

**REGIONAL DISTRICT OF NANAIMO  
AGRICULTURAL ADVISORY COMMITTEE  
FRIDAY, JULY 11, 2014  
2:00 PM**

*(Board Chambers)*

**A D D E N D U M**

**PAGES**

**ALC APPLICATIONS**

35 - 46 ALR Application No. PL2014-051 – Kyler / J.E. Anderson – 2560 Grafton Ave & 2555 Tintern Road Parker Road, Electoral Area 'F'.

*Attachment 12 - Continuation  
Omitted from Agricultural Advisory Agenda*

Distribution: D. Johnstone (Chair), H. Houle, J. Fell, C. Springford, K. Reid, R. Thompson, C. Watson, M. Ryn, K. Wilson, J. McLeod, W. Haddow, P. Thorkelsson, G. Garbutt, J. Holm, P. Thompson, T. Armet, L. Rowett, G. Keller, N. Hewitt



Attachment 12 - Continuation

**French Creek Erosion Streambank Restoration, Adjacent to 2560 Grafton Avenue**

**Grafton Avenue Photos Dec. 3, 2013**



Site location map.



French Creek on the S side along 2560 Grafton Avenue left (when facing downstream) bank takes a hard right turn (the road appears to be built in the natural path of the stream) and reportedly has been eroding over several years. MOT District Office contacted MOT Environmental Management because of concerns the erosion is now progressing to the road toe. Previously waste concrete was placed along the bank. Given the site is not at a high or imminent risk of failure an environmentally friendly treatment using anchored large woody debris, revegetation and habitat complexing features is proposed instead of a homogeneous harder engineering type of treatment. A spawned out coho is rafted along the upstream face of the concrete and redds were visible in the vicinity.



Potential offchannel area along right bank is relatively small, but provides enough room along the flat, previously cleared area to excavate to create year round aquatic habitat. Gravel is visible along the bank, which is desirable for excavation and interception of groundwater but consolidated till (hardpan) was visible in spots along the creekbed and if present in the potential offchannel area may preclude its development.



Downstream/outlet end of offchannel area shows a low spot that is likely a relief area for flood flows that overtop the bank.



Upstream view from Grafton Avenue toward restoration zone along road toe and 2560 Grafton Ave. The parked vehicle would be removed and the landowner indicated support for riparian restoration along the top of bank. If FFC provides volunteer planting, this enhances funding eligibility for the DFO Recreational Fisheries Conservation Partnerships Program and Pacific Salmon Foundation Community Salmon Program. MOT offers to draft the applications on behalf of and review by FFC prior to submission to any funding organizations.



There is disturbance from clearing and fill (e.g. concrete) along 2560 Grafton Avenue upstream of the road along the left bank,. A large woody debris revetment is suggested at the location shown to prevent further outflanking that would eventually erode behind the cluster of maple trees. This area has some loose wood and a deep pool around the maple roots. The treatment would accentuate and stabilize the desirable features through anchored large woody debris that provides complexity and prevents further lateral migration behind the maple cluster.



### French Creek North Trib Crossing at McLean Road



Downstream angled view along right bank abutment riprap upstream of the bridge. Note flow is deflecting off the tip of riprap and other fill that juts into the channel. This is deflecting flows toward the left bank and left bridge abutment and may be contributing to small and localized erosion.



Bridge =  
Grafton Rd  
1/2 Km  
downstream

Some minor erosion and overhang along left bank upstream of bridge opposite of the right bank riprap placement. If desirable, restoration works may be done here to improve bank stability, being cognizant not to constrict the channel or catch debris. Access to this portion of the streambank is from a farm field adjacent to the bridge.

Example of a similar treatment done in 2011 with MOT Environmental Management (Sean Wong, Senior Biologist) as the lead along Wilfred Creek, Downstream of Hwy. 19A.



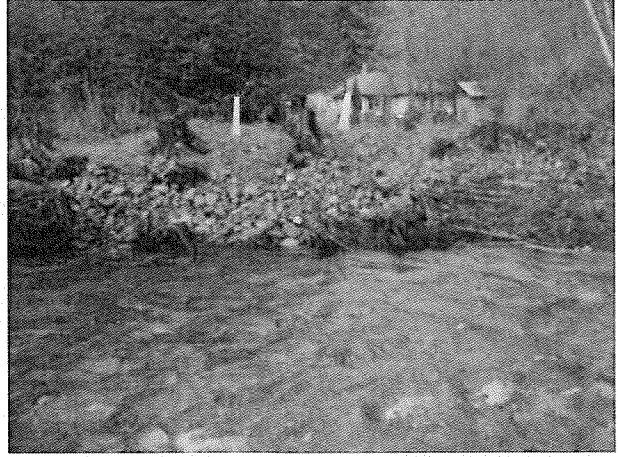
Actively eroding and slumping bank, prior to restoration.



Anchoring of imported large woody debris instream, rootwads placed along bank, bank resloped with native alluvium and revegetation by seeding, bioengineering and native plantings.



Restoring the eroded bank and post-treatment.



Post-restoration works have been stable and functioning as intended.



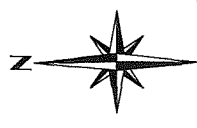
Offchannel pond construction, coho juveniles observed using the offchannel area through all seasons.

Sean Wong  
Senior Biologist  
v. 1 Draft, December 2013



Ministry of  
Transportation  
and Infrastructure

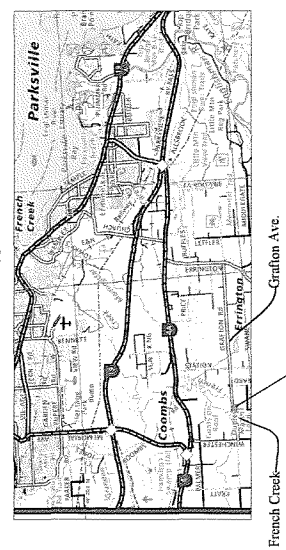




**NOTES**

1. All elevations and dimensions are in meters unless otherwise noted.
2. Vertical Datum is assumed, rebar hub F2 set approximately 1 meter from south edge of pavement Grafton Avenue at 100.000m elevation.
3. Horizontal Bearing Derivation is taken from Plan 26524, Subdivision Plan of Part of Lot 50 and Parcel "A" thereof District Lot 8, Cameron District, Plan 1981

**KEY MAP**  
N.T.S.



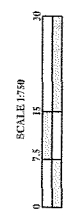
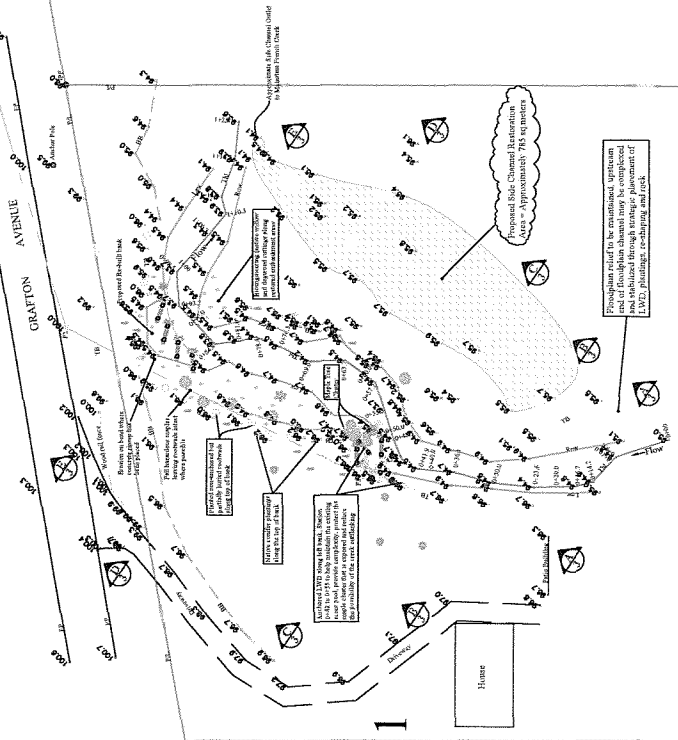
French Creek topographic survey, Surveyed on February 6, 2014 by Bob Foster & Kiara Smith

41

West 4.96 Chains

**LEGEND**

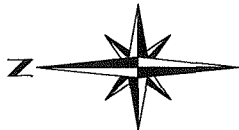
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BB	Bottom of Bank	LWD	LWD
Low	Left Edge Water	Shump	Shump
Rew	Right Edge Water	Rootward	Rootward
Thl	Thalweg	Snag	Snag
A1	Traverse Hub	Dogwood Cuttings	Dogwood Cuttings
UP	Utility Pole	Willow Cuttings	Willow Cuttings
Flow	Flow Direction	Alber	Alber
Fir	Fir	Apple	Apple
Coastal	Coastal Reclamation		
Grass	Grass Seed Mix		



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FRENCH CREEK PROPOSED HABITAT AND STREAM BANK RESTORATION - OVERALL PLAN  
 FOR MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

FOSTER SURVEYING & MAPPING  
 1087 1964 St.  
 Courtenay, B.C. V9N 5S7  
 Date: Feb. 11, 2014  
 Approved by: S.W.  
 Email: rfoster@gmail.com



**NOTES**

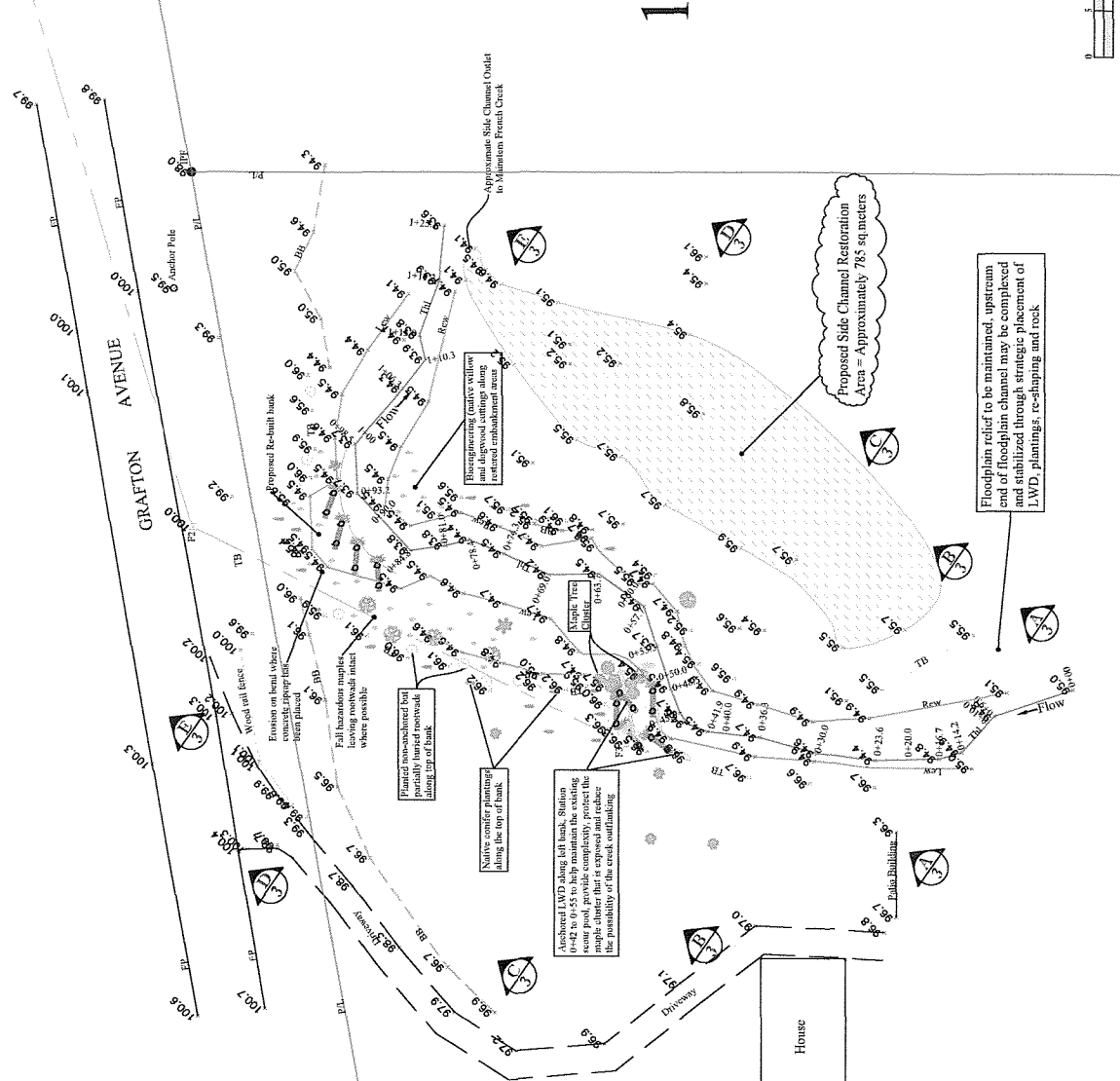
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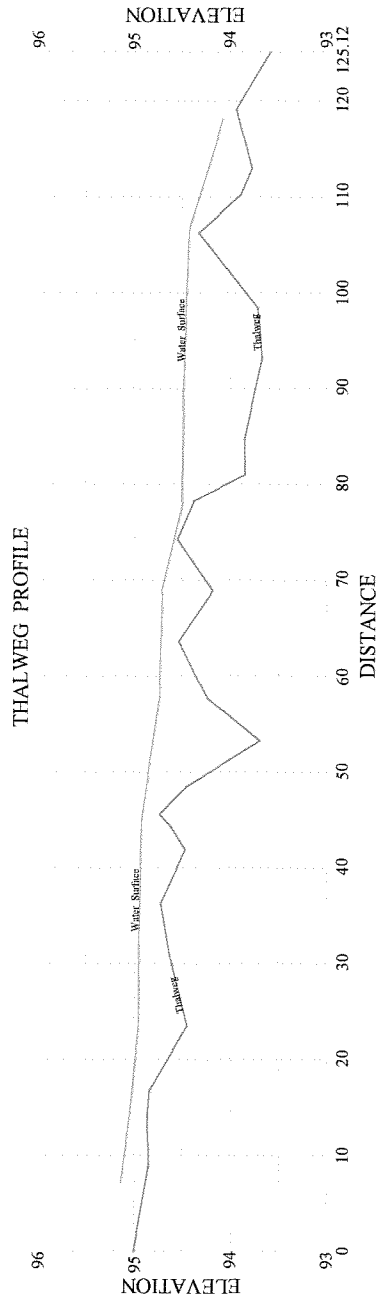
**West 4.96 Chains**

**51**

**LEGEND**

TB	Top of Bank	Maple
BB	Bottom of Bank	Evergreen Seedling
Low	Left Edge Water	LWD
Rew	Right Edge Water	LWD
Thi	Thalweg	Stump
A1	Transverse Hub	Rootwad
UP	Utility Pole	Sng
Flow	Flow Direction	Dogwood Cuttings
Fir	Fir	Willow Cuttings
Constal	Constal Reclamation	Alder
Grass	Grass Seed Mix	Apple

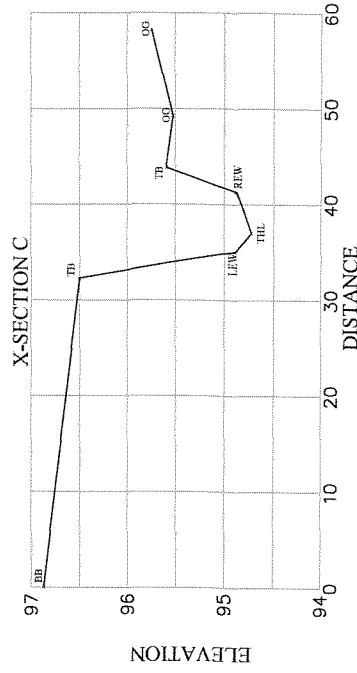
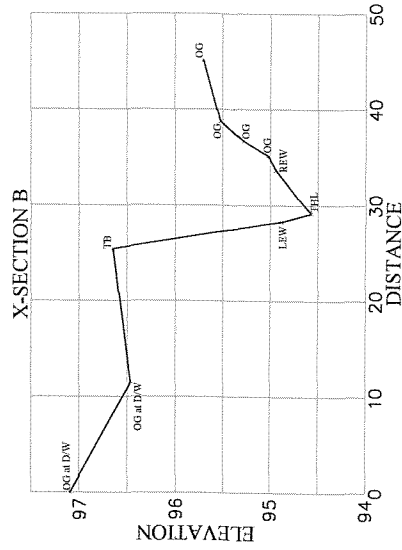
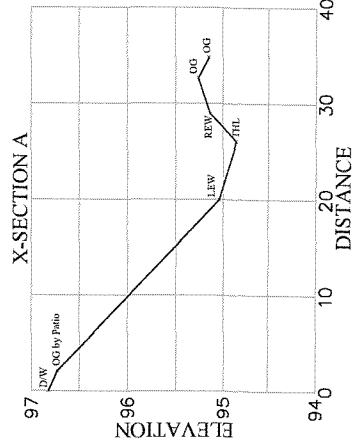




SCALE  
HORIZONTAL: 1:500  
VERTICAL: 1:50

#### LEGEND

TB	TOP BANK
BB	BOTTOM BANK
D/W	DRIVEWAY
LEW	LEFT EDGE WATER
REW	RIGHT EDGE WATER
THL	THALWEG
OG	ORIGINAL GROUND



#### FOSTER SURVEYING & MAPPING

1087 19th St.  
Courtenay, B.C. V9N 5S7

Drawn by: R.F.

DATE: Feb 13, 2014

Approved by: S.W.

rsfoster@gmail.com

#### FRENCH CREEK PROPOSED HABITAT AND STREAM BANK RESTORATION - PROFILE & X-SECTIONS

FOR MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

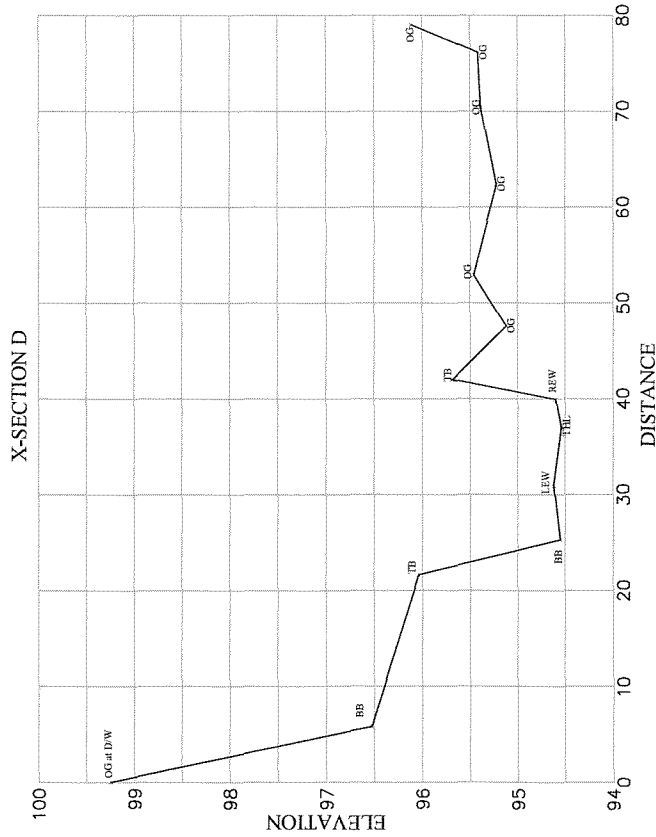
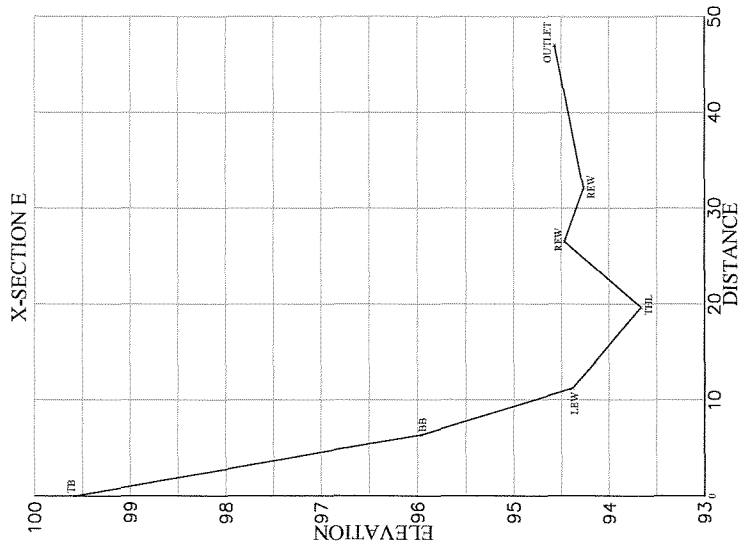
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FILE NAME: FRENCHCREEK.PDF, 2/13/14, 10:52



SCALE  
HORIZONTAL: 1:500  
VERTICAL: 1:50

**LEGEND**

TB	TOP BANK
BB	BOTTOM BANK
D/W	DRIVEWAY
LWB	LEFT EDGE WATER
REW	RIGHT EDGE WATER
THL	THALWEG
OG	ORIGINAL GROUND



FRENCH CREEK PROPOSED HABITAT AND STREAM BANK RESTORATION - X-SECTIONS

FOR MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

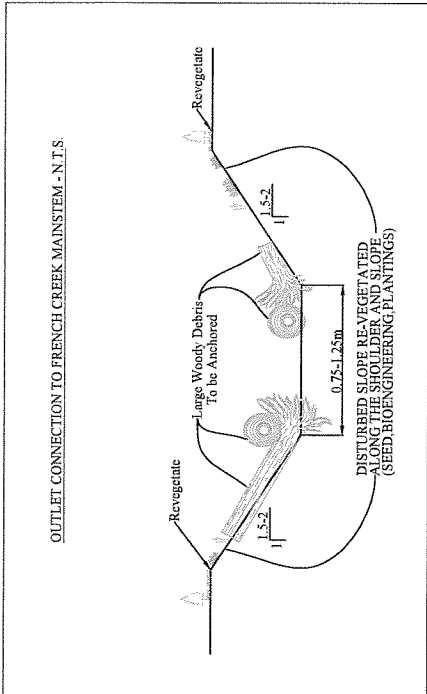
FOSTER SURVEYING & MAPPING

1087 8th St.  
Courtenay, B.C. V9N 5S7  
a1foaster@gmail.com

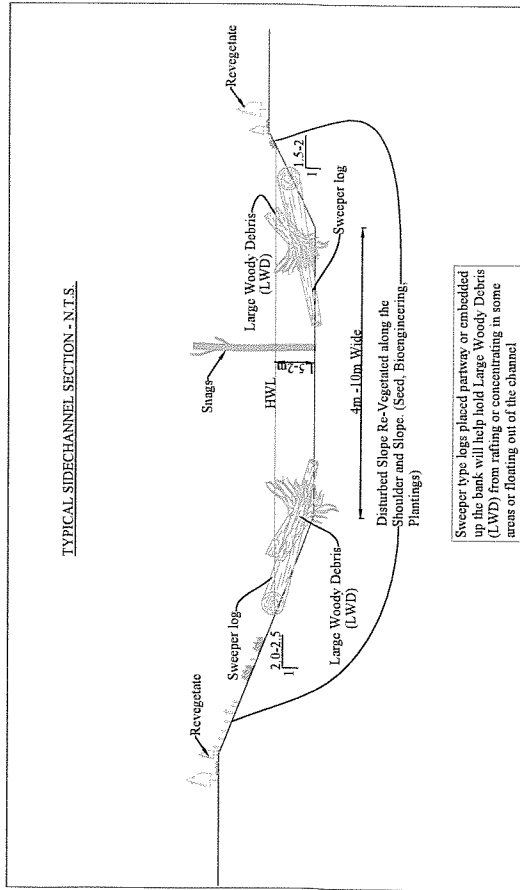
DATE: Feb 13, 2014  
Approved by: S.W.

Drawn by: R.F.





REVEGETATE DISTURBED AREAS WITH COASTAL SEED RECLAMATION MIX AND NATIVE TREES AND SHRUBS



WORKS WILL BE DONE AND FIELD LAYOUT BY OR UNDER THE SUPERVISION OF A FISH HABITAT RESTORATION SPECIALIST. OTHER OPPORTUNISTIC OFF CHANNEL, eg. ALCOVE PONDS MAY BE FIELD FIT BY FISHERIES SPECIALIST.

NOTES

- Obtain environmental, landowner and other permits or approvals, including FLNRO, DFO and MOT.
- All works to be done under the direction of a Fish Habitat Restoration Specialist.
- Conduct fish salvage in varied areas in work zone.
- Isolate mainstem of French Creek from active instream work zone by stop nets, turbidity curtains or other exclusion devices.
- Maintain site isolation from new offchannel areas by retaining earthen plugs, turbidity curtains and/or other sediment control and fish exclusion devices.
- If substantial bedrock, clay or other non-alluvial materials are encountered, it will influence and possibly significantly alter the amount of offchannel development.
- Add in-pond large woody debris to up to 30%.
- Use rootwads for habitat complexing and include longstems partially buried or resting on bank to also act as sweepers to help retain woody debris in offchannel.
- Include terrestrial large woody debris (e.g. rootwads and snags) features for amphibians, birds and other wildlife.
- Follow other relevant environmental construction monitoring and best practices, including use of an Environmental Construction Monitor, fueling away from sensitive areas, conducting work under relatively dry weather conditions, use of machinery and equipment in good working order and free of leaks and spill kits and sediment and erosion control materials to be readily available.
- Seed disturbed areas with coastal reclamation mix, bioengineer along side slopes, plant native conifers along top of offchannel banks.
- Remove fish exclusion and site isolation devices when habitat and water quality is suitable to allow fish utilization and re-colonization. In alluvial areas that generate low sediment inputs, this is often within a day after excavations are complete.
- Remove concrete and other waste in restoration area.
- Sidechannel surplus materials to be endfilled and disposed of outside of floodplain.
- A culvert to be installed equal to or greater than 0.6m Ø and road constructed for temporary access to offchannel right bank area in restoration zone and will be decommissioned as offchannel is completed and site is restored.
- Outlet treatment (e.g. open channel versus riffle control) and offchannel excavation area is dependant on water interception rates and subsurface materials.
- Consolidated till "hardpan" is visible in creekbed. If hardpan is encountered in offchannel area, some of it may be over-excavated and backfilled with stream gravel to provide an enhanced substrate and increase groundwater interception.

FOSTER SURVEYING & MAPPING

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Approved for: S.W.

DATE: Feb 11, 2014

Drawn by: R.F.

FRENCH CREEK PROPOSED HABITAT AND STREAM BANK RESTORATION - SIDE CHANNEL & OUTLET DETAIL.

FOR MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

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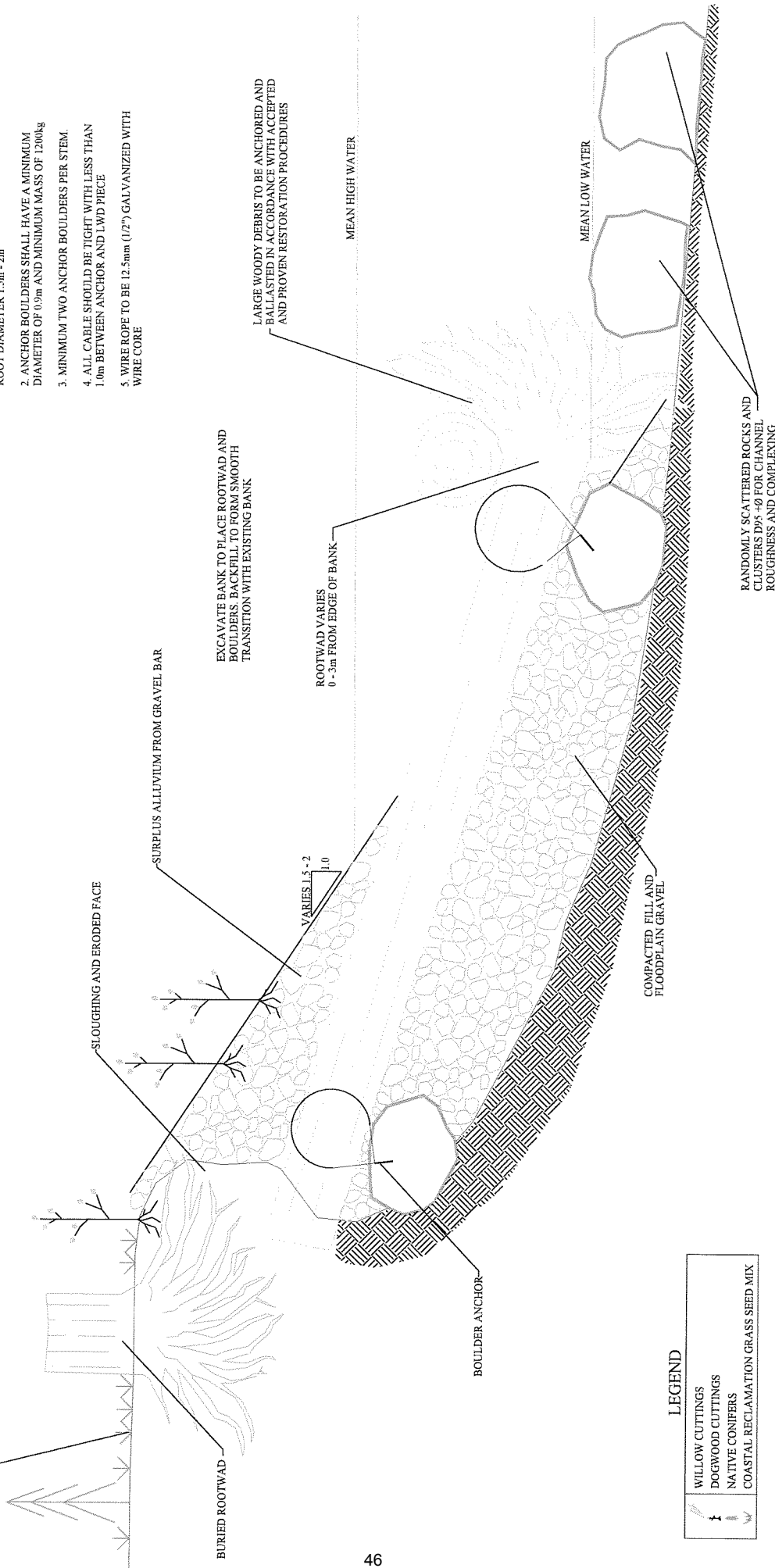


**NOTES FOR LWD AND ROOT WAD INSTALLATION**

1. USE LWD PIECES WITH STEM DIAMETER 0.5m OR GREATER, STEM LENGTH 2.0m OR GREATER AND ROOT DIAMETER 1.5m - 2m
2. ANCHOR BOULDERS SHALL HAVE A MINIMUM DIAMETER OF 0.9m AND MINIMUM MASS OF 1200kg
3. MINIMUM TWO ANCHOR BOULDERS PER STEM.
4. ALL CABLE SHOULD BE TIGHT WITH LESS THAN 1.0m BETWEEN ANCHOR AND LWD PIECE
5. WIRE ROPE TO BE 12.5mm (1/2") GALVANIZED WITH WIRE CORE

DISTURBED OVERBANK TO BE REVEGETATED WITH NATIVE SPECIES AND TOPRESSED WITH SOIL AND GRAVEL. NATIVE CONIFERS, WILLOW AND DOGWOOD PLANTING

COASTAL RECLAMATION GRASS SEED MIX TO BE PLANTED



**LEGEND**

	WILLOW CUTTINGS
	DOGWOOD CUTTINGS
	NATIVE CONIFERS
	COASTAL RECLAMATION GRASS SEED MIX

<p>1067 19th St. Courtenay, B.C. V9N 1S7</p> <p>Drawn by: R.F.</p> <p>DATE: Feb 11, 2014</p> <p>Approved by: S.W.</p> <p>FOSTER SURVEYING &amp; MAPPING a.foster@gmail.com</p>		<p>FRENCH CREEK PROPOSED HABITAT AND STREAM BANK RESTORATION DETAIL FOR MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE</p>		<p>DWG. No. 2014-04-1</p> <p>PAGE 6 OF 6</p> <p>REVISION NO. 1</p>
<p>Ministry of Transportation and Infrastructure BRITISH COLUMBIA</p>				