Appendix A

AMCCO Upland & Sediment Remediation Plan Record Drawings

MAUL FOSTER ALONGI

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

PREPARED FOR:

ASTORIA MARINE CONSTRUCTION COMPANY

LOCATED IN SEC25, T8N, R10W, W.M., CLATSOP COUNTY, ASTORIA, OR

PROJECT CONTACTS

CLIENT	CIVIL ENGINEER
AMCCO 92134 FRONT RD. ASTORIA, OR 97103 P: 503-325-4121 TIM FASTABEND WALLUSKI@CHARTER.NET	MAUL FOSTER & ALONGI, INC. 3140 NE BROADWAY PORTLAND, OR 97232 P: 503-501-5217 ERIK BAKKOM, PE EBAKKOM@MAULFOSTER.COM
ENVIRONMENTAL	**AGENCY**
GSI ENVIRONMENTAL INC. 55 SW YAMHILL STREET SUITE 300 PORTLAND, OR 97204 P: 971-200-8501 LIBBY SMITH LSMITH@GSIWS.COM	OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY 700 NE MULTNOMAH ST PORTLAND, OR 97232 P: 503-229-5696 ERIN MCDONNELL, PE ERIN.K.MCDONNELL@STATE.OR.US
CONTRACTOR	**SURVEYORS**
CUSTOM EXCAVATING 2060 SE AIRPORT LANE WARRENTON, OREGON 97146 P: 503.861.6030 ALEX RAICHL ALEX_CUSTOMEXCAVATING@HOTMAIL.COM	OTAK (PRE-CONSTRUCTION) 4253-A HIGHWAY 101 N SEASIDE, OR 97138 P: 503-738-3425 ANDY MENDENHALL (POST-CONSTRUCTION) MENDENALL2025@GMAIL.COM P: 503-738-6363

PROJECT SUMMARY

SITE ADDRESS:
92134 FRONT RD.
ASTORIA, OR 97103

WORK DESCRIPTION:
IN ACCORDANCE WITH THE RECORD OF DECISION AND AGREEMENTS WITH THE STATE OF OREGON, AMCCO WILL REMOVE HIGHLY CONTAMINATED SOIL AND SEDIMENT FROM THE SITE, REMOVE SEDIMENT FROM OFFSITE CONVEYANCE DITCHES, CONSTRUCT ONSITE CONVEYANCE DITCHES, CONSTRUCT A SOIL CAP, CONSTRUCT AN ENHANCED NATURAL RECOVERY SAND LAYER, AND RESTORE THE DIKE. THE PROJECT INCLUDES DEMOLITION OF A NUMBER OF UPLAND AND ABOVE WATER STRUCTURES TO ACCOMMODATE ABOVE REFERENCED REMEDIATION ACTIVITIES.

VICINITY MAP

NOT TO SCALE

SHEET INDEX

GENERAL NOTES

1. DESIGN SURVEY PERFORMED BY OTAK IN 2013&2017. AS-BUILT SURVEY PERFORMED BY ANDY MENDENHALL IN DECEMBER 2021 AND OCTOBER 2022.
2. HORIZONTAL DATUM: OREGON STATE PLANE COORDINATE SYSTEM SOUTH ZONE, NAD 83/91. ELEVATION DATUM: NAVD 88
3. CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION. A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL CALL 811 (UTILITY NOTIFICATION CENTER) FOR LOCATION MARK-UP OF EXISTING UTILITIES.
4. ALL CONSTRUCTION, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE LATEST STANDARDS AND PRACTICES OF CLATSOP COUNTY AND THE LATEST EDITION OF THE "OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION" PREPARED BY ODOT/APWA.
5. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT WILL PREVAIL.
6. ANY CHANGES TO THE DESIGN AND/OR CONSTRUCTION SHALL BE APPROVED BY THE OWNER OR ENGINEER.
7. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE AN APPROVAL OF ANY OTHER CONSTRUCTION NOT SPECIFICALLY SHOWN ON THE PLANS. PLANS FOR STRUCTURES SUCH AS BRIDGES, BUILDINGS, TANKS, VAULTS, ROCKERIES, AND RETAINING WALLS MAY REQUIRE A SEPARATE REVIEW AND APPROVAL BY THE BUILDING DEPARTMENT PRIOR TO CONSTRUCTION.
8. A COPY OF THESE APPROVED PLANS SHALL BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
9. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL CONSTRUCTION EASEMENTS AND PERMITS NECESSARY TO PERFORM THE WORK.
10. OWNER SHALL PROVIDE OREGON DSL ACCESS AGREEMENT FOR OVER-WATER WORK ACTIVITY.
11. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING.
12. PUBLIC AND PRIVATE DRAINAGE WAYS SHALL BE PROTECTED FROM POLLUTION. NO MATERIAL IS TO BE DISCHARGED TO OR DEPOSITED IN STORMWATER SYSTEMS THAT MAY RESULT IN VIOLATION OF STATE OR FEDERAL WATER QUALITY STANDARDS.
13. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL HAVE AN APPROVED PUBLIC RIGHT-OF-WAY WORK PERMIT PRIOR TO START OF ANY SUCH WORK.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION. TWO-WAY TRAFFIC MUST BE MAINTAINED AT ALL TIMES ON THE ADJACENT PUBLIC STREETS.
15. ANY PUBLIC OR PRIVATE CURB, GUTTER, SIDEWALK, OR ASPHALT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO CLATSOP COUNTY STANDARDS AND PRACTICES.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ADJACENT UTILITIES WHICH MAY INCLUDE, BUT ARE NOT LIMITED TO, WATER, SANITARY SEWER, STORMWATER, POWER, TELEPHONE, CABLE TV, GAS, IRRIGATION, AND STREET LIGHTING. THE CONTRACTOR SHALL NOTIFY RESIDENTS AND BUSINESSES 48 HOURS IN ADVANCE OF ANY WORK AFFECTING ACCESS OR SERVICE AND SHALL MINIMIZE INTERRUPTIONS TO DRIVEWAYS FOR RESIDENTS AND BUSINESSES ADJACENT TO THE PROJECT.
17. ALL LAWN AND VEGETATED AREAS DISTURBED WILL BE RESTORED TO ORIGINAL CONDITION. ANY DISTURBANCE OR DAMAGE TO OTHER PROPERTY ON ADJACENT PARCELS OR IN THE PUBLIC RIGHT-OF-WAY SHALL ALSO BE REPAIRED OR RESTORED TO ORIGINAL CONDITION.
18. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN AND MAINTAINING OFF-SITE ROADS TO BE FREE OF PROJECT-RELATED SEDIMENTS AND TRACKING.

RECORD DRAWING

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AMCCO UPLAND & SEDIMENT REMEDIATION PLAN
ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/06/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE
DRAWING NOT TO SCALE
SHEET TITLE
COVER
SHEET
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CONSTRUCTION NOTES

EROSION AND SEDIMENT CONTROL

1. ALL GRADING AND EROSION CONTROL MATERIALS, WORKMANSHIP AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE CURRENT EDITION OF THE "EROSION AND SEDIMENT CONTROL MANUAL" PREPARED BY THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY AND THE EXISTING PROJECT NPDES 1200-C PERMIT, EPA NO. ORR10F773, FILE NO. 33212, ISSUED 06-21-19. EROSION CONTROL SHALL BE PER THE SPECIFICATIONS AND DETAILS CONTAINED THEREIN AND SHALL TAKE PRECEDENCE OVER OTHER STANDARDS AND SPECIFICATIONS.

2. THE CONTRACTOR SHALL MAINTAIN AN ON-SITE WRITTEN DAILY LOG OF EROSION CONTROL AND MAINTENANCE.

3. DURING THE PERIOD FROM OCTOBER 1ST TO APRIL 30TH, NO SOIL SHALL BE EXPOSED FOR MORE THAN TWO (2) DAYS, FROM MAY 1ST TO SEPTEMBER 30TH, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN SEVEN (7) DAYS.

4. THE CONSTRUCTION ENTRANCE MAY BE REDUCED TO LESS THAN 100' WITH APPROVAL OF THE EROSION CONTROL INSPECTOR.

5. INLET PROTECTION FABRIC SHALL BE INSTALLED UNDER GRATES FOR INLETS IN LANDSCAPED AREAS.

6. THE CONTRACTOR WILL PROVIDE APPROPRIATE PROACTIVE EROSION CONTROL DURING CONSTRUCTION TO PREVENT THE EROSION CONTROL SYSTEMS FROM FAILING DUE TO SILT. THE CONTRACTOR SHALL ENSURE THAT SEDIMENT DOES NOT IMPACT THE ADJACENT PROPERTIES OR THE SURROUNDING PUBLIC ROADS DURING CONSTRUCTION.

7. THE IMPLEMENTATION OF THESE EROSION AND SEDIMENT CONTROL (ESC) PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED, AND VEGETATION IS ESTABLISHED.

8. CARE SHOULD BE TAKEN TO NOT DISTURB MORE AREA THAN NEEDED FOR CONSTRUCTION REQUIREMENTS. ALL DISTURBED SOILS SURFACES ARE TO BE STABILIZED. STABILIZATION OF DISTURBED SOIL AREAS SHALL CONSIST OF: HYDROSEEDING OR HANDSEEDING, MULCHING, PLACING OF EROSION CONTROL BLANKETS OR PLASTIC IN LANDSCAPING SOIL AREAS. IT WILL ALSO CONSIST OF PAVING AND CONCRETE WORK IN DRIVING, PARKING, AND SIDEWALK AREAS. ALL SEEDED AREAS ARE TO BE FERTILIZED, WATERED, AND MAINTAINED TO ENHANCE THE IMMEDIATE REGROWTH OF VEGETATION.

9. MATERIAL STOCKPILES ARE TO BE PROTECTED FROM PRECIPITATION BY THE FOLLOWING MEANS:

   • TEMPORARY - COVER PILES WITH TARPS OR PLASTIC SHEETING WEIGHTED WITH TIRES, LUMBER, OR CONCRETE BLOCKS.

   • PERMANENT - COVER PILES WITH TARPS OR PLASTIC, OR RESEED. PERIMETER AREAS AROUND PILES ARE TO BE SURROUNDED WITH EROSION CONTROL FILTER FABRIC FENCES UNTIL SOILS SURFACE IS STABILIZED WITH RESEEDING.

10. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE CONTINUOUS FUNCTIONING. INSPECTION AND MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO:

    • VERIFYING THAT ALL AREAS ARE GRADED SUCH THAT ALL RUNOFF IS DIRECTED TO A SEDIMENTATION TRAP FACILITY BEFORE BEING DISCHARGING TO SURFACE.

    • REMOVAL OF TRAPPED SILTS AT SILT BARRIERS, SILT TRAPS, OR POINTS OF ACCUMULATION.

    • ADDITIONAL PROTECTIVE MEASURES, AS REQUIRED, DUE TO JOB SITE CONDITIONS.

    • STABILIZED CONSTRUCTION ENTRANCES INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. MONITORING OF VEHICLES LEAVING THE SITE TO MINIMIZE TRANSMISSION OF LOOSE SOILS TO THE PUBLIC ROADWAYS.

    • IF SEDIMENT IS TRANSPORTED ONTO A ROAD SURFACE, THE SURFACE IS TO BE CLEANED THOROUGHLY AT THE END OF EACH DAY.

11. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.

12. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.

13. THIS SEDIMENTATION AND EROSION CONTROL PLAN IS INTENDED TO BE UTILIZED AS A GUIDE TO CONTROL THE TRANSPORTATION OF LOOSE SOILS FROM THE PROPERTY THAT CAUSE WATER QUALITY AND NUISANCE PROBLEMS OUTSIDE OF THE CONSTRUCTION AREA.

14. DEPENDING ON THE CONTRACTOR'S CONSTRUCTION PRACTICES, SOME PORTIONS OF THE PROPOSED EROSION CONTROL PLAN MAY BE VARIED ACCORDING TO THE JOB SITE CONDITION. ALL CHANGES TO THE PLAN MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ADJUSTMENT.

SITE GRADING

15. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE GEOTECHNICAL REPORT PREPARED BY GEODESIGN, INC. FOR THE SITE. THE CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS REGARDING EARTHWORK AS DETAILED IN THE REPORT.

16. ALL PORTIONS OF THE SITE WITHIN THE LIMITS OF THE WORK SHALL BE MOWED AND STRIPPED TO REMOVE ALL GRASS, ROOTS, ORGANIC SOIL, AND CONSTRUCTION FILL DEBRIS PRIOR TO THE BEGINNING OF ANY GRADING OPERATIONS. THE CONTRACTOR SHALL SALVAGE AND STOCKPILE ENOUGH SELECT TOPSOIL TO ACCOMMODATE LANDSCAPING NEEDS.

17. FOLLOWING STRIPPING AND GRUBBING, THE EXPOSED SOILS SHALL BE PROOF ROLLED TO REVEAL WEAK, ORGANIC, OR OTHER UNSUITABLE SOILS. UNSUITABLE SOILS SHALL BE EXCAVATED TO FIRM GROUND AND FILLED TO GRADE WITH SUITABLE NATIVE OR IMPORTED STRUCTURAL FILL.

18. EXPOSED SUBGRADE SOILS ON AREAS TO RECEIVE STRUCTURAL FILL SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES.

19. IF FILLS ARE NEEDED FOR STRUCTURAL SUPPORT, THEY SHALL BE INSTALLED IN NO MORE THAN 8-INCH LIFTS, AND SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY FOR FINE GRAINED NATIVE SOILS UNLESS OTHERWISE SPECIFIED ON THE PLAN. THE TOP LIFT OF FILL SHALL BE COMPACTED TO 92%. ALL OTHER SOILS SHALL BE COMPACTED TO NO LESS THAN 85%.

20. COMPACTION TESTING SHALL BE DONE IN ACCORDANCE WITH ASTM D 698 (STANDARD PROCTOR).

21. AT THE END OF THE GRADING OPERATION, THE STOCKPILED STRIPPINGS SHALL BE DISTRIBUTED ON THE LANDSCAPED AREAS IN A COMPACTED DEPTH NOT TO EXCEED 12".

22. ALL SURFACES SHALL BE GRADED SMOOTH AND FREE OF IRREGULARITIES THAT MIGHT ACCUMULATE SURFACE WATER.

23. ALL GRADING OPERATIONS AND DISTURBED SURFACE STABILIZATION SHALL BE IN ACCORDANCE WITH THE PROJECT EROSION CONTROL PLAN.

TRANSPORTATION

24. THE MOST CURRENT EDITIONS OF THE OREGON DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS AND STANDARD DETAILS AND THE MOST CURRENT EDITIONS OF THE CITY OF ASTORIA DESIGN STANDARDS SHALL BE UTILIZED IN THE CONSTRUCTION OF TRANSPORTATION ELEMENTS OF THESE PLANS.

25. STREET SIGNING AND STRIPING SHALL BE INSTALLED BY THE DEVELOPER. ALL STREET SIGNS AND STRIPING SHALL BE INSTALLED PER THE LATEST ADOPTED EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) PUBLISHED BY THE U.S.DEPARTMENT OF TRANSPORTATION AND LATEST ADOPTED EDITION OF THE STATE OF OREGON SUPPLEMENT TO THE MUTCD.

26. ALL CONSTRUCTION WITHIN THE RIGHT-OF-WAY SHALL HAVE AN APPROVED TRAFFIC CONTROL PLAN AND RIGHT-OF-WAY PERMIT PRIOR TO ANY ON-SITE CONSTRUCTION ACTIVITY.

27. PAVING WITHIN THE PUBLIC RIGHT-OF-WAY WILL NOT BE ALLOWED DURING WET OR COLD WEATHER, PER DOT SPECIFICATIONS.

28. ALL PAVEMENT SHALL BE STRAIGHT CUT PRIOR TO PAVING. EXISTING PAVEMENT SHALL BE REMOVED AS NECESSARY TO PROVIDE A SMOOTH TRANSITION FOR BOTH RIDE AND DRAINAGE.

29. ALL ADA PEDESTRIAN RAMPS SHOWN ON THE PLANS AND ON THE DETAIL SHEETS SHALL BE CONSTRUCTED WITH THE PROJECT.

30. CONTRACTOR SHALL REPORT ALL DAMAGES IMMEDIATELY TO THE CITY'S PUBLIC WORKS DEPARTMENT OR CONTACT THE INSPECTOR ON THE JOB.

31. PUBLIC RIGHTS-OF-WAY SHALL BE KEPT IN A CLEAN AND SERVICEABLE CONDITION AT ALL TIMES. IN THE EVENT MATERIALS ARE INADVERTENTLY DEPOSITED ON ROADWAYS, THE MATERIAL SHALL BE PROMPTLY REMOVED. MATERIALS ARE TO BE SWEPT AND REMOVED WITH A VACUUM SWEEPER.

STORM SEWER CONSTRUCTION

32. ALL MATERIALS AND INSTALLATION OF STORM SEWERS AND DRAINAGE SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IN THE LATEST EDITION OF THE "OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION" BY THE AMERICAN PUBLIC WORKS ASSOCIATION AND THE OREGON DEPARTMENT OF TRANSPORTATION. WHEREVER THE STANDARD SPECIFICATIONS REFER TO THE "STATE", "SECRETARY", OR WHEN REFERENCE IS MADE TO THE DEPARTMENT OF TRANSPORTATION IT SHALL BE UNDERSTOOD THAT THE STANDARD SPECIFICATIONS SHOULD READ THE "OWNER". ADDITIONALLY, ALL MATERIALS AND INSTALLATION OF STORM SEWERS AND DRAINAGE SYSTEMS IN THE RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IN THE MOST CURRENT EDITIONS OF THE CITY OF ASTORIA DESIGN STANDARDS.

33. PIPE LENGTHS SHOWN ON THE PLANS ARE TO THE CENTER OF THE STRUCTURE.

34. PRE-PAVING AS-BUILTS ARE REQUIRED FOR STORMWATER, WATER, AND SANITARY FACILITIES. PROVIDE AS-BUILT INFORMATION TO THE CONSTRUCTION INSPECTOR AND CONSTRUCTION ENGINEER FOR APPROVAL PRIOR TO ANY PAVING.

35. MATERIALS FOR STORM SEWER INLET LATERALS AND MAINS SHALL BE DUAL-WALLED, SMOOTH INTERIOR, CORRUGATED POLYETHYLENE STORM SEWER PIPE, UNLESS OTHERWISE SPECIFIED ON PLANS.

36. SEE THE OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 00445 FOR STORM SEWER PIPE MATERIALS AND PLANS.

37. PERFORATED PIPE MATERIALS SHALL BE PERFORATED CORRUGATED POLYETHYLENE STORM SEWER PIPE.

38. CATCH BASINS SHALL BE TYPE 1 H-20 OR PROJECT APPROVED EQUAL, UNLESS OTHERWISE SPECIFIED ON PLANS.

39. TRENCH EXCAVATION SHALL MEET THE REQUIREMENTS OF OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION BY THE AMERICAN PUBLIC WORKS ASSOCIATION AND THE OREGON DEPARTMENT OF TRANSPORTATION SECTION 00405.41.

40. STORM SEWER PIPE BEDDING AND BACKFILL SHALL MEET THE REQUIREMENTS OF SECTIONS 00405.12-14, AND SECTIONS 00405.45-46. PIPE BEDDING MATERIALS SHALL BE ¾" - 0 AGGREGATE BEDDING PER SECTION 00405.12 AND PIPE BACKFILL MATERIALS SHALL BE CLASS A OR CLASS B PER SECTION 00405.14 AS APPROVED BY THE INSPECTOR. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM RELATIVE DENSITY PER ASTM D 698 (STANDARD PROCTOR). NATIVE BACKFILL MAY BE USED UPON APPROVAL FROM THE INSPECTOR. STORM SEWER PIPE SHALL BE INSTALLED IN THE RIGHT OF WAY IN ACCORDANCE TO THE "UTILITY TRENCH" CITY OF ASTORIA STANDARD DETAIL.

41. STORM SEWER INLETS, AS NOTED ON THE PLANS, SHALL BE FITTED WITH AN APPROVED TRAP.

SANITARY SEWER CONSTRUCTION

42. SANITARY SEWER LATERALS SHALL BE 6" IN SIZE, INSTALLED AT A MINIMUM SLOPE OF 0.01 FT/FT UNLESS OTHERWISE SPECIFIED ON THE PLAN.

43. MATERIALS FOR SANITARY SEWER PIPE SHALL BE PVC PIPE CONFORMING TO ASTM D3034 OR GREEN COLORED PVC-C900 DR 14, HDPE PIPE DR 21, OR DUCTILE IRON, AS NOTED ON THE PLANS.

44. PIPE LENGTHS SHOWN ON THE PLANS ARE TO THE CENTER OF THE STRUCTURE.

45. SANITARY SEWER PIPE BEDDING AND BACKFILL SHALL MEET THE REQUIREMENTS OF SECTIONS 00405.12-14, AND SECTIONS 00405.45-46. PIPE BEDDING MATERIALS SHALL BE ¾" - 0 AGGREGATE BEDDING PER SECTION 00405.12 AND PIPE BACKFILL MATERIALS SHALL BE CLASS A OR CLASS B PER SECTION 00405.14 AS APPROVED BY THE INSPECTOR. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM RELATIVE DENSITY PER ASTM D 698 (STANDARD PROCTOR). NATIVE BACKFILL MAY BE USED UPON APPROVAL FROM THE INSPECTOR. SANITARY SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE TO THE "TRENCH BACKFILL, BEDDING, PIPE ZONE, AND MULTIPLE INSTALLATIONS" STANDARD DETAIL. SANITARY SEWER PIPE SHALL BE INSTALLED IN THE RIGHT OF WAY IN ACCORDANCE TO THE "UTILITY TRENCH" CITY OF ASTORIA STANDARD DETAIL.

46. CONTRACTOR TO MAINTAIN A MINIMUM 10' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN ALL EXISTING AND PROPOSED WATER AND SANITARY SEWER MAINS.

47. ALL SANITARY MANHOLES SHALL BE 48" Ø UNLESS OTHERWISE SPECIFIED ON PLANS.

48. LOCATOR TAPE TO BE LOCATED EIGHTEEN (18) INCHES ABOVE A SEWER MAIN AND TWELVE (12) INCHES ABOVE A SERVICE LINE.

49. THE LOCATOR TAPE SHALL BE MARKED WITH CONTINUOUS THREE (3) INCH WIDE GREEN SIX (6) MIL THICK LOCATOR TAPE THREE (3) INCH HIGH BLACK LETTERS EVERY THREE (3) FEET WITH "WARNING - BURIED SANITARY SEWER".

50. A CONTINUOUS TONING WIRE SHALL BE ATTACHED TO THE TOP OF THE SANITARY SEWER SERVICE LINE. THE TONING WIRE SHALL BE COATED #14 AWG (MIN.) SOLID COPPER WIRE, OR APPROVED EQUAL. THE TONING WIRE SHALL END IN THE VALVE BOX WITH A MINIMUM OF ONE (1) FOOT COILED OF WIRE. THE TONING WIRE SHALL BE TESTED FOR CONTINUITY PRIOR TO ACCEPTANCE. ALL SPLICES WILL BE SOLDERED A MINIMUM OF TWO (2) INCHES IN LENGTH AND ENCASED WITH 3M SCOTCH #220 VINYL MASTIC PADS (3 ½" BY 4 ½") OR 3M SCOTCH 33 ELECTRICAL TAKE AND COATED WITH SCOTCHKOTE ELECTRICAL COATING #1485 (REPEAT PROCESS AFTER FIRST COATING DRIES), OR APPROVED EQUAL.

WATER SYSTEM CONSTRUCTION

51. MATERIALS FOR WATER PIPE SHALL BE DUCTILE IRON CL-52 OR PVC PIPE CONFORMING TO PVC-C900 DR 25, UNLESS OTHERWISE SPECIFIED ON PLANS.

52. PIPE BEDDING MATERIALS SHALL BE ¾" - 0 AGGREGATE BEDDING PER SECTION 00405.12, COMPACTED TO 95% OF THE MAXIMUM RELATIVE DENSITY PER ASTM D 698 (STANDARD PROCTOR). BACKFILL FOR WATER TRENCHES SHALL BE CLASS A OR CLASS B PER SECTION 00405.14 AS APPROVED BY THE DIRECTOR, UNLESS OTHERWISE SPECIFIED ON THE PLANS. NATIVE BACKFILL MAY BE USED UPON APPROVAL FROM THE INSPECTOR. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM RELATIVE DENSITY PER ASTM D 698 (STANDARD PROCTOR). WATER PIPE SHALL BE INSTALLED IN THE RIGHT OF WAY IN ACCORDANCE WITH THE CITY OF ASTORIA STANDARD DETAIL.

53. CONTRACTOR TO MAINTAIN A MINIMUM 10' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN ALL EXISTING AND PROPOSED WATER AND SANITARY SEWER MAINS.

54. ANY SIGNIFICANT DEVIATION FROM THE PLANS WILL REQUIRE A REQUEST FROM THE APPLICANT'S ENGINEER AND APPROVAL FROM THE CITY'S ENGINEER AND CITY INSPECTOR.

BACKFLOW PREVENTION DEVICE NOTES

55. ALL COMMERCIAL WATER METERS SHALL BE PROTECTED WITH A STATE-APPROVED BACKFLOW DEVICE.

56. STATE APPROVED BACKFLOW PROTECTION SHALL BE REQUIRED ON FIRE SPRINKLER AND IRRIGATION SYSTEMS. ALL HOSEBIBS SHALL BE PROTECTED WITH VACUUM BREAKERS. FURTHER BACKFLOW PREVENTION SHALL BE REQUIRED DEPENDING ON WATER USAGE IE - BOILERS, CHILLERS, CHEMICAL ADDITIONS, BOOSTER PUMPS, WELLS, ETC.

RECORD DRAWING

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JAN. 11, 2005
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EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/04/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE

SHEET TITLE

GENERAL CONSTRUCTION NOTES

SHEET

C1.0

ABBREVIATIONS

AC	ACRE, ASPHALT CONCRETE PAVEMENT
ACOE	ARMY CORPS OF ENGINEERS
AD	AREA DRAIN
AGG	AGGREGATE
AIR	AIR RELIEF
AMSL	ABOVE MEAN SEA LEVEL
AP	ANGLE POINT
APN	APPARENT PARCEL NUMBER
APPD	APPROVED
APPROX, ±	APPROXIMAT(-E, -LY)
ASPH	ASPHALT
ASSY	ASSEMBLY
BCR	BEGIN CURB RETURN
BF	BUTTERFLY
BGS	BELOW GROUND SURFACE
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICE
BO	BLOW-OFF
BOC	BACK OF CURB
BOT, BTM	BOTTOM
B.O.W.	BOTTOM OF WALL
BVC	BEGING VERTICAL CURVE
CB	CATCH BASIN
CDF	CONTROLLED DENSITY FILL
CEM	CEMENT
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CIP	CAST IRON PIPE
CIR	CIRCLE
CK	CHECK
CL, ℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COMP	COMPACTION
CONC	CONCRETE
CPE	CORRUGATED POLYETHYLENE
CPL	COUPLING
CT	COURT
CTR	CENTER
CULV	CULVERT
CY	CUBIC YARD
D	DEPTH
DEG	DEGREE(-S)
DI	DUCTILE IRON
DIA	DIAMETER
DIM.	DIMENSION(-S)
DIP, D.I.P.	DUCTILE IRON PIPE
DOT	DEPARTMENT OF TRANSPORTATION
DR	DIMENSION RATIO
DTL	DETAIL
DWG(S)	DRAWING(-S)
E	EAST
EA	EACH
ECR	END CURB RETURN
EG	EXISTING GROUND
EL, ELEV	ELEVATION
ELB, ELL	ELBOW
ELEC	ELECTRIC(-AL)
ENGR	ENGINEER
ENTR	ENTRANCE
EP, EOP	EDGE OF PAVEMENT
EQ	EQUAL(-LY)
ESC	EROSION CONTROL
ESMT	EASEMENT
EST	ESTIMATE(-D)
EVC	END VERTICAL CURVE
EXC	EXCAVATE
EX., EXTG.	EXISTING
EW	EACH WAY
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FLG	FLANGE
FM	FORCE MAIN
FT	FEET, FOOT
GAL	GALLON(-S)
GM	GAS METER
GND	GROUND
GP	GUARD POST
GPM	GALLONS PER MINUTE
GRD	GRADE
GV	GAS VALVE, GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HGT, HT	HEIGHT
HP	HORSEPOWER
HORZ	HORIZONTAL
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH(-ES)
INTX	INTERSECTION
INV	INVERT
IP	IRON PIPE
L	LENGTH
LAT	LATERAL
LB	POUND(-S)
LF	LINEAR FEET
LONG.	LONGITUDINAL
LT	LEFT
MAX	MAXIMUM
MFA	MAUL FOSTER & ALONGI, INC.
MFR	MANUFACTURER
MH	MANHOLE
MIC	MONUMENT (IN CASE)
MIN	MINIMUM; MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MON	MONUMENT (SURFACE)
MW	MONITORING WELL
N	NORTH
N/A	NOT APPLICABLE
NAT G, NG	NATURAL GAS
NE	NORTHEAST
NO.	NUMBER
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
OHP	OVERHEAD POWER
OT	OWNERSHIP TIE
P	PIPE
P TRAN	PAD MOUNTED TRANSFORMER
PC	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE
PEN.	PENETRATION
PERF	PERFORAT(-E, -ED, -ES, -ION)
P.L., PL	PROPERTY LINE, PLACE
POW V	POWER VAULT
PP	POWER POLE
PROP.	PROPOSED
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENT
PV	PLUG VALVE
PVI	POINT OF VERTICAL INTERSECTION
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R, RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RED	REDUCER
REQD	REQUIRED
REQT	REQUIREMENT
REV	REVISION
R/W, ROW	RIGHT OF WAY
RT	RIGHT
S	SOUTH, SLOPE
SB	SOIL BORING
SCH	SCHEDULE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SE	SOUTHEAST
SF	SQUARE FEET
SHT	SHEET
SL	SLOPE
SPEC	SPECIFICATIONS
SQ	SQUARE
SQ IN	SQUARE INCHES
SRF	SURFACE
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STRM	STORM
STRUCT	STRUCTUR(-E, -AL)
SSWR	SANITARY SEWER
SW,S/W	SIDEWALK, SOUTHWEST
TB	THRUST BLOCK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TEL, TELE	TELEPHONE
TEMP	TEMPORARY
TP	TOP OF PAVEMENT, TEL POLE, TURNING POINT
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UTIL	UTILITY
VC	VERTICAL CURVE
VERT	VERTICAL
VOL	VOLUME
W	WIDTH; WIDE; WEST
W/	WITH
WATR	WATER
WM	WATER METER
W/O	WITHOUT
WSE	WATER SURFACE ELEVATION
WV	GATE/GENERAL WATER VALVE
YD	YARD
YR	YEAR

GENERAL LEGEND

GAS/POWER/TELEPHONE SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		GAS METER
		GAS VALVE
		PAD MOUNTED TRANSFORMER
P		POWER VAULT
		TRANSMISSION TOWER
		UTILITY POLE
		UTILITY POLE ANCHOR
		TELEPHONE RISER
T		TELEPHONE VAULT
		LIGHT POLE

SURVEY SYMBOLS

SYMBOL THEOR./ EXIST.	SYMBOL FOUND/ PROP.	DESCRIPTION
		ANGLE POINT
		BENCH MARK
		BLOCK CORNER
		IRON PIPE
		MONUMENT
		OWNERSHIP TIE
		SECTION DATA:
		SECTION CENTER
		SECTION CORNER
		QUARTER CORNER
		SIXTEENTH CORNER
		CLOSING CORNER
MC WC	MC WC	MEANDER CORNER
		WITNESS CORNER
		SOIL BORING
		SPOT ELEVATION

27	EXISTING GRADE MAJOR CONTOUR
27	EXISTING GRADE MINOR CONTOUR
SD_x	EXISTING STORM DRAIN PIPE
W_x	EXISTING WATER PIPE
SS_x	EXISTING SANITARY SEWER PIPE
	EXISTING AC PAVEMENT
	EXISTING CONCRETE SURFACING
	EXISTING GRAVEL SURFACING
	EXISTING BUILDING
	EXISTING FENCE LINE
	EXISTING ROAD CENTERLINE
	EXISTING RIGHT-OF-WAY
PL	EXISTING PROPERTY LINE

WATER SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		CAP/PLUG
		COUPLING
		GUARD POST / BOLLARD
		REDUCER
		THRUST BLOCK
		WATER METER
		DOUBLE CHECK VALVE ASSEMBLY
		FIRE HYDRANT
		AIR RELIEF
		BLOW-OFF VALVE
		CHECK VALVE
		GATE VALVE
		BENDS:
		90 DEGREE BEND
		45 DEGREE BEND
		22.5 DEGREE BEND
		11.25 DEGREE BEND
		VERTICAL BEND
		TEE
		CROSS

SANITARY/STORM SEWER SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		SAN. SEWER CLEAN OUT
	S	SAN. SEWER MANHOLE
		STORM DRAIN CATCH BASIN
		STORM DRAIN CULVERT
	D	STORM DRAIN MANHOLE
		DRY WELL
		AREA DRAIN

27	PROPOSED GRADE MAJOR CONTOUR (5.0' INTERVAL)
27	PROPOSED GRADE MINOR CONTOUR (1.0' INTERVAL)
	PROPOSED STORM DRAIN PIPE
	PROPOSED WATER PIPE
	PROPOSED SANITARY SEWER PIPE
	PROPOSED AC PAVEMENT
	PROPOSED CONCRETE SURFACING
	PROPOSED GRAVEL SURFACING
	PROPOSED BUILDING
	PROPOSED FENCE LINE
	PROPOSED ROAD CENTERLINE
	PROPOSED RIGHT-OF-WAY
PL	PROPOSED PROPERTY LINE

CHANNELIZATION SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		BIKE PATH
		HANDICAP SYMBOL
STOP	STOP	STOP
		RAISED MARKERS:
		LANE MARKERS TYPE I
		LANE MARKERS TYPE II
		SIGN

MISCELLANEOUS SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		MONITORING WELL
		INLET PROTECTION PILLOW
		CONSTRUCTION ENTRANCE
	FG 83.88	PROPOSED SPOT SHOT

SECTION NUMBER — A / C1.X — SECTION REFERENCE SHEET

TYPICAL SECTION CALLOUT

DETAIL NUMBER — X / C1.X — DETAIL REFERENCE SHEET

TYPICAL DETAIL CALLOUT

SF	PROPOSED SEDIMENT FENCE
OR	PROPOSED FLOW DIRECTION
	PROPOSED GRADE BREAK
	PROPOSED DITCH FLOW LINE
	PROPOSED COMPOST SOCK
	PROPOSED PAINT STRIPE
	PROPOSED TRUNCATED DOMES
	EXISTING FLOW DIRECTION
P	EXISTING OVERHEAD POWER
E_x	EXISTING UNDERGROUND POWER
T	EXISTING UNDERGROUND TELEPHONE
G	EXISTING UNDERGROUND GAS

RECORD DRAWING

MAUL FOSTER ALONGI
3140 NE BROADWAY STREET
PORTLAND, OR 97232
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER
70867PE
OREGON
JAN. 11, 1985
CEM E. GOKCORA
EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN
ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

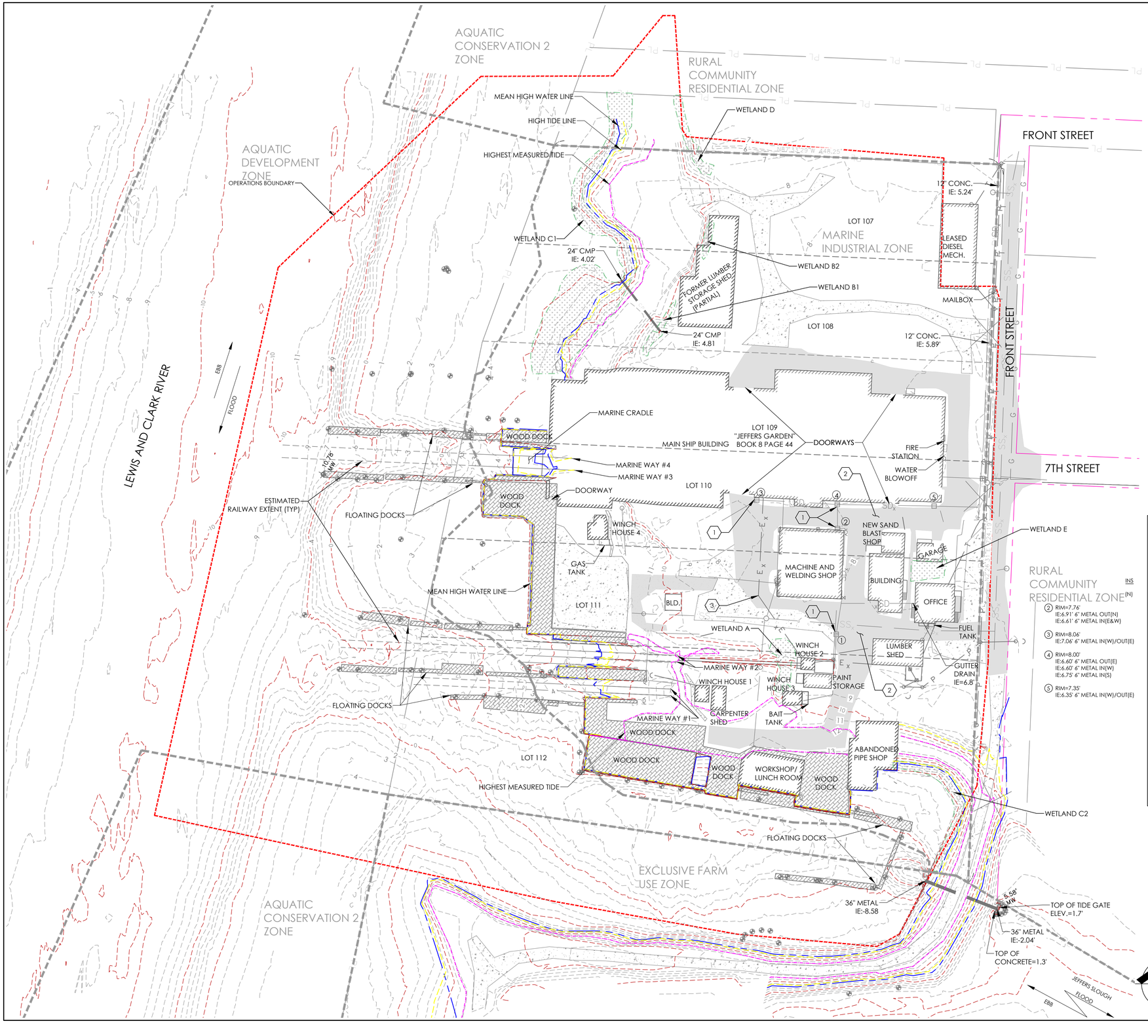
ISSUE	DATE	DESCRIPTION
B	01/04/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE

SHEET TITLE
MASTER LEGEND

SHEET
C 1.1

PLOTTED BY: Gianca Kalmeta RENAME: G:\00_MFA Civil 3D\00_PROJECTS\1029\1653.03-AMCCO PLANS\As-built\C1.1 MASTER LEGEND.dwg
PLOTTED ON: 2022-12-29 4:24 PM



EXISTING CONDITIONS LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- WETLAND
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD 88)
- HIGH TIDE LINE - 8.63' (NAVD 88)
- HIGHEST MEASURED TIDE - 11.9' (NAVD 88)

EXISTING CONDITIONS NOTES

CONSTRUCTION NOTES

1. APPROXIMATE LOCATIONS OF KNOWN OR LOCATED BURIED UTILITIES AND SUBSURFACE FEATURES, AS WELL AS OVERHEAD POWER LINES WITHIN THE SITE ARE PRESENTED ON THE DRAWINGS. HOWEVER, THE CONTRACTOR SHALL ASSUME OTHER BURIED UTILITIES AND SUBSURFACE FEATURES COULD EXIST.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDANCE AND PROTECTION OF ALL UTILITIES AND OTHER SUBSURFACE FEATURES. CALL THE OREGON UTILITY NOTIFICATION CENTER AT 1-800-332-2344 AT LEAST SEVEN (7) BUSINESS DAYS BEFORE PERFORMING ANY SUBSURFACE WORK.
3. THE CONTRACTOR SHALL MAINTAIN A RECORD DRAWING SHOWING THE APPROXIMATE LOCATION OF ALL UTILITIES MARKED BY THE UTILITY LOCATING SERVICES FOR REFERENCE DURING THE COMPLETION OF WORK.
4. THE CONTRACTOR SHALL MAINTAIN MARKERS SHOWING THE GROUND LOCATION OF UTILITIES DURING THE EXECUTION OF WORK.
5. THE CONTRACTOR SHALL MARK THE LOCATION OF IN-WATER UTILITIES BY PLASTIC BUOYS.
6. THE CONTRACTOR SHALL NOTIFY ALL UTILITY PROVIDERS TWO WEEKS IN ADVANCE OF PERFORMING WORK NEAR UTILITIES OR WITHIN A UTILITY EASEMENT (IN PARTICULAR, THE HIGH PRESSURE WATER AND GAS LINES), AS IT IS ANTICIPATED THAT REPRESENTATIVES FROM UTILITY PROVIDERS MAY REQUEST TO BE PRESENT DURING THE WORK.
7. THE EXTENTS OF IN-WATER UTILITIES/FEATURES (I.E. RAILWAYS) ARE SHOWN APPROXIMATELY ON THIS PLAN, AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF WORK.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ACCURATELY FIELD LOCATE AND PREVENT DAMAGE TO ALL UTILITIES AND SUBSURFACE FEATURES. IF ANY UTILITY OR SUBSURFACE FEATURES ARE DAMAGED, THEY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

KEYED NOTES

1. EXISTING STORMWATER SYSTEM CLOGGED AND NOT FUNCTIONING.
2. EXISTING FAILING PAVEMENT AREA
3. APPROXIMATE LOCATION OF 440V UNDERGROUND POWER.

(2) RIM=7.76' IE:6.91' 6" METAL OUT(N) IE:6.61' 6" METAL IN(E&W)

(3) RIM=8.06' IE:7.06' 6" METAL IN(W)/OUT(E)

(4) RIM=8.00' IE:6.60' 6" METAL OUT(E) IE:6.60' 6" METAL IN(W) IE:6.75' 6" METAL IN(S)

(5) RIM=7.35' IE:6.35' 6" METAL IN(W)/OUT(E)

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REGISTERED PROFESSIONAL ENGINEER
70867PE
OREGON
JAN. 11, 2005
CEM E. GOKCORA

EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/06/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE: 0 50' 100
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
EXISTING CONDITIONS PLAN

SHEET
C1.2

PLOTTED ON: 2020-12-29 6:24 PM
PLOTTED BY: Gerick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\04.03-AMCCO\PLANS\A-Build\C1.2 EXISTING CONDITIONS PLAN.dwg

DEQ 1200-C STANDARD NOTES

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.C.I.(3))
2. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS. (SCHEDULE A.12.B AND SCHEDULE B.1)
3. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS. (SCHEDULE B.1.C AND B.2)
4. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, THE ABOVE RECORDS MUST BE RETAINED BY THE PERMIT REGISTRANT BUT DO NOT NEED TO BE AT THE CONSTRUCTION SITE. (SCHEDULE B.2.C)
5. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A 8.A)
6. THE ESCP MUST BE ACCURATE AND REFLECT SITE CONDITIONS. (SCHEDULE A.12.C.I)
7. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT WITHIN 10 DAYS. (SCHEDULE A.12.C.IV. AND V)
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A.7.A.III)
9. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SCHEDULE A.8.C.I.(1) AND (2))
10. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.A.V)
11. MAINTAIN AND DELINEATE ANY EXISTING NATURAL BUFFER WITHIN THE 50-FEET OF WATERS OF THE STATE. (SCHEDULE A.7.B.I.AND (2(A)(B))
12. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE. (SCHEDULE A.8.C.I.(5))
13. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS. (SCHEDULE A.7.C)
14. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY. (SCHEDULE A.7.D.I)
15. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SCHEDULE A.8.C.I.(6))
16. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES. TEMPORARY OR PERMANENT STABILIZATIONS MEASURES ARE NOT REQUIRED FOR AREAS THAT ARE INTENDED TO BE LEFT UNVEGETATED, SUCH AS DIRT ACCESS ROADS OR UTILITY POLE PADS.(SCHEDULE A.8.C.II.(3))
17. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SCHEDULE A.8.C.I.(7))
18. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LANDDISTURBING ACTIVITIES. (SCHEDULE A 7.D.II AND A.8.C.I(4))
19. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SCHEDULE A.7.D.II.(5))
20. CONTROL PROHIBITED DISCHARGES FROM LEAVING THE CONSTRUCTION SITE, I.E., CONCRETE WASH-OUT, WASTEWATER FROM CLEANOUT OF STUCCO, PAINT AND CURING COMPOUNDS. (SCHEDULE A.6)
21. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.E.I.(2))
22. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A. 7.E.III.)
23. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SCHEDULE A 7.A.IV)
24. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.9.B.III)
25. IF AN ACTIVE TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SCHEDULE A.9.D)
26. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A 7.B)
27. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS. (SCHEDULE A 7.E.II.(2))
28. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND BARE GROUND ACTIVITIES DURING WET WEATHER. (SCHEDULE A.7.A.I)
29. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SCHEDULE A.9.C.I)
30. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL. (SCHEDULE A.9.C.I)
31. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SCHEDULE A.9.C.III & IV)
32. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME. (SCHEDULE A.9.B.I)
33. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SCHEDULE A.9.B.II)
34. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.F.I)
35. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.F.II)
36. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS MUST BE REMOVED AND DISPOSED OF PROPERLY, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. (SCHEDULE A.8.C.III(1) AND D.3.C.II AND III)

GENERAL EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE DEQ EROSION & SEDIMENT CONTROL MANUAL (2013) PRIOR TO THE START OF CONSTRUCTION AND INSTALLATION OF EROSION CONTROL BMPs.
2. THE CONTRACTOR SHALL PROVIDE AN EROSION AND SEDIMENT CONTROL INSPECTOR, A PROFESSIONAL WHO MEETS THE INSPECTOR QUALIFICATION REQUIREMENTS AS IDENTIFIED IN SCHEDULE A.12.b.iii.(1) and(2) OF 1200-C PERMIT.
3. ALL EROSION CONTROL BMPs SHALL BE INSTALLED AND MAINTAINED PER THE DEQ EROSION & SEDIMENT CONTROL MANUAL (JANUARY 2013).
4. APPROVAL OF THIS EROSION, SEDIMENT AND POLLUTION CONTROL PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES)
5. THE IMPLEMENTATION OF THIS ESPCP AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESPCP FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND LANDSCAPING IS ESTABLISHED AND INSPECTED.
6. THE ESPCP FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
7. THE ESPCP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESPCP FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
8. THE ESPCP FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
9. THE ESPCP FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF EVERY TWO WEEKS OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT AS DEFINED IN THE CITY OF PORTLAND EROSION CONTROL MANUAL.
10. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

STANDARD NOTES FOR SEDIMENT FENCES

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO MINIMIZE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST, OR OVERLAP 2 INCH X 2 INCH POSTS AND ATTACH AS SHOWN ON DETAIL SHEET 4.3-A.
2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS, THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES.
3. THE FILTER FABRIC SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM FILTER FABRIC FENCE INSTALLATION, SHALL BE BACKFILLED AND COMPACTED, ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY FILTER FABRIC FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCH X 2 INCH POST INSTALLATION. STITCHED LOOPS SHALL BE INSTALLED ON THE UP HILL SIDE OF THE SLOPED AREA.
5. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED.
6. FILTER FABRIC FENCES SHALL BE INSPECTED BY AN OWNER APPROVED INSPECTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

RECORD DRAWING

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REGISTERED PROFESSIONAL ENGINEER
70867PE
OREGON
JAN. 11, 1985
CEM E. GOKCORA

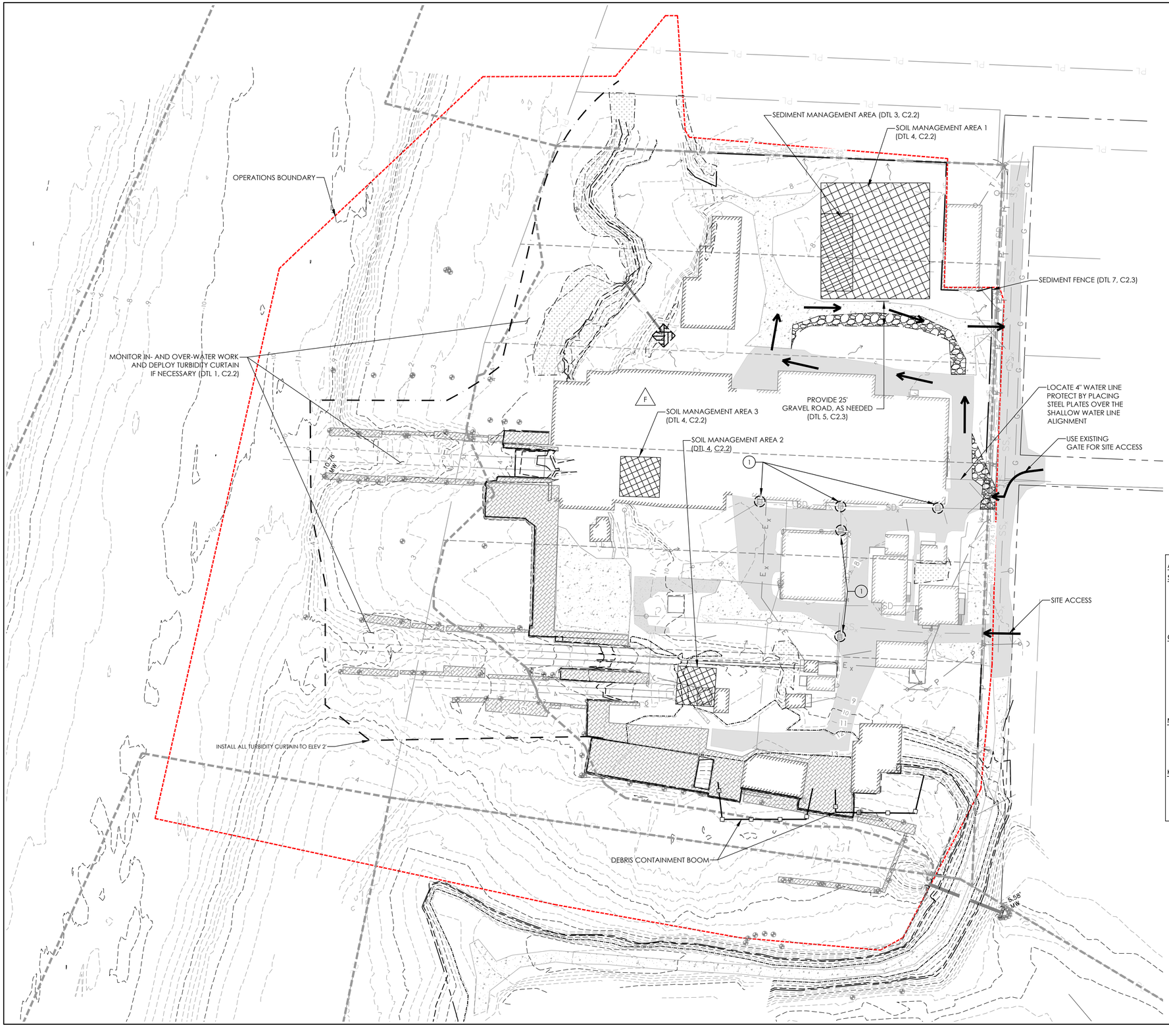
EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN
ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/06/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE
DRAWING NOT TO SCALE
SHEET TITLE
EROSION AND SEDIMENT CONTROL NOTES
SHEET
C2.0

PLOTTED ON: 2022-12-29 4:25 PM PLOTTED BY: Gianna Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\0298.04.03-AMCCO\PLANS\As-built\C2.0 EROSION AND SEDIMENT CONTROL NOTES.dwg



EROSION AND SEDIMENT CONTROL LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE
- MATERIAL STOCKPILE & STAGING AREA
- SEDIMENT MANAGEMENT CELL
- ACCESS ROAD
- IN-WATER WORK BOUNDARY
- CONTAINMENT BOOM
- FLOW DIRECTION ARROW
- SF — PROPOSED SEDIMENT FENCE
- PLUG INLET (5)
- INLET PROTECTION (1)

AMCCO EROSION AND SEDIMENT CONTROL NOTES

SEQUENCING

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO DEMOLITION OR EXCAVATION.
2. IN- AND OVER-WATER WORK WILL BE MONITORED BY THE PROJECT EROSION AND SEDIMENT CONTROL LEAD. IF NECESSARY, IN- AND OVER-WATER WORK STOPPAGE MAY BE REQUIRED IN ORDER TO DEPLOY A TURBIDITY CURTAIN.

CONSTRUCTION NOTES

1. ALL EROSION CONTROL MEASURES AND BEST MANAGEMENT PRACTICES (BMPS) SHALL MEET THE REQUIREMENTS OF THE DEQ 1200-C NPDES GENERAL PERMIT.
2. REFER TO SHEET C2.0 FOR DEQ STANDARD EROSION CONTROL PRACTICES.
3. OFF-SITE STREET SWEEPING WILL BE REQUIRED DAILY WHEN TRUCKS ARE ENTERING AND EXITING THE SITE IF THERE IS OBSERVABLE TRACKING OF MUD FROM THE SITE.
4. INLET PROTECTION SHALL BE PERIODICALLY INSPECTED FOR SEDIMENT ACCUMULATION AND REPLACED WHEN SEDIMENT ACCUMULATION EXCEEDS HALF OF THE CONE DEPTH.

MATERIALS (AND EQUIPMENT)

1. DEBRIS CONTAINMENT BOOM TO BE 10" BOOM WITH 22 OZ. PVC FABRIC.
2. STOCKPILE COVERS SHALL BE IMPLEMENTED FOR ALL ON SITE STORAGE OF SOIL, LONG- OR SHORT-TERM, AND SHALL BE, AT A MINIMUM, 6 MIL THICK U.V. PROTECTED BLACK PLASTIC SHEETING.

KEYED NOTES

(1) ABANDON STORMWATER INLETS. CONTRACTOR TO REMOVE STRUCTURE AND FILL WITH CRUSHED ROCK. ALTERNATIVELY, CONTRACTOR MAY CUT, CAP, AND GROUT THE STORMWATER FACILITIES. GRATES SHOULD BE REMOVED AND CAPPED IN ACCORDANCE WITH THE PLANS.

RECORD DRAWING

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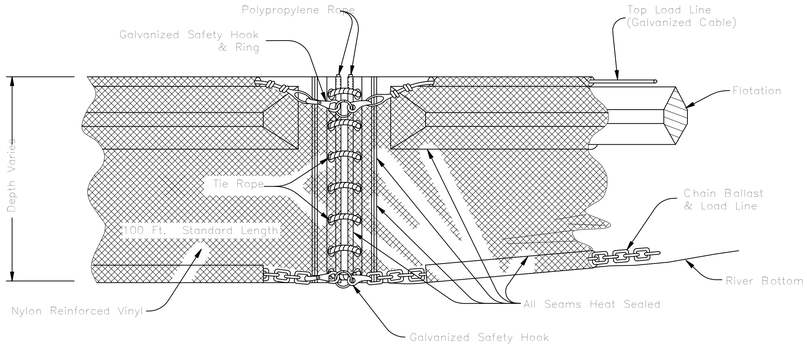
CHECKED: E. BAKKOM

SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN

SHEET
C2.1

PLOTTED BY: Gianck Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\01298.04.03-AMCCO\EVLA\ISS\A-Sub\Cs\C2.1 EROSION AND SEDIMENT CONTROL PLAN.dwg
PLOTTED ON: 2020-12-29 4:25 PM

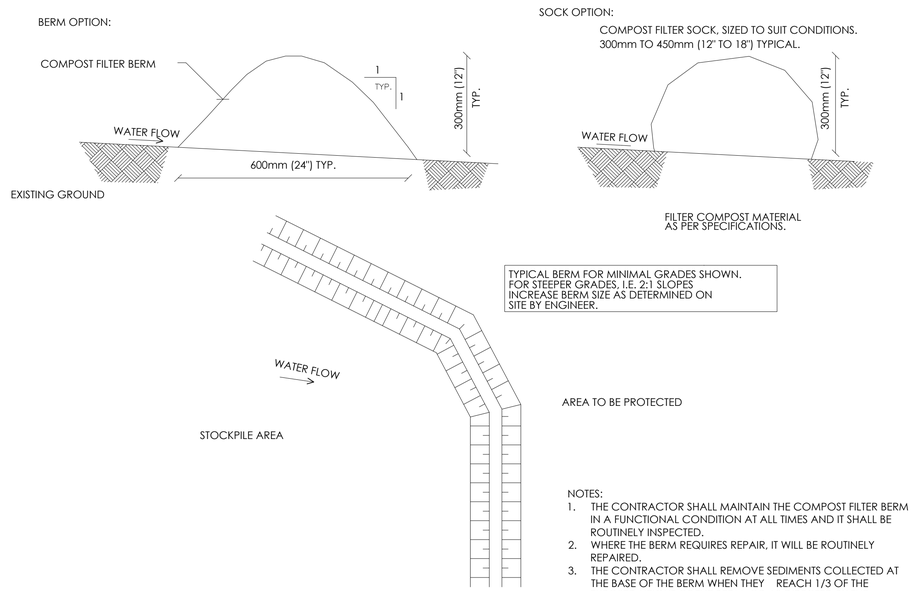


1 C2.1 TURBIDITY CURTAIN DETAIL

NOT TO SCALE

NOTE:

1. TURBIDITY CURTAIN SHALL BE USED AS APPROVED IN THE SECTION 401 CERTIFICATION.
2. TURBIDITY CURTAIN SHALL BE INSTALLED 50' NORTH AND 50' SOUTH FROM THE EXCAVATION WORK AREA, (AS SHOWN IN DETAIL 2 ON THIS SHEET).
3. AS THE EXCAVATION AREA MOVES ALONG THE BANK, THE TURBIDITY CURTAIN SHALL MOVE AND BE INSTALLED AS SHOWN IN THE FIGURE.
4. CONTRACTOR SHALL MAINTAIN CURTAIN DEPLOYMENT CONFIGURATION DURING WORK ACTIVITIES AS OFTEN AS NECESSARY.

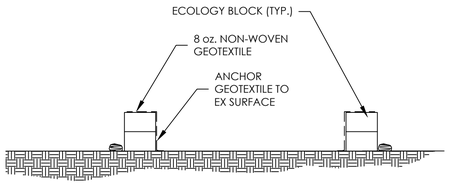


NOTES:

1. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTER BERM IN A FUNCTIONAL CONDITION AT ALL TIMES AND IT SHALL BE ROUTINELY INSPECTED.
2. WHERE THE BERM REQUIRES REPAIR, IT WILL BE ROUTINELY REPAIRED.
3. THE CONTRACTOR SHALL REMOVE SEDIMENTS COLLECTED AT THE BASE OF THE BERM WHEN THEY REACH 1/3 OF THE EXPOSED HEIGHT OF THE BERM, OR AS DIRECTED BY THE ENGINEER.

2 C2.1 COMPOST SOCK DETAIL

NOT TO SCALE

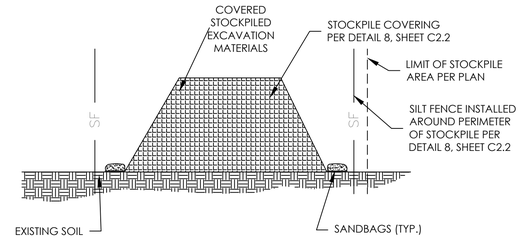


3 C2.1 SEDIMENT MANAGEMENT CELL DETAIL

NOT TO SCALE

SEDIMENT MANAGEMENT CELL NOTES

1. SEDIMENT MANAGEMENT CELL TO BE USED SOLELY FOR STORING OF WET SEDIMENT EXCAVATED FROM SATURATED AREAS.
2. SEDIMENT MANAGEMENT CELL SHALL BE CONSTRUCTED WITH AN ECOLOGY BLOCK PERIMETER.
3. ECOLOGY BLOCKS ARE TO BE STACKED 2-3 COURSES HIGH.
4. TOTAL SEDIMENT VOLUME TO BE MANAGED IS ROUGHLY 1,350 CY. DEPENDENT ON STAGING AND RATE OF EVAPORATION 2 TO 3 COURSES SHALL BE USED AS NEEDED.
5. AS SEDIMENT SETTLES, SUPERNATANT WATER MAY BE SPRAYED ONTO NEARBY STOCKPILES FOR DUST CONTROL. REMAINING SEDIMENT TO DEWATER PRIOR TO OFF-SITE DISPOSAL OF SEDIMENT.



STOCKPILE AREA NOTES

1. INSTALL SEDIMENT FENCING, COMPOST SOCKS AND OTHER BMPs AS NECESSARY TO PREVENT SEDIMENT LADEN RUNOFF FROM EXITING THE STOCKPILE AREA.
2. STOCKPILE COVER TO BE DEPLOYED DURING HEAVY RAIN/WIND AND WHEN STOCKPILE WILL NOT BE USED FOR MORE THAN 48 HOURS. COVER MATERIAL SHALL BE DEPLOYED AS SHOWN ON DETAIL 8, SHEET C2.2.
3. PERIMETER SILT FENCING REMOVED FOR ACCESS TO THE STOCKPILE AREA SHALL BE REPLACED AT THE END OF EACH WORKING DAY, THE PERIMETER SHALL REMAIN COMPLETELY ENCLOSED DURING NON-WORKING HOURS.
4. STOCKPILES PLACED OUTSIDE OF THE PRIMARY STOCKPILE AREA SHALL BE PLACED ON 6 MIL (MINIMUM THICKNESS) PLASTIC SHEETING.
5. SEE SHEET C7.1 FOR SOIL HANDLING NOTES AND DETAILS.

4 C2.1 CROSS SECTION VIEW FOR PERVIOUS SURFACE

NOT TO SCALE

RECORD DRAWING

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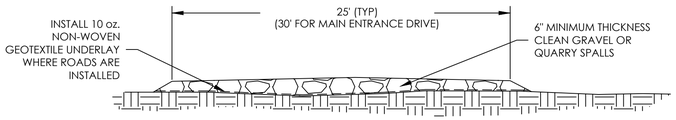
EROSION AND SEDIMENT CONTROL DETAILS I
SHEET
C2.2

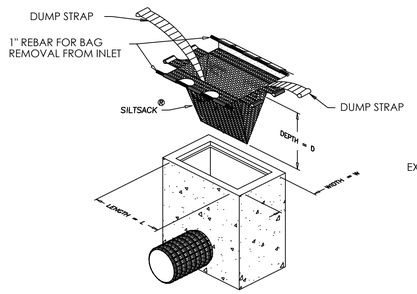
PLOTTED ON: 2020-12-29 4:23 PM PLOTTED BY: Garrick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\00981\04.03-AMCCO\VLA\65-A4-Sht8\C2.2 EROSION AND SEDIMENT CONTROL DETAILS I.dwg

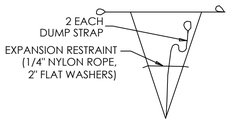


ACCESS / CIRCULATION ROAD NOTES

1. ACCESS AND INTERNAL CIRCULATION ROADS SHALL BE CLEARED OF VEGETATION OR OTHER DEBRIS PRIOR TO PLACEMENT OF GRAVEL SURFACE.
2. GRAVEL SHALL BE KEPT REGULARLY WETTED TO PREVENT AIRBORNE DUST FROM DEVELOPING DURING CONSTRUCTION.
3. GRAVEL MAY BE USED TO BACKFILL HOT SPOT EXCAVATIONS AS WORK PROGRESSES AND HAUL ROADS ARE NO LONGER REQUIRED.
4. HAUL ROADS SHALL BE INSTALLED AS NEEDED TO PREVENT SITE SOIL DUST OVER CONSTRUCTION AREAS.

5 / C2.1 TEMPORARY GRAVEL ACCESS ROAD
NOT TO SCALE

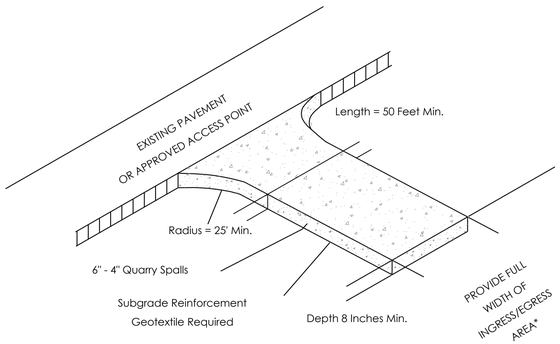




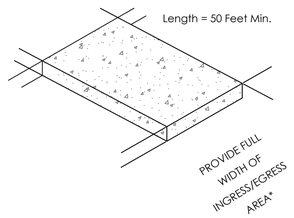
BAG DETAIL

Regular Flow Only
Do not use High Flow Insert Bags.

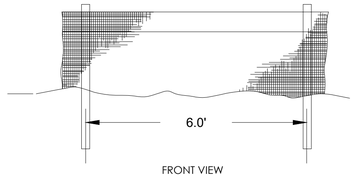
6 / C2.1 STORMWATER INLET PROTECTION
NOT TO SCALE



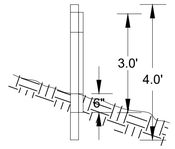
CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



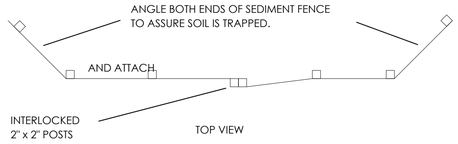
CONSTRUCTION EXIT DETAIL



FRONT VIEW



SIDE VIEW

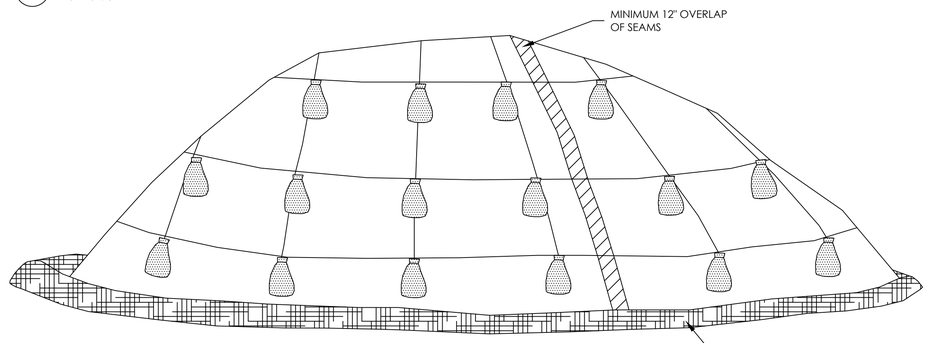


TOP VIEW

NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" MIN. VERTICALLY BELOW GRADE.
2. 2" x 2" FIR, PINE, OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED UPHILL SIDE OF SLOPE.
4. COMPACT NATIVE FILL IN ALL AREAS OF FILTER FABRIC TRENCH.

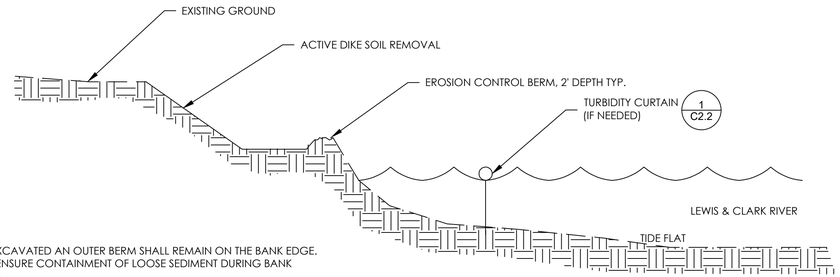
4. SEDIMENT FENCING SHALL BE INSTALLED ON CONTOUR.

7 / C2.1 SEDIMENT FENCE DETAIL
NOT TO SCALE



1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. BARRIER REQUIRED AT TOE OF STOCKPILE AREA.
3. COVERING SHALL BE MAINTAINED TIGHTLY IN PLACE BY USING SAND BAGS OR TIRES ON ROPES WITH A MAXIMUM OF 10' GRID SPACING IN ALL DIRECTIONS.
4. STOCKPILE COVERING SHALL BE BLACK PLASTIC WITH U.V. PROTECTION

8 / C2.1 STOCKPILE COVER DETAIL
NOT TO SCALE



NOTES:

1. AS BANK IS EXCAVATED AN OUTER BERM SHALL REMAIN ON THE BANK EDGE. BERM SHALL ENSURE CONTAINMENT OF LOOSE SEDIMENT DURING BANK EXCAVATION.

10 / C2.1 EROSION CONTROL BERM DETAIL
NOT TO SCALE

RECORD DRAWING

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EROSION AND SEDIMENT CONTROL DETAILS II
SHEET
C2.3

PLOTTED BY: Garrick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\0298\04.03-AMCCO PLANS\As-built\C2.3 EROSION AND SEDIMENT CONTROL DETAILS II.dwg
PLOTTED ON: 2022-12-29 4:26 PM

AQUATIC CONSERVATION 2 ZONE

RURAL COMMUNITY RESIDENTIAL ZONE

AQUATIC DEVELOPMENT ZONE

MARINE INDUSTRIAL ZONE

EXCLUSIVE FARM USE ZONE

AQUATIC CONSERVATION 2 ZONE

RURAL COMMUNITY RESIDENTIAL ZONE

LEWIS AND CLARK RIVER

EBB

FLOOD

MEAN HIGH WATER LINE

HIGH TIDE LINE

HIGHEST MEASURED TIDE

DIKE EASEMENT

WETLAND C1

WETLAND D

WETLAND B1

WETLAND B2

WETLAND A

WETLAND E

VEGETATION TO REMAIN WITHIN 50 FT

FRONT STREET

7TH STREET

LOT 107

LOT 108

LOT 109 "JEFFERS GARDEN" BOOK 8 PAGE 44

LOT 110

LOT 111

LOT 112

LEASED DIESEL MECH.

MAILBOX

DEMOLISH ABOVE GRADE STRUCTURE ONLY

EAST BUILDING

MAIN SHIP BUILDING

DOORWAYS

FIRE STATION

WATER BLOWOFF

MARINE CRADLE

WOOD DOCK

MARINE WAY #4

MARINE WAY #3

DOORWAY

FLOATING DOCKS

WINCH HOUSE 4

GAS TANK

MACHINE AND WELDING SHOP

NEW SAND BLAST SHOP

GARAGE

BUILDING D

OFFICE

FUEL TANK

LUMBER SHED

BLD

MEAN HIGH WATER LINE

MARINE WAY #2

WINCH HOUSE 1

WINCH HOUSE 2

WINCH HOUSE 3

PAINT STORAGE

CARPENTER SHED

BAIT TANK

MARINE WAY #1

WOOD DOCK

ABANDONED PIPE SHOP

WORKSHOP/ LUNCH ROOM

HIGHEST MEASURED TIDE

BLDG CONTAINS LEAD PAINT

TURBIDITY CURTAIN FOR DEBRIS

FLOATING DOCKS

PROTECT BLDG IN PLACE

WETLAND C2

DEMOLISH STRUCTURES ABOVE PILING, INCLUDING SUBFLOORING. PILING TO REMAIN.

5.5ft MW

JEFFERS SLOUGH

EBB

FLOOD

MARINE WAY RAIL SUPPORT STRUCTURE
(CONCEPTUAL DETAIL AS DESCRIBED BY OWNER)

DEMOLITION LEGEND

- REMOVE DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- DEMOLISH EXISTING STRUCTURE
- DEMOLISH EXISTING DIKES AND PILE
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' NAVD88
- HIGH TIDE LINE - 8.63' NAVD88
- HIGHEST MEASURED TIDE - 11.9' NAVD88
- DIKE EASEMENT
- TURBIDITY CURTAIN

DEMOLITION NOTES

SEQUENCING

1. ALL APPROPRIATE EROSION CONTROL BMPS, AS IDENTIFIED ON SHEET C2.1 SHALL BE IN PLACE AND APPROVED BY THE ENGINEEER, PRIOR TO START OF DEMOLITION WORK.
2. CONTRACTOR, ENGINEER AND OWNER SHALL ATTEND A PRE-DEMOLITION MEETING TO REVIEW THE CONDITION OF ALL STRUCTURES TO BE DEMOLISHED.
3. DEMOLITIONS AND TEMPORARY STRUCTURE RELOCATION SHALL OCCUR PRIOR TO OTHER SITE REMEDIATION ACTIVITIES.

CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONDUCT A HAZARDOUS BUILDING MATERIALS SURVEY PRIOR TO DEMOLITION OF STRUCTURES.
2. CONTRACTOR SHALL SALVAGE OR DISPOSE OF ALL MATERIAL REMAINING IN BUILDINGS TO BE DEMOLISHED AND LOOSE WITHIN THE CONSTRUCTION YARD.
3. CONTRACTOR MAY SALVAGE MATERIALS FROM DEMOLISHED STRUCTURES TO THE EXTENT PRACTICAL.
4. POTENTIALLY CONTAMINATED MATERIALS OR THOSE THAT CANNOT BE SALVAGED SHALL BE DISPOSED OF OR MANAGED IN ACCORDANCE WITH OREGON STATE LAW.
5. CONTRACTOR SHALL DEMOLISH STRUCTURES IN A SAFE MANNER CONSISTENT WITH INDUSTRY STANDARD PRACTICES.
6. CONTRACTOR SHALL REMOVE MARINE WAY FLOATS DURING REMEDIATION WORK. FLOATS SHALL BE DISPOSED OF WITH DEMOLITION DEBRIS.
7. CONTRACTOR SHALL REMOVE MARINE WAY RAILS WITHIN THE SEDIMENT EXCAVATION AREAS AND INSIDE THE MAIN SHIP BUILDING. RAILS EXTENDING OUTSIDE OF THESE LIMITS MAY BE REMOVED AT THE CONTRACTOR'S OPTION.
8. CONTRACTOR SHALL REMOVE THE MARINE WAY RAIL SUPPORT STRUCTURE WITHIN THE SEDIMENT EXCAVATION AREAS. THE OWNER REPORTS THAT THE STRUCTURE CONSISTS OF A CROSS TIE SITTING ON TOP OF A SINGLE PILE. THE CONTRACTOR SHALL REMOVE THE OVERLYING STEEL RAIL FROM THE SITE. CROSS TIMBERS AND AT LEAST THE UPPER 5 FEET OF SUPPORT RAILS SHALL BE PULLED TO FACILITATE SEDIMENT EXCAVATION TO A MAXIMUM DEPTH OF 4.0' BELOW MUDLINE.
9. PILINGS IDENTIFIED FOR REMOVAL SHALL BE PULLED IN A MANNER CONSISTENT WITH THE SLOPES IV IN-WATER OVER-WATER STRUCTURES MANUAL.

MATERIALS (AND EQUIPMENT)

1. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND MATERIALS NECESSARY TO SAFELY DEMOLISH STRUCTURES AND MANAGE THE RESULTING DEBRIS.

SUBMITTALS

1. PRECONSTRUCTION SUBMITTALS

   THE CONTRACTOR SHALL PROVIDE A DESCRIPTION OF THE STRUCTURE REMOVAL APPROACH(ES) THAT WILL BE UTILIZED AND THE METHOD OF VERIFYING THAT A NEAT SURFACE HAS BEEN LEFT. THE PLAN SHALL INCLUDE A DESCRIPTION OF THE MEASURES TO BE IMPLEMENTED TO CONTROL THE RELEASE OF STRUCTURE DEBRIS AND OTHER SMALL WOOD FRAGMENTS THAT MAY RESULT.

2. CONSTRUCTION SUBMITTALS

   THE CONTRACTOR SHALL PROVIDE RECEIPTS OF DISPOSAL FROM THE DISPOSAL FACILITY TO THE ENGINEER WITHIN THIRTY (30) DAYS OF THE REMOVAL AND DISPOSAL ACTIVITIES. THE RECEIPT SHALL SHOW THE MEASURED NET WEIGHT OF MATERIAL DISPOSED OF. UPON COMPLETION OF REMOVAL AND DISPOSAL ACTIVITIES, THE CONTRACTOR SHALL CERTIFY TO THE ENGINEER, IN WRITING, THAT ALL MATERIALS WERE EITHER DISPOSED OF AT A DEQ-APPROVED DISPOSAL FACILITY OR APPROPRIATELY SALVAGED/RECYCLED.

KEYED NOTES

1. THE OWNER INTENDS TO KEEP THE LANDWARD PORTION OF THE MAIN SHIP BUILDING. CONTRACTOR SHALL TAKE NECESSARY STEPS TO SEPARATE THE RIVERWARD PORTION OF THE BUILDING, ALLOWING FOR ITS CONTROLLED REMOVAL. OWNER SHALL BE RESPONSIBLE FOR MAKING REPAIRS TO THE REMAINING LANDWARD PORTION OF THE BUILDING. EXTENTS OF THE STRUCTURE DEMOLITION WILL BE EVALUATED BY THE STRUCTURAL CONSULTANT PRIOR TO START OF CONSTRUCTION.
2. IF DEEMED NECESSARY BY THE ENGINEER, A CONTAINMENT BOOM SHALL BE EMPLOYED DURING ALL PILING REMOVAL ACTIVITIES. THE BOOM SHALL ENCIRCLE THE AREAS WHERE PILINGS ARE BEING REMOVED. THIS BOOM SHALL ALSO SERVE TO COLLECT ANY FLOATING DEBRIS. OIL ABSORBENT MATERIALS SHALL BE EMPLOYED IF VISIBLE PRODUCT IS OBSERVED. THE BOOMS SHALL REMAIN IN PLACE UNTIL ALL OILY MATERIAL AND FLOATING DEBRIS HAVE BEEN COLLECTED AND THE SHEENS HAVE DISSIPATED.
3. CONTRACTOR SHALL PROVIDE A MEANS TO CONTAIN DEBRIS RESULTING FROM THE DEMOLITION OF OVER-WATER STRUCTURES, AND PREVENT ITS DISCHARGE TO THE SHORELINE UNDER THE STRUCTURE. CONTAINMENT METHODS SHOULD BE CONSISTENT WITH STANDARD INDUSTRY PRACTICES, AND MAY INCLUDE CONTAINMENT BOOM, DEBRIS NETTING, OR OTHER APPROPRIATE MEASURES.
4. CONTRACTOR SHALL CLEARLY MARK THE EXISTING TIDE GATE TO PROTECT IT FROM ANY DAMAGE DURING CONSTRUCTION. THE TIDE GATE SHALL BE RESTORED TO THE PRE-CONSTRUCTION CONDITIONS IMMEDIATELY, IF DAMAGED.

RECORD DRAWING

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JAN. 11, 2005
CEM E. GOKCORA

EXPIRES: 6/30/2025
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AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/04/2023	RECORD DRAWING DOCUMENT
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DRAWN: G. KALMETA
CHECKED: E. BAKKOM

SCALE

0 50' 100

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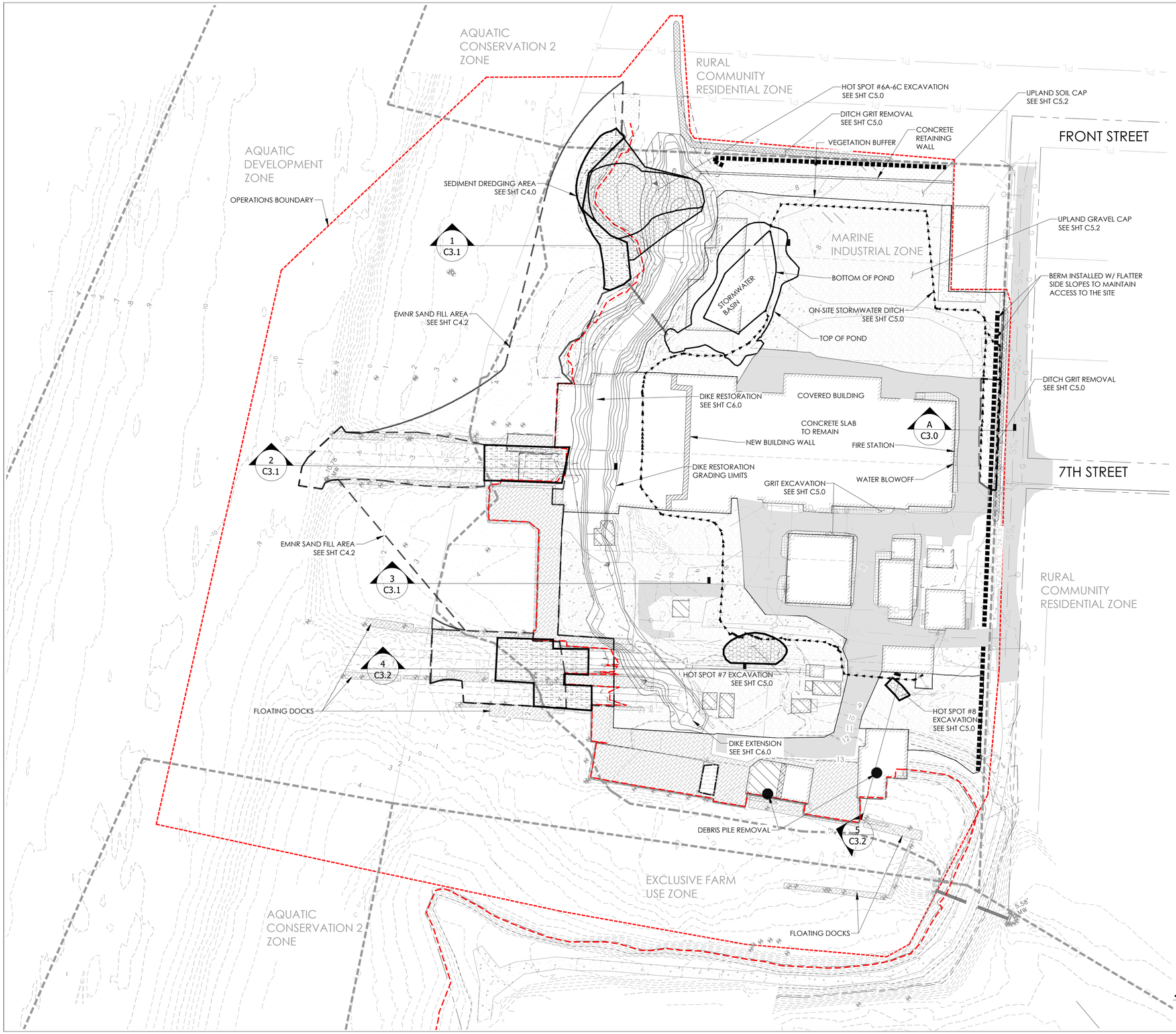
SHEET TITLE

DEMOLITION PLAN

SHEET

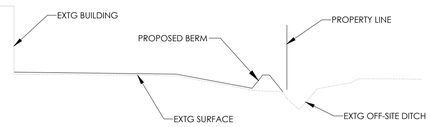
C2.4

PLOTTED ON: 2020-12-29 4:26 PM PLOTTED BY: Garrick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\1029\04.03 AMCCO\VA\MBS\A-builts\C2.4 DEMOLITION PLAN.dwg



REMEDIATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- UPLAND GRAVEL CAP
- UPLAND SOIL CAP
- HOT SPOT EXCAVATION
- GRIT EXCAVATION
- EMNR SAND FILL
- SEDIMENT DREDGING
- BERM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD 88)
- HIGH TIDE LINE - 8.63' (NAVD 88)
- HIGHEST MEASURED TIDE - 11.9' (NAVD 88)



A C3.0 CROSS SECTION VIEW
NOT TO SCALE

REMEDIATION NOTES

SEQUENCING

1. INSTALL EROSION CONTROL MEASURES PRIOR TO EARTH DISTURBING ACTIVITIES (SHEETS C2.0 THROUGH C2.3)
2. DEMOLITION OF SITE STRUCTURES/FEATURES (SHEET C2.4)
   a. PERFORM HAZARDOUS BUILDING MATERIALS (HBM) ASSESSMENT
   b. ISOLATE/CONTAIN AREA UNDER OVER-WATER STRUCTURES
   c. ABATE MATERIALS AS DETERMINED IN HBM
   d. DISPOSE OF DEMOLITION WASTE OFFSITE AS DEBRIS
3. COMPLETE SEDIMENT EXCAVATION/BACKFILL (SHEET C4.0), PRIOR TO INSTALLATION OF EMNR SAND LAYER (SHEET C5.1).
   a. STOCKPILE/DEWATER SATURATED SEDIMENT
4. EXCAVATE UPLAND HOT-SPOTS (SHEET C5.0).
   a. STOCKPILE HOT-SPOT SOIL
   b. TREAT DESIGNATED SOIL
   c. DISPOSE OF EXCAVATED/TREATED SOIL/SEDIMENT AT OFFSITE SUBTITLE D LANDFILL
5. BACKFILL EXCAVATION #6A-6C TO MATCH EXISTING GRADE (SHEET C5.0) AND VEGETATE
6. PREPARE SUBGRADE AND ESTABLISH DRAINAGE PATTERNS (SHEET C5.1)
   a. EXCAVATION OF STORMWATER BASIN
   b. STORMWATER DITCHES
   c. BACKFILL OF EXCAVATIONS #7 AND #8 USING ON-SITE MATERIALS
7. CONSTRUCT DIKE EXTENSION/IMPROVEMENTS (SHEETS C6.0 AND C6.1)
8. CONSTRUCT UPLAND CAPS (SHEET C4.2)
   a. CLEAN SOIL CAP AT LANDSCAPE BUFFER
   b. PAVEMENT OVERLAY
   c. GRAVEL CAP
9. VEGETATE SITE
   a. DIKE EXCAVATION AREA
   b. DIKE CONSTRUCTION AREA
   c. LANDSCAPE BUFFER.

CONSTRUCTION NOTES

1. SEQUENCING LISTED ON THIS SHEET IS ENGINEER'S RECOMMENDATION, WILL BE DISCUSSED WITH THE CONTRACTOR AND CAN BE ADJUSTED/MODIFIED PER CONTRACTOR'S RECOMMENDATIONS.
2. EXCAVATION #6A-6C SHALL BE BACKFILLED WITH CLEAN MATERIAL MEETING DIKE FILL REQUIREMENTS.
3. EXCAVATIONS #7 AND #8 SHOULD BE BACKFILLED USING SOILS GENERATED ON SITE DURING SUB-GRADE PREPARATION.
4. LIMITS OF ASPHALT OVERLAY TO BE CONFIRMED.

RECORD DRAWING

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DRAWN: G. KALMETA
CHECKED: E. BAKKOM

SCALE
0 50' 100'
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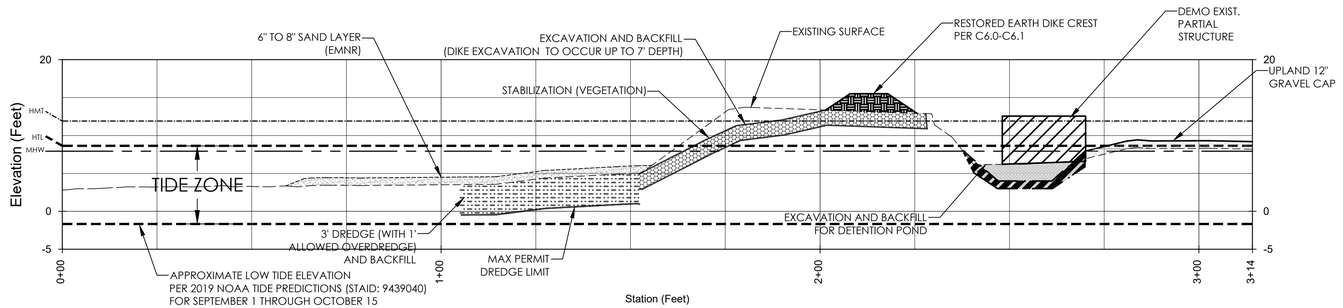
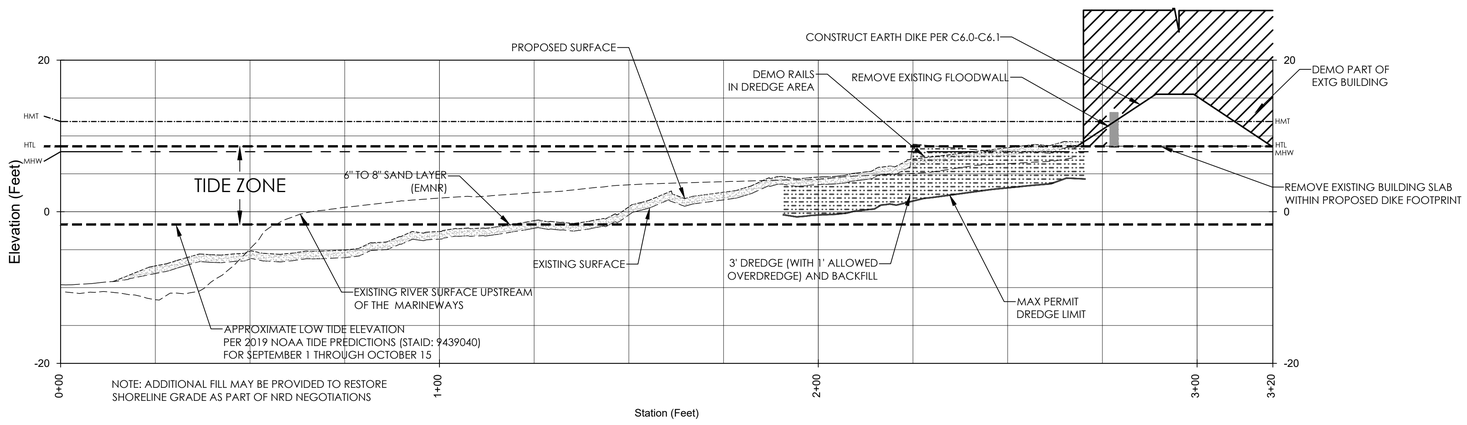
SHEET TITLE
REMEDIATION PLAN

SHEET
C3.0

PLOTTED ON: 2023-01-03 8:52 AM PLOTTED BY: Cem Gokcora FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\1653-AMCCO\PLANS\xx-build\C3.0 REMEDIATION PLAN.dwg



1 / C3.0 HORIZONTAL SCALE 1" = 20' VERTICAL SCALE 1" = 10'
VERTICAL EXAGGERATION: 2



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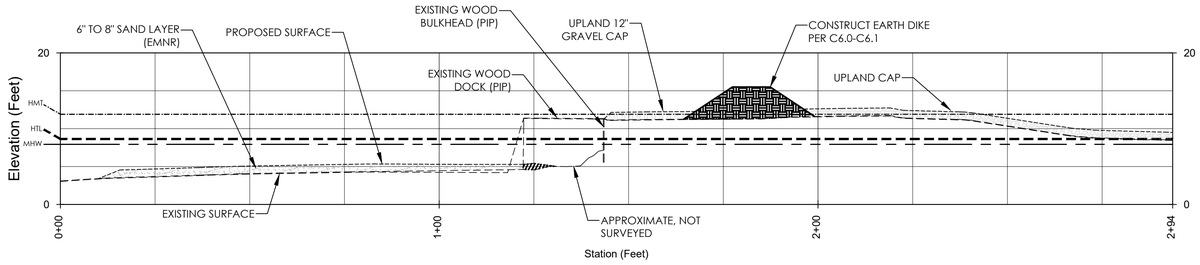
VERTICAL EXAGGERATION: 2



3 / C3.0 HORIZONTAL SCALE 1" = 20' VERTICAL SCALE 1" = 10'
VERTICAL EXAGGERATION: 2

LEGEND

- MEAN HIGH WATER LINE - 7.93' (NAVD 88)
- HIGH TIDE LINE - 8.63' (NAVD 88)
- HIGHEST MEASURED TIDE - 11.9' (NAVD 88)

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CHECKED: E. BAKKOM
SCALE
0 20' 40'
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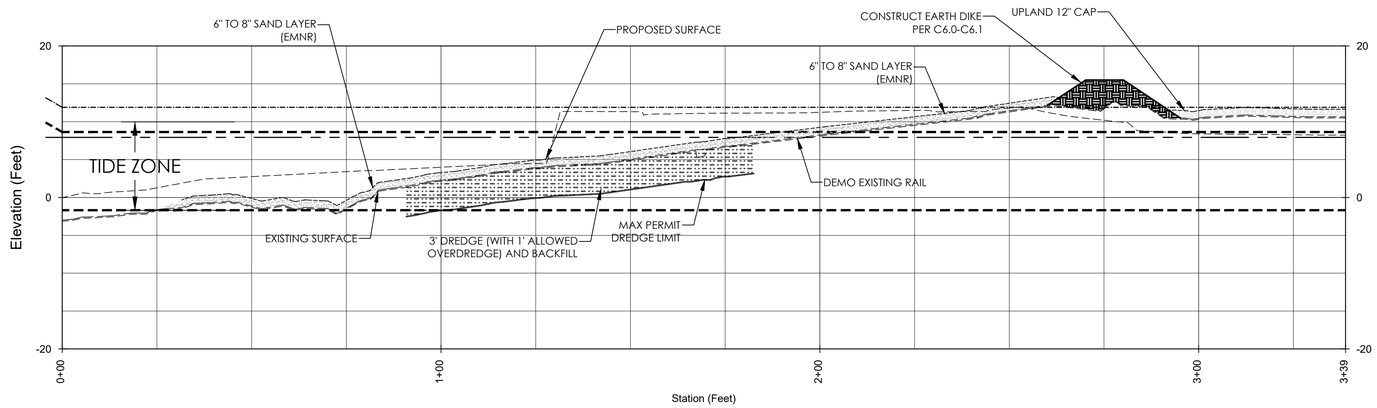
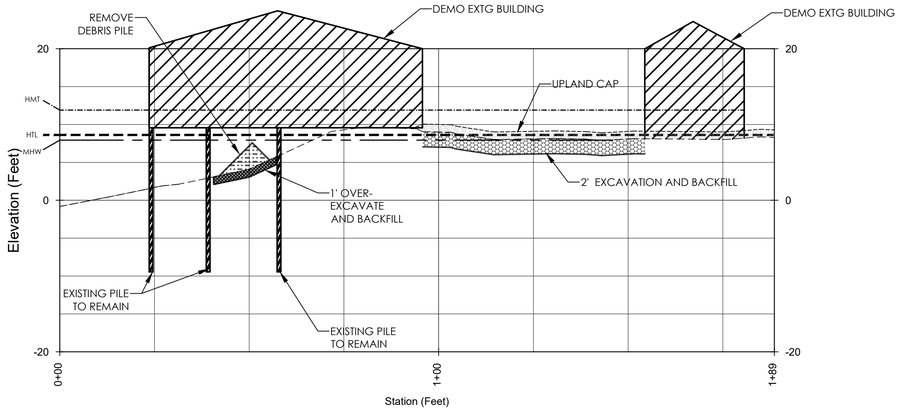
SHEET TITLE
REMEDIATION CROSS-SECTIONS

SHEET
C3.1

PLOTTED ON: 2020-12-29 6:27 PM PLOTTED BY: Gerick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\04.03-AMCCO\PLANS\A-Built\C3.1 REMEDIATION CROSS-SECTIONS.dwg



4 C3.0 HORIZONTAL SCALE 1" = 20' VERTICAL SCALE 1" = 10'
VERTICAL EXAGGERATION: 2



5 C3.0 HORIZONTAL SCALE 1" = 20' VERTICAL SCALE 1" = 10'
VERTICAL EXAGGERATION: 2

LEGEND

- MEAN HIGH WATER LINE - 7.93' (NAVD 88)
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SCALE

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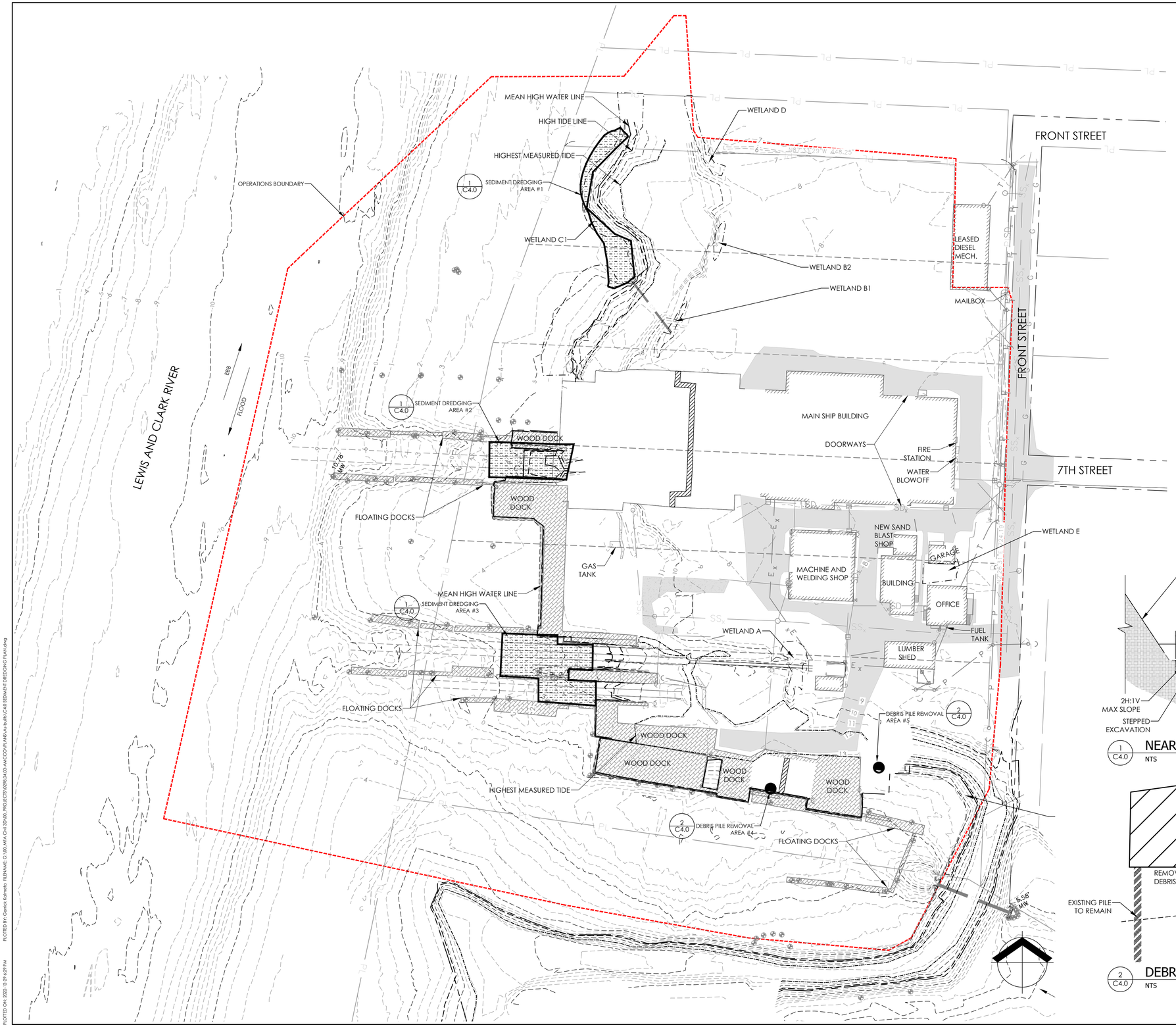
SHEET TITLE

REMEDIATION CROSS SECTIONS II

SHEET

C3.2

PLOTTED ON: 2022-12-29 4:28 PM PLOTTED BY: Garrick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\01298\04.03-AMCCO\PLANS\As-built\C3.2 REMEDIATION CROSS SECTIONS II.dwg



SEDIMENT DREDGING PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- SEDIMENT DREDGING
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD88)
- HIGH TIDE LINE - 8.63' (NAVD88)
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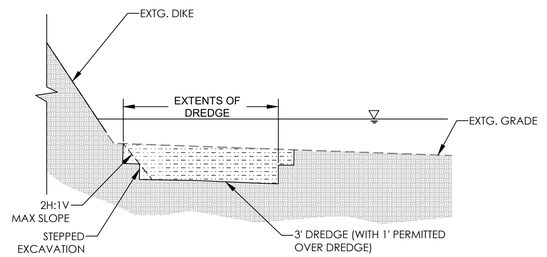
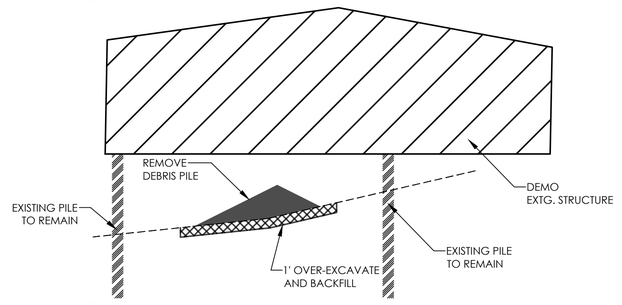
SEE SHEET C4.1 FOR SEDIMENT DREDGING NOTES



1 C4.0 **NEAR SHORE SEDIMENT DREDGE**
NTS



2 C4.0 **DEBRIS PILE REMOVAL**
NTS

RECORD DRAWING

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DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE

0 50' 100

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SHEET TITLE

SEDIMENT DREDGING PLAN

SHEET

C4.0

PLOTTED BY: Camila Kalmeta FILENAME: G:\05_MFA Civil 3D\05_PROJECTS\01653\03.AMCCO\PLANS\As-built\1C4.0 SEDIMENT DREDGING PLAN.dwg
PLOTTED ON: 2022-12-29 4:29 PM

SEDIMENT DREDGING NOTES

SEQUENCING

1. SEDIMENT EXCAVATION/DREDGING SHALL ONLY BE PERFORMED AFTER COMPLETING DEMOLITION OF MARINE WAY RAIL STRUCTURES AND OVER-WATER STRUCTURES (FORMER WORKSHOP AND ABANDONED PIPE SHOP).
2. A SHORELINE DEBRIS SURVEY SHALL BE CONDUCTED BY THE FIELD ENGINEER AND CONTRACTOR SUPERINTENDENT PRIOR TO THE START OF DREDGE ACTIVITIES IN EACH AREA. THE SURVEY WILL BE CONDUCTED AT LOW TIDE WHEN THE ENTIRE EXTENT OF THE DREDGE AREA IS NOT SUBMERGED. OTHER DEBRIS, IF ENCOUNTERED WITHIN THE DREDGE PRISM, WILL BE REMOVED BY THE CRANE DERRICK AND PLACED ON THE MATERIALS BARGE FOR DISPOSAL.
3. SEDIMENT EXCAVATION/DREDGING SHALL ONLY BE CONDUCTED DURING LOW TIDE CONDITIONS, AND BACKFILLED IMMEDIATELY TO MINIMIZE THE POTENTIAL RELEASE OF TURBIDITY ASSOCIATED WITH DISTURBED FINE SEDIMENTS. THE DAILY PROGRESS OF MUDFLAT EXCAVATION MUST BE LIMITED TO THE AREA THAT CAN REASONABLY BE EXCAVATED AND BACKFILLED DURING A SINGLE TIDAL CYCLE.
4. EXCAVATED SEDIMENT MUST BE STAGED IN A DEWATERING CELL FOR THE PERIOD OF TIME THAT IS NECESSARY TO ALLOW ENTRAINED WATER TO DRAIN, AND TO ALLOW THE CONTAMINATED MATERIAL TO PASS THE PAINT-FILTER TEST FOR LANDFILL DISPOSAL.

DREDGING NOTES

1. DREDGING IS ANTICIPATED TO BE PERFORMED WITH STRICT ADHERENCE TO A SET OF OPERATIONAL BMPS TO BE DEVELOPED BY THE CONTRACTOR AND THE ENGINEER TO REDUCE THE POTENTIAL FOR GENERATION OF TURBIDITY AND RELEASE FROM THE WORK AREA IN EXCESS OF THE WATER QUALITY CERTIFICATION LIMITS. THE USE OF WORK AREA ISOLATION (I.E. TURBIDITY CURTAIN) IS NOT CURRENTLY RELIED IN THE CONCEPTUAL DESIGN UPON BECAUSE OF THE SIGNIFICANT EFFORT THAT WOULD BE REQUIRED TO MAINTAIN THE CURTAIN IN THE TIDAL ENVIRONMENT IN SHALLOW WATERS.
2. DREDGING OF NEAR-SHORE HIGHLY CONTAMINATED SEDIMENTS WITHIN THE LEWIS AND CLARK RIVER IS REQUIRED TO BE PERFORMED TO A DEPTH OF 3-FEET BELOW THE EXISTING MUDLINE, WITH A 1-FOOT OVERDREDGE.
3. REMOVAL OF DEBRIS PILES FROM THE SHORELINE UNDER THE FORMER PIPE-SHOP AND MAINTENANCE SHOP IS EXPECTED TO BE CONDUCTED FOLLOWING THE REMOVAL OF THE OVERLYING STRUCTURES. REMOVAL OF THE DEBRIS PILE IS ANTICIPATED TO A DEPTH OF APPROXIMATELY 1-FOOT BELOW THE SURROUNDING GRADE OF SEDIMENT. ADDITIONAL DEBRIS THAT IS OBSERVED BELOW THE DEFINED DREDGE TARGET SHALL ALSO BE REMOVED.
4. LEWIS AND CLARK NEAR SHORE SEDIMENTS HAVE BEEN CLASSIFIED AS SILTS AND CLAYS WITH LOW TO MEDIUM PLASTICITY.
5. DEBRIS PILE MATERIALS HAVE BEEN CLASSIFIED AS WOOD AND METALLIC DEBRIS UNDERLAIN BY SILT.
6. THE DREDGING LIMITS HAVE BEEN AGREED TO WITH DEQ WITH THE UNDERSTANDING THAT WORK CAN BE PERFORMED WITH LAND BASED EQUIPMENT FROM THE SHORELINE. WATER BASED EQUIPMENT MAY BE USED, HOWEVER TIDE CYCLES AND DREDGE/BACKFILL SEQUENCE MUST BE ANTICIPATED IN PROPOSALS.
7. ENGINEERING OVERSIGHT WILL BE CONTINUOUS DURING DREDGING TO CONFIRM THAT BMPS ARE IMPLEMENTED AND TO VERIFY CONFORMANCE WITH THE DREDGING DESIGN.
8. ESTIMATED QUANTITIES FOR EACH SEDIMENT EXCAVATION AREA ARE AS FOLLOWS:

	Sed Excavation #1 (Burn Pit)	Sed Excavation #2 (MW #3)	Sed Excavation #3 (MW #1-2)	Sed Excavation #4 (Coffee Shop Debris Pile)	Sed Excavation #5 (Pipe Shop Debris Pile)
Area (SF)	2630	3375	4850	100 (EST)	100(EST)
Target Depth Below Existing (ft)	3	3	3	1	1
Overdredge Depth Below Existing (ft)	4	4	4	N/A	N/A
Target Volume (cy)	370	420	610	15	10
Max Volume (w/ Overdredge) (cy)	520	580	840	N/A	N/A
Wetlands (Y/N)	Y	N	N	N	N

9. WATER QUALITY
   a. WATER QUALITY REQUIREMENTS SPECIFIED IN THE WATER QUALITY CERTIFICATION MUST BE SATISFIED WHILE WORKING IN WATER.
   b. CONTRACTOR SHALL EMPLOY OPERATIONAL AND ENGINEERING CONTROLS AS NECESSARY TO MEET DOWNGRADIENT LIMITS THAT ARE ESTABLISHED IN THE CERTIFICATION.
   c. OPERATIONAL WATER QUALITY BMPS MAY INCLUDE:
   i. CONDUCTING EXCAVATION WORK ONLY IN THE DRY, I.E. AT LOW WATER CONDITIONS.
   ii. TO THE EXTENT POSSIBLE, THE DAILY EXCAVATION SHALL BE FULLY BACKFILLED PRIOR TO BEING SUBMERGED BY INCOMING TIDE.
   iii. FOR WORK IN SUBMERGED CONDITIONS, UTILIZE CRANE DERRICK WITH ENVIRONMENTAL CLAMSHELL BUCKETS (SEE MATERIALS AND EQUIPMENT NOTES) TO LIMIT THE GENERATION OF TURBIDITY AND POTENTIALLY CONTAMINATED SUSPENDED RESIDUALS.
   iv. FIXED-ARM EXCAVATORS TO PERFORM WORK FROM THE SHORELINE.
   v. RTK-GPS ON THE EXCAVATOR FOR BUCKET POSITIONING IS PREFERRED.
   vi. INDIVIDUAL GRABS SHALL BE LIMITED IN DEPTH TO PREVENT OVERFILLING OF THE BUCKET AND SPILLAGE OF EXCAVATED MATERIAL ONTO THE SHORELINE.
   vii. EXCAVATION SHALL BE COMPLETED IN LIFTS CORRESPONDING TO THE CAPABILITIES OF THE PROPOSED BUCKET. ALL EXCAVATIONS SHALL UTILIZE STAIR-STEPPING (AS SHOWN IN DETAIL ON THIS SHEET) AT THE EDGES TO PREVENT HIGH SIDEWALL CONDITIONS (>1-FOOT) WHICH MAY LEAD TO LOCALIZED SLOPE FAILURE.
   d. ENGINEERING WATER QUALITY BMPS MAY INCLUDE:
   i. TURBIDITY CURTAIN MAY BE DEPLOYED AND MAINTAINED AS NECESSARY TO SATISFY DOWNGRADIENT TURBIDITY REQUIREMENTS AND PREVENT DISPERSAL OF WORK AREA TURBIDITY WHEN EXCAVATIONS ARE COMPLETED IN SUBMERGED CONDITIONS (I.E. DREDGING), OR WHEN OPERATIONAL BMPS ARE NOT ACHIEVING DESIRED RESULTS.
   ii. IF TURBIDITY CURTAIN IS DEPLOYED, THE CONTRACTOR SHALL MANAGE THE CURTAIN EXTENTS DURING THE INCOMING AND OUTGOING TIDE TO PREVENT SIGNIFICANT BILLOWING AND DISTURBANCE OF UNDERLYING RIVERBED SEDIMENT.

10. METHODS

SEDIMENT EXCAVATION (IN THE DRY) WILL BE PERFORMED USING THE FOLLOWING METHODS:

- LONG REACH EXCAVATOR (60-FOOT BOOM)
- FLAT-LIP EXCAVATION BUCKET WITH 3 CUBIC YARD CAPACITY
- PLACEMENT OF A SURVEY STAKE AND FLOAT TO INDICATE THE LIMITS OF THE SEDIMENT DREDGE PRISM
- EXCAVATION WITHIN AN AREA WILL ONLY BE CONDUCTED ON DAYS WHERE THE LOW TIDE IS PREDICTED TO BE WITHIN 1-FOOT OF THE LOWEST ELEVATION IN THE EXCAVATION.
- THE EXCAVATION EDGES WILL BE SLOPED AT A 1H:1V OR STAIR STEPPED IN 1-FOOT INCREMENTS (OR OTHER NECESSARY INCREMENT) TO MINIMIZE DESTABILIZATION OF THE REMAINING SAND AND PREVENT SATURATED SAND FROM FLOWING INTO THE EXCAVATION TO THE EXTENT POSSIBLE.
- THE EXCAVATOR WILL BE LOCATED ON A STABLE PLATFORM SO THAT IT WILL BE ABOVE WATER AT HIGH-TIDE.
- THE EXCAVATION WILL BE ALLOWED TO BE CONDUCTED IN AN AREA THAT CAN BE BACKFILLED WITH CLEAN SAND BEFORE THE RETURNING TIDE.
- THE EXCAVATION DEPTH WILL BE VERIFIED USING A CONSTRUCTION LEVEL OR GPS EQUIPMENT WITH A BASE-STATION.
- BACKFILL SAND WILL BE BUCKET PLACED INTO THE EXCAVATION BY THE EXCAVATOR FROM THE LOWEST ELEVATION WORKING TOWARD THE SHORE.
- IN AN EMERGENCY SITUATION, THE OPEN EXCAVATION FOOTPRINT SHOULD BE COVERED WITH AT LEAST 1-FOOT OF SAND.
- TURBIDITY CURTAIN WILL BE MAINTAINED AT THE WORK SITE FOR USE IN THE EVENT THAT THE TIDE RETURNS BEFORE THE EXCAVATION CAN BE BACKFILLED.

   a. SEDIMENT DREDGING
   i. THE TARGET ELEVATION IDENTIFIED WITHIN A SEDIMENT EXCAVATION AREA IS THE MINIMUM ELEVATION TO WHICH THE EXCAVATION MUST BE COMPLETED. THE OVERDREDGE ELEVATION IS THE MAXIMUM DEPTH OF EXCAVATION WHICH MAY BE COMPLETED IN ACCORDANCE WITH PROJECT PERMITS.
   ii. THE CONTRACTOR SHALL NOT VIOLATE THE OVERDREDGE ELEVATION THAT IS APPROVED WITHIN THE PERMITS.
   iii. THE CONTRACTOR SHALL DREDGE SEDIMENTS USING THE OPERATIONAL BMPS THAT ARE DEFINED ABOVE.
   iv. THE ENGINEER DOES NOT ANTICIPATE THE NEED TO OBTAIN SAMPLES OF THE DREDGED SURFACE PRIOR TO BACKFILL PLACEMENT.
   b. DEBRIS PILES
   i. THE CONTRACTOR SHALL REMOVE THE CONTENTS OF THE DEBRIS PILES TO AN ELEVATION THAT IS APPROXIMATELY 1-FOOT BELOW THE SURROUNDING SEDIMENTS.
   ii. DEBRIS PILE CONTENTS SHALL BE KEPT SEGREGATED FROM OTHER DREDGE SPOILS AND CONTAINERIZED FOR DISPOSAL AFTER FREE WATER HAS BEEN ELIMINATED.

11. DEWATERING
   a. SEDIMENTS SHALL BE DEWATERED ONSITE PRIOR TO DISPOSAL IN A DEWATERING CELL. DISPOSAL MATERIALS MUST SATISFY LANDFILL REQUIREMENTS (INCLUDING PAINT-FILTER) PRIOR TO TRUCKING.
   b. DEWATERING SHALL BE CONDUCTED VIA GRAVITY AND CONSOLIDATION WITHIN A CELL CONSISTING OF CONCRETE BLOCK WALLS AND LINED WITH 6-OZ NON-WOVEN GEOTEXTILE FABRIC (BOTTOM & SIDES). DECANT WATER IS CURRENTLY ANTICIPATED TO INFILTRATE AND/OR DISCHARGE THROUGH THE CONTAINMENT WALL TO THE STORMWATER CONVEYANCE DITCH. INSTALL A GABION BASKET FILLED WITH OYSTER SHELL IN THE DRAINAGE DITCH ON THE UPGRADIENT SIDE OF THE STORMWATER DETENTION FACILITY. DECANT WATER MAY BE DISCHARGED TO THE ONSITE SURFACE WATER MANAGEMENT SYSTEM AND THROUGH THE TIDE GATE.
   c. FOR SEDIMENT THAT IS DREDGED TO A BARGE TO OVER-WATER TRANSPORT, CONSTRUCT STRAWBALE "MAZE" INCLUDING STRAWBALE CHECK DAMS TERMINATING WITH A FILTER BASKET FILLED WITH OYSTER SHELL PRIOR TO FLOWING OFF THE BARGE THROUGH THE SCUPPERS.
   d. THE CONTRACTOR SHALL PROVIDE DETAILS OF THE DEWATERING CELL CONSTRUCTION AND MANAGEMENT IN THE CONSTRUCTION WORK PLAN.

BACKFILL NOTES

1. SEDIMENT EXCAVATIONS SHALL BE FULLY BACKFILLED TO THE PRE-EXISTING GRADE BEFORE INUNDATION BY THE RETURNING TIDE.
2. SEDIMENT EXCAVATIONS SHALL BE BACKFILLED WITH CLEAN IMPORTED DREDGE SAND SATISFYING IMPORT CRITERIA.

MATERIALS AND EQUIPMENT

1. FIXED-ARM EXCAVATOR CAPABLE OF REACHING THE DEFINED EXTENTS OF DREDGING FROM THE SHORELINE.
2. WORK IN DRY CONDITIONS MAY BE CONDUCTED WITH STANDARD OPEN BUCKETS, WITH A FLAT FACE (NO TEETH).
3. WORK THAT MUST BE CONDUCTED IN WET CONDITIONS MUST USE AN ENVIRONMENTAL CLAMSHELL BUCKET. CLAMSHELL BUCKET SHALL FULLY CONTAIN CONTENTS WHEN CLOSED (FULLY ENCLOSED), AND PROVIDE ADEQUATE VENTING. BUCKETS WITH TEETH SHALL BE AVOIDED, UNLESS APPROVED BY THE ENGINEER.
4. BACKFILL AND EMNR SAND SHOULD BE
   a. DREDGE SAND WITH LOW FINES CONTENT
   b. SATISFY IMPORT REQUIREMENTS FOR CONTAMINANT LEVELS.
   i. SEE SEDIMENT CLEAN FILL CRITERIA AS LISTED IN THE DESIGN MEMO.

SUBMITTALS

1. A PORTION OF THE REQUIRED CONTRACTOR'S WORK PLAN SHALL OUTLINE MATERIALS, EQUIPMENT, AND METHODS TO BE USED DREDGE CONTAMINATED NEAR-SHORE SEDIMENT AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THESE SPECIFICATIONS. DESCRIPTIONS SHALL INCLUDE:
   a. LIST OF ALL EQUIPMENT (NAMES, TYPE, SIZE, ETC.).
   b. LIST OF ALL POTENTIAL DREDGE OPERATORS (NAMES, EXPERIENCE, ETC.).
   c. SUMMARY OF DREDGING PROCEDURES.
   d. SUMMARY OF UPLAND SEDIMENT HANDLING PROCEDURES.
   e. SUMMARY OF UPLAND SEDIMENT DEWATERING FACILITIES AND PROCEDURES.
   f. OPERATIONAL BMPS TO BE IMPLEMENTED DURING DREDGING, INCLUDING ALTERNATIVE BMPS TO BE CONSIDERED.
2. THE CONTRACTOR'S WORK PLAN SHALL DESCRIBE SEDIMENT PROCESSING TO ENSURE THAT ALL SEDIMENTS MEET LANDFILL CRITERIA FOR PAINT-FILTER.

RECORD DRAWING

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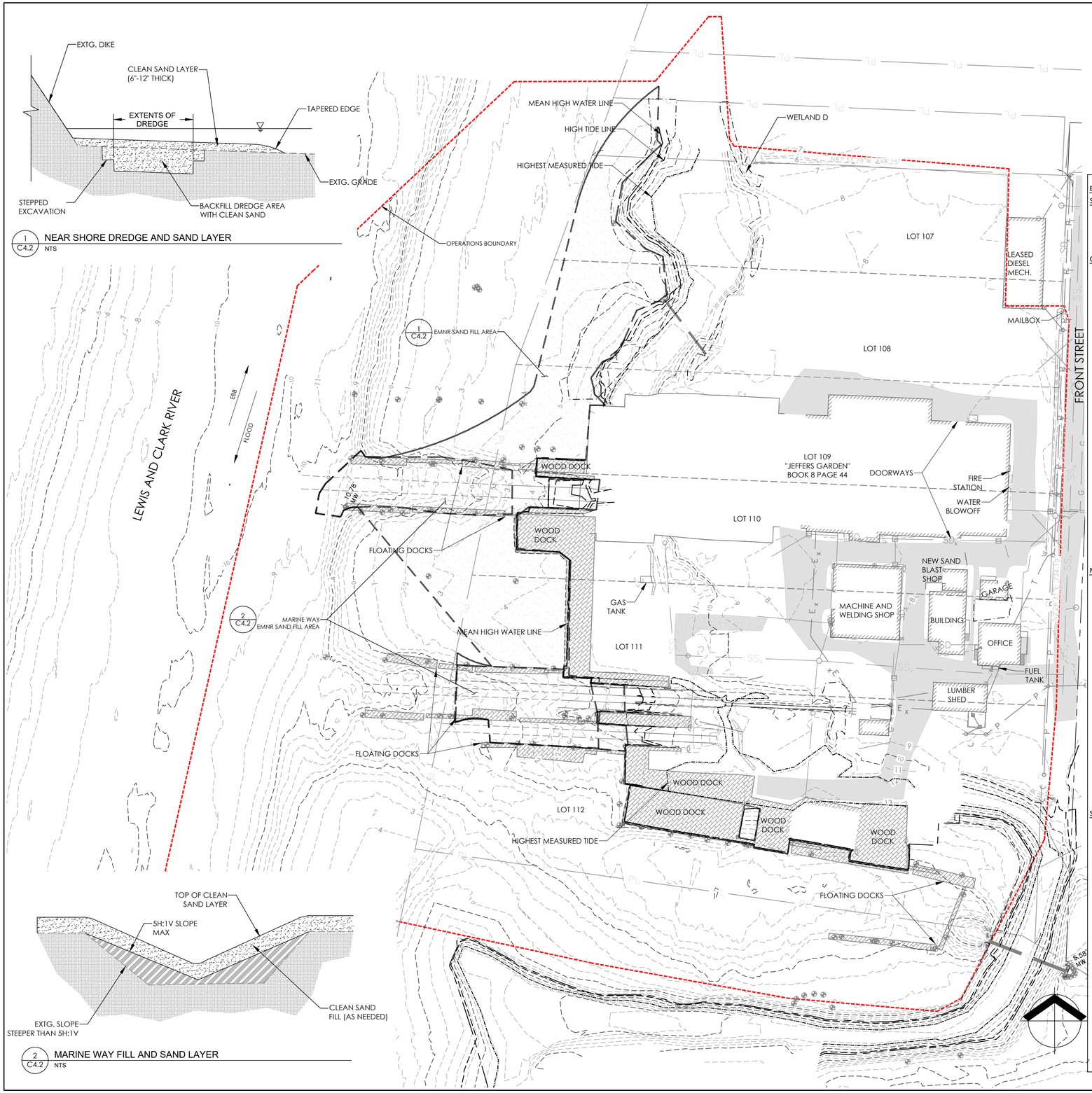
JAN. 11, 1985
CEM E. GOKCORA
EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN
ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/04/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE
DRAWING NOT TO SCALE
SHEET TITLE
SEDIMENT DREDGING NOTES
SHEET
C4.1

1 C4.2 NEAR SHORE DREDGE AND SAND LAYER
NTS



2 C4.2 MARINE WAY FILL AND SAND LAYER
NTS

REMEDIATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- EMNR SAND FILL
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE
- HIGH TIDE LINE
- HIGHEST MEASURED TIDE

ENMR SAND FILL NOTES

SEQUENCING

1. SEDIMENT EXCAVATION AND BACKFILL IN THE LEWIS AND CLARK RIVER WORK AREA SHALL BE COMPLETE PRIOR TO PLACEMENT OF THE EMNR MATERIALS.
2. EMNR SAND SHOULD GENERALLY BE PLACED FROM UPSTREAM TO DOWNSTREAM.
3. EMNR SAND SHOULD BE PLACED STARTING AT THE GREATEST DEPTH IN THE PLACEMENT AREA, MOVING TO THE SHALLOWEST LOCATION.

CONSTRUCTION NOTES

1. EMNR SAND IS REQUIRED TO BE PLACED IN AREAS OF THE LEWIS AND CLARK RIVER WHERE VEGETATION MAY OR MAY NOT EXIST. EMNR SAND SHOULD BE PLACED USING A METHOD THAT WILL GRADUALLY SPREAD THE SAND OVER AN AREA WITHOUT SIGNIFICANT DAMAGE TO VEGETATION THAT MAY REMAIN IN PLACE. THE ENGINEER ANTICIPATES THESE METHODS TO UTILIZE AN AERIAL BROADCASTING APPROACH, SUCH AS TELEBELT CONVEYOR, THIN LAYER CLAMSHELL SPREAD, SLURRY SPRAY.
2. SAND SHOULD BE PLACED BY MECHANICAL MEANS - UNLESS HYDRAULIC PLACEMENT METHODS ARE DEMONSTRATED TO NOT DISPLACE OR SUSPEND THE EXISTING SEDIMENT BED.
3. PROVIDE CLEAN EQUIPMENT FOR THE PLACEMENT AND TRANSPORT OF ALL EMNR MATERIALS.
4. PRIOR TO EMNR SAND PLACEMENT ACTIVITIES, OBTAIN VERIFICATION FROM ENGINEER THAT DREDGING IN AN AREA IS COMPLETE.
5. DEMONSTRATE THE PROPOSED EMNR PLACEMENT METHOD IN A PILOT TEST, WITH EVIDENCE PROVIDED TO THE ENGINEER CONSISTING OF RAIN BUCKETS OR SEDIMENT CORES (CLAM GUN), OR OTHER APPROVED METHOD. CORRECTIONS TO APPLICATION METHODOLOGY SHALL BE MADE AND VERIFIED PRIOR TO GOING FULL SCALE.
6. ESTIMATE THE VOLUME OR TONNAGE OF SAND MATERIAL REQUIRED TO BE PLACED IN EACH GRID APPROVAL UNIT AREA TO SATISFY THE DESIGN REQUIREMENT. CONTRACTOR SHALL MONITOR THE PLACEMENT OF EMNR SAND QUANTITY TO DEMONSTRATE THAT THE REQUIRED THICKNESS OF SAND HAS BEEN PLACED.
7. PRIOR TO START OF CONSTRUCTION, THE ENGINEER AND CONTRACTOR SHALL AGREE ON A MEANS OF DEMONSTRATING SUCCESSFUL PLACEMENT TO THE THICKNESS AND LIMITS DESCRIBED IN THE DRAWINGS FOR PURPOSES OF CERTIFYING COMPLETION FOR DEQ. THESE MEANS MAY INCLUDE A COMBINATION OF THE FOLLOWING: DOCUMENTATION OF TONNAGE/VOLUME OF EMNR DELIVERED TO THE SITE, ENGINEER OBSERVATION OF PLACEMENT, PHYSICAL MEASUREMENT (SEDIMENT CORES/RAIN BUCKETS), AND/OR BATHYMETRY.
8. THE MATERIAL SHALL BE PLACED EVENLY AND METHODICALLY IN ORDER TO ACHIEVE THE SAND THICKNESS SPECIFIED BELOW:
   a. THE DESIRED EMNR SAND LAYER IN VEGETATED AREAS IS 6 TO 8 INCHES.
   b. THE DESIRED EMNR SAND LAYER IN NON-VEGETATED AREAS IS 6 TO 12 INCHES.
9. PLACEMENT OF THE EMNR SAND MATERIAL SHALL BE CONDUCTED IN A CONTROLLED AND ACCURATE MANNER IN SUCH A WAY AS TO CONTROL TURBIDITY TO THE REQUIRED LEVELS SPECIFIED IN THE WATER QUALITY PLAN.
10. EMNR SAND SHOULD BE PLACED STARTING AT THE GREATEST DEPTH IN THE PLACEMENT AREA AND MOVING TO THE SHALLOWEST LOCATION.
11. SUDDEN DISCHARGES OF LARGE VOLUMES OF SAND THAT RESULT IN LARGE DISPLACEMENTS OR "BOMBING" OF THE UNDERLYING SEDIMENT OR AN EMNR SAND THICKNESS THAT EXCEEDS THE ALLOWABLE TOLERANCES SHALL BE AVOIDED.
12. PROVIDE ADVANCE NOTICE TO ALLOW ENGINEER'S PERSONNEL TO OBSERVE EMNR PLACEMENT ACTIVITIES FOR THE PURPOSES OF PLACEMENT VERIFICATION.

MATERIALS (AND EQUIPMENT)

1. EMNR SAND
   a. THE MATERIAL TO BE USED FOR CONSTRUCTION OF THE EMNR LAYER SHALL BE AN IMPORTED, CLEAN, GRANULAR MATERIAL FREE OF ROOTS, LARGE ORGANIC MATERIAL, CONTAMINANTS, AND ALL OTHER DELETERIOUS AND OBJECTIONABLE MATERIAL.
   b. THE MATERIAL SHOULD BE MAIN STEM COLUMBIA RIVER MID-CHANNEL DREDGE SPOILS SUPPLIED BY VARIOUS COMMERCIAL SOURCES.
      i. COORDINATE DREDGING ACTIVITIES WITH THE USACE IN ORDER TO COMPLY WITH THEIR FEDERAL NAVIGATION PROJECT PERMIT. ADDITIONAL PERMIT INFORMATION IS AVAILABLE AT HTTPS://WWW.NWP.USACE.ARMY.MIL/OP/N/.
   c. GRAIN SIZE:

% PASSING	U.S. SIEVE
100	1/2 INCH
80-100	NO. 10
<5	NO. 200

   d. PHYSICAL CHARACTERISTICS: WELL-GRADED, SUBANGULAR TO SUBROUNDED SAND.
   e. SAND SHALL BE FREE FROM CHEMICAL CONTAMINANTS PER TESTING DEFINED IN THE REMEDIAL DESIGN REPORT
2. EMNR SAND PLACEMENT EQUIPMENT: PROPOSE EQUIPMENT THAT HAS THE ABILITY TO MEET THE FOLLOWING CRITERIA:
   a. MINIMIZATION OF THE GENERATION OF SUSPENDED SEDIMENTS DURING SAND PLACEMENT OPERATIONS.
   b. CONSISTENT PLACEMENT OF MATERIAL TO THE ALIGNMENTS, GRADES, AND CROSS SECTIONS SHOWN ON THE DRAWINGS AND DETAILED IN THE SPECIFICATIONS.
   c. CAPABLE OF PROCESSING NECESSARY VOLUMES OF MATERIAL TO ACHIEVE THE PROJECT DELIVERY SCHEDULE.

SUBMITTALS

1. PRE-CONSTRUCTION SUBMITTALS:
   a. SUMMARY OF EQUIPMENT OPERATORS' EXPERIENCE SHOWING THAT THE OPERATORS HAVE A MINIMUM OF 3 YEARS OF EXPERIENCE WITH THE PROPOSED EQUIPMENT FOR EMNR SPREADING.
   b. TWO WEEKS PRIOR TO DELIVERY TO THE SITE, THE CONTRACTOR SHALL CONDUCT ONE GRADATION TEST ACCORDING TO ASTM D422 FOR EMNR SAND FROM EACH SOURCE THAT IS PROPOSED FOR THE PROJECT. THE TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO MATERIAL DELIVERY TO THE SITE.
   c. A PORTION OF THE REQUIRED CONTRACTOR'S WORK PLAN SHALL OUTLINE MATERIALS, EQUIPMENT, AND METHODS TO BE USED TO PLACE EMNR SAND AND FISH MIX ROCK AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THESE SPECIFICATIONS. DESCRIPTIONS SHALL INCLUDE:
      i. EQUIPMENT AND PROCEDURES TO BE USED TO PLACE MATERIALS AND DEMONSTRATE THAT THEY ARE APPROPRIATE TO DESCRIBED SCOPE OF WORK.
      ii. EQUIPMENT AND TEMPORARY FACILITY REQUIREMENTS AND PROCEDURES TO BE USED TO STAGE, STORE, AND TRANSPORT MATERIALS PRIOR TO PLACEMENT.
      iii. PROPOSED METHODS TO SYSTEMATICALLY EXECUTE THE MATERIAL PLACEMENT IN REQUIRED LIFT THICKNESSES (E.G. SWING PATTERN, BUCKET SIZE, ETC.).
   d. USACE DREDGE PERMIT FOR EMNR SAND, AS APPLICABLE TO PROPOSED SOURCE.
   e. THE CONTRACTOR SHALL SUBMIT ALL FILL MATERIAL SOURCE INFORMATION INCLUDING A CONTACT NAME, ADDRESS, PHONE NUMBER FOR EACH PRODUCT AND/OR SOURCE TO THE ENGINEER FOR APPROVAL.
2. CONSTRUCTION SUBMITTALS:
   a. PROVIDE THE ENGINEER WITH A DAILY SAND PLACEMENT PROGRESS SUMMARY IN THE DAILY FIELD REPORT.
   b. PROVIDE EVIDENCE OF PLACED EMNR SAND LAYER THICKNESS FINAL (I.E. BATHYMETRY, RAIN BUCKETS, SEDIMENT CORES, OR OTHER ENGINEER APPROVED METHOD) PRIOR TO DEMOBILIZING SPREADING EQUIPMENT FROM THE SITE.

RECORD DRAWING

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SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

EMNR SAND PLACEMENT

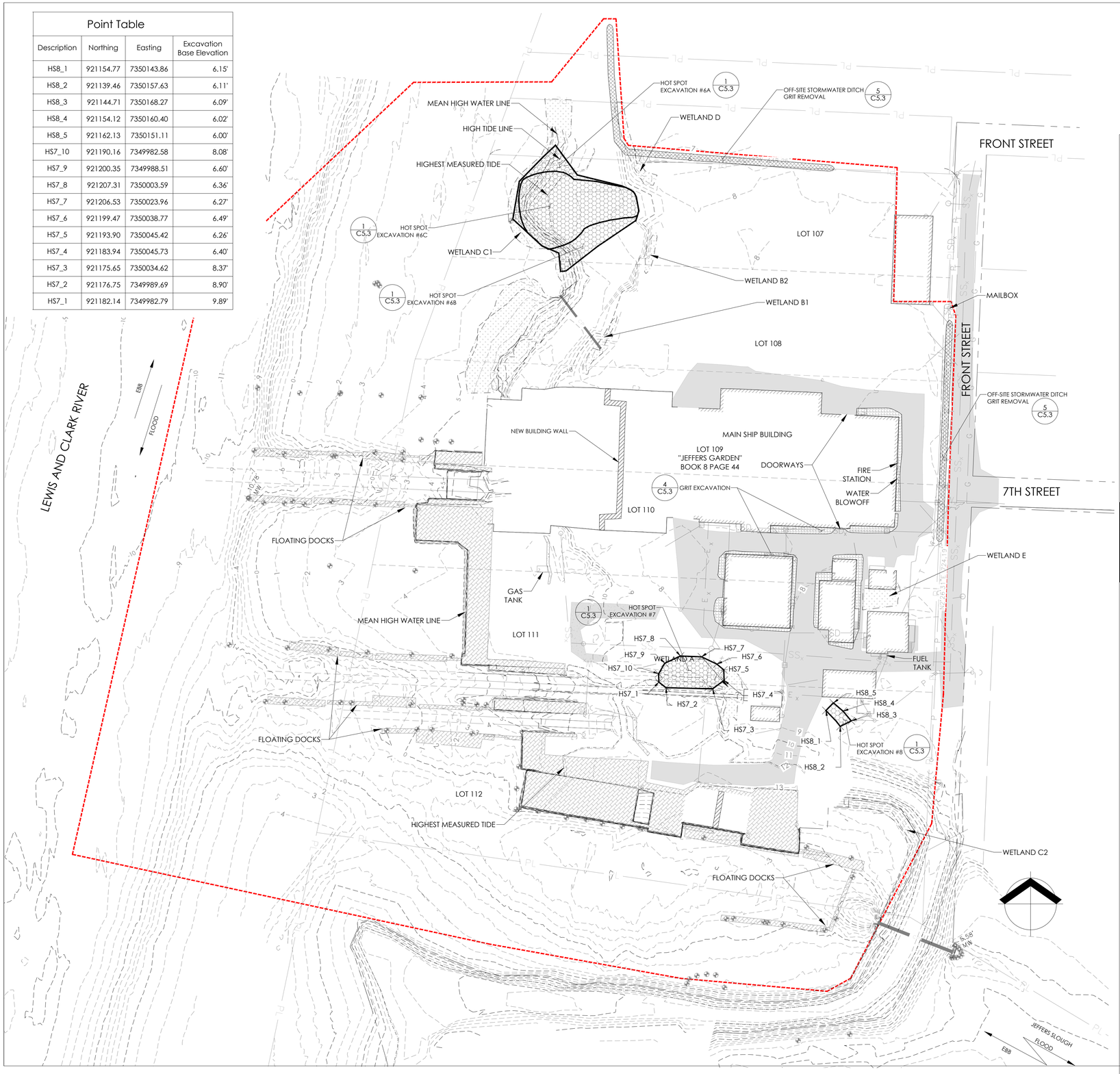
SHEET

C4.2

PLOTTED BY: Gianick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\1653.03 AMCCO\PLANS\As-built\C4.2 EMNR SAND FILL GRADING PLAN.dwg
PLOTTED ON: 2022-12-29 4:29 PM

Point Table

Description	Northing	Easting	Excavation Base Elevation
HS8_1	921154.77	7350143.86	6.15'
HS8_2	921139.46	7350157.63	6.11'
HS8_3	921144.71	7350168.27	6.09'
HS8_4	921154.12	7350160.40	6.02'
HS8_5	921162.13	7350151.11	6.00'
HS7_10	921190.16	7349982.58	8.08'
HS7_9	921200.35	7349988.51	6.60'
HS7_8	921207.31	7350003.59	6.36'
HS7_7	921206.53	7350023.96	6.27'
HS7_6	921199.47	7350038.77	6.49'
HS7_5	921193.90	7350045.42	6.26'
HS7_4	921183.94	7350045.73	6.40'
HS7_3	921175.65	7350034.62	8.37'
HS7_2	921176.75	7349989.69	8.90'
HS7_1	921182.14	7349982.79	9.89'



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- WETLAND
- HOT SPOT EXCAVATION
- GRIT EXCAVATION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD88)
- HIGH TIDE LINE - 8.63' (NAVD88)
- HIGHEST MEASURED TIDE - 11.9' (NAVD88)

UPLAND EXCAVATION NOTES

SEQUENCING

1. UPLAND HOT SPOT EXCAVATIONS SHALL FOLLOW NEAR SHORE DREDGING AND SEDIMENT DEWATERING OPERATIONS.
2. CONTRACTOR TO STAKE HOT SPOT AREAS PER COORDINATE TABLE (TO BE PROVIDED AT TIME OF CONSTRUCTION) AND START EXCAVATION WORK AFTER ENGINEER'S APPROVAL OF THE HOT SPOT BOUNDARIES.
3. CONTRACTOR TO COORDINATE ENGINEER'S EVALUATION AND SAMPLING OF EXCAVATED HOT SPOT AREAS, AND START BACKFILL UPON APPROVAL FROM ENGINEER.
4. EXCAVATE OFFSITE DITCHES AND PERFORM ONSITE GRIT REMOVAL.

EXCAVATION NOTES

1. PROVIDE SHORING IN ACCORDANCE WITH SECTION 15.3.26 AND OTHER APPLICABLE SECTIONS OF THE MOST CURRENT VERSION OF THE ODOT GEOTECHNICAL DESIGN MANUAL (GDM).
2. EXCAVATION LIMITS SHALL BE STAKED BY SURVEYOR, AND TO BE CONFIRMED WITH CQA OFFICER.
3. PROTECT SURVEY BENCH MARKS AND MONUMENTS, FENCES, PAVING, AND STRUCTURES TO REMAIN FROM EQUIPMENT AND VEHICULAR TRAFFIC.
4. PROTECT ABOVE- AND BELOW-GRADE UTILITIES THAT ARE TO REMAIN, IF APPLICABLE.
5. NOTIFY ENGINEER OF UNEXPECTED SUBSURFACE CONDITIONS (SUCH AS VISIBLE CONTAMINATION) AND DISCONTINUE AFFECTED WORK IN AREA UNTIL NOTIFIED TO RESUME WORK.
6. ALL EARTHWORK ACTIVITIES SHALL BE DONE IN STRICT COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL STANDARDS AND REGULATIONS FOR EXCAVATION, TRENCHES, AND EARTHWORK, AND IN ACCORDANCE WITH THE PROVISIONS OF THE SAFETY AND HEALTH REGULATIONS OF THE DEPARTMENT OF LABOR, BUREAU OF LABOR STANDARDS.
7. HOT SPOT EXCAVATIONS SHALL BE LIMITED TO AREAS IDENTIFIED ON THIS PLAN SHEET.
8. NOTIFY THE ENGINEER OF HOT SPOT STAKING FOR APPROVAL PRIOR TO COMMENCING EXCAVATION.
9. EXCAVATION SHALL BE PERFORMED IN A MANNER THAT WILL CONTROL DUST GENERATION, LIMIT SPILLS, AND PREVENT CONTAMINATED MATERIAL FROM MIXING WITH UNCONTAMINATED MATERIAL.
10. SOIL EXCAVATION SHALL BE CONDUCTED IN A MANNER THAT WILL NOT RESULT IN SPILLS TO THE LEWIS AND CLARK RIVER.
11. EXCAVATED HOT-SPOT SOIL, OFFSITE DITCH SOIL, AND GRIT REMOVAL SHALL BE STOCKPILED AT THE SOIL MANAGEMENT AREA.
12. STOCKPILED SOILS SHALL BE COVERED WITH EROSION CONTROL MATTING OR PLASTIC AT THE END OF EACH WORKING DAY TO PREVENT OR MINIMIZE WIND EROSION OR STORMWATER CONTACT.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING THE OFF-SITE MOVEMENT OF ALL WASTE MATERIALS, SPILLS, ETC., RESULTING FROM THE CONSTRUCTION PROCESS, AND SHALL BE RESPONSIBLE FOR ANY CONSEQUENCES OF ANY SUCH OFF-SITE MOVEMENT OF THE MATERIAL.
14. EXCAVATIONS SHALL BE COMPLETED TO THE DEPTH OR ELEVATION SHOWN IN THE TABLE BELOW:

	Excavation #6A (Burn Pit)	Excavation #6B (Burn Pit)	Excavation #6C (Burn Pit)	Excavation #7 (PCB)	Excavation #8 (TPH)
Area (SF)	8070	3685	930	1560	252
Target Depth Below Existing (ft) or Elevation (EL- ft)	2	4	El-5.10	2	2
Target Volume (cy)	600	550	250	94	11
Wetlands (Y/N)	Y	Y	N	Y	N

15. EXCAVATION TOLERANCE IS BETWEEN +0.1 FT (ABOVE) TO -0.25 FT (BELOW) THE DEPTH INDICATED ON THIS PLAN SHEET.
16. NOTIFY ENGINEER WHEN EXCAVATION HAS REACHED REQUIRED ELEVATIONS FOR EVALUATION.
17. EXCAVATED MATERIALS FROM HOT SPOT #6A-6C SHALL BE TREATED BY PHOSPHATE LIQUIDS (ADT ENVIRONMENTAL) OR BY MIXING WITH 3% (BY WEIGHT) CEMENT UNTIL LEACHING CHARACTERISTICS HAVE BEEN STABILIZED.
18. ALL EXCAVATED HOT SPOT SOIL SHALL BE DISPOSED AT A SUBTITLE D LANDFILL THAT HAS BEEN APPROVED BY THE OWNER AND ENGINEER.

BACKFILL NOTES

1. OBTAIN SURVEY OF FINAL EXCAVATION SUBGRADE LIMITS PRIOR TO DEMARCATION AND BACKFILLING.
2. AFTER EVALUATION AND CONFIRMATION (BY THE ENGINEER) OF THE EXCAVATED HOT SPOT AREAS, THE CONTRACTOR SHALL INSTALL THE APPROPRIATE DEMARCATION MATERIAL TO COVER THE FULL EXTENT OF HOT SPOTS #7 AND #8 PRIOR TO BACKFILL. HOT SPOTS 6A-6C SHALL NOT BE DEMARCATED.
3. BACKFILL FOR HOT SPOTS #7 AND #8: BACKFILL AND COMPACT SITE SPOILS AND IMPORTED CLEAN FILL TO THE SURROUNDING GRADES IN LAYERS NOT EXCEEDING 8-INCH THICKNESS, FOLLOWED BY A MINIMUM OF 5 PASSES WITH A VIBRATORY ROLLER OR HEAVY PLATE COMPACTOR.
4. BACKFILL FOR HOT SPOTS #6A THROUGH #6C: BACKFILL AND COMPACT DIKE CONSTRUCTION MATERIAL TO THE EXISTING GRADE PER DIKE BACKFILL REQUIREMENTS AS IDENTIFIED ON SHEET C6.0.

MATERIALS (AND EQUIPMENT)

1. SHORING MATERIALS TO BE CONSISTENT WITH APPROVED SHORING SUBMITTALS, AS IDENTIFIED IN SUBMITTALS SECTION.
2. DEMARCATION MATERIAL - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
3. SITE SPOILS FROM STORMWATER SYSTEM ASSOCIATED EXCAVATIONS
4. IMPORTED CLEAN BACKFILL SATISFYING OREGON DEQ CLEAN FILL CRITERIA FOR SOIL
5. DIKE CONSTRUCTION MATERIAL - SEE DIKE EXTENSION PLAN
6. VIBRATORY ROLLER OR HEAVY PLATE COMPACTOR FOR COMPACTING BACKFILL.
7. SHEEPSFOOT ROLLER FOR COMPACTING DIKE BACKFILL SOIL, OR AS APPROVED IN THE DIKE EXTENSION PLAN.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS):
   a. COPIES OF LICENSES AND CERTIFICATIONS AS REQUIRED BY ALL APPLICABLE JURISDICTIONS TO COMPLETE THE SPECIFIED WORK INCLUDING ALL APPROPRIATE HAZWOPER CERTIFICATIONS.
   b. A WRITTEN STATEMENT INDICATING THE SOURCE, CHARACTER, AND PROPOSED USE OF ALL IMPORTED MATERIALS WITH THE SAMPLES. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   c. SUBMIT A SHORING DESIGN SUMMARY PREPARED BY THE SHORING DESIGN ENGINEER, TO ACCOMPANY THE WORKING DRAWINGS AND CALCULATIONS. INCLUDE THE FOLLOWING IN THE SUMMARY:
   i. A LIST OF SHORING MEMBERS WITH THEIR CAPACITIES AND DESIGN STRESSES
   ii. DESIGN LOADING ASSUMPTIONS FOR EACH MEMBER
   iii. DESIGN SPECIFICATIONS
   iij. SUBSURFACE MATERIALS AND CONDITIONS USED IN DESIGN
2. SD-02 (CONSTRUCTION SUBMITTALS):
   a. DISPOSAL RECEIPTS FOR ALL MATERIALS DISPOSED OFF SITE.
   b. DAILY FIELD REPORTS AND WEEKLY SUMMARIES (LOCATION, PERCENT COMPLETE, STOCKPILES GENERATED)
   c. RECEIPTS FOR ANY MATERIALS RECYCLED OR SALVAGED AT AN OFF-SITE FACILITY.

RECORD DRAWING

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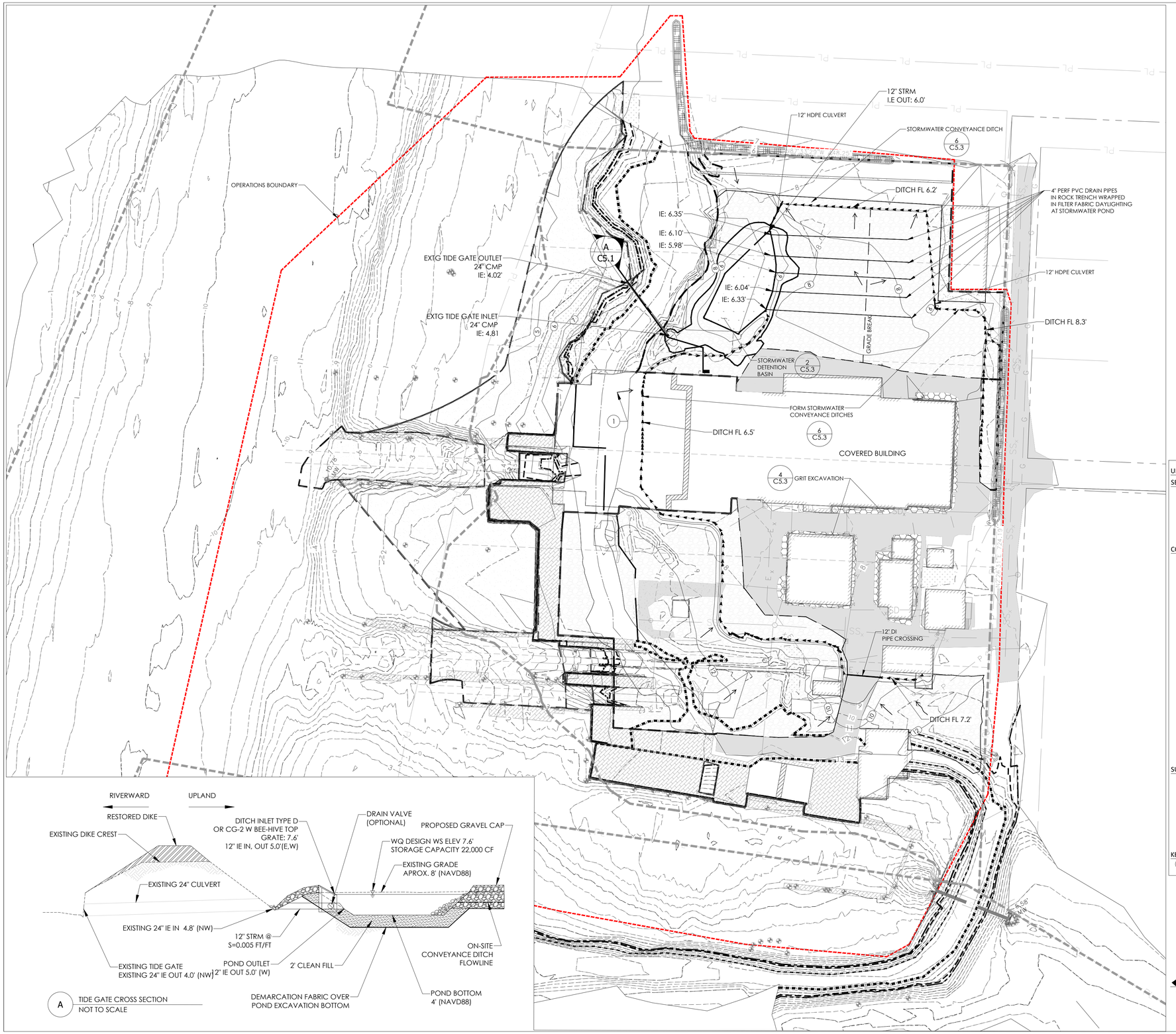
SHEET TITLE

UPLAND EXCAVATION PLAN

SHEET

C5.0

PLOTTED ON: 2023-01-06 5:19 PM
PLOTTED BY: Cem Gokcora
FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\0298.04_AMCCO\PLANS\Astoria\C5.0_UPLAND EXCAVATION PLAN.dwg



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- WETLAND
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

UPLAND SUBGRADE NOTES

SEQUENCING

1. SUBGRADE GRADING EFFORT TO FOLLOW COMPLETION OF UPLAND HOT SPOT EXCAVATION ACTIVITIES
2. EXCAVATE STORMWATER BASIN
3. EXCAVATION OF NEW ON-SITE STORMWATER CONVEYANCE DITCHES
4. GRADE SUBGRADE TOWARD ON-SITE STORMWATER FACILITIES

CONSTRUCTION NOTES

1. CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO ENSURE NO DAMAGE OCCURS TO EXISTING STRUCTURES TO BE PRESERVED, THE EXISTING CLEAN SOIL CAP, AND ACTIVE UTILITIES.
2. DAMAGE TO EXISTING STRUCTURES, AND ACTIVE UTILITIES RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.
3. SUBGRADE SPOILS SHALL BE MANAGED ONSITE TO ESTABLISH DESIRED DRAINAGE PATTERNS AND SHALL NOT BE DISPOSED OFFSITE.
4. EXCAVATE ON-SITE STORMWATER DITCHES TO THE GRADES SHOWN ON THE PLAN.
5. STOCKPILE SPOILS FROM DITCH AND BASIN EXCAVATION FOR USE IN GRADING ACTIVITIES.
6. CAST SPOILS DURING SUBGRADE ESTABLISHMENT OUT THE SITE AS NEEDED TO ASSURE POSITIVE DRAINAGE.
7. CONTRACTOR TO SLOPE SUBGRADE TO PROVIDE POSITIVE DRAINAGE, A MINIMUM ONE HALF (0.5) PERCENT SLOPE, TOWARD THE ON-SITE STORMWATER FACILITIES (DITCHES AND BASIN).
8. BREAKLINE LOCATION(S) SHOWN ON THIS SHEET ARE APPROXIMATE, AND CAN BE MODIFIED BY THE CONTRACTOR TO OPTIMIZE THE SUBGRADE GRADING EFFORT, PROVIDING POSITIVE DRAINAGE TOWARD THE ON-SITE STORMWATER FACILITIES.
9. PROVIDE AN EVEN SUBGRADE SURFACE WITH NO OBJECTS PROTRUDING THAT MAY IMPEDE DEMARCATION LAYER INSTALLATION
10. COORDINATE SUBGRADE EVALUATION WITH ENGINEER.
11. DEMARCATION FABRIC MAY BE INSTALLED AFTER SUBGRADE APPROVAL BY THE ENGINEER.
12. PLACED SUBGRADE SHALL MAINTAIN A MINIMUM OF 0.5% SLOPE.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
2. SD-02 (CONSTRUCTION SUBMITTALS):
   - 2.1. GEOTEXTILE SUBGRADE SURVEY: ONE COMPLETE SUBGRADE SURVEY AND TRIANGULATED IRREGULAR NETWORK (TIN) SURFACE, PREPARED BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF OREGON, WITH X,Y,Z COORDINATES AT MAXIMUM GRID SPACING OF 10 FEET AND RECORDING GRADE BREAKS AND OTHER FEATURES OF INTEREST (STRUCTURES, PAVING, DITCHES, ETC). THIS SURVEY SHALL BE PROVIDED TO AND APPROVED BY THE ENGINEER PRIOR TO CONTRACTOR PLACING DEMARCATION FABRIC.

KEYED NOTES

(1) DIKE DRAINAGE TO FIELD ROUTED TO STORMWATER SWALE.

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JAN. 11, 2005
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This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/06/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

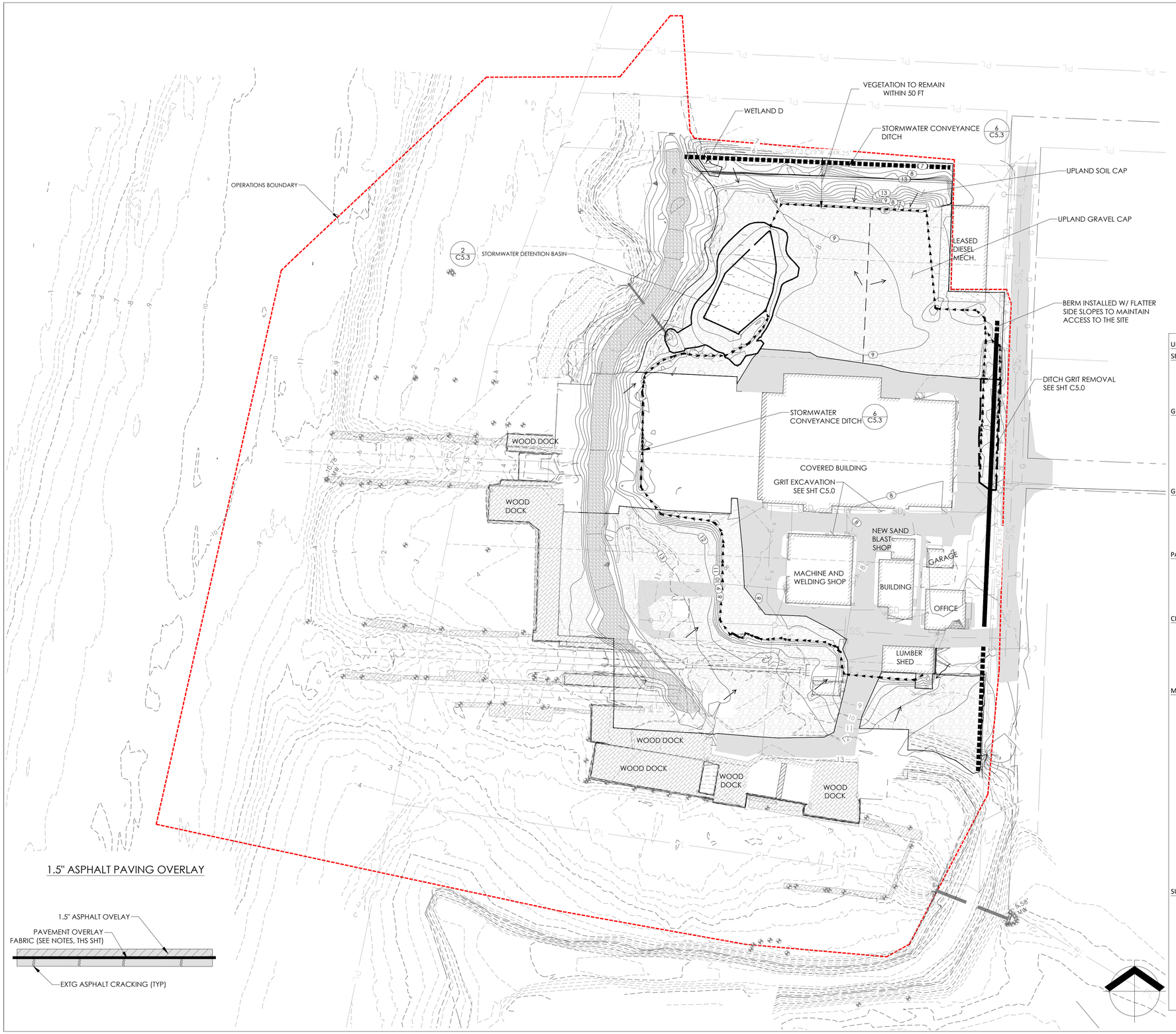
PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM

SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPLAND SUBGRADE PLAN

SHEET
C5.1

PLOTTED ON: 2023-01-10 12:15 AM
PLOTTED BY: Cem Gokcora FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\18.03 AMCCO\VA\MB\A-build\C5.1 UPLAND SUBGRADE PLAN.dwg



UPLAND EXCAVATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- SOIL CAP
- TOPSOIL
- WETLAND
- STORMWATER CONVEYANCE DITCH
- BERM
- PROPOSED FLOW DIRECTION
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE

1.5" ASPHALT PAVING OVERLAY

UPLAND CAPPING NOTES

SEQUENCING

1. OBTAIN SUBGRADE APPROVAL, INCLUDING UPLAND HOT SPOTS BACKFILLING APPROVAL, FROM ENGINEER
2. PLACE DEMARCATION LAYER
3. CONSTRUCT SOIL CAPS PRIOR TO GRAVEL CAP

GENERAL CAPPING NOTES

1. A DEMARCATION LAYER SHALL BE INSTALLED OVER THE ENTIRE AREA OF THE SITE EAST OF THE DIKE.
2. DEMARCATION FABRIC INSTALLATION SHALL EXCLUDE HOT SPOT EXCAVATION AREAS WHERE DEMARCATION MATERIALS HAVE ALREADY BEEN INSTALLED.
3. DEMARCATION FABRIC SHALL BE PLASTIC MESH FENCE WITHIN THE LANDSCAPE BUFFER AND STORMWATER SWALE TO PROVIDE DELINEATION BETWEEN THE CLEAN MATERIAL AND POTENTIALLY CONTAMINATED MATERIALS UNDERNEATH.

GRAVEL CAP NOTES

1. CAP MATERIAL SHALL BE PLACED AND COMPACTED IN A SINGLE 12-INCH LIFT.
2. GRAVEL CAP MATERIAL SHALL BE ROLLED OR PLATE COMPACTED UNTIL A FIRM UNYIELDING SURFACE HAS BEEN ESTABLISHED.
3. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND BY TEST PITTING AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.

PAVING CAP NOTES

1. SAWCUT OR GRIND TRANSITION BETWEEN EXISTING ASPHALT AND OVERLAY
2. ASPHALT, TACK COAT AND PAVEMENT OVERLAY GEOTEXTILE PER 2018 ODOT STANDARD SPECIFICATIONS.
3. PREPARE SURFACE, APPLY SEALANT, PLACE GEOTEXTILE AND PLACE OVERLAY PAVEMENT AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS SECTIONS 00350.41 (F), AND 00748.

CLEAN SOIL CAP AT LANDSCAPE BUFFER

1. SOIL CAP MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8-INCH THICKNESS AND LOOSELY TRACKED INTO PLACE USING TRACKED EQUIPMENT. HAND PLACEMENT AROUND ESTABLISHED VEGETATION IS REQUIRED.
2. CAP THICKNESS SHALL BE FIELD VERIFIED BY THE ENGINEER AT GRADE STAKE LOCATIONS AND AT A MINIMUM OF FIVE LOCATIONS SELECTED AT RANDOM.
3. THE CAPPED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

MATERIALS (AND EQUIPMENT)

1. GRAVEL CAP DEMARCATION FABRIC - BELTECH 1696, 3 OZ/SY WOVEN POLYPROPYLENE, ORANGE OR APPROVED EQUAL
2. VEGETATIVE BUFFER DEMARCATION FABRIC - MESH PLASTIC FENCING, ORANGE OR GREEN
3. GRAVEL CAPPING MATERIAL - 3/4" TO 1-1/2" MINUS CRUSHED ROCK (OR EQUIVALENT TO SUPPORT STORAGE AND PERIODIC TRUCK DELIVERY)
4. CLEAN SOIL CAPPING MATERIAL -
   a. IMPORTED CAP MATERIAL SHALL CONSIST OF SANDY-LOAM FROM APPROVED SOURCES, AND SHALL BE FREE OF PARTICLES GREATER THAN 1-INCH IN DIAMETER, ADMIXTURES OF SUBSOIL, CLAY, NOXIOUS WEEDS AND GRASSES (SUCH AS HORSETAIL, QUACKGRASS, JOHNSON GRASS, AND THEIR ROOTS), AND OTHER MATERIAL DELETERIOUS TO PLANT GROWTH OR THAT HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. IMPORTED TOPSOIL SHALL NOT BE DELIVERED IN A FROZEN OR MUDDY CONDITION. PROTECT FROM EROSION AT ALL TIMES DURING TRANSPORT, STOCKPILING, AND PLACEMENT.
   b. CONTRACTOR SHALL PROVIDE AN ANALYSIS OF ORGANIC CONTENT FROM EACH BORROW SITE. ACCEPTABLE ORGANIC CONTENT RANGE: 2 TO 10% (AS DETERMINED BY ASTM D 2974)
   c. CLEAN FILL SOILS FOR THE VEGETATED SOIL BUFFER MUST HAVE NO MORE THAN 15% CLAY AND OTHER POORLY DRAINING SOIL MATERIALS.
5. PAVEMENT OVERLAY GEOTEXTILE - GEOTEXTILE MEETING PROPERTY VALUES FOR PAVEMENT OVERLAY GEOTEXTILE AS SPECIFIED IN 2018 ODOT STANDARD SPECIFICATIONS TABLE 02320-6.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS)
   a. A 50-LB SAMPLE OF EACH PROPOSED SOURCE SHALL BE SUBMITTED TO THE ENGINEER FOR EVALUATION. ONCE PRELIMINARY APPROVAL IS PROVIDED, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ENGINEER TO OBTAIN SAMPLES TO VERIFY THAT OREGON DEQ CLEAN FILL CRITERIA ARE MET.
   b. TESTING REPORTS FOR FINAL CAP MATERIAL. REPORTS SHALL HAVE GRAIN SIZE DISTRIBUTION (SIEVE ANALYSIS) PER ASTM C 136. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS. MATERIAL TO BE USED AS TOPSOIL SHOULD ALSO INCLUDE SOIL ANALYSIS RESULTS FROM AN APPROVED SOIL TESTING LABORATORY INDICATING THAT IMPORT TOPSOIL MEETS ORGANIC CONTENT REQUIREMENTS.
   c. LIST OF PROPOSED PLACEMENT EQUIPMENT.

RECORD DRAWING

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ASTORIA, OREGON

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PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE: 0 50' 100'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

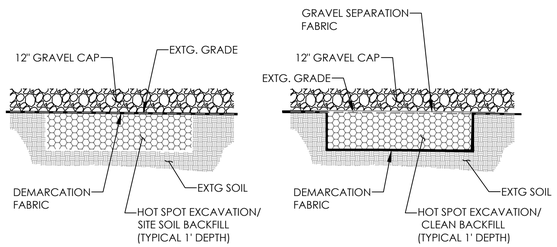
SHEET TITLE

UPLAND CAPPING PLAN

SHEET

C5.2

PLOTTED ON: 2023-01-09 11:51 PM PLOTTED BY: Cem Gokcora FILENAME: G:\05_MFA Civil 3D\05_PROJECTS\0298.04.03-AMCCO\PLANS\As-built\C5.2 UPLAND CAPPING PLAN.dwg



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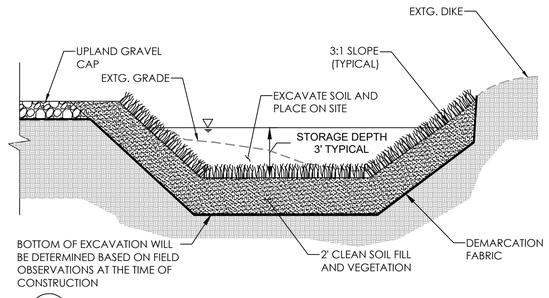

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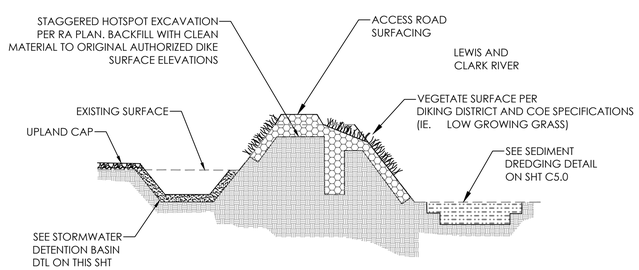

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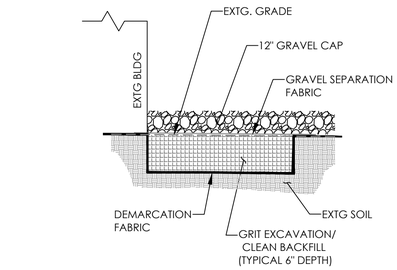

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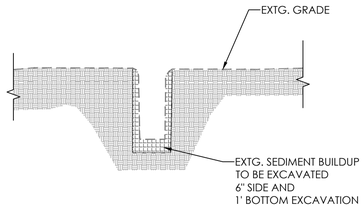

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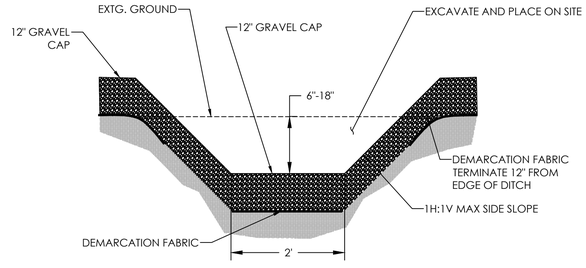

6 ONSITE STORMWATER CONVEYANCE DITCH
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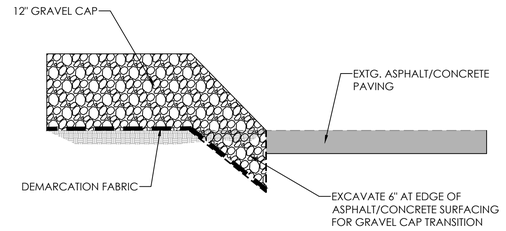

7 GRAVEL CAP TRANSITION
NOT TO SCALE

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DRAWING NOT TO SCALE
SHEET TITLE
UPLAND REMEDIATION DETAILS
SHEET
C5.3

PLOTTED BY: Garrick Kalmeta FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\0298.04.03-AMCCO\PLANS\As-built\C5.3 UPLAND REMEDIATION DETAILS.dwg
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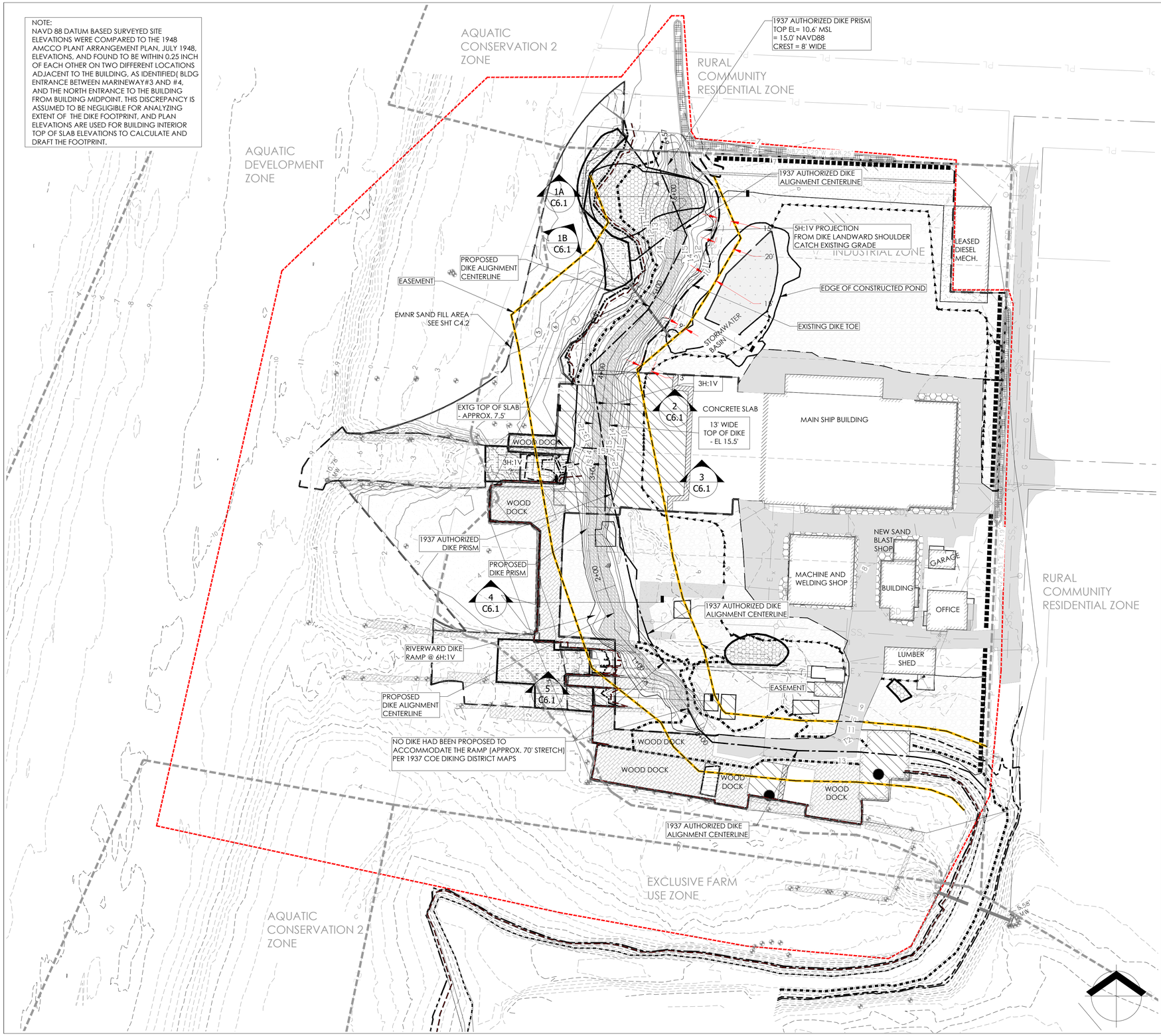
NOTE:
NAVD 88 DATUM BASED SURVEYED SITE ELEVATIONS WERE COMPARED TO THE 1948 AMCCO PLANT ARRANGEMENT PLAN, JULY 1948, ELEVATIONS, AND FOUND TO BE WITHIN 0.25 INCH OF EACH OTHER ON TWO DIFFERENT LOCATIONS ADJACENT TO THE BUILDING, AS IDENTIFIED(BLDG ENTRANCE BETWEEN MARINEWAY#3 AND #4, AND THE NORTH ENTRANCE TO THE BUILDING FROM BUILDING MIDPOINT. THIS DISCREPANCY IS ASSUMED TO BE NEGLIGIBLE FOR ANALYZING EXTENT OF THE DIKE FOOTPRINT, AND PLAN ELEVATIONS ARE USED FOR BUILDING INTERIOR TOP OF SLAB ELEVATIONS TO CALCULATE AND DRAFT THE FOOTPRINT.



REMEDIATION PLAN LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- ACCESS ROAD ABOVE LEVEE
- UPLAND GRAVEL CAP
- HOT SPOT EXCAVATION
- GRIT EXCAVATION
- EMNR SAND FILL
- SEDIMENT DREDGING
- BERM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD)
- HIGH TIDE LINE - 8.63' (NAVD)
- HIGHEST MEASURED TIDE - 11.9' (NAVD)
- INTERIOR WALL TO BE PARTIALLY DEMOLISHED
- DIKE EASEMENT

DIKE EXTENSION NOTES

SEQUENCING

1. DIKE EMBANKMENT SHOULD PROCEED UPON COMPLETION OF ALL IN-WATER WORKS (DEMOLITION OF IN-WATER STRUCTURES, SEDIMENT DREDGING, AND PLACEMENT OF EMNR SAND LAYER) AND EXCAVATION AND BACKFILL OF DIKE HOT SPOT.
2. CONSTRUCT DIKE EMBANKMENT
3. CONSTRUCT TOP OF DIKE ROAD

DIKE CONSTRUCTION NOTES

1. REMOVAL OF EXISTING FLOODWALL BETWEEN MARINE WAYS NO. 3 AND 4 SHOULD BE SCHEDULED FOR A PERIOD WHEN THE PROJECTED HIGH TIDE OVER FIVE SUCCESSIVE DAYS IS NOT IN EXCESS OF 8.0 FEET (NAVD 88), UNLESS ALTERNATIVE MEASURES ARE INSTALLED TO PROTECT THE DIKING DISTRICT FROM FLOODING.
2. SAWCUT CONCRETE SLAB AND REMOVE CONCRETE SLAB/FOUNDATION STRUCTURES WITHIN THE FOOTPRINT OF THE PROPOSED EARTHEN DIKE, TO THE LIMITS SHOWN ON THIS PLAN SHEET.
3. CONDUCT DEFLECTION TESTING IN ACCORDANCE WITH ODOT TM 158 TO EVALUATE SUBGRADE CONDITIONS ALONG DIKE EXTENSION ALIGNMENT.
4. REMOVE UNACCEPTABLE (SUBGRADE THAT YIELDS OVER 1-INCH AFTER 5 PASSES WITH A MINIMUM 13-TON WATER TRUCK) SUBGRADE MATERIAL (ORGANICS, GRAVEL, ETC), SCARIFY THE TOP OF THE SUBGRADE AND EACH SUBSEQUENT SOIL LIFT PRIOR TO COMPACTION OF THE NEXT SOIL LIFT TO ENSURE CONTINUITY OF THE COMPACTED SOIL STRUCTURE.
5. COORDINATE (NOTIFY 72 HRS IN ADVANCE) SUBGRADE EVALUATION WITH ENGINEER PRIOR TO PLACEMENT OF FIRST LIFT.
6. PLACE DIKE EMBANKMENT MATERIAL IN LAYERS NOT EXCEEDING 8-INCH PER LIFT.
7. MOISTURE CONDITION AND COMPACT EACH LIFT WITH SHEEPSFOOT ROLLER (BY A MINIMUM 5 PASSES). VERIFY COMPACTION TO 95% STANDARD PROCTOR PER ASTM D698
8. CONSTRUCT EARTHEN DIKE TO ELEVATION OF 15.0 FEET WITH RIVERWARD SLOPE AT 3H:1V (HORIZONTAL TO VERTICAL) AND LANDWARD SLOPE AT 3H:1V.
9. COORDINATE TOP OF DIKE EVALUATION WITH ENGINEER PRIOR TO START OF DIKE ROAD CONSTRUCTION.
10. UPON ENGINEER'S APPROVAL OF DIKE EMBANKMENT CONSTRUCTION, PLACE SEPARATION FABRIC TO SUPPORT MAINTENANCE VEHICLES, CONSISTENT WITH CURRENT CONSTRUCTION STANDARDS.
11. CONSTRUCT 10--FOOT-WIDE, 6-INCH CRUSHED ROCK FOR TOP OF DIKE ROAD AND COMPACT BY MINIMUM OF 5 PASSES WITH A DRUM ROLLER, SETTING THE TOP OF DIKE ROAD ELEVATION TO APPROXIMATELY 15.5 FEET.
12. VEGETATE EXPOSED EARTHEN FACES OF CONSTRUCTED DIKE WITH DIKE SEED MIX.

MATERIALS (AND EQUIPMENT)

1. DIKE EMBANKMENT MATERIAL: LOCAL CLAY LOAM MATERIAL (OR EQUAL) TO MATCH EXISTING DIKE CONSTRUCTION.
2. DIKE ROAD WOVEN SEPARATION GEOTEXTILE.
3. CRUSHED ROCK FOR TOP OF DIKE ROAD: AGGREGATE BASE IN ACCORDANCE WITH ODOT SPECIFICATIONS SECTION 00640. ALTERNATIVELY, 3 TO 4 INCH PIT RUN AS BASE COURSE, OVERLAIN BY 2 TO 3 INCH $\frac{3}{4}$" MINUS OR 1.5 INCH MINUS CRUSHED ROCK.
4. DIKE SEED MIX: DIKING DISTRICT'S SPECIFIED SEED MIX FOR DIKE MAINTENANCE PROJECTS (TO BE APPLIED WITH HYDROMULCH).
5. SHEEPSFOOT ROLLER FOR EMBANKMENT PLACEMENT.
6. VIBRATORY DRUM ROLLER FOR GRAVEL ROAD PLACEMENT.

SUBMITTALS

1. SD-01 (PRECONSTRUCTION SUBMITTALS):
   a. DIKE CONSTRUCTION WORK PLAN DESCRIBING THE PROPOSED METHODS OF CONSTRUCTION, SEQUENCING, FLOOD PROTECTION MEASURES, MATERIAL SOURCES, AND SCHEDULE.
   b. FIFTY-POUND SAMPLES OF IMPORTED MATERIAL PROPOSED FOR USE AS DIKE EMBANKMENT AND DIKE ROAD MATERIAL TO THE ENGINEER IDENTIFIED BY THE OWNER AT LEAST 10 DAYS PRIOR TO USE. THE CONTRACTOR SHALL NOT USE MATERIALS UNTIL APPROVED BY THE ENGINEER.
   c. A WRITTEN STATEMENT INDICATING THE SOURCE, CHARACTER, AND PROPOSED USE OF ALL IMPORTED MATERIALS WITH THE SAMPLES. BY SUBMITTING SAMPLES, THE CONTRACTOR AGREES THAT THE FILL MATERIAL WILL CONFORM WITH THE MATERIAL SAMPLES SUPPLIED TO THE GEOTECHNICAL ENGINEER.
   d. CERTIFICATION OF TEST RESULTS, SOURCE, AND SAMPLES OF IMPORTED MATERIALS.
   e. LIST OF PROPOSED EQUIPMENT.
   f. MOISTURE-CONDITIONING METHODOLOGY (INCLUDING, BUT NOT LIMITED TO, AERATION) AND CONTRACTOR'S EXPERIENCE WITH THE METHOD(S).

RECORD DRAWING

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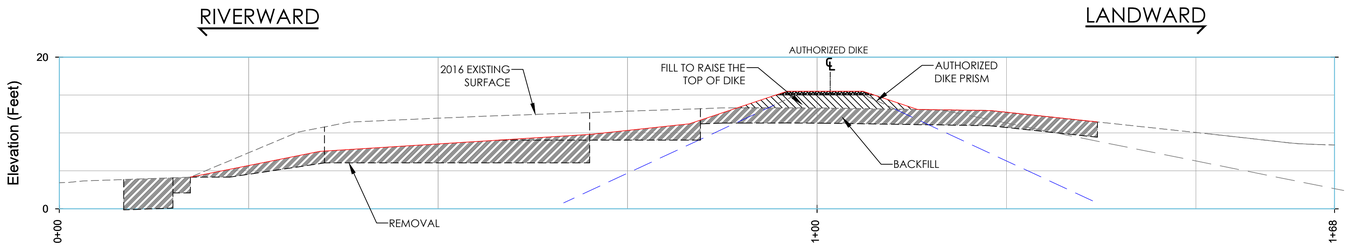
SHEET TITLE
DIKE RESTORATION PLAN

SHEET
C6.0

PLOTTED ON: 2023-01-06 7:58 AM
PLOTTED BY: Cem Gokcora
FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\2018\04.03 AMCCO\PLANS\As-Built\VC6.0 DIKE EXTENSION PLAN.dwg



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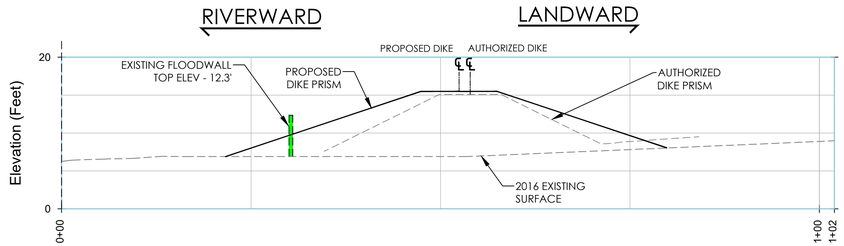

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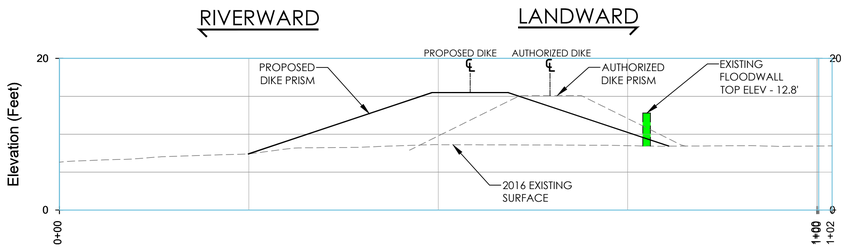

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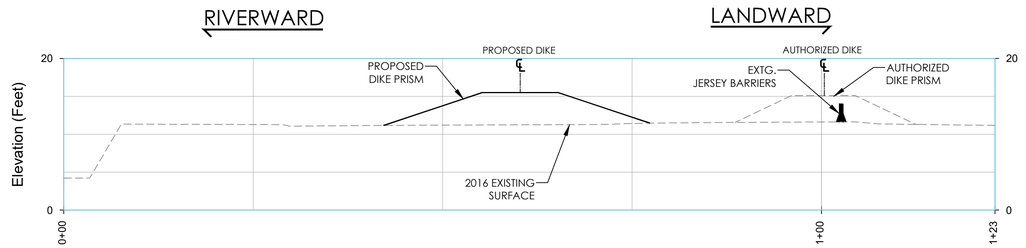

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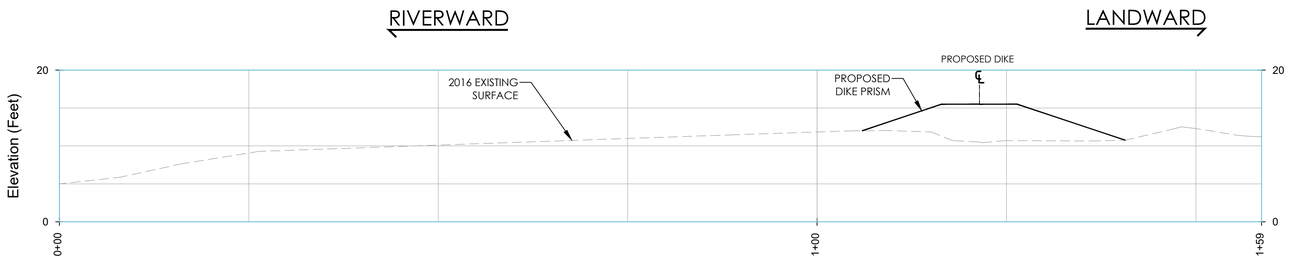

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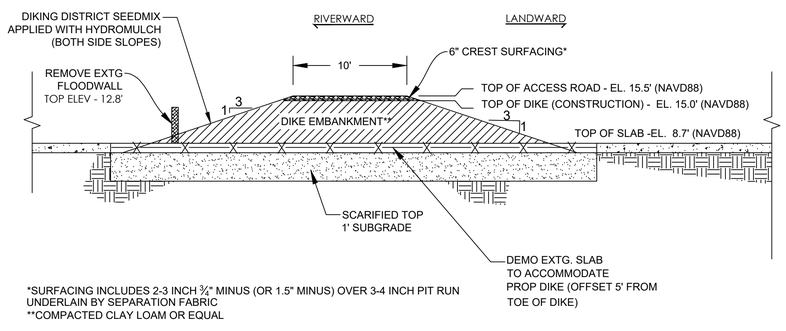
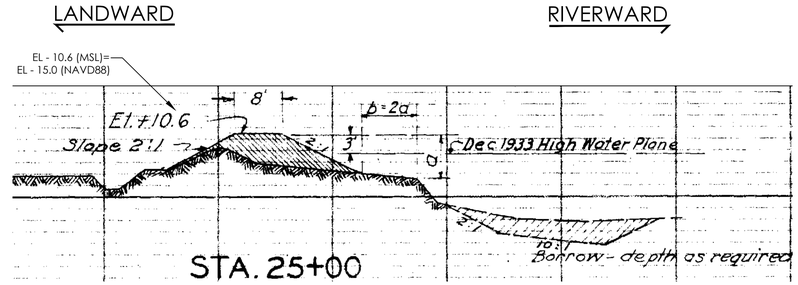
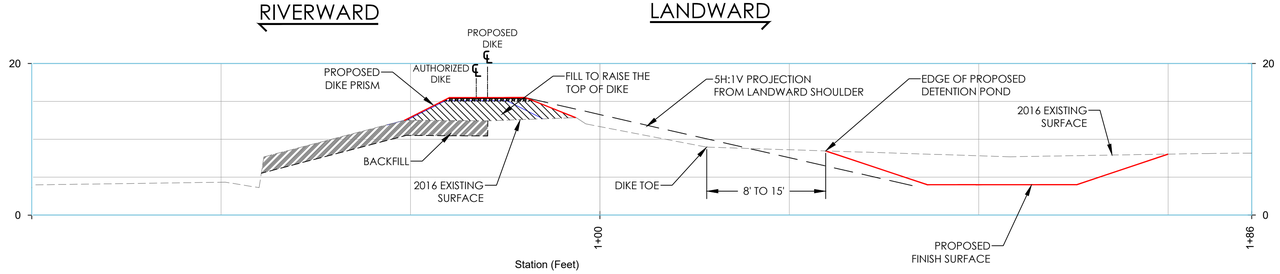


*SURFACING INCLUDES 2-3 INCH ¾" MINUS (OR 1.5" MINUS) OVER 3-4 INCH PIT RUN UNDERLAIN BY SEPARATION FABRIC
**COMPACTED CLAY LOAM OR EQUAL

PROPOSED DIKE CROSS SECTION
NOT TO SCALE



1937 AUTHORIZED DIKE CROSS SECTION (TYPICAL)
NOT TO SCALE



1B DIKE RECONSTRUCTION WITH PROPOSED DETENTION POND
H:1"=10', V:1"=10'

RECORD DRAWING

MAUL FOSTER ALONGI
3140 NE BROADWAY STREET
PORTLAND, OR 97232
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER
70867PE
OREGON
JAN. 11, 2005
CEM E. GOKCORA
EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

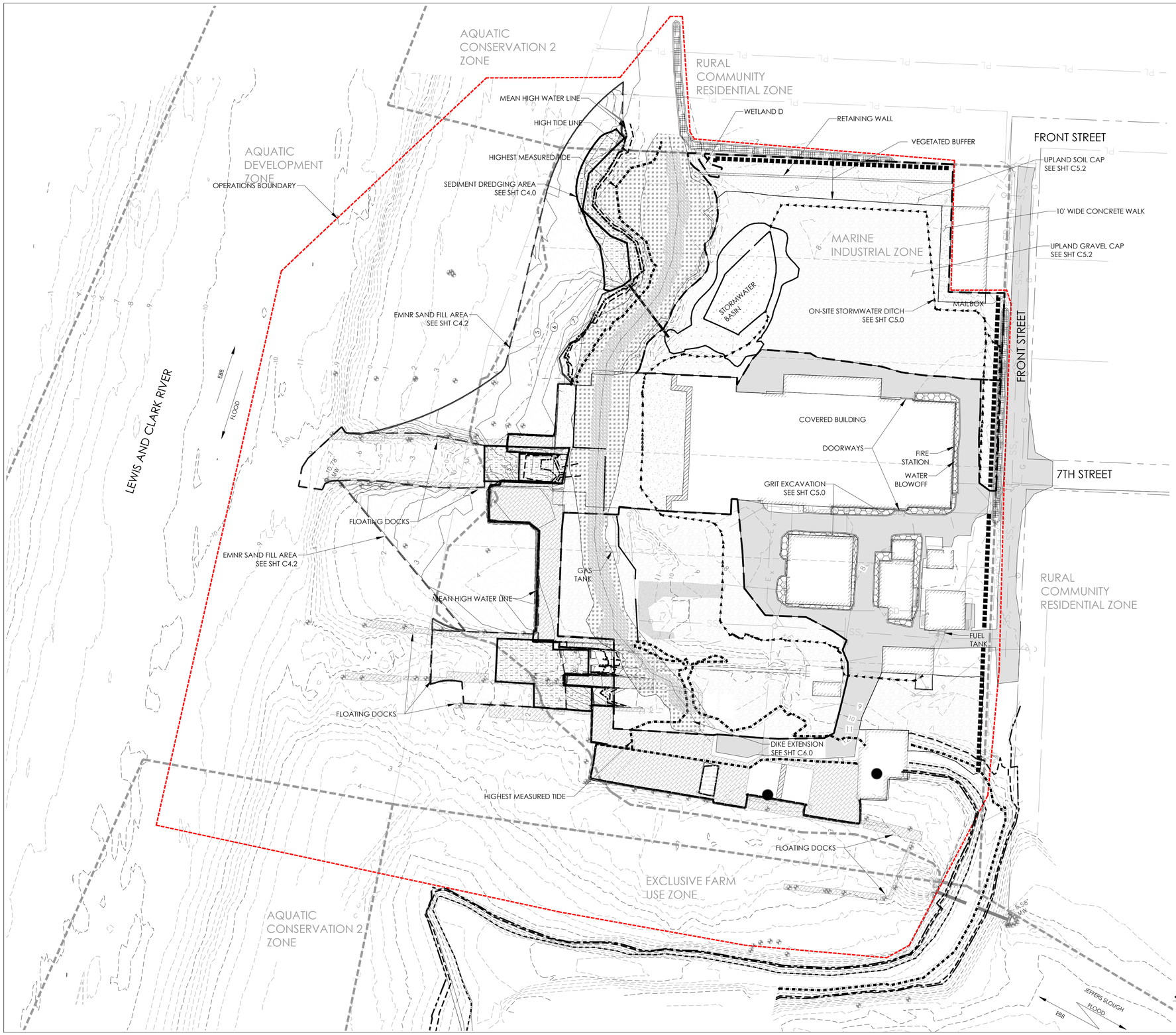
AMCCO UPLAND & SEDIMENT REMEDIATION PLAN
ASTORIA MARINE CONSTRUCTION CO.
ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/06/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM
SCALE

SHEET TITLE
DIKE CROSS SECTIONS

SHEET
C6.1



LANDSCAPE LEGEND

- DOCK PILING
- EXISTING ASPHALT
- EXISTING DOCK
- EXISTING GRAVEL SURFACE
- UPLAND GRAVEL CAP
- GRIT EXCAVATION
- EMNR SAND FILL
- SEDIMENT DREDGING
- 1.5" ASPHALT OVERLAY (OR CONCRETE SURFACING)
- BERM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- LOT LINE
- MEAN HIGH WATER LINE - 7.93' (NAVD 88)
- HIGH TIDE LINE - 8.63' (NAVD 88)
- HIGHEST MEASURED TIDE - 11.9' (NAVD 88)
- DIKE SLOPE NON-VEGETATIVE AREA SEED MIX: LOWLAND PASTURE MIX
- ACCESS ROAD SURFACING: ¾" MINUS CRUSHED ROCK
- STORMWATER POND SEED MIX: PRO TIME PT 406 NATIVE MIX FOR WET AREAS
- VEGETATIVE BUFFER CAP: 12" TOPSOIL
- EXISTING SLAB TO REMAIN
- UPLAND GRAVEL CAP: 3/4" TO 1-1/2" MINUS CRUSHED ROCK OR EQUAL SURFACING
- ROCK LINED CONVEYANCE DITCH: QUARRY SPALLS OR EQUAL

RECORD DRAWING

MAUL FOSTER ALONGI
3140 NE BROADWAY STREET
PORTLAND, OR 97232
PHONE: 971.544.2139
www.maulfoster.com

REGISTERED PROFESSIONAL ENGINEER
70867PE
OREGON
JAN. 11, 1985
CEM E. GOKCORA
EXPIRES: 6/30/2025
This digital seal certifies the signatory and document content.

AMCCO UPLAND & SEDIMENT REMEDIATION PLAN

ASTORIA MARINE CONSTRUCTION CO.

ASTORIA, OREGON

ISSUE	DATE	DESCRIPTION
B	01/04/2023	RECORD DRAWING DOCUMENT
A	05/27/2020	100% DESIGN DOCUMENTS

PROJECT: 1653.01.02
DESIGNED: C. GOKCORA
DRAWN: G. KALMETA
CHECKED: E. BAKKOM

SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
LANDSCAPE PLAN

SHEET
L1.0

PLOTTED ON: 2023-01-06 7:55 AM PLOTTED BY: Cem Gokcora FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\02981.04 (53) AMCCO\FIVUVANS\As-built\L1.0 LANDSCAPE PLAN.dwg

Appendix B

Performance Monitoring, Review & Contingency Plan

MAUL FOSTER ALONGI

Performance Monitoring, Review & Contingency Plan

Former Astoria Marine Construction Company

DEQ Task Order 067-23-13

ECSI No. 1898

92134 Front Road
Astoria, Oregon

Prepared for:

Oregon Department of Environmental Quality

June 14, 2024

Project No. M0785.09.001

Prepared by:

Maul Foster & Alongi, Inc.
3140 NE Broadway, Portland, OR 97232

MAUL FOSTER ALONGI

Performance Monitoring, Review & Contingency Plan

Former Astoria Marine Construction Company

DEQ Task Order 067-23-13

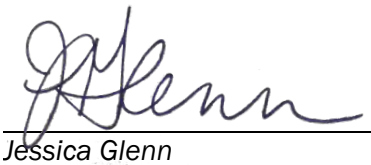
ECSI No. 1898

92134 Front Road

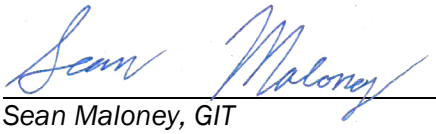
Astoria, Oregon

The material and data in this report were prepared under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.



Jessica Glenn
Senior Environmental Scientist



Sean Maloney, GIT
Staff Geologist

Contents

Limitations

Figures

Following the Report

Appendixes

Abbreviations

AMCCO	Astoria Marine Construction Company
COC	contaminant of concern
DEQ	Oregon Department of Environmental Quality
DU	decision unit
EMNR	enhanced monitored natural recovery area
EPA	U.S. Environmental Protection Agency
ISM	incrementel sampling methodology
MFA	Maul Foster & Alongi, Inc.
MNR	monitored natural recovery
PCB	polychlorinated bi-phenyls
PMR&C Plan	Performance Monitoring, Review & Contingency Plan
PRG	preliminary remediation goal
ROD	Record of Decision
the Site	former Astoria Marine Construction Company sediment site
TBT	tributyltin

1 Introduction

Maul Foster & Alongi, Inc. (MFA) prepared this Performance, Monitoring, Review and Contingency Plan (PMR&C Plan) for the former Astoria Marine Construction Company (AMCCO) sediment site in Astoria, Oregon (the Site; Figure 1-1). The Site is listed in the Oregon Department of Environmental Quality's (DEQ) Environmental Cleanup Site Information database as Site ID 1898. This report was prepared for DEQ under Task 3 of Task Order Amendment No. 067-23-13.

1.1 Purpose

The purpose of this PMR&C Plan is to outline the specific maintenance, monitoring, and corrective action procedures for the Enhanced Monitored Natural Recover (EMNR) sand layer and monitored natural recovery (MNR) areas. Specifically, this PMR&C Plan establishes the framework for specific performance standards and the planned monitoring activities to demonstrate the effectiveness and reliability of the in-water sediment remedy implemented by the property owner in preventing or reducing human and ecological exposures to Site-related contaminants.

2 Background

2.1 Site Location, History, and Description

The approximately seven acre upland property is located at 92134 Front Road, Astoria, Oregon. The property is just outside the eastern boundary of Warrenton and three miles southwest of Astoria, Oregon, at township 8 north, range 10 west, southeast quarter of section 25, Clatsop County (Figure 1-1). The sediment Site is located in the Lewis and Clark River and Jefferson Slough.

AMCCO was founded in 1924. Between 1924 and the 1940s, AMCCO manufactured and repaired wooden-hulled boats (e.g., fishing boats, tow boats, military crafts) and historical activities included construction, refurbishing, maintenance, and repair of wooden and metal ships, which involved painting and sandblasting. These historical activities caused contamination of sediments adjacent to the site, with the primary contaminants of concern (COCs) identified as metals, dioxin/furans, polychlorinated bi-phenyls (PCBs) and tributyltin (TBT).

2.2 Previous Environmental Activities

In March 2011, the United States Environmental Protection Agency (EPA) proposed to place the AMCCO property on the National Priorities List of sites warranting priority cleanup under the federal Comprehensive Environmental Response, Compensation, and Liability Act. The Clatsop County Board of Commissioners requested EPA delay the NPL listing. The request was subsequently granted, and

oversight of cleanup activities was transferred to the DEQ. As part of the Deferral Agreement with EPA, DEQ consulted with EPA, several Federally recognized Tribes, several state agencies, and other Federal Natural Resource Trustees (collectively the "Stakeholders") on the decision making for the project.

In 2015, AMCCO completed a Remedial Investigation and Feasibility Study and in 2017 DEQ issued a Record of Decision (ROD) for cleanup, which identified preliminary remediation goals (PRGs) for sediment based on the site uses and potential human and ecological receptors. These screening levels were used to inform selection of the remedial action, which required targeted dredging and placement of a sand layer for areas with the most contaminated sediments (approximately 65,700 square feet) and monitored natural recovery for the remaining in-water portion of the Site (approximately 580,000 square feet).

Construction of the in-water (and associated upland) remediation work commenced in July 2020, which included nearshore dredging and installation of the EMNR sand layer. All in-water work was finalized by September 2020 (MFA 2024). Under terms of the consent judgment, AMCCO is responsible for operation, maintenance and monitoring ("OM&M") of the upland remedy. Per the EPA deferral agreement, DEQ is responsible for OM&M for the in-water remedy. DEQ is also responsible for establishing institutional controls within the MNR and EMNR areas, if deemed necessary.

During remedial activities, MFA provided oversight, which consisted of observation of hot spot dredging operations and placement of an EMNR sand layer (Figure 2-1).

To verify the EMNR sand layer placement and near-term stability, MFA performed three separate core sampling events following remedy construction at one-year intervals (2020, 2021, and 2022), documenting the thickness of the clean sand layer and the presence of a clear and abrupt transition to the native sediment. The objective of the subsequent core sampling events was to verify stability of the EMNR sand layer, and to evaluate potential changes in layer thickness after two years of tidal exchange and wave action on the Lewis and Clark River. The analysis also evaluated whether there has been any discernable mixing at the EMNR sand layer and sediment interface. The annual coring demonstrated that the design goal of delivering a minimum of 6 inches has been achieved. While the EMNR sand layer is not required to maintain a specific thickness long-term since mixing and erosion/bed exchange is expected, it is noted that the minimum sand depth continued to exceed 6-inches in 2022.

3 Performance Monitoring Activities

Performance monitoring of the EMNR and MNR areas will consist of visual observations, bathymetry surveys, and chemical monitoring. Sediment sampling will be completed using an incremental sampling methodology (ISM) approach, and COC concentrations will be compared to PRGs. As the long term monitoring is associated with natural recovery only (compared to active remedy monitoring, such as an engineered cap), this PMR&C plan will be adaptive to results and changes over time, if any.

For Year 1 monitoring, to be conducted in summer 2024, visual monitoring, a bathymetric survey, and chemical monitoring will be completed to establish baseline conditions. For subsequent years, visual monitoring and a bathymetric survey will be completed annually, and chemical monitoring will be completed in Year 5 (summer 2028) and Year 10 (summer 2033; if required by DEQ). Monitoring will be discontinued once average concentrations of COCs in sediments are below PRGs.

A site-specific HASP (Attachment A of the site-specific sampling and analysis plan) has been prepared for the proposed performance monitoring activities. The HASP was prepared in general accordance with the Occupational Safety and Health Act and the Oregon Administrative Rules. A copy of the HASP will be available for use by MFA staff during field activities.

3.1 Visual Monitoring and Inspection

Visual monitoring and inspections will be completed to identify changes and evaluate the stability of the EMNR sand layer.

Visual monitoring will be completed for the accessible portion of the EMNR sand layer on a regular schedule and following significant events as described in Section 5. Visual monitoring will be completed during low tide, so that the EMNR sand layer which is the most susceptible to wave action and other physical changes can be observed. Monitoring criteria are established for the EMNR sand layer and will determine the need for future analysis and corrective action, if needed. Monitoring criteria are discussed in Section 3.1.2.

3.1.1 Visual Monitoring Schedule and Frequency

Initial visual monitoring and inspection will be conducted in Summer 2024, and will serve as the baseline condition for comparison to future visual monitoring events. Subsequent visual monitoring events will be completed annually.

Inspections will also be completed following events that could potentially cause significant disturbance of the EMNR sand layer (e.g., large storm event, earthquake, grounding of a large watercraft). Photographs and measurements will be collected, as applicable, and are intended to be an informal visual observation to evaluate short-term changes. Visual observations will be recorded in the EMNR Sand Layer Visual Monitoring Form (Appendix A).

Inspections completed outside the annual monitoring event will be summarized with a letter to DEQ describing the areas of the EMNR sand layer affected by the specified event (if any). If the inspection identifies significant changes that require attention, DEQ will be notified and consulted regarding further analysis and recommended next steps.

3.1.2 Visual Monitoring Documentation Requirements

Visual monitoring events will be conducted by a scientist or engineer familiar with the site and monitoring requirements. Field notes will be recorded, and photographs taken at predetermined locations (Figure 3-1) selected to capture most of the Site from the following perspectives:

- Top of the bank looking downslope towards the northern, southern, and western portions of the EMNR sand layer.
- From the northern, southern, and western edges of the EMNR sand layer, looking toward the central portion of the EMNR sand layer.

- From the western edges of the EMNR sand layer, looking upslope.

Visual monitoring will document (at minimum) the following observations of the EMNR sand layer with photographs, notes, measurements, and spatial location data (global positioning system coordinates and/or design station-offset measurements, elevation):

- General sand smoothness and visible deviations from the baseline observation.
- Areas of inconsistent surface indicating excessive erosion of surface materials.
- Areas of vegetative cover, including the presence of stressed or dead vegetation.
- Indications of the presence of wildlife (e.g., holes, burrows, nests)
- Areas of sediment deposition on the EMNR sand layer.
- Any apparent loss of sand material.
- Presence of significant debris on the sand or sediment surface as a potential source of recontamination.
- Other visible indicators of potential contamination (i.e., sheen or staining) on the surface sediments.

The visual observations will be used to determine the need for further analysis or potential corrective action as described in Section 5.

3.2 Bathymetric Survey Monitoring

A bathymetric survey will be conducted in summer 2024. The survey will be combined into a single topographic base map by the surveyor for use as the baseline survey. Future bathymetric surveys will be compared against the baseline survey to evaluate elevation changes. This includes the potential loss of material over time that could impact the physical integrity of the EMNR sand layer, as well as indications of sediment deposition indicating natural recovery.

3.2.1 Bathymetric Survey Monitoring Schedule

The bathymetric survey of the EMNR sand layer and MNR area will be performed annually, and after any event that may have resulted in significant changes to the EMNR sand layer (as described in Section 5). Surveys will be completed at approximately the same time each year, ensuring that direct comparisons of the EMNR sand layer are made between monitoring years.

3.2.2 Bathymetric Survey Monitoring Requirements

A bathymetric multibeam hydrographic survey will be performed during high tide and will include the EMNR and MNR areas. The survey will generally be completed in areas with a water depth of 5 feet and greater. The survey should not be completed following major storm events in order to have minimum turbidity in the water, which may cause a lower degree of accuracy. Data for all multibeam hydrographic surveys will be collected in a manner to ensure comparability to previous surveys.

Multibeam data will be digitally reduced in order to generate a usable terrain file for comparison. Data reduction is necessary to create manageable file sets for comparison of large, three-dimensional surface areas. A one-meter grid will be used for data reduction. ArcGIS will be used to

generate a digital terrain model from the data points in order to compare one year to another. Areas of interest in the resulting comparison can then be evaluated using the original multibeam data, if necessary.

Upon completion of the multibeam hydrographic survey data collection, contour maps and three-dimensional digital terrain models providing complete coverage of all required survey areas will be generated by a licensed survey contractor. Depth analyses will be carried out using surveyor-generated topographic surface imagery. A list of specific quality assurance procedures and survey requirements is provided in Appendix B.

3.2.3 Bathymetric Survey Analysis and Performance Criteria

Hydrographic monitoring surveys will be evaluated to identify elevation anomalies or differences in the EMNR and MNR areas. If an elevation decrease of more than one foot greater than the survey method error is identified during the transect analysis, the following activities may be conducted to further evaluate the change, in coordination with the DEQ:

- Complete a detailed analysis of the high-resolution hydrographic survey maps to delineate the nature and extent of elevation change.
- Conduct additional surveying (as necessary) of the area if existing data density or quality is not sufficient to confirm the nature and extent of potential disruption.
- Perform field verification of EMNR sand layer thickness (e.g., inspection with coring or other acceptable thickness measurement methodology).

Areas of positive elevation change will be noted on analysis, but will not require additional analysis unless corresponding with or adjacent to an area of negative change.

3.3 Chemical Monitoring

Chemical monitoring will be completed to evaluate sediments within the EMNR and MNR areas. This will be completed using an ISM approach, as described in the Sampling and Analysis Plan (Appendix C). MFA identified two decision units (DUs): the EMNR sand layer area (approximately 1.5 acres) and the MNR area (approximately 6.6 acres). An ISM sample will be collected from each DU, and the samples will be analyzed for each of the COCs with a PRG[1]:

- Metals (antimony, arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc) by EPA Method 6020D
- Tributyltin by SOC-BUTYL, Rev, 17.0
- Total PCBs by EPA Method 8082
- Dioxins/furans by EPA Method 1613

MFA will collect a 75-point composite sample from the EMNR area and a 100-point composite sample from the MNR area. The purpose of the initial sampling event will be to identify baseline concentrations of COCs in each area. Subsequent sampling events will be used to evaluate trends

[1] The requested method reporting limits and method detection limits will be consistent with the PRGs established in the ROD.

for COC concentrations and monitor the natural recovery of low levels of contamination in sediments, until the average COC concentrations are below PRGs.

The ISM data will be used to monitor the natural recovery of sediment contamination, and monitoring will be completed at least every 5 years, for 10 years, to demonstrate effectiveness. MFA anticipates that COC concentrations will be below PRGs after 10 years and additional sampling will not be required. If that is not the case, additional sampling and/or remedial measures will be discussed with DEQ to identify a path forward.

4 Reporting

Following field activities and the receipt of analytical data (for monitoring events that include chemical monitoring), MFA will prepare a report discussing the findings. For the initial monitoring event, the visual monitoring and bathymetric survey data will serve as a baseline for future annual assessments. The results of the chemical monitoring will inform potential future sampling activities.

MFA will submit reports on an annual basis, describing the monitoring activities conducted within the current calendar year. Submittal of the report will be within 6 weeks of receipt of data and completion of data validation.

Each monitoring report will be prepared in general accordance with the following outline:

1. Introduction
    a. Purpose
    b. Scope of Work
2. Background
    a. Site Location and Description
    b. Previous Environmental Activities
3. Site Activities
    a. Visual Observation
    b. Bathymetric Survey Monitoring
    c. Sediment Sampling Investigation
4. Chemical Analyses and Results
    a. Analyses Performed
    b. Chemical Results
5. Conclusions and Recommendations
6. Appendices
    a. Photographs
    b. Bathymetric survey

c. Field Methods and Sampling Procedures

d. IDW Disposal Documentation

e. Analytical Laboratory Testing Program and Documentation, including a QA review

5 Contingency Plan

Additional visual or chemical monitoring of the sediment monitoring area may be conducted in the unanticipated event of a significant change in the EMNR sand layer caused by flooding, seismic events, vessel grounding, or other large-scale disturbances. In addition, unanticipated changes in land use patterns (i.e., beneficial uses) or zoning, or climate change-induced alterations of weather patterns, including sea level rise, may additionally warrant alterations to the chemical and visual monitoring plan.

Significant physical changes to the EMNR sand layer could expose contaminated sediments that could be harmful to human health and the environment. Monitoring will identify whether or not the protectiveness of the remedy has been affected and if additional actions should be considered. This may occur if:

- A contiguous area of native sediment is exposed below the EMNR sand layer.
- A contiguous area of the EMNR sand layer has been reduced to a point where detectable concentrations of contaminants of concern may be present.

Visual monitoring or significant bathymetric changes that require additional actions (e.g., additional chemical monitoring) will be determined in collaboration with the DEQ.

References

DEQ. 2017. *Record of Decision; Selected Remedial Action for Astoria Marine Construction Company, Astoria, Oregon*. Oregon Department of Environmental Quality. February 27.

DEQ. 2024. *Task Order Amendment No. 067-23-13-001, Former Astoria Marine Construction Company (AMCCO) Post-Remedy Performance Monitoring.* Oregon Department of Environmental Quality. April 11.

FEMA. 2010. *Flood Insurance Rate Map. Clatsop County, Oregon, and Incorporated Areas.* Federal Emergency Management Agency. September 17.

MFA. 2024. *AMCCO Remedial Action Construction Completion Report; Astoria Marine Construction Company, ECSI No. 1898.* Prepared for Astoria Marine Construction Company. Maul Foster & Alongi, Inc.: Portland, OR. January 25.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figures

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FOSTER
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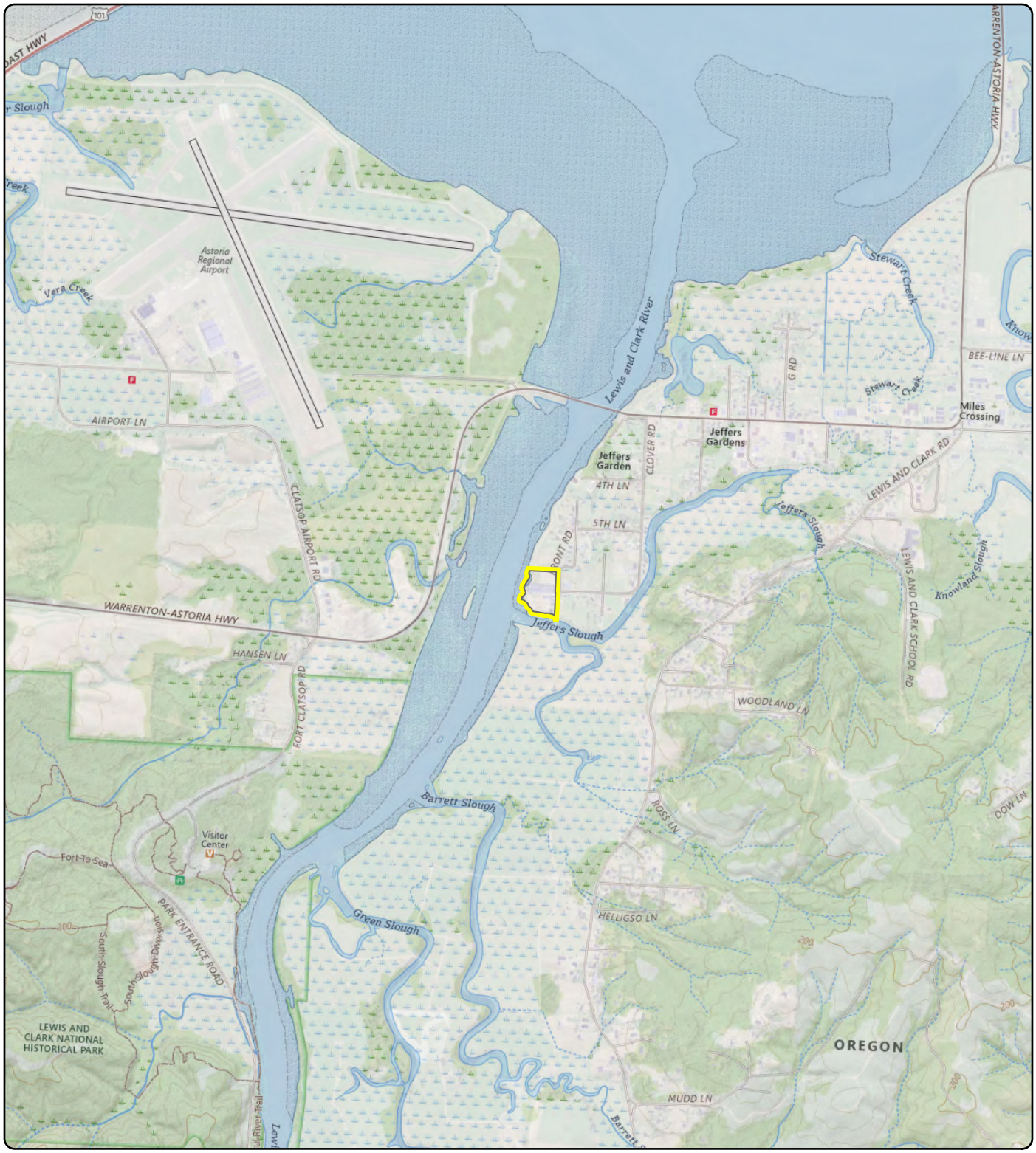

Notes
U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Astoria.
Township 8 north, range 10 west, section 36.

Data Source
Site boundary obtained from Clatsop County parcel dataset.

Legend

Site

Figure 1-1
Site Location

Former Astoria Marine Construction Company
92134 Front Road
Astoria, OR

0 2,000
Feet

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\O_MFA_Projects\M0785\29\001\Pro\M0785_29_001_003.aprx\Fig 1-1 Site Location
Print Date: 5/7/2024
Reviewed By: smaloney
Produced By: sturner
Project: M0785.29.001

Figure 2-1
EMNR Sand Layer and Monitored Natural Recovery Area

Former Astoria Marine Construction Company
92134 Front Road
Astoria, OR

Legend

- Mean Lower Low Water
- Building
- MNR Area
- ENMR Sand Layer

Notes

Area of ENMR sand layer is approximately 65,700 square feet (1.5 acres).
Area of MNR is approximately 351,118 square feet (8.1 acres).
EMNR = enhanced monitored natural recovery.
MNR = monitored natural recovery.

0 100
Feet

Data Sources

Aerial photograph obtained from Google Earth.

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Path: X:\0_MFA_Projects\M0785\29\001\Pro\M0785_29_001_003.aprx\Fig 2-1 EMNR Sand Layer and Monitored Natural Recovery Area
Print Date: 5/23/2024
Reviewed By: jgtorn
Produced By: sturner
Project: M0785.29.001

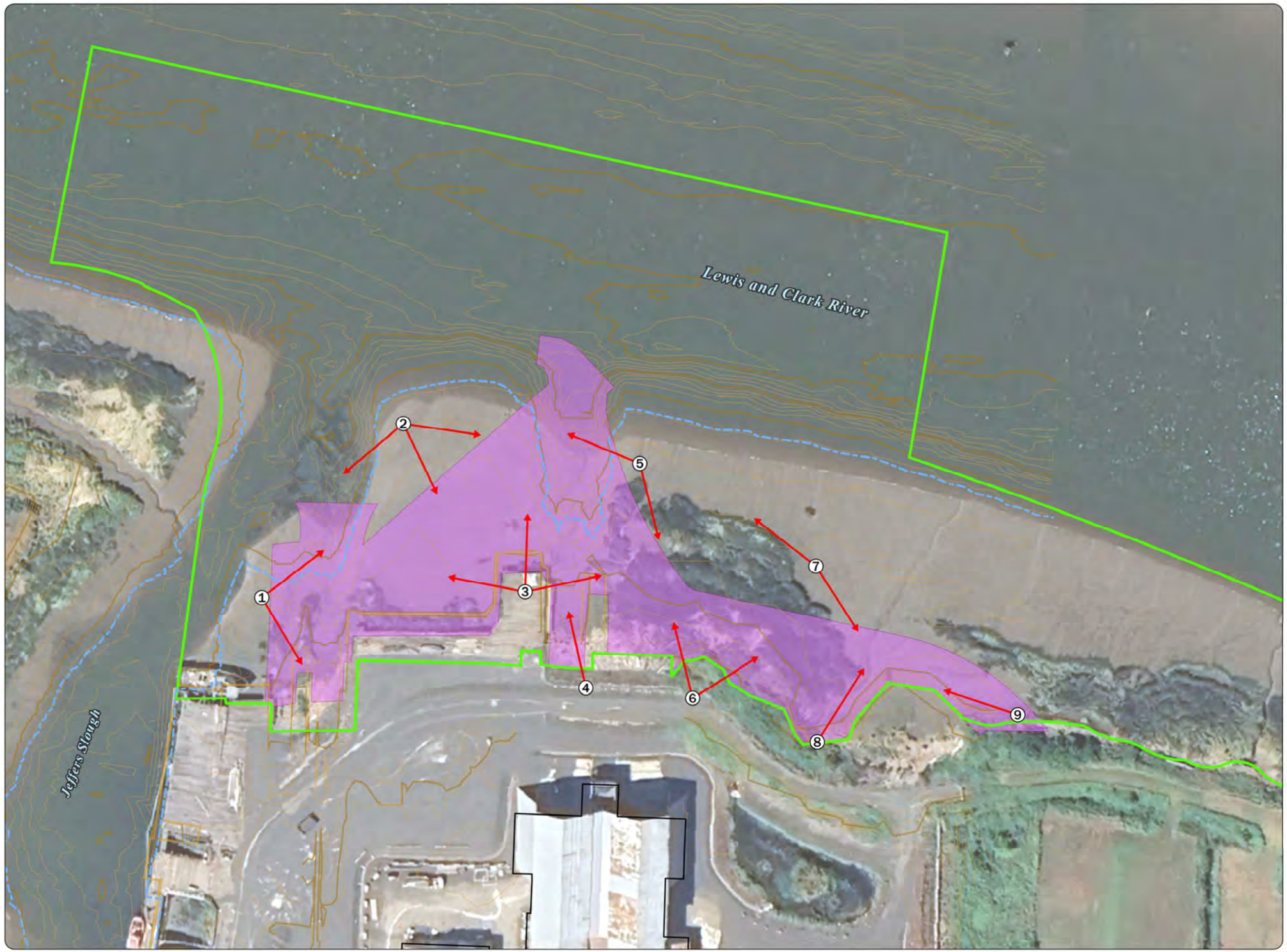

Figure 3-1
Photograph Locations for Visual Monitoring

Former Astoria Marine Construction Company
92134 Front Road
Astoria, OR

Legend

- Photograph Location
- Photograph Direction
- Mean Lower Low Water
- Building
- Monitored Natural Recovery Area
- ENMR Sand Layer

Notes

Area of ENMR sand fill is 65,700 square feet (1.5 acres).
Area of monitored natural recovery area is 351,118 square feet (8.1 acres).
EMNR = Enhanced Monitored Natural Recovery Area.

0 50
Feet

Data Sources

Aerial photograph obtained from Google Earth.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\0_MFA Projects\M0785\29.001\Pro\M0785_29_001_003.aprx\Fig 3-1 Photograph Locations for Visual Monitoring
Print Date: 5/23/2024
Reviewed By: smolinsky
Produced By: sturner
Project: M0785.29.001

Figure 3-2
ISM Sampling Locations

Former Astoria Marine
Construction Company
92134 Front Road
Astoria, OR

Legend

- MNR Sample Increment
- EMNR Primary Sample Increment
- EMNR Duplicate Sample Increment
- EMNR Triplicate Sample Increment
- Increment Sample for Archive
- Mean Lower Low Water
- Building
- MNR ISM Sampling Grid
- EMNR ISM Sampling Grid
- MNR Area
- ENMR Sand Layer

Notes
Area of ENMR sand layer is approximately 65,700 square feet (1.5 acres).
Area of MNR is approximately 351,118 square feet (8.1 acres).
EMNR = enhanced monitored natural recovery.
ISM = incremental sampling methodology.
MNR = monitored natural recovery.

0 100
Feet

Data Sources
Aerial photograph obtained from Google Earth.

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p. 971 544 2139 | www.maulfoster.com

Path: X:\0_MFA_Projects\M07785\29.001\Pro\M07785_29_001_003.aprx\Fig 3-2 ISM Sampling Locations
Print Date: 5/23/2024
Reviewed By: jeffern
Produced By: sturner
Project: M07785.29.001

Appendix A

EMNR Sand Layer Visual Monitoring Form

MAUL FOSTER ALONGI

Former Astoria Marine Construction Company Site

MAUL FOSTER ALONGI

EMNR Sand Layer Visual Monitoring Form

Date: _____

Weather: _____

Monitoring Event: _____

Personnel: _____

Note: Record the photograph location number (corresponding with Figure 3-1 of the PMR&C Plan) associated with each observation.

Monitoring Components		Observation Result
Shoreline Conditions	Is there any sign of sloughing, cracking, or significant erosion?	
Vegetative Cover	Are there areas of inconsistent vegetative cover or stressed or dead vegetation?	
Sand Layer Material	Is there any apparent significant loss of sand layer material?	
Deposited Material or Debris	Are there any areas with significant debris on the sand or sediment surface as a potential source of recontamination? Any staining or sheen? Any evidence of significant sediment deposition?	
Other	Are there any significant abnormalities or physical changes identified during visual monitoring?	

Comments:

Appendix B

Bathymetric Survey Requirements

MAUL FOSTER ALONGI

Bathymetry Survey Requirements

Scope of Work

The bathymetry survey subcontractor (Subcontractor) must be licensed and bonded in the State of Oregon. The Subcontractor shall complete a topographic/bathymetric survey of the EMNR and MNR areas in portions of the Lewis and Clark River and Jeffers Slough within the extent shown in Figure 1.

The survey deliverable shall consist of the following:

- Horizontal Datum - Oregon State Plane Coordinates, North Zone, International Foot
- Vertical Datum – North American Vertical Datum (NAVD 88)
- Provide one digital Portable Document Format (PDF) copy of the final survey report and map signed by a professional Land Surveyor licensed in the State of Oregon.
- Provide combined topographic/bathymetric survey data in a common Esri GIS raster format (e.g., TIF) projected in a common coordinate system (e.g., state plane), with complete metadata including acquisition source, date, sensor, and accuracy information.
- Provide combined topographic/bathymetric survey data in a triangulated irregular network (TIN) surface in Esri GIS format projected in a common coordinate system (e.g., state plane), with complete metadata including acquisition source, date, sensor, and accuracy information.
- Provide bathymetric backscatter data in a common Esri GIS raster format (e.g., TIF) projected in a common coordinate system (e.g., state plane), with complete metadata including acquisition source, date, sensor, and accuracy.
- Provide a spreadsheet-based point file in PNEZD (Point No., Northing, Easting, Elevation, Point Description) format to include all surveyed points.
- Topographic and hydrographic survey products shall be combined by the Surveyor and provided as a single deliverable package (i.e., GIS data, spreadsheet, survey report, etc.).

The following survey methods and quality assurance (QA) procedures shall be use for the survey:

- Horizontal Accuracy: All points shall be horizontally accurate to the nearest 0.05 meter, relative positioning from established control points.
- Vertical Accuracy: All points shall be accurate to within +/- 0.05 meter vertically for topography and other physical features listed in the scope below.
- Data Density: Survey shall produce a minimum of one point per square meter within the survey site.
- Multibeam bathymetric survey procedures (sidelap, positioning modes, system calibration, data reduction, adjustment, processing, and plotting) shall conform to recognized industry standards and the standards given in U.S. Army Corps of Engineers (USACE) Engineering Manual (EM) 1110-2-1003 (2013 version).

- The Subcontractor shall implement quality control procedures prescribed for all survey instrumentation and data collection techniques used for this project in order to minimize systematic and random errors in individual data points. The Subcontractor shall follow and document quality control procedures recommended by the equipment manufacturers' operating manuals and as contained in EM 1110-2-1003 (2013 version).
- The Subcontractor shall perform QA tests (e.g., lead-line soundings, sonar calibration bar checks) to verify that the survey data meets the specified accuracy standards. If QA tests indicate that data does not meet the accuracy standards, additional or more stringent quality control procedures may be necessary.
- Bathymetric surveying shall be conducted using a real-time kinematic (RTK) global positioning system (GPS). The RTK GPS shall be able to provide horizontal positioning accuracy to within 0.1 meters and vertical positioning accuracy to within 0.1 meters. Corrections or adjustments shall be made for site conditions including weather, turbidity, and tidal influence.
- Horizontal location observations shall compensate for errors, geodetic corrections, and atmospheric variations.
- In the intertidal zone, land based topographic surveying methods will be required to achieve complete coverage of the EMNR and MNR. Topographic survey shall meet the accuracy, data density, and quality control/assurance requirements set forth above for bathymetric survey.
- Additional points shall be collected to properly represent grade breaks and hard scape features as described in the minimum information section below.

The following minimum information, where present in the EMNR and MNR areas, shall be collected by Subcontractor and included with the survey deliverable:

- Survey shall be completed within and extending at least 50 feet beyond the limits of the in-water EMNR and MNR areas (defined by the Subcontractor as the area below the line of Ordinary High Water) work as shown on Figure 2.
- Topographic and bathymetric points as described in the previous section to accurately depict the surface conditions within the EMNR and MNR areas.
- Vertical and horizontal datum information including all benchmarks used to establish site elevations shall be displayed on the final survey map.
- A surveyor's certification statement, stamp, and signature shall be included on the final survey deliverable.
- Hourly documentation of water surface elevation (relative to NAVD88) during the survey.
- Show approximated or surveyed location of each of the following items on the final survey map:
  - Existing pilings.
  - Limits of existing land and over-water structures and a description of approximate area and structure type.
  - Stormwater outfalls, culverts, and other structures. Provide (as applicable) rim elevations, presence/depth of standing water, presence of debris or sedimentation, and a description of each pipe penetration including material, size, direction, and invert elevation.
- Locations and elevations (relative to NAVD88) of the Ordinary High Water Line, mean lower low water line, and mean higher high water line on the final survey map.

Figure 1
Survey Area

Former Astoria Marine
Construction Company
92134 Front Road
Astoria, OR

Legend

- Mean Lower Low Water
- Building
- MNR Area
- ENMR Sand Layer

Notes

Area of ENMR sand layer is approximately 63,602 square feet (1.5 acres).
Area of MNR is approximately 351,118 square feet (8.1 acres).
EMNR = enhanced monitored natural recovery.
MNR = monitored natural recovery.

0 100
Feet

Data Sources

Aerial photograph obtained from Google Earth.

MAUL FOSTER ALONGI
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Path: X:\0_MFA Projects\M0785\29.0011\Proj\M0785_29_001_003.aprx\Fig 2-1 EMNR Sand Layer and Monitored Natural Recovery Area
Print Date: 5/23/2024
Reviewed By: jglenn
Produced By: sturner
Project: M0785.29.001

Appendix C

Sampling and Analysis Plan

MAUL FOSTER ALONGI

Sampling and Analysis Plan

Former Astoria Marine Construction Company

DEQ Task Order 067-23-13

ECSI No. 1898

92134 Front Road
Astoria, Oregon

Prepared for:

Oregon Department of Environmental Quality

May 23, 2024
Project No. M0785.09.001

Prepared by:

Maul Foster & Alongi, Inc.
3140 NE Broadway, Portland, OR 97232

MAUL FOSTER ALONGI

Sampling and Analysis Plan

Former Astoria Marine Construction Company

DEQ Task Order 067-23-13

ECSI No. 1898

92134 Front Road

Astoria, Oregon

The material and data in this report were prepared under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.

Jessica Glenn
Senior Environmental Scientist

Sean Maloney, GIT
Staff Geologist

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Abbreviations

AMCCO	Astoria Marine Construction Company
COC	contaminant of concern
DEQ	Oregon Department of Environmental Quality
DU	decision unit
EMNR	enhanced monitored natural recovery area
MFA	Maul Foster & Alongi, Inc.
MNR	monitored natural recovery
PRG	preliminary remediation goal
SAP	sampling and analysis plan
SOP	standard operating procedure
the Site	former Astoria Marine Construction Company sediment site

1 Introduction

Maul Foster & Alongi, Inc. (MFA) prepared this Sampling and Analysis Plan (SAP) for monitoring of natural recovery of sediments for the former Astoria Marine Construction Company (AMCCO) site in Astoria, Oregon (the Site; Figure 1-1). The Site is listed in the Oregon Department of Environmental Quality's (DEQ) Environmental Cleanup Site Information database as Site ID 1898.

This SAP presents the field and sampling procedures, and the analytical testing program MFA will use to complete the field and analytical work for this project.

1.1 Sampling Objectives

The objective of the sampling and analysis is to collect data of sufficient quality to characterize the natural recovery of sediments within the enhanced natural recovery (EMNR) sand layer and the monitored natural recovery (MNR) areas. The SAP is designed to quantify the average concentration of contaminants of concern (COCs) identified in the record of decision. Concentrations will be compared to the site-specific preliminary remediation goals (PRGs; DEQ 2017). In addition, because the average concentration will be characterized and compared over time, the SAP is designed to be able to reproduce representative sampling for use in trend analysis for future natural recovery monitoring events. The first round of sampling, in 2024, will represent the baseline condition following completion of construction activities at the Site in 2020.

2 Sampling Methods

Sediment sampling will be conducted following an incremental sampling methodology (ISM) approach. The following protocol was prepared based on the Interstate Technology & Regulatory Council and DEQ guidance documents (ITRC 2020, DEQ 2020). The sediment monitoring area is split into two decision units (DUs): the EMNR sand layer area and the MNR area. The EMNR sand layer will be a 75-increment ISM triplicate sample, and the MNR area will be a 100-increment single ISM sample (Figure 2-1). Field activities will be completed in accordance with the procedures described below.

2.1 Preparatory Activities

Site Health and Safety Plan. A site-specific HASP has been prepared for the proposed activities (Attachment A). The HASP was prepared in general accordance with the Occupational Safety and Health Act and the Oregon Administrative Rules. A copy of the HASP will be available for use by MFA staff during the field activities.

Underground Utility Location. A public utility notification request will be submitted through the Oregon Utility Notification Center in accordance with Standard Operating Procedure (SOP) 18. This will notify the various utilities in the area to mark any subsurface structures.

Property Access and Work Notification. MFA will coordinate Site access with DEQ. DEQ will secure Site access with the upland property owner. MFA will notify DEQ of the proposed work schedule.

2.2 Sediment Sampling

Sediment will be collected from the sediment cap and MNR areas (see Figure 2-1). Sample increments will be collected from 0 to 6 inches below mud line from sampling locations both above and below the water level, depending on the location. Sampling will be completed using the following protocols:

- The proposed increment locations were selected based on a systematic random approach using a rectangular grid as presented on Figure 2-1. Using a systematic random grid, as opposed to a simple random sampling approach, reduces the probability of missing areas with elevated concentrations. Field personnel will complete field screening in accordance with SOP 3 and note any increments collected from areas that have visual indications of chemical impacts (e.g., staining representative of potential petroleum hydrocarbons).
- For locations above the low-tide elevation, samples will be collected using stainless-steel sampling equipment such as a Russian Peat Borer or other core sampler. The sampling locations will be accessed by walking on the tidal flats during low tide. For submerged locations, sample increments will be collected using a power grab sampler (Van Veen) deployed using a winch from a support vessel. Sediment samples will be collected in accordance with SOP 15 (see Attachment B).
- The target mass of each increment will be approximately 20 grams (± approximately 20 percent) to achieve the overall target sample mass of 1 kilogram. Sample increments will be retrieved using a clean glass or stainless-steel sampling equipment (decontaminated in accordance with SOP 1).
- Organic debris (including surface vegetation and wood chips) and inorganic debris will be removed during sample collection using stainless-steel sampling equipment (e.g., trowels, spoons, etc.), as needed. This effort will ensure that excessive organic matter is not included in sediment collected and will maintain substrate consistency between sample increments.
- Sediment from each increment will be placed in a dedicated laboratory-provided, 1-liter glass jar, with the other increments from the DU, using a clean gloved-hand or decontaminated stainless-steel tool (e.g., spoon, trowel, knife, etc.).
- Sieving will be conducted by the laboratory as part of the sample-drying process, but care will be taken in the field to avoid particles larger than 2 millimeters where practicable. The type and nature of excluded particles will be recorded to ensure particles greater than 2 millimeters do not contain COCs that may contribute to contamination of the sediment fraction of interest. Purposefully excluding larger substrates will improve the probability that a consistent, uniform sample from each increment location will be incorporated, resulting in a representative average concentration.
- One ISM sample will be collected in triplicate from EMNR sand layer area. The replicate samples will consist of 75 sediment increments each, and replicate increment locations were selected

using a systematic random grid. Triplicate sampling will provide a conservative measure of ISM variability through the calculation of the relative standard deviation between replicate concentrations. These samples will be evaluated for uncertainty in the ISM concentrations in the EMNR sand layer area and quality control, as described in Section 3.2.2.

If analytical results indicate the potential that natural recovery is not occurring, it could be due to multiple reasons. This could be the result of factors related to the remedy itself (e.g., loss of sand layer material from unanticipated erosion) or other variables, such as an input from a previously unidentified upstream source. As a preventative measure, MFA will retain ten individual samples from select increment locations (five from each DU; Figure 2-1). These samples will be archived at the laboratory for follow up analysis, if necessary. Sample locations were selected to support future analysis of source inputs, as follows:

- Five locations were selected due to overlap with the dredged areas (where the highest concentrations of COCs were previously observed)
- Two locations were selected from the upstream extends of the MNR DU, to evaluate potential upstream inputs from Jefferson Slough and the Lewis and Clark River
- Three locations were selected along the border of the EMNR and MNR DUs to evaluate the effectiveness of the EMNR sand layer

Individual samples will only be analyzed on an as-needed basis, and after DEQ has provided approval.

2.3 Sample Identification

The field personnel will be responsible for labeling samples and establishing identification. All data will be keyed to the sample's unique sample designation. The unique sample designation will be used on sample containers and associated field data forms and will be used to key the sample identification in the project database.

The field personnel will clearly label each sample container, using permanent ink on a waterproof sample label, as soon as possible following collection. At a minimum, the following information will be written on the sample label:

- Unique sample identification code
- Time and date of collection
- Project number
- Preservative, if appropriate

In order to maintain sample identification consistency in the project database, the unique sample identification code will be assigned according to the following convention: Unique sample number – matrix type – depth (if applicable). The following codes and information will be included in the sample identification code:

Matrix type codes include the following:

- DU = ISM sediment decision unit (e.g., EMNR or MNR)
- Year: collection year (e.g., Year 1 will be 2024)

- Replicate samples will include “A”, “B”, or “C” at the end of the ID

For example, the ISM sediment sample collected from the EMNR DU in Year 1 would have the following sample ID: EMNR-2024-A and its replicates would be EMNR-2024-B and EMNR-2024-C.

2.4 Sampling Handling and Storage

Clean sample containers will be provided by the analytical laboratory ready for sample collection, including preservative, if required. A label will be affixed to each sample container and marked with identifying information. Sample containers will be stored in a cooled ice chest until being transported to refrigerated storage or to the analytical laboratory. Chain of custody will be maintained and documented at all times.

2.5 Decontamination

Decontamination of non-disposable field equipment (e.g., sampling tube, spoons, etc.) will be performed to prevent cross-contamination between sampling locations. Decontamination will be completed in accordance with SOP 1 (see Attachment B).

2.6 Waste Handling and Disposal

Excess sediment following ISM sampling will be replaced at the sampling location, and decontamination liquid will be land-applied. Disposal sampling equipment and personal protective equipment will be disposed of as solid waste.

3 Laboratory Analysis, Quality Assurance, and Quality Control

Soil samples will be submitted to Pace National, under DEQ’s contract for chemical analysis. Analytical costs will be billed directly to DEQ per the price agreement.

3.1 Laboratory Sampling Handling and Storage

After receipt of samples at the laboratory, ISM samples will be dried and processed following the laboratory SOP provided by Pace Analytical National Laboratory (Attachment C). Processing will include air drying at room temperature, disaggregation, and sieving (using a No. 10 sieve with a 2-millimeter sieve size), and compositing into a two-dimensional slab cake. The final mass following air drying and sieving will be recorded by the laboratory. Each sediment sample will be analyzed for the following:

- Metals (antimony, arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc) by EPA Method 6020

- Tributyltin by KRONE 1986
- Total PCBs by EPA Method 8082
- Dioxins and furans by EPA Method 1613

The requested method reporting limits and method detection limits will be consistent with the PRGs established in the ROD. Samples will be analyzed on a standard turnaround time. See Table 3-1 for a summary of the analytical methods and sample container requirements for sediment samples. See Table 3-2 for a summary of the analytical methods, and detection limit goals for sediment samples.

3.2 Quality Assurance and Quality Control

Sediment samples will be collected and analyzed in general accordance with Brownfield Program QAPP (DEQ 2016). This SAP presents quality objectives and procedures for sampling and analysis.

3.2.1 QA/QC Objectives

The general QA objectives for this project are to develop and implement procedures for obtaining and evaluating data of a specified quality that can be used to assess the nature and extent of contamination from current or past uses of hazardous substances. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody procedures.

3.2.2 Field QA/QC

The field QC samples will be used to assess the accuracy and precision of the field sample collection and handling activities. Blanks may be collected and held for analysis until it is determined contamination may be a concern. During fieldwork, disposable or decontaminated sampling equipment will be used to minimize or eliminate cross-contamination. Chain of custody will be maintained at all times. Table 3-3 summarizes the following quality assurance samples to be collected.

ISM Replicate Samples. Field replicates are collected to measure sampling and laboratory precision of the composite samples. Triplicates (three sets of 75-point composite samples) will be collected from the sediment collected from the sediment cap, and the relative standard deviation between the triplicate concentrations will be calculated.

Equipment Rinsate Blanks. Analyses of equipment rinsate blanks will be used to assess the efficiency of field equipment decontamination procedures in preventing cross-contamination of samples. Equipment rinsate blanks will be collected by pouring certified distilled or deionized water over or through decontaminated (clean) non disposable sampling equipment used in the collection of investigative samples and will be subsequently collected in prepared sampling containers. Additives or preservatives will be included in the equipment rinsate blanks as required for analysis. The rinsate blank will be shipped with the associated field samples. A minimum of one rinsate blank will be collected.

3.2.3 Laboratory QA/QC

The laboratory will also perform QC analyses (e.g., matrix spikes, method blanks, and laboratory replicate samples) per the requirements of the analytical method (Attachment C). Detection limits will be consistent with industry standards and, when practicable, below or comparable to promulgated regulatory standards, unless raised due to high analyte concentrations in the sample or matrix effects.

3.3 Data Validation

Validation will be performed for 100 percent of the data report packages for each analysis type generated by each analytical laboratory contractor. The independent data validation review will include review of the following items from the laboratory data reports: consistency with the COC, holding times, method blank performance, laboratory control sample and laboratory control sample duplicate recoveries and agreement, surrogate recoveries, matrix spike and matrix spike duplicate recoveries and agreement, ISM replicate agreement, laboratory duplicate precision, and method blank analyses and reagent blanks.

References

DEQ. 2016. *Quality Assurance Project Plan, Brownfield Program.* Oregon Department of Environmental Quality. November.

DEQ. 2017. *Record of Decision; Selected Remedial Action for Astoria Marine Construction Company, Astoria, Oregon*. Oregon Department of Environmental Quality. February 27.

DEQ. 2020a. Decision Unit Characterization. Oregon Department of Environmental Quality. September 14.

ITRC. 2020. *Technical/Regulatory Guidance, Incremental Sampling Methodology (ISM) Update.* The Interstate Technology & Regulatory Council (ITRC). October.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figures

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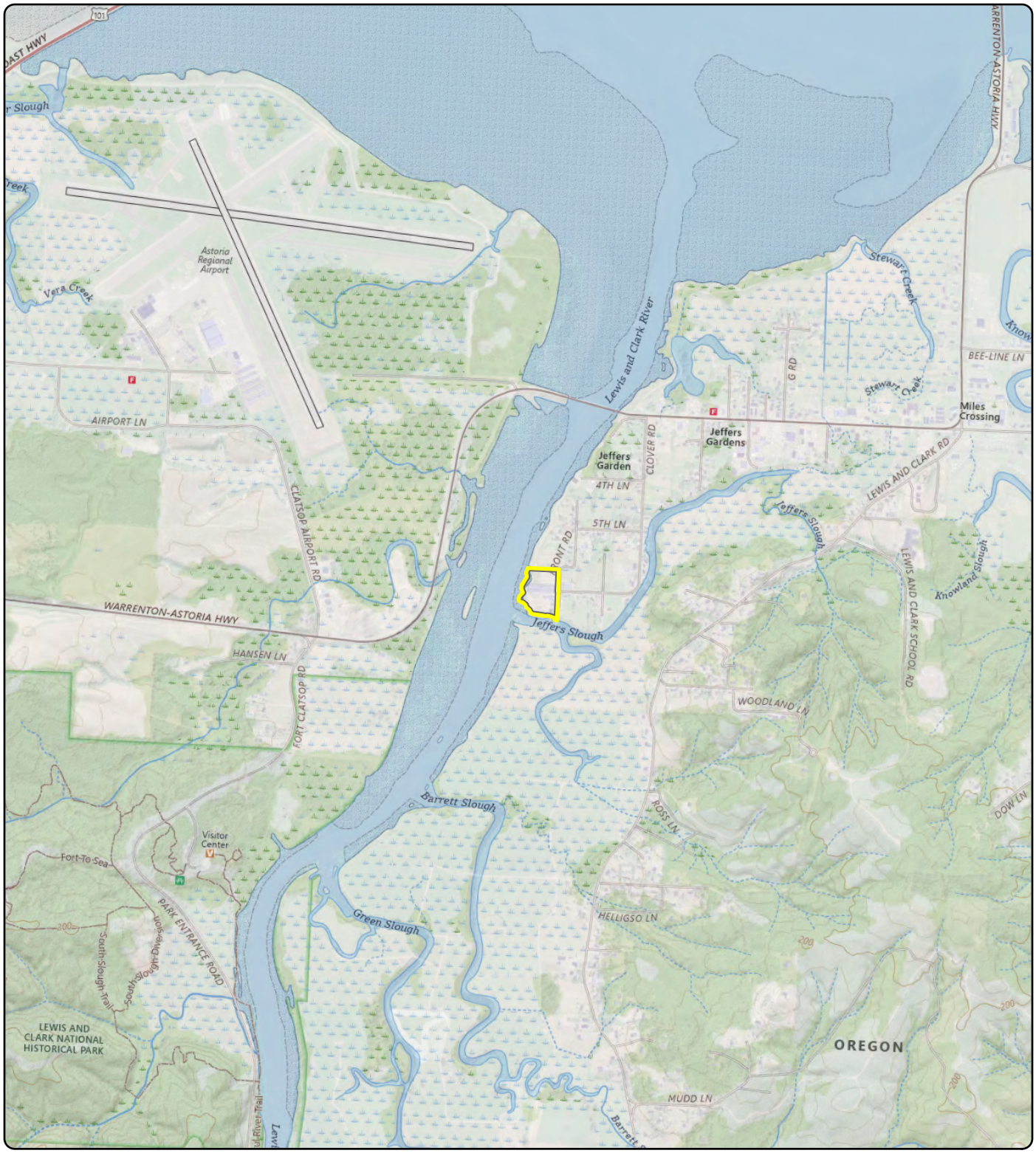

Notes
U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Astoria.
Township 8 north, range 10 west, section 36.

Data Source
Site boundary obtained from Clatsop County parcel dataset.

Legend

Site

Figure 1-1
Site Location

Former Astoria Marine Construction Company
92134 Front Road
Astoria, OR

0 2,000
Feet

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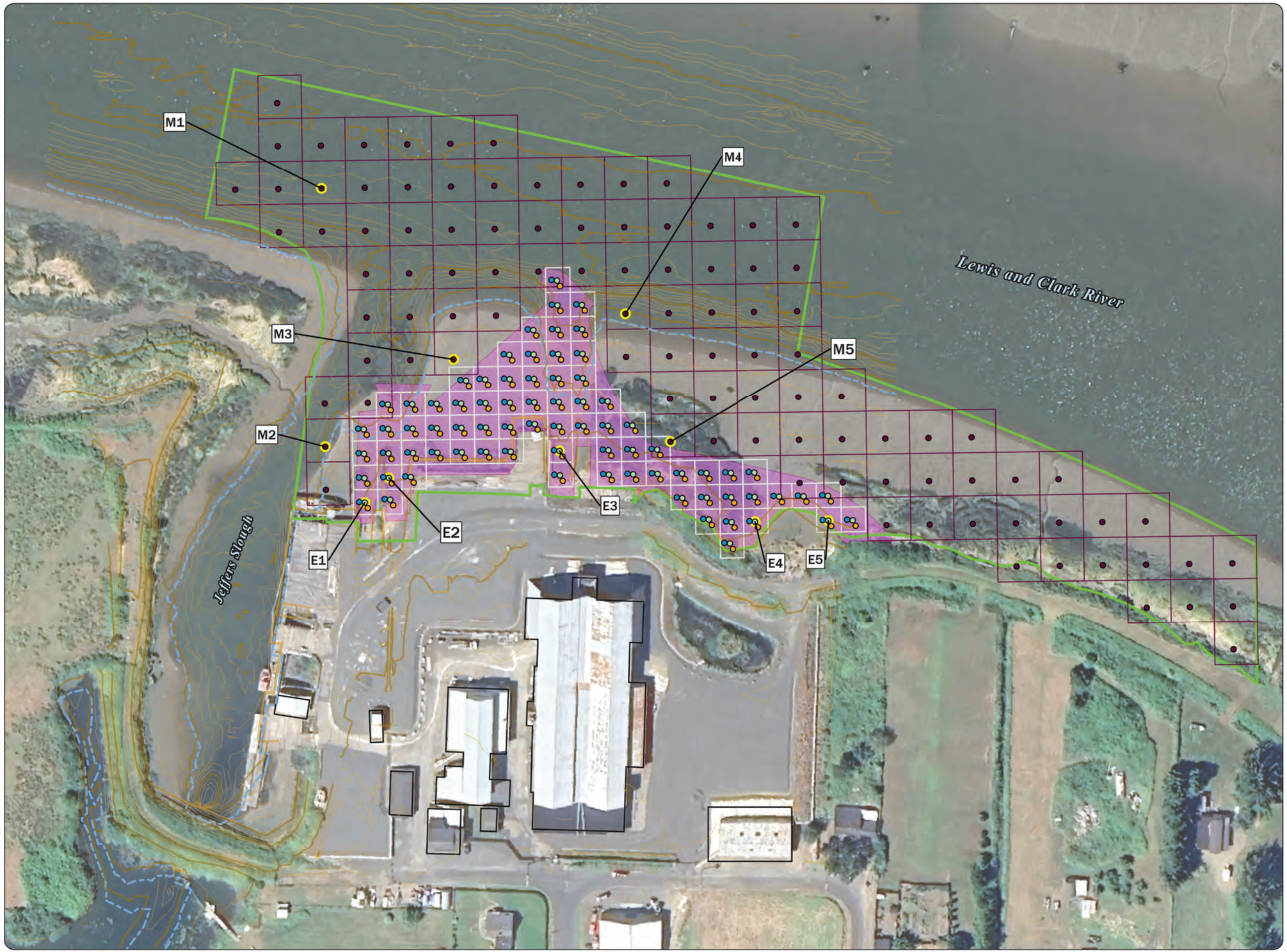
Path: X:\O_MFA_Projects\M0785\29\001\Pro\M0785_29_001_003.aprx\Fig 1-1 Site Location
Print Date: 5/7/2024
Reviewed By: smaloney
Produced By: sturner
Project: M0785.29.001

Figure 2-1
ISM Sampling Locations

Former Astoria Marine Construction Company
92134 Front Road
Astoria, OR



Legend

- MNR Sample Increment
- EMNR Primary Sample Increment
- EMNR Duplicate Sample Increment
- EMNR Triplicate Sample Increment
- Increment Sample for Archive
- Mean Lower Low Water
- Building
- MNR ISM Sampling Grid
- EMNR ISM Sampling Grid
- MNR Area
- ENMR Sand Layer

Notes
Area of ENMR sand layer is approximately 63,602 square feet (1.5 acres).
Area of MNR is approximately 351,118 square feet (8.1 acres).
EMNR = enhanced monitored natural recovery.
ISM = incremental sampling methodology.
MNR = monitored natural recovery.

0 100
Feet

Data Sources
Aerial photograph obtained from Google Earth.

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Path: X:\0_MFA_Projects\M0785\29\001\Pro\M0785_29_001_003.aprx\Fig 2-2 ISM Sampling Locations
Print Date: 5/23/2024
Reviewed By: jglenn
Produced by: sturner
Project: M0785.29.001

Tables

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Table 3-1
Analytical Methods and Sample Container Requirements
DEQ—Former Astoria Marine Construction Company
Performance Monitoring, Review Contingency Plan
Astoria, Oregon

Sample Matrix	Method	Parameter or Parameter Group	Container	Preservation	Storage Temperature	Hold Time
Sediment	SOC-BUTYL, Rev, 17.0	Tributyltin	1 liter glass	None	4°C	14-days
	EPA 8082	PCBs		None	4°C	365 days
	EPA 6020	Metals[(a)]		None	4°C	180 days
	EPA 1613	Dioxin/Furans		None	4°C	365 days

Notes

°C = degrees Celsius.

DEQ = Oregon Department of Environmental Quality.

EPA = U.S. Environmental Protection Agency.

PCB = polychorinated biphenyl.

[(a)] Antimony, arsenic, cadmium, chromium, copper, lead, nickel, siver, and zinc

Table 3-2
Analytical Methods, Detection Limit Goals, and PRGs
DEQ—Former Astoria Marine Construction Company
Performance Monitoring, Review Contingency Plan
Astoria, Oregon

Method	Parameter	Sediment (mg/kg)		
		MDL	MRL	PRGs[1]
Total Metals				
EPA 6020	Antimony	0.166	3	64
EPA 6020	Arsenic	0.1	1	33
EPA 6020	Cadmium	0.0855	1	4.98
EPA 6020	Chromium	0.2965	5	111
EPA 6020	Copper	0.1325	5	149
EPA 6020	Lead	0.099	2	15.5
EPA 6020	Nickel	0.197	2.5	48.6
EPA 6020	Silver	0.0865	0.5	5
EPA 6020	Zinc	0.74	25	459
Organotins				
SOC-BUTYL, Rev, 17.0	Tributyltin	0.00075	0.00223	0.047
Polychlorinated Biphenyls				
EPA 8082	Aroclor 1016	0.0118217	0.034	NV
EPA 8082	Aroclor 1221	0.0118217	0.034	NV
EPA 8082	Aroclor 1232	0.0118217	0.034	NV
EPA 8082	Aroclor 1242	0.0118217	0.034	NV
EPA 8082	Aroclor 1248	0.007379	0.017	NV
EPA 8082	Aroclor 1254	0.007379	0.017	NV
EPA 8082	Aroclor 1260	0.007379	0.017	NV
EPA 8082	Total PCBs	0.007379	0.017	0.00531
Dioxins/Furans				
EPA 1613	1,2,3,4,7,8-HxCDD	0.000382	0.005	NV
EPA 1613	1,2,3,6,7,8-HxCDD	0.000469	0.005	NV
EPA 1613	1,2,3,7,8,9-HxCDD	0.000452	0.005	NV
EPA 1613	1,2,3,4,6,7,8-HpCDD	0.000338	0.005	NV
EPA 1613	1,2,3,4,6,7,8-HpCDF	0.00035	0.005	NV
EPA 1613	1,2,3,4,7,8,9-HpCDF	0.000431	0.005	NV

Table 3-2
Analytical Methods, Detection Limit Goals, and PRGs
DEQ—Former Astoria Marine Construction Company
Performance Monitoring, Review Contingency Plan
Astoria, Oregon

Method	Parameter	Sediment (mg/kg)		
		MDL	MRL	PRGs[1]
EPA 1613	1,2,3,4,7,8-HxCDF	0.000393	0.005	NV
EPA 1613	1,2,3,6,7,8-HxCDF	0.000402	0.005	NV
EPA 1613	1,2,3,7,8,9-HxCDF	0.000385	0.005	NV
EPA 1613	2,3,4,6,7,8-HxCDF	0.000347	0.005	NV
EPA 1613	1,2,3,7,8-PeCDD	0.000202	0.005	0.00000062
EPA 1613	1,2,3,7,8-PeCDF	0.000227	0.005	NV
EPA 1613	2,3,4,7,8-PeCDF	0.000206	0.005	0.000000245
EPA 1613	1,2,3,4,5,6,7,8-OCDD	0.000956	0.01	NV
EPA 1613	1,2,3,4,5,6,7,8-OCDF	0.00109	0.01	NV
EPA 1613	2,3,7,8-TCDF	0.000221	0.001	NV
EPA 1613	2,3,7,8-TCDD	0.000193	0.001	0.000000295
EPA 1613	Dioxin TEQ	NA	NA	0.0000215

Notes

DEQ = Oregon Department of Environmental Quality.

MDL = method detection limit.

mg/kg = milligrams per kilogram.

MRL = method reporting limit.

NA = not applicable

NV = no value.

PRG = preliminary remediation goals.

TEQ = toxicity equivalency.

Reference

[1]DEQ. 2017. *Record of Decision, Selected Remedial Action for Astoria Marine Construction Company, Astoria Oregon. Table 5-1, Preliminary Remediation Goals. Oregon Department of Environmental Quality, Northwest Region. February.*

Table 3-3
Quality Assurance Samples
DEQ—Former Astoria Marine Construction Company
Performance Monitoring, Review Contingency Plan
Astoria, Oregon

Sample Matrix	Field QA Sample Type	Frequency of Collection	Analyses Requested
Sediment	Field Replicate Sample (Duplicate and Triplicate)	1 per investigation	PCBs (EPA 8082) Metals[(a)] (EPA 6020) Dioxins/Furans (EPA 1613) Tributyltin (SOC-BUTYL, Rev, 17.0)
	Equipment Rinsate Blank	1 per investigation	PCBs (EPA 8082) Metals[(a)] (EPA 6020) Dioxins/Furans (EPA 1613) Tributyltin (SOC-BUTYL, Rev, 17.0)

Notes

DEQ = Oregon Department of Environmental Quality.

EPA = U.S. Environmental Protection Agency.

NWTPH = Northwest Total Petroleum Hydrocarbon.

PCB = polychlorinated biphenyl.

[(a)] Antimony, arsenic, cadmium, chromium, copper, lead, nickel, siver, and zinc

Attachment A

Health and Safety Plan

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Health and Safety Plan

Astoria Marine Construction Company

DEQ Task Order 067-23-13

ECSI No. 1898

92134 Front Road
Astoria, Oregon

Prepared for:

Oregon Department of Environmental Quality

May 23, 2024

Project No. M0785.29.001

Prepared by:

Maul Foster & Alongi, Inc.
3140 NE Broadway, Portland, OR 97232

MAUL FOSTER ALONGI

Health and Safety Plan

Astoria Marine Construction Company

DEQ Task Order 067-23-13

ECSI No. 1898

92134 Front Road

Astoria, Oregon

The material and data in this plan were prepared under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.

Jessica Glenn

Senior Environmental Scientist

Sean Maloney, GIT

Staff Geologist

Contents

Appendixes

Abbreviations

AED	automated external defibrillator
CFR	Code of Federal Regulations
COPC	chemical of potential concern
HASP	health and safety plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSC	health and safety coordinator
JHA	job hazard analysis
MFA	Maul Foster & Alongi, Inc.
PIC	principal in charge
PPE	personal protective equipment
the Site	92134 Front Road, Astoria, OR
SSO	site safety officer

1 Nearest Hospital/Emergency Medical Center

1.1 Nearest Hospital

CMH Emergency Room, 2111 Exchange Street, Astoria, OR 97103

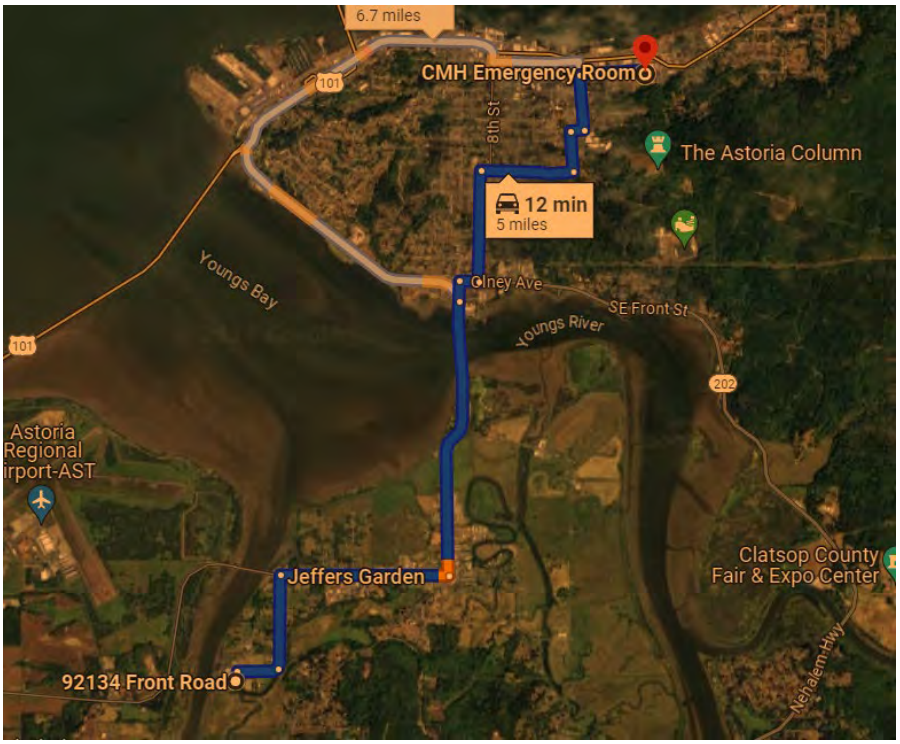
Phone: 503-325-4321

Distance: 5 miles

Travel Time: 12 mins

1.2 Route to Hospital from Site

See the map on the first page of this document.



1.2.1 Driving Directions to Hospital from Site

1. Head north on Front Rd towards 7th Lane (210 feet)
2. Turn right onto 7th Ln (0.2 miles)

3. Continue onto Clover Rd (0.5 miles)
4. Turn right onto US-101 Business (0.8 miles)
5. Turn left to stay on US-101 Business (1.4 miles)
6. Continue Straight onto 5th Street (signs for OR-202/Vernonia/Jewell) (0.1 miles)
7. Turn right onto OR-202 S/Olney Ave (signs for Jewell/Vernonia) (489 feet)
8. Turn left onto 7th St (0.6 miles)
9. Turn right onto Niagara Ave (0.5 miles)
10. Turn left onto 15th Street (0.2 miles)
11. Turn right onto Jerome Ave (361 feet)
12. Turn left at the 1st cross street onto 16th Street (0.3)
13. Turn right onto Exchange Street (0.3 miles)

1.3 Emergency Phone Numbers

Ambulance, Police, Fire	Dial 911
Jessica Glenn Project Manager	Phone: 971-254-8085 Cell: 207-751-4335
Michael Pickering Program Manager	Phone: 971-713-3585 Cell: 971-227-2566
Nicole Bruneel Health and Safety Coordinator (HSC)	Phone: 208-784-1090 Cell: 208-949-3981

2 Plan Summary

This health and safety plan (HASP) was developed to describe the procedures and practices necessary for protecting the health and safety of Maul Foster & Alongi, Inc. (MFA), employees conducting activities at AMCCO site at 92134 Front Road in Astoria, Oregon (the Site). Other employers, including contractors and subcontractors, are expected to develop and implement their own HASPs to manage the health and safety of their personnel.

MFA personnel conducting activities at the Site are responsible for understanding and adhering to this HASP. Before fieldwork begins, the on-Site personnel will designate a site safety officer (SSO) who is familiar with health and safety procedures and with the Site. Safety deficiencies should be immediately communicated to the SSO and, if necessary, to the project manager, PIC/program manager, or MFA's HSC.

All contractors and subcontractors have the primary responsibility for the safety of their own personnel on the Site. All personnel on the Site have stop work authority if they observe conditions that they believe create an imminent danger.

If MFA employees work on the Site for more than a year, this HASP will be reviewed at least annually. Additionally, this HASP will be updated as new or changed conditions are encountered to ensure that it reflects the current known hazards and requirements associated with the Site.

MFA personnel who will be working on the Site are required to read and understand this HASP. MFA personnel entering the work area must sign the personnel acknowledgment sheet (Section 16), certifying that they have read and that they understand this HASP and agree to abide by it.

3 Key Project Personnel

Name	Responsibility
Michael Pickering	PIC or Program Manager
Jessica Glenn	Project Manager
Sean Maloney	Field Personnel
Connor Anderson	Field Personnel
Nicole Bruneel	HSC

4 Emergency Supplies and Equipment List

Equipment	Location and Notes
First Aid Kit	Inside work vehicle.
Fire Extinguishers	Inside work vehicle.
Mobile Phones	On MFA staff.
Traffic Cones	In bed of work vehicle, will be used as needed.
Radios	On MFA staff, inside work vehicle.
Water and Other Fluid Replenishment	Inside work vehicle, in bed of work vehicle, inside food-only cooler in bed of work vehicle.
Eyewash	In work vehicle
Spill Kit	In work vehicle, in bed of work vehicle.
Health and Safety Plan	On MFA staff, in work vehicle, on MFA iPad.

5 Site Description and Background

5.1 Type of Site

The Site is an active shipyard, approximately eight acres, and is located at the confluence of Jefferson Slough and the Lewis and Clark River. Geographically, the facility is located on the relatively flat floodplain of the Lewis and Clark River in the lower portion of the Youngs Bay Watershed.

5.2 Buildings/Structures

The Site includes 11 buildings in total, including a ship-sized assembly/maintenance building, storage areas, shops, and administrative offices. Four marine ways extend from the west side of the site towards the Lewis and Clark River. Multiple docks provide access to the Lewis and Clark River and an inlet known as the Pot Hole. A dike separates Jefferson slough from the Pot Hole.

5.3 Topography

The Site is generally flat, and a flood-control levee separates the upland from the adjacent tidal mudflats of the Lewis and Clark River. The approximate ground elevation of the site is 5 to 8 feet above mean sea level.

5.4 General Geologic/Hydrologic Setting

Soils at the Site are fine-grained silts and clays that classify as Clatsop silty clay loam. This soil is common in tidal areas and of marine origin. The soil forms mudflats characteristic of tidal areas. Clatsop silty clay loam is generally poorly drained or waterlogged.

The Site is located within an area identified by DEQ as a sensitive aquifer in the North Coast Basin. However, the salinity, high iron content, and low yield of the uppermost water-bearing zone at the Site render it unsuitable for drinking water. Groundwater flow direction at the Site is complicated by a groundwater mound beneath the southern side of the Site near MW-01, MW-08, and MW-07. Mounding is thought to be related to stormwater ponding and infiltration in this areas and potable water leaks in the winch house cooling systems. The presence of catch basins and stormwater lines in this area likely influences the groundwater flow direction in this portion of the Site, but groundwater generally moves toward surface water bodies.

5.5 Site Status

Current Site operations include top-side boat painting, rail repair, sanding, and welding. Materials at the Site that may contain hazardous substances include paint thinner, fuels, oils, epoxy paints, and lubricants. Boats being serviced by Astoria Marine Construction are docked in the Pot Hole or in the marine ways.

5.6 General Site History

Astoria Marine Construction Company (AMCCO) was founded in 1924 to manufacture and repair wooden-hulled fishing and ferry boats, tugboats, and yachts. During World War II, the shipyard added larger shipways and expanded operations for construction of military vessel. During the Korean Conflict and the Vietnam War, the company built wooden-hulled minesweepers and subchasers. In addition, AMCCO refurbished previously mothballed warships. In the 1960s, work for the U.S. Navy decreased and operations transitioned toward fishing and tug boat repair. After 1985, AMCCOs business primarily involved repairs of fishing boats.

6 Hazard Evaluation

6.1 Site Tasks and Operations

MFA has completed job hazard analyses (JHAs) for specific tasks that may be conducted on the Site, depending on the scope of work. JHAs are provided in Appendix A. The following list summarizes planned tasks and operations:

- Collecting sediment samples
- Working in remote locations
- Working over water from boats, barges, and/or docks
- Working in or near a public right-of-way or near vehicle traffic

The control measures that field personnel must implement to eliminate or minimize these hazards, such as air monitoring, personal protective equipment (PPE), engineering controls, and decontamination procedures, are detailed in the JHAs and in subsequent sections of this HASP.

6.2 Physical Hazards

The specific physical hazards and associated controls for work on the Site are described in the JHAs provided in Appendix A.

6.3 Chemical Hazard Evaluation

Field personnel are expected to wear personal protective equipment, as discussed in Section 9.1, for protection against unanticipated chemicals.

6.4 Other Hazards

Hazards may include COVID-19, which may require additional safety and health protocol.

7 Health and Safety Training

MFA personnel who could be exposed to COPCs while conducting work on the Site will have completed training consistent with the Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements in 29 Code of Federal Regulations (CFR) 1910.120(e) before beginning work on the Site. The training will include the following:

- Identification of an SSO, and other safety and health personnel, if applicable
- Identification of safety and health hazards specific to work being conducted
- Proper use of required PPE
- Safe work practices required (e.g., fall protection, confined-space entry procedures, hot-work permits, general safety rules)
- Safe use of engineering controls and equipment
- Medical surveillance requirements, including the recognition of signs and symptoms that might indicate overexposure to hazards
- The project-specific emergency response plan/spill containment plan

The HSC will oversee training for MFA personnel conducting fieldwork. Training records, including an outline, signoffs, and competency records, will be maintained by the HSC.

While the HSC is responsible for maintaining training records, the project manager is responsible for verifying that the training status of field personnel is current before these personnel deploy to the field.

8 Safety Equipment

8.1 Personal Protective Equipment

Individuals on the Site must wear PPE to protect against physical hazards. PPE required on the Site is typically modified Level D, which consists of the following:

- Hard hat
- High-visibility vest
- Work boots
- Safety glasses with side shields
- Nitrile gloves or equivalent if handling media potentially impacted or known to be impacted
- Work gloves (if handling materials that might have sharp edges, protrusions, or splinters)

Additional PPE may be necessary for specific tasks with additional hazards. The SSO will be responsible for designating additional PPE for specific tasks. Depending on the activity, additional PPE may include the following:

- Hearing protection (to be worn during high-noise tasks)
- Chemical-resistant clothing, (e.g., Tyvek coveralls)
- Chemical-resistant boots
- Chemical-resistant goggles
- Chemical-resistant gloves
- Faceshield
- Respiratory protection

Additional PPE may be required if workers discover unexpected contamination. Characteristics of unexpected contamination could include unusual odors, discolored media, or a visible sheen. MFA employees should contact the SSO and, if necessary, the project manager and/or the HSC as soon as possible after the discovery of unexpected contamination. The SSO and, if applicable, the project manager and/or HSC will determine any need for additional controls and/or training.

PPE used at the Site must meet the requirements of recognized consensus standards (e.g., American National Standards Institute, National Institute for Occupational Safety and Health), and respiratory protection will comply with the requirements set forth in 29 CFR 1910.134.

Project personnel are not permitted to reduce the specified level of required PPE without approval from the SSO or the project manager and/or HSC.

8.2 Safety Equipment

The SSO will be responsible for ensuring that the following safety equipment is available during fieldwork and is properly inspected and maintained:

- Soap and water for decontamination
- Caution tape, traffic cones, and/or barriers
- First aid kit
- Automated external defibrillator (AED)
- Fire extinguisher
- Fluids for hydration, (e.g., drinking water or sports drink)
- Canopy for shade
- Hand-washing station
- Eye-flushing station

8.3 Communications Equipment

MFA personnel should have a mobile phone or a radio available in case of emergency.

9 Decontamination Procedures

9.1 Partial Decontamination Procedures

MFA employees will implement the following partial decontamination procedures when exiting the work/exclusion zone but remaining on the Site.

- Wash and rinse boots and outer gloves (if wearing two pairs) in containers in the contamination-reduction zone.
- Inspect Tyvek suit for stains, rips, or tears. If the suit is contaminated but is to be reused, full decontamination will be performed as described in Section 9.2. If the suit is damaged, it should not be reused; discard it in a container labeled for disposable items.
- Remove and inspect outer gloves. If they are ripped or otherwise damaged, discard them in a container labeled for disposable items.
- Remove respirator, if worn, and clean with premoistened alcohol wipes. Discard used cartridges at the frequency established by the SSO, project manager, or HSC.
- Wash hands and face with soap and water.

9.2 Full Decontamination Procedures

When exiting the exclusion zone and leaving the Site (e.g., at the end of the work shift), MFA employees will follow the full decontamination procedures listed below.

- Wash and rinse boots and outer gloves in containers in the contamination-reduction zone.
- Remove outer gloves and Tyvek suit and deposit in a container labeled for disposable items.
- Remove respirator and discard used cartridges at the frequency dictated by the SSO, project manager, or HSC.
- Wash and rinse respirator in decontamination container labeled “respirators only.”
- Remove work boots and put on street shoes. Place work boots in a plastic bag or container.
- Remove inner gloves and deposit in a container labeled for disposable items.
- Wash hands and face with soap and water.
- Shower as soon after the work shift as practicable.

10 Medical Surveillance

MFA will ensure that its employees who meet the following criteria are enrolled in a medical surveillance program consistent with 29 CFR 1910.120(f):

- The employees are, or may be, exposed to hazardous substances or health hazards at or above established permissible exposure limits for 30 or more days per year.
- The employees are required to wear a respirator for 30 or more days per year.

MFA employees who exhibit signs or symptoms consistent with overexposure to COPCs will be offered medical surveillance consistent with HAZWOPER requirements.

MFA will ensure that its employees who are authorized to wear respirators are medically evaluated and approved for respirator use, consistent with the respiratory protection standard (29 CFR 1910.134). The HSC or administrative designee (e.g., human resources manager) will maintain medical evaluation records, including respirator clearance documentation.

Personnel medically cleared for respirator use will undergo an annual qualitative fit test. The MFA HSC or administrative designee will conduct the annual qualitative fit tests and will manage the documentation.

If employees are required to wear a respirator on the Site, the project manager will verify that the employee has a current annual respirator fit test.

11 Emergency Response, Spill Containment, and Confined Space

MFA employees will follow the emergency response, spill response, and confined-space procedures described in the MFA Policies and Procedures Manual. Incidents will be documented on the incident report form included as Appendix D.

12 Pre-Entry Briefing

MFA employees will conduct pre-entry briefings prior to beginning work on the Site (e.g., tailgate meetings; see the checklist provided as Appendix E). Additional briefings shall be conducted as the scope of work or conditions change throughout the project to ensure that employees are familiar with and are adhering to the appropriate safety and health protocol. Attendance and discussion topics will be documented on sign-in sheets that will be maintained by the SSO.

13 Periodic Evaluation

The project manager or designee will evaluate the effectiveness of this HASP by conducting periodic HASP audits. A HASP audit form is included as Appendix H. In addition, HASP effectiveness will be evaluated by tracking ongoing health and safety feedback from field personnel working on the project. This feedback will be reviewed and incorporated into either immediate or annual updates of this HASP, as appropriate. This HASP will be reviewed and updated at least annually. Updating this HASP as necessary ensures that it reflects the known hazards, conditions, and requirements associated with the project. MFA will maintain HASP audit or other periodic evaluation records and track all revisions to this HASP.

14 Safe Work Practices

The following safe work practices are provided to supplement the other information in this HASP.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in areas with potentially contaminated materials.
2. Whenever practicable, field personnel will remain upwind of drilling rigs, open excavations, and other ground-disturbing activities.
3. Subsurface work will not be performed at any location until the area has been confirmed by a utility-locator firm to be free of underground utilities or other obstructions.

15 Acknowledgment

MFA cannot guarantee the health or safety of any person entering the Site. Because of the potentially hazardous nature of active sites, it is not possible to discover, evaluate, and provide protection against all possible hazards that may be encountered at the Site. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness. The health and safety guidelines in this HASP were prepared specifically for the Site and should not be used on any other site without prior evaluation by trained health and safety personnel.

MFA personnel who will work at the Site are to read, understand, and agree to comply with the specific practices and guidelines described in this HASP regarding field safety and health hazards.

This HASP has been developed for the exclusive use of MFA personnel. MFA may make this HASP available for review by contracted or subcontracted personnel for information only. This HASP does not cover the activities performed by employees of any other employer on the project. All contracted

or subcontracted personnel are responsible for implementing their own health and safety program, including generating and using their own HASP.

I have read and I understand this HASP and all attachments, and agree to comply with the requirements described herein:

Name	Title	Date

Appendix A

Job Hazard Analyses

MAUL FOSTER ALONGI

Job Hazard Analysis

Task/Operation: Conducting Fieldwork	
Project Number: M0785.29.001	**Location/Site Where Task/Operation Performed:** Astoria Marine Construction Company, 92134 Front Road Astoria, Oregon
Date Prepared: 04/03/2024 **Date Reviewed:** 5/7/2024	**Employee Preparing this Job Hazard Analysis (JHA):** J. Wetmore **Employee Reviewing and Certifying this JHA:** Jessica Glenn

Job/Task Description

This JHA describes hazards and required safe-work practices that are common to most types of fieldwork. See the separate task-specific JHA for hazards and safe-work practices that are unique to certain tasks (e.g., sampling contaminated media, working in remote areas).

Physical Hazards

Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Heat/cold/sunburn	Weather.	Be aware of seasonal dangers, including frostbite, hypothermia, snow blindness, trench foot, and heat stress. Drink plenty of fluids, especially when perspiring. Wear sunscreen on exposed skin. Stop work if an employee feels symptoms of dehydration, overheating, or heat stroke. Move to a shaded area and drink water. During cold or wet conditions, wear adequate clothing to reduce the potential for hypothermia. If there is lightning in the area, seek indoor shelter immediately, if possible. If outdoors, get into a hard-topped vehicle and away from trees. Turn off all radios and electronic equipment.
Eye injury	Debris (e.g., soil, water, injection fluids) coming into contact with eyes; working in areas with low, dense vegetation.	Wear eye protection with side shields. If there is a splash hazard, wear tight-fitting chemical goggles. If chemicals come into contact with eyes, immediately wash chemicals out with water. Identify the location of the eyewash station before beginning the work.

Task/Operation: Conducting Fieldwork		
Head injury	Heavy equipment, tools, overhead hazards impacting the head.	Wear a hard hat. Do not work near moving or heavy equipment or under overhead hazards.
Foot injury	Sharp objects that could be stepped on; large objects falling on feet.	Wear protective boots (composite or steel-toe).
Hand injury	Pinch points, sharp objects, stress from pulling rope, dermal contact with chemicals and contaminated media.	Wear protective gloves. Appropriate gloves should be identified in the HASP or Safe Work Plan. Avoid placing hands near operating equipment.
Hearing loss	Noise generated by heavy equipment/machinery.	Wear hearing protection such as earplugs or earmuffs.
Bodily harm, including to bystanders and the public and pedestrians in the locality of work	Heavy equipment, drilling rigs, support vehicles, traffic and public rights-of-way; potential to be struck, crushed, or impacted by moving objects.	Wear a safety vest for enhanced visibility. Use cones and caution tape to cordon off the immediate work area. Watch for and escort pedestrians away from the work area. Pause work if necessary. Ensure traffic control measures (e.g., traffic cones, signage) are in place. Do not work near moving or heavy equipment or under overhead hazards. Maintain eye contact with equipment operators. When working around vehicles or heavy equipment, know the locations of emergency equipment (e.g., fire extinguishers, emergency shutoff features).
	Potential to be struck by pressurized equipment and hoses	Install cable guards to prevent a suddenly disconnected hose from striking an individual or confirm with subcontractor that such safeguards are in place. Ensure pressurized tanks have safety relief valves. Do not work around pressurized equipment or within the radius of pressurized hoses.
Physical stress	Lifting heavy equipment and objects; conducting strenuous activities; kneeling on hard or gravel surfaces.	Use proper lifting techniques, i.e., bending and lifting with the legs and not the back. Do not twist at the waist when turning. Use the buddy system for heavy objects. Use knee pads or a kneeling pad. Take breaks and rest as needed.

Task/Operation: Conducting Fieldwork		
Accidents with equipment/tools	Sample-collection equipment/tools.	Verify that you have the appropriate equipment/tools for your tasks. Use equipment/tools as intended by the manufacturer. Only use open blades or sharp-edged tools for their intended purposes. Stow tools in the vehicle properly; use appropriate cases and bags. Secure equipment (including compressed-gas cylinders) in the vehicle with netting and straps; do not leave loose—it can cause property damage or serious injuries to others or yourself.
Slips, trips, and falls	Uneven or unstable ground.	Maintain good housekeeping in work areas to minimize or eliminate slip/trip/fall hazards from equipment and supplies. Walk around rather than over hazards on the ground. Use caution when walking on uneven ground or in snowy and/or icy conditions. Dense vegetation may obscure dangerous features, including biological hazards, riverbanks, cliffs, unstable/steep slopes, excavations, and mine adits. Flagging or marking dangerous areas can help reduce the likelihood of injury.

Task/Operation: Conducting Fieldwork		
Biological/Chemical Hazards		
Biological/Chemical Risk	**Source of Hazard/Risk**	**Hazard/Risk Mitigation**
Biological—animals	Livestock, deer; biting or stinging insects, spiders, and snakes; animal feces.	Do not turn your back on animals even if they seem docile. Make sure you have an escape plan in case an animal becomes aggressive. Use bug repellent. Insect nests should never be disturbed. Use snake chaps or shin guards when grass is above the ankle. Employees who are allergic to stings should not work in areas where there is a high risk of encountering stinging insects. Use a bar to clear spiders and/or snakes from objects and/or vegetation. Check well vaults and security lids for insects; use caution when opening. Avoid contact with animal feces. When working indoors, remove animal feces from the work area—if possible, without creating dust.
Biological—plants	Poisonous plants and other irritant vegetation (e.g., blackberry canes).	Do not touch or approach poisonous or irritant vegetation. Wear long pants and a long-sleeved shirt while on the site if poisonous plants and other irritant vegetation is present.
Exposure to chemicals in environmental media	Chemicals or hazardous materials in soil, sediment, surface water, groundwater, NAPL, stormwater, building materials, indoor air, outdoor air, soil vapors, monitoring wells, borings, excavations, and manholes.	See the task-specific JHA.
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified. The need for engineering controls should be discussed with the project manager, health and safety coordinator, and subcontractors, and identified in the HASP or Safe Work Plan.		
General Safe-Work Practices and Guidance: • Employees should not eat or drink in the immediate area where sampling is being conducted. Employees should wash their hands and faces before eating or drinking. If used, nitrile gloves should be disposed of in a container labeled for disposable items. • Cones, barrier tape, or equivalent methods will be used to establish the work area, if feasible. • Tasks that must be conducted in the work area must be coordinated with equipment operators before work begins. Methods of communication, such as direct eye contact, hand signals, and/or verbal communication, will be established before work begins. • Employees should carry a cellular phone and/or a security radio.		

Task/Operation: Conducting Fieldwork
PPE: Hard hat (when working around heavy equipment, including drill rigs, or overhead hazards), work boots (protective composite or steel-toe boots when working around heavy equipment), high-visibility vest or outer garment, safety glasses with side shields, nitrile gloves (or other hand protection appropriate for the type of physical or chemical hazards present), hearing protection (earplugs or earmuffs) as needed. Use chemical goggles if there is a chemical splash hazard.

Job Hazard Analysis

Task/Operation: Task-Specific Hazards		
Project Number: M0785.29.001	**Location/Site Where Task/Operation Performed:** Astoria Marine Construction Company, 92134 Front Road Astoria, Oregon	
Date Prepared: 04/03/2024 **Date Reviewed:** 04/22/2024	**Employee Preparing this Job Hazard Analysis (JHA):** J. Wetmore **Employee Reviewing and Certifying this JHA:** S. Maloney	
Job/Task Description		
This JHA is specific to certain elements of fieldwork that have unique hazards and require specific safe-work practices to mitigate those hazards. See the separate General Fieldwork Hazards JHA for hazards and safe-work practices that are common to most types of fieldwork.		
Sampling Contaminated Solid and Liquid Media		
Hazard/Risk	**Source of Hazard/Risk**	**Hazard/Risk Mitigation**
Exposure to chemicals or hazardous substances (e.g., asbestos) via direct contact and inhalation	Chemicals or hazardous materials in soil, sediment, surface water, groundwater, NAPL, stormwater, injection fluids, and building materials.	See the chemical hazards summary table for applicable chemical hazards.
		Consult the HASP to identify the required PPE for preventing direct contact with contaminated media.
		Use plastic garbage bags or plastic sheeting to cover the work area. It is preferable to roll/berm the edges to catch any drips/spills. If it is raining, work under a rain canopy.
Working in, near, or over Water from Boats, Docks, Shorelines		
Drowning	Entering body of water where work is being conducted; slipping/falling in swift-moving streams.	Wear a U.S. Coast Guard approved personal flotation device when working in 10 feet of water or deeper. When on a boat, maintain three points of contact when motoring. Use the buddy system.
Sickness/nausea	Boat motion.	Use medication to prevent motion sickness. Return to shore if sickness develops. Avoid looking down; keep your head up so that you can see the horizon.

Task/Operation: Task-Specific Hazards		
Slips, trips, and falls	Tight quarters, slippery surfaces, obscured ground surface.	Use caution when walking on uneven ground or when you cannot see ground conditions due to turbid or turbulent water or light reflection. Wear footwear with tread. Keep ropes and lines coiled and stowed to eliminate trip hazards. Beware of unstable banks. Shuffle feet when walking in a water body. Walk around rather than on large rocks to avoid elevating your body above the ground surface and increasing the potential for injury if you fall. When working in or crossing water features, use a backpack so that at least one or preferably both hands are free. Use a walking stick. Never carry electronic equipment in your hand when crossing streams. Secure sharp tools so that you are not injured if you fall.
Accidents with equipment/tools	Sample-collection equipment/tools.	Tie down or stow all equipment, supplies, and tools prior to motoring to ensure they will not move during transport.
Bodily harm	Pinch points from winches or other equipment.	Wear proper gloves and avoid contact with pinch points.
Working Remotely		
Delayed medical support	Any hazards or risks are increased during remote work due to delay in receiving medical support.	Consider potential hazards and bring necessary medical supplies. If cell service will be limited, bring an alternative form of communication in case of an emergency, or use the buddy system. When leaving the on-site headquarters, let a colleague know your destination, route, expected return time, and deviations.
Forest fires	Forest fires can be unpredictable and fast moving.	The safety plan should include a contact for the local fire dispatch. Personnel should identify evacuation routes. If applicable, know and follow current local guidance regarding fire restrictions. This may include reduced working hours and having additional water on site.

Task/Operation: Task-Specific Hazards		
Recreational users	Work during hunting season or around off-road vehicles.	Be familiar with the recreational uses of the area and hunting season schedules. Wear high-visibility clothing.
Getting lost	Lack of food, shelter, first aid.	Bring plenty of water and food. Drink plenty of fluids, especially when perspiring.
		Maintain first-aid kit and items necessary for specific hazards.
		Keep important medications accessible.
		Avoid performing site activities alone after dusk, and avoid working in remote areas alone without letting someone know where you are and when you plan to return.
		Have a detailed field map that includes the topography of the surrounding area, or keep sketches and note landmarks, distances covered, and backtrail (terrain looks different coming than it does going). Take an analog compass with you (i.e., something in addition to a smart phone).
		If traveling into areas with no radio/cell service, note the location where service was last available.
		Maintain radios, phones, and other devices, and have backup batteries. Keep in regular contact with other team members on site.
		Review the weather forecast, be prepared for changing weather conditions, bring and wear clothing adequate to thrive in a variety of climate conditions.
		Bring a fire-starting kit if working during cold weather.
	Panic and loss of mental clarity.	Keep a positive mental attitude and stay put unless doing so endangers you. Travel slowly, conserve energy, take breaks, stay in open areas, and wait out bad weather.

Task/Operation: Task-Specific Hazards		
Vehicle breakdown	Delayed return to cell coverage, medical assistance, food, and shelter.	Maintain adequate fuel and perform vehicle inspections before traveling to remote sites. In the event of vehicle breakdown, stay near the vehicle, dress in layers, drink water if it is available, and ration water if in limited supply. Do not overeat, drink alcohol, or smoke. Tie a red or colored cloth to the antenna or other readily visible object.
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified. The need for engineering controls should be discussed with the project manager, health and safety coordinator, and subcontractors, and identified in the HASP or Safe Work Plan.		
General Safe-Work Practices and Guidance: • See the General Fieldwork Hazards JHA for safe-work practices and guidance common to most types of fieldwork. • If additional safe-work practices are needed to address unique, task-specific hazards, these should be specified in the HASP or Safe Work Plan.		

Appendix B

Chemicals of Potential Concern

MAUL FOSTER ALONGI

Table
Chemical Hazards

Analyte	OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH[1]	LEL (%)	IP (eV)	Other Hazard
TPH						
Total Petroleum Hydrocarbons	NA	300 ppm	NA	1.4	NA	C, E, F, P
PAHs						
Benzo(a)pyrene	0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	NA	C, P
Metals						
Arsenic	0.01 mg/m^3	0.01 mg/m^3	5 mg/m^3	NA	NA	C, P
Cadmium	0.0050 mg/m^3	0.002 mg/m^3	9 mg/m^3	NA	NA	C
Chromium	1 mg/m^3	0.5 mg/m^3	250 mg/m^3	NA	NA	R, P
Copper	1 mg/m^3	0.2 mg/m^3	100 mg/m^3	NA	NA	
Lead	0.05 mg/m^3	0.05 mg/m^3	100 mg/m^3	NA	NA	C, P
Nickel	0.1 mg/m^3	0.1 mg/m^3	10 mg/m^3	NA	NA	C
Silver	0.01 mg/m^3	0.1 mg/m^3	10 mg/m^3	NA	NA	R, P
Zinc	10 mg/m^3	2 mg/m^3	500 mg/m^3	NA	NA	
Additional						
Antimony	0.5 mg/m^3	NE	50 mg/m^3	NA	NA	
Tributyltin	0.01 mg/m^3	NE	25 mg/m^3	NA	NA	P

Table
Chemical Hazards

Notes

ACGIH = American Conference of Governmental Industrial Hygienists.
C = carcinogen.
E = explosive.
F = flammable.
IDLH = immediately dangerous to life and health.
IP (eV) = ionization potential.
LEL = lower explosive limit.
mg/m^3 = milligrams per cubic meter.
NA = not available.
NE = not established.
NIOSH = National Institute for Occupational Safety and Health.
OSHA = Occupational Safety and Health Administration.
P = poison.
PAH = polycyclic aromatic hydrocarbon.
PEL = permissible exposure level.
ppm = parts per million.
R = reactive.
TLV = threshold limit value.
TPH = total petroleum hydrocarbons.
TWA = time-weighted average.

Reference

[1]CDC. 2019. "Immediately Dangerous to Life or Health (IDLH) Values." Centers for Disease Control and Prevention, The National Institute for Occupational Safety and Health (NIOSH). October 8. Accessed September 13, 2022. http://www.cdc.gov/niosh/idlh/intridl4.html.

Appendix C

Site Map

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LEGEND

- Site Location
- Cities
- Roads

MAP NOTES:
Date: March 26, 2015
Data Sources: OGIC, USGS, ESRI, Air photo from Microsoft 2010

N

0 0.25 0.5
Miles

MAUL FOSTER ALONGI

GSI Water Solutions, Inc.

FIGURE 1-1

Site Location Map

Astoria Marine Construction Company (AMCCO)
Remedial Investigation

File Path: P:\Portland\453-Astoria_Marine\GIS\Project_mxds\RI\Figure1-1_Site_Location.mxd, Date: September 9, 2013 1:27:50 PM

Appendix D

Incident Report Form

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Health and Safety Incident Report

This report must be completed in full and submitted within 24 hours to the MFA health and safety coordinator.

Project Name: _____

Project Number: _____

Date and Time of Incident: _____

Location: _____

Type of Incident (check all applicable items):

☐ Illness	☐ Health and safety infraction	☐ Vehicular accident
☐ Injury	☐ Fire, explosion, flash	☐ Electric shock
☐ Property damage or theft	☐ Chemical exposure	☐ Near miss
☐ Spill	☐ Other (describe):	

Description of Incident

Describe what happened and the possible cause of the incident. If reporting a spill, include the quantity or estimated quantity. Identify individual(s) involved, witnesses, and their affiliations. Describe emergency or corrective action taken. Attach additional sheets, drawings, or photographs as needed.

Incident Reporter:

Name	Signature	Date

Health and Safety Coordinator:

Name	Signature	Date

Appendix E

Tailgate Safety Meeting Checklist

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Tailgate Safety Meeting Checklist

Client Name:	
Project No.:	
Communicated By:	
Date:	

Yes	NA	Information Reviewed
☐	☐	Emergency Response Procedures and Site Evacuation Routes
☐	☐	Route to Hospital
☐	☐	HASP Review and Location
☐	☐	Key Project Personnel
☐	☐	Emergency Phone Numbers
☐	☐	Stop Work Authority
☐	☐	General Site Description/History and Chemical Hazards
☐	☐	For Active Sites—Site Activities and Vehicular/Equipment Traffic
☐	☐	Site-Specific Physical Hazards
☐	☐	Required Personal Protective Equipment
☐	☐	Available Safety Equipment and Location
☐	☐	Daily Scope of Work (reference JHAs as applicable)
☐	☐	Decontamination Procedures
☐	☐	Identify Work Zones, Exclusion Zones, and Decontamination Zones
☐	☐	Hazardous Atmospheres
☐	☐	Air Monitoring Equipment and Procedures
☐	☐	Identify Potential Site-Specific Slip, Trip, and Fall Hazards
☐	☐	Dust and Vapor Control
☐	☐	Confined Space(s)
☐	☐	Open Pits and Excavation
☐	☐	Extreme Temperatures
☐	☐	Incident Reporting
☐	☐	Other: _____

Additional Health and Safety Practices and Considerations

Attendees		
Name	Signature	Company
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

Appendix F

HASP Audit Checklist

MAUL FOSTER ALONGI

HASP Audit Checklist

Project Name:	
Project No.:	
Project Location:	
Audit Date / Time:	
Person / Persons Performing Audit:	
MFA Personnel Interviewed or Conducting Fieldwork:	

	Status			Comment	Recommendation	Assigned to:	Scheduled Completion Date:	Actions Completed:	Person Who Completed Actions:	Date Completed:	Current Status / Notes:
	Yes	No	N/A								
Audit Checklist Item											
1. Is there a written HASP for this project? If so, what is the revision date?											
2. Is the HASP available to project personnel?											
3. Does the HASP appear accurate and complete? For example, are the directions to the hospital and the emergency contact numbers accurate? Are the site contaminants listed?											
4. Do the JHAs appear accurate and complete? For example, do there appear to be risks addressed for all of the applicable activities?											
5. Do you observe violations of the HASP requirements?											
6. If applicable, are employees adhering to the respirator program (see SOP 03, Respiratory Protection)?											
Interview Questions											
7. Where do you keep the HASP for this project?											
8. Have you reviewed the HASP for this project? If so, what was your review process?											
9. Can you tell me how you conduct your site activities? Note to auditor—pick a JHA activity and identify major discrepancies between the answer and the JHA, if any.											
10. Do you have any health and safety questions or concerns? For example, have you observed things on this project that you thought were unsafe? Note to auditor—make sure we come up with a plan to promptly address any listed concerns.											

Signature of Person / Persons Conducting Audit			
Name	Signature	Date	

Signature of Project Manager and Principal in Charge Acknowledging Review of Completed HASP Audit Checklist			
Name	Signature	Date	

Attachment B

Standard Operating Procedures

MAUL FOSTER ALONGI

Standard Operating Procedure

Decontamination of Field Equipment

SOP Number: 1
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the decontamination procedure for field equipment that may come in contact with contaminated media and that Maul Foster & Alongi, Inc. (MFA) staff may reuse at multiple sample locations or sites. Decontamination is performed to reduce the potential for cross-contamination of samples that will be collected with multiuse equipment and that will undergo physical or chemical analyses. Other equipment that is multiuse—not used specifically for sample collection (e.g., water level meter, pump used for well development)—also requires decontamination. Finally, decontamination is necessary to minimize the potential for MFA staff's exposure to chemicals.

Typically, decontamination is not necessary for field equipment that is disposable and intended to be used only once (e.g., disposable bailer). Additionally, this SOP does not apply to equipment used by subcontractors, such as drilling equipment. However, MFA staff should confirm that subcontractors are implementing appropriate decontamination procedures to minimize the potential for cross-contamination of samples or MFA staff's exposure to chemicals.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Nonphosphate detergent solution (e.g., Alconox, Liquinox)
- Distilled and potable water
- Personal protective equipment (as specified in the site-specific health and safety plan)
- Buckets to contain rinsate, brushes, paper towels

Depending on the site conditions and the types of contaminants that may be present, the use of other decontamination materials, such as deionized water, methanol, hexane, or isopropyl alcohol, may be necessary. The need for other materials should be determined prior to fieldwork. The decontamination procedures using other materials should be described in a site-specific sampling and analysis plan (SAP).

Methodology

When the site-specific SAP specifies additional or different requirements for decontamination, it takes precedence over this SOP. In the absence of a SAP, the following procedures shall be used.

General Sampling Procedure:

1. Rinse the equipment with potable water to remove visible soil, petroleum sheen, or contamination.

2. Scrub the equipment with a brush and solution of distilled water and nonphosphate detergent.

3. Rinse the equipment with distilled water.

4. Allow equipment to air dry, or dry it with paper towels.

5. At all times, ensure that the decontaminated equipment is stored so as to prevent it from becoming contaminated while not in use. Depending on the size of the equipment, it can be wrapped with new aluminum foil or placed in a new plastic bag.

Rinsate Storage:

All fluids resulting from equipment decontamination shall initially be contained in a bucket and then transferred to a Department of Transportation-approved container (e.g., 55-gallon drum) stored on site at a location that does not interfere with on-site activities (e.g., vehicle traffic, pedestrian areas). Place a label on each container and include the following information:

- The date on which fluids were placed in the container
- Contents (e.g., “water from equipment decontamination”)
- Contact information, including MFA staff or client phone number

Note that labels on containers exposed to sunlight or precipitation are prone to fading. Use a waterproof, indelible ink pen (e.g., Sharpie®) whenever possible. In the field notebook, keep a detailed inventory of all containers, including the number of containers, the approximate quantity of liquids generated, and a description of the source of the fluids. Provide this information to the MFA project manager. For future reference, take photographs of (1) each drum label, (2) the drum(s), and (3) the drum storage vicinity on site.

Note that some clients and site owners have specific requirements for labeling and storage of containers. The requirements should be determined in advance of the fieldwork.

Standard Operating Procedure

Field Screening for VOCs in Soil

SOP Number: 3
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the use of a photoionization detector (PID) to field screen soil for evidence of organic vapors. The PID measures the organic vapor concentration in parts per million, is not compound-specific.

Never rely on a stand-alone PID reading to identify organic chemical contamination in soil. Always collect multiple PID readings (e.g., at multiple depths along the length of a soil core), since it is the relative difference in concentration between multiple readings (e.g., a sudden increase in concentration at a certain depth interval) that is the typical indictor of contamination. Additionally, PID readings should always be accompanied by observation of the soil samples for other indictors of contamination, such as soil staining or chemical odors, so that these multiple lines of evidence can be used together to identify potential organic chemical contamination in the field.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- PID with calibration gas
- Ziploc®-type bags
- Field forms or notebook for documenting PID readings

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for organic vapor field screening, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

The electron volt (eV) rating for the PID lamp (e.g., 9.8, 10.6, 11.7) must be greater than the ionization potential (in eV) of a compound in order for the PID to detect the compound. A lamp of at least 9.8 eV should be used for petroleum hydrocarbons. A lamp of at least 10.6 eV should be used for typical chlorinated alkenes. If the project health and safety plan does not specify the lamp size, verify the compatibility of the lamp size with the anticipated compounds expected to be present in soil prior to the field activities, and confirm with the project manager.

General Sampling Procedure (Heading 3 No Number Style):

Calibration:

- The PID should be calibrated daily (or more frequently, as needed).
- Calibrate the PID according to the manufacturer's instructions.

- Document the calibration activities and results in the field notebook.

Measuring organic vapor content:

- Place a representative volume (generally, a "handful") of freshly exposed soil into a Ziploc-type bag.
- Seal the bag and gently knead the bag to loosen the soil.
- Let the bag set for several minutes to allow organic vapors, if present, to volatilize from the soil into the headspace of the bag.
- Partially open the bag so that the tip of the PID intake tube can be inserted into the bag but is not in contact with the soil, then close the bag seal around the intake tube.
- Record the PID measurement and document results in the field notes or boring log.

Static Sheen Test Procedure and Observations:

Sheen Test Procedure:

- Following the PID screen discussed above, add enough water to cover the soil in the container.
- Observe the water for signs of discoloration/sheen and characterize per the table below.

When static sheen testing is required or when making observations of a water surface the following table presents descriptions to be used (consistent with Department of Ecology Guidance)[1].

No Sheen (NS)	No visible sheen on the water surface
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid. Natural organic oils or iron bacteria in the soil may produce a slight sheen.
Moderate Sheen (MS)	Pronounced sheen over limited area; probably has some color/iridescence; spread is irregular, may be rapid; sheen does not spread over entire water surface.
Heavy Sheen (HS)	Heavy sheen with pronounced color/iridescence; spread is rapid; the entire water surface is covered with sheen.
Biogenic Film (BF)	False positive results may be generated by the presence of decaying organic matter and iron bacteria, which can produce a rainbow-like sheen similar to an oil sheen. These sheens, unlike oil sheens, can typically be broken up creating platy or blocky fragments when agitated or disturbed. Biogenic films can also be foamy.

[1] Department of Ecology. 2016. Guidance for remediation of petroleum contaminated sites. June.

Scope and Application

This standard operating procedure (SOP) describes the methods for obtaining sediment samples for physical and/or chemical analysis. Sediment samples will be collected using a tool appropriate for the site and the sediment conditions (i.e., grain size and plasticity, depth of water).

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- Sampling equipment, as appropriate:
  - Hand-operated sediment sampler or similar (e.g., Russian peat borer)
  - Power grab sampler or similar (e.g., van Veen grab sampler)
  - Vibracore sampler
- Stainless steel spoons, scoops, and trowels
- Stainless steel bowls
- Tape measure with increments in feet and tenths of a foot
- Laboratory-supplied sample containers
- Laboratory chain-of-custody form and cooler with ice
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures)
- Personal flotation vest
- Field forms or notebook for documenting the sampling procedures

Other Considerations

Sediment sampling may require local, state, and/or federal agency approvals. Confirm with the MFA project manager whether any agency approvals are necessary, and if so, ensure that you have paperwork with you documenting the approvals (e.g., access agreements, in-water work permits).

If MFA staff will be operating a boat, ensure that the staff have appropriate operator licenses. If subcontractors will provide boats or barges, ensure that the subcontractors are appropriately licensed.

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for sediment sampling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

General Sample Collection Procedure:

Depending on water depth, the sampling locations will be accessed through a combination of water vessels and/or wading. If obstructions are encountered or locations are otherwise inaccessible, then locations will be field-adjusted and documented. Don gloves as specified in the health and safety plan; replace gloves with new gloves after each sample is collected.

Russian Peat Borer or similar

Typically, this tool is suitable only for collecting shallow samples in soft, organic sediments and in wadable water depths.

Manually advance to the target depth (up to 50 centimeters) and then rotate the tube 180 degrees to collect a relatively undisturbed semicylindrical sediment core. Withdraw the sampling device and then open the chamber containing the sediment core. If sample recovery is limited (i.e., less than approximately 75 percent), discard the sample and resample within a few feet of the original location. Additional deployments may be necessary to obtain the required sample volume for laboratory analysis. Describe and document the sediment lithology in accordance with SOP 2.

Power Grab Sampler or similar

This tool is suitable only for collecting samples of surface sediments that are relatively free of rock, large organic matter (e.g., wood, twigs), and other debris (e.g., anthropogenic material such as metal and glass).

Surface sediment will be collected for discrete or composite analysis from a boat-mounted pneumatic power grab sampling device or by wading. The speed of the grab sampler's descent will be controlled by a winch or crane to minimize disturbance of the sediment. The speed of ascent will also be controlled to minimize loss of sediment from washout. The sediment sample will be inspected upon retrieval to ensure that the grab sampler was completely closed and retained all sediment, including any surficial fines.

After the sampler is secured on the boat, the sediment sample will be inspected carefully before the acceptability of the sample is determined. Each grab sample will be inspected to ensure the following:

- The jaws of the sampler had closed completely during sampling.
- The grab sampling device did not overpenetrate, as indicted by sediment extruding over the top edge or doors of the sampler.
- Target sampling depth was achieved.
- A layer of water overlying the sediment sample is retained in the sampling device.
- The sediment surface is relatively flat, with no winnowing or rilling to indicate loss of fine sediment at the top of the sample.

If not all of these conditions are met, then the sample will be discarded and resampling will be conducted within a few feet of the original location, as follows:

- Discrete surface sediment samples will be collected and submitted individually for analysis.
- After the sediment has been photographed, it will be removed from the grab sampler, using a stainless-steel spoon, and placed in a decontaminated stainless-steel bowl.
- Sediments in direct contact with the grab sampler will not be collected for analysis.
- Discrete samples will be placed directly into sample collection jars. Additional sediment will be collected from each discrete sampling location where composited samples are needed. This additional sediment will be composited in a stainless steel bowl (or equivalent) and homogenized using clean tools (e.g., stainless steel spoon).
- Samples collected for the analysis of potentially volatile chemicals will be placed in appropriate sample containers immediately after retrieval to minimize volatilization.
- When a sample is determined to be acceptable, the overlying water will be removed and then a photograph of the grab surface will be taken.
- Describe and document the sediment lithology in accordance with SOP 2.

Vibracore Sampler

Subsurface sediment core collection will be performed as follows:

- The sampling vessel will navigate to the target position. The GPS position will be recorded from the vessel at the vibracore location where the vibracore first rests on the sediment surface.
- The vibracore will be advanced without power (under its own weight), then vibration will be applied until the core tube is advanced to the target depth or to refusal.
- After a brief pause, the core tube will be extracted from the sediment, using only the minimum vibratory power needed for extraction.

The core will be accepted, rejected, or stored on the vessel pending one additional drive attempt. Field protocols are outlined below:

- Percent recovery is calculated by dividing the height of the recovered sediment by the penetration depth. A minimum of 75 percent recovery is targeted.
- If the core was not able to penetrate to target depth, a second attempt will be made. If similar core refusal is met, a decision will be made as to whether the target depth is achievable. If it is determined to be unachievable, then a description of sediments encountered and potential causes of refusal will be recorded.
- Core sampling intervals or depths will not be corrected for underrecovery. Best professional judgment will be used to stop the core sampler from collecting material before significant sediment compaction occurs.

The core will be inspected for the following acceptance criteria:

- A layer of water overlying the sediment surface is retained in the core barrel.
- The core has 75 percent target recovery versus penetration (or, after two attempts, document why recovery is less).
- The core tube is in good condition (not excessively bent).

- The core appears representative of sediment in the surrounding area.
- The target penetration depth has been achieved or bedrock is encountered. If the target depth is not reached because of cobbles, debris, refusal, or other difficult coring conditions, an additional core will be attempted as described in the contingency plan.

After core acceptance, water will be carefully decanted from the top of the core tube to minimize sediment disturbance. Cores may be cut into segments for handling and storage. Core tubes will be capped and inscribed on the sidewalls with core and segment identification and an "up" arrow.

Actual core penetration will be determined using a tape measure attached to the vibracore head. The core will be driven a minimum of 1 foot deeper than the lower boundary of intended depth or until refusal. The tape measure will be used to measure total core length by comparing the start and end measurements of a tape. After the coring equipment is safely onboard the vessel, the core liner, with the intact core inside, will be extruded. Recovery will be determined by comparing the penetration with the height of the material in the extracted core.

The subsurface sediment cores for chemistry analysis may be processed on the vessel or on land, as described below:

- The core tube will be split open lengthwise to preserve the material stratigraphy inside, using a table saw, handheld circular saw, radial saw, shearing tool, X-ACTO® knife (if liner used), or similar device.
- Cores will be photographed before they are sampled. The sample ID, date, and orientation of the core will be included in each photograph.
- Describe and document the sediment lithology in accordance with SOP 2.
- Subsurface sample intervals will be 2 feet unless field conditions indicate otherwise (e.g., a change in lithology, odor, sheen). Intervals will be collected more frequently if changes observed in the core are observed more frequently than every 2 feet.

While on the vessel, personnel will record the following core collection data in the field notes and on a boring log or sediment log form:

- Date/time. Local date and time when the vibracoring began at each location.
- Total Drive Length. Core tube length and the depth of the core tube penetration into the subsurface.
- Recovered Length. Thickness of the sediment column retained in the core tube before sectioning and removal of the core catcher.

Sampling Procedure:

After the cores have been described and the sample intervals have been determined, sediment will be collected within the determined sample interval, homogenized until uniform in color and texture, and placed into appropriate sample containers for laboratory analysis. Samples collected for the analysis of potentially volatile chemicals will be placed in appropriate sample containers immediately after retrieval to minimize volatilization. Aquatic organisms, large rocks, and debris will be removed from the sample and noted in the field notes.

Decontamination of the sampling device and field equipment will take place between sample stations in accordance with SOP 1.

Standard Operating Procedure

Underground Utility Locates

SOP Number: 18
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the practices for locating underground utilities. Refer to the MFA health and safety plan (HASP) for additional information regarding communication procedures to be followed when an inadvertent utility strike occurs, as well as regarding methods for mitigating hazards during a utility strike.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the HASP)
- Marking materials (e.g., marking paint, stakes, flags)
- Field documentation materials

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for underground utility locates, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Before Conducting Utility Locates:

- Ensure that the locate will be conducted reasonably soon before the excavation work begins, e.g., within 48 hours. There may be project-specific conditions, e.g., weather and/or ground features that could cause markings to fade, which would require scheduling of the excavation work sooner than 48 hours after the locate.
- Clearly define the boundary of the work and the locations of all proposed excavations. Prepare a map of the project area showing the excavation locations.
- Interview site managers/property owners and obtain plans or drawings, if available, showing on-site utilities.
- For project work that will not take place in the public right-of-way, ensure that the public rights-of-way nearest to the project are identified and communicated during the one-call notification.
- Identify the township and range of the project area. This information can be easily attained by a quick email to MFA's GIS Exchange.
- If feasible, conduct a site visit to identify site conditions that could cause fading or disruption of marking paint. Such conditions could include gravel or ground sensitive to erosion and high traffic.
- Check the weather forecast to assess the potential for snow or rain to make marking utilities difficult or cause the markings to fade.

One-Call Utility Notification:

- If possible, initiate the one-call utility notification at least one week before the proposed work begins.
- Include a map or GPS coordinates when submitting the notification.
- Before conducting any excavation activities, confirm with each public utility that the utility locate has been completed.
- On remote or complicated sites, consider meeting public locators on site.
- Document the one-call ticket number and results in the project files.
- Provide the one-call ticket number to subcontractors who will be doing the excavations.

Private Utility Locate:

- Conduct the private utility locate only after confirmation that the public utility locate has been completed and all public utilities have been marked and the results reviewed by MFA staff who will be overseeing the excavations.
- Meet the private locator on site and participate in the entire private utility locate. Be engaged in the process, ask questions, and take time to walk the site thoroughly with the locator.
- Bring a copy of the one-call utility ticket and results of the one-call utility locater to check against the utility markings on the ground.
- If possible, have a site/property representative knowledgeable of on-site utilities participate in the private utility locate.
- If paint alone may not suffice to ensure clear marking of utilities, add vertical markers such as stakes or flags.
- Visually assess the area of the proposed excavation(s) to identify features potentially indicative of buried utilities. Have the private utility locator examine each feature identified below to assess the presence of buried utilities.
  - Examine adjacent public rights-of-way where public utilities have been marked for evidence of utilities that may extend onto the project site.
  - Identify nearby light poles, telephone poles, electrical utility poles, or other overhead utility poles with wires or conductors that run from the overhead utility, down the pole, and into the ground.
  - Identify the location of gas meters, water meters, or other aboveground junction boxes for evidence of utilities extending from these features into the ground.
  - Examine asphalt and concrete ground surfaces for discontinuities in the surface indicative of utility installations. Discontinuities may include recent patches of asphalt or concrete inlaid within older concrete or asphalt surfaces.
  - Identify manholes and catch basins indicative of buried storm or sanitary sewer pipes. Open manholes to examine the orientation of associated pipes to assess whether the utilities may be present near proposed excavations.
  - Identify tank ports and vent pipes.

- Identify irrigation systems and associated features such as valve boxes and controllers.
- Identify any other signs indicating the presence of buried utilities.
- Be wary of utility marks that suddenly begin or dead end.

Preparing to Perform Subsurface Activities after a Locate:

- Ensure that the markings are still visible when the work begins.
- Adjust locations, as needed, to avoid identified utilities, or use alternative methods such as nonmechanical excavation means (i.e., manual excavation or air-knifing) to a minimum depth of 5 feet.

Table
APWA UNIFORM COLOR CODE

	WHITE—Proposed Excavation
	PINK—Temporary Survey Markings
	RED—Electric Power Lines, Cables, Conduit and Lighting Cables
	YELLOW—Gas, Oil, Steam, Petroleum or Gaseous Materials
	ORANGE—Communication, Alarm or Signal Lines, Cables or Conduit
	BLUE—Potable Water
	PURPLE—Reclaimed Water, Irrigation and Slurry Lines
	GREEN—Sewers and Drain Lines

Source: Uniform Color Codes, ANSI Standard Z535.1. American Public Works Association. Revised 1999.

Attachment C

Laboratory Standard Operating Procedure for Multi-Increment Sampling

MAUL FOSTER ALONGI

Document Information

Document Number: ENV-SOP-MTJL-0112 **Revision:** 05

Document Title: Multi-Increment Sampling

Department(s): SVOA

Date Information

Effective Date: 17 Feb 2022

Notes

Document Notes:

All Dates and Times are listed in: Central Time Zone

Signature Manifest

Document Number: ENV-SOP-MTJL-0112 **Revision:** 05

Title: Multi-Increment Sampling

All dates and times are in Central Time Zone.

ENV-SOP-MTJL-0112

QM Approval

Name/Signature	Title	Date	Meaning/Reason
Rebecca King (010125)	Manager - Quality	17 Feb 2022, 11:42:57 AM	Approved

Management Approval

Name/Signature	Title	Date	Meaning/Reason
Kyle Moore (006492)	Supervisor	14 Dec 2021, 03:29:55 PM	Approved
Michael Jones (006596)	Quality Analyst 3	17 Dec 2021, 12:44:45 PM	Approved

TEST METHOD STANDARD OPERATING PROCEDURE
TITLE: Multi-Increment Sampling
TEST METHOD: NA
ISSUER: Pace Analytical National Center for Testing & Innovation

1.0 Scope and Application

1.1 Appendix A of EPA Method 8330B (SW-846) specifically addresses field sampling. The appendix provides guidance for explosive residue sample collection, handling, and laboratory processing techniques. Method 8330B recommends the use of multi-increment (MI) sampling, which involves the extraction of a representative portion of material from within a single decision unit which will adequately address potential compositional and distributional heterogeneity. In MI sampling, several increments from the same decision unit are combined to form one sample that is submitted for laboratory analysis. The procedures for MI sampling are specifically designed to minimize sampling error and provide a more scientifically-representative mean concentration of the contaminant(s) present in the decision unit.

1.2 Initial demonstration for achieving samples size below 75µm per DOD/DOE QSM is on file in the QA department.

2.0 Summary of Method

2.1 Samples are dried, ground, and homogenized before subsamples are taken for sample preparation.

3.0 Interferences

3.1 Care must be taken to not cross-contaminate samples during the drying, sieving, and grinding procedures. Grinding blanks are required to verify procedure is free from cross contamination.

3.2 The drying process may result in quantitative losses of some analytes. Project Managers may consider eliminating the drying process prior to analysis or removing poor performers from the target analyte list if drying is required.

4.0 Definitions

4.1 Sieve: A device made of wire mesh held in a frame through which finer particles of a mixture of various sizes may be passed to separate them from coarser ones or through which soft materials may be forced for reduction to fine particles.

4.2 Shatterbox: A device for mechanically pulverizing a sample or material.

4.3 Ball Mill: A device using ceramic pellets and rotation in a closed container to pulverize the contents.

4.4 Refer to the Laboratory Quality Manual for a glossary of common lab terms and definitions.

5.0 Health and Safety

5.1 The toxicity or carcinogenicity of each chemical material used in the laboratory has not been fully established. Each chemical should be regarded as a potential health hazard and exposure to these compounds should be as low as reasonably achievable.

5.2 The laboratory maintains documentation of hazard assessments and OSHA regulations regarding the safe handling of the chemicals specified in each method. Safety data sheets for all hazardous chemicals are available to all personnel. Employees must abide by the health, safety and environmental (HSE) policies and procedures specified in this SOP and in the Pace National Chemical Hygiene / Safety Manual.

5.3 Personal protective equipment (PPE) such as safety glasses, gloves, and a laboratory coat must be worn in designated areas and while handling samples and chemical materials to protect against physical contact with samples that contain potentially hazardous chemicals and exposure to chemical materials used in the procedure.

5.4 Concentrated corrosives present additional hazards and are damaging to skin and mucus membranes. Use these acids in a fume hood whenever possible with additional PPE designed for handing these materials. If eye or skin contact occurs, flush with large volumes of water. When working with acids, always add acid to water to prevent violent reactions. Any processes that emit large volumes of solvents (evaporation/concentration processes) must be in a hood or apparatus that prevents employee exposure.

5.5 Contact your supervisor or local HSE coordinator with questions or concerns regarding safety protocol or safe handling procedures for this procedure.

6.0 Sample Collection, Preservation, Holding Time, and Storage

6.1 Samples should be collected in accordance with a sampling plan and procedures appropriate to achieve the regulatory, scientific, and data quality objectives for the project.

6.2 Pace National will typically receive samples in 4-8oz containers for processing.

7.0 Equipment and Supplies

7.1 Sieve: 10mesh

7.2 Grinder: Shatterbox or equivalent capable of reducing particle size to <75µm

7.3 Drying rack

7.4 12-inch brass pans

7.5 Aluminum baking sheets

8.0 Reagents and Standards

8.1 All reagents and standards must be recorded in the appropriate preparation log and assigned a unique number. See ENV-SOP-MTJL-0041, *Standard Logger – Tree Operation*. Additional information regarding reagent preparation can be found in the Standards Logger (Tree) digital archive system. All spiking solutions and surrogate standard solutions should be replaced at least every six months or sooner if a problem is detected unless otherwise noted.

9.0 Procedure

9.1 All sample contents within the container are emptied into a pan/weigh boat and dried to a constant weight.

9.1.1 A Blank matrix must be dried with samples.

9.1.2 Obtain a clean pan/weigh boat and record the tare weight.

9.1.3 Empty the entire contents of the sample container into the pan/weigh boat.

9.1.4 Using gloved hands break the soil into small pieces as necessary to facilitate the drying process. Use fresh gloves for each sample to prevent cross contamination.

9.1.5 Record the initial weight of the entire sample.

9.1.6 After the initial weight is obtained, dry the sample at room temperature in a hood for approximately 24 hours. Then obtain a 2nd sample weight.

9.1.7 Continue the drying process for approximately 12 hours and obtain a 3rd sample weight.

9.1.8 Two consecutive weights of less than 10% difference, taken approximately 12 hours apart, is considered to be dried to a constant weight.

9.1.9 Dates/Times are recorded as well as the ambient temperature with each weighing of samples.

9.2 For all methods or when client-specific data quality objectives (DQOs) require grinding, dried sample is introduced into the shatterbox or equivalent. The entire sample must be ground. If multiple portions are ground separately, the aliquots must be combined prior to subsampling for extraction. Samples are ground up to three-minute intervals. Intervals and duration are dependent on the sample matrix and analytes of interest for the specific project. The Blank and weekly check sample must also proceed through this step.

9.3 Dried sample material is passed through a 10mesh (2mm) sieve (may be assisted using gloved hands). Do not intentionally include vegetation unless project specifications include this requirement. Depending on sample matrix, sieving may be performed initially to facilitate the drying process.

9.4 The Blank matrix is ground at the end of each batch. A blank will also be ground after any sample of known concentration above detectable limits, including quality control samples.

9.5 Each sample/QC is spread into a pan in order to perform sufficient subsampling of the final sample aliquot. At least 30 sample increments must be taken for the subsampling procedure. The sample volume extracted for analysis should represent the entire ground sample.

NOTE: If sample volume does not allow 30 aliquots, a note will be made on the extraction log.

9.6 See the specific method extraction SOP for further processing information.

10.0 Data Analysis and Calculations

10.1 See the Laboratory Quality Assurance Manual for equations for common calculations.

11.0 Quality Control and Method Performance

11.1 Analyst Qualifications and Training

11.1.1 Employees that perform any step of this procedure must have a completed Read and Acknowledgment Statement for this version of the SOP in their training record. In addition, prior to unsupervised (independent) work on any client sample, analysts that prepare or analyze samples must have successful initial demonstration of capability (IDOC) and must successfully demonstrate on-going proficiency on an annual basis. Successful means the initial and on-going DOC met criteria, documentation of the DOC is complete, and the DOC record is in the employee's training file. Refer to ENV-SOP-MTJL-0015, *Technical Training and Personnel Qualifications for Chemistry* for more information.

12.0 Data Review And Corrective Action

12.1 Data Review

12.1.1 Pace National's data review process includes a series of checks performed at different stages of the analytical process by different people to ensure that SOPs were followed, the analytical record is complete and properly documented, proper corrective actions were taken for QC failure and other nonconformance(s), and that test results are reported with proper qualification.

12.1.2 The review steps and checks that occur as employees complete tasks and review their own work is called primary review.

12.1.3 All data and results are also reviewed by an experienced peer or supervisor. Secondary review is performed to verify SOPs were followed, that calibration, instrument performance, and QC criteria were met and/or proper corrective actions were taken, qualitative ID and quantitative measurement is accurate, all manual integrations are justified and documented in accordance with the Pace National's SOP for manual integration, calculations are correct, the analytical record is complete and traceable, and that results are properly qualified.

12.1.4 A third-level review, called a completeness check, is performed by reporting or project management staff to verify the data report is not missing information and project specifications were met.

12.1.5 Refer to ENV-SOP-MTJL-0014, *Data Handling and Reporting* and ENV-SOP-MTJL-0038, *Data Review* for specific instructions and requirements for each step of the data review process.

12.2 Corrective Action

12.2.1 Corrective action is expected any time QC or sample results are not within acceptance criteria. If corrective action is not taken or was not successful, the decision/outcome must be documented in the analytical record. The primary analyst has primary responsibility for taking corrective action when QA/QC criteria are not met. Secondary data reviewers must verify that appropriate action was taken and/or that results reported with QC failure are properly qualified.

13.0 Pollution Prevention and Waste Management

13.1 Pace National proactively seeks ways to minimize waste generated during our work processes. Some examples of pollution prevention include but are not limited to: reduced

solvent extraction, solvent capture, use of reusable cycletainers for solvent management, and real-time purchasing.

13.2 The EPA requires that laboratory waste management practices be conducted consistent with all applicable federal and state laws and regulations. Excess reagents, samples and method process wastes must be characterized and disposed of in an acceptable manner in accordance with Pace National's Chemical Hygiene Plan / Safety Manual.

14.0 Modifications

14.1 Pace National is set up currently to process from 4oz/8oz/16oz/32oz jars that have been prepared in the field from bulk containers. Pace National cannot currently process bulk samples for this method.

14.2 Due to limited sample volume received as listed in 14.1:

14.2.1 Duplicate subsampling is performed rather than triplicate

15.0 Responsibilities

15.1 Pace National employees that perform any part this procedure in their work activities must have a signed Read and Acknowledgement Statement in their training file for this version of the SOP. The employee is responsible for following the procedures in this SOP and handling temporary departures from this SOP in accordance with Pace National's policy for temporary departure.

15.2 Pace National supervisors/managers are responsible for training employees on the procedures in this SOP and monitoring the implementation of this SOP in their work area.

16.0 Attachments

16.1 Not applicable to this SOP

17.0 References

17.1 Nitroaromatics, Nitramines, and Nitrate Esters by High Performance Liquid Chromatography (HPLC), SW-846 Method 8330B, Revision 2, October 2006, Appendix A.

17.2 Quality Systems Manual (QSM) for Environmental Laboratories, Department of Defense (DoD), Version 5.1, 2017.

TEST METHOD STANDARD OPERATING PROCEDURE
TITLE: Multi-Increment Sampling
TEST METHOD: NA
ISSUER: Pace Analytical National Center for Testing & Innovation

18.0 Revision History

This Version:

Section	Description of Change
7.3, 7.4, 7.5, 9.2. Removed 8.2, 9.6, & 14.3.	Process update and removal of 8330 prep steps.

This document supersedes the following document(s):

Document Number	Title	Version
ESC Lab Sciences SOP #330377	ESC Lab Sciences SOP #330377	1
ESC Lab Sciences SOP #330377	ESC Lab Sciences SOP #330377	2
ESC Lab Sciences SOP #330377	ESC Lab Sciences SOP #330377	3
ENV-SOP-MTJL-0112	Multi-Increment Sampling	01
ENV-SOP-MTJL-0112	Multi-Increment Sampling	02
ENV-SOP-MTJL-0112	Multi-Increment Sampling	03
ENV-SOP-MTJL-0112	Multi-Increment Sampling	04