGS: ON BRIDGE: 1.2 kN/m VERTICAL & HORIZONTAL SIMULTANEOUSLY
STEEL: ALL STEEL SHALL MEET CSA G40.21
350W W, HSS, WT
300W PLATE
ASTM A53 HAND RAIL PIPE
ASTM A252 GR 3 FOR SPINE PIPE

ALL FABRICATED STEEL TO BE HOT DIP GALVANIZED TO CSA G164 U.N.O. PREVENT VENT HOLES AS REQUIRED.

WELDING: ALL WELDING TO CSA W59.
ALL WELDERS CERTIFIED TO CSA W47.1.
BOLTS: GALV. ASTM A307, GALV. ASTM A325 OR 18.8 STAINLESS AS NOTED
CONCRETE: TO CONFORM TO CSA A23.1–09 AND CSA A23.2–09 AND FOR ALL CONCRETE TESTING TO BE COMPLETED AS PER REQUIREMENT LISTED IN CSA A23.4 AND A23.2.
MIN. COMPRESSIVE STRENGTH=30 MPa AT 28 DAYS,
EXPOSURE CLASS: C1
WATER CEMENT RATIO: 0.4
AIR CONTENT CATEGORY: CAT 1 (AIR CONTENT=5–8%)
GROUT: 45 MPa @ 28 DAYS
SOIL: ASSUMED ALLOWABLE BEARING CAPACITY = 120 kPa TO BE CONFIRMED ON SITE BY GEOTECHNICAL ENGINEER PRIOR CONSTRUCTION.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA J.H. ESAU 30757 JAN 25 2012

REV.	DESCRIPTION	DATE
H		
G		
F		
E	REISSUED FOR CONST.	25/01/12
D	GENERAL REVISION	16/12/11
C	NOTES REVISED	29/03/11
B	ISS'D FOR CONSTRUCTION	15/03/11
A	ISSUED FOR REVIEW	09/03/11

DATE 25/02/11
SCALE AS NOTED
DRAWN BY R.C.
DESIGN BY J.E.
CHECKED BY
APPROVED
PROJECT No. 10059 REV. E
DRAWING No. 100

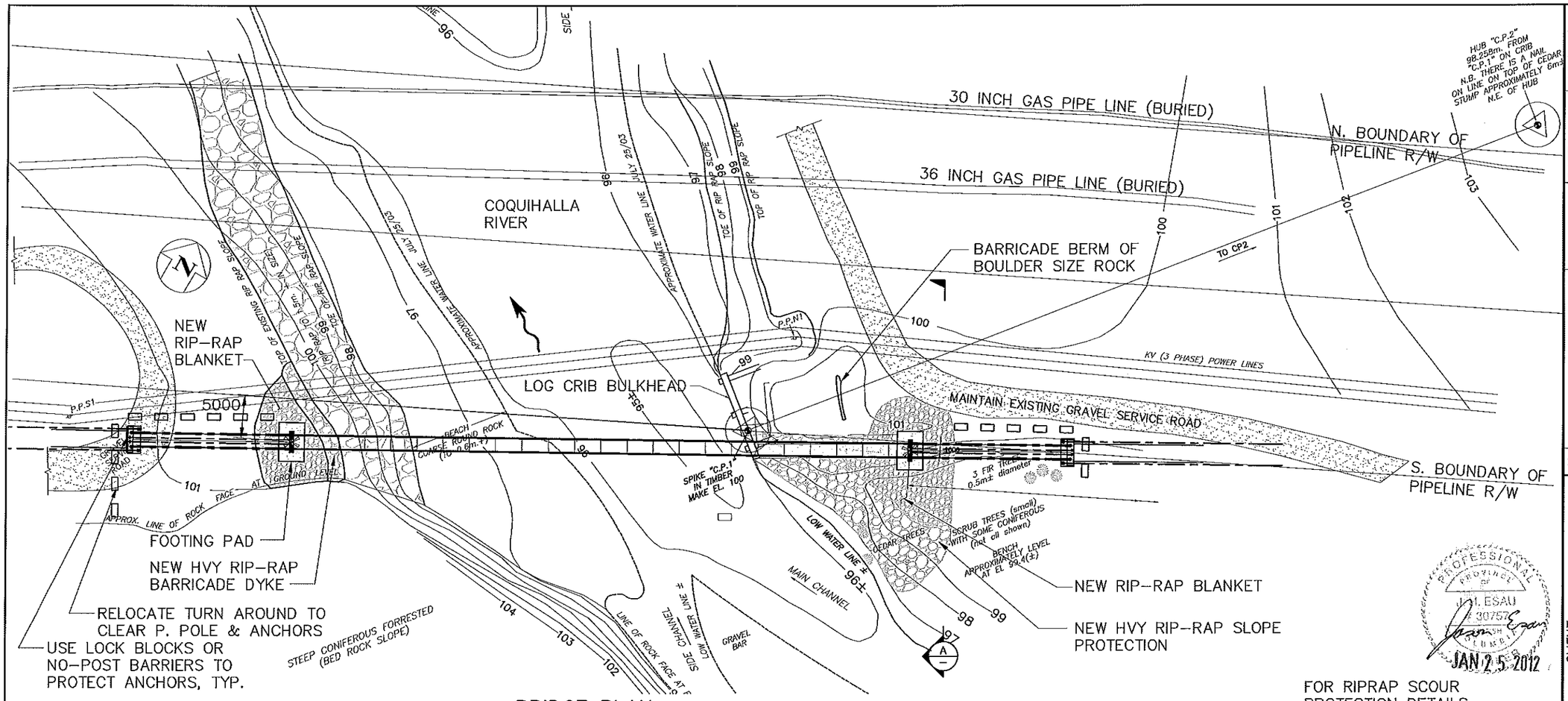
CLIENT
BC MINISTRY OF NATURAL RESOURCE OPERATIONS

PROJECT
TRANS CANADA TRAIL
COQUIHALLA PED. BRIDGE

DRAWING TITLE
LOCATION PLAN AND NOTES

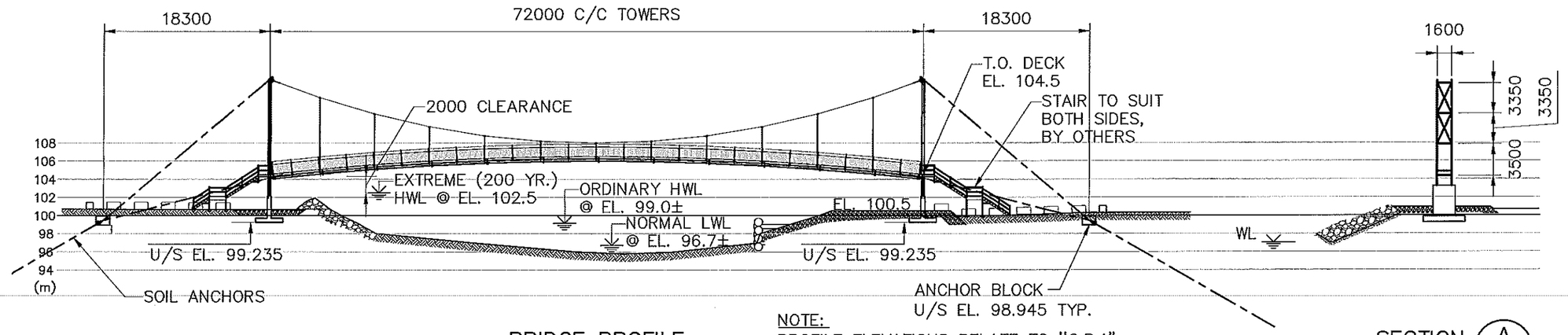
ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. V4G 1K7
E-mail: info@all-span.ca
PH: (604) 940-2212 FAX: (604) 940-1516

CADFILE: 10059–101



BRIDGE PLAN
1:500 (CONTOURS ARE "AS IS")

FOR RIPRAP SCOUR PROTECTION DETAILS, SEE DWG. 10059-201-204



BRIDGE PROFILE
1:500

NOTE:
PROFILE ELEVATIONS RELATE TO "C.P.1".
SPIKE IN LOG SET @ 100.00m (NOT GEODETIC)

SECTION A
1:500

REV.	DESCRIPTION	DATE
H		
G		
F		
E		
D	REISSUED FOR CONST.	25/01/12
C	GENERAL REVISION	16/12/11
B	ISS'D FOR CONSTRUCTION	15/03/11
A	ISSUED FOR REVIEW	09/03/11

DATE	25/02/11
SCALE	AS NOTED
DRAWN BY	R.C.
DESIGN BY	J.E.
CHECKED BY	
APPROVED	
PROJECT No.	10059 REV. D
DRAWING No.	101

CLIENT
BC MINISTRY OF NATURAL RESOURCE OPERATIONS

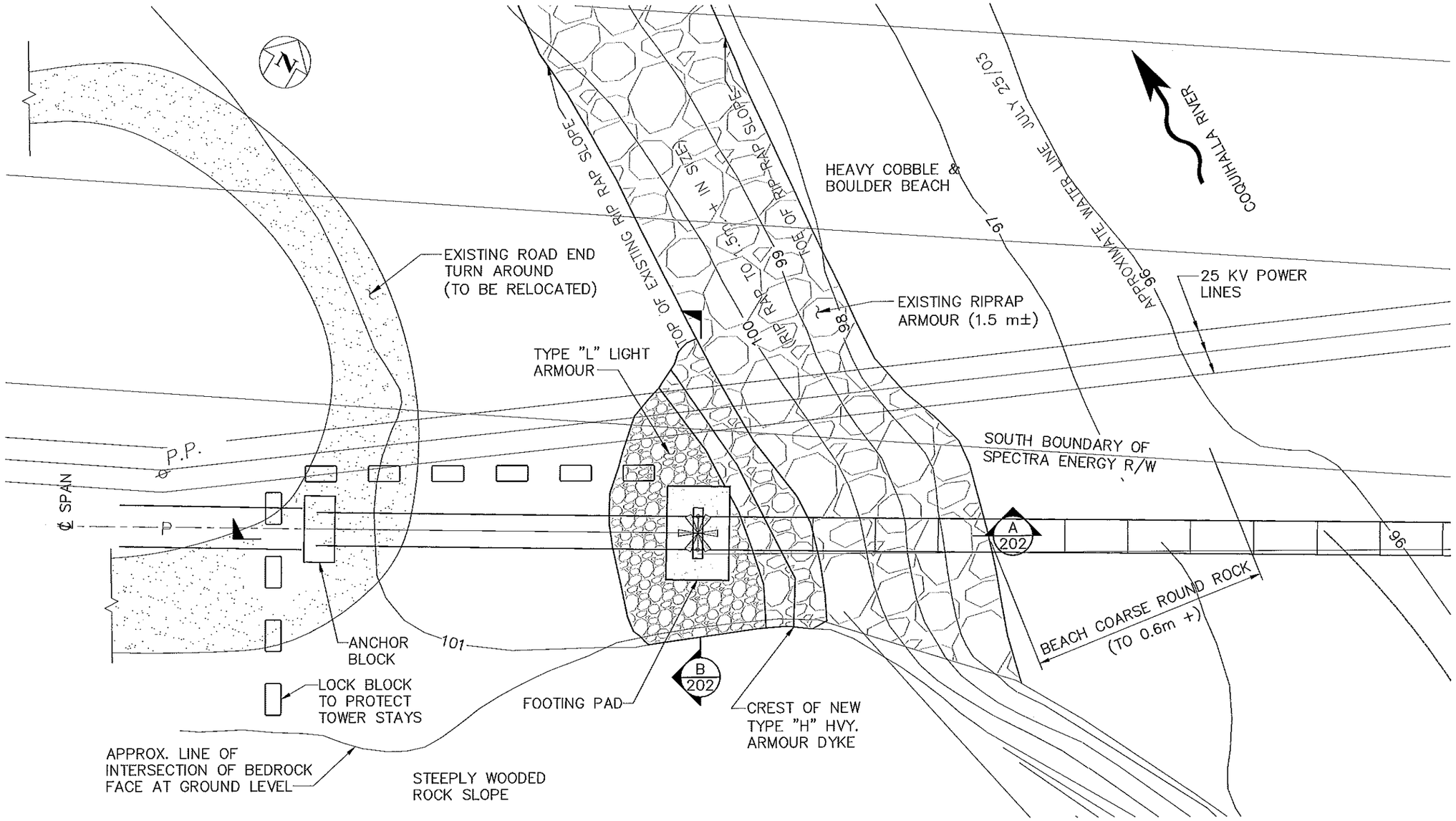
PROJECT
TRANS CANADA COQUIHALLA PED. BRIDGE

DRAWING TITLE
BRIDGE PLAN, PROFILE AND SECTION

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA J.H. ESAU 30757 JAN 25 2012

ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. V4G 1K7
E-mail: info@all-span.ca
PH: (604) 940-2212 FAX: (604) 940-1516

CADFILE: 10059-101



WEST END SCOUR PROTECTION PLAN
1:200

(ACCESS STAIRS OR RAMP TO BE BY OTHERS; NOT SHOWN)

REV.	DESCRIPTION	DATE
B	REISSUED FOR CONST.	25/01/12
A	ISS'D FOR CONSTRUCTION	15/03/11

DATE 25/02/11
SCALE AS NOTED
DRAWN BY R.C.
DESIGN BY J.E.
CHECKED BY
APPROVED
PROJECT No. 10059 REV. B
DRAWING No. 201

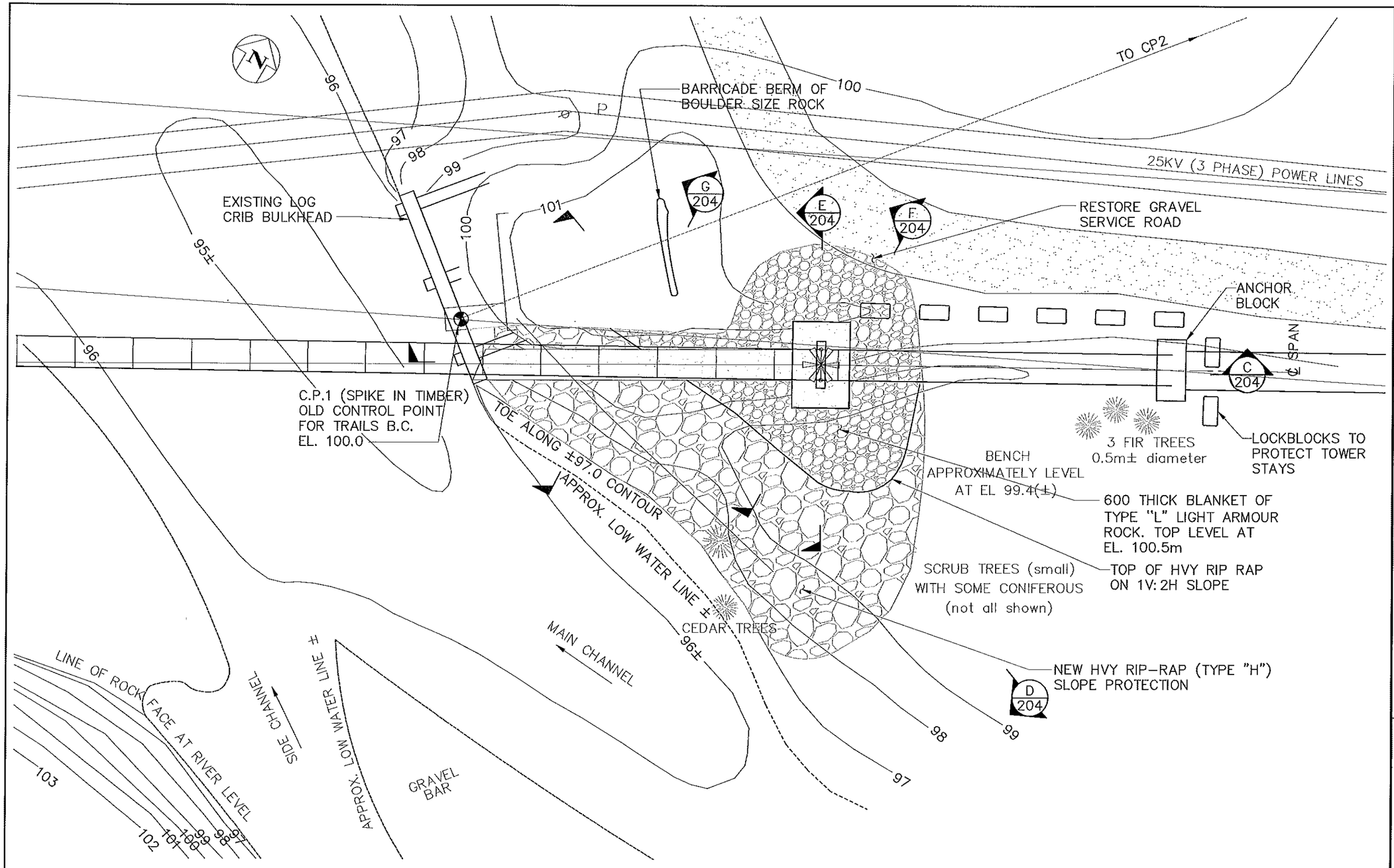
CLIENT
BC MINISTRY OF NATURAL
RESOURCE OPERATIONS

PROJECT
TRANS CANADA TRAIL
COQUIHALLA PED. BRIDGE

DRAWING TITLE
WEST END
SCOUR PROTECTION PLAN

ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. V4G 1K7
E-mail: info@all-span.ca
PH: (604) 940-2212 FAX: (604) 940-1516

CADFILE:10059-101



EAST END SCOUR PROTECTION PLAN
1:200

NOTES:
CONTOURS ARE "AS IS" ; SEE DWG 204 FOR DETAILED SECTIONS

(ACCESS STAIRS OR RAMP TO BE BY OTHERS; NOT SHOWN)

REV.	DESCRIPTION	DATE
A	ISS'D FOR CONSTRUCTION	15/03/11
B	SEC'N LOCATION REVISED	29/03/11
C	REISSUED FOR CONST.	25/01/12
D		
E		
F		
G		
H		

DATE 25/02/11
SCALE AS NOTED
DRAWN BY R.C.
DESIGN BY J.E.
CHECKED BY
APPROVED
PROJECT No. 10059
DRAWING No. 203
REV. C

CLIENT
BC MINISTRY OF NATURAL RESOURCE OPERATIONS

PROJECT
TRANS CANADA TRAIL COQUIHALLA PED. BRIDGE

DRAWING TITLE
EAST END SCOUR PROTECTION PLAN

ALL-SPAN
ENGINEERING & CONSTRUCTION LTD.
#201 – 7198 VANTAGE WAY
DELTA, B.C. V4G 1K7
E-mail: info@all-span.ca
PH: (604) 940-2212 FAX: (604) 940-1516

CADFILE: 10059-101

Not Responsive

From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Wednesday, March 28, 2012 9:15 AM
To: Trent, Tennessee FLNR:EX
Subject: RE: Your File 16660-20/REC0035-Squeah

It appears that the proposed bridge is about 147 m south of our centerline and therefore we do not appear to be affected. Our comments remain as set out below in my email of March 5th should any of the works come within 30m of our pipeline.

Thanks for keeping us informed.

Donna Ferguson
Land & Right-of-Way Representative
Trans Mountain Pipelines
KINDER MORGAN CANADA
7815 Shellmont Street
Burnaby, BC V5A 4S9
Direct Tel: (604) 268-3094
Fax: (604) 268-3001
S22

Please consider the environment before printing this email

From: Trent, Tennessee FLNR:EX [mailto:Tennessee.Trent@gov.bc.ca]
Sent: Tuesday, March 20, 2012 11:52 AM
To: Ferguson, Donna
Subject: RE: Your File 16660-20/REC0035-Squeah

Hello Donna,
I will attach clearer maps and a plan / profile of the proposed bridge project for your review. Please call me anytime with questions.

Thanks

Tennessee Trent, RFT, FIT
Recreation Officer

Recreation Sites and Trails BC
Squamish MFLNRO Office
604.898.2194 office

From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Monday, March 5, 2012 1:11 PM
To: Trent, Tennessee FLNR:EX
Subject: Your File 16660-20/REC0035-Squeah

Further to your letter of February 16, 2012 and my subsequent telephone message, it is difficult to ascertain exactly where the location is for the proposed recreation site and pedestrian bridge in relation to our pipeline. Is it located within the NW1/4 Section 34-5-25-6 just downstream of our vault and before the tunnel?

Kinder Morgan Canada Inc.'s (KMC) pipelines and rights-of-way are subject to the provisions of the *National Energy Board Act* and the *Oil and Gas Activities Act*. No ground disturbance is permitted within 30 metres of any pipeline or right-of-way without placing a BC One Call at 1-800-474-6886 and obtaining prior written consent from KMC. Separate permission is required to install any permanent facility such as a fence, driveway, road, bridge, utility or even landscaping within the right-of-way. Enquiries in this regard should be directed to the attention of the KMC Pipeline Protection Department at 1-888-767-0304 (toll free) or 604 268-3060.

Crown Land Recreation
Land Referral

MINISTRY OF Forests, Lands and Natural Resource Operations
Recreation Sites &Trails Branch

BRITISH COLUMBIA
The Best Place on Earth

Date: February 16, 2012
File: 16660-20/REC0035 - Squeah

Trans Mountain Pipeline ULC
7815 SHELLMONT ST
BURNABY, BC
V5A4S9

Dear Trans Mountain Pipeline:

Proposed Recreation Project:
Construction and establishment of a recreation site and pedestrian bridge adjacent the Coquihalla Highway near Deneau Creek

Applicant:
British Columbia Ministry of Forests Lands and Natural Resource Operations (MFLNRO) – Recreation, Sites and Trails BC division

Location of Land:
In and around UTM zone 10 623428 5477560, 284 meters above sea level

Reference Map No: 092H044

Parcel Size: 16.5 Ha

Purpose of Application:
To receive comments regarding the Ministries intent to construct a recreation site and pedestrian bridge under authority of Section 57 of the Forest and Range Practices Act (FRPA). Subsequent to construction the Ministry intends to authorize the trail under Section 56 of FRPA. The location of this site is adjacent the Coquihalla River, approximately 21 kilometres North East of Hope, BC. This recreation site will allow management of camping in the area and will facilitate the installation of a pedestrian bridge over the Coquihalla River as an important connection along the Trans-Canada Trail.

Nature of Proposal:

The Ministry of Forests, Lands and Natural resource Operations, Recreation Sites and Trails BC Branch is proposing to designate, under Sec. 56 of FRPA, the recreation site as per the attached Schedule A map(s) and proposing to enact works to the recreation site under Section 57 FRPA.

Tennessee Trent –
Recreation Officer
tennessee.trent@gov.bc.ca

MFLNRO -
Recreation Sites and Trails Branch
Squamish-Metro Vancouver District

Suite 101-42000 Loggers Lane
Squamish BC. V8B 0H3
Tel: (604) 898-2194
Fax: (604) 898-2191

The intent of the development is to facilitate and accommodate public use of the Trans-Canada Trail by establishing camping facilities and by constructing a pedestrian bridge crossing of the Coquihalla River. This will improve public safety, contribute to sustainable use of the trail, and increase user enjoyment of the trail.

A Section 57 Authorisation under FRPA is required for the purposes of maintenance and construction of a recreation site on Crown land. Establishment of a recreation site or trail under Section 56 of FRPA designates the site or trail as a managed recreation feature in an integrated land base and is considered in resource management activities.

We would appreciate your response (30 days from present date) with comments you may have on this proposal. Comments may be in writing or by e-mail. A non-response by the due date assumes you are in favour of this proposal. If you require any additional time to assess this proposal you may contact me to request it at any time.

If you have any questions regarding this proposal please contact Tennessee Trent, Recreation Officer, Squamish-Metro Vancouver District at tennessee.trent@gov.bc.ca.

Thank you for your comments.

Yours truly,

Tennessee Trent, RFT, FIT
Recreation Officer
Recreation Sites and Trails BC
Squamish MFLNRO Office
101-42000 Loggers Lane
Squamish, BC
V8B 0H3

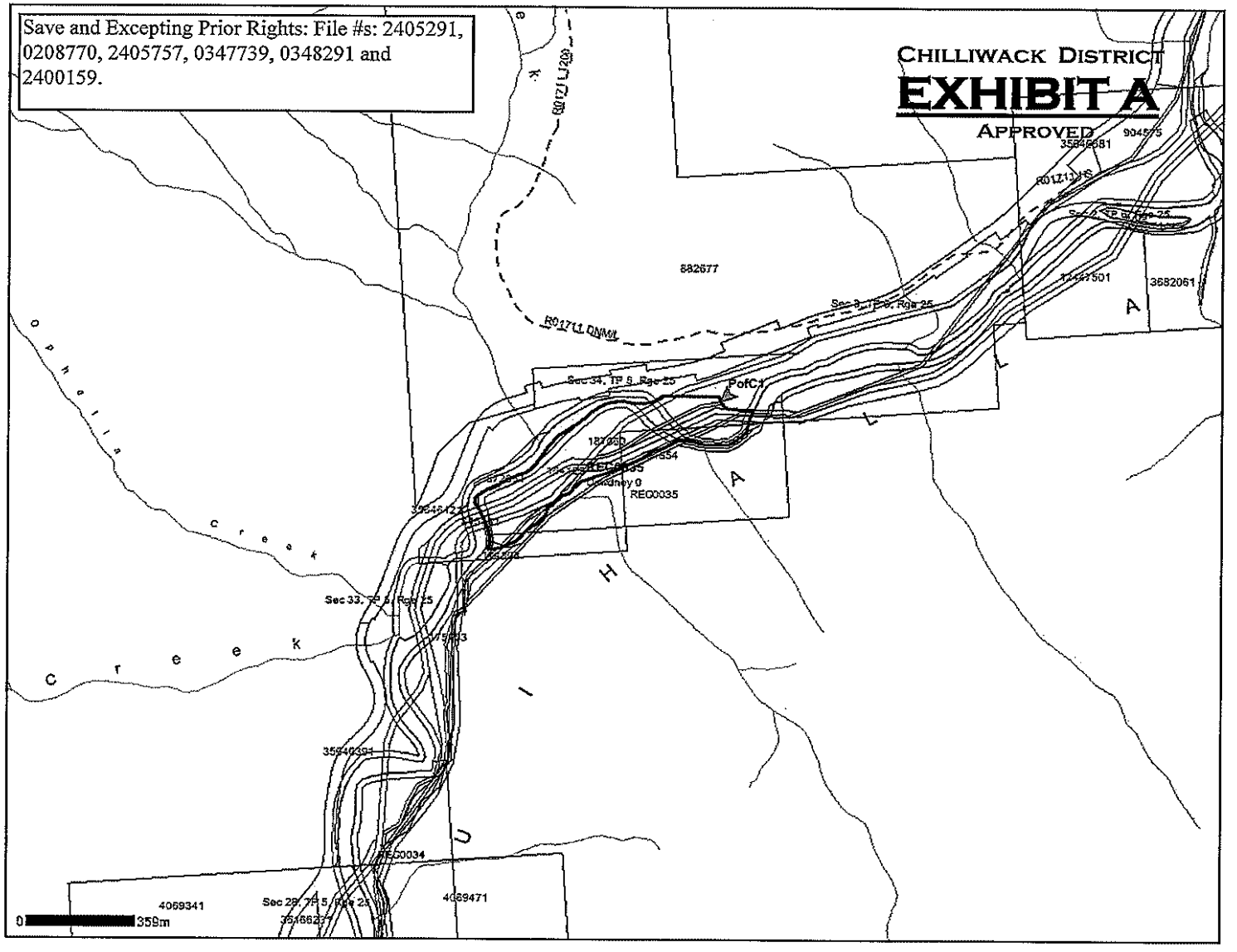
BRITISH COLUMBIA

EXHIBIT A

MAP OF : REC0035 - Squeah SIT Amendment # 3 (shown in bold black)			
FOREST REGION : RCO FOREST DISTRICT : DCK	TSA : 30 LAND DISTRICT : Chilliwack Forest District	PULPWOOD AGREEMENT :	MGT UNIT TYPE : MGT UNIT NO :
ESF SUBMISSION ID : 1083946 BCGS MAPSHEET NO : 92H.044	SCALE : 1:20000 at A Size Area (Ha): 16.201	UTM : 10 NAD : NAD 83	DRAWN BY : FTA DATE : Feb 14, 2012

N
W E
S

Save and Excepting Prior Rights: File #s: 2405291, 0208770, 2405757, 0347739, 0348291 and 2400159.



Legend

- Tenure Application
- Tenure Road Application
- Retired Tenure Road
- P of C
- P of T
- Tenure Feature
- Range
- TFL
- Provincial Forest
- Forest Service Road
- Highway
- Municipal Road
- Non Status Road
- Recreation Trails
- Road Permit
- SUP Road
- Right of Way
- Schedule B CP Road
- Mineral Tenure Points
- Cities
- Waterbodies
- River/Stream
- Coastline / Island

REC0035 (16.201 Ha)
PofC1 UTM10 623782, 5477696

Aubrey, Michelle FLNR:EX

From: Ferguson, Donna [Donna_Ferguson@kindermorgan.com]
Sent: Monday, January 9, 2012 12:14 PM
To: Taylor, Mark D FLNR:EX
Cc: Williams, Megan FLNR:EX; Zeleny, Bob
Subject: RE: Kinder Morgan : Forestry Licence to Cut ?

Thanks - I believe there's an initial site visit later this week and will have some details to provide then (I hope). Will get back to you.

-----Original Message-----
From: Taylor, Mark D FLNR:EX [mailto:Mark.D.Taylor@gov.bc.ca]
Sent: Monday, January 09, 2012 12:10 PM
To: Ferguson, Donna
Cc: Williams, Megan FLNR:EX
Subject: Kinder Morgan : Forestry Licence to Cut ?

Hi Donna, Mark here.

Short & Sweet

L47557 and L47504 have not expired yet BUT the areas within those previous licences now fall within the Robson Valley TSA so I can't amend that one as it is now part of the Prince George District. Good news is if you need to do future works in the Valemount north area I guess ?

L47205 expired in 2008.

We (Megan & I) are thinking you may have to apply for a Forestry Licence to Cut but we would appreciate more info on what exactly you are intending to use this permit for. Removal of timber ?, how much ?, when ?

In the meantime Megan will discuss with her collegues what the proper approval / licence we should go with and also has offered to do a status of the area within DL 2638 KDYD. (map attached Megan)

Thanks Ladies
Mt

Mark Taylor RFT
Special Tenures & Engineering Technician Headwaters Forest District Ministry of Forests, Lands & Natural Resource Operations
687 Yellowhead Hwy
Clearwater, BC V0E 1N2
Ph : 250/587-6750
Fax: 250/587-6790
mark.d.taylor@gov.bc.ca

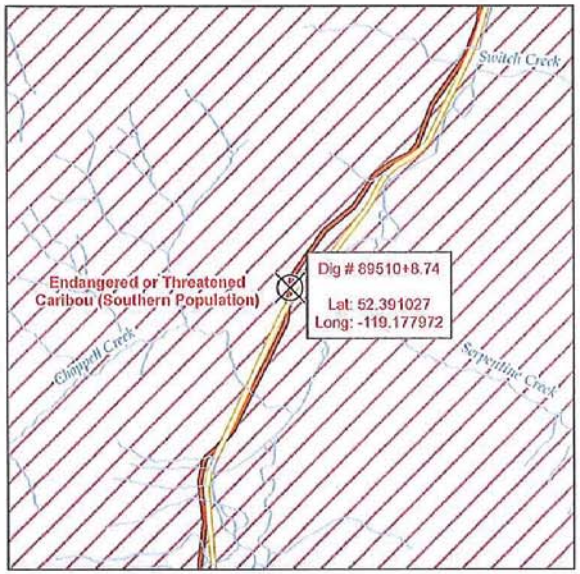
-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]

Sent: Tuesday, January 3, 2012 1:54 PM
To: Taylor, Mark D FLNR:EX
Subject: Licence to Cut

Further to our telephone conversation earlier, please see attached draft maps with Lat and Long with respect to the upcoming anomaly dig. I believe they fall within DL 2638 KDYD. The site is just upstream of our Chappel Pump Station about 25 km north of Blue River.

As discussed, we're hoping that any trees that need to be cleared for access will fall under one of our existing licences: L47557, L47205 or L47504.

Appreciate your assistance.



Digs
Valves
Wells
Trans Mountain Pipeline
Express & Highways
Major Roads
Water Body
Rivers & Streams
Parcels

N

TRANSMOUNTAIN PIPELINE
2011 Pipeline Integrity Program
Validation (Dig # 89510+8.74)

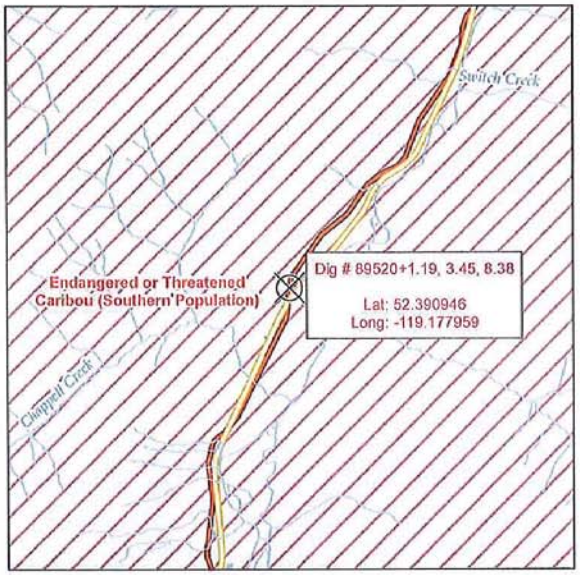
KMC Projection
2011-DIG-MAP-0242.mxd

0 200 400
Meters

KINDER MORGAN CANADA INC

Map No: 89510+8.74

Date: November 4, 2011 **DRAFT**



Digs
Valves
Wells
Trans Mountain Pipeline
Express & Highways
Major Roads
Water Body
Rivers & Streams
Parcels

N

TRANSMOUNTAIN PIPELINE
2011 Pipeline Integrity Program
Validation (Dig # 89520+1.19, 3.45, 8.38)

KMC Projection
2011-DIG-MAP-0243.mxd

0 200 400
Meters

KINDER MORGAN CANADA INC

Map No: 89520+1.19, 3.45, 8.38

Date: November 4, 2011 DRAFT

Aubrey, Michelle FLNR:EX

From: Ferguson, Donna [Donna_Ferguson@kindermorgan.com]
Sent: Tuesday, January 3, 2012 3:36 PM
To: Taylor, Mark D FLNR:EX
Subject: Licence to Cut -

The new site is about 3 km north of Miledge.

Donna Ferguson
Land & Right-of-Way Representative
Trans Mountain Pipelines
KINDER MORGAN CANADA
7815 Shellmont Street
Burnaby, BC V5A 4S9
Direct Tel: (604) 268-3094
Fax: (604) 268-3001
S22

Please consider the environment before printing this email

Not Responsive

From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Wednesday, March 14, 2012 10:21 AM
To: Taylor, Mark D FLNR:EX
Subject: RE: KinderMorgan - Chappell Creek repair

Yes, as per my phone call whenever possible we like to engage the services of Simpcw (John Cartwright). They were to do the tree clearing etc. in order to provide access. I gather a number of issues arose with Highways (Prince George) with respect to the location and proper mapping of the culverts (he apparently still doesn't have it from Hwys) and also regarding slash burning. I believe these are near resolution. John mentioned that he would be contacting Front Counter as well as yourselves with respect to acquiring an extension and also getting a crossing permit with respect to the Telus fibre optics r/w. We've also alerted our agent, Taso Gavriel of Gateway Services, to follow up on this.

Due to the above we had to commence work on other sites. Once we get the go ahead from Simpcw we will proceed with this project as quickly as possible, weather permitting. I gather it is in a very difficult location to work in.

Not Responsive

Not Responsive

BRITISH COLUMBIA

Project: 92145

January 25, 2012

Kinder Morgan Canada Inc.
c/o Gateway Land Services Ltd.
3 – 550 Lorne St.
Kamloops, BC V2C 1W3

Dear Bob Love:

Thank you for your letter of January 20, 2012 in which you outlined the steps and plan that Kinder Morgan Canada Inc. have undertaken and need to undertake in order to address an anomaly to the pipeline located on unsurveyed Crown land adjacent to the Yellowhead Highway and just north of the Chappell Creek Pump station, Kamloops Division Yale District.

We understand from your letter that Kinder Morgan Canada Inc. is requesting an expedited turnaround on a request to:

a) Temporarily occupy 0.12 Ha Crown land for the purpose of a "laydown/staging area" adjacent to Ministry of Transportation right of way (Yellowhead road).
b) Temporarily occupy 0.1 Ha Crown land adjacent to the pipeline right of way to facilitate digging, inspecting and repairing the pipeline.
c) Remove the Crown trees within the areas noted above

We understand from discussions with Water Stewardship Division that a notification regarding reviewing an existing stream is already underway.

We further understand that the National Energy Board, Ministry of Environment, the Department of Fisheries and Oceans and Simpcw First Nations have been contacted and are involved in discussions and work associated with the project.

Kinder Morgan Canada Inc. has committed to grading of the affected ground and seeding the ground in the spring of 2012.

I hereby authorize Kinder Morgan Canada Inc. under Section 52 of the *Forest Act* to temporarily occupy the Crown land outside the Highway right of way and remove timber and vegetation on behalf of the Crown within the area indicated as Exhibit A for a period of 2 months as of the date of this letter.

FrontCounter BC

Mailing Address:
441 Columbia Street
Kamloops BC V2C 2T3

Phone: (250) 828-4131
Fax: (250) 828-4442
Toll Free: 1-877-855-3222
Website: www.frontcounterbc.gov.bc.c

If removal of merchantable timber from the area is necessary Kinder Morgan Canada Inc. will need to contact FrontCounter BC at 250-828-4131 for authority to remove timber.
If you have any questions regarding the application process or requirements for a complete application, please contact me at (250) 828-4474.

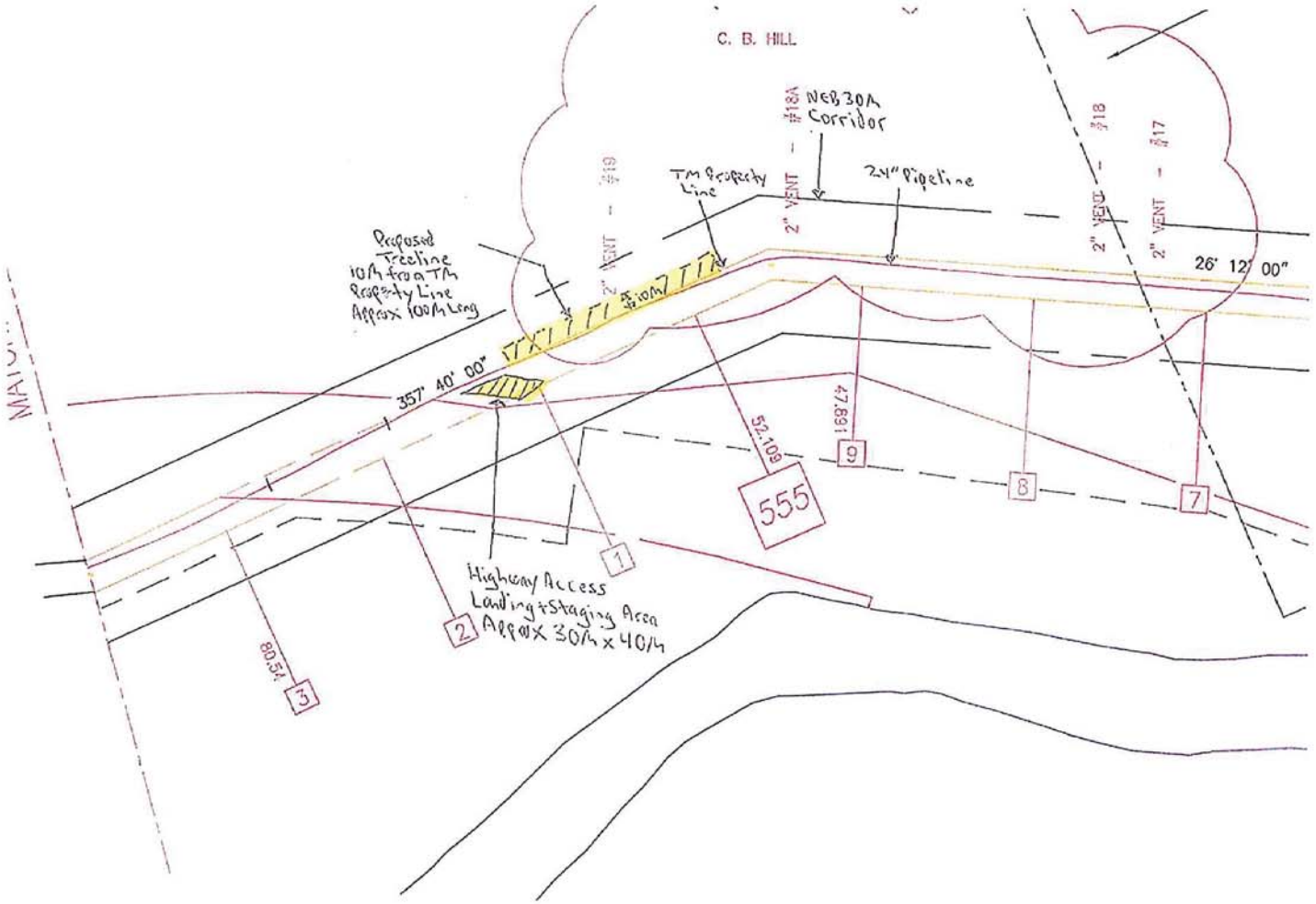
Sincerely,

Peter Lishman, RPF
Director, Resource Authorizations
Ministry of Forests Lands and Natural Resource Authorizations

encl:

pc: Rick Sommer, District Manager, Duane Wells, Water Officer, Kristen Johnson, Development Approvals Tech, Taso Gavriel, Kelvin Stelter, Donna Ferguson

EXHIBIT A


C. B. HILL
#18A NEB 30A Corridor
TM Property Line
24" Pipeline
2" VENT - #19
2" VENT - #18
2" VENT - #17
Proposed Treeline 10M from TM Property Line Approx 100M Long
357° 40' 00"
26° 12' 00"
52.10
47.89
555
Highway Access Landing + Staging Area Approx 30M x 40M
80.54
1
2
3
7
8
9

Aubrey, Michelle FLNR:EX

From: Williams, Megan FLNR:EX
Sent: Wednesday, January 11, 2012 2:55 PM
To: 'Ferguson, Donna'
Subject: RE: Finn Creek

Oh Jeepers, that's a whole nother kettle of fish. If you need to cut the trees in the park then outline that in the park permit. The trees in the park are the parks, so if you are cutting, piling, burning you probably don't need anything else...maybe parks would like to use the trees for firewood in the park...but if you have to move the trees out of the park you will need a Licence to Cut through the Forest Act.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Wednesday, January 11, 2012 1:28 PM
To: Williams, Megan FLNR:EX
Subject: RE: Finn Creek

Many thanks - is my understanding still correct that if we have to cut any trees that Parks is exempt and we do not need a Licence to Cut but obviously permit from Parks.

-----Original Message-----
From: Williams, Megan FLNR:EX [mailto:Megan.Williams@gov.bc.ca]
Sent: Wednesday, January 11, 2012 1:14 PM
To: Ferguson, Donna
Subject: RE: Finn Creek

Here is the answer from Water Stewardship

Some utility lines through parks are covered by Stat Right of Ways....in these cases the land is deemed excluded from the park and therefore requires the Work in and about a stream authorization:

http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/index.html - the application is about 1/2 way down the page.

If you are going outside your Right of Way then you will also need a Park Use Permit.

http://www.env.gov.bc.ca/pasb/applications/process/park_use.html#Applications - land use/Occupancy permit

If parkland exists downstream of the work area then it is a good idea to refer the application to the Area Supervisor.

HOWEVER:
Some utility lines are authorised in a park through a Park Use Permit (I don't think yours is), in this case the land is still parkland and therefore requires a Park Use Permit.

So the advice is: you will need a Section 9 Water Act application, and probably a Park Use Permit. Contact Bruce Petch at Parks to discuss the park use (250-371-6216). The park use permit if one is necessary can take up to 140 days to adjudicate if they are busy, I would recommend getting this in as soon as possible.

Both of these applications can come through our office here.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Williams, Megan FLNR:EX
Sent: Tuesday, January 10, 2012 10:55 AM
To: 'Ferguson, Donna'
Subject: RE: Finn Creek

Hi Donna, this part of the creek is definitely in the Park, and therefore your contact would be with parks. I'm just checking with them on the form and the contact. Will let you know.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Monday, January 9, 2012 1:56 PM
To: Williams, Megan FLNR:EX
Subject: Finn Creek

Megan, not sure if this is in your area - DL 3262 KDYD. We plan on doing a natural hazard remediation at this location later in the year. Our records indicate that it is Crown land - PID 013-019-350 but then GIS seems to indicate that it falls within Finn Creek Provincial Park. The works would be within the stream crossing of our plan A1367 - I highlighted this in yellow. Would like to sort this out so we know whether we should be apply to Parks or to Crown for the necessary permitting.

Much appreciated. Let me know if this is out of your area. It's just north of our Finn Pump Station which is south of Blue River but north of McMurphy.

Thanks.

Not Responsive

From: Zimmerman, Ted FLNR:EX
Sent: Friday, April 20, 2012 4:22 PM
To: 'Niki Wilson'; 'Dave Poulton'; 'Roy Howard'; 'Natalie Loban'; 'Lexa Hobenshield'; 'Thea.Mitchell@pc.gc.ca'; 'John.Wilmshurst@pc.gc.ca'; Back, Scott ENV:EX; 'Terry Antoniuk'
Subject: Yellowhead Creek bridge - MOT response

TMLF Steering Committee members:

As you know, one of the actions that came out of our February 1 meeting at Mt. Robson was to seek additional funding support from the BC Ministry of Transportation and Infrastructure for the proposed replacement of the Yellowhead Creek Highway 16 crossing. This site was identified as Priority 2 in our list of investments to restore or improve aquatic habitat connectivity.

Over the last 2 months I have been working with my contacts at MOTI including their environmental and engineering departments to explore possible options for joint funding of this project. To assess the feasibility of the project they have reviewed both of the Triton reports and have discussed the project objectives and design considerations with me.

In their report, Triton had identified a tentative cost of S21 for the culvert replacement at Yellowhead, assuming a need for an 18m bridge crossing. In reviewing the design and environmental requirements for this project, MOTI has come back with a span length of 35m at an estimated cost of $2.5M. This length is required in order to meet provincial stream crossing guidelines. While MOTI supports the concept of restoring fish connectivity, they do not see this project as a priority relative to other fish passage barriers in the region, and are unwilling to support it financially at this time.

I have not followed up with Triton as I wanted to first relay this information back to you so we can discuss the consequences of this assessment. Assuming that MOTI has correctly estimated the needs and costs of this project (and I see no reason to believe otherwise) it looks like it will be very difficult to proceed with the crossing replacement given the budget constraints we are faced with.

We should probably arrange for a conference call to discuss next steps.

Regards,

Ted Zimmerman

Deputy Regional Manager, Omineca Fish and Wildlife
Ministry of Forests, Lands and Natural Resource Operations
Government of British Columbia
4051 18th Ave. PRINCE GEORGE BC V2N 1B3
250.614.9904
ted.zimmerman@gov.bc.ca

Not Responsive

-----Original Message-----
From: Zimmerman, Ted FLNR:EX
Sent: Thursday, March 8, 2012 3:43 PM
To: 'roy@fraserheadwaters.org'; Back, Scott ENV:EX
Cc: 'Niki Wilson'; 'Anne-Marie Syslak'; 'Dave Poulton'; 'Lexa Hobenshield'; 'Terry Antoniuk'; 'John Wilmshurst'; Nolan, Daryl TRAN:EX
Subject: RE: New Research relevant for Trans Mountain Legacy steering committee

Thanks Roy.

I discussed the prospect of a cost sharing agreement for the Yellowhead crossing with Daryl Nolan, Manager of Environmental Services at the BC Ministry of Transportation. He advised that there may be some opportunities to tap into funding sources related to environmental projects and/or culvert replacements.

I have provided a copy of the Triton report to Daryl so that he can review the preliminary engineering and determine which of the projects may be eligible for partner funding. He has shared this report with various staff in MOT and once they've had a chance to review it our plan is to get together and discuss options. I'll brief the SC once we've had that discussion.

Cheers,

Ted Zimmerman

Deputy Regional Manager, Omineca Fish and Wildlife Ministry of Forests, Lands and Natural Resource Operations Government of British Columbia
4051 18th Ave. PRINCE GEORGE BC V2N 1B3
250.614.9904
ted.zimmerman@gov.bc.ca

Not Responsive

Not Responsive

-----Original Message-----
From: Zimmerman, Ted FLNR:EX
Sent: Monday, January 30, 2012 3:12 PM
To: 'Hobenshield, Lexa'
Subject: RE: Travel to Mount Robson

OK - see you in Robson.

Ted

-----Original Message-----
From: Hobenshield, Lexa [mailto:Lexa Hobenshield@kindermorgan.com]
Sent: Monday, January 30, 2012 3:12 PM
To: Zimmerman, Ted FLNR:EX; Back, Scott ENV:EX
Subject: RE: Travel to Mount Robson

Thanks Ted

I've already made my travel plans for tomorrow so will catch a ride bright & early with Scott on Wednesday.

Many thanks! Lexa.

-----Original Message-----
From: Zimmerman, Ted FLNR:EX [mailto:Ted.Zimmerman@gov.bc.ca]
Sent: Monday, January 30, 2012 2:51 PM
To: Hobenshield, Lexa; Back, Scott ENV:EX
Subject: Re: Travel to Mount Robson

Hi Lexa

I'm planning to leave tomorrow afternoon (Tues) so if that works better for you you're welcome to join me. Scott will be leaving on Wednesday AM as per his original plan.

I haven't booked accommodation yet S22

Cheers! Ted

----- Original Message -----
From: Hobenshield, Lexa [mailto:Lexa Hobenshield@kindermorgan.com]
Sent: Monday, January 30, 2012 02:27 PM
To: 'Terry Antoniuk' <terry@salmoconsult.com>; 'Niki Wilson' <nikilynnwilson@gmail.com>; 'Dave Poulton' <dpoulton@telus.net>; 'John.Wilmshurst@pc.gc.ca' <John.Wilmshurst@pc.gc.ca>
Cc: Zimmerman, Ted FLNR:EX; Back, Scott ENV:EX
Subject: RE: Travel to Mount Robson

Hi guys

I'm going to catch a ride from Prince George with Ted & Scott. We're planning to leave PG bright & early at 530am on Wednesday.

Cheers! Lexa.

-----Original Message-----
From: Terry Antoniuk [mailto:terry@salmoconsult.com]
Sent: Monday, January 30, 2012 2:15 PM
To: 'Niki Wilson'; 'Dave Poulton'; John.Wilmshurst@pc.gc.ca; Hobenshield, Lexa
Subject: RE: Travel to Mount Robson

The current plan is for us all to carpool in my truck. I'll plan to pick up Niki and food at 08:00, Lexa and Dave S22 at 08:20.
John you'll be stop number 2 at about 8:15 - where should we meet you?

T.M. (Terry) Antoniuk P.Biol., RPBio.
Salmo Consulting Inc.
PO Box 61071, Kensington RPO
Calgary, AB T2N 4S6
Phone: (403)-266-6363
Fax: (403)-266-6353
Cell: (403)-815-4164

"old mental models and decision habits are deeply ingrained; they do not change just because of a logical argument." (J.W. Forrester 1995).

Not Responsive

Not Responsive

From: Zimmerman, Ted FLNR:EX
Sent: Wednesday, January 11, 2012 1:57 PM
To: 'Bonnie Glines'; 'Hobenshield, Lexa'; 'David Poulton'
Subject: RE: Alberta Ecotrust Invoice approval

Approved from my end.

Ted Zimmerman

Deputy Regional Manager, Omineca Fish and Wildlife
Ministry of Forests, Lands and Natural Resource Operations
Government of British Columbia
4051 18th Ave. PRINCE GEORGE BC V2N 1B3
250.614.9904
ted.zimmerman@gov.bc.ca

Not Responsive

Popowich, Tracy CSNR:EX

From: Turner, Jason [Jason Turner@kindermorgan.com]
Sent: Monday, January 23, 2012 9:37 AM
To: Phillpotts, Mark G FLNR:EX
Cc: Wells, Duane FLNR:EX
Subject: RE: File R3-6991
Attachments: image001.gif

Thanks Mark, much appreciated.

Jason Turner, *R.P.Bio., B.Sc.*
Environmental, Health & Safety Coordinator

KINDER MORGAN CANADA

Direct: (250) 371-4017
Cell: (250) 319-5331

Web: www.kindermorgan.com/pipelinesafety
Call Before You Dig BC One Call: 1.800.474.6886 or cell *6886

From: Phillpotts, Mark G FLNR:EX [mailto:Mark.Phillpotts@gov.bc.ca]
Sent: Friday, January 20, 2012 9:12 AM
To: Turner, Jason
Cc: Wells, Duane FLNR:EX
Subject: File R3-6991

Hi Jason,

I have no concerns with your pipeline maintenance on an unnamed tributary near Blue River, as long as you can follow the Terms and Conditions found here>>
http://www.env.gov.bc.ca/wsd/regions/thr/wateract/terms_conditions_thompson_region09.pdf

If you have any questions feel free to contact me.

Mark Phillpotts
Ecosystems Biologist
Ministry of Natural Resource Operations
1259 Dalhousie Drive
Kamloops, B.C. V2C 5Z5
tel: 250.371.6219 cell: 250.318.4728

BRITISH COLUMBIA
The Best Place on Earth

File: A704241

June 24, 2011

Kinder Morgan Canada
Suite 7200 300-5th Avenue
Calgary, AB T2P 5J2

Dear Bob Zeleny:

Re: Approval Application – A704241 – Swift Creek

Approval for the above has been granted, and the approval document verifying this is attached.

All work shall be done in accordance with the "Standards and Best Practices for Instream Works" (MOE 2004).

The licensee must adhere to all other Provincial and Federal Regulations.

Section 92 of the Water Act gives the recipient of this notice the right to appeal my decision. You may file an appeal within 30 days of the date indicated on this letter. Information on filing an appeal can be found on the Environmental Appeal Board WEB site at http://www.eab.gov.bc.ca/.

If you have any questions or concerns regarding the document issued, please contact Darren DeFord at (250) 565-6079.

Yours truly,

Normand Bilodeau, RPF
Assistant Regional Water Manager

/mm

Enc.

p.c. Ministry of Forests, Lands & Natural Resource Operations, Prince George, BC
Attention: Brady Nelless
Fisheries & Oceans Canada, Prince George, BC
Ministry of Environment, Conservation Officer Service – Prince George, BC

Ministry of Forests, Lands & Natural Resource Operations

Mailing Address:
325-1011 Fourth Avenue
PRINCE GEORGE BC V2L 3H9

Telephone: (250) 565-6135
Facsimile: (250) 565-6629

BRITISH COLUMBIA
The Best Place on Earth

Province of British Columbia
Water Act

Approval
Section 9 (1)

Kinder Morgan Canada, Suite 7200, 300 – 5th Avenue, Calgary Alberta T2P 5J2 is hereby authorized to make changes in and about a stream as follows:

1) The name of the stream is Swift Creek.

2) The changes to be made in and about a stream is:
   - Bank Erosion Protection and maintenance of a pipeline crossing as described in the document "Swift Creek Pipeline Remediation; Screening Level Environmental Assessment" dated December 21, 2010 prepared by Triton Environmental Consultants Ltd., prepared for Kinder Morgan Canada Inc.
   - Location described by applicant as 52°50'13.79"N, 119°17'15.91"W.

3) The works authorized shall be initiated no earlier than October 15 and completed by November 30, 2011.

4) Mitigation measures shall be followed as outlined in the following two documents:
   - Swift Creek Pipeline Remediation; Screening Level Environmental Assessment" prepared by Triton Environmental Consultants Ltd. dated December 21, 2010; and
   - Post construction monitoring as outlined in emails sent between Triton Environmental Consultants Ltd and Water Stewardship dated June 20 and June 21, 2011.

5) All work shall be done in accordance with the "Standards and Best Practices for Instream Works" (MOE 2004).

6) Care shall be exercised during all phases of construction to minimize siltation.

7) Equipment operating near the stream shall be free of external grease, oil or fluid leaks and an emergency spill response kit shall be kept on-site.

8) Refueling of machinery shall be conducted to ensure that deleterious substances shall not enter the watercourse.

9) All excavated material and debris shall be placed in a stable area above the high water mark of the stream and protected from erosion by planting grass and/or vegetation.

10) All disturbed areas of the banks and the stream channel must be restored and protected from erosion.

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

12) 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.

13) The holder of this Approval shall notify the Engineer or Regional Water Manager under the Water Act when the changes have been completed.

14) The changes shall be completed to the satisfaction of the Engineer or Regional Water Manager under the Water Act.

15) This Approval, or a copy of it, must be kept or posted on the work site so that it may be shown to a Ministry official upon request.

Normand Bilodeau, RPF
Assistant Regional Water Manager

Date Issued: June 24, 2011

Approval/File No. A704241

ENVIRONMENTAL CONSULTANTS

TERA Environmental Consultants
Suite 1100, 815 - 8th Avenue S.W., Calgary, Alberta T2P 3P2 Canada
Business: (403) 265-2885 • Fax: (403) 266-6471 • Website: www.teraenv.com

March 23, 2012

Sheri Petrovcic
Natural Resource Officer
FrontCounter BC
1044 - 5th Avenue
Prince George, British Columbia V2L 5G4

Dear Ms. Petrovcic,

RE: Request for Approval under Section 8 of the British Columbia *Water Act* for the Kinder Morgan Canada Inc. TMX - Anchor Loop Project

On behalf of Kinder Morgan Canada Inc., owner and operator of Trans Mountain Pipeline ULC (Trans Mountain), please find enclosed an application for Short Term Use of Water under Section 8 of the British Columbia (BC) *Water Act*.

Trans Mountain completed construction of the TMX - Anchor Loop Project, a 158 km pipeline from Hinton, Alberta to a location near Rearguard, BC in November 2008. Restoration activities along the right-of-way were undertaken in 2009 under Section 8 Approvals A704169A (large sources) and A704169B (small sources) and 2010 under Section 8 Approvals A704207 (various sources) and 2011 under Section 8 Approvals A704249 (various sources).

Trans Mountain intends to continue restoration efforts this year and as such is requesting this Section 8 Approval to facilitate riparian irrigation at watercourse crossings within BC, and potential hydroseeding and weed spraying efforts which may be required. As per your email conversations of March 20, 2012 with Amanda Schultz of TERA Environmental Consultants, it is our understanding that these activities fall under the "water delivery" purpose. Restoration efforts and water use will remain the same or decrease in 2012. A cheque for $600 is enclosed as the fee for water usage and the application.

If you have any questions, please feel free to contact me by phone at (403) 968-3163 or by email at aschultz@teraenv.com.

Sincerely,

TERA ENVIRONMENTAL CONSULTANTS

Amanda Schultz, B.Sc.
Environmental Planner

cc Ryan Leier, Kinder Morgan Canada Inc.

TERA File: 8154.001
Via: Email

BRITISH COLUMBIA
The Best Place on Earth

MINISTRY OF ENVIRONMENT
WATER STEWARDSHIP DIVISION

Multiple Sites Application for an Approval
Short Term Non-Recurrent Use of Water
Section 8 of the *Water Act*

Every Approval applicant, or their agent, shall furnish the following particulars to the appropriate regional office (refer to Part 9 of Guide for regional office addresses).
Note: if applying as a company, please use the B.C. registered company name and address.

1. Applicant Information

Name: Ryan Leier, Trans Mountain Pipeline ULC (Kinder Morgan Canada Inc.)		
Address: 68, 80 Chippewa Road		
City: Sherwood Park	Province: Alberta	Postal code: T8A 4W6
Phone: (780) 449-5918	Fax: (780) 449-3053	
E-mail: ryan_leier@kindermorgan.com		
Contact Name (if different from the Applicant): Amanda Schultz, TERA Environmental Consultants		
Address (if different from the Applicant): 1100, 815 - 8th Avenue S.W.		
City: Calgary	Province: Alberta	Postal code: T2P 3P2
Phone: (403) 968-3163	Fax: (403) 266-6471	
E-mail: aschultz@teraenv.com		

FOR OFFICE USE ONLY	
Date Received:	**Water File Number:**
	Client Number:
	Application Number:
	Amount Received:
	Receipt Number:

2. Location of Proposed Works – Multiple Sites						
Site # (E.g. 1 – 9)	Stream Name (or description)	Flows Into	Location of intake and works relative to surveyed or known point, including reference landmarks	Latitude, Longitude, Elevation	Legal description of land which will be crossed by diversion	Works to be used, including works necessary to dispose of used water (e.g. pipes, pump)
1	Moose River	Fraser River	150 m upstream of Highway 16 crossing	52.920223 -118.801311 1037 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
2	Fraser River	Pacific Ocean	Approximately 8 km east of Mount Robson Visitor Centre (at the TMX - Anchor Loop right-of-way)	53.015686 -119.118640 941 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
3	Grant Brook Creek	Fraser River	250 m upstream of the Highway 16 crossing	52.896414 -118.747384 1059 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
4	Yellowhead Creek	Fraser River	400 m upstream of the Highway 16 crossing (at the TMX - Anchor Loop right-of-way)	52.851648 -118.591462 1093 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
5	Yellowhead Creek	Fraser River	At the Highway 16 crossing (TMX - Anchor Loop compensation site)	52.850937 -118.596951 1120 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
6	Rockingham Creek	Fraser River	100 m upstream of the Highway 16 crossing	52.862320 -118.529054 1120 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
7	Yellowhead Lake	Fraser River	At Lucerne Station Road, approximately 35 km west of Jasper, AB	52.857058 -118.556492 1120 m asl	Mount Robson Provincial Park, Crown Land	1" to 3" hose with water intake (screened in accordance with DFO regulations).
8	Will require smaller volumes of water from 51 unnamed drainages/channels along the TMX - Anchor Loop pipeline right-of-way for watering of riparian plantings. The primary method for water withdrawal will be hand bucketing, however; 1" and 2" hoses with screened intakes may also be employed.					
9	Will require smaller volumes of water from unnamed stream at KL 407 along the TMX - Anchor Loop pipeline right-of-way for watering of riparian plantings. The primary method for water withdrawal will be hand bucketing, however; 1" and 2" hoses with screened intakes may also be employed.					

3. Water Use – Multiple Sites						
Site # (Use same # as in (2) above)	Total Volume of Water to be Used (indicate units)	Maximum rate of withdrawal (indicate units)	Start and End dates between which water is to be used (12 month maximum)		Purpose for which water is to be used	Legal description of land where water is to be used
			Start	End		
1	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Hydroseeding Riparian irrigation Spraying - weed control	Mount Robson Provincial Park, Crown Land
2	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Hydroseeding Riparian irrigation Spraying - weed control	Mount Robson Provincial Park, Crown Land
3	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Hydroseeding Riparian irrigation Spraying - weed control	Mount Robson Provincial Park, Crown Land
4	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Hydroseeding Riparian irrigation Spraying - weed control	Mount Robson Provincial Park, Crown Land
5	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Riparian irrigation	Mount Robson Provincial. Park, Crown Land
6	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Hydroseeding Riparian irrigation Spraying - weed control	Mount Robson Provincial Park, Crown Land
7	1000 L	Less than 10% of streamflow at the time of withdrawal	May 1, 2012	April 30, 2013	Hydroseeding Riparian irrigation Spraying - weed control	Mount Robson Provincial Park, Crown Land
8	The volumes withdrawn from the 51 unnamed drainages/channels along the TMX - Anchor Loop right-of-way will not exceed 200 L at each crossing and will be used for irrigation of nearby vegetation. The maximum rate of withdrawal will be less than 10% of streamflow at the time of withdrawal. The requested dates are also May 1, 2012 to April 30, 2013.					
9	The volumes withdrawn from the unnamed channel at KL 407 along the TMX - Anchor Loop right-of-way will not exceed 500 L and will be used for irrigation of nearby vegetation. The maximum rate of withdrawal will be less than 10% of streamflow at the time of withdrawal. The requested dates are also May 1, 2012 to April 30, 2013.					

4. Land Ownership at Point of Extraction – Multiple Sites

*Please do not attach the Land owner's written approval with Application, but keep it for your files as you may be asked to produce it during an inspection or audit.
Note: No right of expropriation exists under Approval. If difficulty will be experienced in obtaining easements, it may be better to apply for a water licence instead.

Site # (same # as in (2) above)	Applicant is owner of property	Property is Crown Land, Applicant has Tenure	Property is Crown Land, tenured to Ministry of Transportation	Third party as lease/licence tenure	Received written consent of Landowner *	Property is owned by Landowner (if different from applicant) Provide address including street, city, province, postal code	Telephone	E-mail (optional)
1 to 7	☐	☐	☐	☒	☐	Mount Robson Provincial Park c/o Wayne Van Velzen, (Area Supervisor) P.O. Box 579 Valemount, BC V0E 2Z0 Park Use Permit PG0710287	(250) 566-9777	
8 & 9	☒	☐	☐	☒	☐	Mount Robson Provincial Park (as above) is the owner of the land at the point of extraction for the unnamed drainages/channels within Mount Robson Provincial Park. The two western-most drainages are on property owned by the Applicant, Trans Mountain Pipeline. c/o Ryan Leier 68, 80 Chippewa Road Sherwood Park AB, T8A 4W6	(780) 449-5918	

5. Drawing, Plan and Site Map(s)

1. For each proposed site, attach a drawing showing the proposed point of diversion and the proposed works, including the relation between works and lot boundaries, location of buildings, stream direction and flow.

See attached Drawings.

2. For each proposed site, attach a key map at an appropriate scale showing the location of the site.

See attached Maps.

3. Detailed description of work to be performed at each site (attach additional page(s) if necessary):

At Sites 1 through 7, water will be withdrawn using hand buckets, or 1" to 3" screened hoses (with pumps) primarily for the purposes of irrigation of riparian vegetation at the various watercourse crossings along the TMX - Anchor Loop pipeline right-of-way within British Columbia. If required, water will also be used to conduct weed control or hydroseeding operations along the right-of-way.

At the 51 unnamed drainages/channels identified collectively as "Site 8" and the unnamed channel at KL 407 identified as "Site 9", water withdrawal will be conducted primarily by hand dipping buckets, although small diameter screened hoses and pumps may be employed. Water will be used to irrigate nearby plantings.

Water withdrawal at all locations will not exceed 10% of the streamflow at the time of withdrawal.

6. Statement of Intent

By submitting this application form, I declare that the information contained on this form is complete and accurate information. I have read, understood and will meet the requirements to conduct short term non-recurrent use of water in accordance with Section 8 of the *Water Act*.

Signed: Amanda Schultz		Application Date:	21/03/2012 (day/month/year)

7. Responsibilities

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

8. Submission Instructions

Send the completed form along with any attachments and the fee to the local office in which the proposed works are located. Addresses for local offices are listed on the instruction sheet.

The fee for a short-term water use Approval is comprised of two parts (refer to Part 8 of Guide):

(a) A fee for the proposed type of water use (contained in Part One of Schedule A of the Water Regulation) Refer to:

http://www.env.gov.bc.ca/wsd/water_rights/cabinet/schedule_1_fees_water_Oct-2011.pdf

(b) A water rent, for one year, which is based on the proposed purpose and volume of water use (contained in Parts 2 and 3 of Schedule A of the Water Regulation) Refer to:

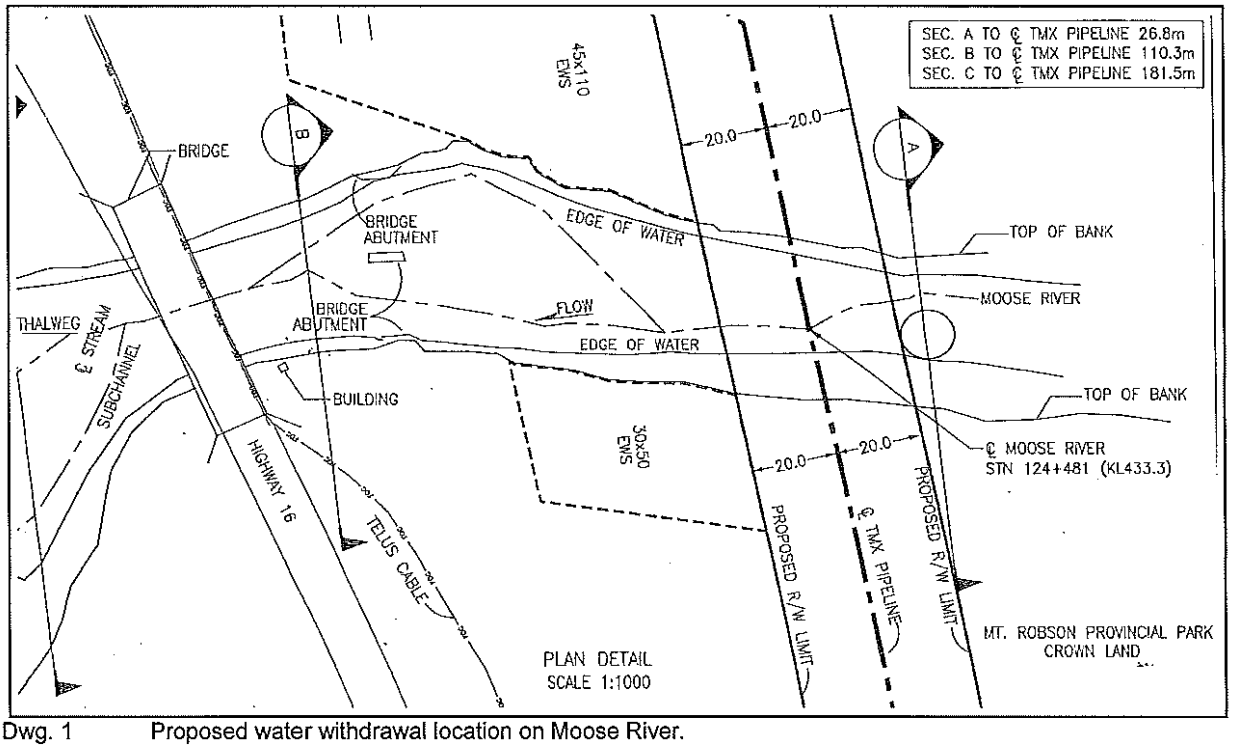
http://www.env.gov.bc.ca/wsd/water_rights/water_rental_rates/cabinet/new_rent_structure%20_revised_feb-2012.pdf

Cheques should be made payable to the Minister of Finance. Note that FrontCounterBC in Kamloops will also accept VISA and MasterCard.

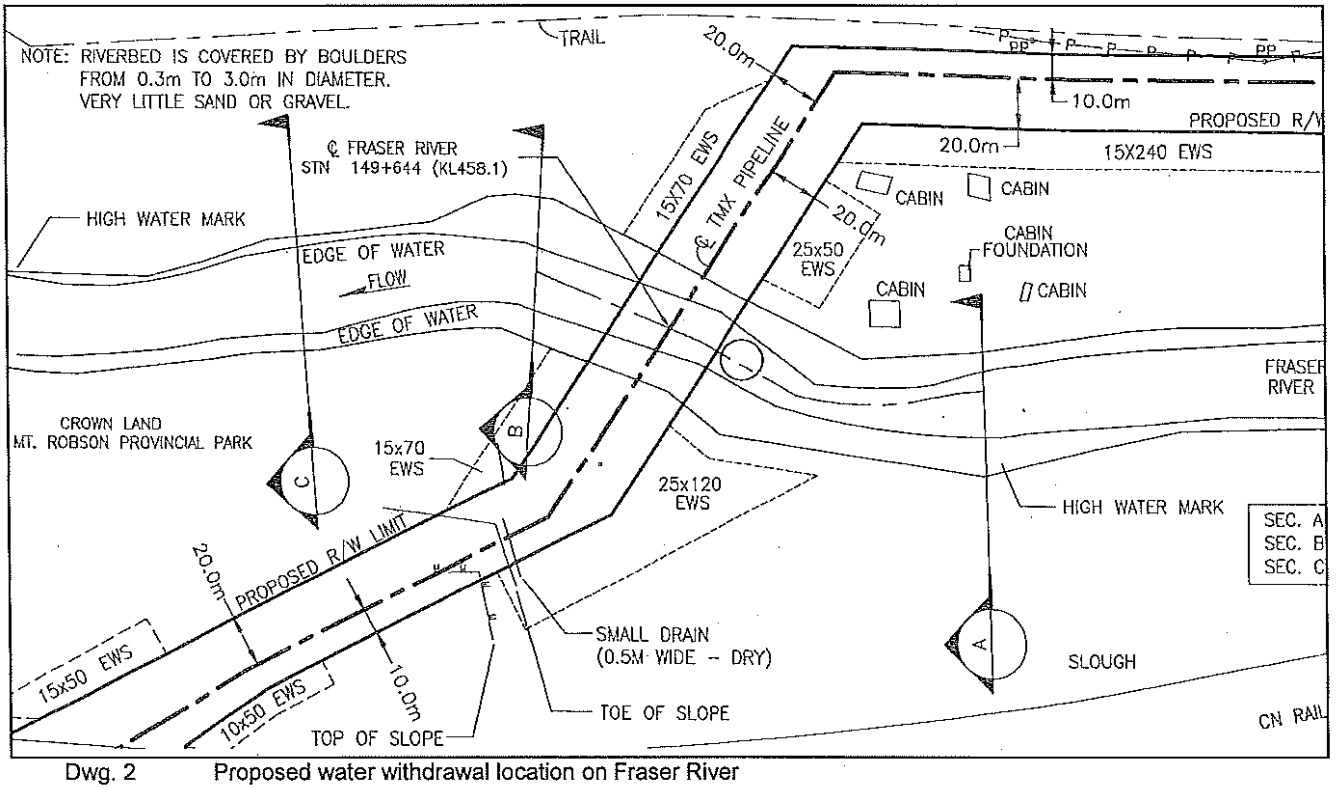
☒ Sketch plan included (mandatory)	☒ Key location map included (mandatory)

ATTACHMENT A

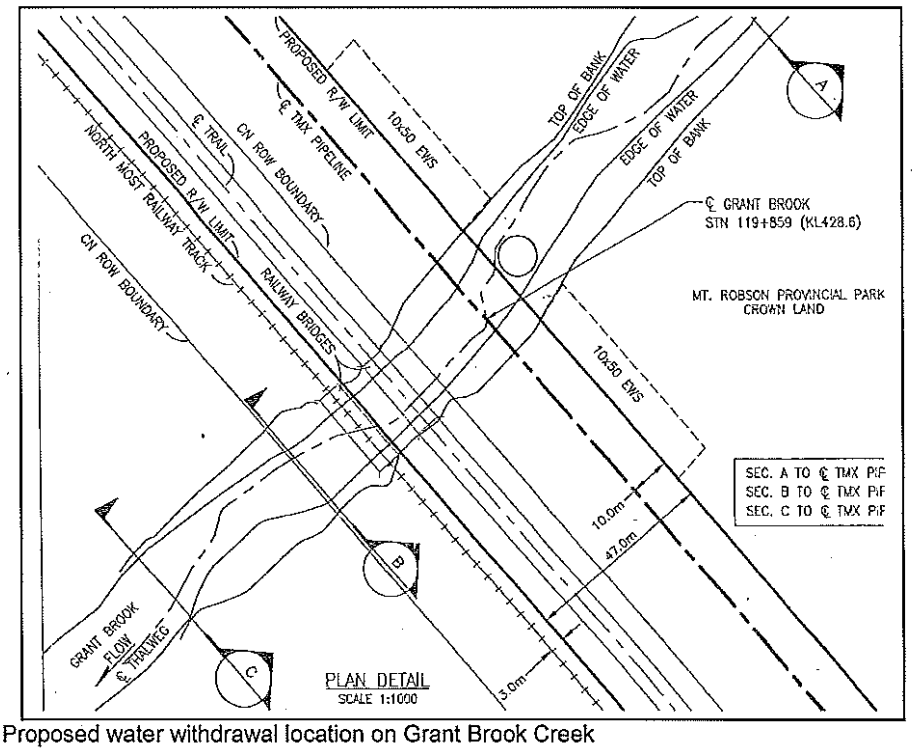
DRAWINGS



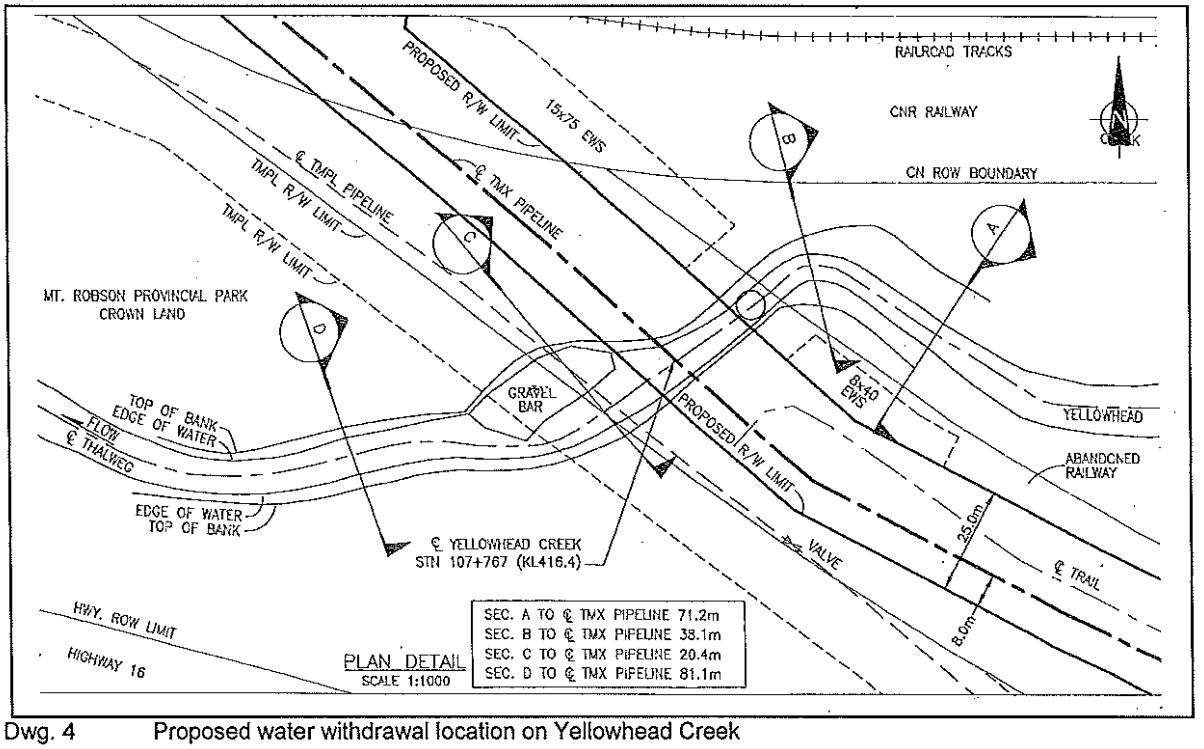
Dwg. 1 Proposed water withdrawal location on Moose River.



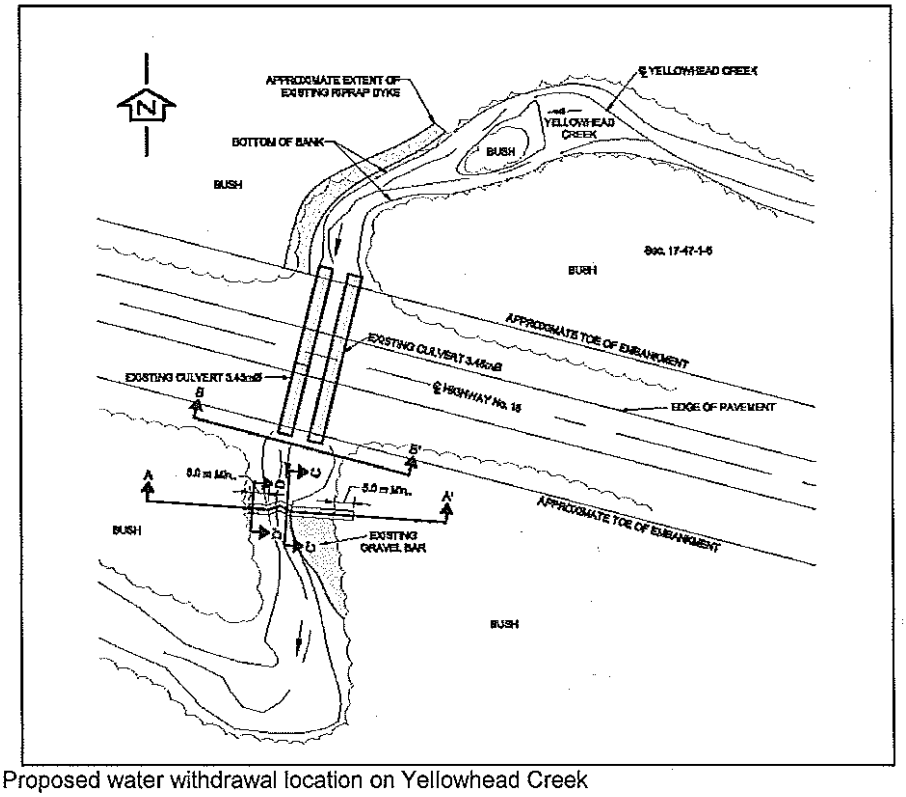
Dwg. 2 Proposed water withdrawal location on Fraser River



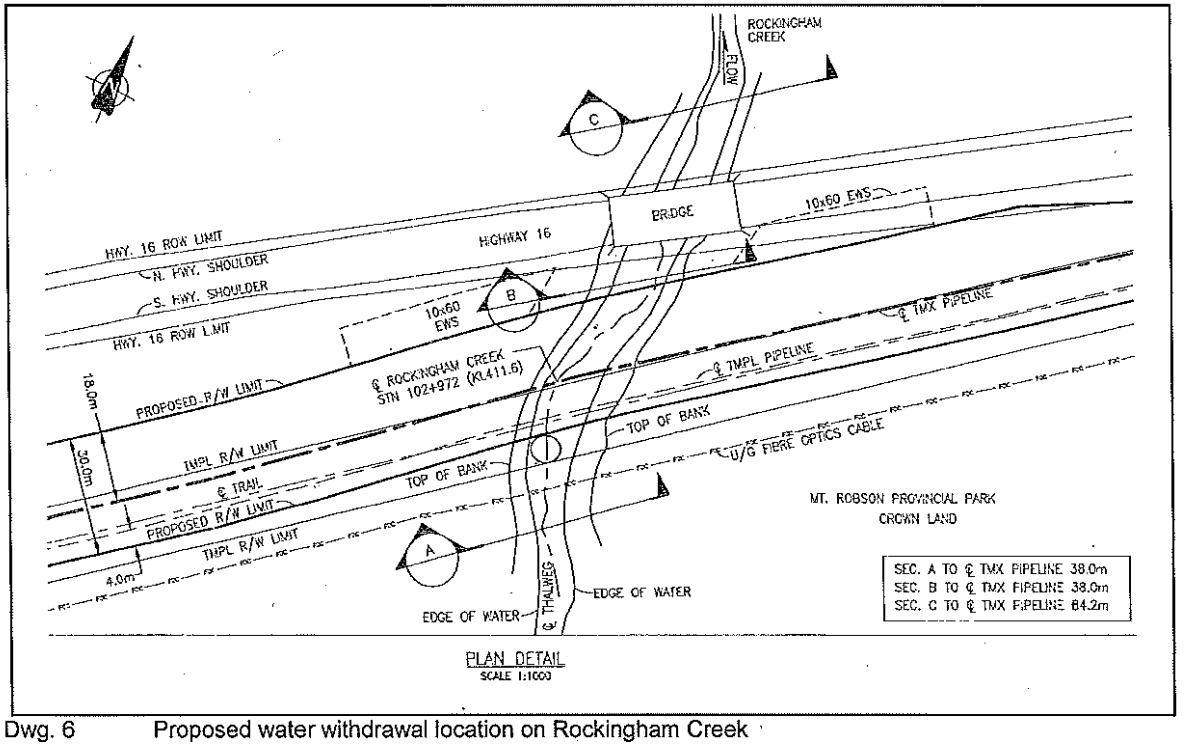
Dwg. 3 Proposed water withdrawal location on Grant Brook Creek



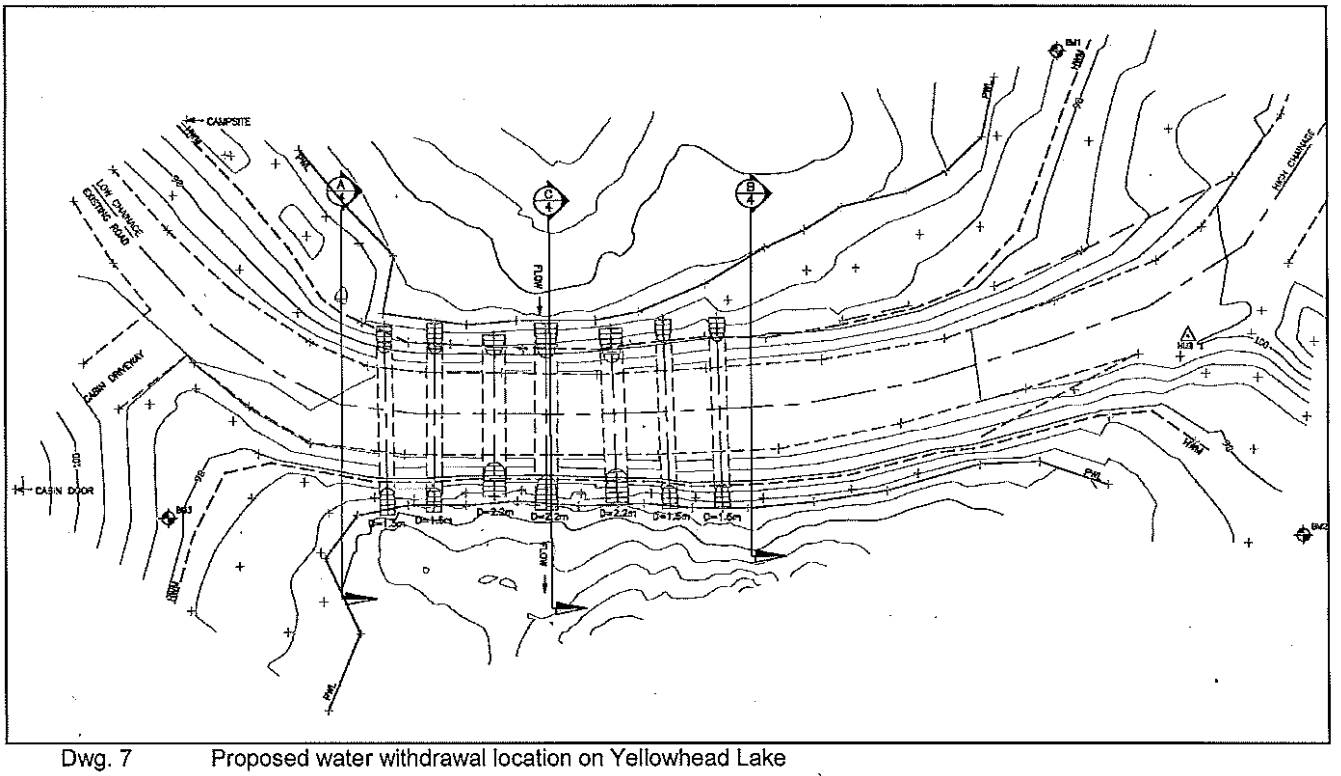
Dwg. 4 Proposed water withdrawal location on Yellowhead Creek



Dwg. 5 Proposed water withdrawal location on Yellowhead Creek



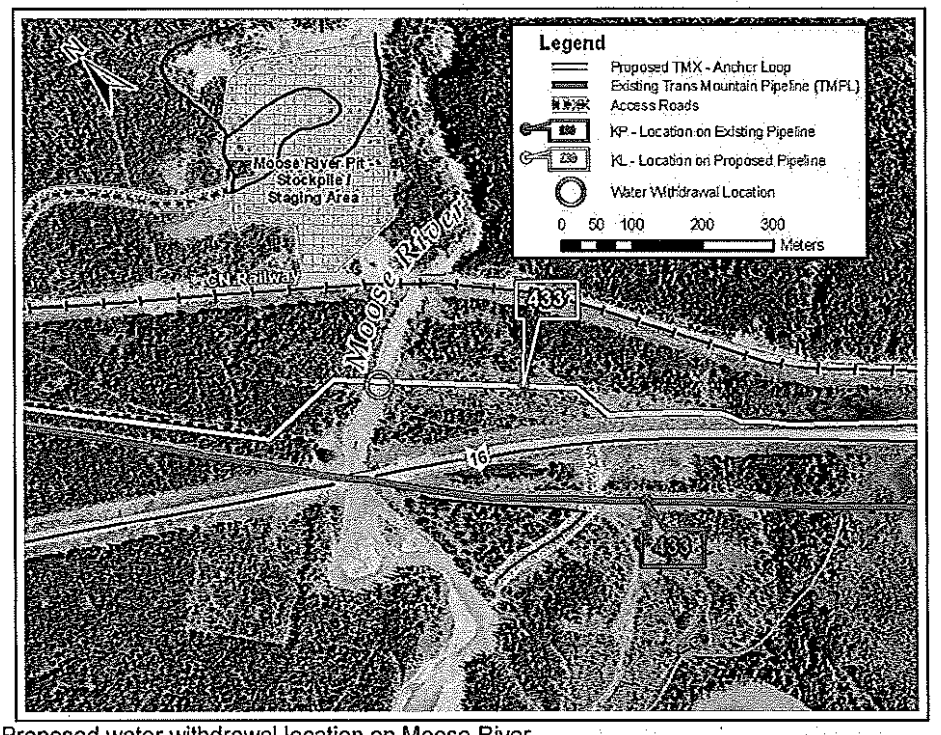
Dwg. 6 Proposed water withdrawal location on Rockingham Creek



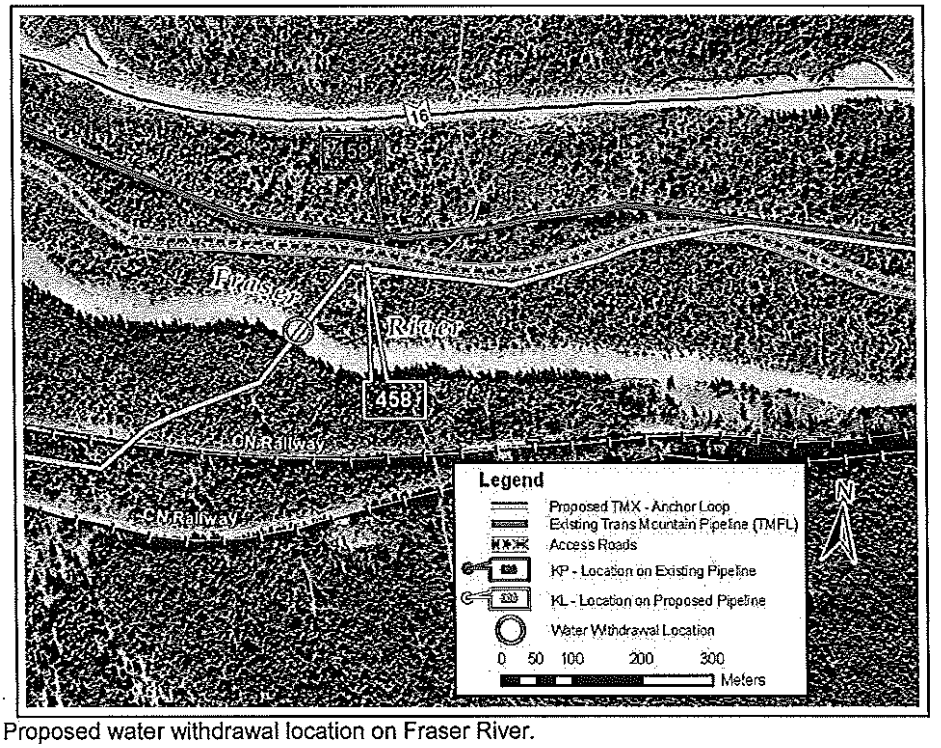
Dwg. 7 Proposed water withdrawal location on Yellowhead Lake

ATTACHMENT B

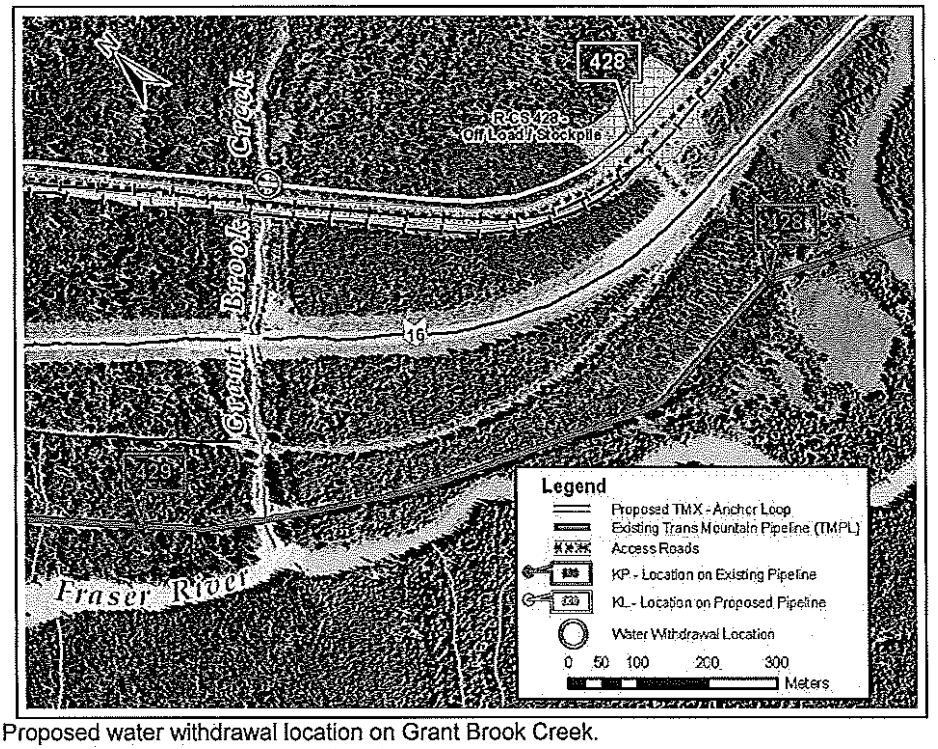
MAPS



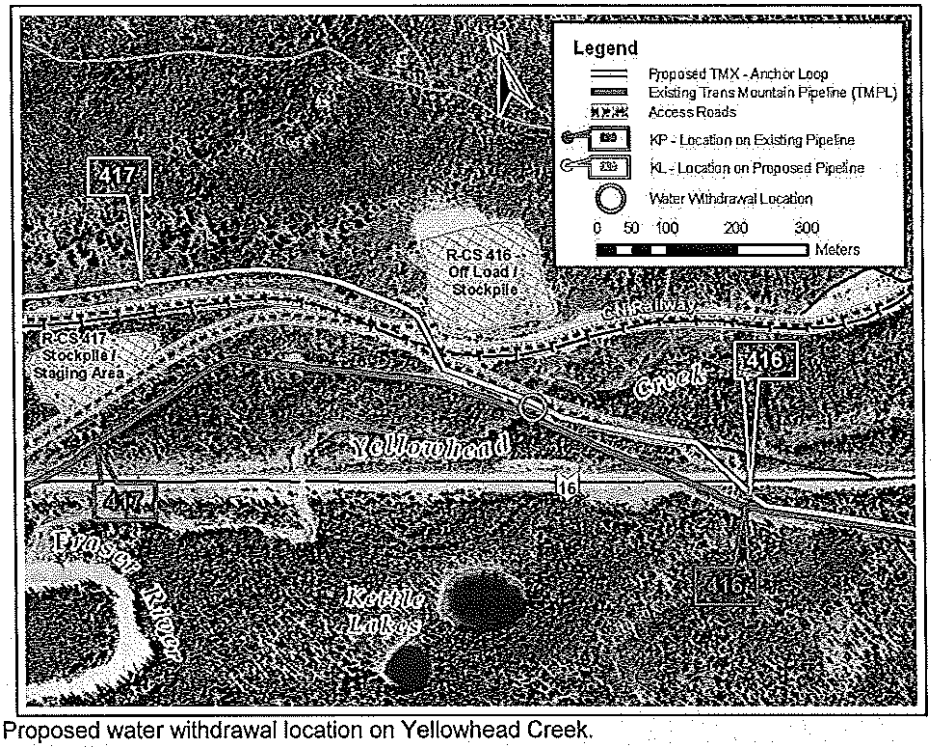
Map 1 Proposed water withdrawal location on Moose River.



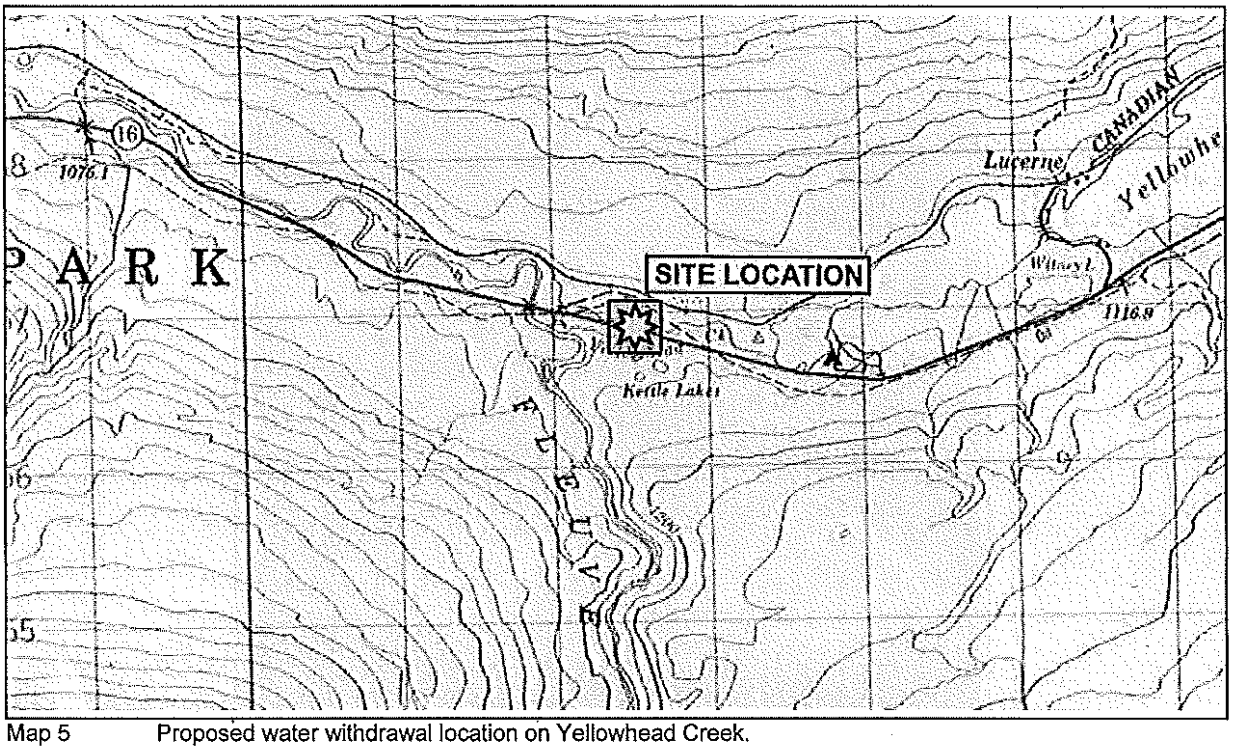
Map 2 Proposed water withdrawal location on Fraser River.



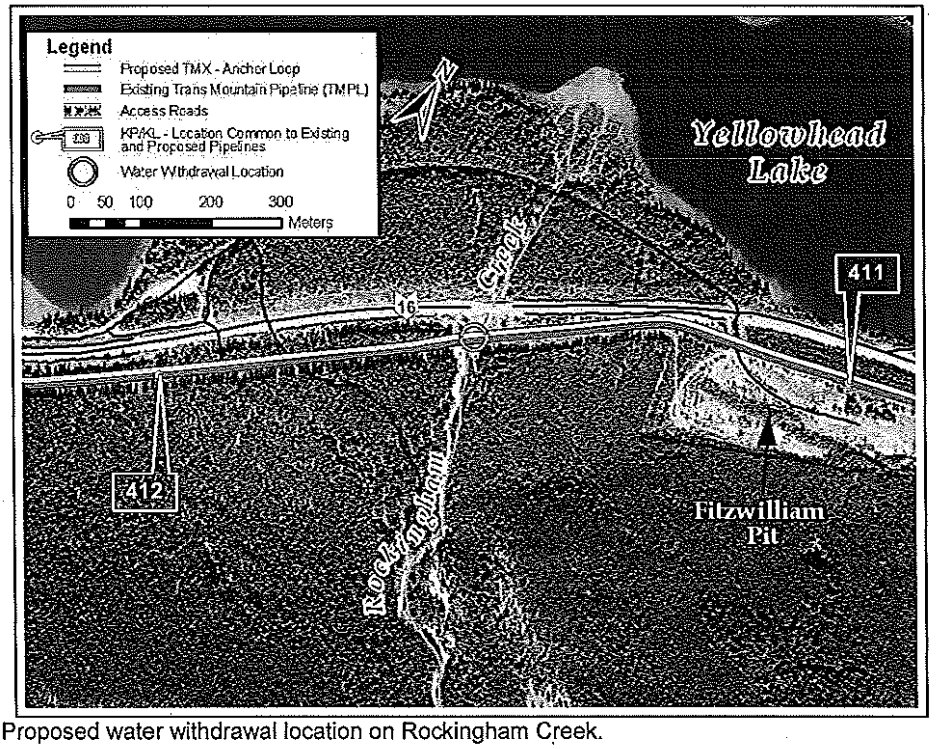
Map 3 Proposed water withdrawal location on Grant Brook Creek.



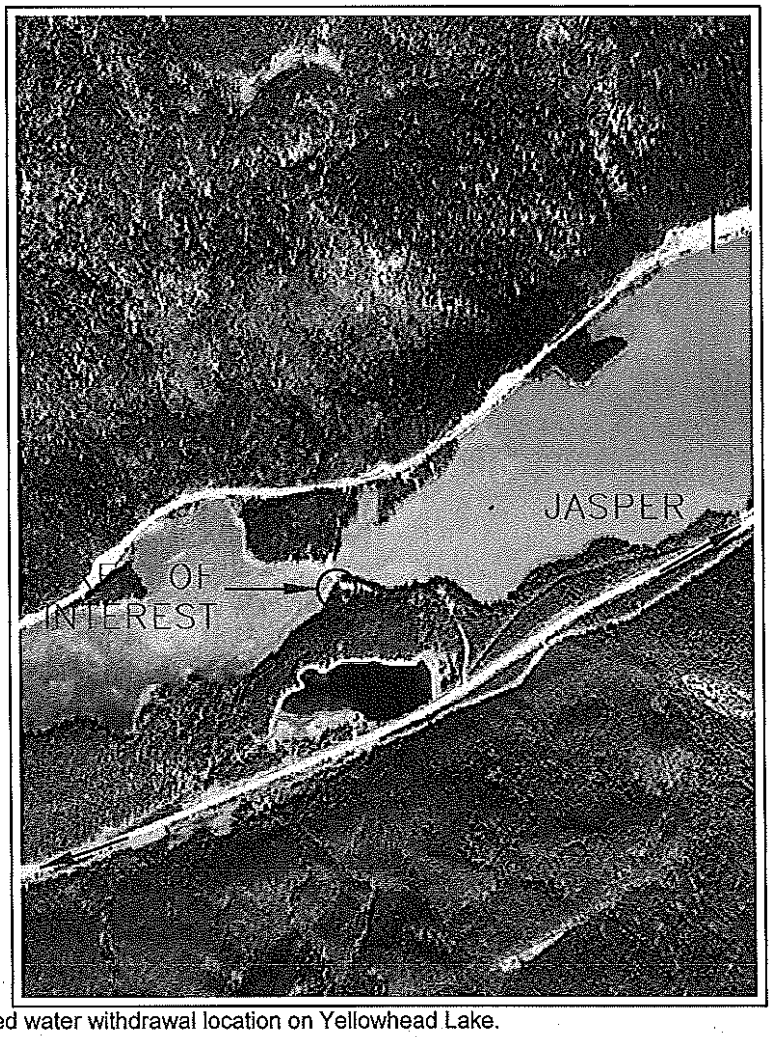
Map 4 Proposed water withdrawal location on Yellowhead Creek.



Map 5 Proposed water withdrawal location on Yellowhead Creek.



Map 6 Proposed water withdrawal location on Rockingham Creek.



Map 7 Proposed water withdrawal location on Yellowhead Lake.

-----Original Message-----
From: Ferguson, Donna [mailto:]
Sent: Tuesday, January 17, 2012 4:25 PM
To: Williams, Megan FLNR:EX
Cc: 'Taso Gavriel'
Subject: RE: DL 2638

Yes, I got a call today from the field that this is progressing much sooner than anticipated. I believe Kelvin (our local guy in charge) will be doing a site visit tomorrow and because of the timing and location I've asked our agent - Taso Gavriel - Gateway Services - to help us out on this. I believe he will be getting in touch with you, if he hasn't already with a lot more detail. We will require a Highway's Permit, possibly a Licence to Cut (Kelvin was going to check out the quantity and type of trees tomorrow), and perhaps a temporary LOC unless there's a way to circumvent this due to the need to expedite as quickly as possible in order to avoid any potential risk. Our easement does give us the right of ingress and egress but I gather it is in a very steep terrain and the snow doesn't help. We always endeavour to stay within our right-of-way but these conditions may make it difficult and laydown space etc. may be required. Hopefully this can be worked out.

-----Original Message-----
From: Williams, Megan FLNR:EX [mailto:Megan.Williams@gov.bc.ca]
Sent: Tuesday, January 17, 2012 4:05 PM
To: Ferguson, Donna
Subject: RE: DL 2638

Do you need me to review more than the area designated by the X...because that is all I looked at. I'm understanding now that you may need area outside your stat right of way?

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Tuesday, January 17, 2012 11:10 AM
To: Williams, Megan FLNR:EX
Subject: DL 2638

Did you have time to look at the status of DL 2638?

-----Original Message-----
From: Taylor, Mark D FLNR:EX [mailto:Mark.D.Taylor@gov.bc.ca]
Sent: Monday, January 09, 2012 12:10 PM
To: Ferguson, Donna
Cc: Williams, Megan FLNR:EX
Subject: Kinder Morgan : Forestry Licence to Cut ?

Hi Donna, Mark here.

Short & Sweet

L47557 and L47504 have not expired yet BUT the areas within those previous licences now fall within the Robson Valley TSA so I can't amend that one as it is now part of the Prince George District. Good news is if you need to do future works in the Valemount north area I guess ?

L47205 expired in 2008.

We (Megan & I) are thinking you may have to apply for a Forestry Licence to Cut but we would appreciate more info on what exactly you are intending to use this permit for. Removal of timber ?, how much ?, when ?

In the meantime Megan will discuss with her collegues what the proper approval / licence we should go with and also has offered to do a status of the area within DL 2638 KDYD. (map attached Megan)

Thanks Ladies
Mt

Mark Taylor RFT
Special Tenures & Engineering Technician Headwaters Forest District Ministry of Forests, Lands & Natural Resource Operations
687 Yellowhead Hwy
Clearwater, BC V0E 1N2
Ph : 250/587-6750
Fax: 250/587-6790
mark.d.taylor@gov.bc.ca

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Tuesday, January 3, 2012 1:54 PM
To: Taylor, Mark D FLNR:EX
Subject: Licence to Cut

Further to our telephone conversation earlier, please see attached draft maps with Lat and Long with respect to the upcoming anomaly dig. I believe they fall within DL 2638 KDYD. The site is just upstream of our Chappel Pump Station about 25 km north of Blue River.

As discussed, we're hoping that any trees that need to be cleared for access will fall under one of our existing licences: L47557, L47205 or L47504.

Appreciate your assistance.

Williams, Megan FLNR:EX

From: Williams, Megan FLNR:EX
Sent: Wednesday, January 25, 2012 11:31 AM
To: S22
Cc: 'Kelvin_Stelter@kindermorgan.com'; 'Bob_Love@kindermorgan.com'; 'Donna_Ferguson@kindermorgan.com'
Subject: Kindermorgan - Chapell Creek repair
Attachments: 20120125111820.pdf

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca

How Did We Do?
Clients of **FrontCounter BC** are invited to take our customer satisfaction survey. We'd appreciate your input.

From S22
Sent: Tuesday, January 24, 2012 4:32 PM
To: Williams, Megan FLNR:EX
Cc: Kelvin_Stelter@kindermorgan.com; Bob_Love@kindermorgan.com; Donna_Ferguson@kindermorgan.com
Subject: Fwd: RE: Kindermorgan

Thanks Megan

---------- Forwarded message ----------
From: **Williams, Megan FLNR:EX** <Megan.Williams@gov.bc.ca>
Date: Jan 24, 2012
Subject: RE: Kindermorgan
To: S22

I will send you the letter tomorrow.

If Simpcw elects not to take the wood, and the wood is about a truckload or less (35-40m3) then Kinder Morgan can pile the wood adjacent to the right of way and paint "firewood" on it.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC

Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of **FrontCounter BC** are invited to take our customer satisfaction survey. We'd appreciate your input.

From: s22
Sent: Tuesday, January 24, 2012 3:24 PM
To: Williams, Megan FLNR:EX
Cc: s22 Kelvin_Stelter@kindermorgan.com; Bob_Love@kindermorgan.com; Donna_Ferguson@kindermorgan.com
Subject: Re: Kindermorgan

Thank Megan, great job!!!

We were advised this morning that MoT will be approving the access to the Hwy, we are waiting for writen confirmation, expected some time tomorrow.

I further confirm our conversation this morning where in you advised that should the Simpcw elect not to take the timber then Kinder Morgan can leave the timber next to the Right of Way.

Please send the letter to Bob Love and cc the above personal.

Thanks again Megan,

Taso

On Jan 24, 2012, **Williams, Megan FLNR:EX**<Megan.Williams@gov.bc.ca> wrote:

> Hi Taso, I have a letter of authorization done that will allow Kindermorgan to occupy the Crown land outside of the Hwy right of way and to remove the trees and vegetation under S. 52 of the Forest and Range Practices Act.
>
> What it doesn't do, is allow you access to land within the right of way (that would be Hwys) nor does it allow you the ability to divert the creek which if I understand correctly may already have been dealt with by Water Stewardship, specifically Duane Wells.
>
> If there is any merch. Timber in the area that you need to clear and Simpcw wants it, they'd need to come back to us with a request for a timbermark.

Does this work for you? I will get Peter to sign it tomorrow and call when it is done.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email:Megan.Williams@gov.bc.ca

How Did We Do?
Clients of**FrontCounter BC** are invited to take our customer satisfaction survey. We'd appreciate your input.

BRITISH COLUMBIA

Project: 92145

January 25, 2012

Kinder Morgan Canada Inc.
c/o Gateway Land Services Ltd.
3 – 550 Lorne St.
Kamloops, BC V2C 1W3

Dear Bob Love:

Thank you for your letter of January 20, 2012 in which you outlined the steps and plan that Kinder Morgan Canada Inc. have undertaken and need to undertake in order to address an anomaly to the pipeline located on unsurveyed Crown land adjacent to the Yellowhead Highway and just north of the Chappell Creek Pump station, Kamloops Division Yale District.

We understand from your letter that Kinder Morgan Canada Inc. is requesting an expedited turnaround on a request to:

a) Temporarily occupy 0.12 Ha Crown land for the purpose of a "laydown/staging area" adjacent to Ministry of Transportation right of way (Yellowhead road).
b) Temporarily occupy 0.1 Ha Crown land adjacent to the pipeline right of way to facilitate digging, inspecting and repairing the pipeline.
c) Remove the Crown trees within the areas noted above

We understand from discussions with Water Stewardship Division that a notification regarding reviewing an existing stream is already underway.

We further understand that the National Energy Board, Ministry of Environment, the Department of Fisheries and Oceans and Simpcw First Nations have been contacted and are involved in discussions and work associated with the project.

Kinder Morgan Canada Inc. has committed to grading of the affected ground and seeding the ground in the spring of 2012.

I hereby authorize Kinder Morgan Canada Inc. under Section 52 of the *Forest Act* to temporarily occupy the Crown land outside the Highway right of way and remove timber and vegetation on behalf of the Crown within the area indicated as Exhibit A for a period of 2 months as of the date of this letter.

FrontCounter BC

Mailing Address:
441 Columbia Street
Kamloops BC V2C 2T3

Phone: (250) 828-4131
Fax: (250) 828-4442
Toll Free: 1-877-855-3222
Website: www.frontcounterbc.gov.bc.c

If removal of merchantable timber from the area is necessary Kinder Morgan Canada Inc. will need to contact FrontCounter BC at 250-828-4131 for authority to remove timber.
If you have any questions regarding the application process or requirements for a complete application, please contact me at (250) 828-4474.

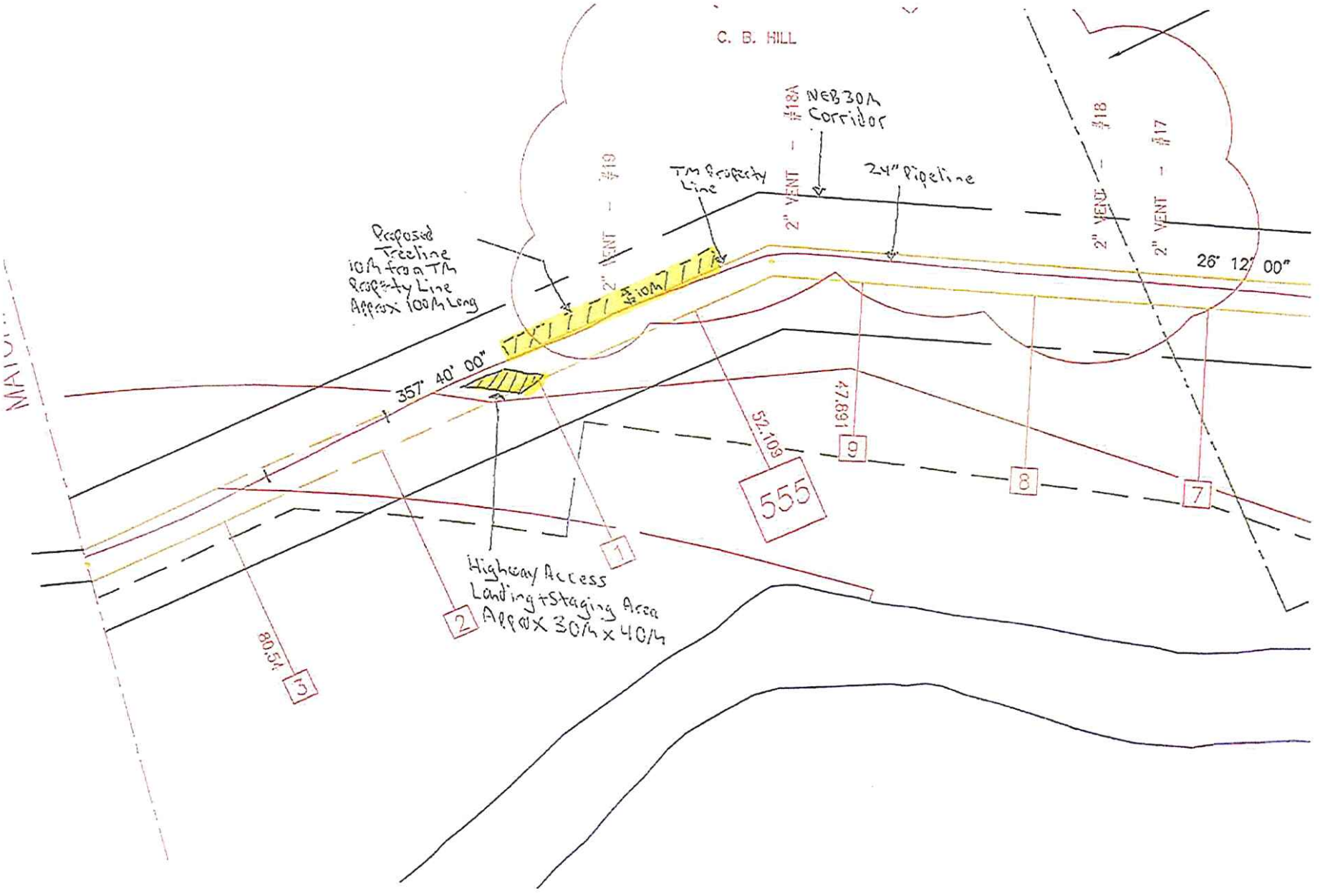
Sincerely,

Peter Lishman, RPF
Director, Resource Authorizations
Ministry of Forests Lands and Natural Resource Authorizations

encl:

pc: Rick Sommer, District Manager, Duane Wells, Water Officer, Kristen Johnson, Development Approvals Tech, Taso Gavriel, Kelvin Stelter, Donna Ferguson

EXHIBIT A


C. B. HILL
NEB30A Corridor
#18A
#19
#18
#17
2" VENT
2" VENT
2" VENT
TM Property Line
24" Pipeline
Proposed Treeline 10M from TM Property Line Approx 100M Long
10M
357° 40' 00"
26° 12' 00"
47.691
52.109
555
Highway Access Landing + Staging Area Approx 30M x 40M
80.51
1
2
3
7
8
9

Williams, Megan FLNR:EX

From: Ferguson, Donna [Donna_Ferguson@kindermorgan.com]
Sent: Wednesday, January 18, 2012 9:43 AM
To: Lishman, Peter FLNR:EX
Cc: Williams, Megan FLNR:EX
Subject: RE: Kinder Morgan

Thanks - really appreciate all your help. Taso, our land agent, will be getting in touch with you with more details.

-----Original Message-----
From: Lishman, Peter FLNR:EX [mailto:Peter.Lishman@gov.bc.ca]
Sent: Tuesday, January 17, 2012 4:42 PM
To: Ferguson, Donna
Cc: Williams, Megan FLNR:EX
Subject: RE: Kinder Morgan

Donna --we will work to expedite the approvals however we need to know the nature of the event and what agencies we need to have involved

Peter Lishman RPF
Director,Resource Authorizations
Thompson Okanagan Region
Ministry of Natural Resource Operations
250-828-4239

-----Original Message-----
From: Williams, Megan FLNR:EX
Sent: Tuesday, January 17, 2012 4:27 PM
To: Lishman, Peter FLNR:EX
Subject: Kinder Morgan

FYI...those involved are likely Mark Taylor (Jennifer Fraser), Don Meeks.

Not sure about the environment folk although we may want to at least include in discussion.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Ferguson, Donna [mailto:]
Sent: Tuesday, January 17, 2012 4:25 PM
To: Williams, Megan FLNR:EX
Cc: 'Taso Gavriel'

Subject: RE: DL 2638

Yes, I got a call today from the field that this is progressing much sooner than anticipated. I believe Kelvin (our local guy in charge) will be doing a site visit tomorrow and because of the timing and location I've asked our agent - Taso Gavriel - Gateway Services - to help us out on this. I believe he will be getting in touch with you, if he hasn't already with a lot more detail. We will require a Highway's Permit, possibly a Licence to Cut (Kelvin was going to check out the quantity and type of trees tomorrow), and perhaps a temporary LOC unless there's a way to circumvent this due to the need to expedite as quickly as possible in order to avoid any potential risk. Our easement does give us the right of ingress and egress but I gather it is in a very steep terrain and the snow doesn't help. We always endeavour to stay within our right-of-way but these conditions may make it difficult and laydown space etc. may be required. Hopefully this can be worked out.

-----Original Message-----
From: Williams, Megan FLNR:EX [mailto:Megan.Williams@gov.bc.ca]
Sent: Tuesday, January 17, 2012 4:05 PM
To: Ferguson, Donna
Subject: RE: DL 2638

Do you need me to review more than the area designated by the X...because that is all I looked at. I'm understanding now that you may need area outside your stat right of way?

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Tuesday, January 17, 2012 11:10 AM
To: Williams, Megan FLNR:EX
Subject: DL 2638

Did you have time to look at the status of DL 2638?

-----Original Message-----
From: Taylor, Mark D FLNR:EX [mailto:Mark.D.Taylor@gov.bc.ca]
Sent: Monday, January 09, 2012 12:10 PM
To: Ferguson, Donna
Cc: Williams, Megan FLNR:EX
Subject: Kinder Morgan : Forestry Licence to Cut ?

Hi Donna, Mark here.

Short & Sweet

L47557 and L47504 have not expired yet BUT the areas within those previous licences now fall within the Robson Valley TSA so I can't amend that one as it is now part of the Prince George District. Good news is if you need to do future works in the Valemount north area I guess ?

L47205 expired in 2008.

We (Megan & I) are thinking you may have to apply for a Forestry Licence to Cut but we would appreciate more info on what exactly you are intending to use this permit for. Removal of timber ?, how much ?, when ?

In the meantime Megan will discuss with her collegues what the proper approval / licence we should go with and also has offered to do a status of the area within DL 2638 KDYD. (map attached Megan)

Thanks Ladies
Mt

Mark Taylor RFT
Special Tenures & Engineering Technician Headwaters Forest District Ministry of Forests, Lands & Natural Resource Operations
687 Yellowhead Hwy
Clearwater, BC V0E 1N2
Ph : 250/587-6750
Fax: 250/587-6790
mark.d.taylor@gov.bc.ca

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Tuesday, January 3, 2012 1:54 PM
To: Taylor, Mark D FLNR:EX
Subject: Licence to Cut

Further to our telephone conversation earlier, please see attached draft maps with Lat and Long with respect to the upcoming anomaly dig. I believe they fall within DL 2638 KDYD. The site is just upstream of our Chappel Pump Station about 25 km north of Blue River.

As discussed, we're hoping that any trees that need to be cleared for access will fall under one of our existing licences: L47557, L47205 or L47504.

Appreciate your assistance.

Williams, Megan FLNR:EX

From: Ferguson, Donna [Donna_Ferguson@kindermorgan.com]
Sent: Tuesday, January 17, 2012 9:49 AM
To: Williams, Megan FLNR:EX
Subject: RE: The Strand Line
Attachments: image001.jpg

Hi, Megan. I've never heard of the "Strand Line". I asked our External Relations people and others here and they too have not heard of it so not sure where this info came from.

We are in the middle of an "Open Season" process. It began in October and will end in mid-February. The Open Season seeks commercial commitment from our customers. In simple terms, we propose a package of terms for a potential expansion project and solicit bids from potential customers for contracting capacity on the project.

We've been discussing the possibility of expansion for some time now and this process is meant to formalize commitments from potential customers. If we have support, our next step will be to initiate a thorough and comprehensive consultation process, environmental and socio-economic assessments, etc. – to develop a regulatory application. We should know whether we are proceeding with the project TMX some time late in the first quarter of 2012. Greg Toth is the Project Manager for TMX.

If at any time you have any media/public relations type questions, please feel free to contact Lexa Hobenshield, our Manager, External Relations at Lexa_Hobenshield@kindermorgan.com or 604.268.3013.

If you hear anything more about the "Strand Line" and referencing us, please let us know and we'll try to get to the source.

Donna Ferguson
Land & Right-of-Way Representative
Trans Mountain Pipelines

KINDER MORGAN CANADA

7815 Shellmont Street
Burnaby, BC V5A 4S9
Direct Tel: (604) 268-3094
Fax: (604) 268-3001
Cell: (604) 999-6334

Please consider the environment before printing this email

From: Williams, Megan FLNR:EX [mailto:Megan.Williams@gov.bc.ca]
Sent: Monday, January 16, 2012 4:18 PM
To: Ferguson, Donna
Subject: The Strand Line

Hi Donna, we heard a story on CBC this morning about the Strand Line, the proposal from Kinder Morgan to twin the pipeline from Edmonton to Kamloops.

Do you have a contact within KinderMorgan for this project? We'd be looking to set up a meeting with them to discuss. This is likely what we would term a "major project" and we would want to establish what resources such as a Project Manager we may need to put towards this project.

Thanks.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca

How Did We Do?
Clients of **FrontCounter BC** are invited to take our customer satisfaction survey. We'd appreciate your input.

Williams, Megan FLNR:EX

From: Ferguson, Donna [Donna_Ferguson@kindermorgan.com]
Sent: Wednesday, January 11, 2012 1:28 PM
To: Williams, Megan FLNR:EX
Subject: RE: Finn Creek

Many thanks - is my understanding still correct that if we have to cut any trees that Parks is exempt and we do not need a Licence to Cut but obviously permit from Parks.

-----Original Message-----
From: Williams, Megan FLNR:EX [mailto:Megan.Williams@gov.bc.ca]
Sent: Wednesday, January 11, 2012 1:14 PM
To: Ferguson, Donna
Subject: RE: Finn Creek

Here is the answer from Water Stewardship

Some utility lines through parks are covered by Stat Right of Ways....in these cases the land is deemed excluded from the park and therefore requires the Work in and about a stream authorization:

http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/index.html - the application is about 1/2 way down the page.

If you are going outside your Right of Way then you will also need a Park Use Permit.

http://www.env.gov.bc.ca/pasb/applications/process/park_use.html#Applications - land use/Occupancy permit

If parkland exists downstream of the work area then it is a good idea to refer the application to the Area Supervisor.

HOWEVER:
Some utility lines are authorised in a park through a Park Use Permit (I don't think yours is), in this case the land is still parkland and therefore requires a Park Use Permit.

So the advice is: you will need a Section 9 Water Act application, and probably a Park Use Permit. Contact Bruce Petch at Parks to discuss the park use (250-371-6216). The park use permit if one is necessary can take up to 140 days to adjudicate if they are busy, I would recommend getting this in as soon as possible.

Both of these applications can come through our office here.

Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Williams, Megan FLNR:EX
Sent: Tuesday, January 10, 2012 10:55 AM
To: 'Ferguson, Donna'
Subject: RE: Finn Creek

Hi Donna, this part of the creek is definitely in the Park, and therefore your contact would be with parks. I'm just checking with them on the form and the contact. Will let you know.

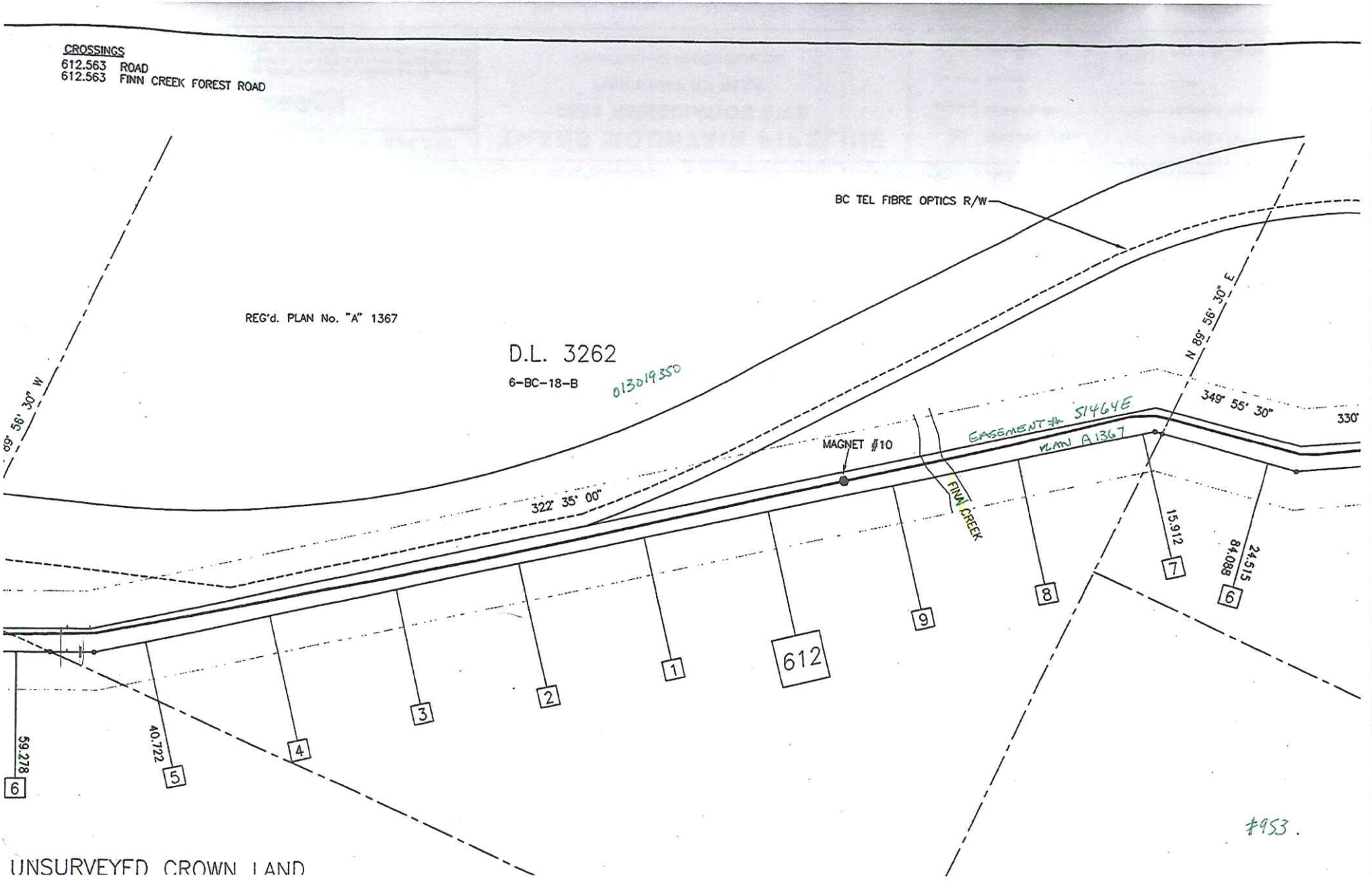
Megan Williams, BScF, RPF
Senior Natural Resource Specialist
FrontCounterBC
Thompson Okanagan Service Centre - Kamloops
Phone: (250)828-4474
Fax: (250)828-4442
Email: Megan.Williams@gov.bc.ca
How Did We Do?
Clients of FrontCounter BC are invited to take our customer satisfaction survey. We'd appreciate your input.

-----Original Message-----
From: Ferguson, Donna [mailto:Donna_Ferguson@kindermorgan.com]
Sent: Monday, January 9, 2012 1:56 PM
To: Williams, Megan FLNR:EX
Subject: Finn Creek

Megan, not sure if this is in your area - DL 3262 KDYD. We plan on doing a natural hazard remediation at this location later in the year. Our records indicate that it is Crown land - PID 013-019-350 but then GIS seems to indicate that it falls within Finn Creek Provincial Park. The works would be within the stream crossing of our plan A1367 - I highlighted this in yellow. Would like to sort this out so we know whether we should be apply to Parks or to Crown for the necessary permitting.

Much appreciated. Let me know if this is out of your area. It's just north of our Finn Pump Station which is south of Blue River but north of McMurphy.

Thanks.


CROSSINGS
612.563 ROAD
612.563 FINN CREEK FOREST ROAD
BC TEL FIBRE OPTICS R/W
REG'd. PLAN No. "A" 1367
D.L. 3262
6-BC-18-B
013019350
09° 56' 30" W
N 89° 56' 30" E
322° 35' 00"
349° 55' 30"
330'
MAGNET #10
EASEMENT # 51464E
PLAN A1367
FINN CREEK
59.278
40.722
15.912
84.088
24.515
612
UNSURVEYED CROWN LAND
#953.

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Environment

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

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

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

1. Applicant Information (also complete sections 6 and 7)

Name: Kinder Morgan Canada		
Address: 2355 Trans Canada Hwy. West		
City: Kamloops	Province: BC	Postal code: V1S 1A7
Phone: 250-371-4017	e-mail: jason_turner@kindermorgan.com	

2. Location of Works

Street Address of Works (or nearest town): Between Blue River and Valemount adjacent to Hwy. 5		
Stream Name: Unnamed tributary	Flows Into: North Thompson River	
Location on Stream:		
Reference Landmarks: KMC Chappel Pump Station		Amount of disturbance in m^2: ~20
Multiple Sites: YES / NO: No		Number of sites: 1
Latitude: N52 23' 27.4056"	Longitude: W119 10' 40.6524"	Elevation: ~ 800 meters
Legal description of property where work is proposed: Crown Land		

3. Drawing, Plan and Site Map

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

4. Proposed Timing for Work

Start (day/month/year): 6 / February / 2012	Finish (day/month/year): 15 / March / 2012

FOR OFFICE USE ONLY

Date Received: RECEIVED FEB 16 2012 FrontCounterBC	Water File Number:
	Client Number:
	Application Number:
	Amount Received:
	Receipt Number:

5. Type of Works

Requires Approval:

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

*Provide culvert dimensions:

Length:

Width:

Diameter:

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

Requires Notification:

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

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

Federal/Provincial

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

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

Provincial/Municipal

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

[1] Some activities fitting the description for Notification may be reviewed by Ministry/Agency staff, who may decide that an Approval is required.
[2] Must be completed under direction of the Crown. No notification is required prior to undertaking works, but a description of changes must be submitted to a habitat officer within 72 hours of the change.
[QP] QP means a professional who through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within their area of expertise.

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

Total area disturbed by proposed works (all sites): Approximately 20 m^2

The ground surface is saturated which presents a challenge to safely expose the pipeline anomalies with heavy equipment. Redirect uphill drainage source to dry up the right of way and anomaly dig site.

Please refer to Kinder Morgan Canada's Environmental Mitigative Measures worksheet (attached) submitted to onsite pipeline maintenance crew.

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

6. Land Ownership

Please check one of the following:

☐ The applicant is the owner of the property.

☒ The property is Crown land. Tenure/licence number: Kinder Morgan Canada – Trans Mountain Pipeline Right of Way

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

Landowner's Name:		
Address:		
City:	Province:	Postal code:
Phone:	e-mail:	

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

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

7. Who is doing the Work?

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

Company Name:		
Contact Name:	Professional Affiliation:	
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

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

Company Name:		
Contact Name:		
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

8. Statement of Intent

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

~~With respect to a Notification, in accordance with Part 7 of the Water Regulation, Section 40(1), I declare that I have submitted my application 45 days prior to the commencement of any work by me, or anyone employed by me.~~ I understand that I will be receiving a confirmation of receipt of the application by Ministry of Environment (including confirmation of the applicable dates for the 45 day period) and that, unless I receive a response from a Habitat Officer within this 45 day notification period, I understand that I should not commence any activities until the 45 day notification period has passed. I understand that it is an offence under the Water Act to make changes in and about a stream without authority.

Signed: _____ Application Date: 12/January/2012 (day/month/year)

9. Submission Instructions

Send the completed form along with the following attachments to the local office in which the proposed works are located. Addresses for local offices are listed on the instruction sheet.

Please note that if you are providing a Notification, no fees are required. However, a fee of $130.00 is required if you are submitting an application for an Approval. The $130.00 Approval application fee is not refundable. Payment for the Approval fee may be made at FrontCounter BC offices with a credit card.

If the proposed works require an Approval, prior to proceeding further with this application please ensure that this project will be able to proceed under the Federal *Fisheries Act.*

Required Attachments for both Notifications and Approvals:

☒ Sketch plan (mandatory)

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

☒ Key location map (mandatory)

☐ For works requiring an Approval **only**, a cheque, money order or deposit by credit card for $130 payable to: Minister of Finance. The fee is non-refundable. No fee is required for a Notification.

10. Responsibilities

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

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

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

DFO Operational Statement. Teri Ridley / Dave Pehl. Kamloops DFO Office.

KINDER MORGAN CANADA INC.

Environmental Mitigative Measures (to be included in Work Plan)
Provide job specific mitigative measures for any of the environmental issues identified on the Environmental Checklist in the corresponding section. Contact Environment Department for support.

Project Title / Number: N.Thompson Dig 555.996&556.005 Dig#'s 89510+8.74; 89520+1.19; 89520+3.45; 89520+8.38

Completed by: Jason Turner Date: January 11, 2012

1. Environmental Issues Identified on Alignment Sheets (if available): (ex. flag known rare plant or archeological sites, obtain straw from landowner for straw crimping erosion prone soils, ect.) Within caribou winter range area. GIS checked on January 11, 2012.
2. Land Use: (ex. Order appropriate seed mix, identify proper/adequate access to the site, ect.) Area surrounding the dig site is a forested area, use r/w seed mixture appropriate for Blue River area.
3. Land Ownership: (ex. Ensure all appropriate permits/approvals are obtained, additional environmental studies may be required, ect.) Donna Ferguson has confirmed area is Crown Land.
4. First Nations Traditional Land Use: (ex. Contact Regulatory Affairs dept for consultation, ect.) According to the GIS dig map there are no IR's in the area. Located within Simpcw's Traditional Territory and given our recent Protocol Agreement to inform them of all activities within their territory, a courtesy call is required. Kelvin Stelter has confirmed he has contacted Sam Phillips of Simpcw First Nations to set up a site visit to look over the scope work and to review any opportunities the Simpcw could be involved in during the project.
5. Access: (ex. strip topsoil on access route to prevent soil degradation, remove any gravel used for access to site, minimize clearing or brushing for access, ect.) Equipment will access the site from Hwy. 5 and along the right of way. A temporary equipment access ramp will be required and constructed off the TMPL right of way within the Ministry of Transportation Highway corridor. Construction of this temporary ramp will require approval from MOT. The ramp will include a temporary culvert to allow drainage.
6. Working within 30 m of a wetland, waterbody or watercourse: (ex. acquire permit from DFO, use matting for equipment, install silt fence to prevent siltation in watercourse, limited clearing and brushing in proximity to a watercourse, ect.) The dig will occur on a hillside where drainage from an uphill source is flowing down the face of the hill. The ground surface is saturated which presents a challenge to safely expose the pipeline anomalies with heavy equipment. A geotechnical engineering assessment was conducted by Golder Associates, and a recommendation has been made to extend the length of an existing culvert where the drainage is originating at the uphill source. The intention of extending the culvert is to permanently redirect water along side of the right of way rather than through the middle of the right of way. Another option is for the drainage to be redirected beyond the right of way and intercepted by a topography feature which would continue to drain under an existing highway culvert. Both of these options are intended to keep the source of the drainage flowing towards its current location beyond the right

of [illegible] (ie. not to change or impact the final destination of the drainage, impact downstream users or infrastructure, and/or negatively impact fish habitat downstream.)

All hydrocarbon fuelled generators and small equipment must be placed in lined containment berms. No refueling of equipment is to occur within 100 meters of any watercourse.

Vegetation clearing is required to re-establish the right of way and to establish an area(s) where heavy equipment can be safely positioned on the hillside (ie. work platforms). Clearing this vegetation will not negatively impact riparian habitat or contribute to a cumulative impact of reducing riparian nutrient inputs.

All stockpiled soil must be covered.

7. Soil Disturbance: (ex. Strip all available topsoil, minimize grading, keep topsoil and subsoil separate, stop work if required in wet conditions, ect.)

Crews will do their best to salvage all possible topsoil (organic layer) to color change (or to 15 cm if color is indistinguishable) and store onsite. Ensure adequate separation (1 m) between topsoil and subsoil. Backfill subsoil and topsoil according to the layers and depths excavated onsite.

8. Fish and Wildlife Timing Restrictions: (ex. pre-mow vegetation outside of work window, conduct wildlife survey or fish salvage, ect.)

Fish do not reside in the subject drainage within the portion located in the right of way, however, fish populations may reside in downstream portions of the subject drainage. The most important mitigative action item is to ensure our activities do not create sediment transport into the North Thompson River or downstream portions of the drainage where fish may reside/overwinter or where salmon eggs may exist in gravels.

9. Vegetation Disturbance: (ex. Minimize disturbance to sod layer, minimize clearing of trees, clear/brush within nesting bird windows, ect.)

Prior to removing any trees, please contact Donna Ferguson with an update of your schedule. Donna has contacted Mark Taylor with the Headwater Forest District with regards to three existing KMC Licenses to Cut within the Headwaters District which do not expire until August 2012. Our tree cutting activities on Crown Land may be authorized under one of these existing licenses? Mark is currently looking into this and we must confirm with Donna we are authorized under the existing licenses prior to cutting any trees.

A danger tree review is required. The area must be scoped for 'Suspect' trees per our H&S Danger Tree Standard (426). Have all identified danger trees within the vicinity of the work areas removed by a qualified feller.

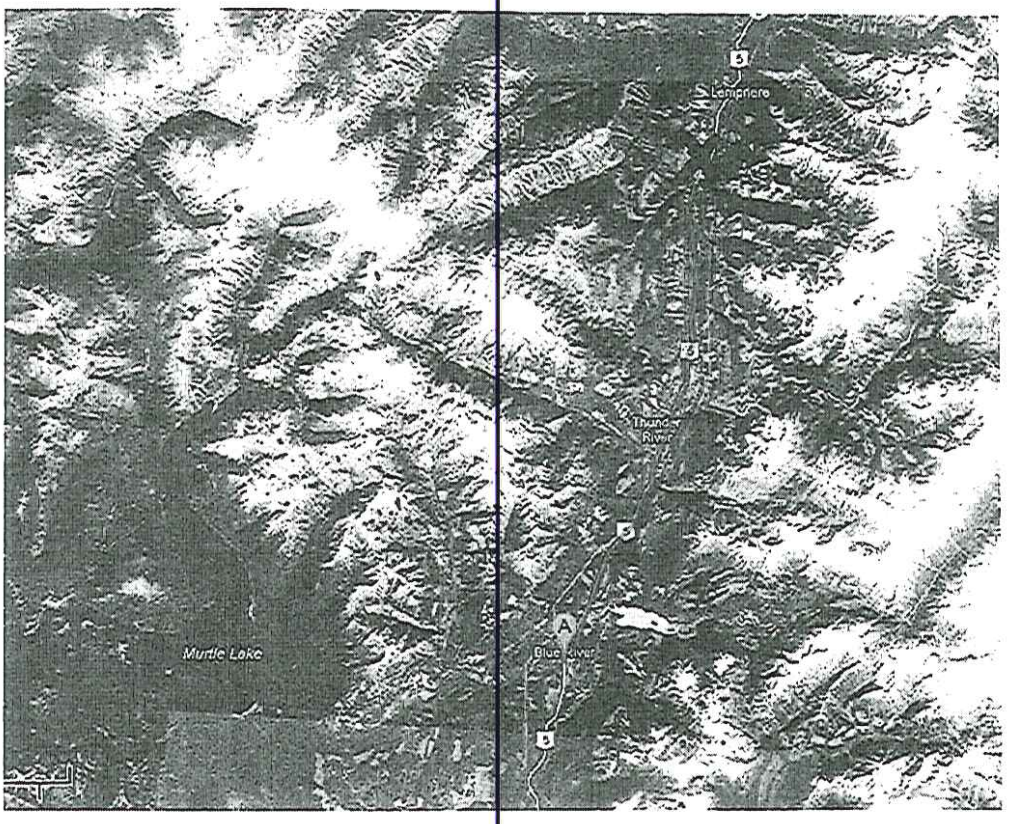
10. Water Management: (ex. Pump water to highly vegetated area, erosion control structures, perimeter site fencing, filter structure in place, energy dissipater to prevent erosion, ect.)

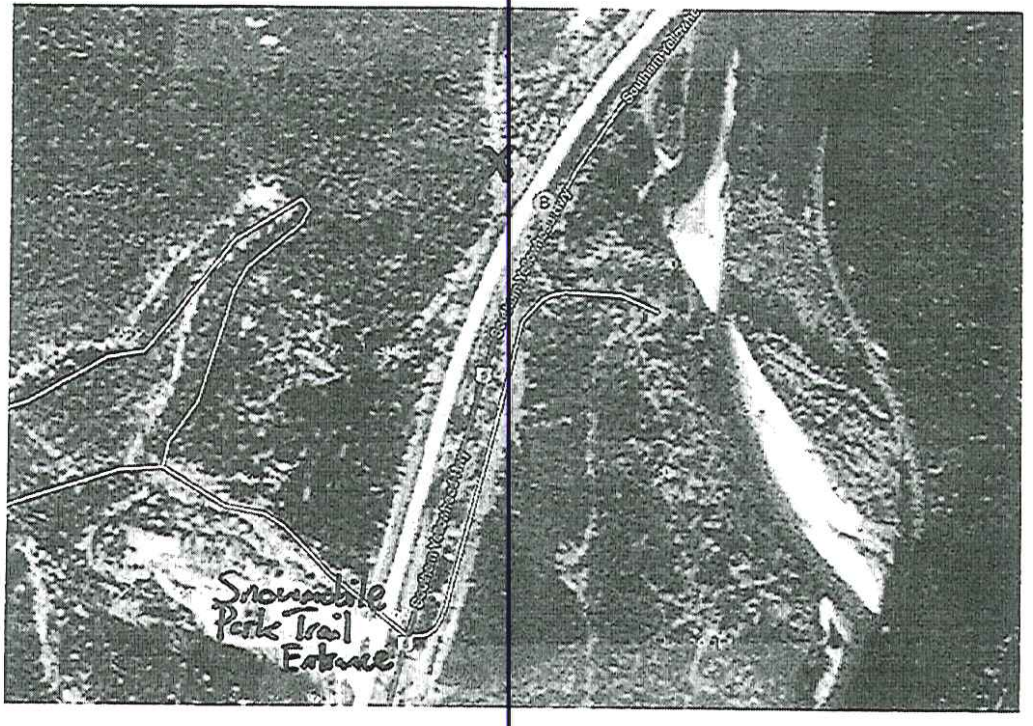
Dewatering the excavation may be required. Ensure all turbid water is directed to a location where it can infiltrate to ground, where it will not cause erosion or scour features on the hillside, and/or not a location where turbid water can flow into fish habitat.

It is very important that our proposed instream activities (ie. culvert extension) don't dry up the downstream portion of the subject watercourse, sediment laden water is managed appropriately, and our activities do not result in turbid water entering the North Thompson River. An Environmental Monitor must be onsite during initial drainage re-routing and setup.

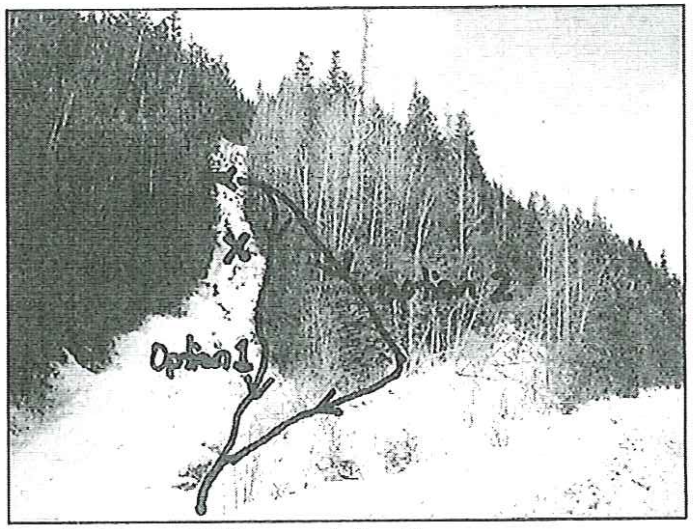
11. Waste Management: (ex. arrange for waste disposal bins, rollaway containers, tanks or barrels for the site, have an EHS approved waste contractor on site, ect.) Capture and collect sandblasting grit and pipe dope. Place in 45 gallon drum and transport back to Blue River Pump Station for storage and disposal.
12. Contaminated Soil / Groundwater: (ex. pre-job assessment to identify or delineate contamination, contingency plan to stockpile soil for future disposal, ect.) N/A
13. Odours / Air Emissions / Dust: (ex. water down site to prevent dust, community notification prior to activity, use of carbon filter or burner system to reduce emission/odours, ect.) N/A
14. Noise Disturbance: (ex. schedule work for daylight hours, maintenance of equipment to ensure unnecessary noise, ect.) N/A
15. Herbicides / Pesticides: (ex. use only certified Pesticide Applicators, do not spray within 30 m of a watercourse, do not use soil sterilent without permission, ect.) N/A

Site Location

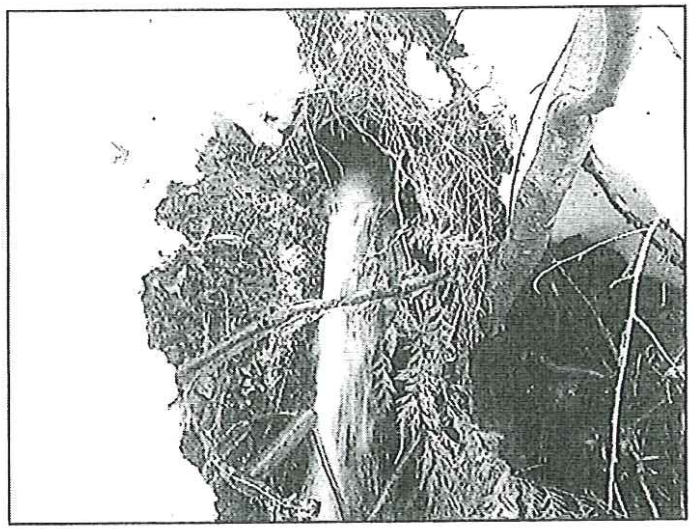




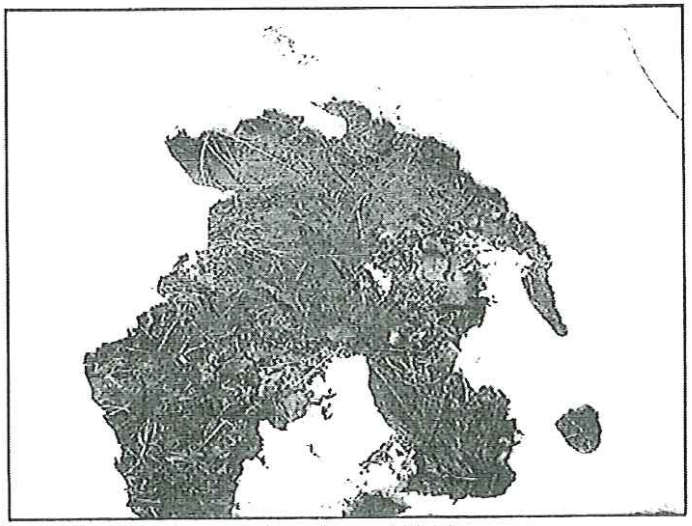
Site Photographs



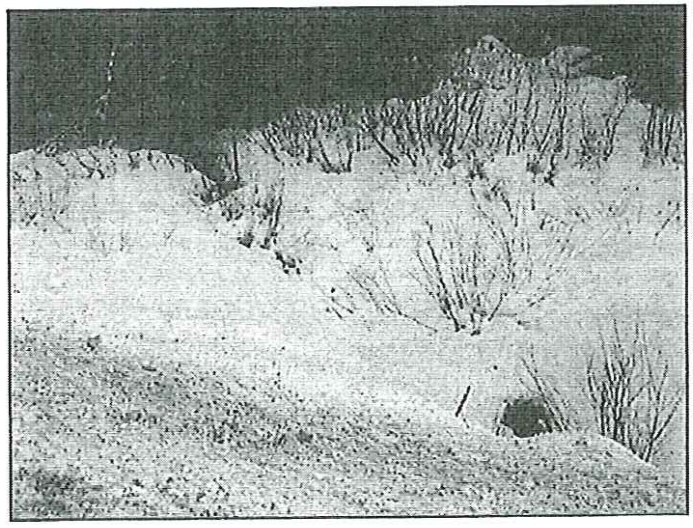
Campbell Bennett Hill anomaly location



Uphill culvert



Example of drainage substrate on hillside



Drainage flows under highway to the N.Thompson River

BRITISH COLUMBIA

Project Number: 92145
File: 306911

January 19, 2012

Kinder Morgan Canada
2355 Trans Canada Highway West
Kamloops BC V1S 1A7

Attn: Jason Turner

Re: Section 9 *Water Act* Application "Changes In and About a Stream"

Thank you for your application under the *Water Act* for approval or notification for changes in and about a stream. You have indicated that you plan to construct a diversion around a worksite over an unnamed tributary of the North Thompson River.

FrontCounter BC has accepted your application for a water approval/notification application on behalf of the Ministry of Forests, Lands and Natural Resource Operations Water Stewardship Authorizations. If additional application fees are required they will be calculated and assessed only if an approval is issued from this application. There will be no fee if a notification is issued.

This letter does not imply approval/notification will be issued nor does it give you any authorization to occupy or use the Crown land under application.

During the application review, your application may be referred for comment to:

- First Nations;
- other government agencies having statutory responsibilities related to your application;
- local governments.

Your application has been forwarded to the Ministry of Forests, Lands and Natural Resource Operations Water Stewardship Authorizations for approval.

In the meantime, if you have any questions or concerns please contact this office.

Sincerely,

Dawn Nicholson

For Craig Morrison
Natural Resource Specialist
FrontCounter BC
Email: Craig.Morrison@gov.bc.ca