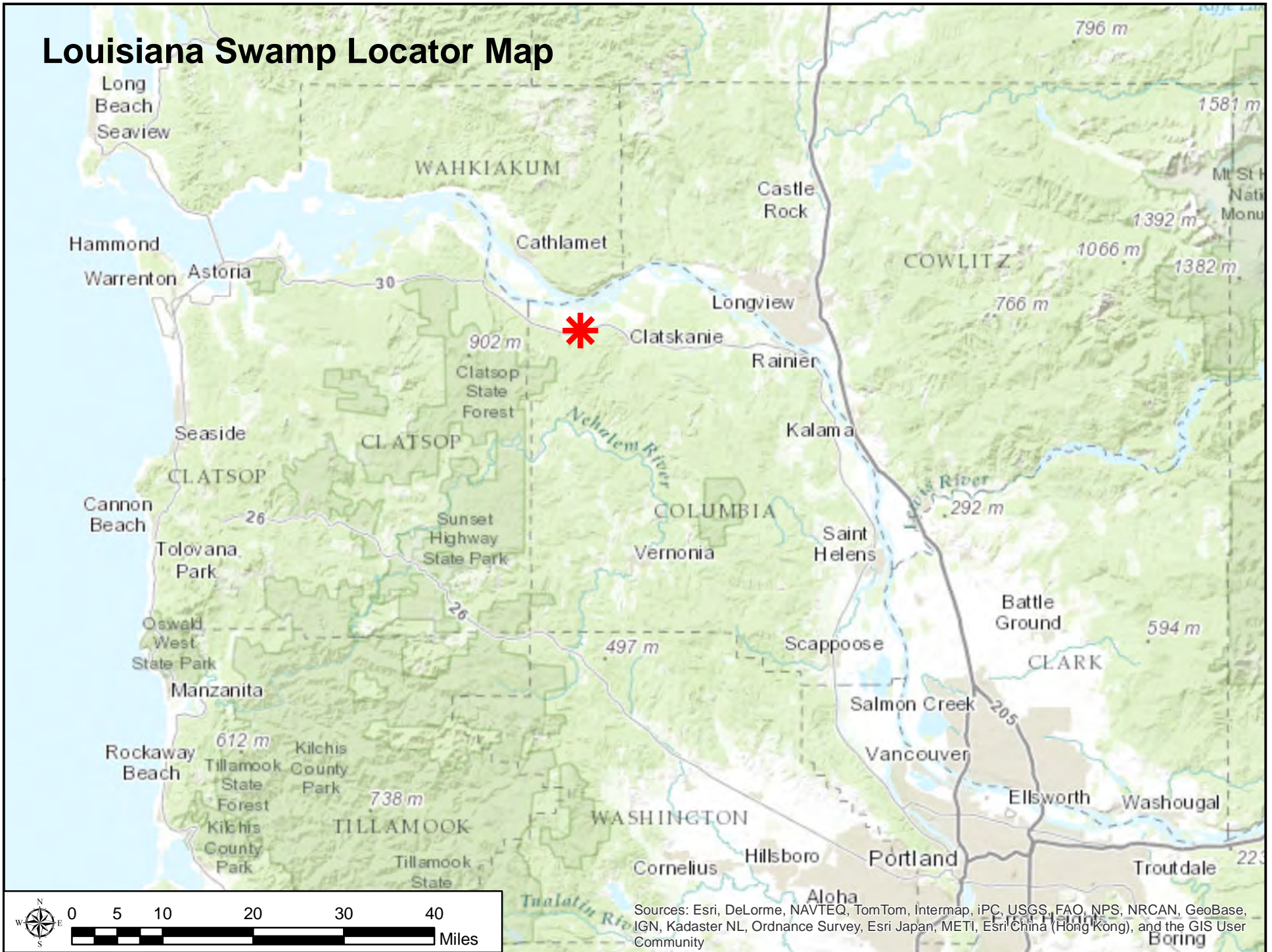


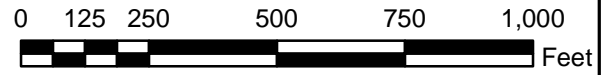
Louisiana Swamp Locator Map



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community



**Louisiana Swamp Tidal Reconnection
Lower Columbia River Watershed Council**

Map by: BB on 02/02/12

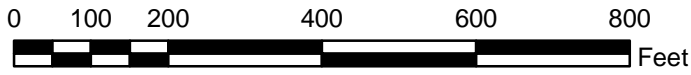


OR State Plane North NAD 88

Legend








-  Project Boundaries
-  Creeks and Streams



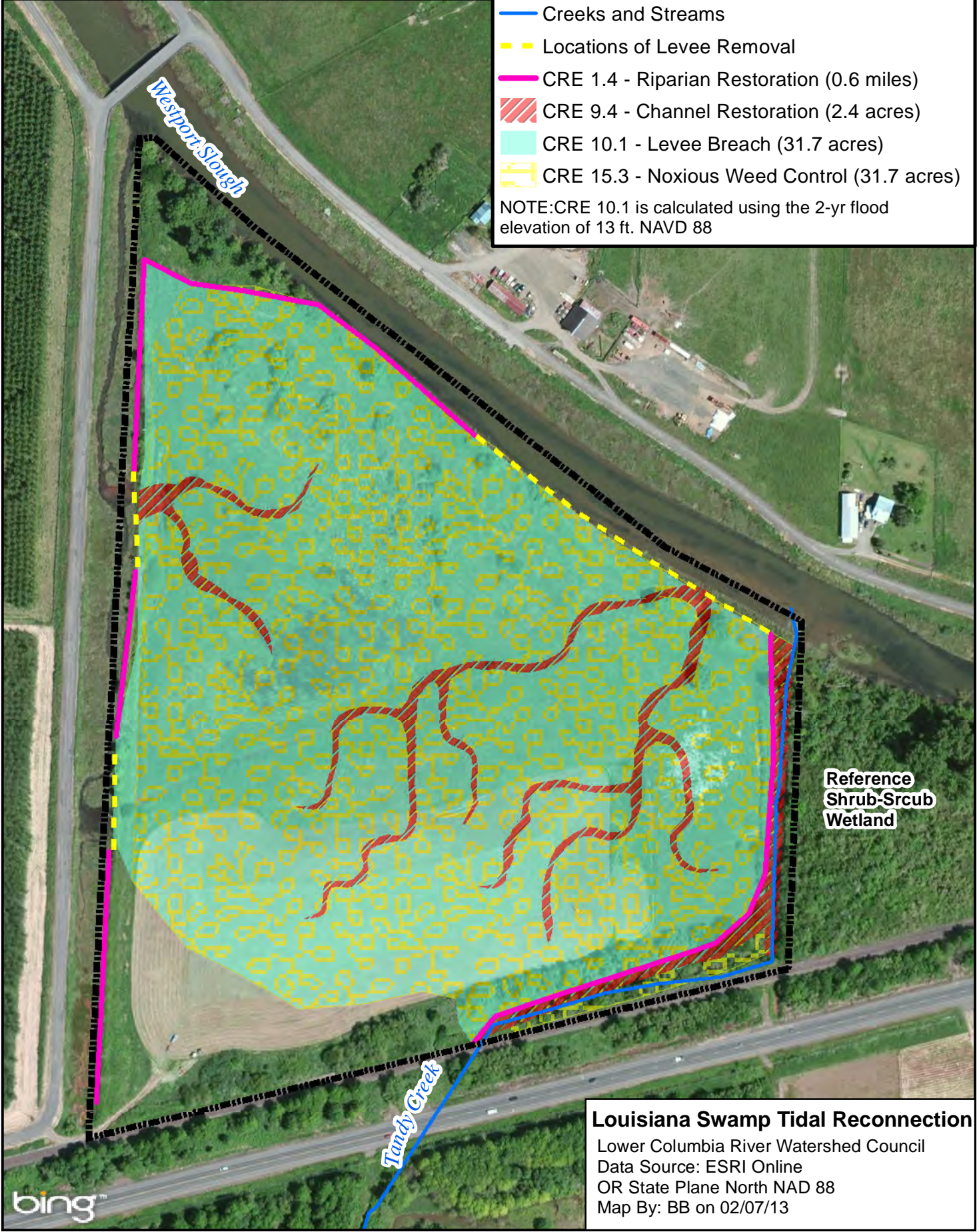


Legend



-  Louisiana Swamp Project Area (35-acres)
-  Creeks and Streams
-  Locations of Levee Removal
-  CRE 1.4 - Riparian Restoration (0.6 miles)
-  CRE 9.4 - Channel Restoration (2.4 acres)
-  CRE 10.1 - Levee Breach (31.7 acres)
-  CRE 15.3 - Noxious Weed Control (31.7 acres)

NOTE: CRE 10.1 is calculated using the 2-yr flood elevation of 13 ft. NAVD 88

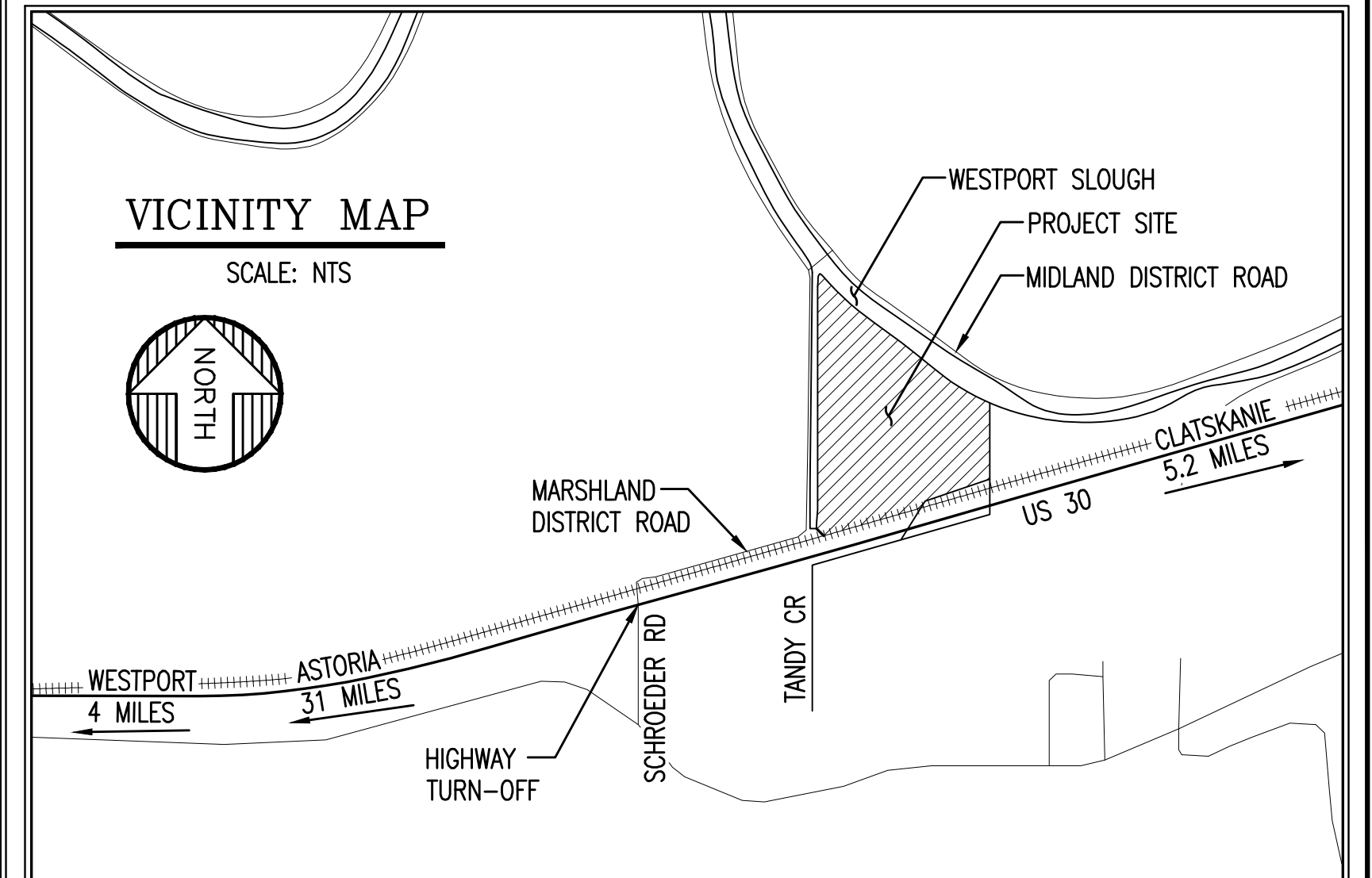


Louisiana Swamp Tidal Reconnection
 Lower Columbia River Watershed Council
 Data Source: ESRI Online
 OR State Plane North NAD 88
 Map By: BB on 02/07/13



LA SWAMP TIDAL RECONNECTION (DRAFT)

DECEMBER 2012



LEGEND

E.O.G.	EDGE OF GRAVEL
(E)	EXISTING
(N)	NEW
⊙	WATER PROBE
---	EXISTING CULVERT
---	EXISTING MAJOR CONTOURS
---	EXISTING MINOR CONTOURS

PROJECT TEAM

LOWER COLUMBIA ESTUARY PARTNERSHIP
811 SW NAITO PARKWAY, SUITE 410
PORTLAND, OR 97204
PHONE: (503) 915-0220
FAX: (503) 226-1580
CONTACT: BILL BENNETT, COORDINATOR
bennett@lcrep.org

LOWER COLUMBIA RIVER WATERSHED COUNCIL
PHONE: (503) 728-2945
CELL: (503) 709-9652
CONTACT: MARGARET MAGRUDER, COORDINATOR
margruder@clatskanie.com

DRAWING INDEX

DRAWING NUMBER	DESCRIPTION
D-1727-1000-01	OVERALL SITE PLAN, VICINITY MAP & DRAWING INDEX
D-1727-1000-02	EXISTING CONDITIONS PLAN
D-1727-1000-03	PROPOSED IMPLEMENTATION PLAN, SEQUENCE & NOTES
D-1727-1000-04	GRADING PLAN & LEGEND
D-1727-1000-05	PLANTING & COMMUNITY PLANS, SCHEDULE & LEGEND
D-1727-1000-06	HABITAT ENHANCEMENT PLAN & LEGEND
D-1727-1000-07	SECTIONS
D-1727-1000-08	SECTIONS
D-1727-1000-09	CHANNEL PROFILES
D-1727-1000-10	DETAILS & NOTES
D-1727-3000-01	EROSION AND SEDIMENT CONTROL COVER SHEET
D-1727-3000-02	CLEARING AND DEMOLITION ESC PLAN
D-1727-3000-03	GRADING/STREET/UTILITY CONSTRUCTION ESC PLAN
D-1727-3000-04	ESC DETAILS

NOTE:
3000 SERIES SHEETS SPECIFICALLY ADDRESS STATE OF OREGON DEQ 1200C PERMIT REQUIREMENTS

COLUMBIA SOIL & WATER CONSERVATION DISTRICT
35285 MILLARD ROAD
ST. HELENS, OR 97051
PHONE: (503) 397-4555
CONTACT: TYLER JOKI
tyler.joki@or.nacdn.net

U.S. FISH & WILDLIFE SERVICE
911 NE 11TH AVE #1
PORTLAND, OR 97232
PHONE: (503) 231-6121
CONTACT: AMY HORSTMAN
amy_horstman@fws.gov

GREENWOOD RESOURCES, INC.
1500 SW 1ST AVE STE. 940
PORTLAND, OR 97201
PHONE: (971) 533-7065
CONTACT: RICK STONEX
rick.stonex@gwrglobal.com

LOWER COLUMBIA ENGINEERING
36200 PITTSBURG ROAD, SUITE E
ST. HELENS, OR 97051
PHONE: (503) 366-0399
FAX: (503) 366-0449
CONTACT: ANDREW NIEMI, P.E.
andrew@lowercolumbiaenr.com

KLS SURVEYING
1224 E. ALDER ST.
VERNONIA, OR 97064
PHONE/FAX: (503) 429-6115
CONTACT: DON WALLACE, PLS
dwallace@msn.com

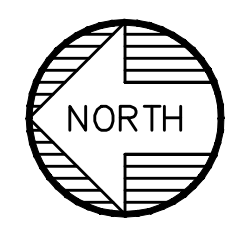
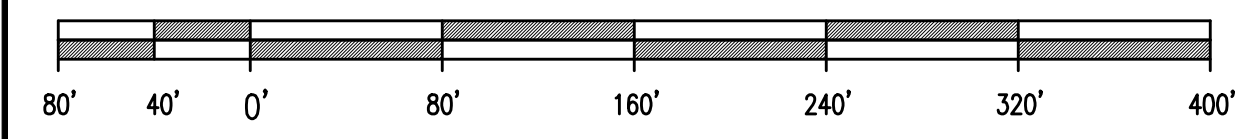
UTILITY LOCATES
(48 HOUR NOTICE PRIOR TO EXCAVATION)

OREGON LAW REQUIRES YOU TO FOLLOW THE RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH 952-001-0100. (YOU MAY OBTAIN COPIES OF THE RULES FROM THE CENTER BY CALLING 503 246 1987.)

ONE CALL SYSTEM.....1 800 332 2344

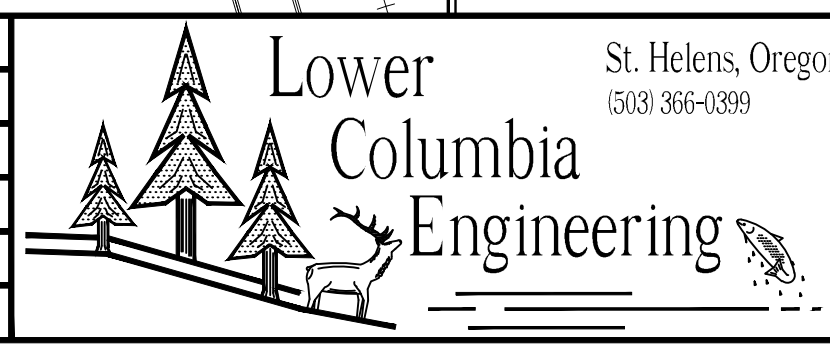
ON LINE <http://www.callbeforeyoudig.org/>

DATE: 12/19/12
ISSUED
FOR APPROVAL

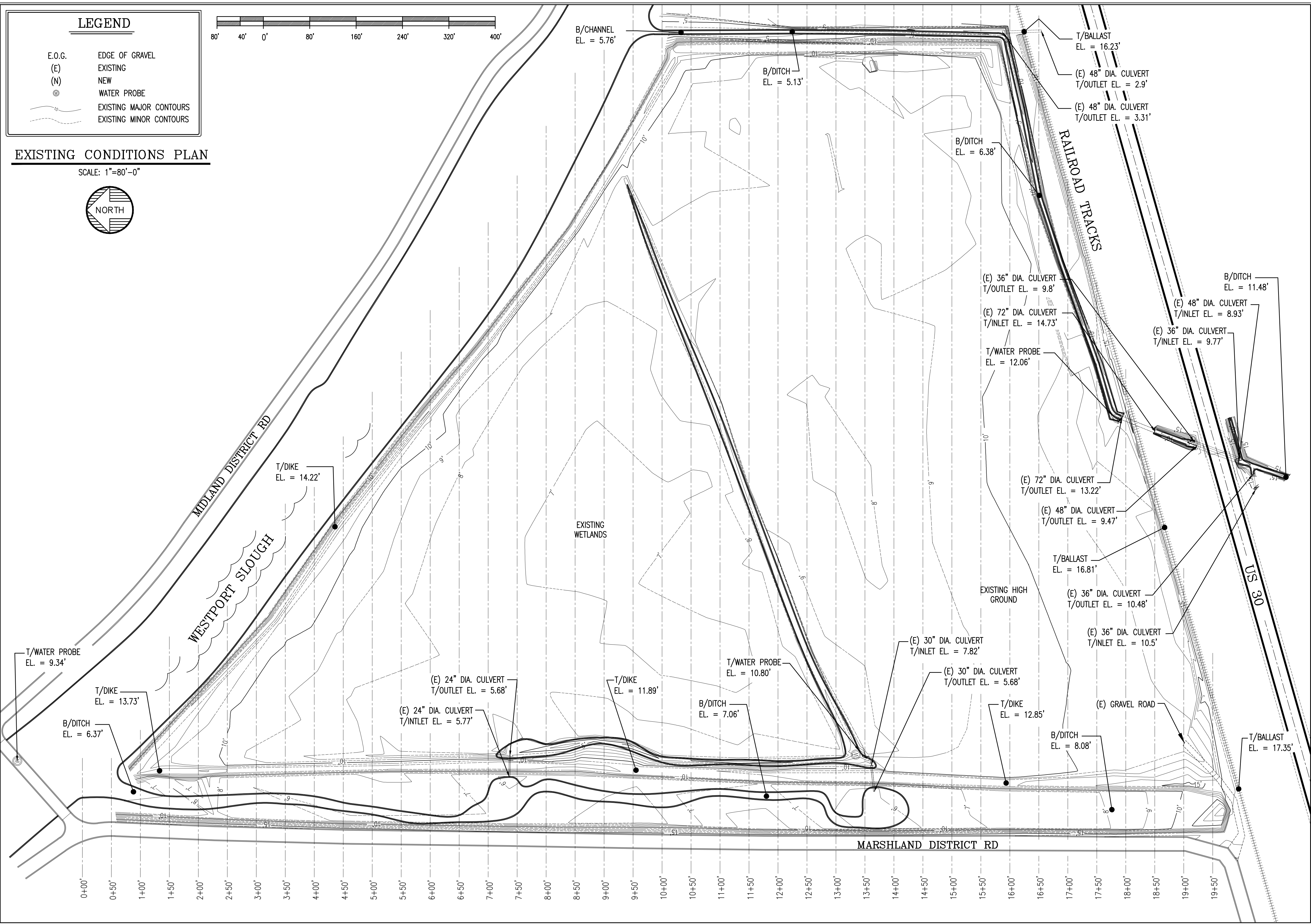


OVERALL SITE PLAN
SCALE: 1"=80'-0"

REV.	REVISION RECORD	DATE

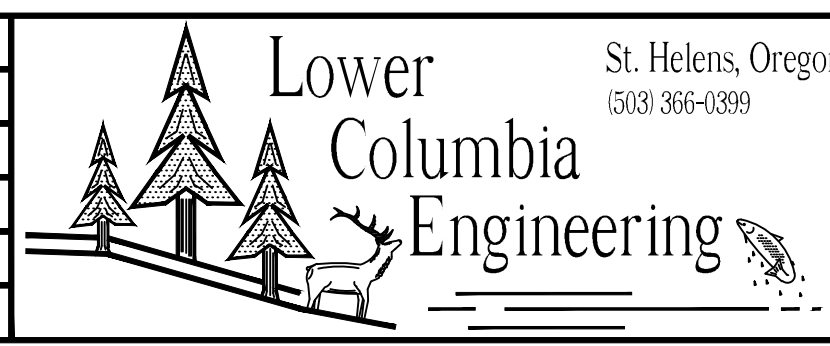


PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		OVERALL SITE PLAN, VICINITY MAP, DRAWING INDEX
SCALE	NOTED	DATE 12/04/12 DWG. NO. D-1727-1000-01



DATE: 12/19/12
ISSUED
FOR APPROVAL

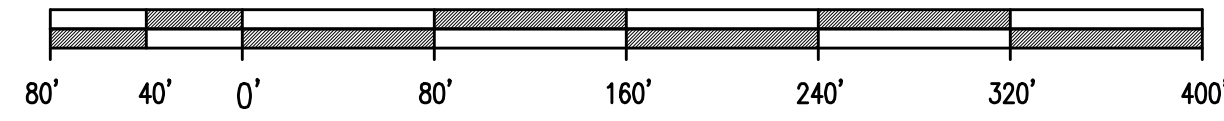
REV.	REVISION RECORD	DATE



PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		EXISTING CONDITIONS PLAN
SCALE	NOTED	DATE 12/04/12 DWG. NO. D-1727-1000-02

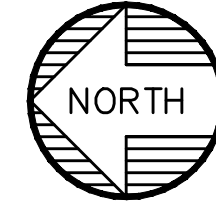
LEGEND

- E.O.G. EDGE OF GRAVEL
- (E) EXISTING
- (N) NEW
- ⊙ WATER PROBE
- EXISTING MAJOR CONTOURS
- - - EXISTING MINOR CONTOURS
- MAJOR CONTOURS
- - - MINOR CONTOURS



PROPOSED IMPLEMENTATION PLAN

SCALE: 1"=80'-0"



REMOVAL/TREATMENT PLAN FOR NON-NATIVE INVASIVE SPECIES

1. THE AREA TO BE TREATED SHALL BE MOWED OR MECHANICALLY CUT TO THE GROUND PRECEDING HERBICIDE TREATMENT DURING MAY OR JUNE OF THE YEAR PRIOR TO IMPLEMENTATION.
2. ALLOW TO RESPRUT AND GROW TO APPROXIMATELY 18" TALL.
3. APPLY GARLON 3A HERBICIDE (OR EQUIVALENT APPROVED PRODUCT) PER MANUFACTURERS SPECIFICATIONS JUST PRIOR TO PLANTS DORMANT PERIOD DURING SEPTEMBER. MIXTURE SHALL BE 2.0% GARLON 3A AND .5% MODIFIED SEED OIL (MSO). WORK SHALL BE PERFORMED BY CERTIFIED APPLICATOR.
4. CONTRACTOR SHALL READ AND FOLLOW ALL PRODUCT LABELS AND APPLICATION INSTRUCTIONS FOR THE HERBICIDE USED.
5. LOWER COLUMBIA ENGINEERING IS NOT RESPONSIBLE FOR THE PROPER APPLICATION OF ANY HERBICIDAL PRODUCT.
6. DO NOT APPLY DIRECTLY TO FRESH WATER HABITATS.
7. TO AVOID RUN-OFF INTO ADJACENT STREAM DO NOT SPRAY BEFORE PERIODS OF HEAVY RAIN.
8. REPLANT NATIVE VEGETATION IN ORDER TO REOCCUPY THE AREA AS WELL AS TO PREVENT FURTHER INVASION BY HIMALAYAN BLACKBERRY OR OTHER INVASIVE SPECIES.
9. PERFORM SELECTIVE MAINTENANCE TREATMENTS IN ORDER TO REDUCE OR ELIMINATE COMPETING NON-NATIVE VEGETATION SURROUNDING NEWLY PLANTED NATIVE VEGETATION FOR A MINIMUM PERIOD OF FIVE YEARS. AVOID SPRAYING NATIVE PLANTS.

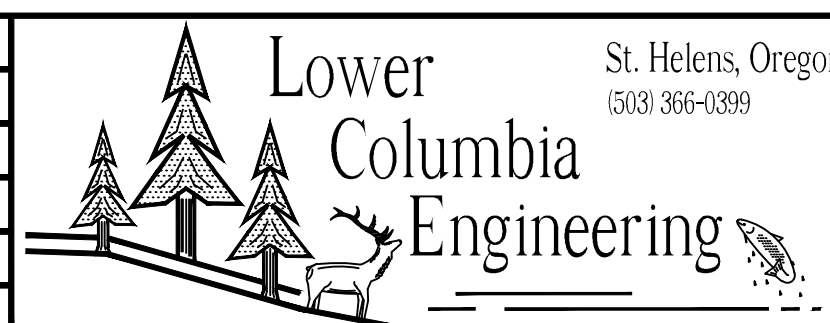
PROPOSED IMPLEMENTATION SEQUENCE

- | | |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ① | INITIAL REMOVAL OF INVASIVE SPECIES SEE "REMOVAL/TREATMENT PLAN FOR NON-NATIVE INVASIVE SPECIES" ABOVE. |
| ② | PLUG ALL WATER ENTRY POINTS TO WORK AREA ON OR NEAR JULY 1ST. |
| ③ | ANY ACCUMULATED WATER WITHIN WORK AREA SHALL BE PUMPED TO AN UPLAND VEGETATED AREA OUTSIDE OF THE WORK AREA. |
| ④ | ESTABLISH STAGING AREA AND INSTALL INITIAL EROSION AND SEDIMENT CONTROL (ESC) BMP'S AS NECESSARY. (SEE 3000 SERIES ESC PLANS) |
| ⑤ | INITIATE GRADING WORK WITHIN LEVEES PER PROPOSED GRADING PLAN ON SHEET 04. SCREEN AND DRY MATERIAL AS REQUIRED. DO NOT DISTURB EXISTING LEVEE AND BANK DURING ANY SITE ACTIVITIES UNTIL SPECIFIED. INSTALL ESC MEASURES, SEED AND STRAW MULCH IMMEDIATELY AFTER COMPLETION OF EXCAVATION. |
| ⑥ | INSTALL LARGE WOODY DEBRIS AND ASSOCIATED BALLAST ROCK INSIDE OF LEVEES PER HABITAT ENHANCEMENT PLAN ON SHEET 06. |
| ⑦ | REMOVE EXISTING CULVERTS AND TIDE GATES AND EXCAVATE LEVEE BREACHES ALONG EXISTING LEVEES PER PROPOSED GRADING PLAN ON SHEET 04. CONSTRUCT TANDY CREEK CHANNEL MODIFICATIONS AT SE CORNER OF WORK AREA. PLACE AND COMPACT FILL AS PER SPECIFICATIONS ADJACENT TO BREACHES. INSTALL ESC MEASURES, SEED AND STRAW MULCH IMMEDIATELY AFTER COMPLETION OF EXCAVATION. |
| ⑧ | PERFORM REMAINING GRADING ACTIVITY PER PROPOSED GRADING PLAN ON SHEET 04. INSTALL ESC MEASURES, SEED AND STRAW MULCH IMMEDIATELY AFTER COMPLETION OF EXCAVATION. |
| ⑨ | INSTALL ANY REMAINING LARGE WOODY DEBRIS AND BALLAST ROCK AS PER HABITAT ENHANCEMENT PLAN ON SHEET 06. |
| ⑩ | INSTALL PLANTS PER PLANTING PLAN ON SHEET 05. |
| ⑪ | REMOVE ALL TEMPORARY SEDIMENT AND EROSION CONTROL FEATURES. |
| ⑫ | PERFORM NECESSARY OBSERVATIONS AND MAINTENANCE REQUIRED TO ENSURE PROJECT SUCCESS. AT A MINIMUM THIS SHALL INCLUDE THE FOLLOWING:
A. MANAGEMENT OF NON-NATIVE INVASIVE SPECIES PER REMOVAL/TREATMENT PLAN ABOVE.
B. PROJECT AREA SHALL BE MONITORED FOR EROSION OR UNUSUAL ACTIVITY AT A MINIMUM OF THREE TIMES PER YEAR FOR FIVE YEARS FOLLOWING IMPLEMENTATION. THIS SHALL INCLUDE CAREFUL OBSERVATION OF LEVEE BREACH AREAS FOLLOWING EXTREME TIDAL PERIODS. ANY EROSION OR UNUSUAL ACTIVITY SHALL BE BROUGHT TO THE ATTENTION OF LOWER COLUMBIA ENGINEERING.
C. PLANTING SURVIVAL SHALL BE MONITORED ANNUALLY IN THE SPRING. AREAS WITH UNACCEPTABLE LOSS SHALL BE REPLANTED BASED ON RECOMMENDATIONS BY BIOLOGIST. |

DATE: 12/19/12
ISSUED FOR APPROVAL

NOTE:
THIS PROPOSED IMPLEMENTATION PLAN IS FOR DISCUSSION PURPOSES ONLY AND NOT INTENDED TO DEFINE THE MEANS AND METHODS REQUIRED FOR PROPER EXECUTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS REQUIRED TO PROPERLY EXECUTE THIS PROJECT IN ACCORDANCE WITH COMMONLY ACCEPTED STANDARDS FOR RESTORATION ACTIVITY. CONTACT LOWER COLUMBIA ENGINEERING WITH ANY QUESTIONS OR UNCERTAINTIES PRIOR TO PROCEEDING.

REV.	REVISION RECORD	DATE



PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		IMPLEMENTATION PLAN, SEQUENCE & NOTES
SCALE	NOTED	DATE 12/04/12
		DWG. NO. D-1727-1000-03

LEGEND

- E.O.G. EDGE OF GRAVEL
- (E) EXISTING
- (N) NEW
- ⊙ WATER PROBE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- MAJOR CONTOURS
- MINOR CONTOURS

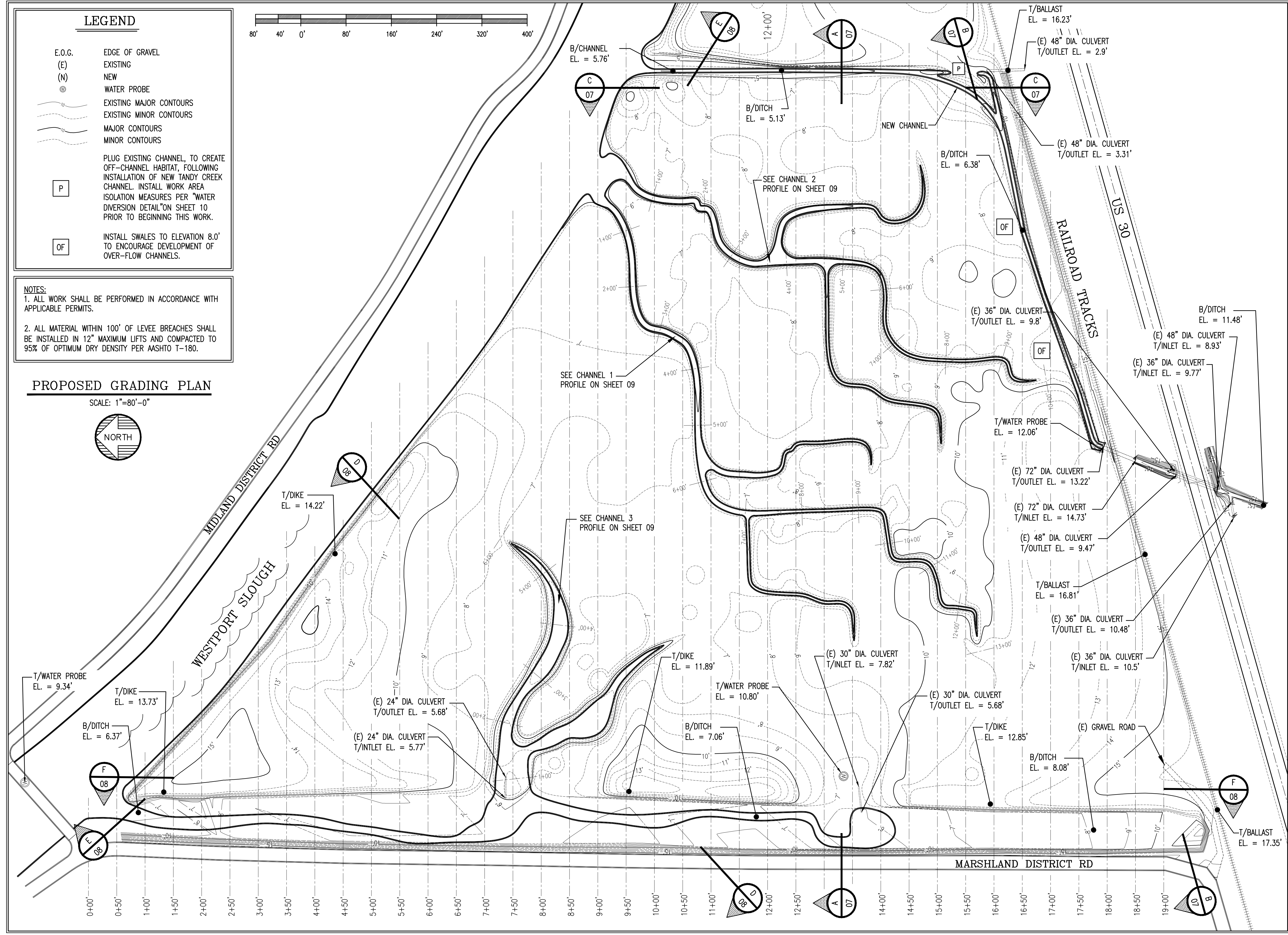
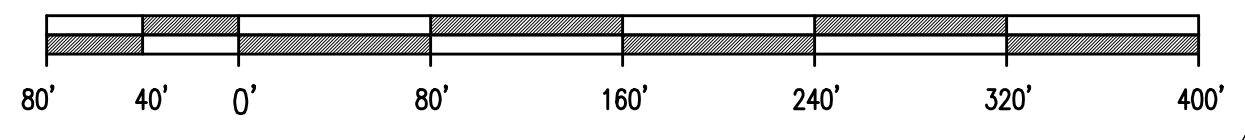
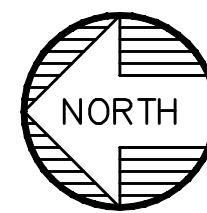
- P PLUG EXISTING CHANNEL, TO CREATE OFF-CHANNEL HABITAT, FOLLOWING INSTALLATION OF NEW TANDY CREEK CHANNEL. INSTALL WORK AREA ISOLATION MEASURES PER "WATER DIVERSION DETAIL" ON SHEET 10 PRIOR TO BEGINNING THIS WORK.

- OF INSTALL SWALES TO ELEVATION 8.0' TO ENCOURAGE DEVELOPMENT OF OVER-FLOW CHANNELS.

NOTES:
 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE PERMITS.
 2. ALL MATERIAL WITHIN 100' OF LEVEE BREACHES SHALL BE INSTALLED IN 12" MAXIMUM LIFTS AND COMPACTED TO 95% OF OPTIMUM DRY DENSITY PER AASHTO T-180.

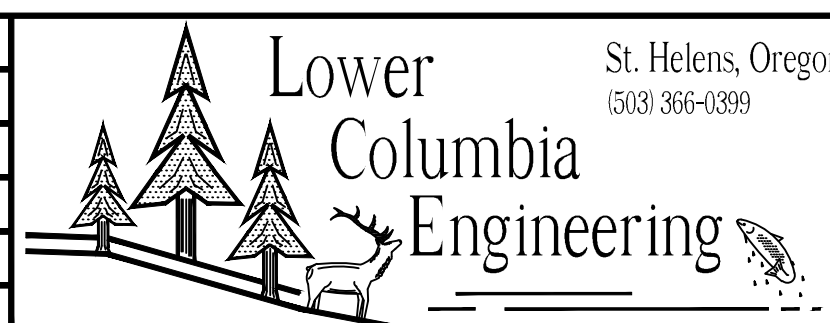
PROPOSED GRADING PLAN

SCALE: 1"=80'-0"

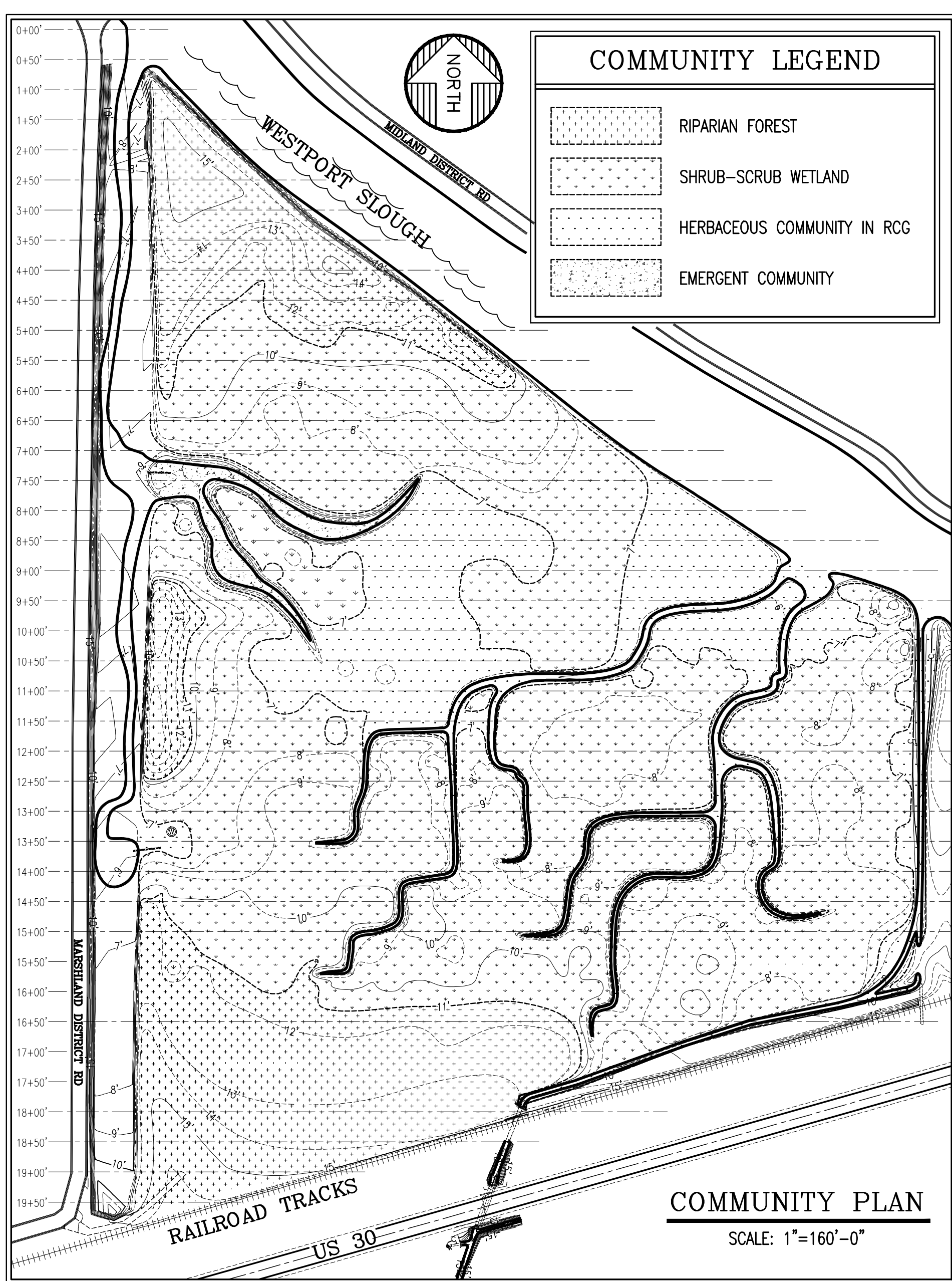


DATE: 12/19/12
 ISSUED FOR APPROVAL

REV.	REVISION RECORD	DATE



PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		PROPOSED GRADING PLAN & LEGEND
SCALE	NOTED	DATE 12/04/12 DWG. NO. D-1727-1000-04



COMMUNITY PLAN
SCALE: 1"=160'-0"

COMMUNITY LEGEND

	RIPARIAN FOREST
	SHRUB-SCRUB WETLAND
	HERBACEOUS COMMUNITY IN RCG
	EMERGENT COMMUNITY

PLANTING LEGEND

TREES

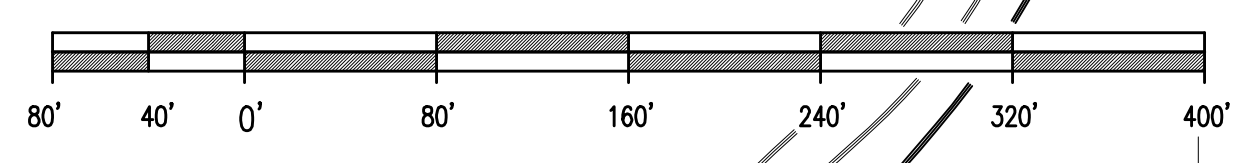
- BIG LEAF MAPLE
- RED ALDER
- OREGON ASH
- SITKA SPRUCE
- BLACK COTTONWOOD
- CEDAR

SHRUBS

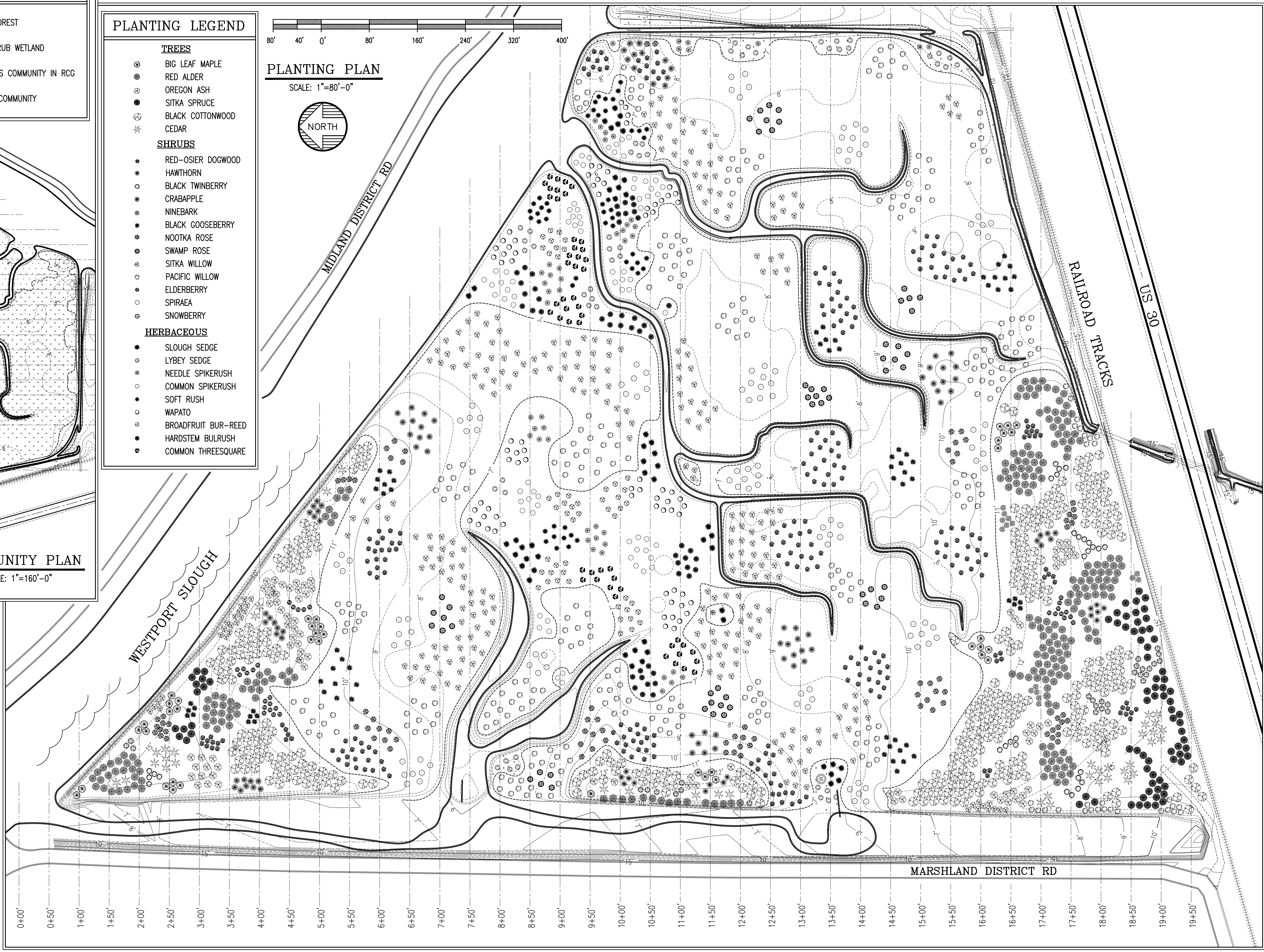
- RED-OSIER DOGWOOD
- HAWTHORN
- BLACK TWINBERRY
- CRABAPPLE
- NINEBARK
- BLACK GOOSEBERRY
- NOOTKA ROSE
- SWAMP ROSE
- SITKA WILLOW
- PACIFIC WILLOW
- ELDERBERRY
- SPIRAEA
- SNOWBERRY

HERBACEOUS

- SLOUGH SEDGE
- LYBEE SEDGE
- NEEDLE SPIKERUSH
- COMMON SPIKERUSH
- SOFT RUSH
- WAPATO
- BROADFRUIT BUR-REED
- HARDSTEM BULRUSH
- COMMON THREESQUARE



PLANTING PLAN
SCALE: 1"=80'-0"



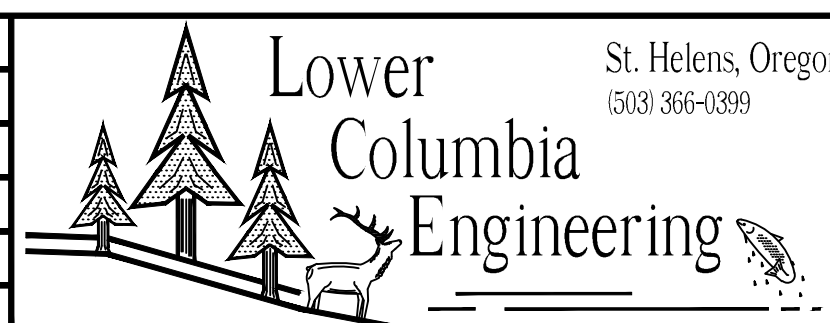
PLANTING SCHEDULE/PER ACRE

ITEM	FOREST/RIPARIAN COMMUNITY	SHRUB-SCRUB COMMUNITY	EMERGENT COMMUNITY	TOTAL
TREES				
BIG LEAF MAPLE	40			40
RED ALDER	240			240
OREGON ASH	80			80
SITKA SPRUCE	80			80
BLACK COTTONWOOD	320			320
CEDAR	40			40
SHRUBS				
RED-OSIER DOGWOOD	45	220		265
HAWTHORN	15			15
BLACK TWINBERRY	30			30
CRABAPPLE	30	55		85
NINEBARK	15			15
BLACK GOOSEBERRY	15	55		70
NOOTKA ROSE	30	55		85
SWAMP ROSE		55		55
SITKA WILLOW	30	275		305
PACIFIC WILLOW	30	275		305
ELDERBERRY	30			30
SPIRAEA		110		110
SNOWBERRY	30			30
HERBACEOUS				
SLOUGH SEDGE			50	50
LYBEE SEDGE			50	50
NEEDLE SPIKERUSH			50	50
COMMON SPIKERUSH			75	75
SOFT RUSH			50	50
WAPATO			75	75
BROADFRUIT BUR-REED			50	50
HARDSTEM BULRUSH			50	50
COMMON THREESQUARE			50	50

SEE TYPICAL PLANTING DETAILS ON SHEET 10

DATE: 12/19/12
ISSUED FOR APPROVAL

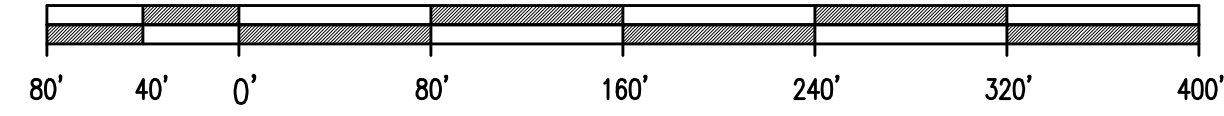
REV.	REVISION RECORD	DATE



PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		PLANTING & COMMUNITY PLANS AND SCHEDULES
SCALE	NOTED	DATE 12/04/12
		DWG. NO. D-1727-1000-05

LEGEND

- E.O.G. EDGE OF GRAVEL
- (E) EXISTING
- (N) NEW
- ⊙ WATER PROBE
- MAJOR CONTOURS
- - - MINOR CONTOURS
- 20'-40' LOG WITH ROOT WAD
- 30'-50' STICK LOG
- ⊙ 48"-60" BALLAST ROCK

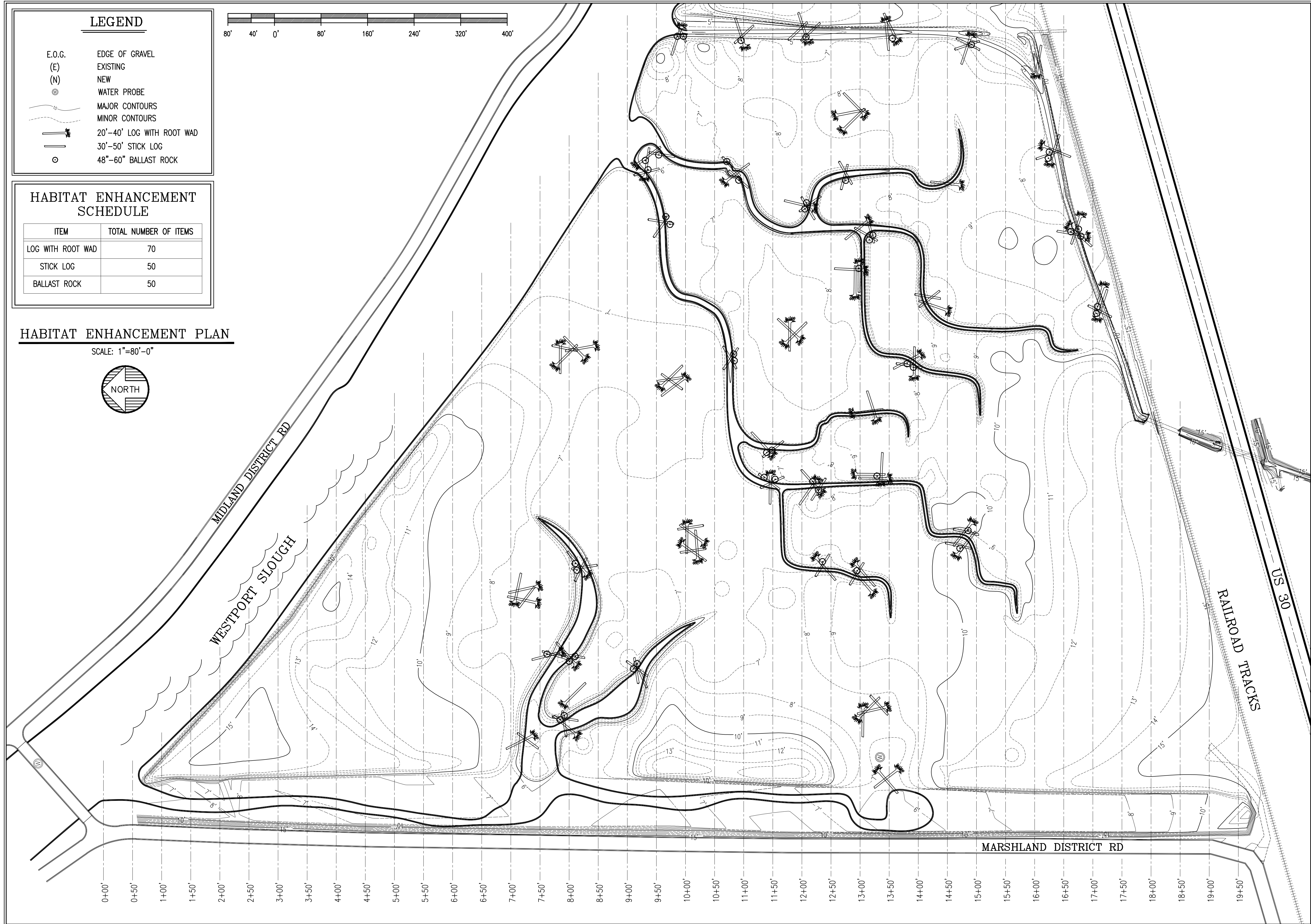
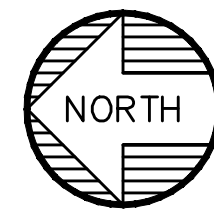


HABITAT ENHANCEMENT SCHEDULE

ITEM	TOTAL NUMBER OF ITEMS
LOG WITH ROOT WAD	70
STICK LOG	50
BALLAST ROCK	50

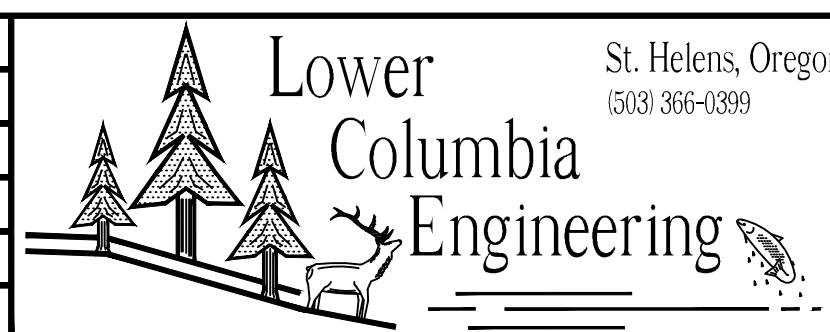
HABITAT ENHANCEMENT PLAN

SCALE: 1"=80'-0"



DATE: 12/19/12
ISSUED
FOR APPROVAL

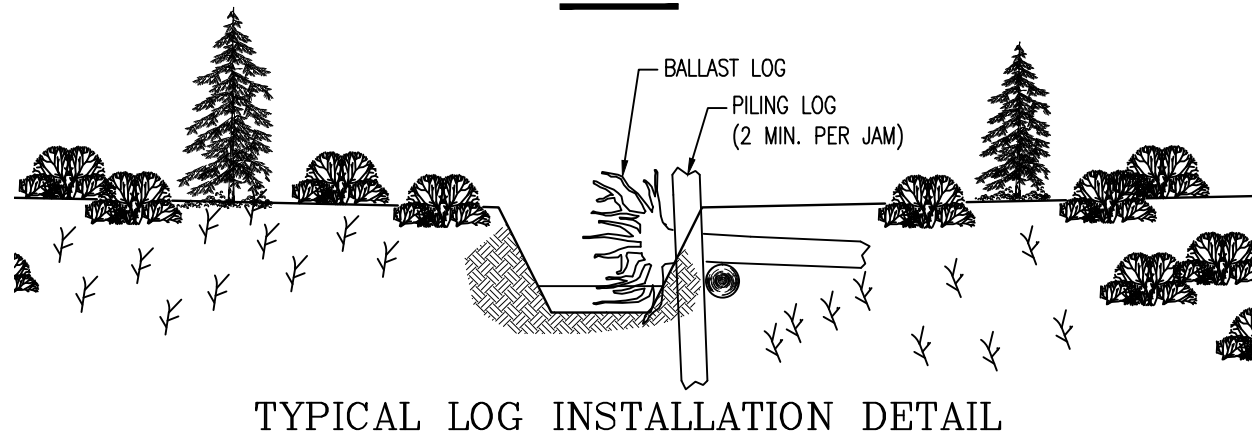
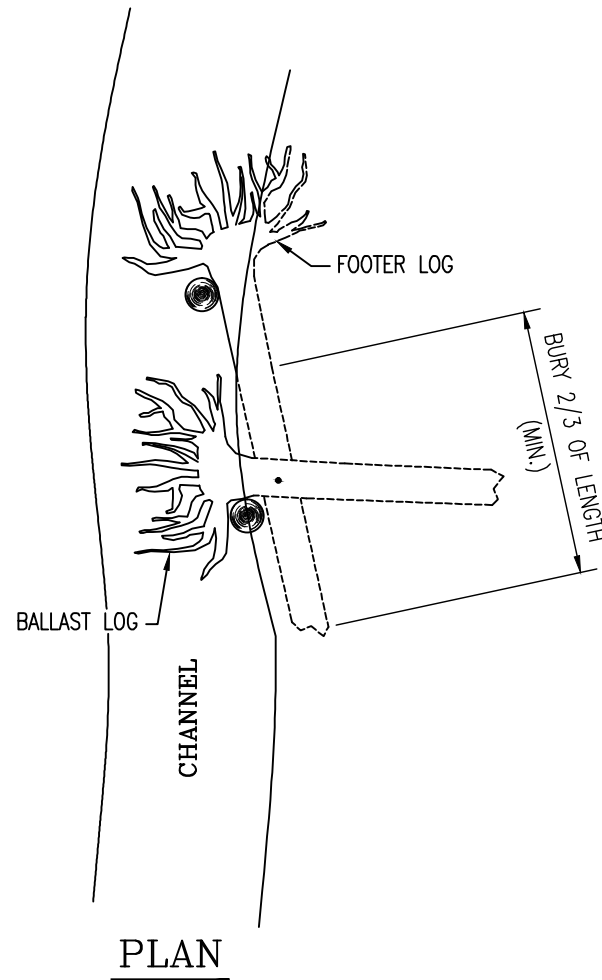
REV.	REVISION RECORD	DATE

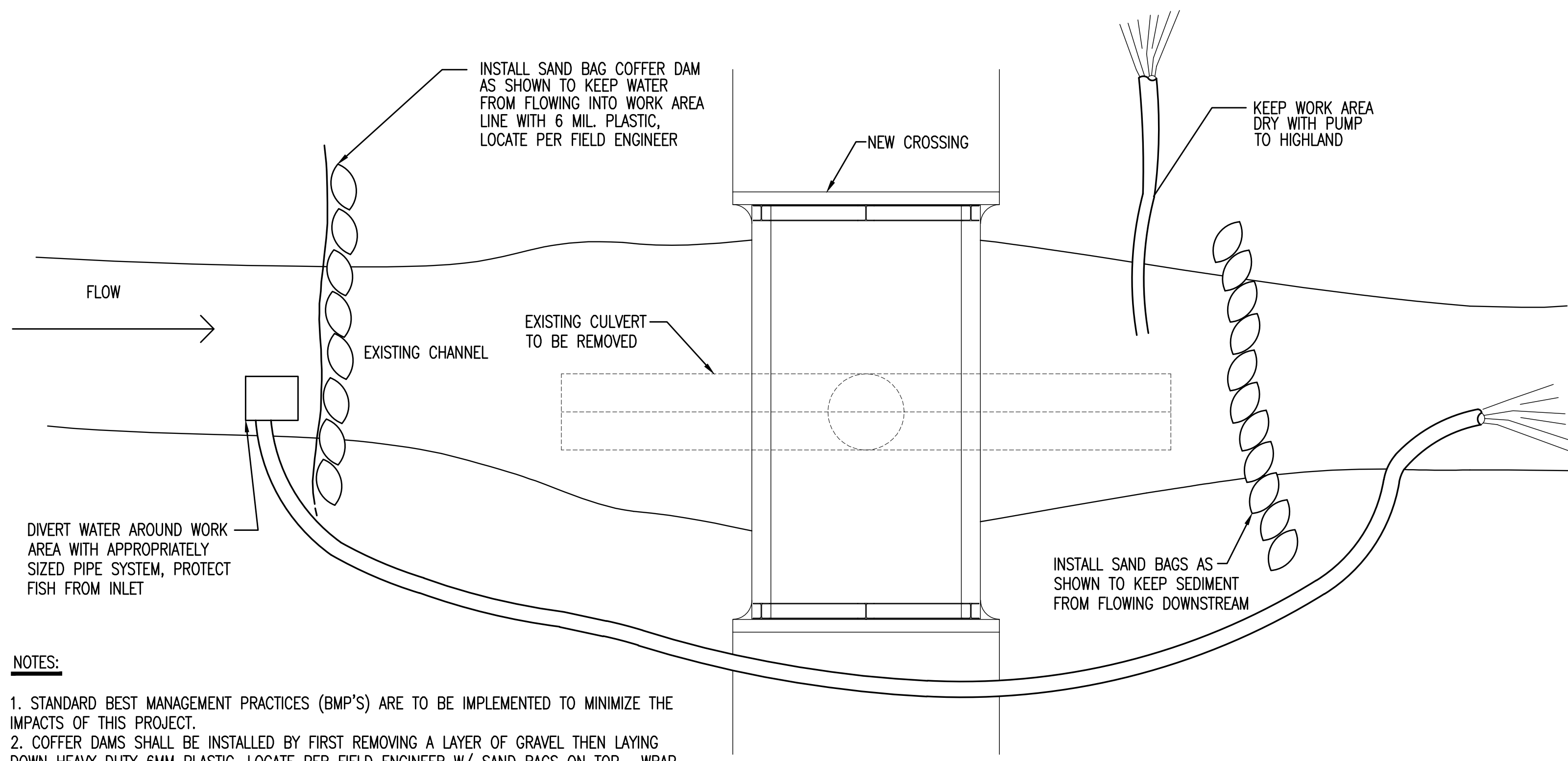


PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		HABITAT ENHANCEMENT PLAN & LEGEND
SCALE	NOTED	DATE 12/04/12
		DWG. NO. D-1727-1000-06

NOTES:

1. THE LOGS SHALL BE INSTALLED IN NARROW TRENCHES, EXCAVATED JUST LARGE ENOUGH TO ACCEPT THE LOG OR PUSHED IN PLACE WITH ADJACENT NATIVE VEGETATION LEFT INTACT.
2. LOGS SHALL BE SKEWED TO THE CHANNEL, DO NOT INSTALL LOGS LEVEL.
3. BACKFILL TRENCH WITH NATIVE SOIL, IN ALL CASES, THE EXTENT OF BURIAL SHALL BE AS SHOWN (2/3 OF LENGTH MIN.). ADDITIONAL ANCHORING MAY BE NECESSARY AT LOCATIONS WITH ANTICIPATED SCOUR, AS DIRECTED ELSEWHERE ON THESE PLANS OR BY THE FIELD ENGINEER.
4. REVEGETATE AREA WITH WHOLE PLANTS OR SLIPS PER PLANTING PLAN.
5. TRENCHES MAY ROUTINELY BE IN EXCESS OF 4 FEET DEEP, NO PERSON SHALL BE ALLOWED NEAR OR IN ANY TRENCH AND THE TRENCH IS TO BE FILLED IMMEDIATELY AFTER EXCAVATION.
6. WATER IN THE TRENCH MAY FLOAT THE LOG. IN THESE CASES OTHER LOGS SHALL BE STACKED ON TOP OF THE LOG AND SUNK USING THE WEIGHT OF THE EXCAVATOR TO PUT THE LOG AT THE PROPER ELEVATION PRIOR TO BACKFILLING.





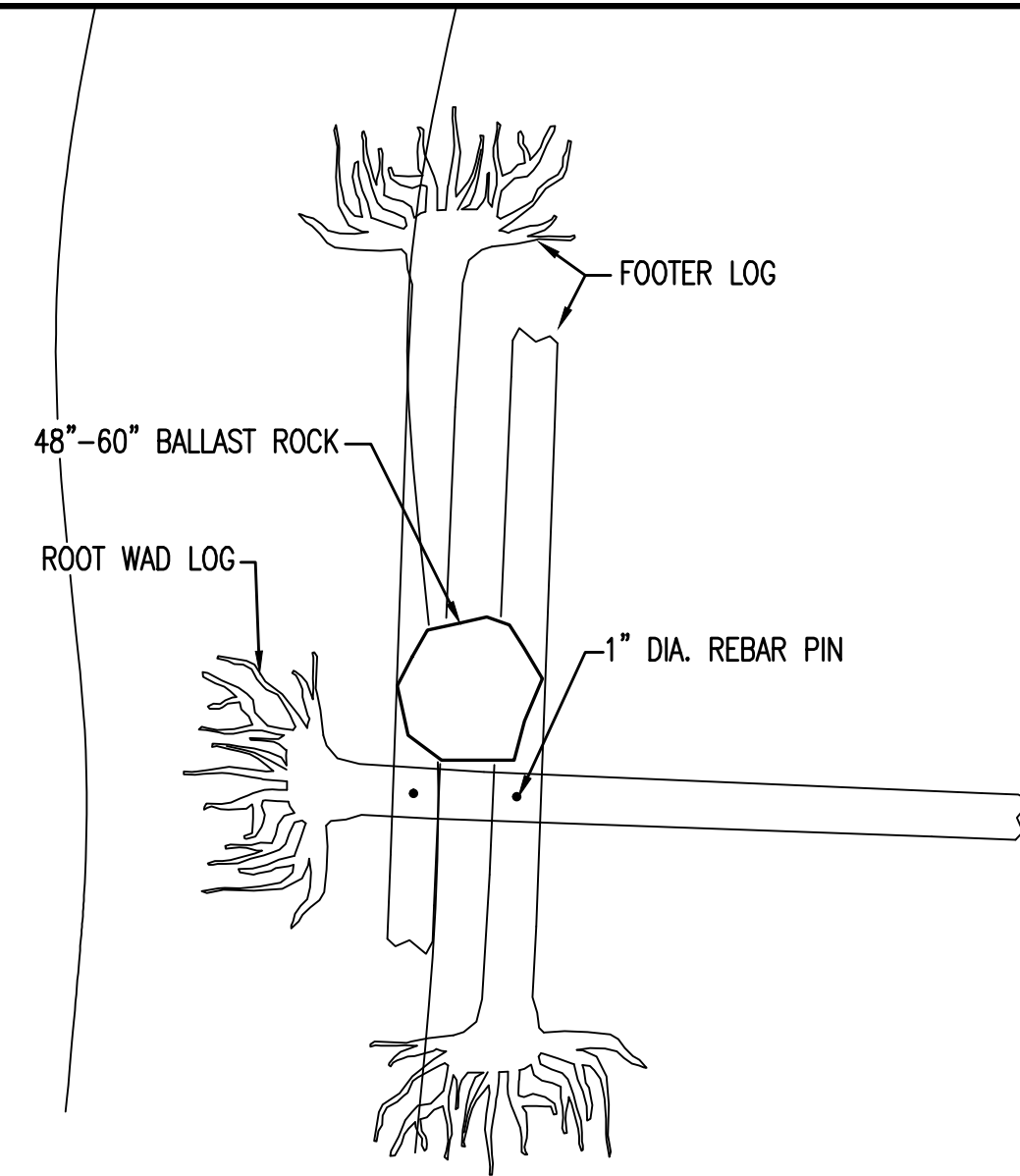
WATER DIVERSION DETAIL

NOTES:

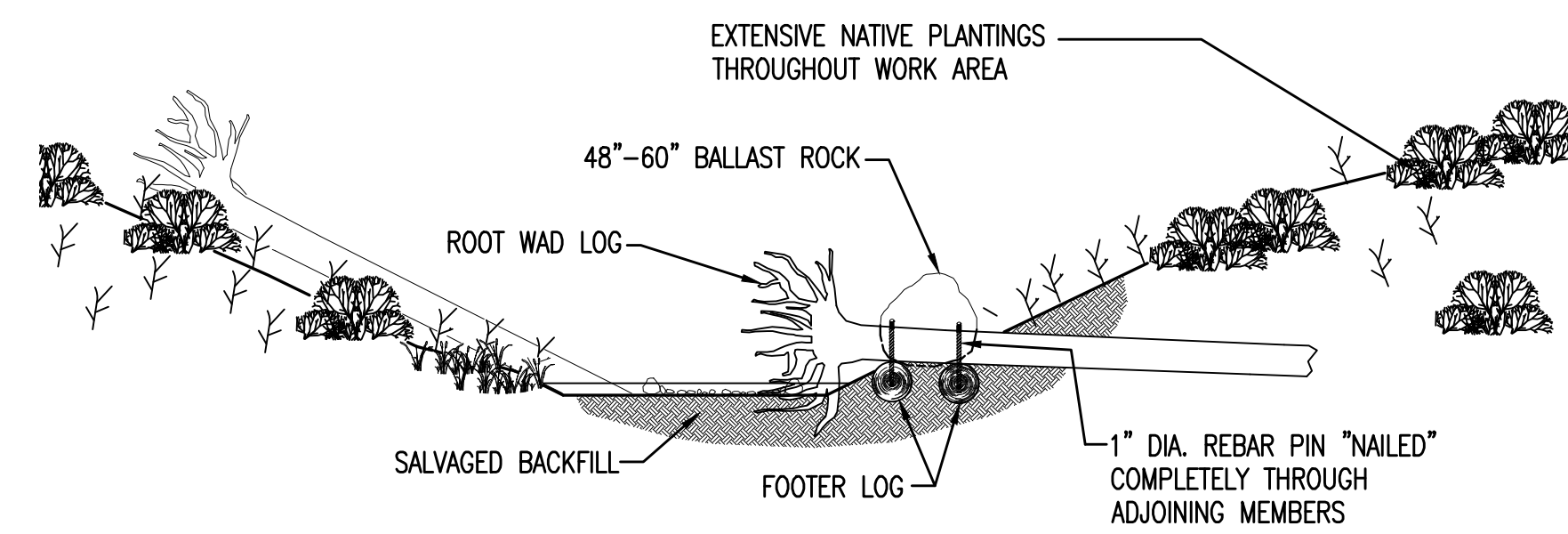
- STANDARD BEST MANAGEMENT PRACTICES (BMP'S) ARE TO BE IMPLEMENTED TO MINIMIZE THE IMPACTS OF THIS PROJECT.
- COFFER DAMS SHALL BE INSTALLED BY FIRST REMOVING A LAYER OF GRAVEL THEN LAYING DOWN HEAVY DUTY 6MM PLASTIC, LOCATE PER FIELD ENGINEER W/ SAND BAGS ON TOP. WRAP PLASTIC AROUND FRONT OF SANDBAGS TO ACHIEVE AN EFFECTIVE SEAL ON BOTTOM & SIDES OF CHANNEL.
- SAND BAGS SHALL BE FILLED WITH SAND, ROUNDED PEA GRAVEL & 7/8" ROUNDED DRAIN ROCK.
- A PUMP MUST BE ON HAND AT ALL TIMES FOR PUMPING SEEPAGE WATER AS NEEDED. IF A PUMP IS USED FOR DIVERSION, A SECOND PUMP MUST BE ON SITE DURING CONSTRUCTION.
- FIELD ENGINEER SHALL APPROVE DIVERSION PIPE SIZE.
- PRIOR TO CONSTRUCTION A FISH BLOCK NET WITH 1/2 INCH MESH WILL BE INSTALLED ABOVE THE PROJECT AREA. ODFW WILL WORK WITH THE CONTRACTOR TO ELECTROFISH THROUGH THE PROJECT AREA, CAPTURING ALL FISH AND RELEASING THEM UPSTREAM OF THE PROJECT AREA. WHILE THE PROJECT IS BEING DEWATERED, ODFW WILL ELECTROFISH THROUGH THE AREA TO CAPTURE ANY FISH THAT MAY HAVE ESCAPED THE FIRST PASS THROUGH AND RELEASE THEM UPSTREAM OF THE PROJECT AREA.
- THE DOWN STREAM COFFER DAM SHALL NOT BE CONSTRUCTED UNTIL THE FULL FLOW IS RUNNING THROUGH THE DIVERSION, CONTRACTOR SHALL COORDINATE W/ ODFW FOR REMOVING ANY FISH FROM WORK AREA AT LEAST ONE WEEK PRIOR TO COMPLETION OF DIVERSION.
- WHEN RE-WATERING ADD APPROXIMATELY 20% OF THE FLOW FOR 4 HOURS, THEN 50% FOR FOUR HOURS. PUMP SILTY WATER TO HIGHLAND PRIOR TO REMOVING LOWER COFFER DAM & RESTORING FULL FLOW.

NOTES:

- THE LOGS SHALL BE INSTALLED IN NARROW TRENCHES, EXCAVATED JUST LARGE ENOUGH TO ACCEPT THE LOG AND WITH ADJACENT VEGETATION LEFT INTACT.
- LOGS SHALL BE SKEWED TO THE CHANNEL - DO NOT INSTALL LOGS LEVEL.
- BACKFILL TRENCH WITH NATIVE SOIL IN ALL CASES THE EXTENT OF BURIAL AS SHOWN ABOVE SHALL BE COMPLETED. ADDITIONAL ANCHORING MAY BE NECESSARY AT LOCATIONS WITH ANTICIPATED SCOUR, AS DIRECTED ELSEWHERE ON THESE PLANS OR BY THE FIELD ENGINEER.
- REVEGETATE AREA WITH WHOLE PLANTS OR SLIPS PER PLANTING PLAN.
- TRENCHES MAY ROUTINELY BE IN EXCESS OF 4 FEET DEEP, NO PERSON SHALL BE ALLOWED NEAR OR IN ANY TRENCH AND THE TRENCH IS TO BE FILLED IMMEDIATELY AFTER EXCAVATION.
- WATER IN THE TRENCH MAY FLOAT THE LOG. IN THESE CASES OTHER LOGS OR BALLAST ROCK SHALL BE STACKED ON TOP OF THE LOG AND SUNK USING THE WEIGHT OF THE EXCAVATOR TO PUT THE LOG AT THE PROPER ELEVATION PRIOR TO BACKFILLING.

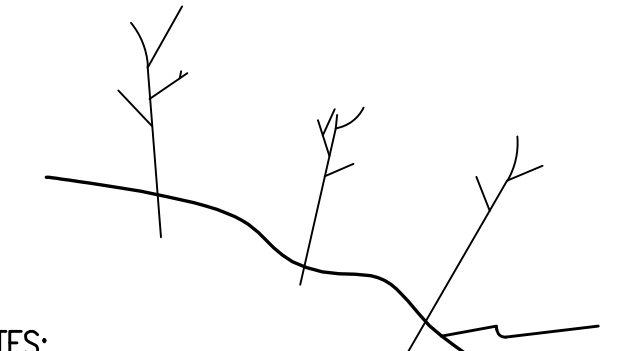


PLAN



TYPICAL LOG INSTALLATION DETAIL

LOCAL STAKE PLANTING

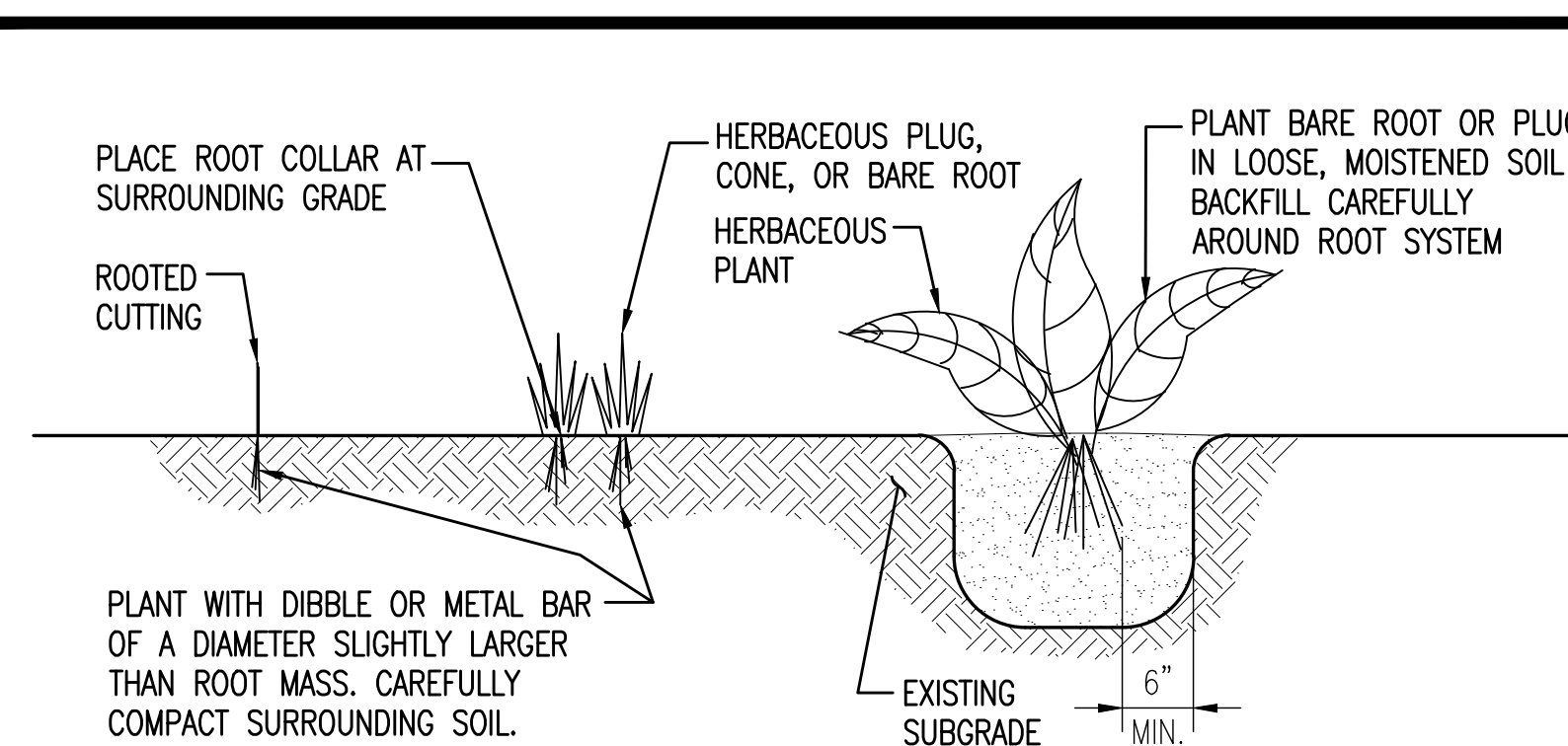


NOTES:

- SELECT LOCAL DOGWOOD, ELDERBERRY, WILLOW, TWIN BERRY, SALMONBERRY, NINEBARK, OCEANSPRAY, SNOWBERRY, CURRENT, HARDHACK, OR OTHER LOCAL SPECIES.
- CLEANLY CUT INTO STAKES OF ANY SIZE FROM SMALLER THAN A PENCIL TO AS LARGE AS THE DONOR WILL ALLOW. SMALL STAKES ARE MUCH EASIER TO INSTALL, LARGE STAKES CAN STAND ABOVE COMPETING VEGETATION.
- EACH STAKE SHOULD HAVE AT LEAST 2 NODES (BUDS).
- BUNDLE STAKES INTO MANAGEABLE GROUPS, RIGHTSIDE UP AND STORE IN THE STREAM UNTIL USE.
- INSTALL BY SLIDING INTO GROUND AT A RANGE OF LOCATIONS, SOME HIGH AND SOME LOW WITH RESPECT TO ORDINARY HIGH WATER.
- NEATLY TRIM ANY ENDS THAT ARE MASHED BY POUNDING.
- PERFORM FROM SEPTEMBER THRU MAY OR IN MOIST SOIL.
- PLANTING DENSITY SHALL PROVIDE FOR MAXIMUM UNPLANTED AREA OF 2'-0" IN ANY DIRECTION.
- INCLUDE LOCAL STAKE PLANTING AS DIRECTED BY PROJECT ADMINISTRATOR.

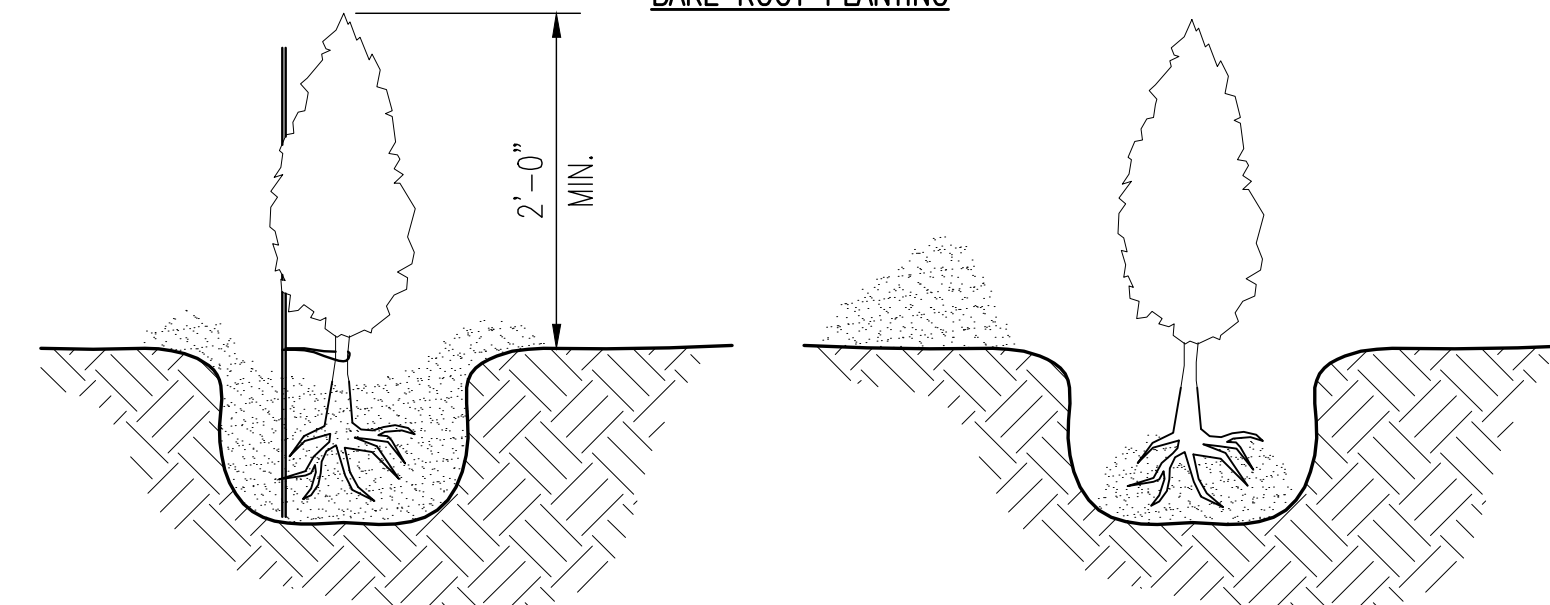
GENERAL NOTES

- LOG PLACEMENT SHOWN IS ONLY CONCEPTUAL AND MAY BE ADJUSTED BASED ON DIRECTION BY FIELD ENGINEER.
- NATIVE STREAMBED MATERIAL IN TANDY CREEK SHALL BE SALVAGED AND REUSED BEFORE ADDITIONAL GRAVEL IS INTRODUCED. ANY NECESSARY ADDITIONAL STREAMBED GRAVEL MIX SHALL BE EQUAL PARTS OF 7/8" DRAIN ROCK, 1 1/2" DRAIN ROCK AND 2" TO 6" COBBLE, ALL ROUNDED AND WASHED WITH NO FINE SEDIMENT. THIS BEDDING SHALL BE 8"-12" THICK AND EXTEND THROUGHOUT DISTURBED STREAMBED AREA AS REQUIRED.
- ANY CASCADES SHALL NOT BE GREATER THAN 6" TALL FALLING INTO POOLS THAT FISH CAN JUMP FROM RATHER THAN SHALLOW SURFACES SUCH AS ROCKS.
- WORK SHALL BE CONDUCTED ONLY DURING APPROVED WORK PERIOD BY ODFW. WORK PERIOD AND ANY REQUIRED EXTENSIONS MUST BE APPROVED BY ODFW PRIOR TO PERFORMING ANY WORK.
- ALL AREAS BEHIND THE LEVEE BREACHES MUST BE WELL VEGETATED PRIOR TO THE BREACH TO PREVENT SEDIMENT FROM ENTERING THE RIVER FOLLOWING THE FIRST TIDAL FLUSH.
- VEGETATION MATS AND SEED WILL BE INSTALLED IMMEDIATELY FOLLOWING THE LEVEE BREACHING ON ALL EXPOSED BARE SOILS.
- CONTACT ENGINEER WITH ANY QUESTIONS OR UNCERTAINTIES REGARDING LOG PLACEMENT OR ANY OTHER ISSUES PRIOR TO PROCEEDING.
- LOWER COLUMBIA ENGINEERING IS NOT RESPONSIBLE FOR ANY MOVEMENT OF LOGS OR BANK STABILIZATION ISSUES.

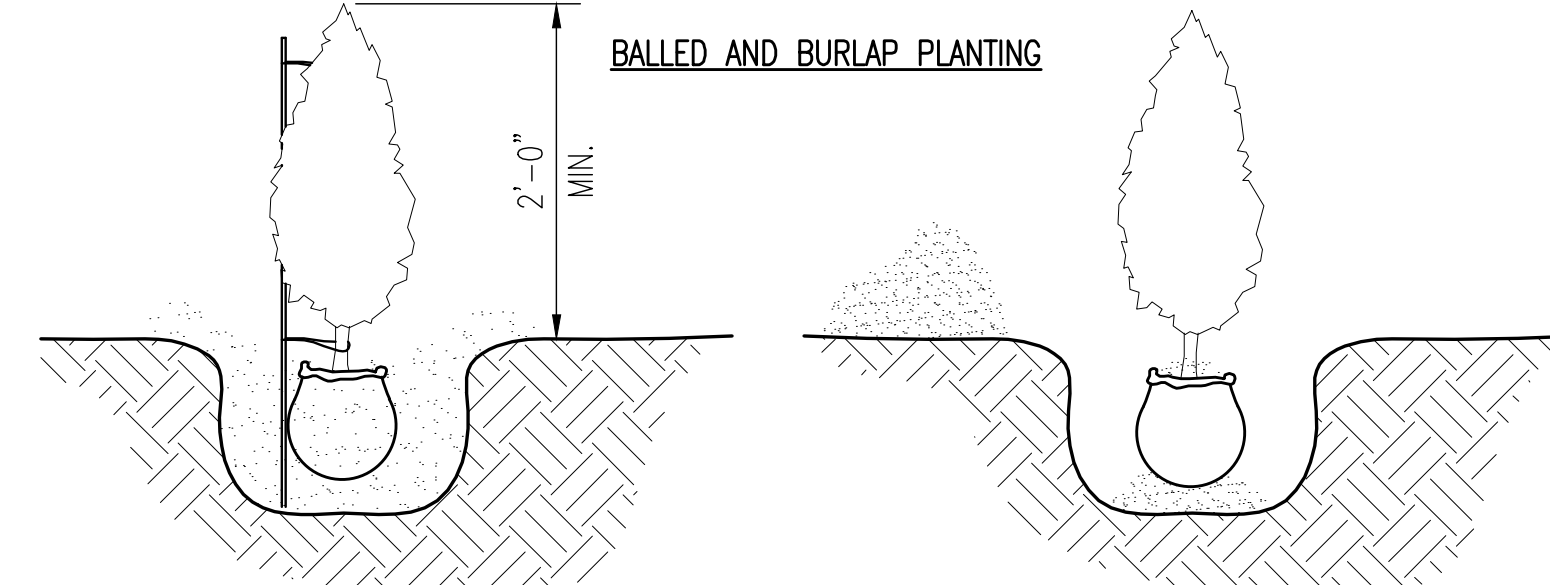


BAREROOT, PLUG ROOTED CUTTING DETAIL

BARE ROOT PLANTING



BALLED AND BURLAP PLANTING



TYPICAL PLANTING DETAILS

NOTES:

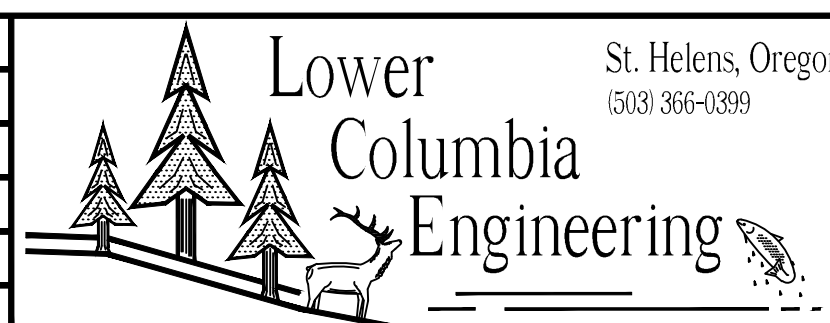
- SOAK BARE ROOT PLANTS FOR 24 HRS BEFORE PLANTING.
- DIG HOLE APPROXIMATELY 2X ROOT BALL DIAMETER.
- BACKFILL A CONE SHAPED MOUND IN THE HOLE.
- SPREAD ROOTS EVENLY ON MOUND.
- FILL 3/4 FULL, COMPACT GENTLY AND ADJUST PLANT ALIGNMENT.
- COMPLETE FILL AND CREATE RIDGE AROUND PLANT FOR A WATERING BASIN.
- WATER THOROUGHLY.
- STAKE AS NECESSARY.

NOTES:

- DIG HOLE TWICE AS LARGE AS ROOT BALL.
- BACKFILL A CONE SHAPED MOUND IN THE HOLE.
- INSTALL TREE AND OPEN BURLAP TO FULLY EXPOSE SURFACE SOIL.
- FILL 3/4 FULL, COMPACT GENTLY AND ADJUST PLANT ALIGNMENT.
- COMPLETE FILL AND CREATE RIDGE AROUND PLANT FOR A WATERING BASIN.
- STAKE AS NECESSARY.
- WATER THOROUGHLY.

DATE: 12/19/12
ISSUED
FOR APPROVAL

REV.	REVISION RECORD	DATE



PROJ. NO.	1727	COLUMBIA SOIL AND WATER CONSERVATION DIST.
DWG. BY	TCO	LA SWAMP TIDAL RECONNECTION
APPR. BY		DETAILS & NOTES
SCALE	NOTED	DATE 12/04/12
		DWG. NO. D-1727-1000-10