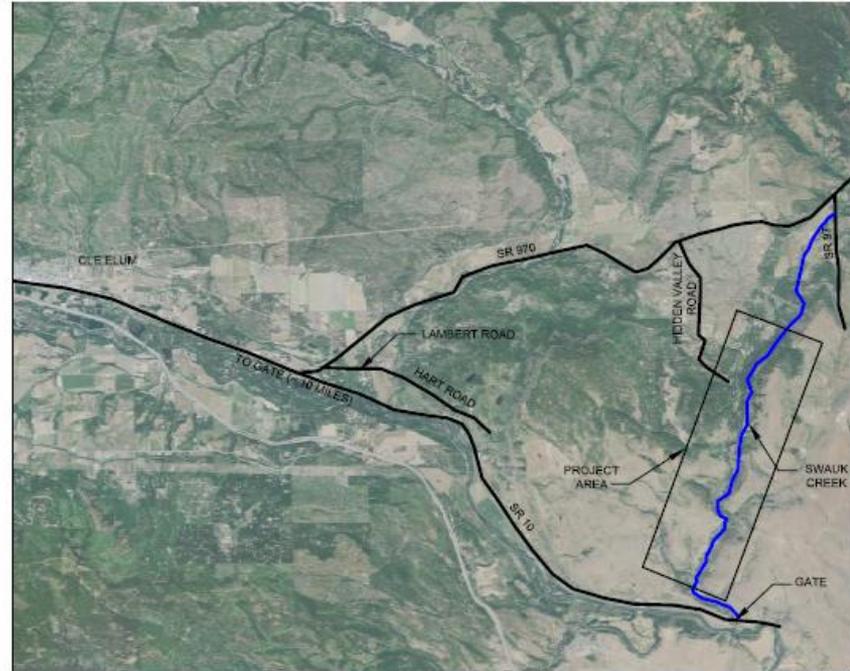


# YAKAMA NATION SWAUK CREEK RESTORATION PROJECT

YAKAMA NATION, KITTITAS COUNTY, WASHINGTON



**VICINITY MAP**  
N.T.S.



**PROJECT LOCATION MAP**  
SCALE: 1" = 2000'

**SHEET INDEX:**

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LARGE WOODY MATERIAL REPLENISHMENT DETAIL	D4
MISCELLANEOUS DETAILS	D5
BRIDGE PROTECTION PLAN	B1
BRIDGE PROTECTION SECTION	

**PROJECT LOCATION:** Swauk Creek, Washington  
**CLIENT AGENCY:** Yakama Nation  
**DESIGN CONSULTANT:** Cardno ENTRIX  
**ENGINEER OF RECORD:** Jack Bjork, P.E., D.WRE.  
**GEOMORPHOLOGIST:** Tim Abbe, PH.D., P.E.G., P.H.G.  
**PROJECT ENGINEER:** George Fowler, E.I.T.

**60% SUBMITTAL**

**YAKAMA NATION**

<b>PURPOSE:</b> Floodplain Restoration  <b>DATUM:</b> N/A  <b>ADJACENT PROPERTY OWNERS:</b> 1. WDNR 2. USBLM 3. Horse Canyon Ranch, LLC	<b>NAME:</b> Yakama Nation Fisheries-Harry Smiskin, Chairman  <b>APPLICANT REFERENCE:</b>  <b>SITE LOCATION ADDRESS:</b> 18511 Highway 10 Ellensburg, WA 98926	<b>PROPOSED:</b> Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  <b>IN:</b> Swauk Creek <b>NEAR/AT:</b> Cle Elum <b>COUNTY:</b> Kittitas <b>STATE:</b> WA  <b>SHEET 1 OF 20</b>  <b>DATE:</b> June 19, 2012
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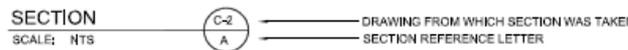
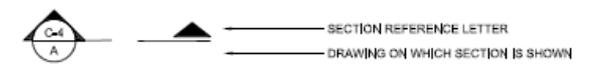
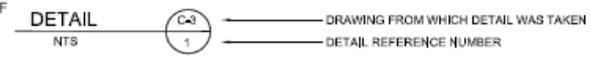
DATE	
REVISIONS	
203 First Avenue West, Suite 300 Seattle, WA 98101 www.cardnointer.com www.entrux.com	
<b>TITLE SHEET</b>	<b>KITTITAS COUNTY, WASHINGTON</b>
SWAUK CREEK RESTORATION PROJECT YAKAMA NATION	
DATE	06/19/12
DESIGNED BY	G. FOWLER
DRAWN BY	T. HUBLE
CHECKED BY	T. ABBE / A. BLOOM
SCALE	AS NOTED
ENTRUX JOB NO.	4229402
FIGURE NO.	<b>T1</b>
SHEET	1 OF 20

**GENERAL NOTES:**

1. MATERIAL STAGING AREAS TO BE LOCATED AS SHOWN ON THE SITE PLAN. MATERIAL SHALL NOT BE STORED OUTSIDE OF IDENTIFIED STAGING AREAS, UNLESS APPROVED BY OWNER OR SITE ENGINEER.
2. CONTRACTOR SHALL LIMIT MACHINERY MOVEMENT TO PROJECT LIMITS DEFINED ON STAGING AND ACCESS PLAN OR IDENTIFIED AS ACCEPTABLE BY ON-SITE ENGINEER.
3. CLEARING LIMITS FOR TEMPORARY ACCESS ROAD AND PROPOSED STRUCTURES SHALL BE LIMITED TO THE AREA REQUIRED FOR SAFE EQUIPMENT OPERATION. CLEARING LIMITS SHALL BE FLAGGED BY CONTRACTOR AND APPROVED BY ENGINEER AT LEAST 3 DAYS PRIOR TO CLEARING ACTIVITIES. CLEARING LIMITS SHALL BE FLAGGED TO MINIMIZE THE AREA OF DISTURBANCE
4. ENGINEER WILL ESTABLISH EXISTING CHANNEL BED ELEVATION CONTROL POINTS FOR EACH STRUCTURE LOCATION. CONTRACTOR WILL USE THIS STRUCTURE SPECIFIC DATUM FOR TARGET EXCAVATION DEPTHS.
5. ENGINEER WILL STAKE OUT CONTROL POINTS FOR EACH STRUCTURE AS SHOWN ON DETAIL SHEETS.
6. CONTRACTOR IS RESPONSIBLE FOR SETTING OFFSETS FOR ALL CONTROL POINTS AND IS RESPONSIBLE FOR COSTS RELATED FOR ENGINEER TO REESTABLISH THEM.
7. CONTRACTOR SHALL SUBMIT FOR APPROVAL A CONSTRUCTION SEQUENCE PLAN FOR EACH STRUCTURE 5 DAYS PRIOR TO SITE WORK INCLUDING EXCAVATION/LOG AND BOULDER PLACEMENT AND BACKFILL.
8. CONTRACTOR IS RESPONSIBLE TO DETERMINE IF DESIGN EXCAVATION DEPTHS CAN BE REACHED FOR EACH SITE LOCATION BEFORE CONSTRUCTION OF STRUCTURE.
9. APPROVED CONSTRUCTION SEQUENCE PLAN SHALL NOT BE ALTERED UNLESS APPROVED BY ENGINEER.
10. FIELD VERIFY WITH ENGINEER ALL STRUCTURE LOCATIONS, LENGTHS, WIDTHS, AND ELEVATIONS PRIOR TO EXCAVATION, ASSEMBLY, AND INSTALLATION OF EACH STRUCTURE.
11. CONTRACTOR SHALL PROVIDE 24 HOURS ADVANCE NOTICE TO THE ENGINEER PRIOR TO ANY REQUIRED INSPECTION.
12. EQUIPMENT USED FOR THIS PROJECT SHALL BE FREE OF EXTERNAL PETROLEUM-BASED PRODUCTS WHILE WORKING NEAR ANY SURFACE WATER OR WETLANDS. ACCUMULATION OF SOILS OR DEBRIS SHALL BE REMOVED FROM THE DRIVE MECHANISMS (WHEELS, TRACKS, TIRES, ETC.) AND UNDERCARRIAGE OF EQUIPMENT PRIOR TO ITS WORKING BELOW THE BANKFULL WATER ELEVATION.
13. EQUIPMENT SHALL BE CHECKED DAILY FOR LEAKS, AND ANY NECESSARY REPAIRS SHALL BE COMPLETED PRIOR TO COMMENCING WORK ACTIVITIES.
14. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT NO PETROLEUM PRODUCTS, HYDRAULIC FLUID, SEDIMENTS, SEDIMENT-LADEN WATER, CHEMICALS, OR ANY OTHER TOXIC OR DELETERIOUS MATERIALS ARE ALLOWED TO ENTER OR LEACH INTO THE RIVER, GROUNDWATER, OR WETLANDS.
15. IF AT ANY TIME, AS A RESULT OF PROJECT ACTIVITIES, FISH ARE OBSERVED IN DISTRESS, A FISH KILL OCCURS, OR WATER QUALITY PROBLEMS DEVELOP (INCLUDING EQUIPMENT LEAKS OR SPILLS), OPERATIONS SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY. WASHINGTON DEPARTMENT OF FISH AND WILDLIFE AND WASHINGTON DEPARTMENT OF ECOLOGY SHALL BE CONTACTED IMMEDIATELY BY THE ENGINEER OR BY HIS/HER DESIGNEE. WORK SHALL NOT RESUME UNTIL FURTHER APPROVAL BY OWNERS REPRESENTATIVE.
16. FISH BLOCK NETS WILL BE SET UP BY WDFW UPSTREAM AND DOWNSTREAM OF A SERIES OF STRUCTURES (1000' OF CHANNEL) EACH MONDAY AND WILL COMPLETE THE FISH RECOVERY BEFORE CONSTRUCTION BEGINS. THE CONTRACTOR WILL PROVIDE 48 HOUR NOTICE TO FIELD ENGINEER IF WORK IS ANTICIPATED TO BEGIN OUTSIDE A 1000' ISOLATED CHANNEL.
17. EROSION CONTROL METHODS SHALL BE USED TO PREVENT SILT-LADEN WATER FROM ENTERING THE RIVER.
18. ALTERATION OR DISTURBANCE OF THE BANK AND BANK VEGETATION SHALL BE MINIMIZED TO THAT NECESSARY TO CONSTRUCT THE PROJECT. CONTRACTOR SHALL KEEP DISTURBED AREAS WITHIN ACCESS AND STAGING AREAS SHOWN ON PLANS.
19. IF HIGH FLOW CONDITIONS THAT MAY CAUSE SILTATION OR EROSION ARE ENCOUNTERED DURING CONSTRUCTION, WORK SHALL STOP UNTIL THE FLOW SUBSIDES.
20. CONTRACTOR SHALL SALVAGE ALL TREES WITH DIAMETER BREST HEIGHT (DBH) GREATER THAN 3 IN. FOR REUSE. IF POSSIBLE, SHRUBS AND SMALLER TREES SHALL BE SCOOPED UP AT ROOTWAD AND SET ASIDE. PLANT ON STRUCTURE OR NEWLY GRADED BANK AFTER STRUCTURE IS BUILT.
21. EXCAVATIONS THAT HAVE POTENTIAL TO IMPACT THE WETTED CHANNEL OF THE CREEK SHALL BE ISOLATED. ISOLATION MEANS COULD CONSIST OF BUT NOT LIMITED TO: SILT BOOMS, BULK BAGS, BLADDER DAMS OR APPROVED EQUAL AS NECESSARY TO PREVENT IMPACTS TO WATER QUALITY. CONTRACTOR IS RESPONSIBLE FOR ISOLATION OF THE SITE. ENGINEERING PLANS ARE FOR GUIDANCE AND CONTRACTOR ASSUMES CONTROL THAT EACH SITE ISOLATION TECHNIQUE COULD BE DIFFERENT AND MINOR ADAPTATION FROM PLAN WILL EXIST AND CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH VARIATION FROM THE PLAN.

**SURVEY AND MAPPING NOTES:**

1. BASIS OF BEARINGS IS WASHINGTON STATE PLANE COORDINATE SYSTEM.
2. ELEVATIONS ARE BASED ON NAD88.
3. ELEVATIONS ARE APPROXIMATE AND MAY VARY.
4. HORIZONTAL DATA ASSUMED TO BE ± 5' HORIZONTAL ACCURACY.
5. CONTOURS ARE BASED ON 2005 LIDAR.



\*"TYP" INDICATES THAT THE DETAIL/SECTION IS UNIFORMLY TYPICAL THROUGHOUT PROJECT EXCEPT WHERE OTHERWISE NOTED  
 \*"VAR" SPECIFIES THAT DETAIL/SECTION WAS TAKEN FROM SEVERAL DRAWINGS

**NOTE AND DETAIL/SECTION REFERENCING**

DATE									
REVISES									
SCALE									
200 First Avenue West, Suite 500 Seattle, WA 98119 www.cardno.com www.entrix.com									
CONSTRUCTION AND GENERAL NOTES					SWAUK CREEK RIVER RESTORATION PROJECT YAKAMA NATION				
KITTITAS COUNTY, WASHINGTON									
DATE: 4/20/12 DESIGNED BY: GJ/CHL/KLB DRAWN BY: T.NAGLE CHECKED BY: T.AMBROSI/BJORN ALSO: AB NOTED PROJECT NO: 42284003 SHEET NO: <b>G1</b> REV: 2 of 20									

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

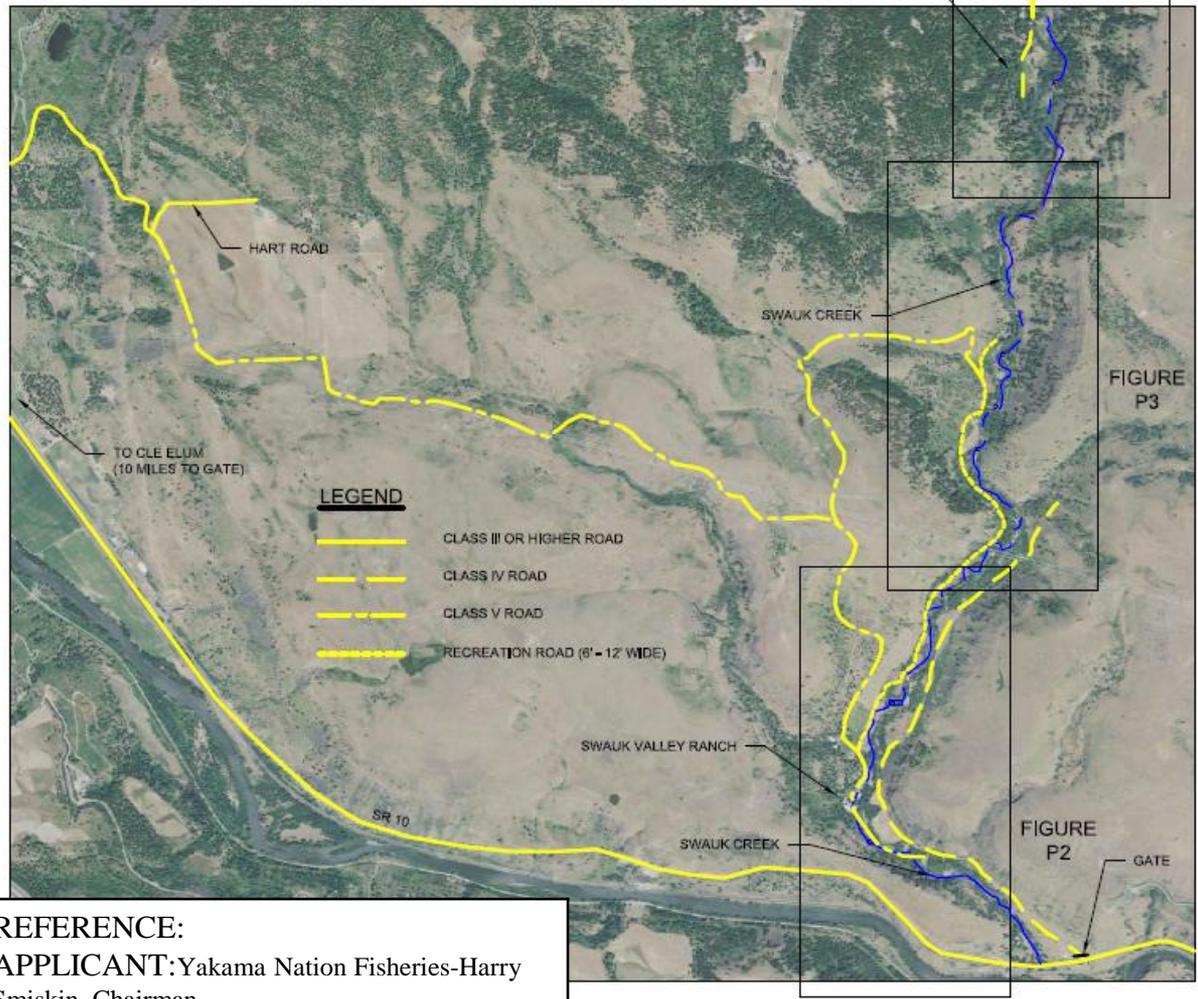


FIGURE P4

FIGURE P3

FIGURE P2

**LEGEND**

- CLASS III OR HIGHER ROAD
- CLASS IV ROAD
- CLASS V ROAD
- RECREATION ROAD (8' - 12' WIDE)

**NOTES**

1. ACCESS TO CONSTRUCTION SITES IN P2 AND P3 FROM SR10, ACCESS TO SITES TO P3 CAN OCCUR FROM SR10 OR HART ROAD. ACCESS TO P4 FROM HIDDEN VALLEY ROAD,
2. IMPROVEMENTS TO ACCESS ROADS MAY BE NEEDED, ALL MATERIALS MUST BE REMOVED UNLESS APPROVED BY ENGINEER AND LANDOWNER,
3. ROAD IMPROVEMENTS MUST NOT ENCROACH CREEK UNLESS NOTED IN PLANS,
4. AS PART OF ROAD IMPROVEMENT ACTIVITIES, CLEARING MAY OCCUR BUT NO GRUBBING, ALL TREES LARGER THAN 8" TO BE CLEARED MUST BE APPROVED BY ENGINEER OR INSPECTOR,
5. ALL CLEARED AREAS MUST BE RESTORED,
6. ROAD CLASSIFICATIONS FROM \_\_\_\_\_ AND BASED ON \_\_\_\_\_

**60% SUBMITTAL  
NOT FOR CONSTRUCTION**

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

SHEET 3 of 20 DATE: June 19, 2012

DATE:	
REVISIONS:	



**ACCESS AND KEY MAP**  
 SWAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON

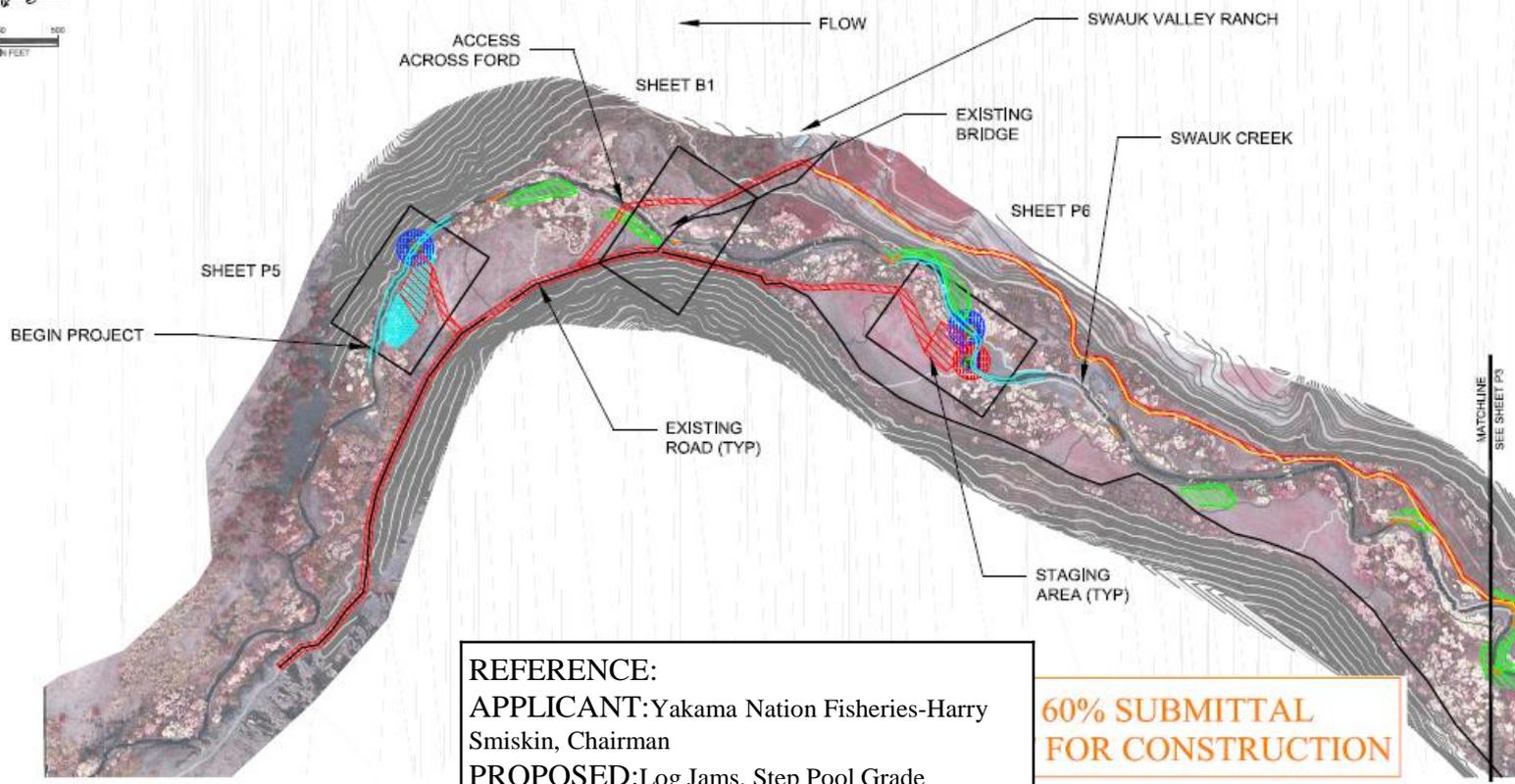
DATE:	3/2/11
DESIGNED BY:	G. FOWLER
DRAWN BY:	T. HIGLE
CHECKED BY:	T. ABRE / A. BROWN
SCALE:	1"=100'
ENTRIX JOB NO.:	429493
FIGURE NO.:	<b>P1</b>
SHEET:	3 of 20

**NOTES:**

1. ACCESS TO CONSTRUCTION SITES IN P2 IS FROM SR10,
2. EQUIPMENT CAN NOT ENTER ACTIVE FLOW AREA AT FORD. ACTIVE FLOW AREA IS DEFINED AS FOUR FEET ABOVE CHANNEL BED. A CENTER PIER CAN BE CONSTRUCTED FROM LOGS, ECOLOGY BLOCKS OR CLEAN QUARRY SPALLS. THE BASE OF THE PIER CAN NOT EXCEED 7' IN WIDTH. BANK GRADING CAN OCCUR ABOVE ACTIVE FLOW AREA,
3. ALL ACCESS ROADS WILL BE FLAGGED BY CONTRACTOR AND WILL NOT EXCEED 15' WIDTH,
4. BOUNDARIES OF STAGING AREAS TO BE MARKED BY CONTRACTOR AND APPROVED BY ENGINEER OR INSPECTOR,
5. ALL CLEARING MUST BE CONTAINED WITHIN STAGING OR ACCESS AREAS. NO GRUBBING WILL OCCUR WITHIN 25' OF CREEK EDGE OF WATER,
6. ALL CLEARING AREAS WILL BE RESTORED.
7. BOUNDARIES OF LARGE WOODY MATERIAL REPLENISHMENT AREAS WILL BE DELINEATED BY ENGINEER OR INSPECTOR,
8. ALL WORK AREAS MUST BE ISOLATED FROM WATER AND ANY GROUND WATER MUST BE PUMPED TO AN APPROVED UPLAND SITE.

**LEGEND**

	ENGINEERED LOG JAM		LWM REPLENISHMENT AREA
	STEP POOL STRUCTURE		REVEGETATION AREA
	CLASS V ROAD		CONTOUR 5'
	RECREATION TRAIL		ACCESS AND STAGING AREA



**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington  
**SHEET 4 of 20 DATE:** June 19, 2012

**60% SUBMITTAL FOR CONSTRUCTION**

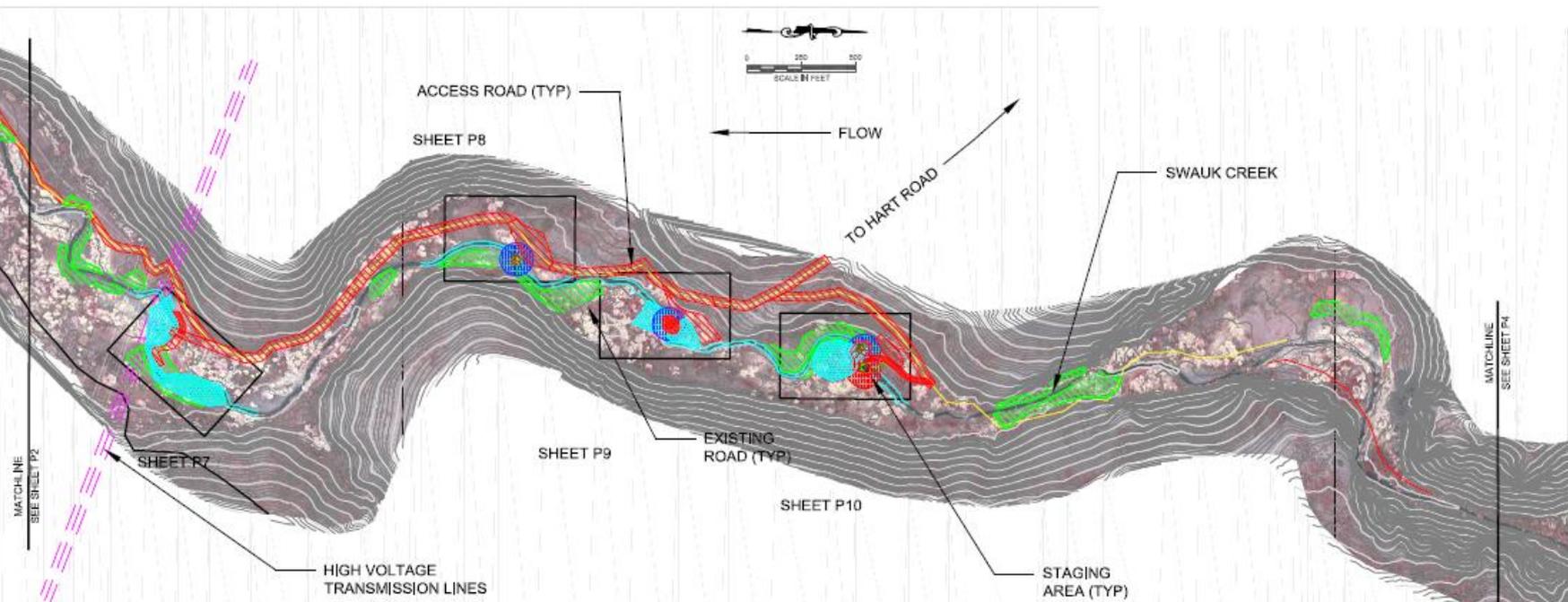
DATE	
REVISIONS	
 200 First Avenue West, Suite 500 Seattle, WA 98101 WWW.GARDNO.COM	
	
ACCESS AND STAGING	SWAUK CREEK RESTORATION PROJECT YAKAMA NATION KITTITAS COUNTY, WASHINGTON
DATE	2011
DESIGNED BY	G. FOWLER
DRAWN BY	T. MOYLE
CHECKED BY	T. ABRE / A. RICH
SCALE	1"=50'
ENTRANCE NO.	4294832
FIGURE NO.	
<b>P2</b>	
SHEET	4 of 20

**NOTES:**

1. ACCESS TO CONSTRUCTION SITES IN P3 CAN OCCUR ALONG EXISTING CLASS IV ROAD FROM HART ROAD OR ALONG RECREATION TRAIL. ACCESS TO THESE CONSTRUCTION SITES CAN ONLY CROSS THE CREEK AT APPROVED LOCATIONS ON PLANS.
2. ALL STREAM CROSSINGS MUST OCCUR WITHIN ISOLATED WORK AREAS.
3. ALL ACCESS ROADS WILL BE FLAGGED BY CONTRACTOR AND WILL NOT EXCEED 15' WIDTH.
4. BOUNDARIES OF STAGING AREAS TO BE MARKED BY CONTRACTOR AND APPROVED BY ENGINEER OR INSPECTOR.
5. ALL CLEARING MUST BE CONTAINED WITHIN STAGING OR ACCESS AREAS. NO GRUBBING WILL OCCUR WITHIN 25' OF CREEK EDGE OF WATER.
6. ALL CLEARING AREAS WILL BE RESTORED.
7. BOUNDARIES OF LARGE WOODY MATERIAL REPLENISHMENT AREAS WILL BE DELINEATED BY ENGINEER OR INSPECTOR.
8. ALL WORK AREAS MUST BE ISOLATED FROM WATER AND ANY GROUND WATER MUST BE PUMPED TO AN APPROVED UPLAND SITE.

**LEGEND**

	ENGINEERED LOG JAM		LWM REPLENISHMENT AREA
	STEP POOL STRUCTURE		REVEGETATION AREA
	CLASS V ROAD		CONTOUR 5'
	RECREATION TRAIL		ACCESS AND STAGING AREA



**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

SHEET 5 of 20 DATE: June 19, 2012

DATE	3/25/11
DESIGNED BY	G. FOWLER
DRAWN BY	T. MOBLE
CHECKED BY	T. ARBE & A. BROWN
SCALE	1"=80'
PROJECT JOB NO.	4229432
FIGURE NO.	<b>P3</b>
SHEET	5 of 20

**Cardno ENTREN**  
 202 7th Avenue West, Suite 500  
 Seattle, WA 98119  
 WWW.CARDNO.COM

**FISHERIES**  
**YAKAMA NATION**

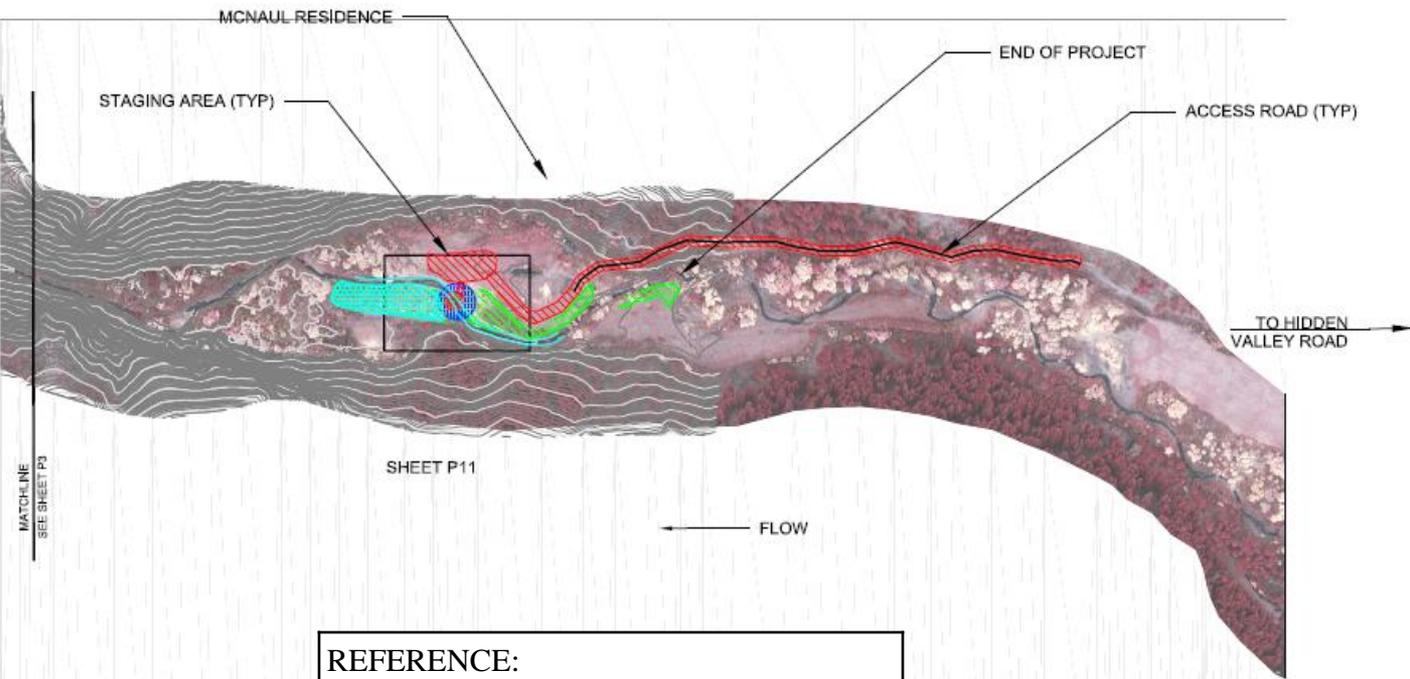
**ACCESS AND STAGING**  
**SWAUK CREEK RESTORATION PROJECT**  
**YAKAMA NATION**  
**KITITAS COUNTY, WASHINGTON**

**NOTES:**

1. ACCESS TO CONSTRUCTION SITES IN P4 ALONG EXISTING CLASS IV ROAD FROM HIDDEN VALLEY ROAD.
2. EQUIPMENT CAN NOT ENTER ACTIVE FLOW AREA AT FORD. ACTIVE FLOW AREA IS DEFINED AS FOUR FEET ABOVE CHANNEL BED. A CENTER PIER CAN BE CONSTRUCTED FROM LOGS, ECOLOGY BLOCKS OR CLEAN QUARRY SPALLS. THE BASE OF THE PIER CAN NOT EXCEED 7" IN WIDTH, BANK GRADING CAN OCCUR ABOVE ACTIVE FLOW AREA.
3. ALL ACCESS ROADS WILL BE FLAGGED BY CONTRACTOR AND WILL NOT EXCEED 15' WIDTH.
4. BOUNDARIES OF STAGING AREAS TO BE MARKED BY CONTRACTOR AND APPROVED BY ENGINEER OR INSPECTOR.
5. ALL CLEARING MUST BE CONTAINED WITHIN STAGING OR ACCESS AREAS. NO GRUBBING WILL OCCUR WITHIN 25' OF CREEK EDGE OF WATER.
6. ALL CLEARING AREAS WILL BE RESTORED.
7. BOUNDARIES OF LARGE WOODY MATERIAL REPLENISHMENT AREAS WILL BE DELINEATED BY ENGINEER OR INSPECTOR.
8. ALL WORK AREAS MUST BE ISOLATED FROM WATER AND ANY GROUND WATER MUST BE PUMPED TO AN APPROVED UPLAND SITE.

**LEGEND**

	ENGINEERED LOG JAM		LWM REPLENISHMENT AREA
	STEP POOL STRUCTURE		REVEGETATION AREA
	CLASS V ROAD		CONTOUR 5'
	RECREATION TRAIL		ACCESS AND STAGING AREA



**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

SHEET 6 of 20 DATE: June 19, 2012

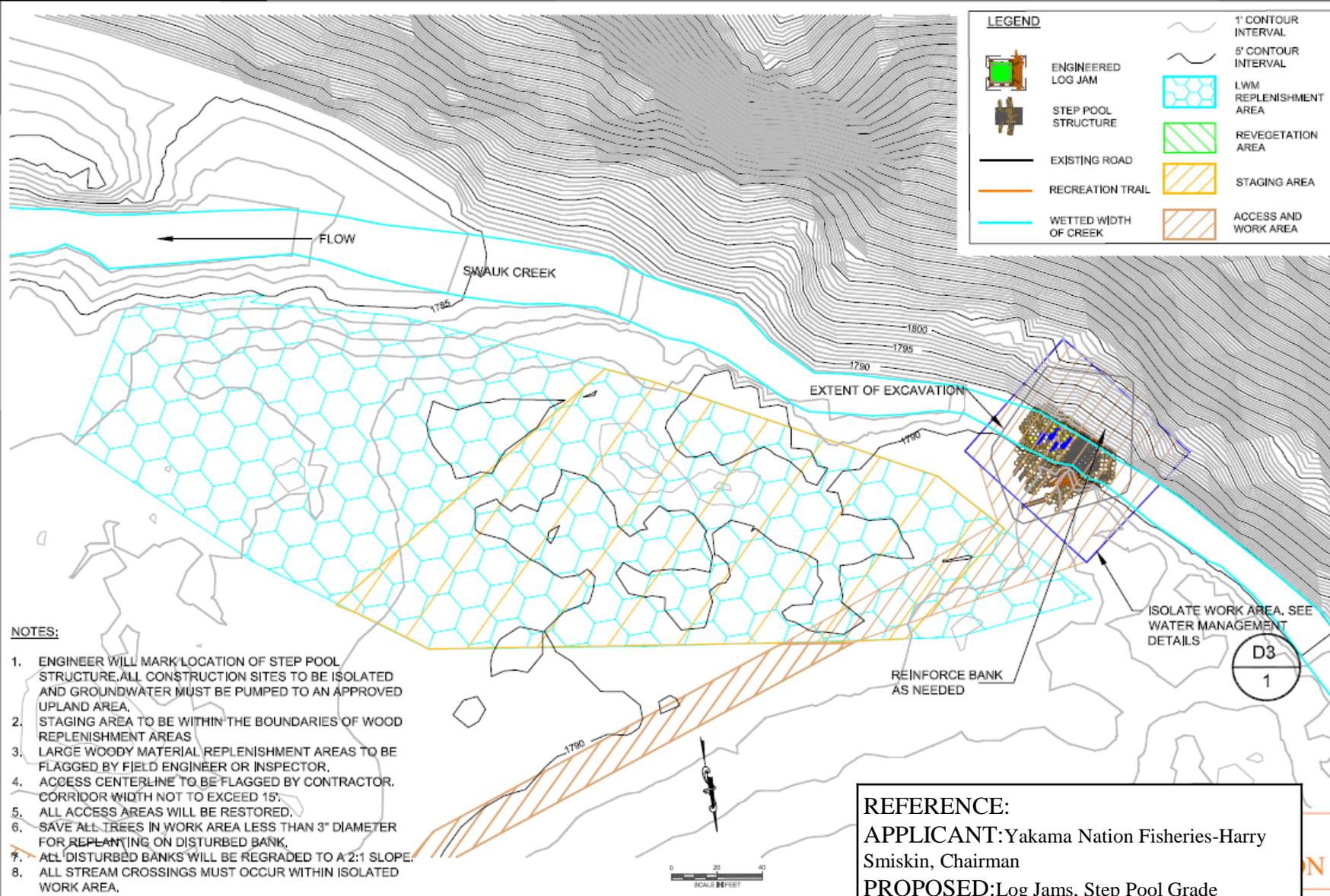
**60% SUBMITTAL  
 NOT FOR CONSTRUCTION**

DATE	3/25/11
DESIGNED BY	G. FOWLER
DRAWN BY	T. MOSE
CHECKED BY	T. MOSE & B. MOSE
SCALE	1"=50'
DATE: JOB NO.	4224300
TITLE: P4	
SHEET	6 of 20

**Cardno FUTURE**  
 200 First Avenue West, Suite 500  
 Seattle, WA 98119  
 WWW.CARDNO.COM

**FISHERIES**  
**YAKAMA NATION**

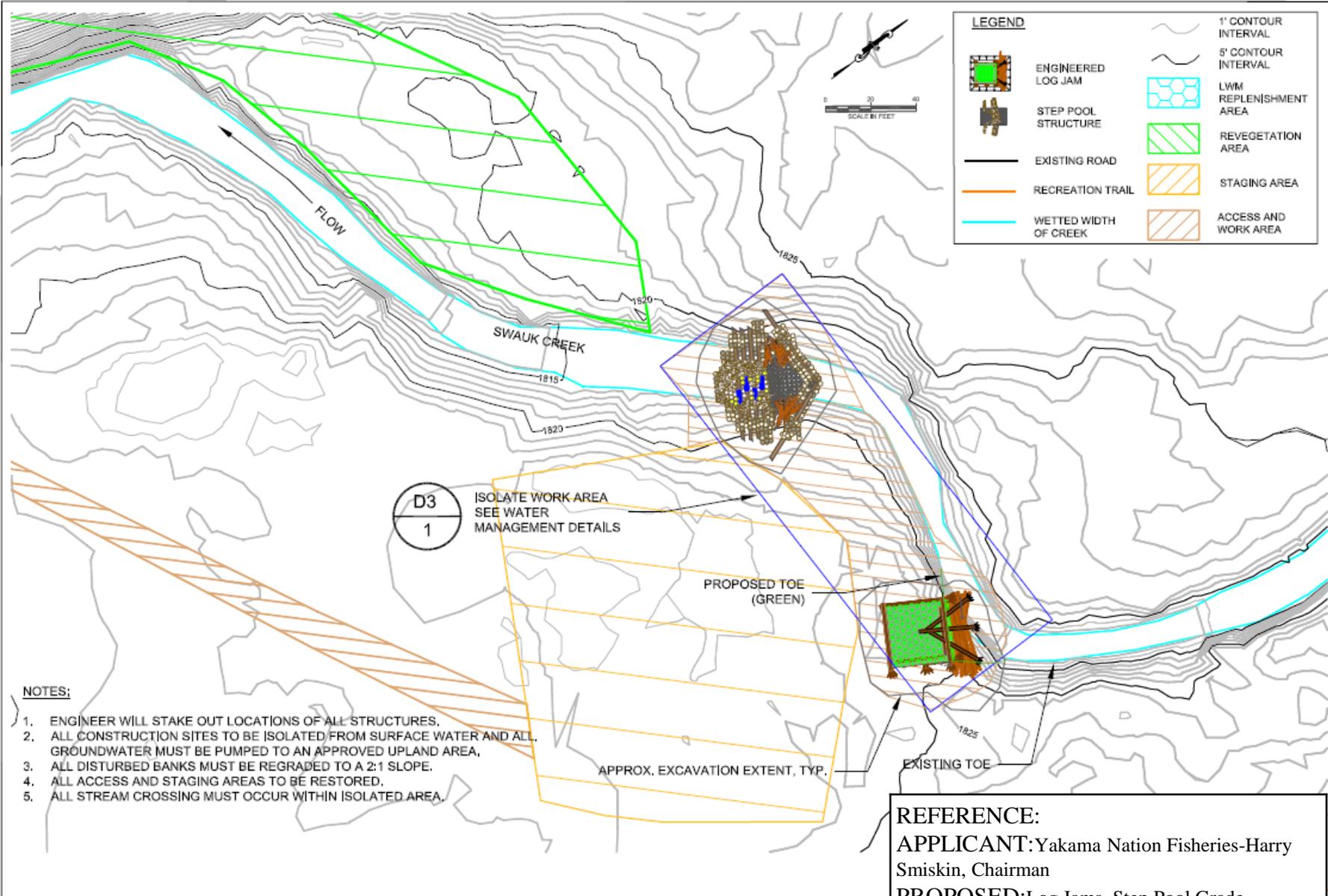
**ACCESS AND STAGING**  
**SIWALK CREEK RESTORATION PROJECT**  
**YAKAMA NATION**  
**KITITITAS COUNTY, WASHINGTON**



DATE	
REVISIONS	
200 First Avenue West, Suite 200 Seattle, WA 98116 WWW.ENTRIX.COM	
PLAN	KITTITAS COUNTY, WASHINGTON
SWAUK CREEK RESTORATION PROJECT YAKAMA NATION	
DATE:	8/20/11
DESIGNED BY:	G. POWLER
DRAWN BY:	T. MADGE
CHECKED BY:	T. ABBE
SCALE:	1"=40'
ENTRIX JOB NO.:	4234622
FIGURE NO.:	P5
SHEET:	7 of 20

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

SHEET 7 of 20 DATE: June 19, 2012



DATE: 6/21/12  
 DESIGNED BY: G. POWERS  
 DRAWN BY: T. NADLE  
 CHECKED BY: T. ABBE / A. BORK  
 SCALE: 1"=50'  
 SYSTEM JOB NO.: 4204932  
 REQUIREMENT: **P6**  
 SHEET: 8 of 20

**Cardno ENTRIX**  
 205 First Avenue West, Suite 500  
 Seattle, WA 98119  
 WWW.ENTRIX.COM

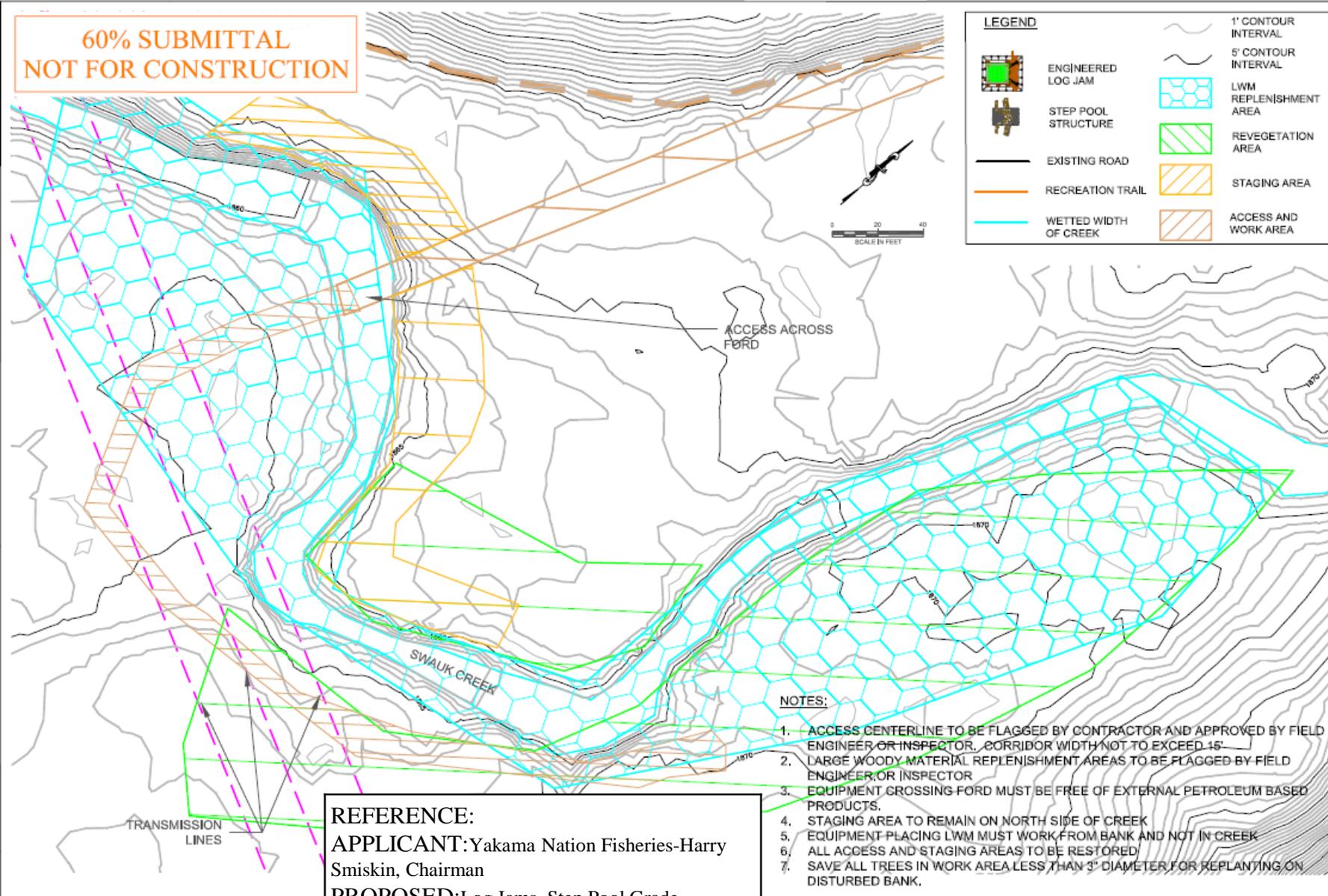
**FISHERIES**  
**YAKAMA NATION**

**PLAN**  
 SWAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON

**REFERENCE:**  
 APPLICANT: Yakama Nation Fisheries-Harry Smiskin, Chairman  
 PROPOSED: Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
 AT/NEAR: Cle Elum, Washington

**SHEET 8 of 20 DATE: June 19, 2012**

**60% SUBMITTAL  
NOT FOR CONSTRUCTION**



**LEGEND**

	ENGINEERED LOG JAM		1' CONTOUR INTERVAL
	STEP POOL STRUCTURE		5' CONTOUR INTERVAL
	EXISTING ROAD		LWM REPLENISHMENT AREA
	RECREATION TRAIL		REVEGETATION AREA
	WETTED WIDTH OF CREEK		STAGING AREA
			ACCESS AND WORK AREA

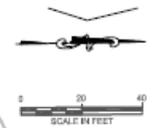
- NOTES:**
1. ACCESS CENTERLINE TO BE FLAGGED BY CONTRACTOR AND APPROVED BY FIELD ENGINEER OR INSPECTOR, CORRIDOR WIDTH NOT TO EXCEED 15'
  2. LARGE WOODY MATERIAL REPLENISHMENT AREAS TO BE FLAGGED BY FIELD ENGINEER OR INSPECTOR
  3. EQUIPMENT CROSSING FORD MUST BE FREE OF EXTERNAL PETROLEUM BASED PRODUCTS.
  4. STAGING AREA TO REMAIN ON NORTH SIDE OF CREEK
  5. EQUIPMENT PLACING LWM MUST WORK FROM BANK AND NOT IN CREEK
  6. ALL ACCESS AND STAGING AREAS TO BE RESTORED
  7. SAVE ALL TREES IN WORK AREA LESS THAN 3" DIAMETER FOR REPLANTING ON DISTURBED BANK.

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

**SHEET 9 of 20 DATE:** June 19, 2012

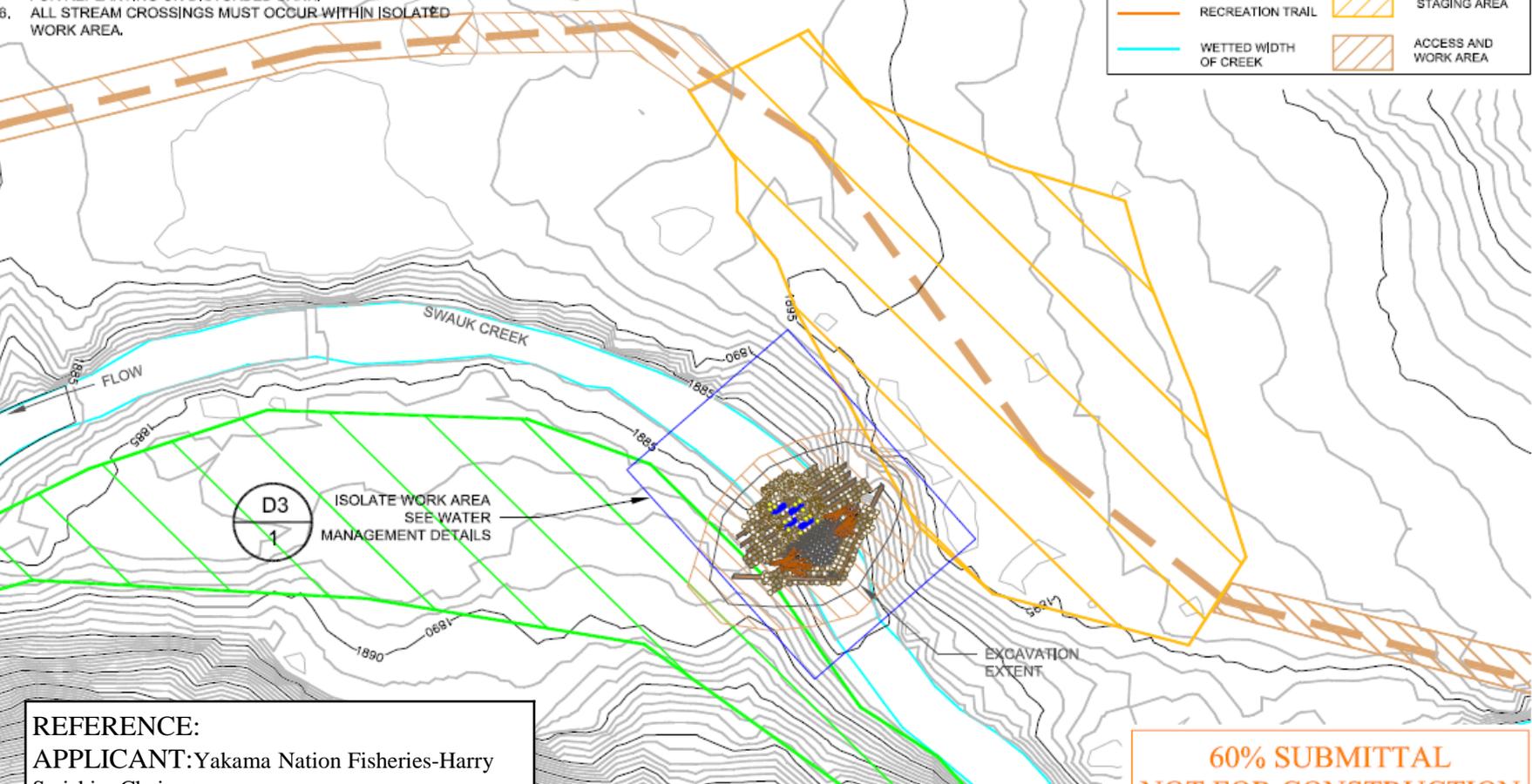
DATE	
REVISIONS	
 200 First Avenue West, Suite 500 Seattle, WA 98119 WWW.CARDNOENTRIX.COM	
<b>PLAN</b> SWAUK CREEK RESTORATION PROJECT YAKAMA NATION KITTITAS COUNTY, WASHINGTON	
DATE:	02/11
DESIGNED BY:	G. POWLER
DRAWN BY:	T. NAGLE
CHECKED BY:	T. NAGLE / A. BROWN
SCALE:	1"=10'
ENTRUST JOB NO.:	4224932
FIGURE NO.:	<b>P7</b>
SHEET	9 of 20

- NOTES:**
1. ENGINEER WILL MARK LOCATION OF STEP POOL STRUCTURE.
  2. CONSTRUCTION SITE TO BE ISOLATED FROM SURFACE WATER AND GROUNDWATER MUST BE PUMPED TO AN APPROVED UPLAND AREA.
  3. ACCESS CENTERLINE TO BE FLAGGED BY CONTRACTOR. CORRIDOR WIDTH NOT TO EXCEED 15'.
  4. ALL ACCESS AREAS WILL BE RESTORED.
  5. SAVE ALL TREES IN WORK AREA LESS THAN 3" DIAMETER FOR REPLANTING ON DISTURBED BANK.
  6. ALL STREAM CROSSINGS MUST OCCUR WITHIN ISOLATED WORK AREA.



**LEGEND**

	ENGINEERED LOG JAM		1' CONTOUR INTERVAL
	STEP POOL STRUCTURE		5' CONTOUR INTERVAL
	EXISTING ROAD		LWM REPLENISHMENT AREA
	RECREATION TRAIL		REVEGETATION AREA
	WETTED WIDTH OF CREEK		STAGING AREA
			ACCESS AND WORK AREA



**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

**SHEET 10 of 20    DATE: June 19, 2012**

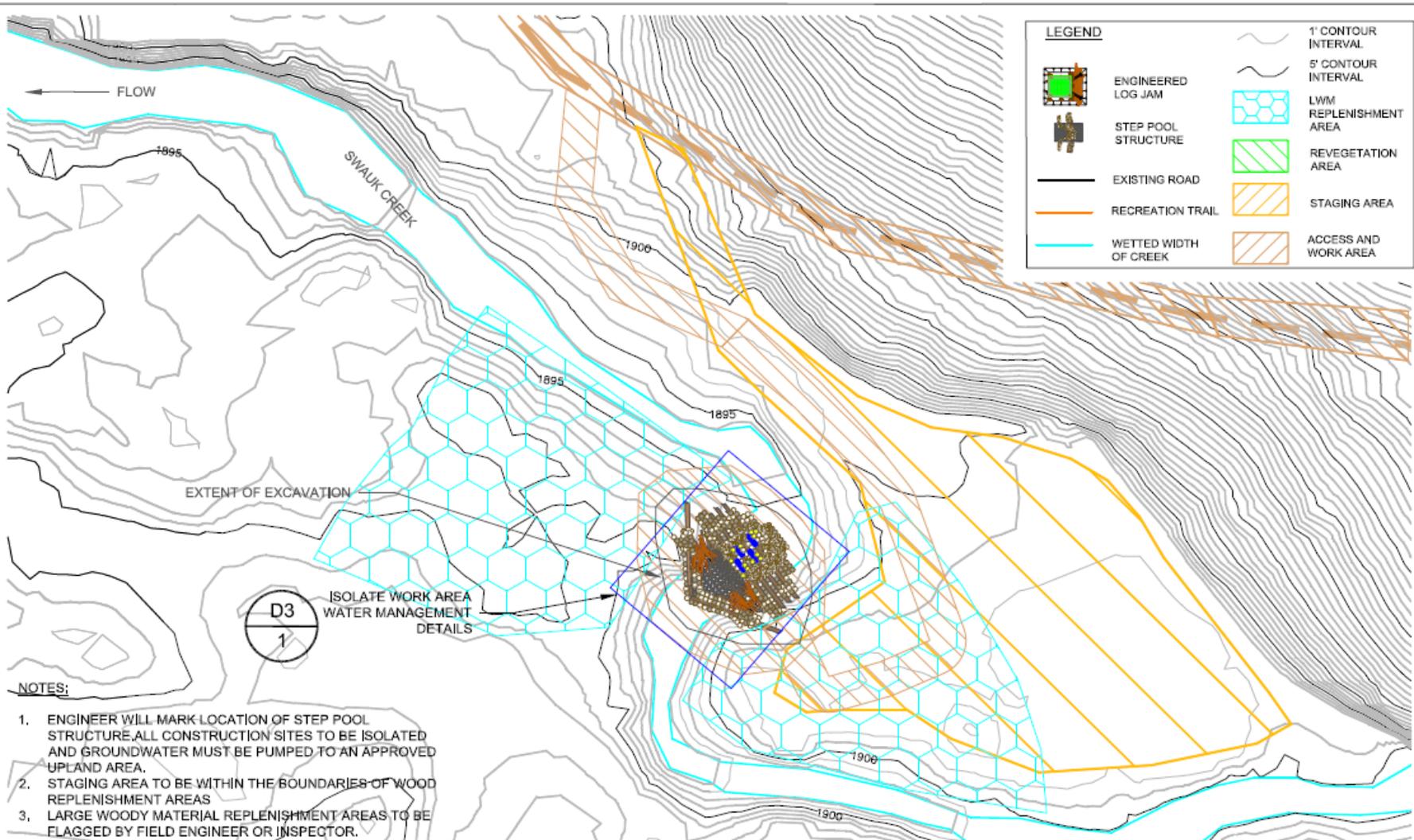
**60% SUBMITTAL  
 NOT FOR CONSTRUCTION**

DATE	06/11
DESIGNED BY	G. FOWLER
DRAWN BY	T. HABLE
CHECKED BY	T. ABRE / A. BUCH
SCALE	1" = 100'
SHEET JOB NO.	4229402
FIGURE NO.	
<b>P8</b>	
SHEET	10 of 20

**PLAN**  
 SWAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON

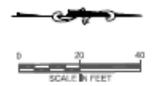
**FISHERIES**  
  
**YAKAMA NATION**

**Cardno**  
**ENTRIX**  
 205 First Avenue West, Suite 500  
 Seattle, WA 98119  
 WWW.CARDNO.COM



LEGEND	
	ENGINEERED LOG JAM
	STEP POOL STRUCTURE
	EXISTING ROAD
	RECREATION TRAIL
	WETTED WIDTH OF CREEK
	1' CONTOUR INTERVAL
	5' CONTOUR INTERVAL
	LWM REPLENISHMENT AREA
	REVEGETATION AREA
	STAGING AREA
	ACCESS AND WORK AREA

- NOTES:**
- ENGINEER WILL MARK LOCATION OF STEP POOL STRUCTURE, ALL CONSTRUCTION SITES TO BE ISOLATED AND GROUNDWATER MUST BE PUMPED TO AN APPROVED UPLAND AREA.
  - STAGING AREA TO BE WITHIN THE BOUNDARIES OF WOOD REPLENISHMENT AREAS
  - LARGE WOODY MATERIAL REPLENISHMENT AREAS TO BE FLAGGED BY FIELD ENGINEER OR INSPECTOR.
  - ACCESS CENTERLINE TO BE FLAGGED BY CONTRACTOR, CORRIDOR WIDTH NOT TO EXCEED 15'.
  - ALL ACCESS AREAS WILL BE RESTORED.
  - SAVE ALL TREES IN WORK AREA LESS THAN 3" DIAMETER FOR REPLANTING ON DISTURBED BANK.
  - ALL CREEK CROSSINGS MUST OCCUR WITHIN ISOLATED WORK AREAS.



DATE	06/19/12
DESIGNED BY	G. FOMBLER
DRAWN BY	T. HADLE
CHECKED BY	T. HARRIS / A. BUCK
SCALE	1"=40'
ENTER JOB NO.	4229402
FIGURE NO.	P9
SHEET	11 of 20

**Cardno ENTRIX**  
 200 First Avenue West, Suite 500  
 Seattle, WA 98119  
 www.entrinx.com

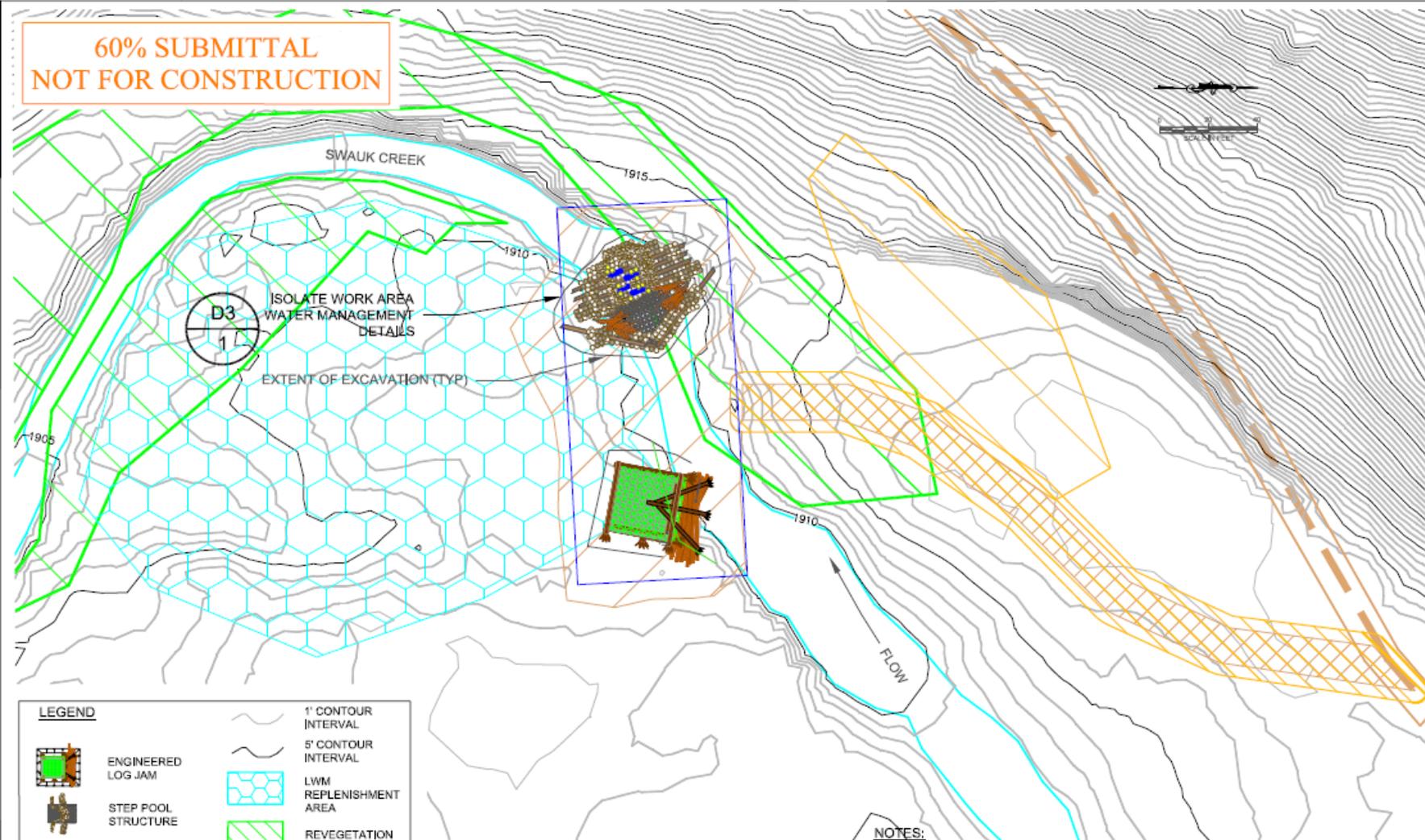
**FISHERIES**  
**YAKAMA NATION**

**PLAN**  
 SWAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

SHEET 11 of 20 DATE: June 19, 2012

**60% SUBMITTAL  
NOT FOR CONSTRUCTION**



LEGEND	
	ENGINEERED LOG JAM
	STEP POOL STRUCTURE
	EXISTING ROAD
	RECREATION TRAIL
	WETTED WIDTH OF CREEK
	1' CONTOUR INTERVAL
	5' CONTOUR INTERVAL
	LWM REPLENISHMENT AREA
	REVEGETATION AREA
	STAGING AREA
	ACCESS AND WORK AREA

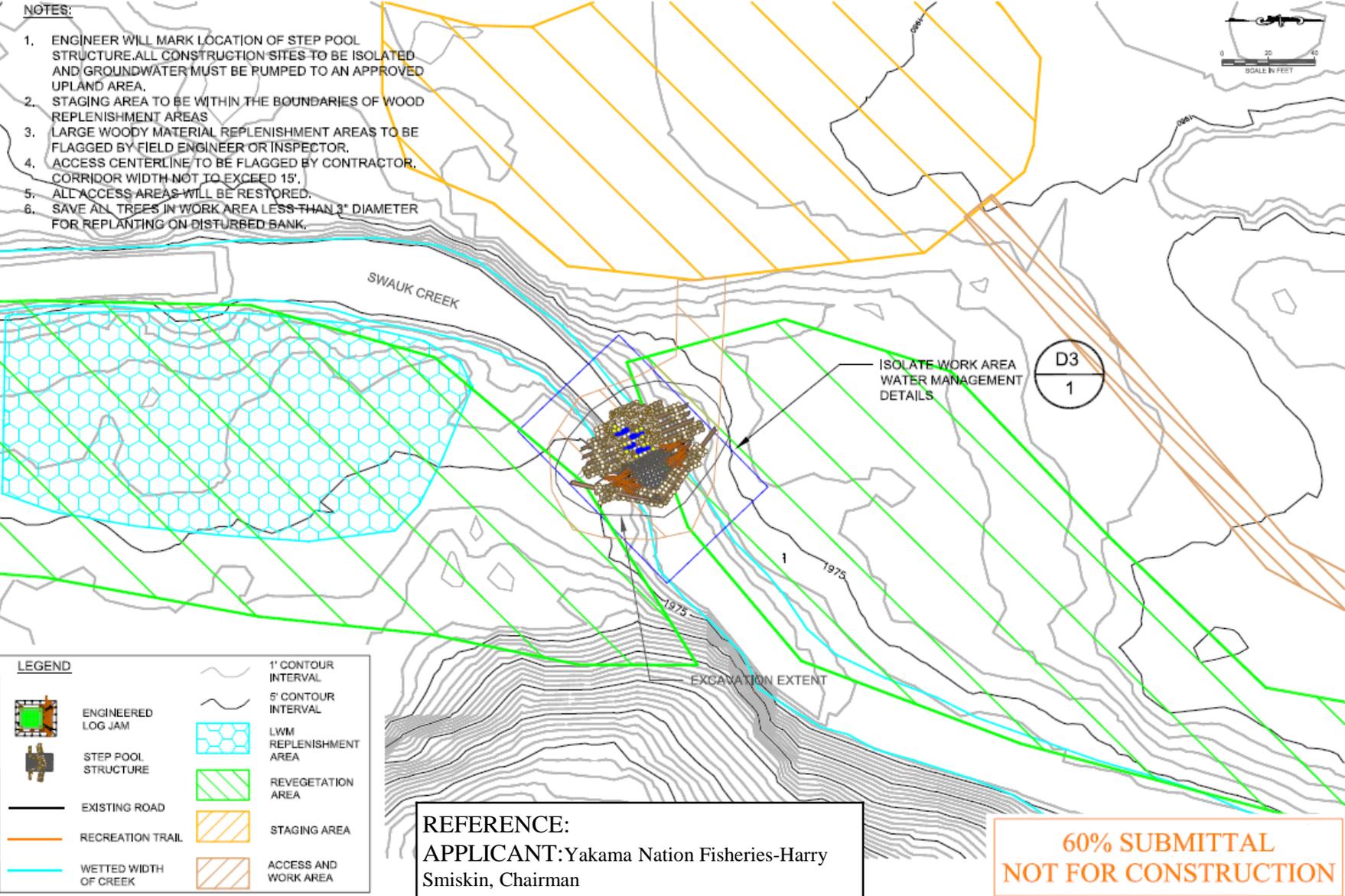
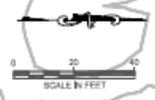
- NOTES:**
1. ENGINEER WILL STAKE OUT LOCATIONS OF ALL STRUCTURES
  2. ALL CONSTRUCTION SITES TO BE ISOLATED FROM SURFACE WATER AND ALL GROUNDWATER MUST BE PUMPED TO AN APPROVED UPLAND AREA.
  3. ALL DISTURBED BANKS MUST BE REGRADED TO A 2:1 SLOPE
  4. ALL ACCESS AND STAGING AREAS TO BE RESTORED
  5. ALL STREAM CROSSINGS MUST BE WITHIN ISOLATED WORK AREA

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington  
**SHEET 12 of 20**    **DATE:** June 19, 2012

DATE	
REVISIONS	
 200 First Avenue West, Suite 500 Seattle, WA 98105 WWW.CARDNOENTRIX.COM	
<b>PLAN</b>	SWAUK CREEK RESTORATION PROJECT YAKAMA NATION KITTITAS COUNTY, WASHINGTON
DATE:	02/11
DESIGNED BY:	G. POWLER
DRAWN BY:	T. HADLE
CHECKED BY:	T. ABBE / A. BROWN
SCALE:	1"=30'
ENTRIX JOB NO.:	4229430
FIGURE NO.:	<b>P10</b>
SHEET	12 of 20

**NOTES:**

- ENGINEER WILL MARK LOCATION OF STEP POOL STRUCTURE. ALL CONSTRUCTION SITES TO BE ISOLATED AND GROUNDWATER MUST BE PUMPED TO AN APPROVED UPLAND AREA.
- STAGING AREA TO BE WITHIN THE BOUNDARIES OF WOOD REPLENISHMENT AREAS
- LARGE WOODY MATERIAL REPLENISHMENT AREAS TO BE FLAGGED BY FIELD ENGINEER OR INSPECTOR.
- ACCESS CENTERLINE TO BE FLAGGED BY CONTRACTOR. CORRIDOR WIDTH NOT TO EXCEED 15'.
- ALL ACCESS AREAS WILL BE RESTORED.
- SAVE ALL TREES IN WORK AREA LESS THAN 3" DIAMETER FOR REPLANTING ON DISTURBED BANK.

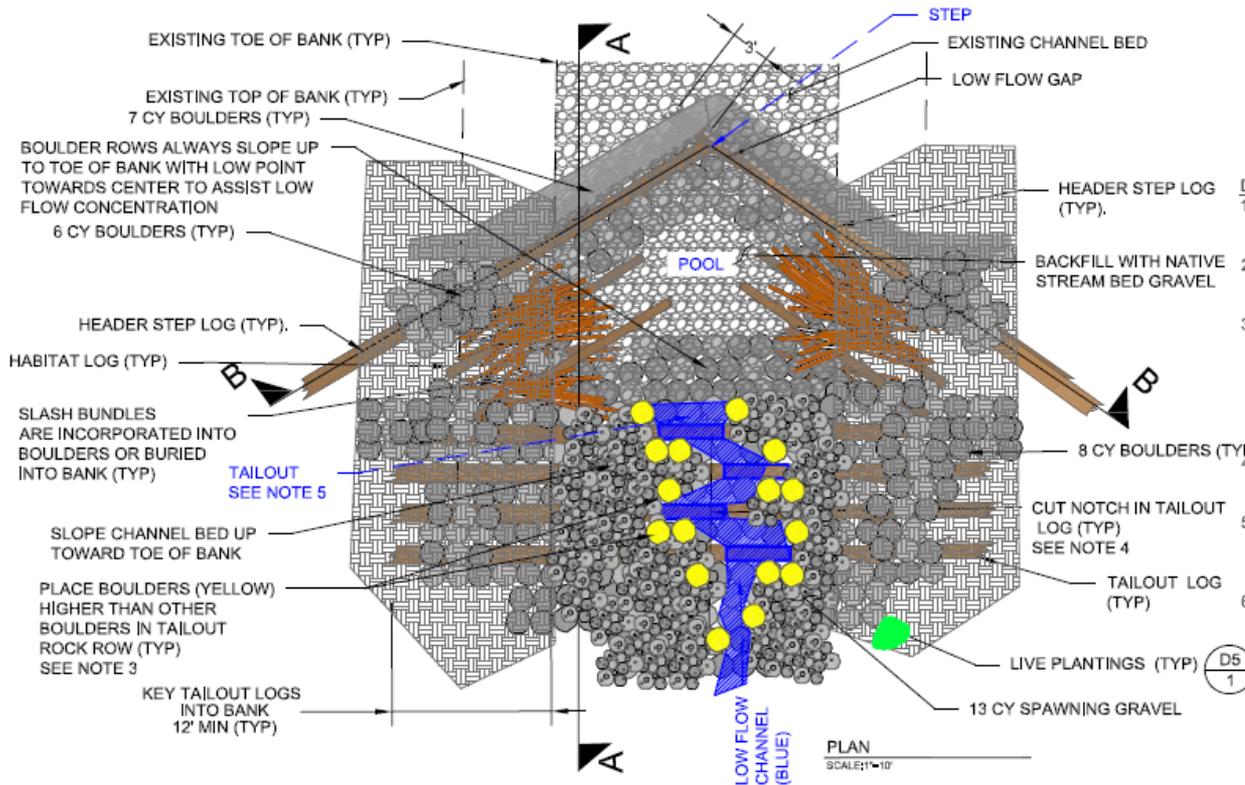


LEGEND	
	1' CONTOUR INTERVAL
	5' CONTOUR INTERVAL
	ENGINEERED LOG JAM
	STEP POOL STRUCTURE
	EXISTING ROAD
	RECREATION TRAIL
	WETTED WIDTH OF CREEK
	LWM REPLENISHMENT AREA
	REVEGETATION AREA
	STAGING AREA
	ACCESS AND WORK AREA

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington  
**SHEET 13 of 20 DATE:** June 19, 2012

**60% SUBMITTAL  
 NOT FOR CONSTRUCTION**

DATE	
REVISIONS	
 200 19th Avenue West, Suite 100 Seattle, WA 98119 WWW.GARDNO.COM	
<b>PLAN</b> SWAUK CREEK RESTORATION PROJECT YAKAMA NATION KITTITAS COUNTY, WASHINGTON	
DATE:	6/29/11
DESIGNED BY:	G. POWLER
DRAWN BY:	T. HADLE
CHECKED BY:	T. ARBE / J. BJORCK
SCALE:	1"=40'
ENTERED JOB NO.:	42294002
FIGURE NO.:	
<b>P11</b>	
SHEET	13 of 20



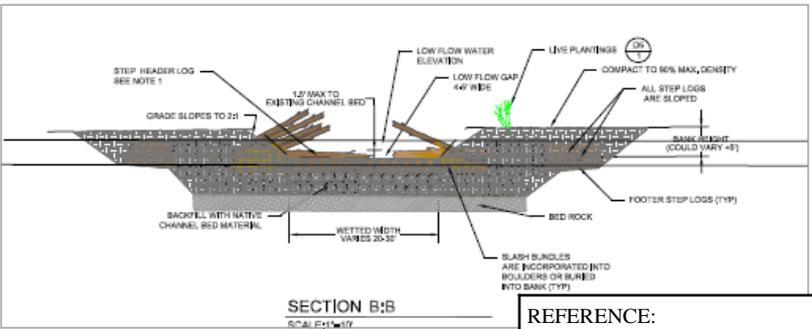
**STRUCTURE PURPOSE**  
 THE OBJECTIVE OF A STEP POOL STRUCTURE IS TO RAISE THE NEARBY WATER SURFACE ELEVATIONS TO ENGAGE LOW LYING FLOODPLAINS MORE FREQUENTLY WHILE MINIMIZING THE LENGTH OF CHANNEL THAT NEEDS TO BE DISTURBED. THE STRUCTURE ALSO PROVIDES IMMEDIATE AND LONG TERM HABITAT BENEFITS WITH THE ADDITIONS OF WOOD AND BANK PLANTINGS.

- DESIGN NOTES**
1. THE APEX OF THE 40' AND 35' LOGS CAN NOT EXCEED 1.5' ABOVE CHANNEL BED.
  2. VOIDS TO BE "CHINKED" SO GAPS BETWEEN BOULDERS ARE SMALLER THAN 1/4" DIAMETER.
  3. ANGULAR BOULDERS TO EXTEND NO MORE THAN 0.5' ABOVE SPAWNING GRAVEL. BOULDERS SHOULD BE OFFSET FROM EACH OTHER TO CREATE ZIG-ZAG PATTERN FOR LOW FLOW CHANNEL. ALL OTHER BOULDERS TO BE COVERED WITH 0.5' MIN SPAWNING GRAVEL.
  4. 5' BY 0.5' NOTCHES TO BE CUT IN TAILOUT HEADER LOGS TO CREATE A LOW FLOW CHANNEL.
  5. TAILOUT ELEVATION TO BE SET 0.5' BELOW APEX OF STEP HEADER LOG TO ENSURE STEP HEIGHT DOES NOT EXCEED 0.5'.
  6. BOULDERS SHALL BE 1.75 TO 2.5' DIAMETER

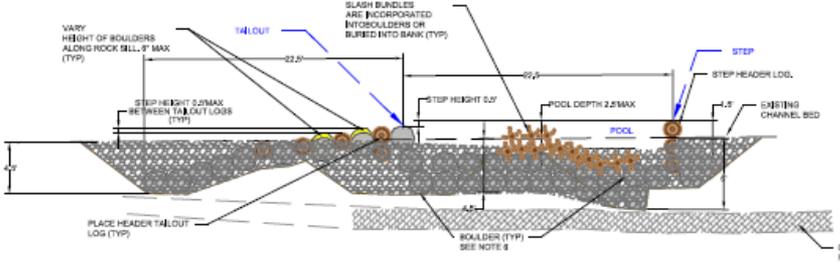
**LOG SCHEDULE: STEP POOL**

LOCATION	NAME	QUANTITY	DIAMETER	LENGTH	ROOTWAD
			FT	FT	Y/N
STEP	FOOTER	4	1.5	40	N
	HEADER	1	1.5	40	N
	HEADER	1	1.5	35	N
POOL	HABITAT	4	1	20	N
	FOOTER	1	1.5	50	N
TAILOUT	FOOTER	1	1.5	50	N
	HEADER	4	1.5	50	N

**PLAN**  
SCALE: 1"=10'



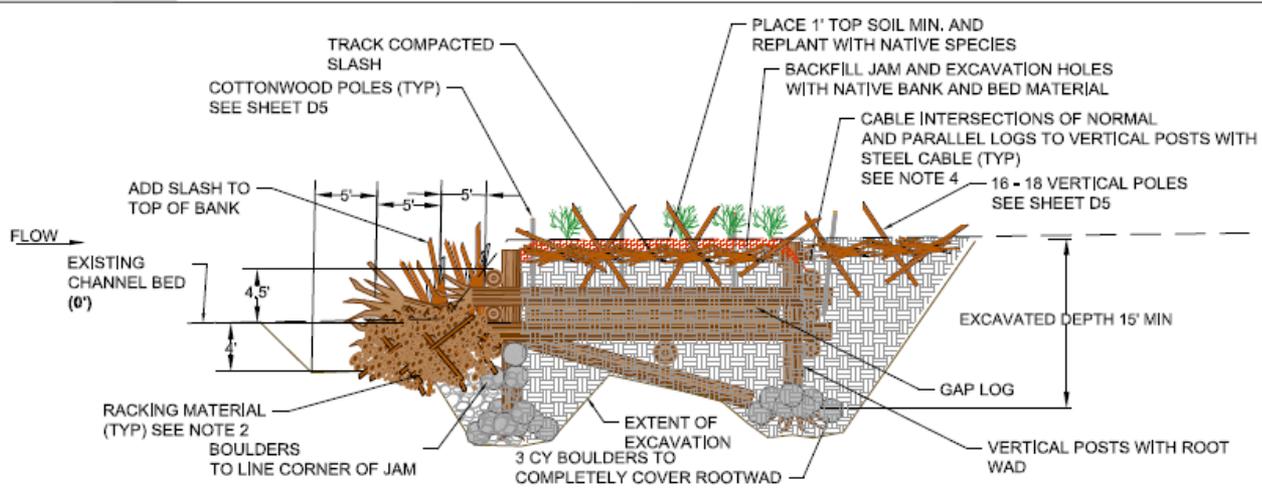
**SECTION B-B**  
SCALE: 1"=10'



**SECTION A-A**  
SCALE: 1"=10'

**REFERENCE:**  
 APPLICANT: Yakama Nation Fisheries-Harry Smiskin, Chairman  
 PROPOSED: Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
 AT/NEAR: Cle Elum, Washington

DATE	
REV/REVISION	
SCALE	
200 First Avenue West, Suite 600 Seattle, WA 98119 www.cardnoentrix.com www.cardnoentrix.com	
<b>STEP POOL STRUCTURE : PLAN, SECTION AND DETAILS</b> <b>SWAUK CREEK RESTORATION PROJECT</b> <b>YAKAMA NATION</b> <b>KITITIAS COUNTY, WASHINGTON</b>	
DATE:	6/20/11
DESIGNED BY:	G. ZWILGER
DRAWN BY:	T. HANLEY
CHECKED BY:	T. ABRAHAM / J. OLSON
SCALE:	AS NOTED
ENTRIX JOB NO.:	428462
PLAN NO.:	
<b>D1</b> SHEET 14 of 20	



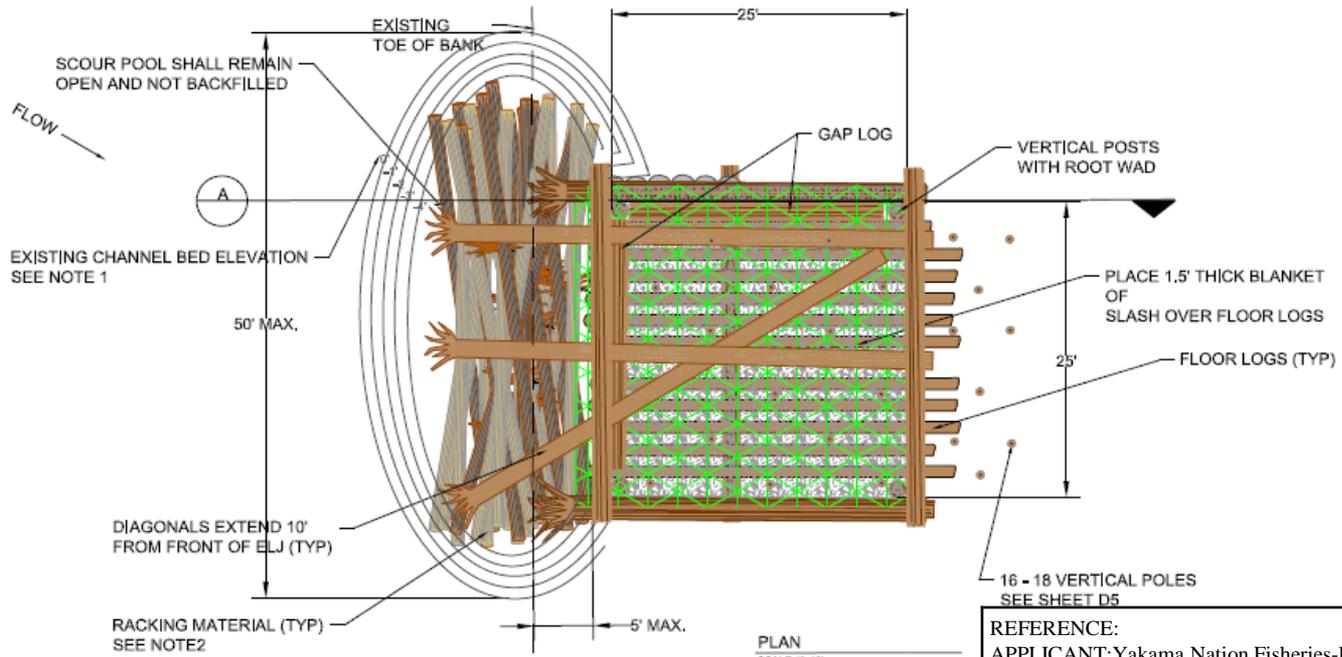
SECTION A-A  
SCALE: 1"=10'

PURPOSE OF STRUCTURE  
STRUCTURE OBJECTIVES IS TO  
INTRODUCE AND ANCHOR A COMPLEX  
LARGE AMOUNT OF WOOD IN A SCOUR  
HOLE AND PROVIDE LONG TERM SHADING  
WITH A RIPARIAN BENCH.

- DESIGN NOTES**
1. FIELD ENGINEER WILL ESTABLISH CHANNEL BED ELEVATION (0') FOR EACH SITE. ALL EXCAVATION DEPTHS ARE RELATIVE TO THIS DATUM
  2. RACKING MATERIAL SHALL CONSIST OF A DENSE MIXTURE OF BRANCHES RANGING IN DIAMETER FROM 0.25' TO 0.75' AND 10'-15' LONG
  3. ROOTWADS OF PARALLEL LOGS SHALL EXTEND FIVE FEET AWAY FROM THE FACE OF THE ELJ
  4. BOULDERS SHALL BE RANGE IN SIZE FROM 1 3/4' TO 2 1/4'

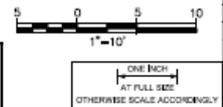
LOG SCHEDULE: ELJ

LAYER	NAME	QUANTITY	DIAMETER	LENGTH	ROOTWAD
		#	FT	FT	Y/N
VERTICAL	POSTS	4	1.5	15	Y
LAYER 1	NORMAL	3	1.5	30	N
LAYER 2	PARALLEL	2	1.5	30	Y
	FLOOR	11	1	30	N
	DIAGONAL	3	1.5	30	Y
	GAP LOG	1	1.5	25	N
LAYER 3	NORMAL	2	1.5	30	N
	GAP LOG	1	1.5	25	N
LAYER 4	PARALLEL	2	1.5	30	N
LAYER 5	NORMAL	2	1.5	30	N



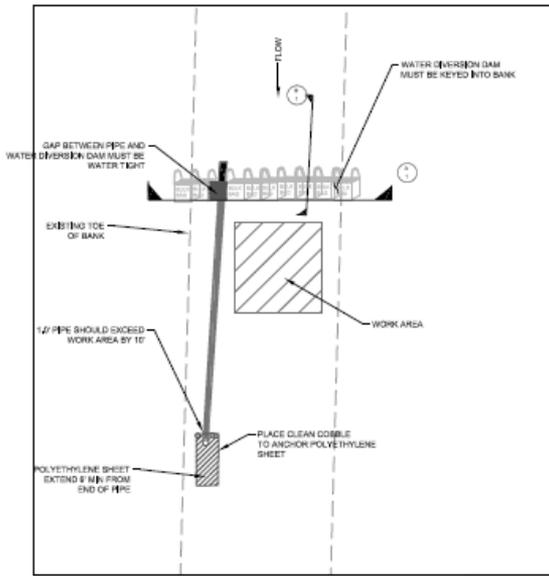
PLAN  
SCALE: 1"=10'

**DRAFT  
NOT FOR CONSTRUCTION**

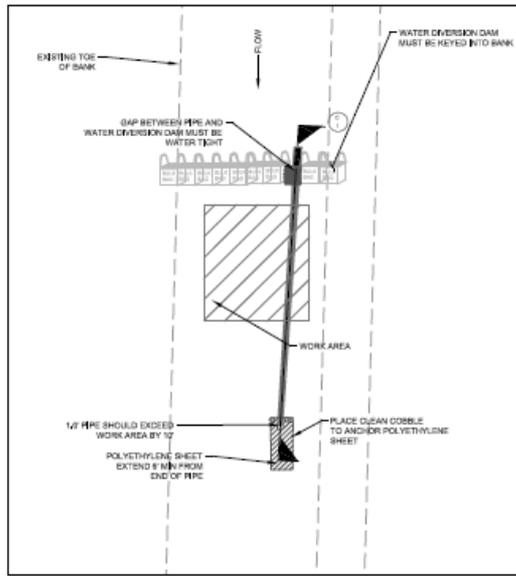


REFERENCE:  
 APPLICANT: Yakama Nation Fisheries-Harry Smiskin,  
 Chairman  
 PROPOSED: Log Jams, Step Pool Grade Controls, Large Wood  
 Replenishment, Bridge Replacement, Riparian Planting  
 AT/NEAR: Cle Elum, Washington

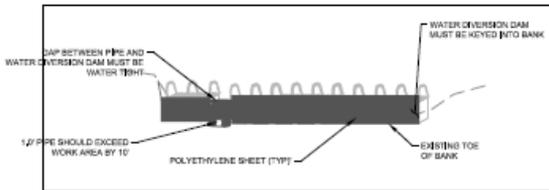
DATE: \_\_\_\_\_  
 REVISIONS: \_\_\_\_\_  
 SEAL: \_\_\_\_\_  
  
 280 First Avenue West, Suite 800  
 Seattle, WA 98101  
 www.cardnoentrux.com  
 www.entrux.com  
  
 ELJ : PLAN, SECTION AND DETAILS  
 SWAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON  
 DATE: 6/19/12  
 DESIGNED BY: GJ/OWLER  
 DRAWN BY: T. SAGLE  
 CHECKED BY: T. HARRIS, G. DORN  
 SCALE: AS NOTED  
 ENTRIX JOB NO.: 428433  
 PAGE NO.:  
**D2**  
 SHEET 15 of 22



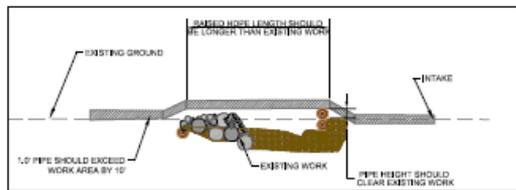
PLAN WATER DIVERSION-PHASE I  
NTS



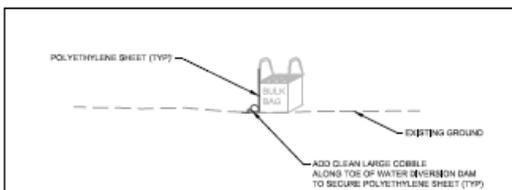
PLAN WATER DIVERSION-PHASE II  
NTS



WATER DIVERSION SECTION -PHASE I  
NTS



WATER DIVERSION SECTION -PHASE II  
NTS



WATER DIVERSION SECTION -PHASE I  
NTS

**REFERENCE:**  
**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington

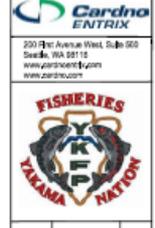
**60% SUBMITTAL  
 NOT FOR CONSTRUCTION**

- PURPOSE:**  
 TO ISOLATE WORK ZONE AND PREVENT WATER FROM FLOWING INTO AND OUT OF THE WORK AREA TO PREVENT TURBID WATER FROM ENTERING SWAUK CREEK
- DESIGN NOTES:**
1. WATER MANAGEMENT DETAILS ARE FOR GUIDANCE ONLY. CONTRACTOR MAY CHOOSE ANY PASSIVE APPROACH TO ISOLATE SITE TO PREVENT INFLOW AND OUTFLOW OF WATER
  2. MATERIAL AND QUANTITY USED TO MAKE IMPERMEABLE WALL MAY VARY DEPENDING ON CONTRACTOR'S LEVEL OF EXPERTISE AND FAMILIARITY
  3. CONTRACTOR ASSUMES ALL RESPONSIBILITY AND COSTS ASSOCIATED WITH ISOLATING SITE AND PREVENTING WATER FROM ENTERING AND EXITING WORK AREA
  4. LARGE RAIN EVENTS COULD OCCUR DURING CONSTRUCTION MONTHS (AUGUST/SEPTEMBER) BUT MAXIMUM RECORDED DISCHARGE DURING THIS TIME IS SCFS.
  5. CONTRACTOR ASSUMES ALL RESPONSIBILITY AND COSTS ASSOCIATED WITH A DELAY IN WORK IF WORK STOPS DUE TO WATER OVERTOPPING THE WATER DIVERSION DAM
  6. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING TURBIDITY LEAVING THE ISOLATED WORK AREA
  7. ALL GROUNDWATER WITHIN THE SITE MUST BE PUMPED TO APPROVED UPLAND AREA
  8. PIPE MUST HAVE MINIMAL LEAKING. WATER DEPTHS DOWNSTREAM OF SITE SHOULD BE THE SAME BEFORE AND AFTER INSTALLATION OF WATER DIVERSION DAM AND PIPE

DATE	
REVISION	

SCALE	
-------	--

**Cardno  
 ENTRIX**  
 250 First Avenue West, Suite 500  
 Seattle, WA 98112  
 www.cardno.com  
 www.entrinx.com



**WATER MANAGEMENT DETAILS**  
**SWAUK CREEK RIVER RESTORATION PROJECT**  
**YAKAMA NATION**  
**KITITIAS COUNTY, WASHINGTON**

DATE:	3/20/11
DESIGNED BY:	G.FOWLER
DRAWN BY:	T. NAGLE
CHECKED BY:	T. NAGLE / J. LORCK
SCALE:	AS NOTED
ENTRIX JOB NO.	428403

FIGURE NO. **D3**  
 SHEET 16 OF 20

ONE INCH  
 AT FULL SIZE  
 OTHERWISE SCALE ACCORDINGLY

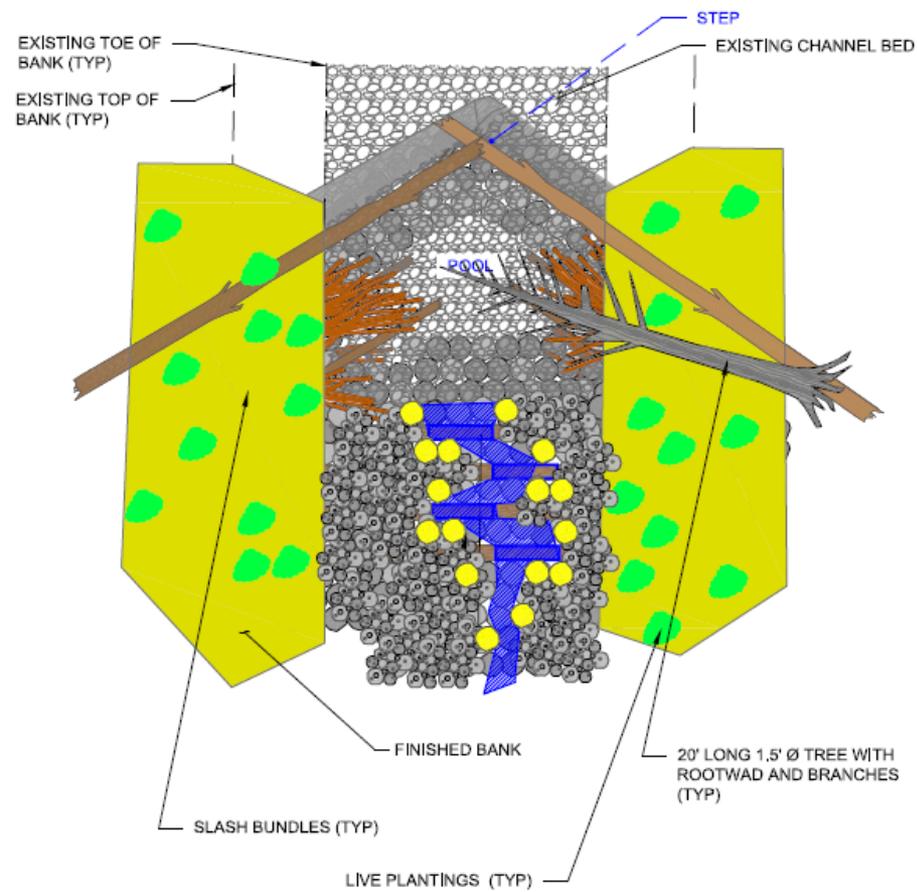


DATE	
REVISIONS	
SCALE	

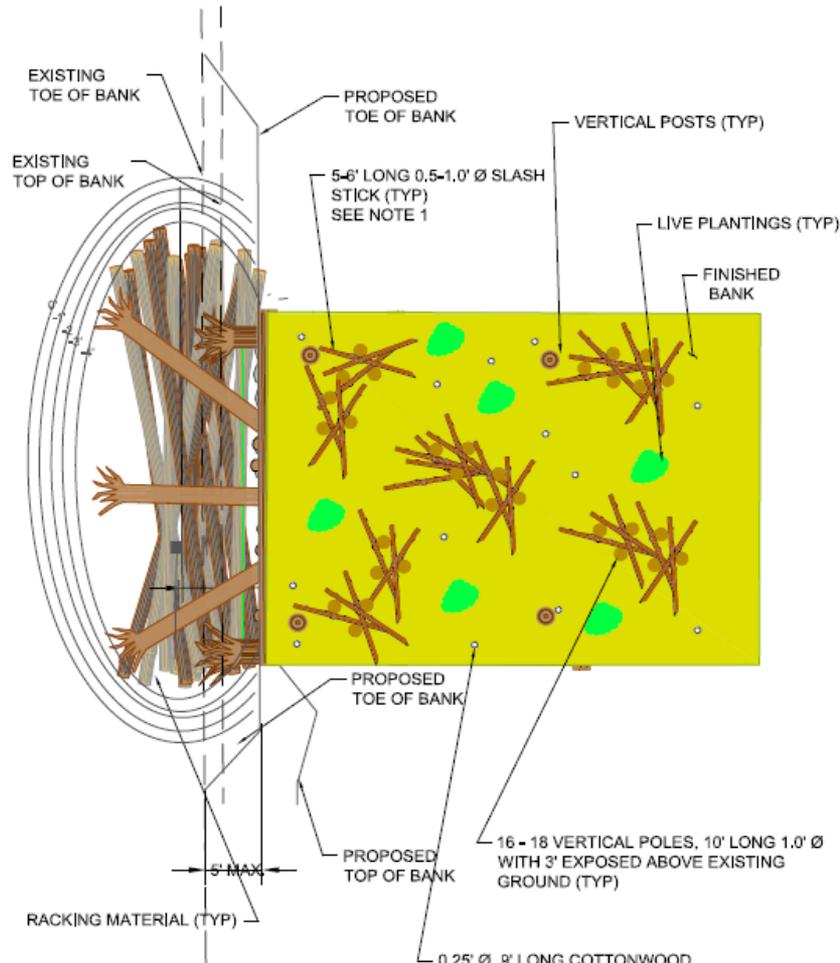


MISCELLANEOUS DETAILS  
 SWAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON

DATE:	6/19/12
DESIGNED BY:	G. POWLER
DRAWN BY:	T. MAGUIE
CHECKED BY:	T. AMBE / J. DORR
SCALE:	AS NOTED
ENTRUX JOB NO.:	4226462
PLAN NO.:	D5
SHEET	18 of 20



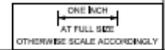
**STEP POOL FINISHED SURFACE DETAIL**  
 SCALE: 1" = 12'



**ELJ FINISHED SURFACE DETAIL**  
 SCALE: 1" = 12'

- DESIGN NOTES**
1. SLASH STICKS SHOULD BE WEDGED BETWEEN VERTICAL POLES
  2. COTTONWOOD POLES SHALL EXTEND 1.0' ABOVE GROUND AND BE INSTALLED IN A RANDOM PATTERN
  3. VERTICAL POST SHOULD NOT EXCEED 1.0' ABOVE GROUND
  4. LIVE PLANTINGS SHALL CONSIST OF A MIX OF SHRUB AND SMALL TREE SPECIES

**REFERENCE:**  
 APPLICANT: Yakama Nation Fisheries-Harry Smiskin, Chairman  
 PROPOSED: Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
 AT/NEAR: Cle Elum, Washington





**NOTES:**

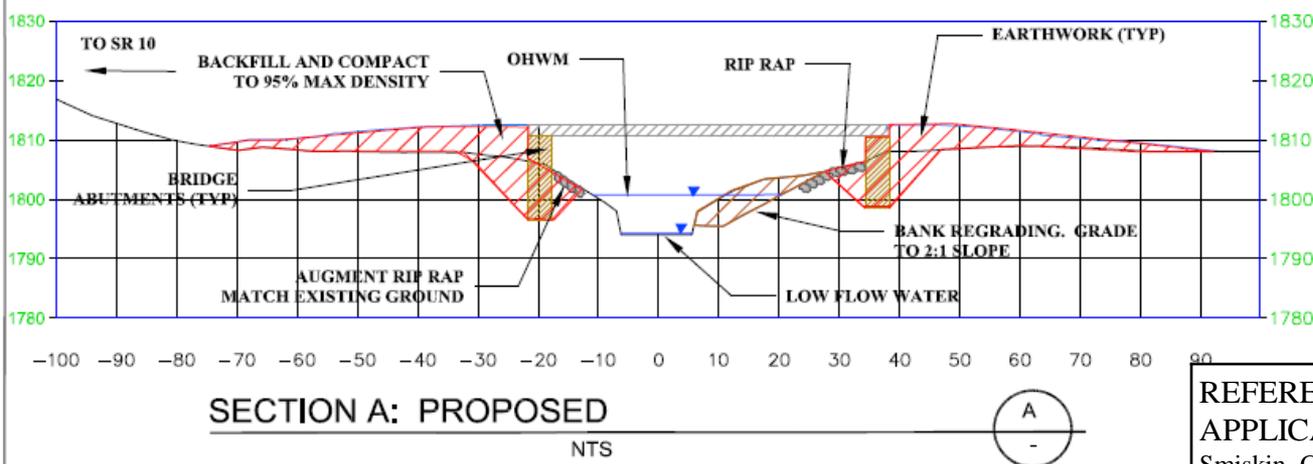
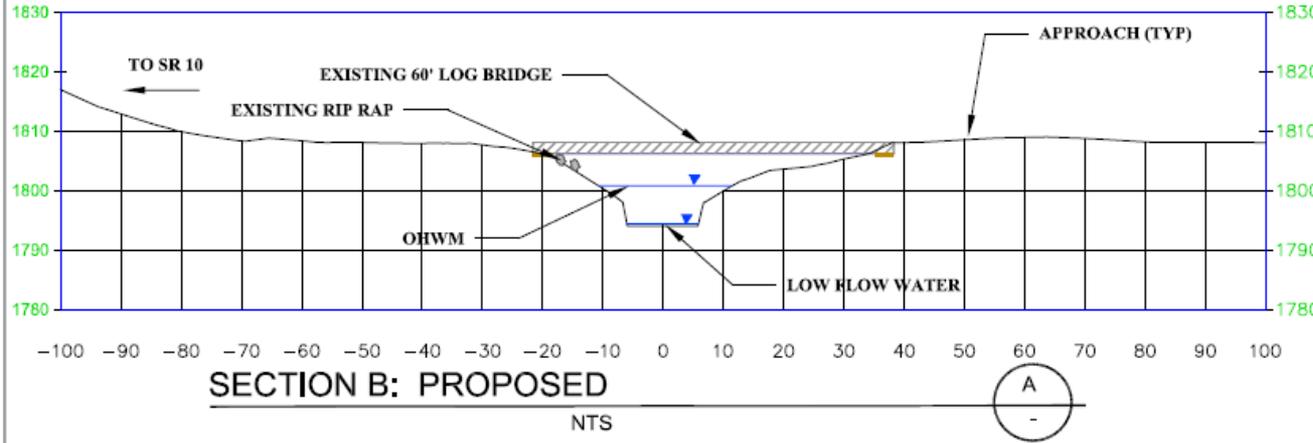
1. BANK GRADING WILL OCCUR ABOVE WETTED CHANNEL DURING CONSTRUCTION.
2. CREEK BANK MATERIAL WILL BE USED AS PART OF FILL FOR BRIDGE APPROACHES
3. BRIDGE ABUTMENTS WILL CONSIST OF PRE CAST CONCRETE STRUCTURES AND AUGMENTATION OF EXISTING RIP RAP
4. RAISE EXISTING BRIDGE AND PLACE ON NEW ABUTMENTS

DATE	
REVISIONS	



**BRIDGE SECTION AND DETAILS**  
 SWIAUK CREEK RESTORATION PROJECT  
 YAKAMA NATION  
 KITTITAS COUNTY, WASHINGTON

DATE	3/20/11
DESIGNED BY	G/OWLER
DRAWN BY	T. HUBLE
CHECKED BY	T. HUBLE / J. BLOK
SCALE	AS NOTED
ENTER JOB NO.	028402
FIGURE NO.	<b>B2</b>
SHEET	33 of 30



**REFERENCE:**

**APPLICANT:** Yakama Nation Fisheries-Harry Smiskin, Chairman  
**PROPOSED:** Log Jams, Step Pool Grade Controls, Large Wood Replenishment, Bridge Replacement, Riparian Planting  
**AT/NEAR:** Cle Elum, Washington