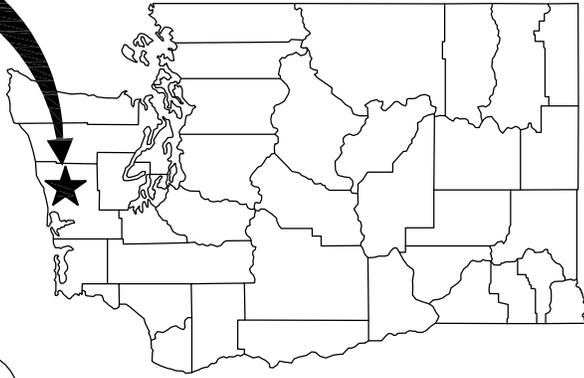
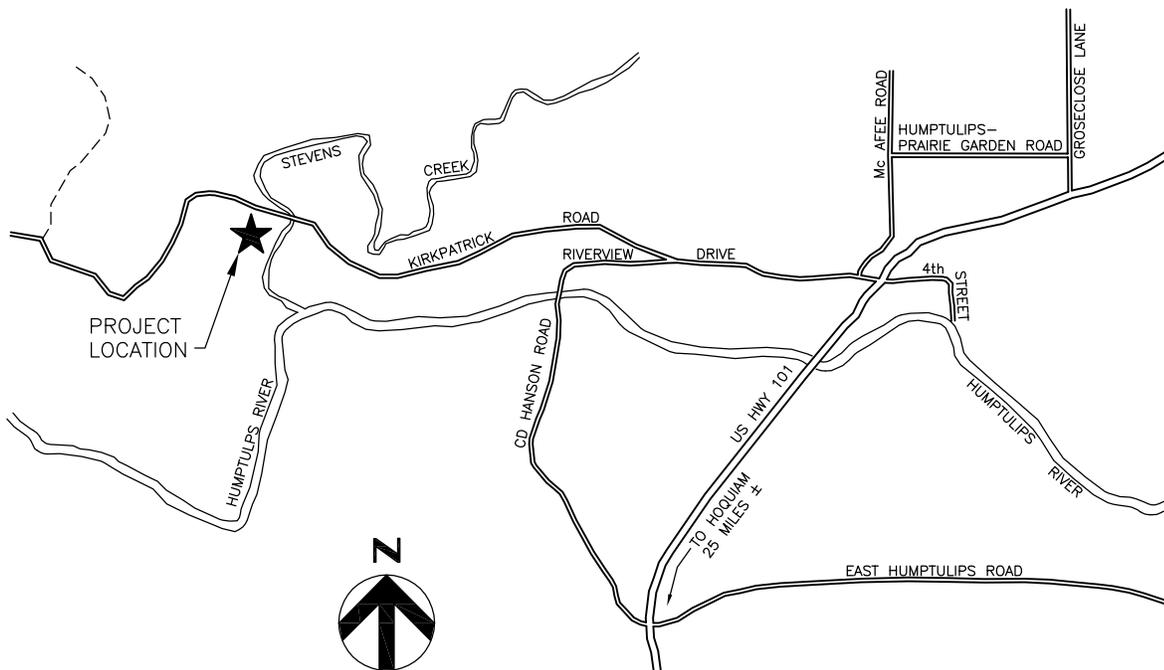


PROJECT LOCATION

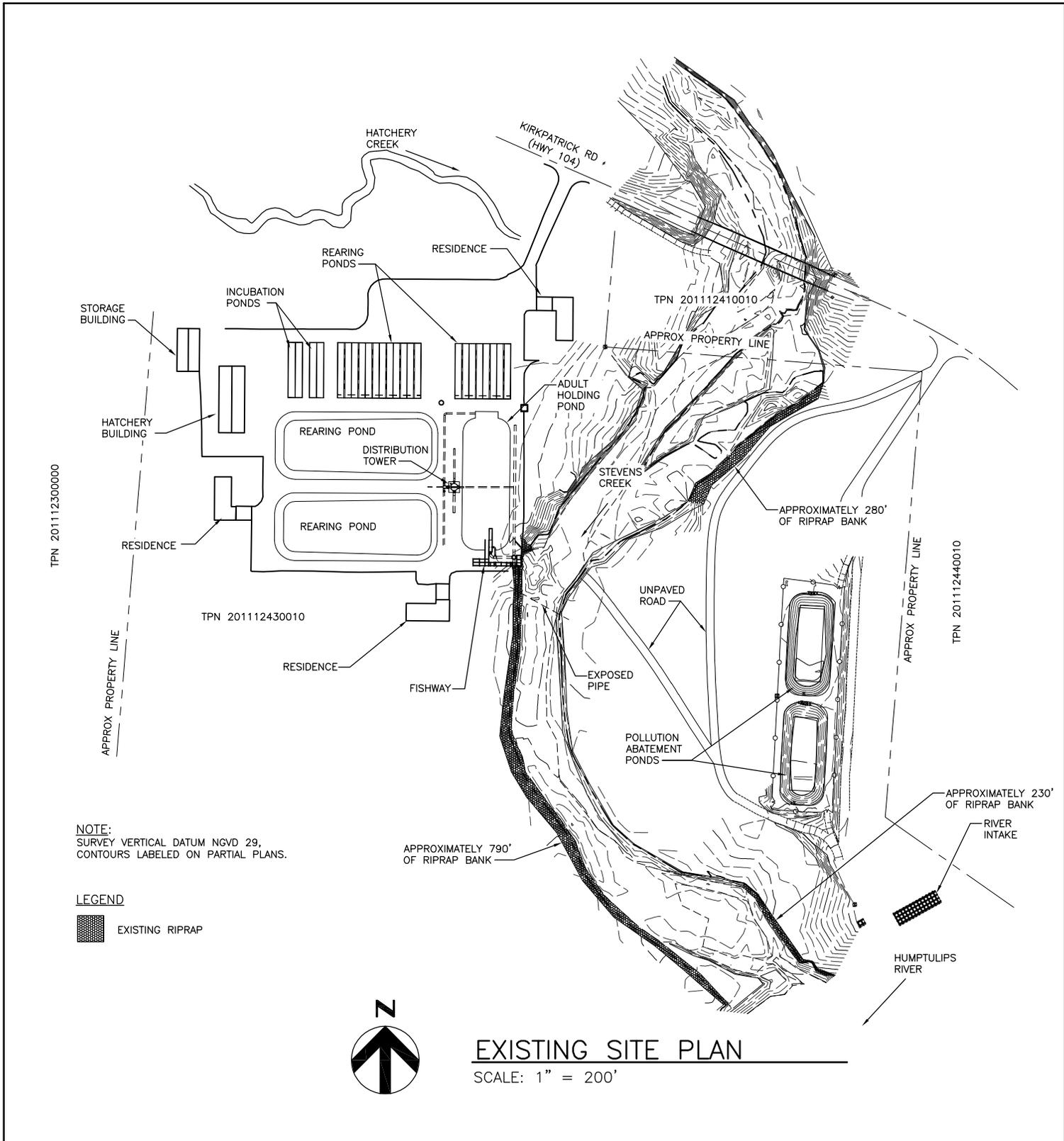


STATE MAP
NO SCALE



VICINITY MAP
NO SCALE
SEC 12, T20N, R11W

PURPOSE: HUMPTULIPS HATCHERY SCREENED INTAKE SUPPLY	WASHINGTON DEPT. of FISH & WILDLIFE 600 CAPITOL WAY N. OLYMPIA, WA 98501-1091	PROPOSED: STEVENS CREEK INTAKE
DATUM: <u>NGVD 29</u> ADJACENT PROPERTY OWNER: 1. <u>GRAYS HARBOR AUDUBON SOCIETY</u> 2. <u>GRAYS HARBOR COUNTY</u> ENG. PROJECT NO. _____	REFERENCE NO. _____ SITE: HUMPTULIPS FISH HATCHERY ADDRESS: 1704 KIRKPATRICK RD HUMPTULIPS, WA 98665	IN: <u>STEVENS CREEK</u> NEAR: <u>HUMPTULIPS</u> COUNTY OF: <u>GRAYS</u> STATE: <u>WA</u> PORTION OF: <u>SEC 12, T20, R11</u> DATE: <u>10/24/2013</u> SHEET <u>1</u> OF <u>10</u>



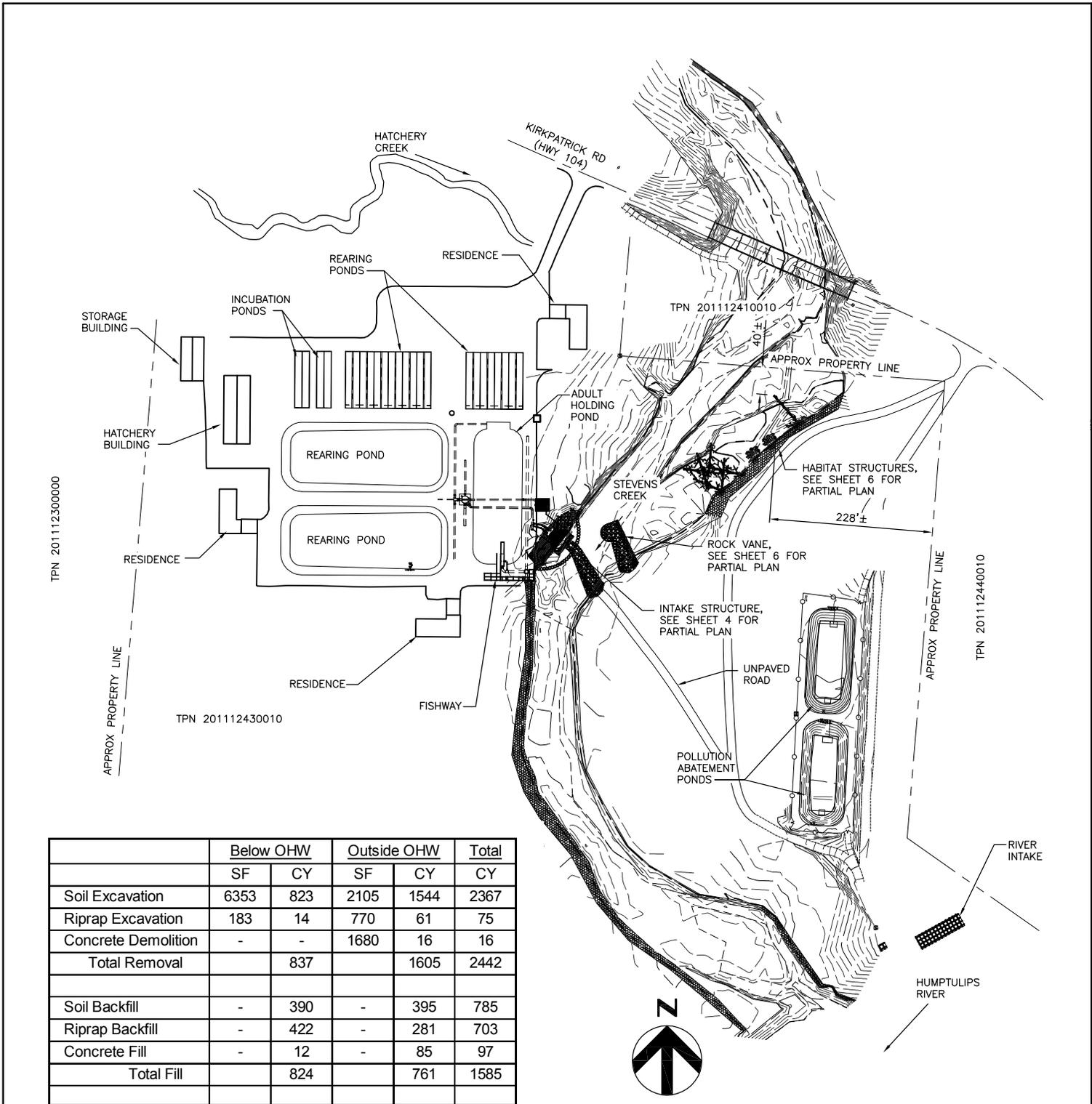
NOTE:
 SURVEY VERTICAL DATUM NGVD 29,
 CONTOURS LABELED ON PARTIAL PLANS.

LEGEND
 [Hatched Box] EXISTING RIPRAP



EXISTING SITE PLAN
 SCALE: 1" = 200'

REFERENCE NO. _____
APPLICANT: WASHINGTON DEPT. of FISH & WILDLIFE
HUMPTULIPS FISH HATCHERY STEVENS CREEK INTAKE
AT: <u>HUMPTULIPS, WA</u> , WASHINGTON
DATE: <u>10/24/2013</u> SHEET <u>2</u> OF <u>10</u>



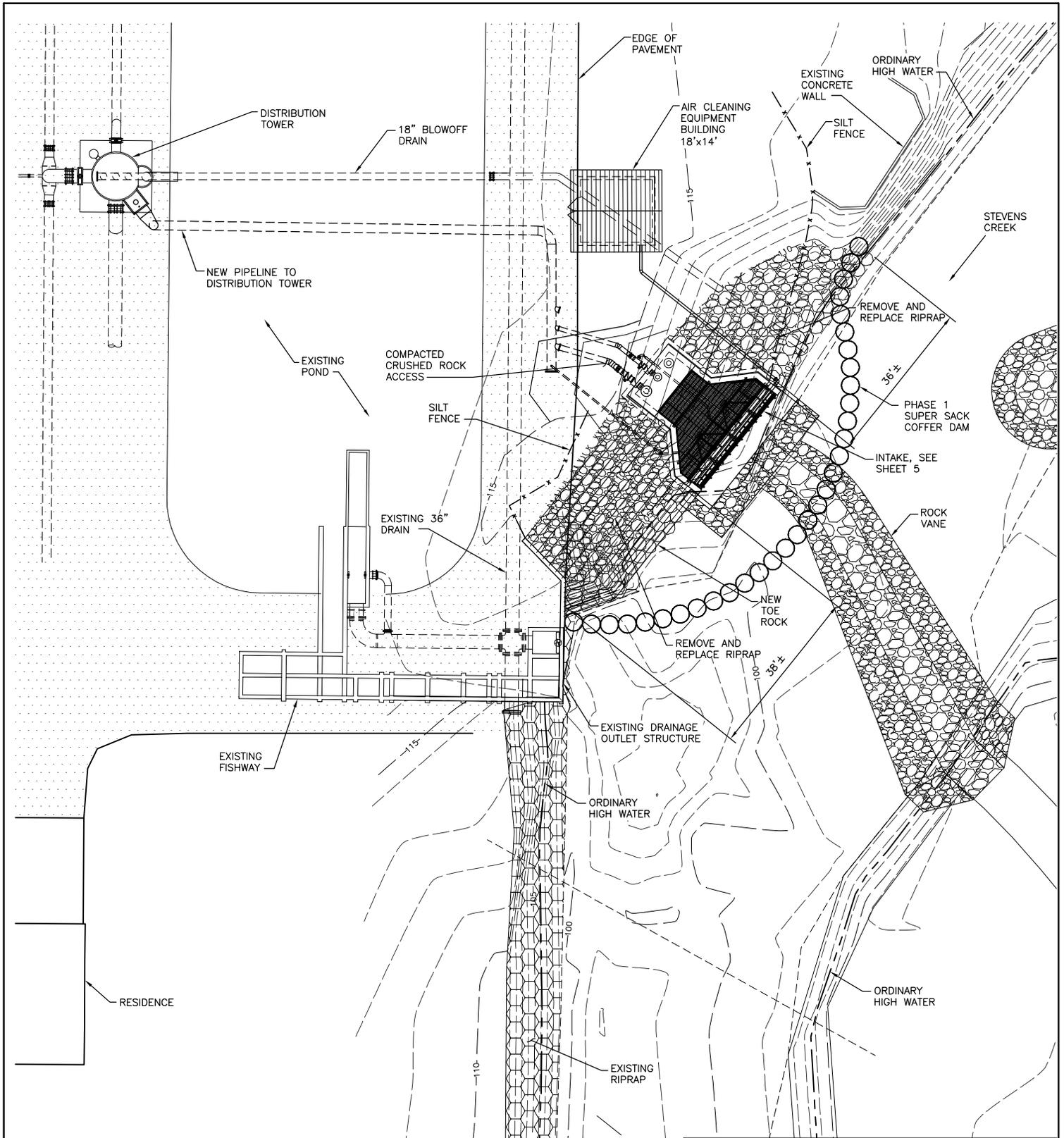
	Below OHW		Outside OHW		Total
	SF	CY	SF	CY	CY
Soil Excavation	6353	823	2105	1544	2367
Riprap Excavation	183	14	770	61	75
Concrete Demolition	-	-	1680	16	16
Total Removal		837		1605	2442
Soil Backfill	-	390	-	395	785
Riprap Backfill	-	422	-	281	703
Concrete Fill	-	12	-	85	97
Total Fill		824		761	1585

SITE PLAN

SCALE: 1" = 200'

REFERENCE NO. _____
APPLICANT: WASHINGTON DEPT. of FISH & WILDLIFE
HUMPTULIPS FISH HATCHERY STEVENS CREEK INTAKE
AT: <u>HUMPTULIPS, WA</u> , WASHINGTON
DATE: <u>10/24/2013</u> SHEET <u>3</u> OF <u>10</u>

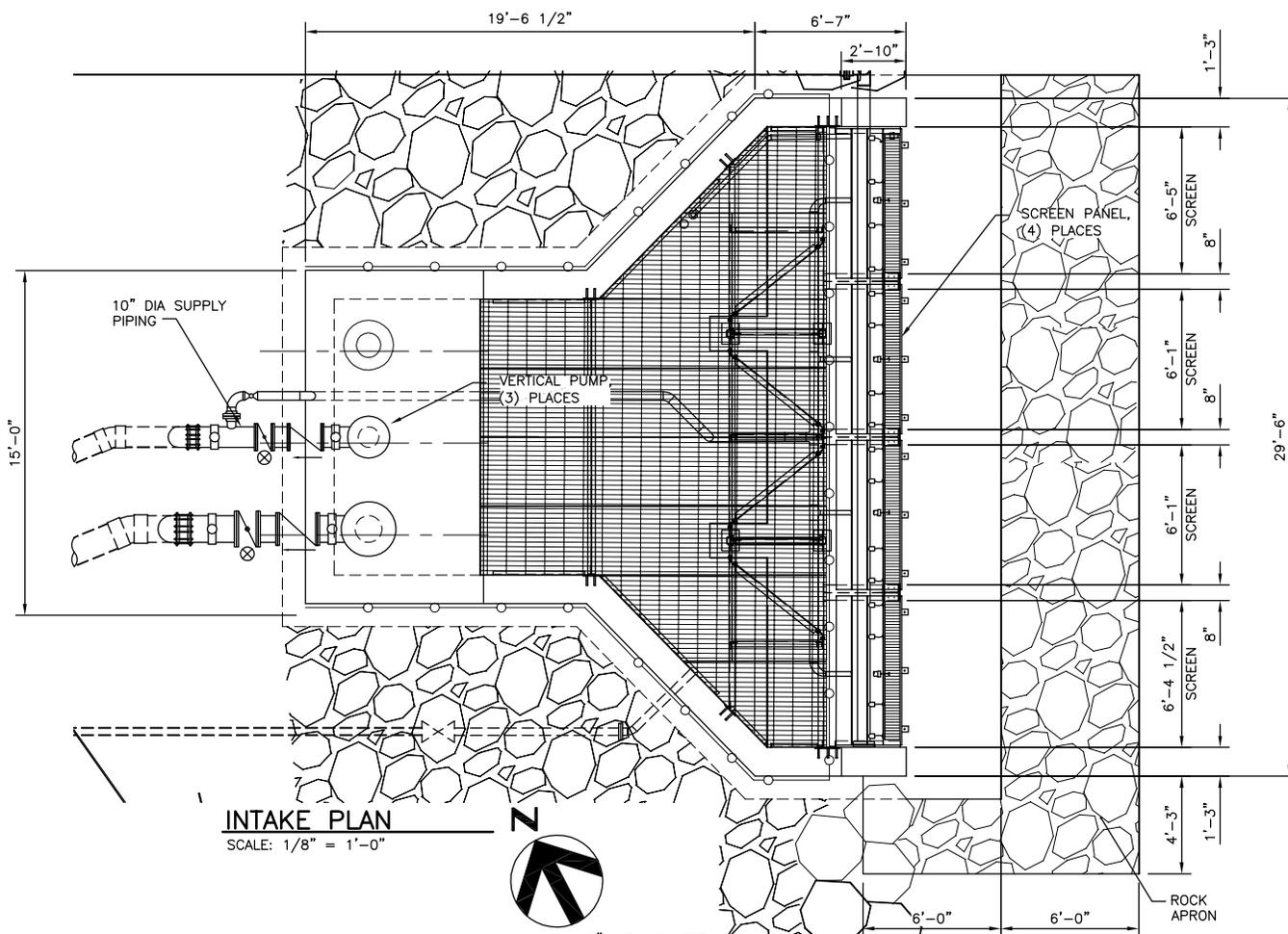
ENG. PROJECT NO. _____



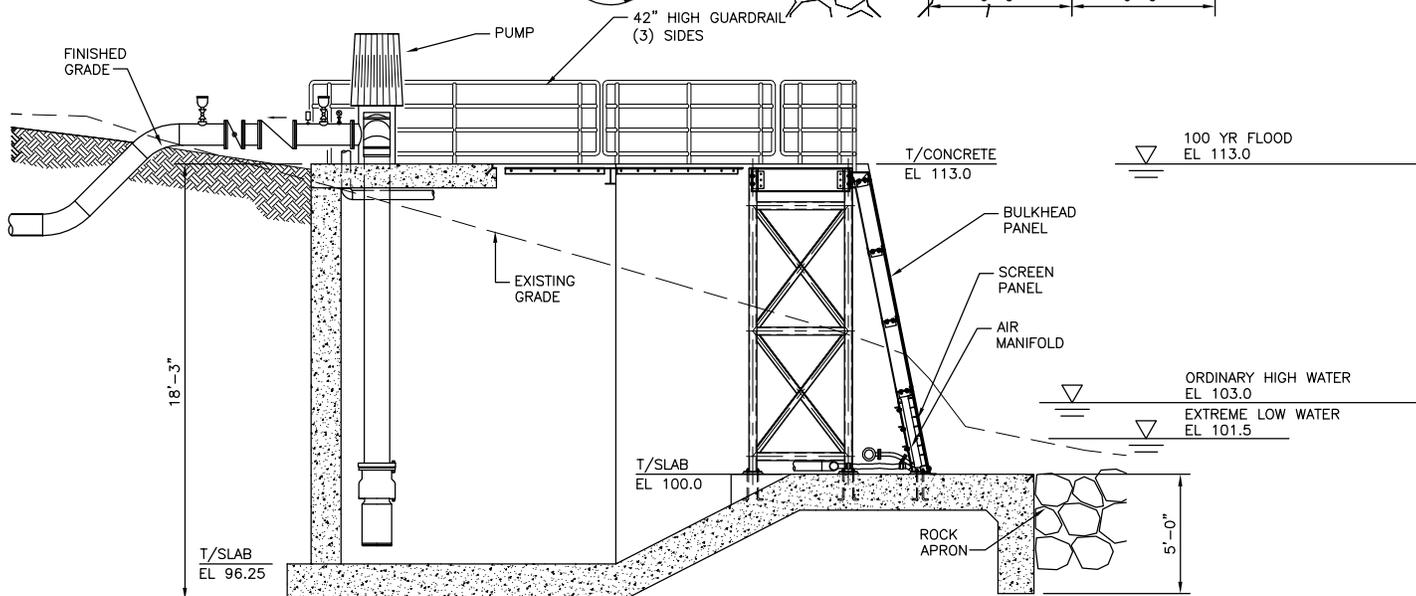
PARTIAL PLAN
SCALE: 1" = 30'

REFERENCE NO.	_____
APPLICANT:	WASHINGTON DEPT. of FISH & WILDLIFE
	HUMPTULIPS FISH HATCHERY
	STEVENS CREEK INTAKE
AT:	HUMPTULIPS, WA _____, WASHINGTON
DATE:	10/24/2013 SHEET 4 OF 10

ENG. PROJECT NO. _____



INTAKE PLAN
SCALE: 1/8" = 1'-0"



INTAKE SECTION
SCALE: 1/8" = 1'-0"

SCREEN CRITERIA

WITHDRAWAL AT EXTREME LOW WATER - 3.5 CFS
WITHDRAWAL AT ORDINARY HIGH WATER - 20.0 CFS

APPROACH VELOCITY - 0.4 FEET/SECOND

SCREEN SHALL BE TYPE 304 STAINLESS STEEL, 1.75 PROFILE BAR WITH BARS PERPENDICULAR TO FLOW

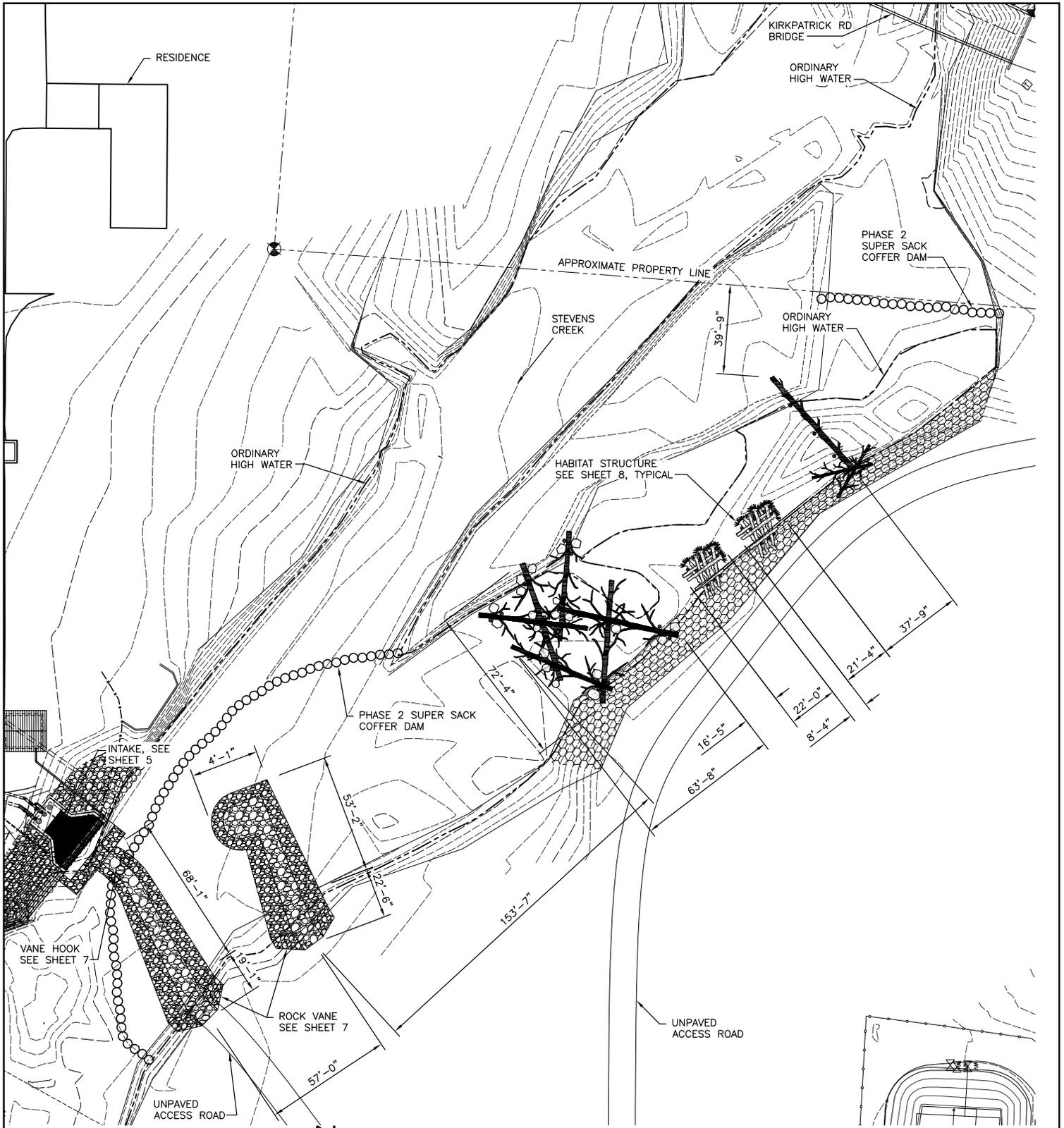
REFERENCE NO. _____

APPLICANT:
WASHINGTON DEPT. of FISH & WILDLIFE
HUMPTULIPS FISH HATCHERY
STEVENS CREEK INTAKE

AT: HUMPTULIPS, WA, WASHINGTON

DATE: 05/06/2013 SHEET 5 OF 10

ENG. PROJECT NO. _____



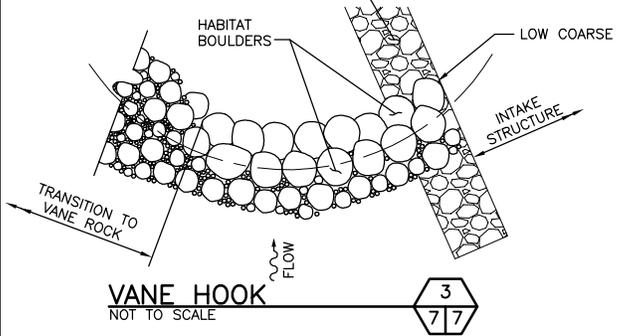
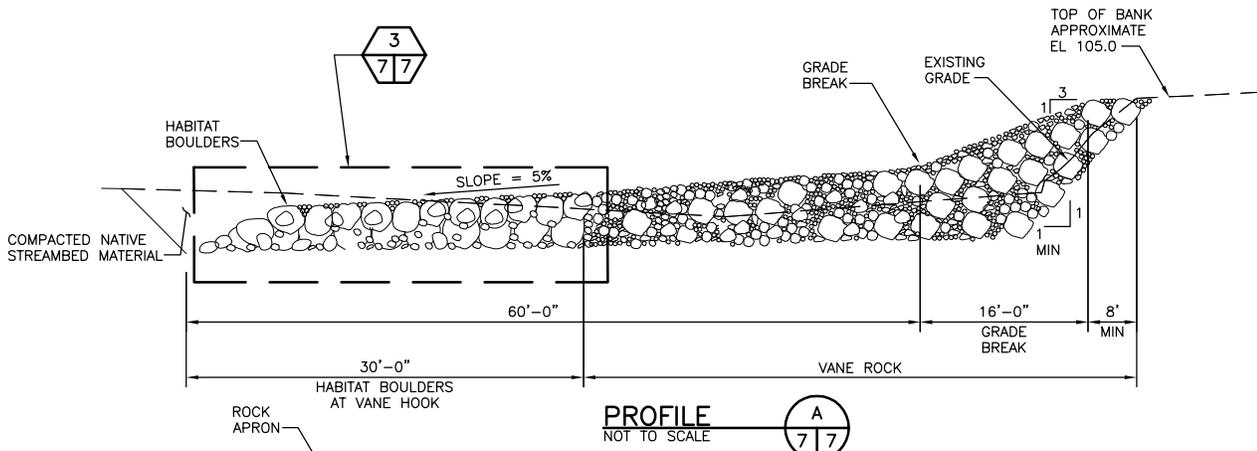
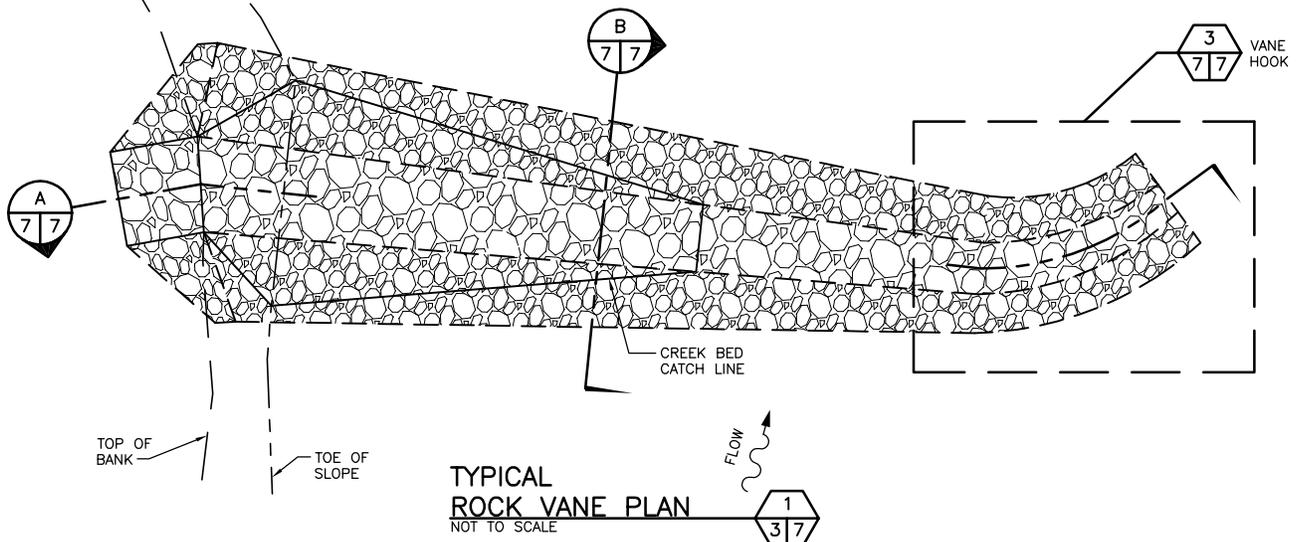
PARTIAL PLAN

SCALE: 1" = 60'

REFERENCE NO. _____
 APPLICANT:
 WASHINGTON DEPT. of FISH & WILDLIFE
HUMPTULIPS FISH HATCHERY
 STEVENS CREEK INTAKE

AT: HUMPTULIPS, WA, WASHINGTON
 DATE: 10/24/2013 SHEET 6 OF 10

ENG. PROJECT NO. _____

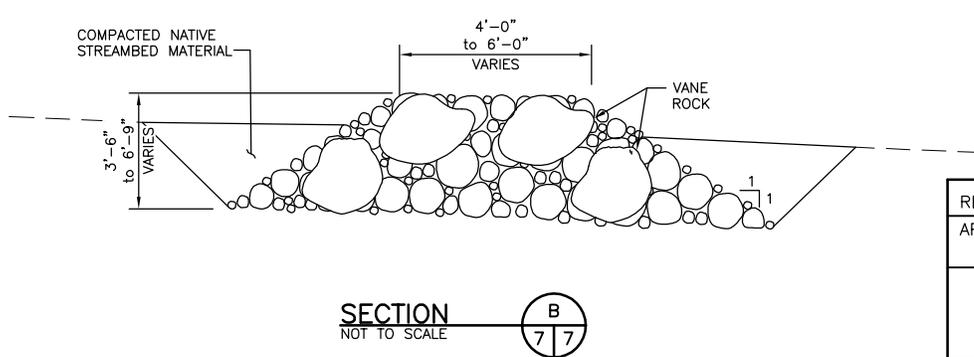


NOTE:
DRILL HOLES INTO HABITAT BOULDERS
AND EPOXY U-SHAPED #5 REBAR.

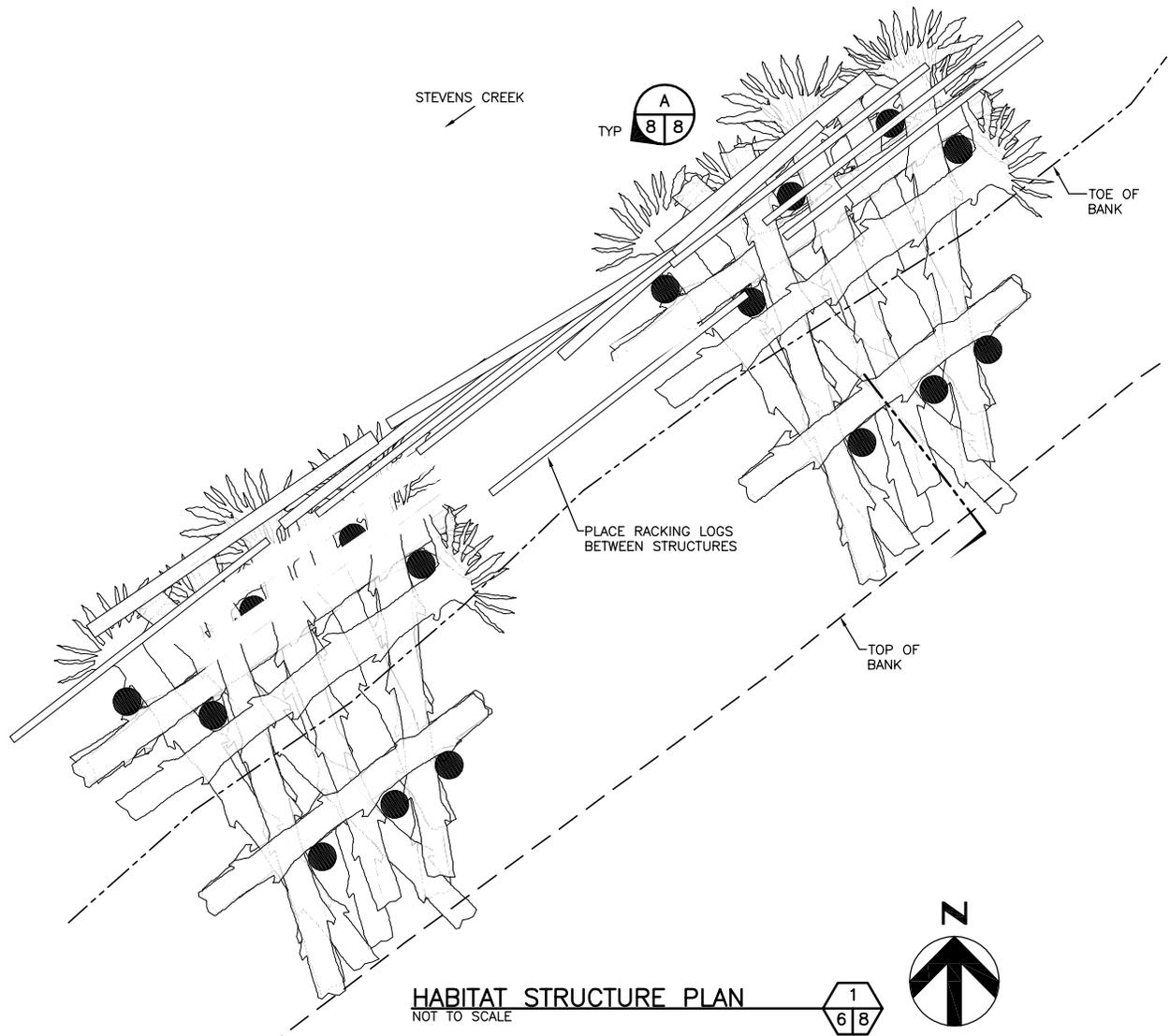
LEGEND

ROCK VANE		
MEDIAL DIAMETER	% PASSING	
28-INCH	100	
18-INCH	84	
10-INCH	50	
4-INCH	30	

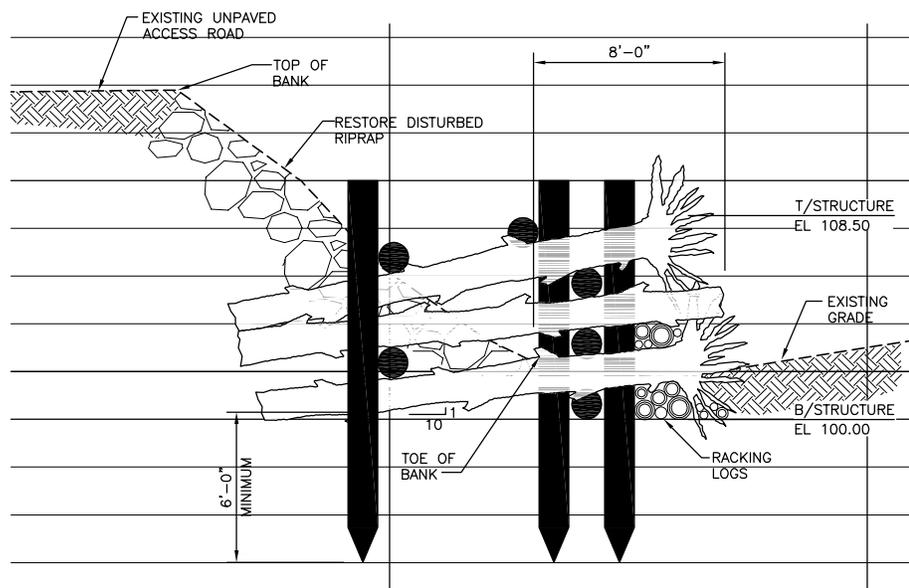
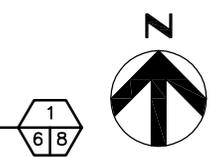
	HABITAT BOULDER	36-48 INCHES
---	TOP OF BANK	
- - -	TOE OF SLOPE	
- - - -	BURIED FEATURE	



REFERENCE NO.	_____
APPLICANT:	WASHINGTON DEPT. of FISH & WILDLIFE
	HUMPTULIPS FISH HATCHERY
	STEVENS CREEK INTAKE
AT:	HUMPTULIPS, WA _____, WASHINGTON
DATE:	05/06/2013 SHEET 7 OF 10



HABITAT STRUCTURE PLAN
NOT TO SCALE



TYPICAL SECTION
NOT TO SCALE

REFERENCE NO.	_____
APPLICANT:	WASHINGTON DEPT. of FISH & WILDLIFE
	HUMPTULIPS FISH HATCHERY
	STEVENS CREEK INTAKE
AT:	HUMPTULIPS, WA _____, WASHINGTON
DATE:	10/24/2013 SHEET 8 OF 10

MATERIALS:

A. ROCK VANES:

1. VANE ROCK SHALL CONSIST OF A WELL GRADED MATRIX OF HARD, DURABLE, ANGULAR ROCK WITH A MINIMUM SPECIFIC GRAVITY OF 2.6 WHICH CONFORMS TO THE FOLLOWING GRADATION:

MEDIAL DIAMETER	% PASSING
28-INCH	100
18-INCH	84
10-INCH	50
4-INCH	30

B. HABITAT BOULDERS:

1. HABITAT BOULDERS SHALL CONSIST OF HARD, DURABLE ROUNDED TO SUB-ANGULAR STONE MEETING THE REQUIREMENTS OF 2012 WSDOT 9-03.11(4) FOR THE "FOUR-MAN" CLASSIFICATION. THE BREADTH AND THICKNESS OF ANY STONE SHALL NOT BE LESS THAN ONE-THIRD ITS LENGTH. THE MEDIAL DIAMETER OF ALL STONES SHALL RANGE FROM 36 TO 48 INCHES.

C. ROOT WADS AND LOGS:

1. TREES USED AS ROOT WADS, LOGS, AND PILINGS MUST BE SOUND, FREE OF CRACKS AND SPLITS AND FREE FROM SIGNIFICANT DECAY. EXISTING TREES TO BE USED AS ROOT WADS AND FOOTER LOGS MAY BE IDENTIFIED BY THE CONTRACTOR AND WDFW AND MARKED FOR SUCH USE. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADDITIONAL MATERIALS, IF SUCH ROOT WADS AND FOOTER LOGS ARE NOT AVAILABLE ON SITE AND ALREADY DESIGNATED FOR REMOVAL.
2. ROOT WADS SHALL HAVE A LENGTH OF TREE TRUNK WITH THE ROOT MASS ATTACHED. THE ROOT MASS SHOULD BE OF SUBSTANTIAL SIZE AND A MIN OF 30 FEET OF THE TRUNK MUST BE ATTACHED TO PROVIDE FOR ADEQUATE ANCHORING. THE ROOT MASS SHOULD EXCEED FOUR FEET IN DIAMETER. IN SOME INSTANCES, MULTIPLE ROOT WADS CAN BE INSTALLED TOGETHER TO PROVIDE THE NECESSARY MASS. ALL HABITAT LOGS AND ROOT WAD LOGS SHALL HAVE A DIAMETER GREATER THAN TWENTY-FOUR INCHES (24").
3. PILINGS SHALL BE A MIN OF 12 FEET LONG, HAVE A DIAMETER OF 12 TO 18 INCHES, AND BE FREE OF BRANCHES. ONE END IS TRIMMED TO A SHARP POINT.
4. TREES USED FOR ROOT WADS, HABITAT LOGS, AND PILINGS CAN CONSIST OF ANY SPECIES THAT PROVIDES A DENSE, FLATTENED ROOT MASS. TREES WITH PRIMARILY A DEEP TAP ROOT ARE NOT GENERALLY SUITABLE FOR ROOT WADS. COTTONWOODS SHALL NOT BE USED.

CONSTRUCTION METHODS:

A. PREPARATION:

1. CONTRACTOR SHALL COORDINATE WITH WDFW PRIOR TO THE REMOVAL OF ANY TREES OR CLEARING OF ANY BRUSH.
2. REMOVE TREES, DEBRIS, ORGANIC MATERIAL, DELETERIOUS MATTER AND RIP RAP FROM PROJECT AREA AS NECESSARY TO INSTALL ROCK VANE AND ROOT WAD STRUCTURES.
3. OVER-EXCAVATE STREAMBED AND BANK MATERIAL AS REQUIRED TO RECEIVE ROCK AND ROOT WAD STRUCTURES.
4. STOCKPILE ALL RE-USABLE MATERIALS AT THE DIRECTION OF WDFW. CONTRACTOR SHALL SALVAGE ALL ROCKS FOR REUSE WHICH MEET SPECIFICATIONS FOR HEAVY LOOSE RIP RAP AND ALL BOULDERS. REMOVE UNUSABLE MATERIAL COMPLETELY FROM SITE.

B. ROCK ANCHORS:

1. WHERE INDICATED ON THE PLANS, SECURE LOGS TO THREE-MAN HABITAT BOULDERS AS FOLLOWS:
 - a. PLACE TWO HABITAT BOULDERS ADJACENT TO THE ROOT WAD JUST UPSTREAM OF THE ROOT MASS.
 - b. DRILL HOLES IN THE HABITAT BOULDERS WITH A GAS OR PNEUMATIC DRILL TO A MIN. DEPTH OF 6 INCHES. HOLES MUST BE CLEAN OF ALL DUST, DEBRIS, OIL AND SOAP AFTER DRILLING.
 - c. INSERT U-SHAPED #5 REBAR AND EPOXY INTO HOLES SEVERAL TIMES TO DISPENSE AND COMPLETELY MIX EPOXY AND ELIMINATE AIR POCKETS.
 - d. EPOXY RESIN SYSTEMS SHALL MEET THE REQUIREMENTS OF ASTM C881, TYPE IV GRADE 3. TEST STRENGTH OF BOND AFTER MINIMUM CURE TIME RECOMMENDED BY THE EPOXY MANUFACTURER.

C. LOG ANCHORS:

1. WHERE INDICATED ON THE PLANS, SECURE LOGS TOGETHER AS FOLLOWS:
 - a. PROVIDE THREE WRAPS OF 5/8" DIAMETER GALVANIZED, NON-GREASED WIRE ROPE AROUND LOGS. SECURE WIRE ROPE WITH THREE SS WIRE CLAMPS AND TRIM TAG ENDS TO 12 INCHES.

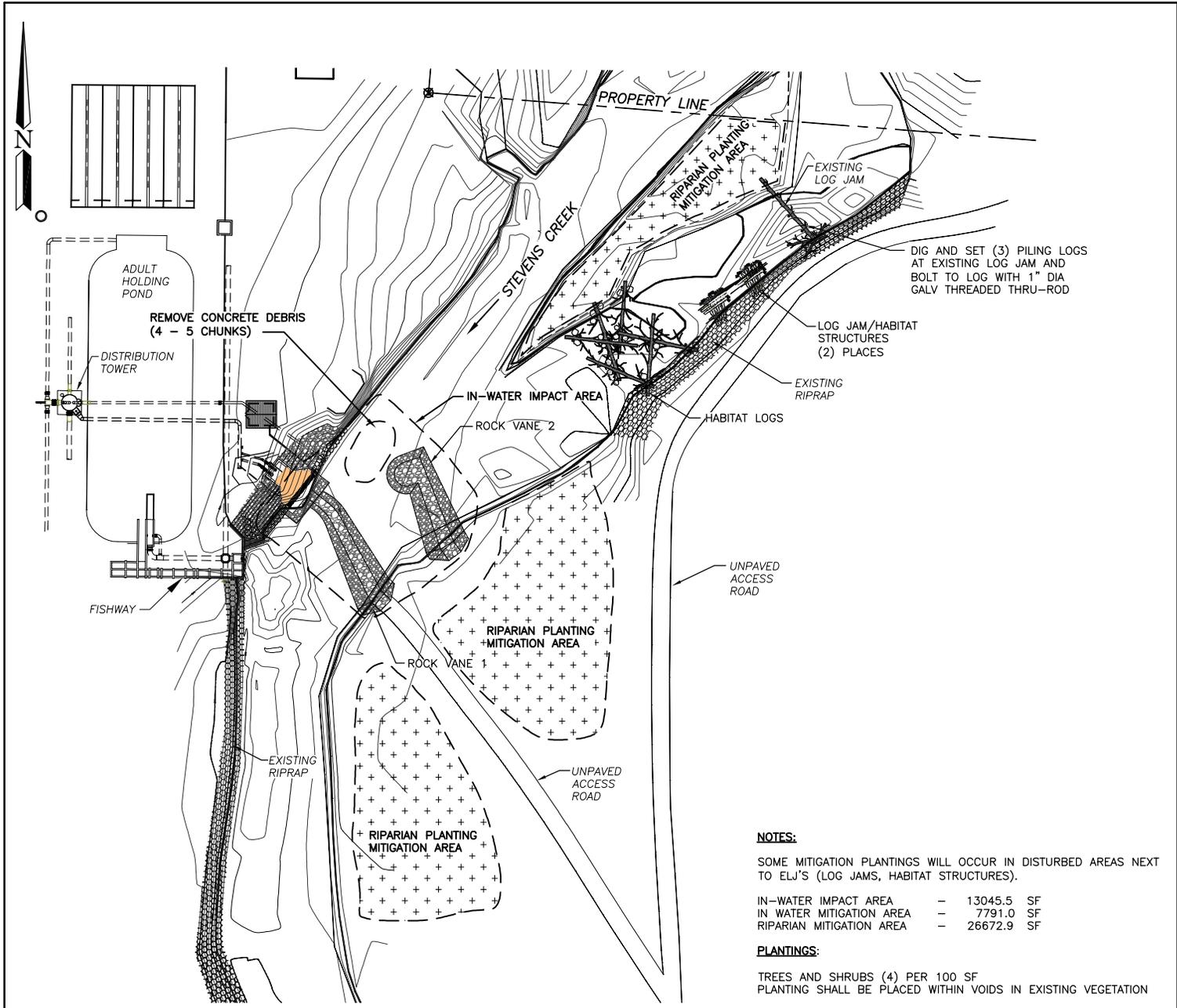
D. ROCK VANES:

1. EXCAVATE STREAMBED AND STREAM BANK RECEIVING HABITAT LOGS, HABITAT BOULDERS, AND ROCK MATRIX TO REQUIRED SUBGRADE.
2. INSTALL THREE HABITAT LOGS UNDER THE DIRECTION OF ENGINEER AND ANCHOR THEM IN PLACE WITH THREE ROCK ANCHORS.
3. PLACE VANE ROCK MATRIX TO LIMITS SHOWN ON THE DRAWINGS.
4. HAND PLACE ROCKS AS NECESSARY TO OBTAIN A WELL-GRADED DISTRIBUTION OF MATERIAL. DO NOT PLACE STONE BY ANY METHOD THAT WOULD CAUSE PARTICLE SIZE SEGREGATION.

E. LOG HABITAT STRUCTURES:

1. MODULAR ROOT WAD HABITAT STRUCTURES SHALL BE COMPOSED OF THREE TREES WITH INTACT ROOT WADS, ONE BOULDER ANCHOR, THREE PILINGS, WIRE ROPE AND MISCELLANEOUS HARDWARE.
2. BEGINNING FROM THE DOWNSTREAM END OF THE PROJECT AREA, CREATE AN EXCAVATION INTO THE EXISTING STREAM BANK TO BURY A 12 FT SECTION OF EACH LOG HABITAT STRUCTURE.
3. EXCAVATE TRENCHES INTO THE STREAMBED AND BANK AT AN ANGLE AND LENGTH THAT WILL ACCOMMODATE THE ROOT MASSES OF EACH STRUCTURE.
4. TO THE EXTENT POSSIBLE, PLACE THE ROOT WADS WHERE THE MAJORITY OF THE ROOT MASS IS BELOW THE BANK FULL ELEVATION BUT ARE EXPOSED ABOVE THE EXISTING STREAMBED BY AT LEAST $\frac{1}{2}$ THE ROOT WAD DIAMETER.
5. ONE OF THE TWO ROOT WADS IS PLACED ON TOP OF THE DOWNSTREAM ADJACENT ROOT WAD HABITAT STRUCTURE.
6. AFTER THE STRUCTURE IS PLACED IN THE CORRECT POSITION, PLACE A BOULDER ANCHOR ON THE UPSTREAM ORIENTED ROOT WAD MASS WHICH EXTENDS FURTHEST INTO THE STREAM.
7. PLACE UP TO THREE ADDITIONAL PILING ANCHORS AS DIRECTED BY THE ENGINEER. IF SOIL CONDITIONS DO NOT ALLOW FOR THE DRIVING OF WOODEN PILES TO A MINIMUM DEPTH OF 5 FEET, ONE ADDITIONAL ROCK ANCHOR MAY BE USED.
8. AFTER INSTALLATION OF EACH HABITAT STRUCTURE, LOW AREAS, DIVOTS, INTERSTITIAL SPACES, AND BANKS ARE FILLED WITH NATIVE STREAMBED AND STREAM BANK MATERIALS AND RESTORED BACK TO EXISTING GRADE.
11. ALL RESTORED NATIVE MATERIALS SHALL BE MECHANICALLY COMPACTED WITH BLOWS FROM AN EXCAVATOR BUCKET AND/OR AN EXCAVATOR-MOUNTED VIBRATORY PLATE AS DIRECTED BY WDFW.
12. AREAS OF EXISTING RIP RAP SHALL BE RESTORED WITH A TWO TO THREE FOOT LAYER OF RIP RAP SALVAGED DURING INITIAL SITE PREPARATION.

REFERENCE NO. _____
APPLICANT: WASHINGTON DEPT. of FISH & WILDLIFE
HUMPTULIPS FISH HATCHERY STEVENS CREEK INTAKE
AT: HUMPTULIPS, WA _____, WASHINGTON
DATE: 10/24/2013 SHEET 9 OF 10



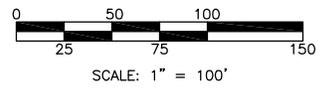
DIG AND SET (3) PILING LOGS AT EXISTING LOG JAM AND BOLT TO LOG WITH 1" DIA GALV THREADED THRU-ROD

NOTES:
 SOME MITIGATION PLANTINGS WILL OCCUR IN DISTURBED AREAS NEXT TO ELJ'S (LOG JAMS, HABITAT STRUCTURES).

IN-WATER IMPACT AREA - 13045.5 SF
 IN WATER MITIGATION AREA - 7791.0 SF
 RIPARIAN MITIGATION AREA - 26672.9 SF

PLANTINGS:
 TREES AND SHRUBS (4) PER 100 SF
 PLANTING SHALL BE PLACED WITHIN VOIDS IN EXISTING VEGETATION

MITIGATION SITE PLAN
 SCALE: 1" = 100'



PLANTING SCHEDULE			
RIPARIAN MITIGATION AREAS COMBINED			
COMMON NAME	SCIENTIFIC NAME	QUANTITY	SIZE
TREES			
SITKA SPRUCE	<i>Picea sitchensis</i>	100	2 GAL
DOUGLAS FIR	<i>Pseudotsuga menziesii</i>	100	2 GAL
RED ALDER	<i>Alnus rubra</i>	100	1 GAL
SHRUBS			
RED-OSIER DOGWOOD	<i>Cornus stolonifera</i>	100	1 GAL
PACIFIC NINEBARK	<i>Physocarpus capitatus</i>	100	1 GAL
WILLOW SPECIES	<i>Salix spp.</i>	370	STAKES
RED HUCKLEBERRY	<i>Vaccinium parvifolium</i>	100	1 GAL
OCEAN SPRAY	<i>Holodiscus discolor</i>	100	1 GAL

REFERENCE NUMBER:
 APPLICANT NAME:
 WASHINGTON DEPT. of FISH & WILDLIFE
 PROPOSED PROJECT:
 MITIGATION SITE PLAN AND PLANTINGS
 LOCATION: HUMPTULIPS HATCHERY
 SHEET 10 OF 10 DATE: 10/04/2013