Pilot Study Implementation Report
Lower Columbia Slough –
Pacific Meats Cleanup Site
Portland, Oregon
ECSI No. 145

Prepared for:
Oregon Department of Environmental Quality
Task Order No. 20-13-33

January 27, 2016
1888-03/Task 2

APEX

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1.0 Introduction

This Pilot Study Implementation Report (Report) documents the application of activated carbon (AC) in the Lower Columbia Slough as part of a pilot study as defined in the Pilot Study Work Plan (Apex, 2016a). The location of the pilot study is within the Slough waterway adjacent to the Pacific Meats Cleanup Site (Site) within the Lower Columbia Slough (Figure 1). This Report was prepared for the Oregon Department of Environmental Quality (DEQ) under Task 9 of Task Order No. 20-13-33.

1.1 Purpose

The purpose of the pilot study is to evaluate performance and implementability of two forms of activated carbon (AC) sediment amendments to reduce bioavailability of elevated levels of PCBs in sediment. The following factors are considered:

- Implementability in terms of:
    - placement effectiveness and challenges for the AC amendments,
    - impacts of AC placement on water quality, and
    - equipment and access requirements for AC placement;
- Effectiveness of amendments in reducing pore water concentrations of PCBs in the biologically active zone; and
- Costs associated with AC placement.

Baseline concentrations of PCBs in sediment and porewater in the pilot study area were determined and summarized in the Baseline Sampling Report (Apex, 2016b). A series of annual monitoring events of the pilot study area will be performed to assess the effectiveness of each form of AC in reducing the bioavailability of PCBs in interstitial sediment porewater. Information gathered from this pilot study will be used evaluate whether AC would be a viable option for treating PCB contamination in other “hot spots” within the Columbia Slough.

1.2 Scope of Work

To accomplish the pilot study objectives, the following tasks were completed and are discussed in further detail in this report:

1) Assessment of delivery methods for applying AC to the target sediments;
2) Application of AC to the designated study area;
3) Documentation of the implementability and costs of the AC amendment application methods and products.

These activities are discussed in further detail within this Completion Report.

2.0 Background

This section presents a description of the Site, the geology, previous work done at the Site, and the nature and extent of impacted sediments.

2.1 Site Location and Description

The area for the pilot study (the Site) is located within the central portion of the Lower Slough section of the Columbia Slough, starting just east of the City of Portland Outfall 60, in the City of Portland, Multnomah County, Oregon (see Figures 1 and 2), and extending to the west adjacent to the former Pacific Meat property (located at 2701 N Newark Street, Portland, Oregon). At present, the upland property owners include Blue Line Transportation, Inc. on the western side of the project area and Ferguson Enterprises, Inc. on the eastern side of the project area. The Slough elevation at the Site varies seasonally, with lower water levels in the fall and summer months and higher water levels in the winter and spring. The Lower Columbia Slough is also tidally influenced as it is directly connected to the Willamette River.

The Columbia Slough Watershed drains approximately 32,700 acres of land, including areas in Fairview Lake and Fairview Creek, and portions of Troutdale, Fairview, Gresham, Maywood Park, Wood Village, and unincorporated Multnomah County. Historically the watershed contained channels, streams, lakes, ponds, and wetlands. As a result of urban development, the watershed has been altered, including building levees and draining and filling the wetland areas. The water has been channelized into what is now called the Columbia Slough. Side creeks and channels were filled in or diverted to underground pipes. The area is now an extensively managed surface water system with many water control structures. The former Pacific Meat property is immediately adjacent to the Slough, and historical operations and stormwater discharges from the Site and City of Portland outfalls have impacted the adjacent Slough sediments.

2.2 Geology

Characteristic of a lowland, slow-moving water body, the Columbia Slough has fine, silty sediments with a fairly high organic matter content (BES, 2005). Based on our field observations, sediments at the Site are comprised primarily of silt from the mudline to at least three feet below the mudline (bml). The silty sediments in the project vicinity are gray and soft, sometimes containing organic matter or sand.

The primary geologic unit underlying the project Site has been mapped as surficial soil deposits of unconsolidated alluvium derived from river and stream deposits at the ground surface. These soils consist of sand and silt of recent age (Holocene Age, within the last 10,000 years) deposited on the flood plains of the

Columbia River. Some of the materials are deposits of upstream formations re-worked by the Columbia River. This unit is typically found in thicknesses of less than 50 feet. This unit mantles the eroded surface of Pleistocene-aged unconsolidated sand and silt alluvium deposits, and the eroded surface of Late-Pleistocene lacustrine (lake sediment) deposits.

The Natural Resource Conservation Service (NRCS) web soil survey indicates the primary near-surface soils on the Site consist of Sauvie silt clay loam (protected) and Rafton silt loam (protected). The "protected" designation indicates protection against flooding from dikes and levees. Sauvie silt clay loam soils are characterized as poorly drained, dark-grayish-brown, fine-grained soils formed in recent alluvium with some mixing of volcanic ash. Rafton silt loam soils are characterized as very poorly drained, dark-grayish-brown, silty loam soils formed on flood plains and low terraces.

2.3 Previous Work

The Portland District U.S. Army Corps of Engineers collected 15 sediment samples from varying depths from a portion of the Lower Slough in 1998. The sample sites were too distant from the outfalls to directly characterize outfall sediments. PCBs were detected at concentrations as high as 930 micrograms per kilogram (µg/kg) near Pacific Meats. Elevated PCB concentrations were found in both shallow (0 to75 centimeters [cm]) and deep (75 to150 cm) sample depth intervals.

In October 2006, samples were collected along a 600-foot stretch of the Lower Slough at the Pacific Meats cleanup site (ECSI No. 145, GeoDesign, 2007). Sixteen sediment samples were collected adjacent to the property with two samples collected immediately adjacent to private outfalls. PCBs were detected in the sediments at concentrations of up to 2,450 µg/kg. In general, the samples collected from depth intervals of 1 to 2 feet below the sediment surface (mudline) contained the highest concentrations.

The City of Portland performs long-term monitoring of Slough-wide conditions (under an Intergovernmental Agreement with DEQ). In 2006, 23 sediment samples were collected in the Lower Slough. PCBs were detected at concentrations of up to 330 µg/kg. The PCB concentrations were found to be higher in the Lower Slough than in other reaches of the Slough, and were detected more consistently in the Lower Slough, consistent with the more industrial and commercial development of this area. One sediment sample from this study was collected in the vicinity of the Pacific Meat project and contained 70 µg/kg PCBs.

In 2008, DEQ began allowing parties that likely contributed to contamination in Columbia Slough sediments to enter into formal settlements to resolve their liability. Settlements, in the form of a Consent Judgment, include paying into a settlement fund that DEQ can use to complete environmental investigation and cleanup in the portion of the Slough impacted by the contributing parties. The first parties to take advantage of this process are located in the Lower Columbia Slough. Six parties discharging to City and private stormwater outfalls in this section of the Lower Slough settled with DEQ in 2008 and additional parties have settled with DEQ since that

time. DEQ used a portion of the fund to design and implement a sediment investigation in this area in 2009 and 2011.

Consistent with previous studies, PCBs were found to be the primary contaminant of concern in this reach of the Columbia Slough due to the potential risk to humans and wildlife that may consume fish. DEQ collected incremental samples throughout the segment of interest and more focused composite samples in the vicinity of outfalls and other likely contaminant sources. Using Thiessen polygons for all available discrete and localized composite data points in the slough (with the polygon enclosing the area that is closest to the associated data point), several target areas were identified as having elevated concentrations of PCBs. The incremental sample results were used to determine a segment-wide average concentration for PCBs of 46 µg/kg. The weighted average concentration based on the Theissen polygons was calculated to be 93 µg/kg. Priority areas for remedial action were determined by identifying the polygons that would need to be reduced to 10 parts per billion (ppb) PCB to generate a weighted average concentration for the reach that was lower than the IS-based average concentration. The Pacific Meats Cleanup Site/City of Portland Outfall 60 was identified as one of five identified Priority Characterization Areas (PCAs).

2.4 Nature and Extent of Contamination

Historical samples were collected in the vicinity of the Pacific Meats Cleanup Site, and City of Portland Outfall 60, including 17 shallow sediment samples (defined as less than 30 cm bml) and 8 deep sediment sample locations (defined as greater than 30 cm bml). In addition, five soil samples were collected on the Columbia Slough bank (designated by an "HA–" prefix). Within this vicinity, shallow sediment sample PCB concentrations ranged from 69 µg/kg to 2,040 µg/kg, and deep sample PCB concentrations ranged from non-detect to 2,450 µg/kg. A figure summarizing historic sample locations and concentrations can be seen in the Work Plan (Apex, 2016a).

2.5 Baseline Sampling

Baseline sampling for the pilot study was conducted in June and September 2016 and is documented in the Baseline Sampling Report (Apex, 2016b). Baseline concentrations of total organic carbon (TOC), black carbon, and PCBs in bulk sediment were obtained in each study area. In addition, baseline concentrations in porewater were obtained using *in-situ* and *ex-situ* methods. Bulk sediment samples were taken from 0-15 centimeters below mudline (bml) using both incremental sampling methodology (ISM) and discrete sampling techniques. Bulk ISM samples were taken across three areas of the Site, east, central, and west. Bulk discrete samples were taken at locations that corresponded to the powerwater sampling locations. A figure showing all sample locations is provided in the Baseline Sampling Report (Apex, 2016b). As measured in discrete sample analysis, the PCB concentrations in both bulk sediment and porewater were generally higher near the south bank of the Slough and near former and current outfalls.

Total PCB concentrations (congeners) in shallow sediment (from 0-15 cm bml) ranged from 60.95 to 207.55 µg/kg in the ISM samples, and 9.69 to 13,522.25 µg/kg in the discrete samples. The discrete sampling results suggest that PCB concentrations in the central and east sections of the Site are higher than those in the west section, while the results from the ISM samples present concentrations that are relatively similar across the Site (albeit highest in the west section).

Baseline sampling indicated that the current black carbon levels in the sediments within the pilot study area average approximately 0.14 percent black carbon, while the average TOC levels were approximately 3 percent. Calculations for the amount of carbon to be added to the sediment were based on the goal of raising the concentration of black carbon to approximately 3 percent in the top 15 centimeters (cm) of sediment throughout application area.

3.0 Activated Carbon Application

This section summarizes field activities completed during AC placement within the study area and deviations from the Work Plan.

3.1 Preparatory Activities

Site Health and Safety Plan. A Site-specific health and safety plan (HASP) was prepared for the field activities. The HASP was prepared in general accordance with the Occupational Safety and Health Administration (OSHA) and the Oregon Administrative Rules (OAR). A copy of the HASP was provided in Appendix D of the Work Plan. A hard copy of the HASP was maintained on site during the field activities.

Permits. For project streamlining purposes, including permitting, this project was conducted concurrently with preparations for a future removal action at the Pacific Carbide Site in the Columbia Slough. In accordance with City of Portland floodplain balanced cut-fill requirements, excavation of an access bench on the bank at Pacific Carbide accounted for compensatory removal to balance the addition of fill within the Slough resulting from activated carbon application.

Actions taken under the DEQ cleanup program are not required to obtain state and local permits, but must meet the substantive requirements of all applicable permits. Ensuring that substantive requirements were met generally required completing the standard permitting processes.

Permits and access agreements required or for which substantive requirements were met included:

- USACE Nationwide Permit 38
- Oregon DSL Removal/Fill Permit
- City of Portland Remedial Action Exempt Review for Site Development Permit

- Portland Parks and Recreation Department – Non-Parks Use Permit
- Oregon Department of Fish and Wildlife (ODFW) Scientific Taking Permits
- Access Agreements
    - Blue Line Transportation, Inc. (Adjacent Property)
    - Ferguson Industries, Inc. (Adjacent Property)
    - DSL – Waters of the State
    - Portland Parks/Multnomah County Drainage District (Levee Access)
    - Waterway Access (Boat Ramp)

Copies of permits and access agreements are provided in Appendix A.

Subcontractor Procurement. The Request for Proposal (RFP) documents prepared for procurement of AC placement services were sent to twelve pre-qualified contractors. The procurement documents were primarily based on placement performance criteria, with no prescribed methods for placement of the AC products. The intent was to allow contractors to propose placement methods based on their experience and equipment/technology at their disposal. Ten of the twelve solicited contractors attended the mandatory pre-proposal site walk. Two proposals for placement services were received by the application deadline. The costs presented in both proposals were substantially higher than the estimated project cost. Contractors that did not submit proposals cited workload concerns due to a busy construction season, unpredictable waterway conditions, financial risk associated with project access uncertainties, and challenges in finding an application method that ensured accurate layer thickness.

Oregon Administrative Rules (OAR) 137-049-0430 of Oregon's General Provisions Related to Public Contracts for Construction Services allowed DEQ to "negotiate Value Engineering and Other Options with the Responsible Bidder submitting the lowest, Responsive Bid in an attempt to bring the Project within the Contracting Agency's Cost Estimate." Of the two proposals, the proposal provided by Dixon Marine Services, Inc. (DMS) of Inverness, California presented the lower cost. As a result, the original procurement was voided and a revised, value-engineered scope of work for AC placement was negotiated with DMS.

The AC products used in the pilot study were proprietary products that were specified in the Work Plan and therefore were not competitively procured. In addition, these products were ordered prior to competitive procurement of a material placement contractor for the project, as they required several months of lead time for manufacture and delivery. Sedimite Solutions of Ellicott City, Maryland and AquaBlok of Swanton, Ohio were selected to provide AC products.

In addition to the placement contractor and AC material procurement, Apex conducted competitive procurement for turbidity control equipment. The turbidity control equipment consisted of 800 linear feet of

DOT Type II floating turbidity curtain (50-foot sections) with 6-inch encased foam floatation boom, permeable woven filter fabric skirt (minimum vertical length of 60-inches), connections, anchors, and reefing lines. IWT/Cargo-Guard of Waretown, New Jersey was selected as the turbidity curtain vendor.

Value Engineering. In order to bring the project cost to within the range of the original cost estimate while still achieving the project remediation objectives, a revised value engineering process was applied to the engineering design. The original scope of work included placement of three types of AC products, including Sedimite™, Aquagate+PAC™, and a granular activated carbon (GAC) and sand mixture. The revised project scope eliminated the GAC-sand mixture from the pilot test in order to reduce project complexity and cost, as well as to streamline application methods. Based on this revision, the size of the AC application area was reduced from 60,000 square feet (sf) (approximately 600 feet by 100 feet) to 40,000 sf (approximately 600 feet by 67 feet). The study area was divided into two equal area plots (approximately 300 feet by 67 feet) referred to as the east and west plot (see Figure 2).

Site Access. For AC placement activities, the site was accessed via the Blue Line Transportation, Inc. property located at 2606 North Newark Street, as well as from an undeveloped portion of the Ferguson Industries, Inc. property located at 9129 N Tyndall Avenue. The upland portion of these properties adjacent to the bank was used for staging and delivery of materials to the study area.

Wildlife Surveys. Wildlife surveys were required for endangered species known to be present at or near the Site. An Apex biologist conducted a survey for Oregon native turtles on the bank of the Slough in the area where work would be conducted. No turtles, hatchlings, or eggs were found during the survey. Relocation of turtles prior to work was not necessary based on observations made during the initial survey.

A benthic survey for the presence of native mussel species was conducted at the site. Approximately 43 dip net samples were taken, covering an area of one cubic meter, to a depth of 10 centimeters. Each dip net sample was rinsed with slough water using a bilge pump, to remove excess sediment, and expose any potential biological specimens. Samples were collected along predetermined transect areas, with samples being collected every meter. No mussels were encountered in any of the dip net samples. Relocation and salvage of mussels during AC application activities was not necessary based on observations made during the survey.

Archaeologist. A professional archeologist reviewed all onsite areas of material placement, prior to placement, to ensure cultural resources were not inadvertently affected. No culturally sensitive sites were identified within the placement areas. A summary of the archeological review is presented in Appendix B.

3.2 Pre-Pilot Test

Prior to application in the Slough, a pre-pilot test was conducted to determine efficacy of the proposed AC application technology. The pre-pilot test was conducted to demonstrate that the selected technology could

deliver the amendment without substantial loss of AC, within a reasonable timeframe, and maintain control over layer thickness. The technologies were tested on land so that results could be visually verified. The contractor (DMS) used shallow wading pools to simulate in-water placement. Evaluated technologies included an in-line vacuum pump (line-vac) and a landscape material application truck (blower truck). A third technology considered prior to the pre-pilot test was a pneumatic ag spreader. This option was removed from the plan prior to the pre-pilot based on an evaluation that it was unlikely to accurately deliver the AC products. In addition, excessive dust emissions may have been a prohibitive factor. The results of the pre-pilot test for each product are described below.

Sedimite™. When tested using the blower truck and approximately 300 feet of hose, the observed Sedimite™ was only slightly abraded based on cursory visual assessment (overall product loss of approximately 10%). The extent of Sedimite™ abrasion was relatively similar when transmitted through the line-vac. Wet tests (spraying of the Sedimite™ into shallow pools) indicated that the tested methods were delivering the material to the bottom of the water column as intended. Based on the presumption that some of the Sedimite™ abrasion observed during the dry test was caused by contact with the receiving bin (or other dry Sedimite™), it was anticipated that less degradation of the product would occur when the products was applied into water.

Each supersack of Sedimite™ could be placed very quickly using the blower truck method (approximately 5 minutes per 1,100 lb supersack). Using the blower truck method, the placement production would generally be limited only by placement equipment and quality control requirements (i.e. location control and movement of the placement vessel). Placement rate tests were much slower using line-vac method, ranging from approximately 5 to 7 minutes per 5-gallon bucket with approximately twenty 5-gallon buckets compromising a supersack.

Dust created by the placement of Sedimite™ using both tested methods was considerable and it was noted that these methods would require engineering controls for dust suppression during placement.

Aquagate+PAC™. Blower truck and line-vac tests were also conducted for the Aquagate+PAC™ product. As the PAC component of the Aquagate+PAC™ is an outer coating, it is susceptible to abrasion, and was significantly abraded when tested using the blower truck and 300 feet of hose. The PAC coating loss was approximately 75%, based on cursory visual assessment. There was slightly less degradation when the blower truck hose length was reduced to 100-feet. The PAC coating was less abraded (PAC loss of approximately 25%, based on cursory visual assessment) when transmitted through the line-vac. As with the Sedimite™, there appeared to be significantly less degradation of the product when applied into the pools of water versus the degradation observed in the bin and bucket tests.

Similar to Sedimite™ placement, each supersack of Aquagate+PAC™ could be placed very quickly using the blower truck methods (approximately 10 minutes per 2,500 lb supersack). Placement rate tests were much

slower using line-vac methods, ranging from approximately 4 to 6 minutes per 5-gallon bucket with approximately forty buckets compromising a supersack. Dust created by Aquagate+PAC™ placement using both methods was similar to that of Sedimite™ (considerable). Again, engineering controls would be required for dust suppression.

Conclusions. Based on the pre-pilot test results, blower truck placement of the Sedimite™ was selected as a cost-effective method for the less accessible east plot. A pressure washer used to spray water on the blower hose discharge provided acceptable dust suppression during the pre-pilot placement tests.

The pre-pilot test did not identify an acceptable (i.e. cost-effective and with limited material degradation) method for the delivery of Aquagate+PAC™. The blower truck method resulted in too much PAC loss; and the time and labor costs of placing Aquagate+PAC™ using line-vac methods would be cost prohibitive.

Apex and Dixon Marine evaluated alternative placement methods for Aquagate+PAC™ . Placement by telescoping conveyor belt (telebelt) over-the-water from a barge had previously been considered but had been rejected based on the distance of much of the placement area from the Slough bank (up to 100 feet) and upland site access limitations. Because the placement area had been reduced in size, resulting in a distance reduction to 67 feet from the Slough bank, it was determined that a large portion of the Aquagate+PAC™ placement would be possible using a telescoping conveyor belt (telebelt) from the upland Blue Line Transportation, Inc. site. An onsite meeting with Blue Line representatives resulted in agreement for additional access permission that would facilitate the telebelt method and this method was selected for the application of Aquagate+PAC™. In the event that there were areas that could not be reached with the telebelt, the additional AC would be applied with line-vac or hand placement methods.

3.3 Activated Carbon Placement

As modified from the original design, the pilot study area extends approximately 600 feet along the shoreline and approximately 67 feet from the south shoreline into the Slough. Sedimite™ was applied to the east plot and AquaGate+PAC™ to the west. The target thickness was 0.6 inches for Sedimite™ in the east plot and 1.7 inches for AquaGate+PAC™ in the west plot.

The revised implementation approach for the AC placement was developed by DEQ and Apex, with implementation feasibility input provided by DMS. The technical proposal document produced by DMS is presented in Appendix C. Each plot was divided into placement cells. The size of the placement cells was used to develop volume per area quality control requirements.

A visual grid was established for amendment placement, using Real Time Kinematic (RTK) GPS survey equipment based on a template produced using Hypack software. The site survey included demarcation (staking) of the plot limits. A visual grid of cells using PVC poles was established to demarcate each placement cell.

Prior to placement in the study area, AC materials were delivered from the manufacturer in supersacks and stored in an indoor warehouse at MG Warehouse Inc. located at 9700 N Hurst Ave, Portland, OR. Once site preparation activities were complete, the supersacks of AC were transported to the site via truck and offloaded using a crane and forklifts. Photographs of the AC placement are presented in Appendix D.

Sedimite™ Placement. Sedimite™ was placed in the east plot of the pilot study area (see Figure 2). The plot was divided into placement cells marked with PVC poles. The placement cells were sized such that one supersack of Sedimite™ would be used for each cell to achieve the desired material placement thickness. There was a total of 37 placement cells (see figure 3). The volume per area quality control criteria (2.25 pounds [lbs] per sf) was met by DMS personnel moving the blower truck discharge hose across the placement area at a constant rate determined in the pre-pilot test to deliver the accurate quantity of Sedimite™. A total of 24.75 tons of Sedimite™ were placed in the east test plot at the Site.

As described in Section 3.2, a blower truck operated by Rexius Express, Inc. (subcontractor to DMS) was used to deliver the AC product to the Slough. The blower truck was positioned at the top of the Slough bank. Hard piping was used from the blower truck to the Slough shoreline to reduce material degradation during delivery. Flexible piping was used to deliver the AC product from the shoreline to the application area.

Placement areas were approximately 55 feet long and 9 feet wide for the smaller (500 kg) Sedimite bags and 55 feet long and 10.5 feet wide for the larger (600 kg) Sedimite™ bags. A small working platform (floating dock) was placed in the slough using a crane and was positioned parallel to the long axis of the placement cell, allowing the crew to access the full length of each cell. An airboat was used to position the platform alongside a placement cell. Once positioned, the barge was stabilized using small outriggers (spuds). Placement began at the eastern limits of the test plot and progressed to the western extent, with Sedimite™ placement in each cell generally progressing from shore towards the center of the slough. This process continued until all Sedimite™ placement cells were completed. To mitigate emission of dust resulting from blower truck-related material degradation, pressure washers were used to mitigate dust during application. The pressure washer was positioned directly adjacent to the outlet of the product delivery hose and water was applied to the material during discharge to limit airborne dust.

AquaGate+PAC™ Placement. Aquagate+PAC™ was placed in the west plot of the pilot study area (see Figure 2). The plot was divided into six placement cells (see Figure 3) based on factors such as telebelt arc width (allowing relatively uniform linear transects) and boom access limitations. Five of the cells were approximately 3,600 sf in area. Nineteen bags were applied to the 3,600 sf area to achieve the volume per area quality control criteria (13.2 lbs per sf). The sixth cell was approximately 2,000 sf. Eight supersacks of Aquagate+PAC™ were applied to this cell. A total of 128 tons of Aquagate+PAC™ were placed in the west plot.

Aquagate+PAC™ was distributed in the study area with a Puzmister T-130 Telebelt. The telebelt was positioned perpendicular to the slough on the southern bank and was equipped with a DMS-designed spreader that redirects material flow from the telebelt conveyor to a uniform sheet (~3 feet wide) of material, parallel to the telebelt boom. The telebelt was equipped with RTK DGPS system using a Hypack™ model, that monitored and displayed, in real time, the position of the belt tip and center of rotation relative to the placement areas. As the boom tip passed over placement areas in arcs, a matrix file created within Hypack™ generated a color gradient on screen that visually confirmed where material had been placed and areas that had not yet been covered. Aquagate+Pac™ placement in the Western extent of the site typically progressed from the center of the slough to the shore.

3.4 Quality Control

AC Placement Thickness. Visual verification of AC coverage was conducted throughout the application process. Seasonally low water levels in the Slough resulted in dry bank application for a portion of the area and coverage achieved by the application methods could be visually verified from the shore. In addition, the sediment surface in areas covered by water could be observed from a kayak due to shallow water levels. If the visual assessment found areas without adequate coverage, the contractor was directed to place additional AC product in that area and the AC product coverage was reassessed thereafter.

In addition to visual verification of AC coverage during placement, the thickness of the AC distributed within the study area was monitored using collection plates. The collection plates consisted of flat metal pans with 4-inch sidewalls, lowered into the AC application area prior to placement of AC. The plates were removed after the AC application was complete to assess the application thickness. In order to verify that the specified thickness of each AC delivery product was achieved, a minimum of one pan was placed in each Sedimite™ placement cell and eight pans were placed in each AquaGate+PAC™ placement cell. Locations of placement pans are shown on Figures 3 and 4. Additionally, upon completion of AC distribution within the study area, Apex staff collected sediment cores using a Russian Peat Corer to verify AC thickness at various locations within the study area. The target thickness for Sedimite™ in the east plot was 0.6 inches. The average thickness of the Sedimite™ layer based on quality assurance monitoring samples was 0.8 inches. The target thickness for AquaGate+PAC™ in the west plot was 1.7 inches. The average thickness for the AquaGate+PAC™ layer based on quality assurance monitoring samples is 1.9 inches. Measured AC thickness values from test pans placed in cells during AC application and the sediment cores collected are presented in Appendix E.

Overall, quality control measures showed that the AC products were applied uniformly across the pilot study area. This was verified visually and with thickness measurements that were near the targets for each plot.

Turbidity Monitoring. In order to meet permit requirements, typical turbidity control best management practices (BMPs) and DEQ 401 Water Quality Certification guidelines were followed, including:

- Prior to in-water work, silt curtains were installed around the perimeter of the placement area.
- The turbidity curtain BMPs were installed in such a way that fish were prevented from being isolated within the area enclosed by the turbidity curtains (silt curtain was installed at the shoreline and moved outward into position)
- Turbidity monitoring was conducted throughout the placement of AC materials.

Turbidity monitoring was conducted prior to and during the project in accordance with the permits issued for the project. Turbidity monitoring was conducted at monitoring points approximately 200 feet outside of the silt curtain downstream of the placement area, and approximately 100 feet outside of the silt curtain upstream of the placement area. Turbidity readings were collected prior to AC placement on a daily basis to establish a baseline turbidity level for the day. Once AC application was initialized for the day, Apex staff would collect turbidity readings upstream and downstream of the work area (outside the silt curtain) at an interval of no more than four hours between each set of upstream and downstream turbidity readings. Upstream and downstream turbidity readings were compared in order to ensure that the Site work was not causing more than a 10% increase in turbidity. Turbidity measurements recorded during AC placement activities are presented in Appendix E.

Oversight. Apex provided oversight throughout the AC product placement process. Oversight included daily documentation of contractor work activities, visual verification that all areas were covered with delivered AC product, documentation of turbidity monitoring, and measurement of AC product thickness.

3.5 Deviations From the Work Plan

As described in Section 3.1, a value engineering process was applied to the remedial design to allow the project to achieve the remedial goals while limiting project implementation cost. There were two primary deviations from the Work Plan that facilitated this. The first deviation was the elimination of one of the AC products (the sand-GAC mixture) as described in Section 3.1. Sedimite™ and AquaGate+PAC™ were retained as the AC products to be evaluated in the pilot study based on their relatively similar material properties and thus, their likelihood of similar handling and placement characteristics. In addition, these products were retained based on their successful application and performance as AC delivery products for similar studies. Finally, based on their long ordering lead time of 3 to 4 months, these products had already been ordered and were in production or transit when the project redesign was conducted. These factors lead to the application of Sedimite™ and AquaGate+PAC™ as part of this pilot study.

The size and layout of the application area was redesigned to account for the revised AC product distribution plan. The volume of Sedimite™ and AquaGate+PAC™ had been pre-ordered and would cover approximately 40,000 square feet of the study area when applied at the design thickness. As seen on Figure 2, the study area was reduced from 600 feet by 100 feet (60,000 sf) to 600 feet by 67 feet (approximately 40,000 sf). This would allow the product to cover the near-shore sediments identified as having higher concentrations of PCBs.

In addition, as described in Section 3.1, the AC placement quality control emphasis was modified from performance-based layer thickness criteria to material placement volume per unit area. This allowed the contractor to consider a wider range of application technologies, while still applying the required volume of carbon to the sediment surface. The placement area size and material volume placed by the contractor was tracked closely to ensure the contractor was meeting quality control objectives. In addition, the layer thickness verification measures specified in the Work Plan (pre-placed pans and sediment cores) were implemented to confirm AC product layer thickness and coverage.

During application, it was discovered that Sediment Solutions had provided two different Sedimite™ pellet formulations. Photographs showing the differing Sedimite™ products are presented in Appendix C. The larger, more durable pellet was used in the pre-pilot test and the blower truck had been calibrated and optimized for this product. The larger product was provided in 500 kg supersacks. A second, smaller and more brittle formulation of the product was provided in 600 kg supersacks, allowing distinction between the two sizes of the product. The larger product was applied first, using the blower truck settings and placement cell size developed in the pre-pilot test. The smaller, more brittle product did not run through the blower truck efficiently and by comparison, more dust was created during delivery. To successfully deliver the smaller product to the sediment surface intact, the blower truck delivery rate was reduced and an additional pressure washer was added to control dust. Additionally, as the smaller product was provided in larger supersacks, the placement cell size was adjusted to accommodate the additional volume per cell.

4.0 Comparative Analysis of AC Materials and Methods

This section provides a description of the advantages and disadvantages of each product, application methods, and AC product cost comparison to assess which placement method and product would be most effective for future Slough projects involving AC material placement.

Application Methods. This section compares the two placement methods (blower truck and telebelt) used in the pilot study. The application of Sedimite™ with a blower truck allowed for layer thickness control resulting from operator management at the discharge end of the hose. The extended blower truck hose length (up to 400 linear feet) allowed for limited access application, as would be common for banks of the Columbia Slough. In comparing the two application methods (telebelt versus blower truck), it should be noted that the use of a blower truck was an undocumented process for AC product placement, while telebelt methods have been used for numerous placement applications. The lessons learned in testing and refining the blower truck placement method for AC delivery could be applied to future projects, reducing the preparation time and cost for this method.

The primary disadvantage of the blower truck placement method is AC product degradation. The pneumatic force exerted on the product by the blower truck causes significant abrasion, resulting in some product loss (approximately 10% overall product loss, in the case of the products tested). For future applications, this

would result in the need for additional product to achieve the project design layer thickness. Other disadvantages include the necessity of in-water equipment mobilization (floating dock and work vessels) for delivery that is not necessary for land-based telebelt application. Also, comparatively more in-water preparation was required for blower truck application methods, including installation of PVC demarcation poles for the smaller placement cells, as well as the addition time necessary for barge repositioning between these placement cells. Finally, product abrasion resulting in airborne dust emissions was a comparative disadvantage of the blower truck methods. The dust emissions were mitigated using engineering controls; however, these also resulted in additional personnel and equipment costs.

The application of AquaGate+PAC™ with a telebelt allowed for GPS tracking of the AC application and comparatively efficient placement following GPS and placement equipment set-up. This method was less labor intensive than the blower truck method, as there was no need for workers to be on the water during application. The telebelt does allow for delivery of AC product to areas where land-based over-water access is not an option. Delivery of the product to the sediment surface via telebelt resulted in significantly fewer dust emissions compared to the blower truck. The telebelt requires clear access to the water surface and therefore is not ideal for a tree-lined bank.

The labor and material costs for AC product placement were comparable for both the east and west placement areas. Both products required the use of specialized subcontracted equipment (blower truck for Sedimite™ and telebelt for AquaGate+PAC™). To achieve the AC delivery goals, each product was applied in about three days with similar relative labor and equipment costs. A significant difference between the two product applications was the volume applied; the AquaGate+PAC™ volume was approximately five times the required volume of Sedimite™. If telebelt application was an option for Sedimite™ application, this may have been the most efficient overall method of delivering the desired amount of AC to the sediment surface.

AC Products. Sedimite™ has a relatively high concentration of PAC (50% by weight), as compared to AquaGate+PAC™ (10% by weight for the selected formulation). Based on the native sediment carbon content at the Site, a thin (0.6 inch) layer of Sedimite™ was specified to achieve the AC delivery goal. The thin layer was difficult to achieve based on the relative size of the pellets and the precision thresholds of the delivery methods. The differing size and friability of the two Sedimite™ formulations resulted in the necessity of mid-application equipment re-calibration, resulting in significant application delays; however, this may have been a circumstance unique to this delivery and could be avoided through improved manufacturer product quality assurance.

The AquaGate+PAC™ formulation used in this study had a lower concentration of PAC as compared to Sedimite™, requiring thicker product application and more time to apply. While we applied AquaGate+PAC™ with 10% AC, the product can be custom-ordered in a formulation of up to 25% PAC. Using a higher concentration of PAC in the AquaGate+PAC™ would result in a smaller volume of product required for delivery, therefore reducing placement time. When testing the blower truck placement method for the purpose

of this study, the formulation of the AquaGate+PAC™ (PAC coating on an aggregate core versus homogenous PAC throughout the pellet) resulted in the loss of substantially more PAC due to abrasion as compared to Sedimite™, thereby limiting the use of the blower truck placement methods to Sedimite™.

The costs of the two AC products were comparable to deliver an approximately equal amount of AC to the sediment surface. The cost of Sedimite™ was $90,000 and the cost of AquaGate+PAC™ was $95,125. Though the total volume of product was different (128 tons of AquaGate+PAC™ versus 24.75 tons of Sedimite™), the amount of AC was the same. Based on the comparable cost of each product to deliver the same amount of PAC, the major cost driver for each of these products is the cost of the PAC within the product.

Ultimately, the goal of the AC product application is to raise the percentage of black carbon in the upper 15 cm of sediment from 0.14 percent to approximately 3 percent throughout application area, resulting in a reduction of the bioavailability of PCBs. Annual monitoring will allow evaluation of progress toward this goal to inform the comparison of the two products and the application methods.

5.0 References

Apex Companies, LLC (Apex), 2016a. *Pilot Study Work Plan, Lower Columbia Slough – Pacific Meats Cleanup Site, Portland, Oregon ECSI No. 145.* January 15, 2016.

Apex, 2016b. *Baseline Sampling Report, Lower Columbia Slough – Pacific Meats Cleanup Site, Portland, Oregon ECSI No. 145.* December 2, 2016.

City of Portland Bureau of Environmental Services (BES), 2005. *Columbia Slough Watershed Characterization.* June 2005.

Note: Base map prepared from USGS 7.5-minute quadrangle of Portland, OR, dated 2014 as provided by USGS.gov.

0 2,000 4,000

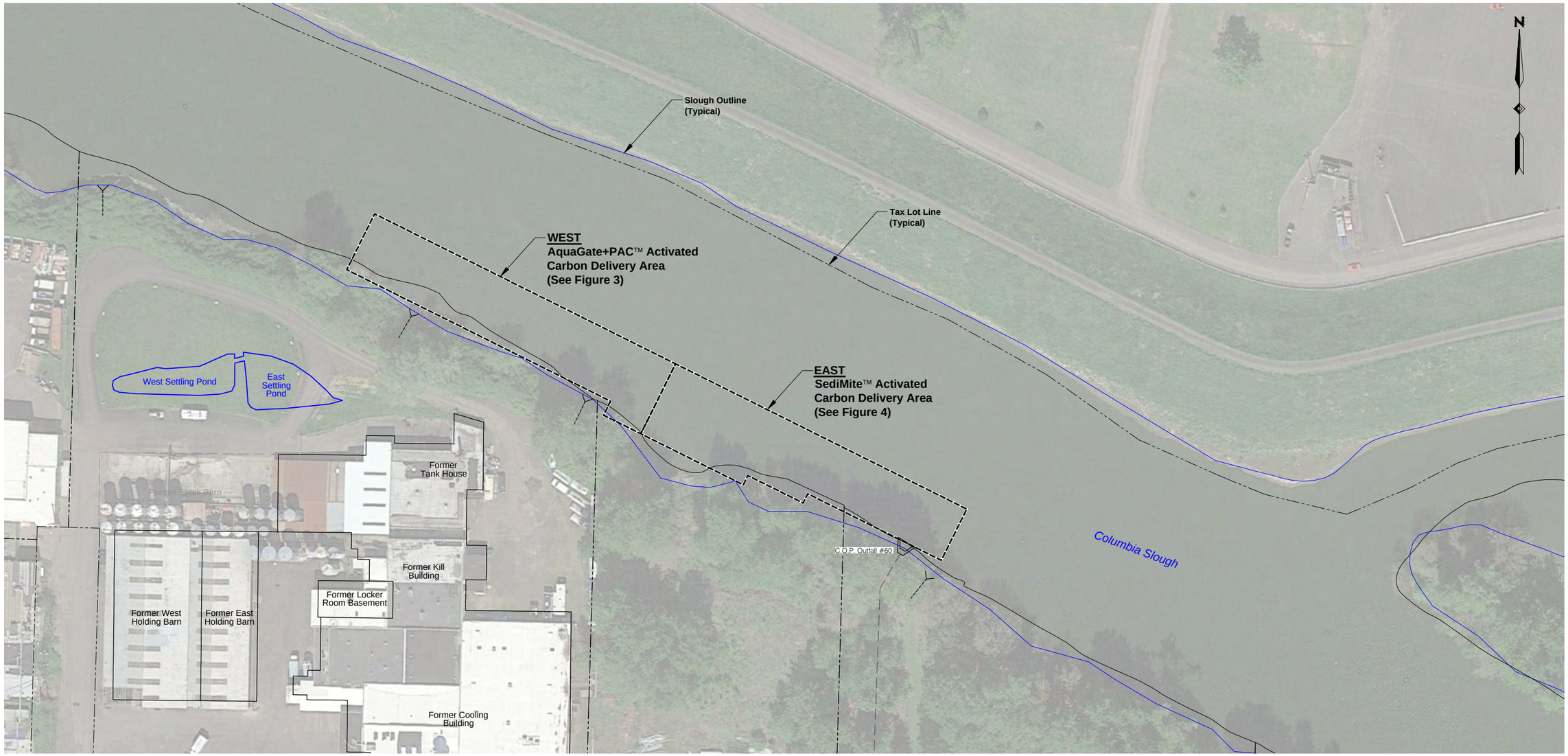
Approximate Scale in Feet

N

Site Location Map

Pilot Study Implementation Report
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1888-03	Figure
	January 2017		1



Legend:

C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location

------ Non-City Outfall Location

0 100 200

Scale in Feet

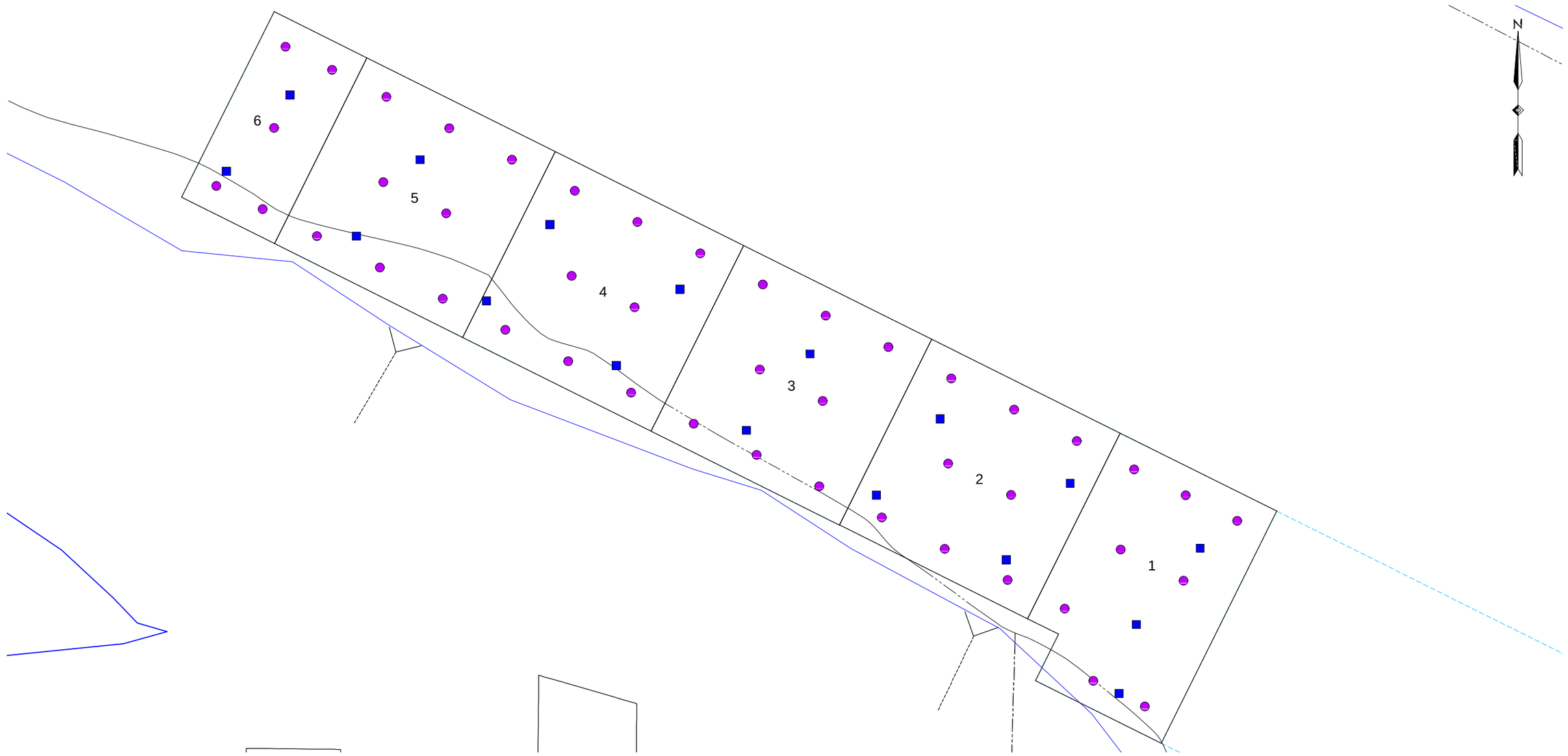
NOTES:

1) Base map prepared from Metro Data Sets (ORHP-NIF).
2) Stormwater facility locations from BES data (8/12/10).
3) Vertical Datum Orthometric NAVD88 (in international feet).
4) Google aerial from 4-17-2015.

Site Plan

Pilot Study Implementation Report
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1888-03 January 2017	Figure 2



Legend:

C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location

Non-City Outfall Location

Pre-Placed Pan

Sediment Core Sample

0 30 60

Scale in Feet

NOTES:

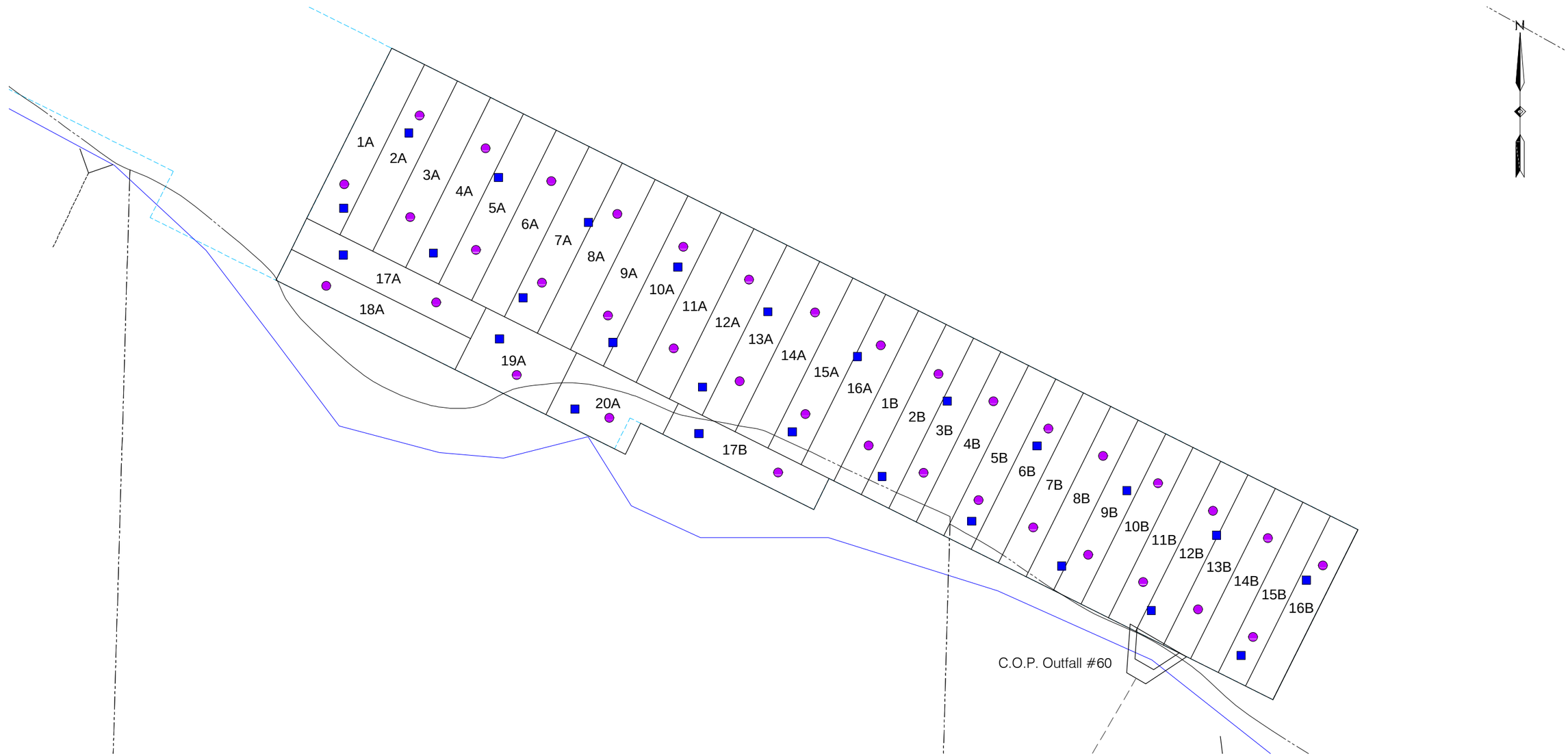
1) Base map prepared from Metro Data Sets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).
4) Locations of CS-GC-07 and CS-GC-08 are approximate.
5) Vertical Datum Orthometric NAVD88 (in international feet).

AquaGate+PAC™ Quality Control Sample Locations

Pilot Study Implementation Report
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1888-03	Figure
January 2017		3



Legend:

C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location

Non-City Outfall Location

Pre-Placed Pan

Sediment Core Sample

0 30 60

Scale in Feet

NOTES:

1) Base map prepared from Metro Data Sets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).
4) Locations of CS-GC-07 and CS-GC-08 are approximate.
5) Vertical Datum Orthometric NAVD88 (in international feet).

Sedimite™ Quality Control Sample Locations

Pilot Study Implementation Report
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1888-03	Figure
January 2017		4

Appendix A

Site Permits and Access Agreements

Oregon
Kate Brown, Governor

Department of Fish and Wildlife
West Region
17330 SE Evelyn Street
Clackamas, OR 97015
Phone: 971-673-6000
Fax: 971-673-6070

July 27, 2016

Oregon Department of Environmental Quality
Attn: Jennifer Sutter
700 NE Multnomah St.
Portland, OR 97232
Email: sutter.jennifer@deq.state.or.us
Tel: 503-229-6148

Re: Pacific Meats Pilot Study - ODFW Wildlife Capture, Holding, Transport and Relocation Permit (Permit #CFO-16-04)

Dear Ms. Sutter,

This letter serves as authorization for the Oregon Department of Environmental Quality and their representative(s) to capture, temporarily hold, transport, and relocate amphibians and reptiles during wildlife rescue/salvage operations associated with the **Pacific Meats Pilot Study**. The project is located in the Columbia Slough Watershed, Multnomah County at approximately River Mile 6.2 of the Lower Columbia Slough.

The project consists of construction of an earthen bench from which some project equipment will be operated, removal of minimal riparian vegetation, placement of gravel, installation of silt curtains, and placement of two different activated carbon (AC) materials in the Slough. The goal of the project is to evaluate two forms of AC sediment amendments, specifically considering the effectiveness of the form of AC in reducing the bioavailability of PCBs in interstitial sediment pore water; implementability in terms of placement options for the AC amendment, equipment and access requirements; and monitoring options for measuring success including in-situ and ex-situ pore water sampling methods. The study is intended to prevent exposure of benthic and pelagic communities to the contaminants known to be present. A variety of native fish and wildlife species, including listed salmonids, would benefit from this effort.

Authorization Purpose & Need: The purpose of this authorization is to facilitate avoidance and minimization of direct disturbance to and mortality of native amphibians and reptiles present at the project site at time of construction by allowing them to be captured and relocated. Amphibians and reptiles in general are highly vulnerable to in-water work and/or ground-disturbance activities as they are not able to easily move out of harm's way. Depending on the species, time of year, life stage, and /or environmental conditions, reptiles and amphibians (including eggs and juveniles) occur in a variety of aquatic and terrestrial habitats.

The Oregon Department of Fish and Wildlife (ODFW) understands that the project will be conducted in a manner as described in permit application materials dated July 15, 2016 and as discussed with ODFW staff.

The project is scheduled to begin **July 15, 2016** and be completed by **September 15, 2016**.

Species Authorized: With the exception of federally listed species, this authorization covers all species of reptiles and amphibians, including those designated by Oregon Administrative Rule 635-044 as "Nongame Wildlife Protected". Several species non-native reptiles and amphibians (OAR 635-056) are also authorized.

The following amphibian and reptile species are known or suspected to occur at and near the project site therefore could be encountered during project activities:

Species	Native or Non-Native	ODFW Classification
Western Painted Turtle	Native	Nongame Protected
Western Pond Turtle	Native	Nongame Protected
Red-eared Slider	Non-Native	Prohibited
Common Snapping Turtle	Non-Native	Prohibited
Other Amphibians and Reptiles	Native	Nongame Protected & Nonprotected
American Bullfrog	Non-Native	Controlled

Authorized Methods: Dip Net, Hand Capture, Temporary Holding

Permit Conditions:

1) Disinfect project equipment before and after use to prevent disease transmission. Implement the standard "*Hygiene Protocol for Control of Disease Transmission Between Amphibian Study Sites*" (USGS 2016) or equivalent protocol.
2) Conduct wildlife capture, temporary holding, transport and release consistent with ODFW's Technical Guidance document(s) unless otherwise instructed by ODFW (Susan Barnes, 971-673-6010 or Todd Alsbury, 971-673-6011).
3) Native wildlife captured are to be immediately relocated after data collection is complete. Captured native wildlife are to be released into suitable habitat on the **Lower Columbia Slough at approximately River Mile 5.9** as proposed.
4) If any Western Pond Turtle, turtle hatchling, or reptile egg is found or captured, contain and immediately contact ODFW (Susan Barnes) for instructions.
5) Non-native wildlife captured may not be released or relocated live. Non-native turtles (e.g., Red-eared Slider, Snapping Turtle) are to be placed in an escape-proof container and transferred to ODFW's Clackamas office within 24 hours of collection unless otherwise arranged. American Bullfrogs captured are to be humanely euthanized according to ODFW guidance (attached) or other acceptable method. Carcasses are to be buried at the project site or disposed of off-site.
6) If project conditions change or questions arise, contact ODFW (Susan Barnes or Todd Alsbury).

Sub-Permittees: Adam Reese (Apex Companies, LLC); cell: 503-502-2726

Wildlife CHTR Permit Expiration: This authorization is effective the date of signature and expires **December 31, 2016.**

Record Keeping & Reporting: All wildlife captures, including any mortalities, are to be recorded on the annual Wildlife CHTR report form. A completed report form for 2016 activities is to be submitted to ODFW within 30 days of the permit expiration date. Submit report to ODFW, Attn: Susan Barnes, 17330 SE Evelyn Street, Clackamas, OR 97015.

If you have questions regarding this authorization or the conditions as listed above, please contact me at susan.p.barnes@state.or.us or (971) 673-6010.

Sincerely,

Susan P. Barnes

Susan P. Barnes
Regional Conservation Biologist
West Region

Cc: ODFW – Don VandeBergh, Andrew Butler, Doug Kitchen, Todd Alsbury, Ben Walczak, Randi Lisle, Michele Weaver, Andrea Hanson, Christina Donehower, Rick Boatner, Colin Gillin DVM

Attachments:

Attachment 1. ODFW Wildlife CHTR Permit Technical Guidance (Amphibians & Reptiles)
Attachment 2. ODFW Technical Guidance for American Bullfrog Capture
Attachment 3. ODFW Wildlife CHTR Permit Annual Report Form

Oregon
Kate Brown, Governor

Department of Fish and Wildlife
Fish Division
4034 Fairview Industrial Drive SE
Salem, OR 97302
(503) 947-6201
FAX (503) 947-6202
www.dfw.state.or.us/

2016 - SCIENTIFIC TAKING PERMIT – FISH

Permit Holder: Jennifer Sutter Permit Number: 20655

Organization: Oregon Department of Environmental Quality
Project Title: Pacific Meats Pilot Study

Address: 700 NE Multnomah St , Suite 600, Portland, OR 97232 Dates: 08/05/16-12/31/16

Phone: (503)229-6148
Email: sutter.jennifer@deq.state.or.us

Federal Authorization: **This permit does not provide any federal authorization for ESA listed fish species.**

Principal Investigator: Chris Luk Co-Investigator(s): n/a

PI Signature:_____ CI Signature(s): _____

Location(s): Lower Willamette:
The project is located within the upper portion of the Lower Slough section of the Columbia Slough, City of Portland, Multnomah County, Oregon. The pilot study is
west of the City of Portland Outfall 60, adjacent to the former Pacific Meat facility

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CONDITIONS AND AUTHORIZATION OF THIS PERMIT:

1. The Permit Holder, Principal Investigator, Co-Investigator, and all people working under their supervision shall at all times observe and comply with all federal and state laws, including the Endangered Species Act of 1973, as amended, and lawful regulations issued thereunder, which relate to threatened or endangered plant or animal species while performing activities described in the permit application. ODFW's approval of this permit does not certify that Permittee's activities described in its application are lawful under the federal ESA. Permittee's compliance with permit conditions is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. General conditions of Oregon Revised Statutes and Oregon Administrative Rules apply to this permit that cannot be used in lieu of any permit required by federal law or regulation. Permission to sample in areas where federally protected fish may occur is contingent upon the permittee obtaining necessary authorization from the appropriate federal agency and acting in accordance with the conditions established by the federal government. If a condition on this permit conflicts with a condition on a federal permit or authorization, then the permittee must comply with the more restrictive condition.
2. This permit is not transferable and must be carried while collecting. The Principal Investigator and all Co-Investigators must sign their own copy of the permit.
3. Persons not named on the permit may assist in collecting only while accompanied by the Principal Investigator or Co-investigator(s) listed above.
4. Access to private property is contingent on landowner permission. This permit does not authorize trespassing.
5. This permit is not valid in any refuge, park, city, wildlife area, or area closed to collection without written approval of manager or administrator.
6. Sampling must be coordinated with local District Biologists of the Oregon Department of Fish and Wildlife and officials of the Oregon State Police and they must be notified prior to sampling.
7. An annual activity/collection report associated with this permit must be submitted to ODFW by December 31, 2016 via **https://apps.nmfs.noaa.gov/.** Renewal of this permit will not be issued until ODFW reviews and approves the annual activity/collection report. All fish, crayfish, and mussel take must be recorded in the

annual report. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, control, capture, or collect, or to attempt to engage in any such conduct.

8. In-water work must occur during the appropriate in-water work window (http://www.dfw.state.or.us/lands/inwater/oregon_guidelines_for_timing_of_%20InWater_work2008.pdf). Exceptions to in-water work periods must be approved by the local ODFW District Fish Biologist and submitted to the ODFW ESA staff in writing prior to commencing work outside the approved in-water work windows.
9. May rescue or salvage fish and invertebrates (crayfish and mussels) during in-water construction area isolation as described in this final OR STP and the attached APPS take table and permit. After examination and recovery, all fish should be released as soon as possible, unharmed, in nearby free-flowing water or as instructed by local ODFW biologists. Prior to release, fish should be held in fresh, cool, aerated water.
10. May only conduct activities via methods as described in the attached APPS permit. Actual distribution of take among sites is authorized as described in the APPS permit application. All numbers of fish authorized in this permit and the attached APPS permit take table are annual totals.
11. Indirect mortality may not exceed 10%. Mortality rates are calculated as a percentage of total catch, not to exceed the number as described in the take tables in the permit application. In the event that mortality for any species exceeds this rate, the permittee should contact ODFW ESA staff, (503-947-6254 or 541-440-3353 x263) prior to any further activity.
12. Follow FDA approved protocols and use only FDA approved substances for anesthetizing fish.
    a) **MS-222** may not be used where fish may be subject to sport harvest fisheries within 21 days;
    b) **Clove oil** may not be used at all;
    c) **AQUI-S®** may be used as an alternative to MS-222. To use AQUI-S® 20E as an immediate release sedative in freshwater fish for field-based activities, permit holder must sign up to participate in USFWS-AADAP INAD 11-741 and must comply with the requirements as set forth in the INAD Study Protocol for AQUI-S® 20E (for more information go to www.fws.gov/fisheries/aadap).
    d) **Carbon dioxide** can be used as a fish anesthetic as per FDA rules and requires no withdrawal time;
    e) **Electro-anesthesia** can be used as a fish anesthetic as an alternative to chemicals, and requires no withdrawal time.
13. If sampling in multiple sub-basins (4th field HUCs), we recommend that after each sampling event concludes all gear is cleaned and/or allowed to completely dry to prevent the spread of invasive species.
14. If you approach your permitted take or percent indirect mortality at a location and still have sampling to conduct, or would like to revise your sampling methods or procedures; please contact the ODFW ESA staff as soon as possible to request a permit modification so that you can continue your project.

ISSUED BY: _____ DATE: 8/5/16

Holly Huchko
Endangered Species Act Specialist
541-440-3353 x263

Distribution: Luk, Fines; Fish Research, Alsbury, Walczak, Thompson, Murtagh -ODFW

OREGON FISH BIOLOGISTS CONTACT DETAILS (as of 5.20.16)

ODFW District Biologist	Phone	E-mail	Watershed District	Office
Todd Alsbury	(971) 673-6011	Todd.Alsbury@state.or.us	North Willamette-Cascade Unit	Clackamas
Ben Walczak*	(971) 673-6013	Ben.Walczak@state.or.us	North Willamette-Cascade Unit	Clackamas
Tom Murtagh	(971) 673-6044	Tom.Murtagh@state.or.us	North Willamette-Coast Range	Clackamas
Josie Thompson*	(971)673-2040	Josie.E.Thompson@state.or.us	North Willamette-Coast Range	Clackamas
Tim Bailey	(541) 962-1829	Timothy.D.Bailey@state.or.us	Grande Ronde	LaGrande
Vacant*	(541)-962-1830 ext. 230	Vacant	Grande Ronde	La Grande
Tom Rien	(971) 673-6081	Tom.A.Rien@state.or.us	Mainstem Columbia	Clackamas
John Spangler	(541) 265-8306 ext. 224	John.J.Spangler@state.or.us	Mid Coast	Newport
Vacant*	(541)-265-8306 ext. 236	Vacant	Mid Coast	Newport
Todd Confer	(541) 247-7605	Todd.A.Confer@state.or.us	Rogue	Gold Beach
Steve Mazur*	(541)-247-7605	Steve.J.Mazur@state.or.us	Rogue	Gold Beach
Bill Duke	(541) 276-2344	William.B.Duke@state.or.us	Umatilla	Pendleton
Rod French	(541) 296-4628	Rod.A.French@state.or.us	Mid Columbia	The Dalles
Jason Seals*	(541)-296-4628	Jason.T.Seals@state.or.us	Mid-Columbia	The Dalles
Mike Gray	(541) 888-5515	Michael.E.Gray@state.or.us	Coos-Coquille	Charleston
Gary Vonderohe*	(541)-888-5515	Gary.R.Vonderohe@state.or.us	Coos-Coquille	Charleston
Brett Hodgson	(541) 388-6363 ext. 227	Brett.L.Hodgson@state.or.us	Deschutes	Bend
Erik Moberly*	(541)-447-5111 ext 24	Erik.R.Moberly@state.or.us	Deschutes	Bend
Tim Porter*	(541) 447-5111	Timothy.K.Porter@state.or.us	Deschutes	Prineville
Greg Huchko	(541) 440-3353 ext. 249	Greg.F.Huchko@state.or.us	Umpqua	Roseburg
Jason Brandt*	(541)-440-3353	Jason.R.Brandt@state.or.us	Umpqua	Roseburg
Robert Bradley	(503) 842-2741	Robert.Bradley@state.or.us	North Coast	Tillamook
Vacant*	(503) 842-2741	Vacant	North Coast	Tillamook
Elise Kelley	(541) 757-4186 ext. 249	Elise.X.Kelley@state.or.us	South Willamette	Corvallis

Alex Farrand*	(541) 757-4186	Alex.Farrand@state.or.us	South Willamette	Corvallis
Trevor Watson	(541) 575-1167	Trevor.M.Watson@state.or.us	John Day	John Day
Brent Smith*	(541) 575-1167	Brentton.A.Smith@state.or.us	John Day	John Day
Dave Banks	(541) 573-6582	David.T.Banks@state.or.us	Malheur	Hines
Ben Ramirez*	(541) 889-6975 ext. 25	Benji.S.Ramirez@state.or.us	Malheur	Ontario
Jeff Yanke	(541) 426-3279	Jeff.Yanke@state.or.us	Grande Ronde	Enterprise
Kyle Bratcher*	(541) 426-3279	Kyle.W.Bratcher@state.or.us	Grande Ronde	Enterprise
Vacant	(541) 883-5732	Vacant	Klamath	Klamath Falls
Bill Tinniswood*	(541) 883-5732	William.R.Tinniswood@state.or.us	Klamath	Klamath Falls
Justin Miles*	(541) 947-2950	Justin.P.Miles@dfw.state.or.us	Klamath	Lakeview
Dan Van Dyke	(541) 826-8774 ext. 234	Daniel.J.VanDyke@state.or.us	Rogue	Central Point
Pete Samarin*	(541) 826-8774	Peter.A.Samarin@state.or.us	Rogue	Central Point
Jeff Ziller	(541) 726-3515 ext. 26	Jeffrey.S.Ziller@state.or.us	South Willamette	Springfield
Kelly Reis*	(541) 726-3515	Kelly.E.Reis@state.or.us	South Willamette	Springfield
Scott Groth	(541) 888-5515	Scott.D.Groth@state.or.us	Marine Invertebrates	Charleston
Ali Whitman	(541) 867-4741 ext. 284	Alison.D.Whitman@state.or.us	Marine Zone	Newport
Patrick Mirick	(541) 867-0300 ext. 223	Patrick.Mirick@state.or.us	Marine Zone	Newport

* = Assistant Fish Biologist

NOAA FISHERIES
NATIONAL MARINE FISHERIES SERVICE

Authorizations and Permits for Protected Species (APPS)

File #: 20655
Title: Pacific Meats Pilot Study

Applicant Information

Name:	Jennifer Sutter
Title:	Project Manager
Affiliation:	Oregon Department of Environmental Quality
Address:	700 NE Multnomah St , Suite 600
City,State,Zip:	Portland, OR 97232
Phone Number:	(503)229-6148
Email:	sutter.jennifer@deq.state.or.us

Project Information

File Number:	20655
Application Status:	Application Complete - Issued
Project Title:	Pacific Meats Pilot Study
Project Status:	New
Previous Federal or State Permit:	
Permit Requested:	• Oregon Scientific Taking Permit for Fish and Marine and Freshwater Invertebrates
Where will activities occur?	Oregon (including Columbia River and offshore waters)
State department of fish and game/wildlife:	N/A
Research Timeframe:	Start: 08/05/2016 End: 12/30/2016

Sampling Season/Project Duration:	Capture and release of the mussels will occur during the 2016 in-Water Work Period with possible variance past the September 15, 2016 window, if mussels are encountered.
Project Type:	Rescue/Salvage

Project Description

Purpose: The purpose of the Oregon Department of Environmental Quality (ODEQ) project in the Lower Columbia Slough is to complete a pilot study to evaluate the use of activated carbon (AC) to reduce the bioavailability of polychlorinated biphenyls (PCBs) in Columbia Slough sediments.

In 2009 and 2011, ODEQ completed sediment investigations in the Lower Columbia Slough and identified areas where active sediment cleanup is warranted to address more elevated levels of contamination. PCBs were found to be the primary contaminant of concern in this reach of the Lower Columbia Slough due to the potential risk to humans and wildlife that may consume fish. An area at approximately River Mile 6.2 of the Lower Columbia Slough, adjacent to the former Pacific Meats Cleanup Site/City of Portland Outfall 60, was identified as a Priority Characterization Area.

The pilot study will evaluate two forms of AC sediment amendments, specifically considering the effectiveness of each form of AC in reducing the bioavailability of PCBs in interstitial sediment pore water; implementability in terms of placement options for the AC amendments, equipment and access requirements; and monitoring options for measuring success including in-situ and ex-situ pore water sampling methods.

Description: Pacific Meats Pilot Study Project Implementation Description - For the purpose of this pilot study, the project area will be divided into two equal-area (approximately 20,000 square feet) plots (west and east), each of which will be used to evaluate one of the two AC materials. The pilot study area will be accessed via the Slough and AC materials will be transported to the site in supersacks or other larger containers. The AC materials will be placed via a method that will most uniformly deliver AC at the desired thickness.

Each of the two activated carbon delivery areas will be divided into smaller grids into which the volume of material to be delivered to each area can be predetermined (for the purpose of ensuring that errors in application rates do not result in an excess or lack of material by the completion of each application area). Based on the size of the study area and the two test plots, it is anticipated that 22 tons of SediMite™ will be delivered across the western cell of the study area to a target depth of approximately 0.59 inch. A total of 116 tons of AquaGate+PAC™ (10%) will be delivered across the east cell of the study area to a target depth of approximately 1.74 inches.

The thickness of the activated carbon products will be field-verified regularly during delivery, including the collection of several cores across the application grid and observing the applied material thickness. The boundaries of each application area will be delineated using a hand-held GPS unit.

Mussel Capture & Release Implementation Description - Temporary ecological effects will be minimized by adding activated carbon to the sediment surface to raise the black carbon concentration in sediment to the baseline TOC concentration; installation of silt curtains extending from the shoreline to isolate the AC application areas from water column receptors in the main channel of the Lower Slough; and coordination to conduct a native mussel survey of the pilot study project area. If native mussels are identified, DEQ and Apex will work to remove native mussels from the pilot study project area prior to AC application. These mussels will be captured and permanently relocated using the methods described below.

A benthic sampling of the sediment will be completed prior to commencement of the pilot study. The benthic survey will use a tapered kick net or similar tool used for benthic

sampling to identify and capture mussels observed in the AC amendment area. The survey will be completed by transects from bank to bank/perpendicular to flow of the survey area. Transects will be completed to an approximate depth of 10 centimeters.

If mussels are identified during the benthic survey, the mussels will be removed by nets to scoop the substrate. Mussels will be placed in mesh bags and kept in water until the survey is complete. Once the survey is completed, the bag(s) with mussels will be placed in a cooler and kept wept during transport to the relocation site. Time of transport is estimated between 15 and 20 minutes to the relocation site at approximate river mile Approximately river mile 5.9. The relocation site is the South bank of Lower Columbia Slough adjacent to the Malarkey property located at 3131 N Columbia Boulevard, Portland, Oregon. Mussels will be placed in the Slough at the relocation site anterior side down. The relocation site is less than a 0.5 mile upstream of the pilot study area.

No tagging, intrusive procedures, or scientific research will be completed on the mussels captured and relocated.

Supplemental Information

Methods:	A benthic sampling of the sediment will be completed prior to commencement of the pilot study. The benthic survey will use a tapered kick net or similar tool used for benthic sampling to identify and capture mussels observed in the AC amendment area. The survey will be completed by transects from bank to bank/perpendicular to flow of the survey area. Transects will be completed to an approximate depth of 10 centimeters. If mussels are identified during the benthic survey, the mussels will be removed by nets to scoop the substrate. Mussels will be placed in mesh bags and kept in water until the survey is complete. Once the survey is completed, the bag(s) with mussels will be placed in a cooler and kept wept during transport to the relocation site. Time of transport is estimated between 15 and 20 minutes to the relocation site at approximate river mile Approximately river mile 5.9. The relocation site is the South bank of Lower Columbia Slough adjacent to the Malarkey property located at 3131 N Columbia Boulevard, Portland, Oregon. Mussels will be placed in the Slough at the relocation site anterior side down. The relocation site is less than a 0.5 mile upstream of the pilot study area.
Lethal Take:	Not Applicable
Anticipated Effects on Animals:	None. No tagging, intrusive procedures, or scientific research will be completed on the mussels captured and relocated.
Measures to Minimize Effects:	Mussels captured, if any, will be kept in a mesh bag in the project area until the end of the day which is anticipated to correspond to completion of the benthic survey. After completion of the benthic survey, mussels in the bag(s) will be placed in coolers and transported to the relocation site approximately 15 to 20 minutes away, and approximately less than 0.5 mile upstream of the pilot study area.
Disposition of Tissues:	Not Applicable
Public Availability of Product/Publications:	Not applicable.

Biologist Comments

Date	From	Comments
08/04/2016	Todd Alsbury	I do not have any specific comments or concerns...

Federal Information

Federal Agency	Type	Authorization Number and Title	Date Signed	Expiration Date	Listing Units/Stocks Covered	Comments
U.S. Army Corps of Engineers (Corps)	Other	NWP-2016-126	05/10/2016	03/18/2017	N/A	Nationwide Permit 38 for the implementation of the pilot study.

Location/Take Information

Freshwater Location

Research Area: Pacific Ocean State: OR Sub Basin (4th Field HUC): Lower Willamette Stream Name: Lower Columbia Slough Begin Mile: 6.2 End Mile: 6.2 Township: 1 N Range: 1 E Section: 9 Latitude: 45.591494 Longitude: -122.69372
Sale in Oregon of species taken: None
Location Description: The project is located within the upper portion of the Lower Slough section of the Columbia Slough, City of Portland, Multnomah County, Oregon. The pilot study is west of the City of Portland Outfall 60, adjacent to the former Pacific Meat facility (loca

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date

1		Mussel, Oregon floater	NA	N/A	Adult	Unknown	100	Capture/Handle/Release Fish	Net, Kick		N/A	8/5/2016	12/30/2016

Project Contacts

Responsible Party: Jennifer Sutter
Primary Contact: Ashleigh K Fines
Principal Investigator: Chris Luk

Attachments

Application Archive - P20655T14Issued.pdf (Added Aug 5, 2016)
Project Description - P20655T11888-0303PilotStudyPlan.pdf (Added Aug 3, 2016)
Project Description - P20655T11888-0306RelocationSite.pdf (Added Aug 3, 2016)

Status

Application Status:	Application Complete
Date Submitted:	August 3, 2016
Date Completed:	August 5, 2016
Last Date Archived:	August 5, 2016

• Oregon Scientific Taking Permit for Fish and Marine and Freshwater Invertebrates

Current Status: Issued Status Date: August 5, 2016
Date State Approved: August 5, 2016
Expire Date: December 31, 2016

Modification Requests

This section is currently empty.

Reports

Report Required

Nbr	Report Type	Report Period		Date Due	Status	Date Received
		Start Date	End Date			
1	Annual-Year End	01/01/2016	12/31/2016	12/31/2016	N/A	

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
P.O. BOX 2946
PORTLAND, OREGON 97208-2946

May 10, 2016

Regulatory Branch
Corps No.: NWP-2016-72

Ms. Jennifer Sutter
Oregon Department of Environmental Quality
700 NE Multnomah St.
Suite 600
Portland, Oregon 97232

Dear Ms. Sutter:

The U.S. Army Corps of Engineers (Corps) received your request for Department of the Army authorization to conduct remediation and sediment sampling activities. The project is located at 2701 N. Newark Street, in the Columbia Slough at River Mile 6.2, in Portland, Multnomah County, Oregon. The site is in Section 9, Township 1 North, Range 1 East. (Lat 45.591494°/Long -122.693720°)

The project will place a total of 346 cubic yards of fill over 60,000 square feet. The study area will be divided into three equal-area (approximately 20,000 feet) plots (West, Central, and East). Each of the plots will be used to evaluate one of the three activated carbon (AC) materials. The Western Cell will be filled with 33 tons of SedimiteTM, to reach a material depth of approximately 0.9 inch. The Central Cell will be filled with 156 tons of AquaGate+PACTM (10%), to reach a material depth of approximately 2.3 inches. The Eastern Cell will be filled with 16 tons of GAC blended with 145 tons of sand, to reach a material depth of approximately 2.2 inches. The AC materials will be placed via a method that will most uniformly deliver the AC at the desired thickness, such as spreading telebelt or manually operated pneumatic spreader. Material will be manually redistributed if uneven thicknesses of material are located within the test plot.

Annual sampling will consist of 150 surface samples across the project area, sampling to a depth of less than 1 foot. The volume of sediment removed for each of these samples consists of approximately 4 ounces (total sediment removed will be approximately 1 cubic foot). Approximately 20 tests of in-situ pore water sampling will also be conducted over 20 locations, no sediment would be removed as a part of these tests.

The work will be conducted from June 2016 to December 2016. The project is shown on the enclosed drawings (Enclosure 1).

DEPT OF ENVIRONMENTAL QUALITY
RECEIVED
MAY 16 2016
NORTHWEST REGION

This letter verifies your project is authorized under the terms and limitations of Nationwide Permit (NWP) No. NWP No.: 38 (Cleanup of Hazardous and Toxic Waste) AND NWP No. 6 (Survey Activities). Your activities must be conducted in accordance with the conditions found in the Portland District NWP Regional Conditions (Enclosure 2) and the NWP General Conditions (Enclosure 3). You must also comply with the Oregon Department of Environmental Quality (DEQ) Water Quality Certification Conditions (Enclosure 4), and the project specific conditions lettered (a) through (e) below. **Failure to comply with any of the listed conditions could result in the Corps initiating an enforcement action.**

a. Permittee shall notify the Regulatory Branch with the date activities in waters of the United States are scheduled to begin. Notification shall be sent by e-mail to cenwp.notify@usace.army.mil or mailed to the following address:

U.S. Army Corps of Engineers
CENWP-OD-GC
Permit Compliance, Multnomah County
P. O. Box 2946
Portland, Oregon 97208-2946

The subject line of the message shall contain the name of the county in which the project is located followed by the Corps of Engineers permit number.

b. Permittee shall ensure a Professional Archeologist has reviewed all onsite areas of material placement, prior to placement, to ensure an archeological sites or cultural resource is not inadvertently affected. Areas in which material should not be placed shall be marked and avoided. An onsite monitor is not necessary for the placement action.

c. In the event cultural resources, historic properties, or human remains are discovered during the any phase of the authorized work, the Permittee shall fully implement the recommendations outlined in the Inadvertent Discovery Plan (Enclosure 5).

d. Permittee shall install a silt curtain prior to the initiation of work. The silt curtain shall be installed starting from shore and working waterward and installed in a manner that will not cause fish entrapment.

e. Permittee shall notify the Corps if the project changes in scope or is otherwise modified.

We have prepared a Preliminary Jurisdictional Determination (JD), which is a written indication that wetlands and waterways within your project area may be waters of the United States (Enclosure 6). Such waters have been treated as jurisdictional waters of the United States for purposes of computation of impacts and compensatory mitigation requirements. If you concur with the findings of the Preliminary JD, please sign it and return it to the letterhead address within two weeks. If you believe the Preliminary JD is inaccurate, an Approved JD may be requested, which is an official determination regarding the presence or absence of waters of the United States. The enclosed *Notification of Administrative Appeal Options and Process and Request for Appeal* describes options regarding Preliminary and Approved JDs (Enclosure 7). If you will like an Approved JD, one must be requested prior to starting work within waters of the United States. Once work within waters of the United States has been started, the opportunity to request an Approved JD will no longer be available.

This authorization does not obviate the need to obtain other permits where required. Permits, such as those required from the Oregon Department of State Lands (ODSL) under Oregon's Removal /Fill Law, must also be obtained before work begins.

The nationwide permits expire on March 18, 2017. This verification is valid until March 18, 2017 unless the NWP is modified or revoked prior to that date. If you commence or are under contract to commence this activity before the date the NWP expires, is modified, or revoked, you will have 12 months from the date of the expiration, modification, or revocation to complete the activity under the present terms and conditions of the current NWP.

We would like to hear about your experience working with the Portland District, Regulatory Branch. Please complete a customer service survey form at the following address: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

If you have any questions regarding this NWP verification, please contact Ms. Melody White at the letterhead address, by telephone at (503) 808-4385, or e-mail: Melody.J.White@usace.army.mil.

FOR THE COMMANDER, JOSE L. AGUILAR, COLONEL, CORPS OF ENGINEERS, DISTRICT COMMANDER:

Melody White

Shawn H. Zinszer
Chief, Regulatory Branch

Enclosures

Copy Furnished:

Oregon Department of State Lands (Butterfield)
Oregon Department of Environmental Quality (Nayar)
Oregon Department of Land Conservation and Development (Snow and Wade)

Corps ID No: NWP-2016-72

REQUEST FOR PERMIT TRANSFER PER GENERAL CONDITION 29

When the structures or work verified by this nationwide are still in existence at the time the property is transferred, and/or a new party obtains this permit verification, the terms and conditions of this permit will continue to be binding on the new permittee. The new permittee should sign and date below to accept the liabilities associated with complying with the terms and conditions of this permit verification, and to validate its transfer.

PERMIT TRANSFEREE:

_____ _____
Signature DATE

_____
Name (Please print)

_____
Street Address

_____
City, State, and Zip Code

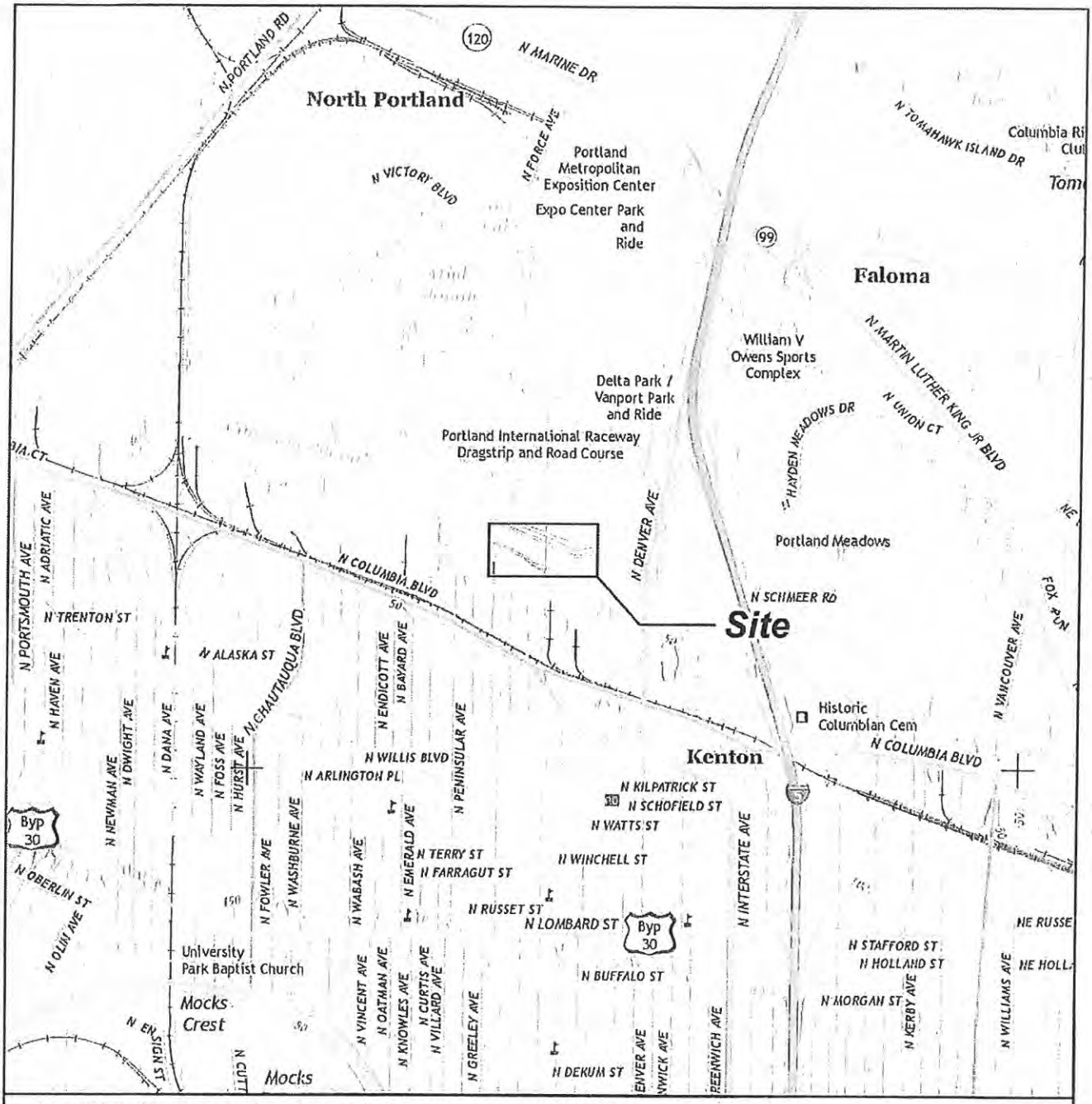
NEW OWNER (if applicable):

_____ _____
Signature DATE

_____
Name (Please print)

_____
Street Address

_____
City, State, and Zip Code



Note: Base map prepared from USGS 7.5-minute quadrangle of Portland, OR, dated 2014 as provided by USGS.gov.

0 2,000 4,000

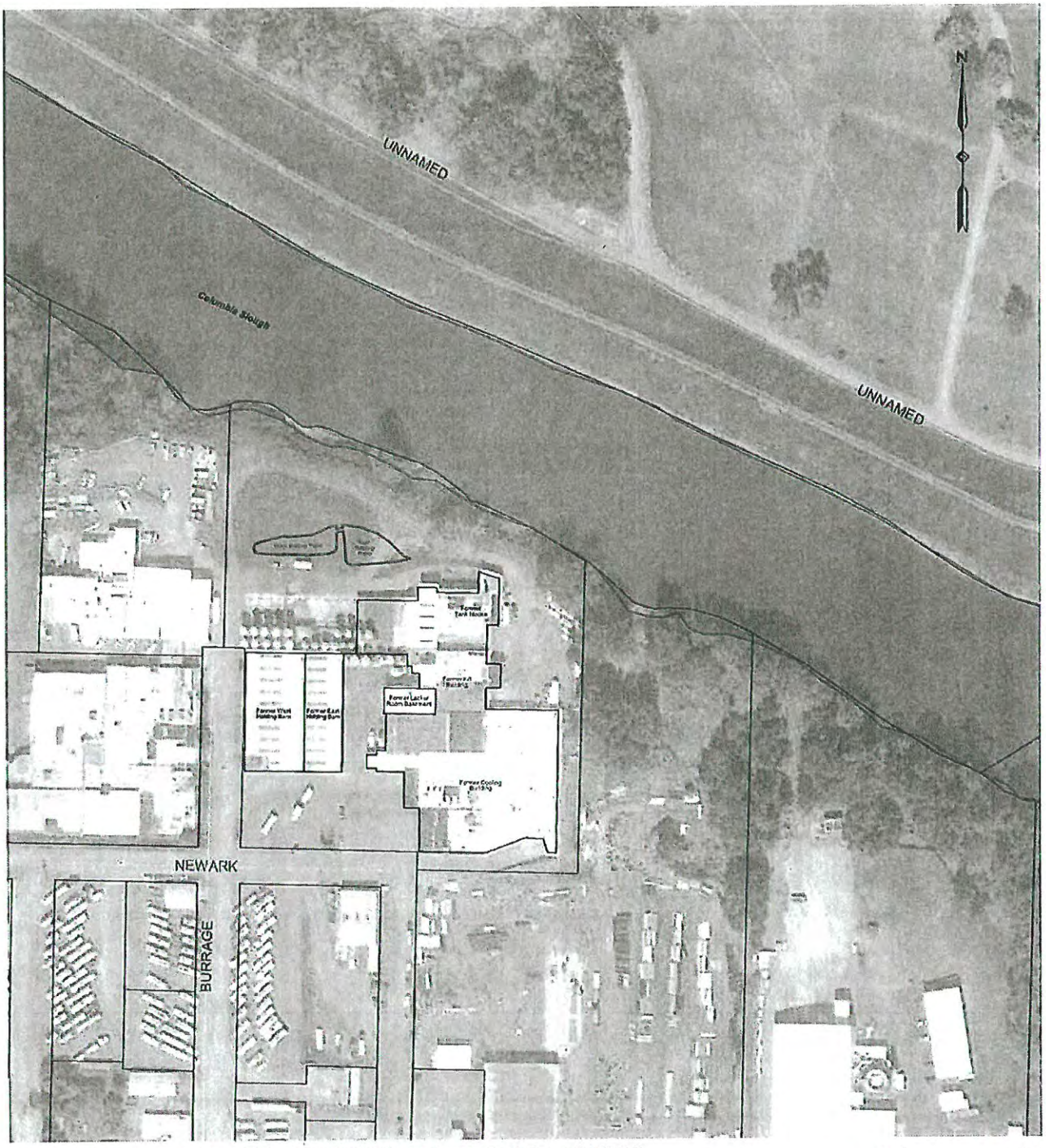
Approximate Scale in Feet

N

Site Location Map

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1888-03 March 2016	Figure 1



Note: Base map prepared from Metro datasets (2016) and Google Earth Pro aerial (2014).

0 200 400

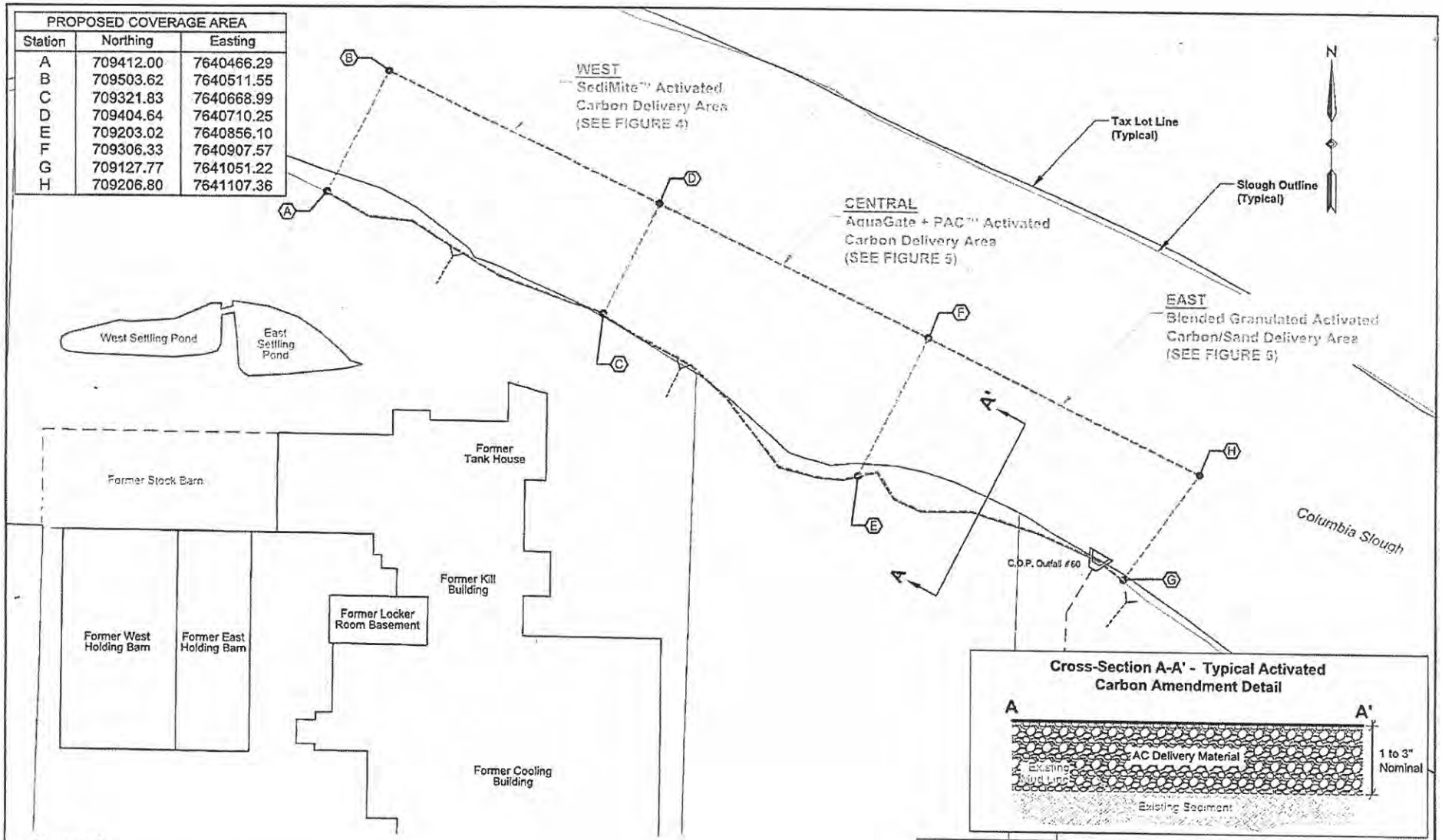
Scale in Feet

Site Vicinity Plan

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1888-03	Figure 2
	March 2016		

PROPOSED COVERAGE AREA		
Station	Northing	Easting
A	709412.00	7640466.29
B	709503.62	7640511.55
C	709321.83	7640668.99
D	709404.64	7640710.25
E	709203.02	7640856.10
F	709306.33	7640907.57
G	709127.77	7641051.22
H	709206.80	7641107.36



Legend:

- C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location
- Non-City Outfall Location
- Proposed AC Coverage Area
- A A' Cross-Section Location (See Inset)

0 100 200
Scale in Feet

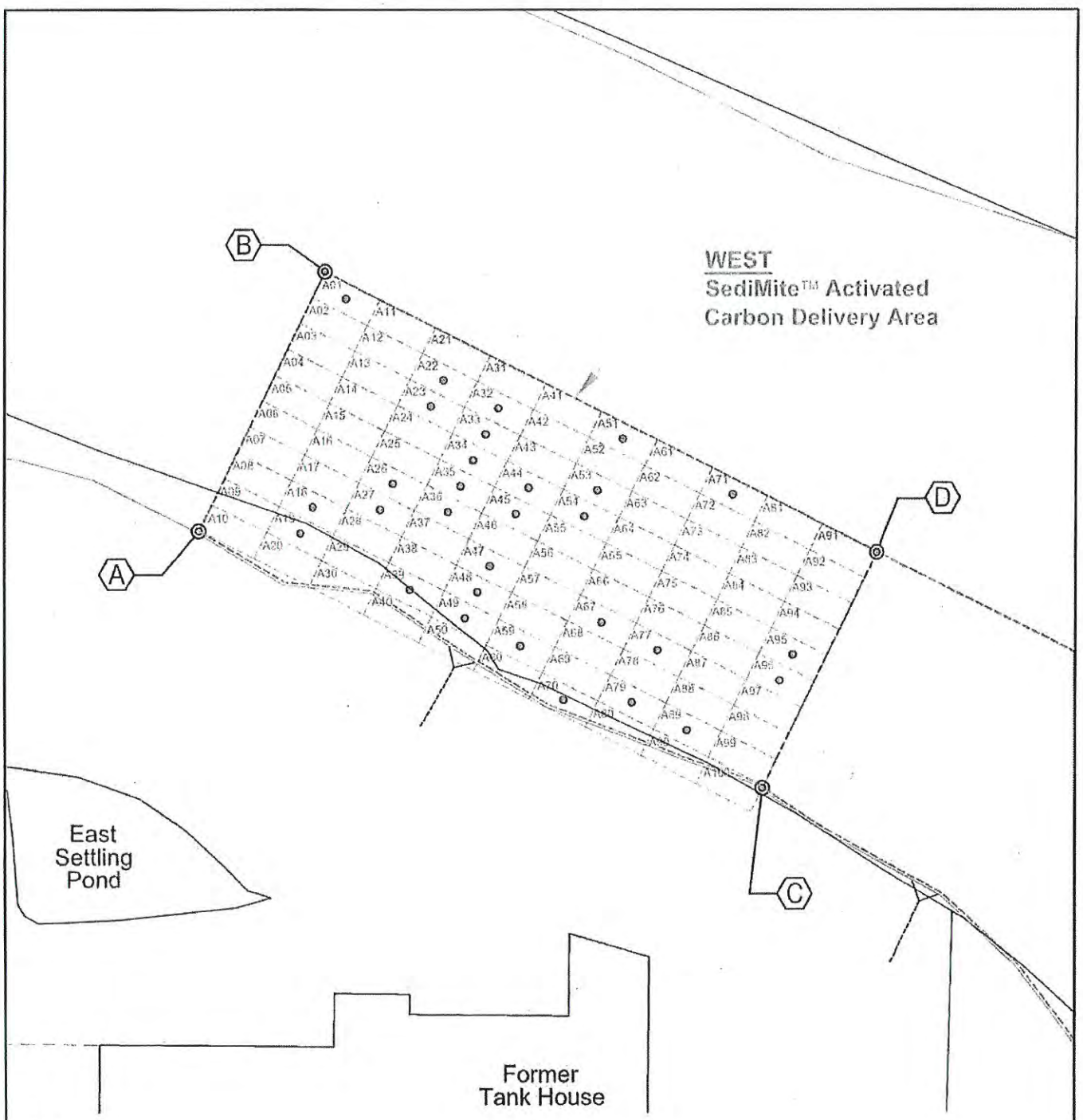
NOTES:
1) Base map prepared from Metro datasets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).

Pilot Study Plan

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX — Apex Companies, LLC, 3015 SW First Avenue, Portland, Oregon 97201

Project Number	1888-03	Figure
March 2016		3



Legend:

C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location

Non-City Outfall Location

Proposed AC Coverage Area

Incremental Sample Grid and
Proposed Incremental Sample Location

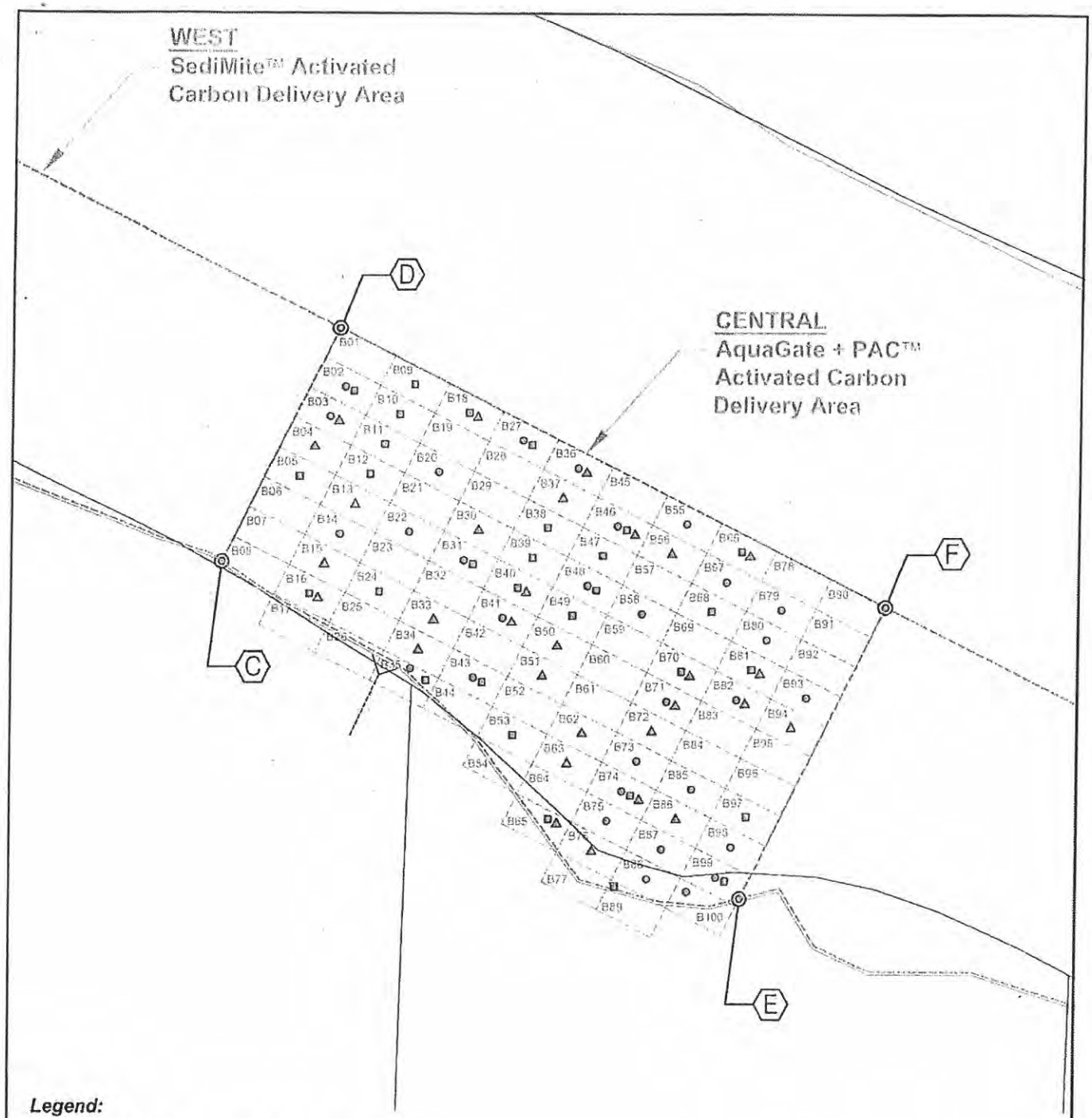
0 50 100
Scale in Feet

NOTES:
1) Base map prepared from Metro datasets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).

West Plot Bulk Sample Locations

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX Apex Companies, LLC, 3015 SW First Avenue, Portland, Oregon 97201	Project Number	1888-03	Figure
	March 2016		4



Legend:

- City of Portland (C.O.P.) Outfall Location
- Non-City Outfall Location
- Proposed AC Coverage Area
- Incremental Sample Grid and Proposed Incremental Sample Location
- Proposed Replicate 1 Sample Location
- Proposed Replicate 2 Sample Location

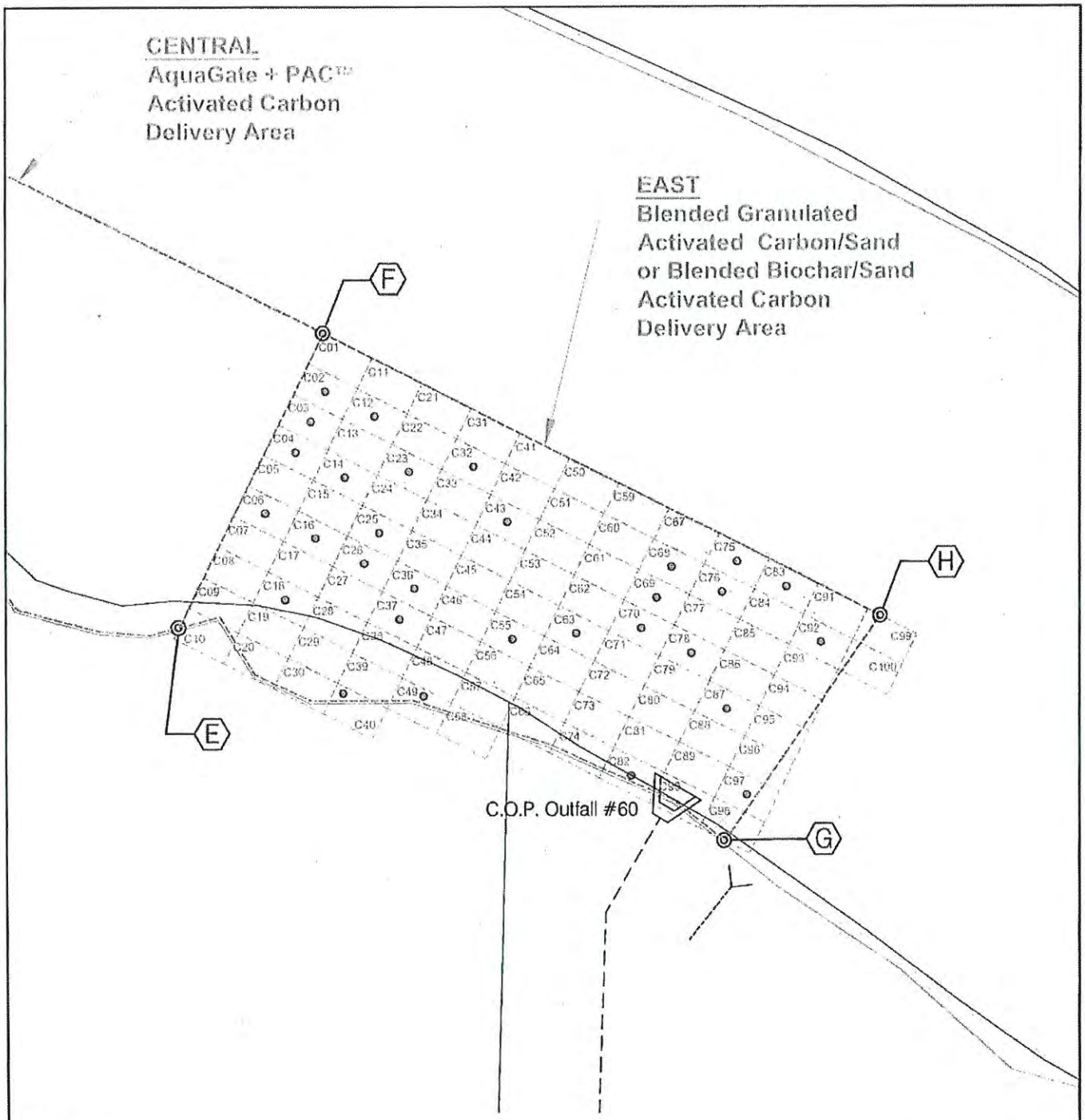
0 50 100
Scale in Feet

NOTES:
1) Base map prepared from Metro datasets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).

Central Plot Bulk Sample Locations

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1888-03 March 2016	Figure 5



Legend:

C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location

Non-City Outfall Location

Proposed AC Coverage Area

Incremental Sample Grid and Proposed Incremental Sample Location

0 50 100
Scale in Feet

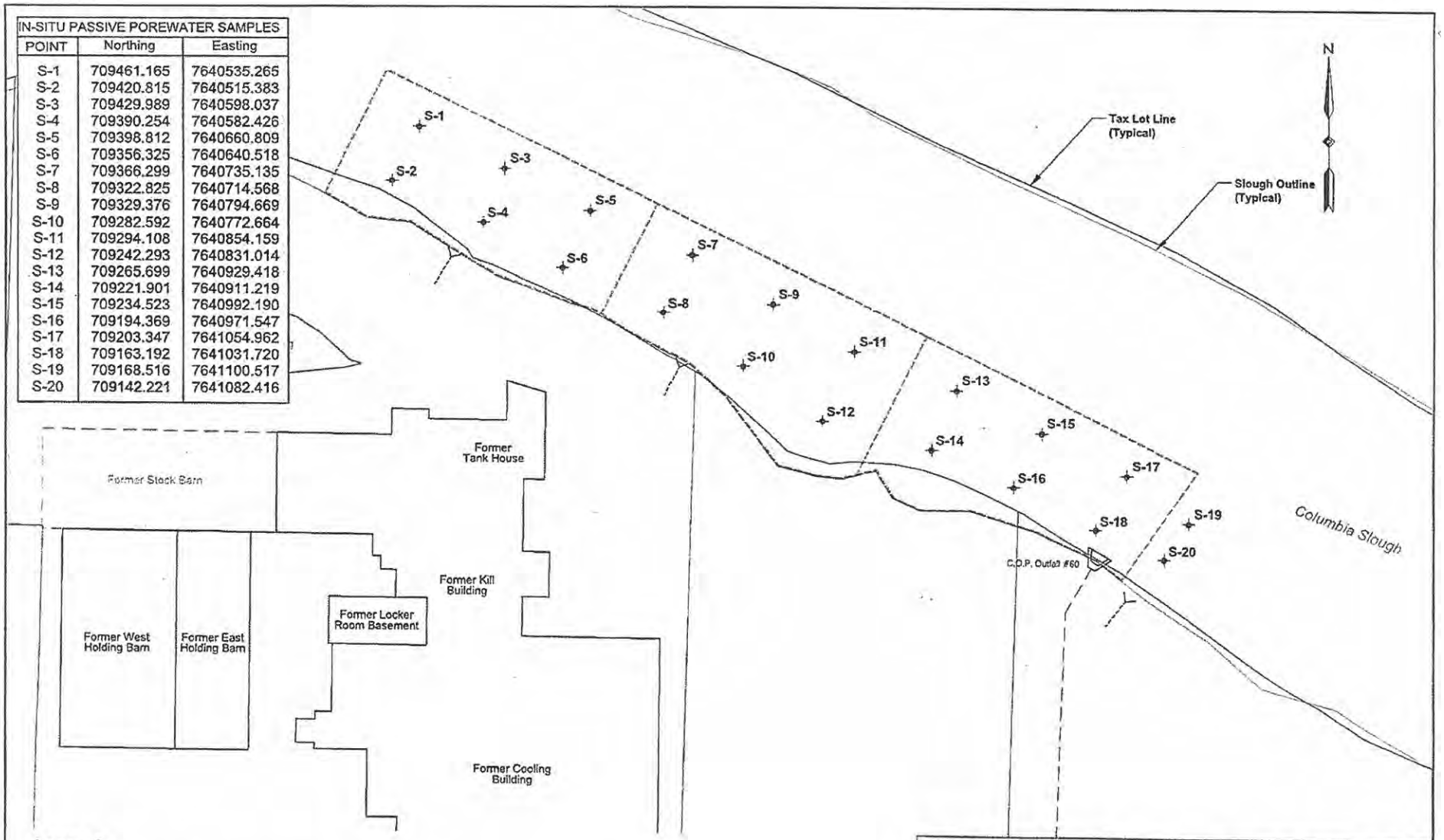
NOTES:
1) Base map prepared from Metro datasets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).

East Plot Bulk Sample Locations

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1888-03 March 2016	Figure 6

IN-SITU PASSIVE POREWATER SAMPLES		
POINT	Northing	Easting
S-1	709461.165	7640535.265
S-2	709420.815	7640515.383
S-3	709429.989	7640598.037
S-4	709390.254	7640582.426
S-5	709398.812	7640660.809
S-6	709356.325	7640640.518
S-7	709366.299	7640735.135
S-8	709322.825	7640714.568
S-9	709329.376	7640794.669
S-10	709282.592	7640772.664
S-11	709294.108	7640854.159
S-12	709242.293	7640831.014
S-13	709265.699	7640929.418
S-14	709221.901	7640911.219
S-15	709234.523	7640992.190
S-16	709194.369	7640971.547
S-17	709203.347	7641054.962
S-18	709163.192	7641031.720
S-19	709168.516	7641100.517
S-20	709142.221	7641082.416



Legend:

C.O.P. Outfall #60 — City of Portland (C.O.P.) Outfall Location

Non-City Outfall Location

Proposed AC Coverage Area

S-1 (1, 2, 3) — Proposed 3-Point In-Situ Passive Porewater Sediment Sample Location

0 100 200
Scale in Feet

NOTES:
1) Base map prepared from Metro datasets (ORHP-NIF).
2) Samples from DEQ geodatabase files.
3) Stormwater facility locations from BES data (8/12/10).

In-Situ Passive Porewater Sample Locations

Pacific Meats Pilot Study
Lower Columbia Slough
Oregon Department of Environmental Quality
Portland, Oregon

APEX — Apex Companies, LLC, 3015 SW First Avenue, Portland, Oregon 97201

Project Number	1888-03	Figure
March 2016		7

Attachment A

Activated Carbon Specifications

SediMite™

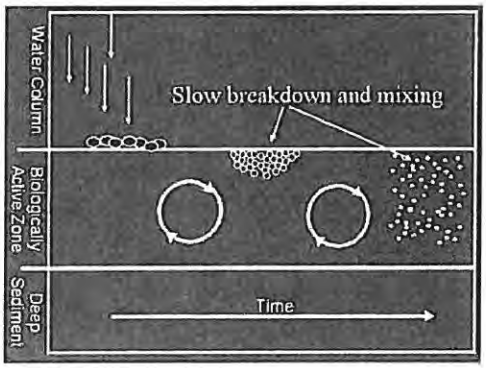
A Low-Impact In-Situ Treatment Technology for Contaminated Sediments

PRODUCT DESCRIPTION

SediMite™ is a low-impact technology for delivering treatment materials to sediment for in-situ remediation.

It is an agglomerate comprised of a treatment agent (typically activated carbon), a weighting agent (to enable it to sink and resist resuspension), and an inert binder. Activated carbon delivered through SediMite™ can be used to treat sediments contaminated with PCBs, mercury, methylmercury, dioxins, furans, PAHs, DDT and other hydrophobic chemicals.

SediMite™ readily sinks in water delivering activated carbon to the sediment surface. The SediMite™ particles breakdown slowly over time and release the activated carbon that is slowly integrated into surface sediments through natural mixing processes such as bioturbation.



PRODUCT SPECIFICATIONS

Activated carbon content	: 50 ± 5 % by dry weight
Activated carbon type	: coal or coconut shell based virgin carbon
Activated carbon quality	: iodine number = 1000 ± 100
Activated carbon particle size	: 90% < 50 US Mesh size
Inert materials (sand/clay)	: 50 ± 5 % by dry weight
Moisture content	: 5 - 10 %
Dry bulk density	: 0.7 kg/L or 45 lb/ cu ft.
Wet particle density	: 1.4 kg/L
Standard dimensions of pellets	: 5x10 mm; can be customized

***Note**: This in-situ remediation technology is covered under two US patents : # 7,824,129 and # 7,101,115. Sediment Solutions provides this technology under license from the patent holders and has exclusive license for the pelletized delivery of activated carbon to sediments.*

SEDIMENT SOLUTIONS

PO Box 7011, Ellicott City, MD 21042
Phone: 443-629-2136
Email: info@sedimite.com
Web: www.sedimite.com

evoqua
WATER TECHNOLOGIES

WESTATES® COAL BASED GRANULAR ACTIVATED CARBON - AQUACARB® 830 AND 1240 CARBONS (FORMERLY KG-401 AND KG-502)

FOR MUNICIPAL, INDUSTRIAL AND REMEDIAL WATER TREATMENT

Description & Applications

AquaCarb® 830 and AquaCarb 1240 carbons are high activity granular activated carbons manufactured from selected grades of bituminous coal. Manufactured by direct activation, they exhibit exceptional hardness and attrition resistance and have become a cost effective choice for use in municipal, industrial and remedial water treatment applications. These high surface area microporous carbons have been specifically developed for the removal of a broad range of organic contaminants from potable, waste and process waters.

Applications

Cost effective AquaCarb activated carbons developed by Evoqua have been demonstrated to provide superior performance in an extensive array of liquid phase treatment applications. AquaCarb activated carbons are available for:

- Dechlorination/chloramine reduction
- Removal of organic contaminants
- Taste and odor reduction
- Disinfection-by-product (DBP) removal
- Pesticide removal
- Drinking water treatment
- Groundwater remediation
- Wastewater treatment
- Industrial process water treatment
- Biological activated carbon support

Quality Control

AquaCarb activated carbons are extensively quality checked at our State of California certified environmental and carbon testing laboratory located in Los Angeles, CA. Evoqua's laboratory is fully equipped to provide complete quality control analyses using ASTM standard test methods in order to assure the consistent quality of all Westates® carbons.

Our technical staff offers hands-on guidance in selecting the most appropriate system, operating conditions and carbon to meet your needs. For more information, contact your nearest Evoqua representative.

FEATURES AND BENEFITS:

- ANSI/NSF Standard 61 classified for use in potable water applications
- Fully conforms to physical, performance and leachability requirements established by the current ANSI/AWWA B604 (which includes the Food Chemical Codex requirements)
- A detailed quality assurance program guarantees consistent quality from lot to lot and shipment to shipment

AquaGate+PAC 10%

AquaGate+PAC™

Background

AquaGate+PAC (Powdered Activated Carbon) is a patented, composite-aggregate technology resembling small stones typically comprised of a dense aggregate core, clay or clay-sized materials, polymers, and fine-grained activated carbon additives.

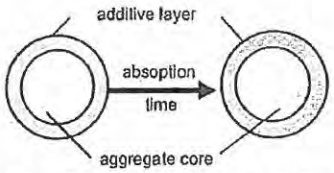


Figure 1. Configuration of PAC-coated particle.

AquaGate+PAC serves as a delivery mechanism to reliably place reactive capping materials into aquatic environments.

Product Specifications

Aggregate:	Nominal AASHTO #8 (1/4-3/8") or custom-sized to meet project-specific needs * Limestone or non-calcareous substitute, as deemed project-appropriate
Clay:	Bentonite (or montmorillonite derivative) ** Typically 15% by weight*
Activated Carbon:	Powdered – Iodine Number 800 mg/g (minimum) ◦ 99% (minimum) through 100 mesh sieve ◦ 95% (minimum) through 200 mesh sieve ◦ 90% (minimum) through 325 mesh sieve ** Target 10% by weight - Range of 7.5 – 12.5% by weight*
Binder:	Cellulosic polymer
Permeability:	1×10^{-4} to 1×10^{-7} cm/sec (Variations will exist and permeability can be influenced by particle size distribution, placement, and cover materials – surcharge load)
Dry Bulk Density:	68 – 78 lbs/ft^3
Moisture:	10 – 12% (maximum)

AquaBlok®
Composite Particle System

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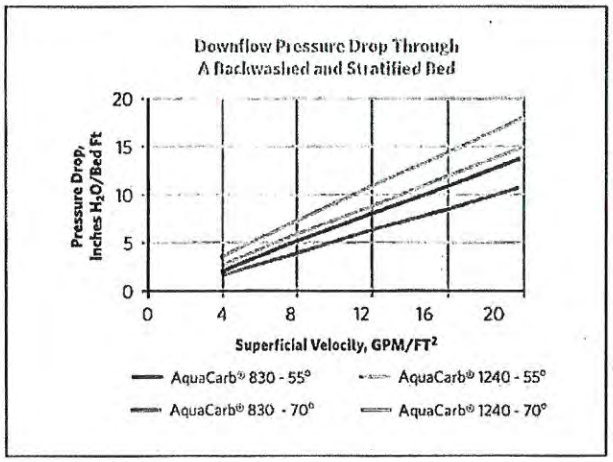
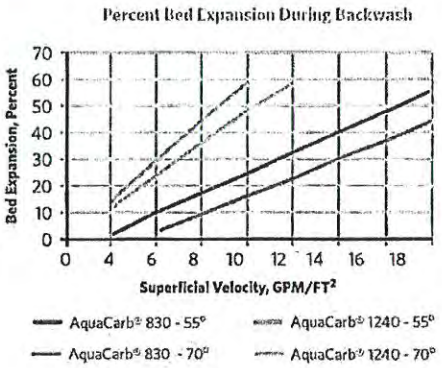
TYPICAL PROPERTIES

Parameter	AquaCarb® 830	AquaCarb 1240
Carbon Type	Bituminous Coal	Bituminous Coal
Mesh Size, U.S. Sieve	8 x 30	12 x 40
Effective Size, mm	0.8 - 1.1	0.55 - 0.75
Uniformity Coefficient	2.1	1.9
Iodine No., mg I_2/g	900	1000
Abrasion No., Wt. %	80	80
Apparent Density, g/cc	0.46 - 0.54	0.46 - 0.54

Safety Note: Under certain conditions, some compounds may oxidize, decompose or polymerize in the presence of activated carbon causing a carbon bed temperature rise that is sufficient to cause ignition. Particular care must be exercised when compounds that have a peroxide-forming tendency are being adsorbed. In addition the adsorption of VOCs will lead to the generation of heat within a carbon bed. These heats of reaction and adsorption need to be properly dissipated in order to fully assure the safe operation of the bed.

Wet activated carbon readily adsorbs atmospheric oxygen. Dangerously low oxygen levels may exist in closed vessels or poorly ventilated storage areas. Workers should follow all applicable state and federal safety guidelines for entering oxygen depleted areas.





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US Army Corps of Engineers
Portland District

2012 Nationwide (NWP) Regional Permit Conditions Portland District

The following Nationwide Permit (NWP) regional conditions are for the Portland District Regulatory Branch boundary. Regional conditions are placed on NWPs to ensure projects result in less than minimal adverse impacts to the aquatic environment and to address local resource concerns.

ALL NWPs –

1. **High Value Aquatic Resources:** Except for NWPs 3, 20, 27, 32, 38, and 48, any activity that would result in a loss of waters of the United States (U.S.) in a high value aquatic resource is not authorized by NWP. High value aquatic resources in Oregon include bogs, fens, wetlands in dunal systems along the Oregon coast, native eel grass (*Zostera marina)* beds, kelp beds, rocky substrate in tidal waters, marine reserves, marine gardens, vernal pools, alkali wetlands, and Willamette Valley wet prairie wetlands.

   NOTE: There are other types of wetlands in Oregon, such as mature wooded wetlands and tidal swamps, which are also considered as providing high value and functions to the State's aquatic ecosystems. Impacts to these waters will be evaluated on a case-by-case basis for potential authorization under a Nationwide Permit. For more information about the State's Wetlands of Conservation Concern" please visit http://www.oregon.gov/dsl/PERMITS/docs/wetland_cons_concern.pdf.

2. **Cultural Resources and Human Burials-Inadvertent Discovery Plan**: In addition to the requirements in NWP General Conditions 20 and 21 permittee shall immediately notify the Portland District Engineer if at any time during the course of the work authorized, human burials, cultural items, or historic properties, as identified by the National Historic Preservation Act and Native American Graves Protection and Repatriation Act, are discovered. The permittee shall implement the following procedures:

   a. Immediately cease all ground disturbing activities.

   b. Project Located in Oregon: Notify the Oregon State Historic Preservation Office (503-986-0674).

   c. Project Located in Washington: Notify the Washington Department of Archaeology and Historic Preservation (360-586-3077).

   d. Notify the Portland District Engineer. Notification shall be made by fax (503-808-4375) as soon as possible following discovery but in no case later than 24 hours. The fax shall clearly specify the purpose is to report a cultural resource discovery. Follow up the fax notification by contacting the Portland District Engineer representative (by email and telephone) identified in the verification letter.

   e. Failure to stop work immediately and until such time as the Portland District Engineer has coordinated with all appropriate agencies and Native American tribes, and complied with the provisions of 33 CFR 325 (Appendix C), the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, and other pertinent regulations could result in violation of state and federal laws. Violators are subject to civil and criminal penalties.

3. **In-water Work:** In order to minimize potential impacts to water quality, aquatic species and habitat, in-water work will be limited by the following timing considerations:

   a. Permittee shall complete all in-water work within the preferred work window

specified in Oregon Department of Fish and Wildlife's (ODFW) "Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources," June 2008, or most current version, available at: http://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_%20InWater_Work2008.pdf.

b. If work cannot be completed within the preferred timing window, despite every attempt to do so, permittee shall submit a request to work out side of the preferred window to the Portland District Engineer in writing. Permittee shall not begin any in-water work outside of the preferred window until they have received written approval from the District Engineer. The District Engineer will coordinate with the appropriate agencies prior to finalizing a decision.

4. **Fish and Aquatic Life passage:** In addition to the requirements of NWP General Conditions 2 and 9, all activities authorized by a NWP shall not restrict passage of aquatic life beyond the necessary construction period. Aquatic life shall be interpreted to include amphibians, reptiles, and mammals whose natural habitat includes waters of the U.S. and which are generally present in and/or around waters of the U.S.

a. Activities such as the installation of culvert, intake structures, diversion structures, or other modifications to stream channel morphology must conform to fish passage standards developed by the ODFW and the National Marine Fisheries Service (NMFS). ODFW's standards can be found at OAR 635-412-0035; ODFW provides an overview at http://www.dfw.state.or.us/fish/passage/ and NMFS provides an overview at http://www.nwr.noaa.gov/hydropower/hydropower_northwest/hydropower_in_the_nw.html.

5. **Fish Screening:** The permittee shall ensure that all intake pipes utilize fish screening that complies with standards developed by NMFS and ODFW ("Anadromous Salmonid Passage Facility Design", July 2011). http://www.nwr.noaa.gov/hydropower/hydropower_northwest/hydropower_in_the_nw.html or the most current version.

6. **Work Area Isolation and Dewatering**: Appropriate best management practices shall be implemented to prevent erosion and sediments from entering wetlands or waterways.

a. All in-water work shall be isolated from the active channel or conducted during low seasonal stream flows.

b. Permittee shall provide for fish passage upstream and downstream of the worksite.

c. Cofferdams shall be constructed of non-erosive material, such as concrete jersey barriers, sand and gravel bag dams, or water bladders. Constructing a cofferdam by pushing material from the streambed or sloughing material from the streambanks is not authorized.

d. Sand and gravel bag dams shall be lined with a plastic liner or geotextile fabric to reduce permeability and prevent sediments and/or construction materials from entering the active stream channel.

e. Upstream and downstream flows shall be maintained by routing flows around the construction site with a pump, bypass pipe, or diversion channel.

f. A sediment basin shall be used to settle sediments in return water prior to release back into the waterbody. Settled water shall be returned to the waterbody in such a manner as to avoid erosion of the streambank. Settlement basins shall be placed in uplands.

g. Fish and other aquatic species must be salvaged prior to dewatering. The State of Oregon requires a Scientific Take Permit be obtained to salvage fish and wildlife. Permittee is advised to contact the nearest ODFW office. For further information contact ODFW at http://www.dfw.state.or.us.

7. **Dredging:** For any NWP-authorized activities, including but not limited to NWP 3, 12, 13, 19, 27, 35, 36, 40, and 41 that involve removal of sediment from waters of the U.S. permittee shall ensure that:

a. Any necessary sediment characterization regarding size, composition, and potential contaminants is conducted prior to dredging and the material is suitable for in-water disposal per the Sediment Evaluation Framework for the Pacific Northwest, 2009 (available at: http://www.nwp.usace.army.mil/Missions/Environment/DMM.aspx) or the most current version.

b. The least impactful methodology and activity sequencing is used to ensure impacts to the aquatic system are minimized to the maximum extent practicable. Examples include using a hydraulic, closed-lipped clamshell bucket, toothed clamshell bucket, dragline and/or excavator.

c. Dredged or excavated material is placed where sediment-laden water cannot enter waterways or wetlands in an uncontrolled manner. The discharge associated with the return of sediment-laden water into a water of the U.S. from an upland disposal site requires separate authorization from the District Engineer under NWP 16.

8. **Chemically Treated Wood** – Withdrawn.

9. **Mechanized Equipment:** In addition to the requirements in NWP General Condition 11, permittee shall implement the following to prevent or limit aquatic impacts from mechanized equipment:

a. In all events use the type of equipment that minimizes aquatic impacts spatially and temporally.

b. Use existing roads, paths, and drilling pads where available. Temporarily place mats or pads onto wetlands or tidal flats to provide site access. Temporary mats or pads shall be removed upon completion of the authorized work.

c. Operate equipment from the top of a streambank and conduct work outside of the active stream channel, unless specifically authorized by the District Engineer.

d. Isolate storage, staging, and fueling areas, and operate and maintain equipment in isolation from waters, wetlands, and riparian areas.

e. Maintain spill prevention and containment materials with ready access at vehicle staging areas. Permittee and staff shall be trained to effectively deploy the measures. Spill response materials include straw matting/bales, geotextiles, booms, diapers, and other absorbent materials, shovels, brooms, and containment bags. In the event of a spill of petroleum products or other chemicals with potential to affect waters or wetlands, permittee shall immediately report the spill to the Oregon Emergency Response Service (OERS) at 1-800-452-0311 and shall implement containment and cleanup measures, as directed.

10. **Deleterious Waste:** In addition to the requirements in NWP General Condition 6, permittee shall not dispose of biologically harmful or waste materials into waters or wetlands. These materials include but are not limited to the following:

a. Petroleum products, chemicals, cement cured less than 24 hours, welding slag and grindings, concrete saw cutting by-products, sandblasted materials, chipped paint, tires, wire, steel posts, asphalt and waste concrete.

b. Discharge water created during construction activities (such as but not limited to concrete wash out, pumping for work area isolation, vehicle wash water, drilling fluids, dredging return flows, and sediment laden runoff) shall be treated to remove debris, sediment, petroleum products, metals, and other pollutants and

discharged in a controlled fashion to avoid erosion. A separate Department of the Army permit and/or a National Pollutant Discharge Elimination System (NPDES) permit from Oregon Department of Environmental Quality's (DEQ) may be required prior to discharge. Permittee is directed to contact the nearest DEQ office (http://www.deq.state.or.us/about/locations.htm) for more information about the NPDES program.

11. **Stormwater Discharge Pollution Prevention:** Activities that result in stormwater runoff passing over disturbed areas and impervious surfaces must include reduction measures, controls, treatment techniques and management practices to avoid discharge of soil, debris, toxics and other pollutants to waterways and wetlands.

a. **Erosion Control:** During construction and until the site is stabilized, the permittee shall ensure all practicable measures are implemented and maintained to prevent erosion and runoff. For proper erosion control measure selection and implementation, the permittee is referred to DEQ "Oregon Sediment and Erosion Control Manual," April 2005, available at: http://www.deq.state.or.us/wq/stormwater/escmanual.htm. Appropriate control measures and maintenance include, but are not limited to the following:

1) Permittee shall inspect and maintain control measures in good condition throughout construction and until permanent measures are well established. Permittee shall repair or replace any damages such as rips, broken stakes that result in loss of intended function. Permittee shall install additional control measures and reseed or replant with native and/or non-competitive species as necessary to achieve stabilization of the site. Spray-on mulches imbedded with benign sterile species may be used to temporarily stabilize the area until permanent controls are in place.

2) Once soils or slopes have been stabilized, permittee shall completely remove and properly dispose of or re-use all components of installed control measures.

b. **Post-Construction Stormwater Management:** If the activity will result in creation of new impervious surfaces and federally listed aquatic species or their habitat may be affected by the proposed activity permittee shall forward a copy of the post-construction stormwater management plan (SWMP) to the Portland District Engineer for our consultation under the Endangered Species Act. A copy of the SWMP must be submitted to the DEQ for their review and approval prior to initiating construction.

1) Submittal of the post-construction stormwater management plan to DEQ at the same time the application is submitted to the Corps will streamline the project review. DEQ's Stormwater Management Plan Submission Guidelines for Removal/Fill Permit Applications which involve impervious surfaces can be found at http://www.deq.state.or.us/wq/sec401cert/docs/stormwaterGuidlines.pdf. This document provides information to determine the level of detail required for the plan based on project type, scope, location, and other factors, as well as references to assist in designing the plan and a checklist for a complete submission.

12. **Upland Disposal:** Material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Portland District Engineer.

a. Final disposition of materials removed from waters and wetlands to uplands may require separate approvals under Oregon State Solid Waste Rules. For more information please visit DEQ's Solid Waste

program at:
http://www.deq.state.or.us/lq/sw/index.htm

b. Temporary upland stockpiles of excavated or dredged materials shall be isolated from waterways, wetlands, and floodwaters; stabilized prior to wet weather; and maintained using best management practices unless specifically authorized by the District Engineer.

13. **Restoration of Temporary Impacts:** To minimize temporal losses of waters of the U.S. construction activities within areas identified as temporary impacts shall not exceed two construction seasons or 24 months, whichever is less. For all temporary impacts, permittee shall provide the Portland District Engineer a description, photos, and any other documentation which demonstrates pre-project conditions with the Preconstruction Notification.

    b. Site restoration of temporarily disturbed areas shall include returning the area to pre-project ground surface contours. Permittee shall revegetate temporarily disturbed areas with native, noninvasive herbs, shrubs, and tree species sufficient in number, spacing, and diversity to replace affected aquatic functions.

    c. Site restoration shall be completed within 24 months of the initiation of impacts (unless otherwise required by the specific NWP). However, if the temporary impact requires only one construction season, site restoration shall be completed within that same construction season before the onset of seasonal rains.

14. **Permittee-responsible Compensatory Mitigation:** When permittee-responsible compensatory mitigation is required by the Portland District Engineer to replace lost or adversely affected aquatic functions, the permittee shall provide long-term protection for the mitigation site through real estate instruments (e.g., deed restriction or conservation easement) or other available mechanisms. The appropriate long-term protection mechanism will be determined by the Portland District Engineer based on project-specific review and must be in place prior to initiating the permitted activity.

15. **Inspection of the Project Site:** The permittee shall allow representatives of the Portland District Engineer and/or DEQ to inspect the authorized activity to confirm compliance with nationwide permit terms and conditions. A request for access to the site will normally be made sufficiently in advance to allow a property owner or representative to be on site with the agency representative making the inspection.

16. **Sale of Property/Transfer of Permit:** Permittee shall obtain the signature(s) of the new owner(s) and transfer this permit in the event the permittee sells the property associated with this permit. To validate the transfer of this permit authorization, a copy of this permit with the new owner(s) signature shall be sent to the Portland District Engineer at the letterhead address on the verification letter.

NATIONWIDE SPECIFIC CONDITIONS:

NWP 3 – Maintenance

1. Permittee shall implement measures necessary to prevent streambed gradient alterations and streambank erosion.

NWP 5 – Scientific Measurement Devices

1. Permittee shall remove all scientific measurement devices including all associated structures and fills including anchoring devices, buoys, and cable within 30 days after research is completed.

NWP 6 – Survey Activities

1. Use of in-water explosives is not authorized.

2. Permittee shall isolate all in-stream exploratory trenching from the active channel.

NWP 12 – Utility Line Activities

1. Permittee shall install trench-blockers of a type and design sufficient to prevent the drainage of the wetland areas (e.g. bentonite clay plugs, compacted sand

bags, etc.) where utility lines are buried within or immediately adjacent to wetlands and other waters.

2. Permittee shall remove and separately reserve the topsoil from the subsurface soils during trenching. Permittee shall place the reserved topsoil as the final surface layer in backfilling the trench.

3. Agency coordination, per Nationwide Permit General Condition 31 (d), is required where utility lines are proposed in estuaries to ensure there are no impacts to native shellfish beds.

4. Manholes placed in streams or other waterways require specific approval by the District Engineer.

NWP 13 – Bank Stabilization

1. Permittee shall include the use of bioengineering techniques and natural products (e.g. vegetation and organic material such as root wads) in the project design to the maximum extent practicable and shall minimize the use of rock, except when it is anchoring large woody debris. Non-biodegradable materials, such as plastic netting, that may entrap wildlife or pose a safety concern shall not be used for soil stabilization. Riparian plantings shall be included in all project designs unless the permittee can demonstrate that such plantings are not practicable.

2. Riprap shall be clean (i.e. free of toxic contaminants and invasive species), durable, angular rock.

NWP 23 – Approved Categorical Exclusions

1. Pre-construction notification or other Corps-approved documentation is required for all activities which require a permit from the Portland District Engineer.

NWP 29 – Residential Developments

1. Wetland impacts associated with the construction or expansion of a single residence including attendant features (utility lines, roads, yards, etc) shall not exceed one-fourth (¼) acre.

NWP 41 – Reshaping Existing Drainage Ditches

1. All in-water work shall be isolated from the active stream channel or conducted during low seasonal stream flows.

NWP 43 – Stormwater Management Facilities

1. All in-water work shall be isolated from the active stream channel or conducted during low seasonal stream flows.

2. This NWP does not authorize the retention of water in excess of that required to meet stormwater management requirements for purposes such as recreational lakes, reflecting pools, irrigation, etc.

NWP 44 – Mining Activities

1. Reclamation, when required, must be achieved within 24 months of completing the mining activity.

2. In-stream mining including bar scalping is not authorized by this NWP.

3. Permittee shall ensure site includes appropriate grade controls to prevent headcutting of streams or bank erosion.

4. The use of in-water explosives is prohibited under this nationwide.

5. Excavated materials may be temporarily stockpiled within the channel above the plane of the water surface for up to seven (7) days. Excavated materials shall not be stockpiled in wetlands or flowing water.

NWP 48 – Commercial Shellfish Aquaculture Activities

1. Agency coordination, per NWP General Condition 31 (d), is required for all activities proposed under this NWP.

NOTE: For projects involving commercial aquaculture or mariculture cultivation of oysters, clams, and mussels on state submerged and submersible lands permittee is advised authorization may be required from the Oregon Department of Agriculture. For more information go to

http://www.oregon.gov/ODA/FSD/program_shellfish.shtml

NWP 51– Land-Based Renewable Energy Generation Facilities

1. Agency coordination, per NWP General Condition 31 (d), is required for activities where aerial power transmission lines cross navigable waters.

NWP 52 – Water Based Renewable Energy Generation Pilot Projects

1. Agency coordination, per NWP General Condition 31 (d), is required for all activities proposed for verification under this NWP.

2. Activities authorized under this NWP shall comply with the siting requirements of the Oregon Territorial Sea Plan, which designates areas as suitable for such activities. For more information go to http://www.oregon.gov/LCD/OCMP/Pages/Ocean_TSP.aspx.

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation
(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course; condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or Study River (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species.
(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties.
(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the

requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district

engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a

final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, and ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation

may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l) (3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification.
(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity.

The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b) (1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of

NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulations of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide

line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b) (1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of

immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b) (1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

State of Oregon
Department of Environmental Quality

Oregon Department of Environmental Quality (DEQ) 401 Water Quality (WQC) General Conditions

In addition to all USACE permit conditions and regional permit conditions, the following 401 Water Quality Certification conditions apply to all Nationwide Permit (NWP) categories certified or partially certified Additional 401 Water Quality Certification category specific conditions follow, which must also be complied with as applicable.

1) Turbidity: All Permittees must implement all reasonably availably technological controls and management practices to meet the standard rule of no more than a 10 percent increase in project caused turbidity above background levels. However, if all reasonably available controls and practices are implemented by a permittee, turbidity exceedances of more than 10 percent above background are allowed for limited times depending on the severity of the increase, as specified in this condition.

a. **Monitoring and Compliance Requirements:** Permittee must monitor and record in a daily log stream turbidity levels during work below ordinary high water, compare turbidity caused by authorization actions to background levels, and adapt activities to minimize project-caused turbidity. Required monitoring steps include:

i. Identify two monitoring locations:

A. Background location: A relatively undisturbed location, approximately 100 feet upcurrent from the disturbing activity; and,

B. Compliance location: A location downcurrent from the disturbing activity, at approximately mid-depth, within any visible plume, at the distance that corresponds to the size of the waterbody where work is taking place as listed on the table below:

WETTED STREAM WIDTH	COMPLIANCE DISTANCE
Up to 30 feet	50 feet
>30 feet to 100 feet	100 feet
>100 feet to 200 feet	200 feet
>200 feet	300 feet
LAKE, POND RESERVOIR	Lesser of 100 feet or Maximum surface dimension

ii. Determine Compliance:

A. At the start of work, measure turbidity at both locations and record in the daily log date, time, location, tidal stage (if waterbody is tidally influenced), and turbidity levels at each point and comparison. Permittee must also record in the daily log all controls and practices implemented at the start of the work.

B. During work, measure turbidity at both locations at the frequency directed in the tables below and record in the daily log date, time, location, tidal stage (if waterbody is tidally influenced), and turbidity measurements.

C. Turbidity measurements must be representative of stream turbidity when the activity is being conducted. Measurements cannot be taken during a cessation of activity.

D. If project caused turbidity is elevated above background, Permittee must implement additional controls and practices and monitor both points again as described below for either monitoring method. A description of the additional controls and the date, time, and location where they are implemented must be recorded in the daily log:

MONITORING WITH A TURBIDIMETER*		
ALLOWABLE EXCEEDANCE TURBIDITY LEVEL	ACTION REQUIRED AT 1ST MONITORING INERNAL	ACTION REQUIRED AT 2ND MONITORING INTERNAL
0 to 5 NTU above background	Continue to monitor every 4 hours	Continue to monitor every 4 hours
5 to 29 NTU above background	Modify controls & continue to Monitor every 4 hours	Stop work after 8 hours at 5-29 NTU above background
30 to 49 NTU above Background	Modify controls & continue to Monitor every 2 hours	Stop work after 2 confirmed hours At 30-49 NTU above background
50 NTU or more above Background	Stop work	Stop work

VISUAL MONITORING*		
No plume observed	Continue to monitor every 4 hours	Continue to monitor every 4 hours
Plume observed within compliance distance	Modify controls & continue to Monitor every 4 hours	Stop work after 8 hours with an observed plume within compliance distance
Plume observed beyond compliance distance	Stop work	Stop work
**Note: Monitoring visually may require stopping work as soon as the visual plume exceeds the waterbody specific compliance distance. However, using a turbidimeter can allow work to continue based on more precise determination of the severity of the turbidity increase over time.*		

iii. Work must **stop immediately for the remainder of the 24-hour period** if:

A. A visible turbidity plume extends beyond the compliance distance; or,

B. Turbidity is measured at the compliance point at:

I. 50 NTU or more over background at any time;
II. 30 NTU over background for 2 hours; or
III. 5-29 NTU over background for 8 hours.

iv. Work may continue if no visible plume is observed, turbidity measured at the compliance point is no more than 0-5 NTU above background, or additional control measures can be applied to keep the visible plume within the compliance distance, measured turbidity ranges, and durations listed in the tables above.

b. Turbidity Control Measures - The permittee must implement all reasonably available controls and practices to minimize turbidity during in-water work, which may include, but are not limited to:

i. Schedule, sequence or phase work activities so as to minimize in-water disturbance and duration of activities below ordinary high water;

ii. Install and maintain containment measures to prevent erosion of upland material to waterways and wetlands, isolate work areas from flowing waters, and prevent suspension of in-stream sediments to the maximum extent practicable;

iii. Apply control measures for all in-stream digging, including but not limited to: employing an experienced equipment operator; not dumping partial or full buckets of material back into the wetted stream; adjusting the volume, speed, or both of loads or hydraulic suction equipment; or by using a closed-lipped environmental bucket;

iv. Limit the number and location of stream crossing events. If equipment must cross a waterway, establish temporary crossing sites at an area with stable banks, where the least vegetation disturbance will occur, shortest distance across water, oriented perpendicular to the stream, and supplement with clean gravel or other temporary methods as appropriate;

v. Place excavated, disturbed, and stockpiled material so that it is isolated from the edge of waterways and wetlands and not allowed to enter waters of the state uncontrolled; and

vi. Apply other effective turbidity control techniques, such as those in Appendix D and throughout DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005, http://www.deq.state.or.us/wq/stormwater/docs/escmanual/appxd.pdf.

c. Reporting: Copies of daily logs for turbidity monitoring must be made available to DEQ and other regulatory agencies upon request. The log must include:

i. Background NTUs or observation, compliance point NTUs or observation, comparison of the points in NTUs or narrative, and location, time, date, and tidal stage (if applicable) for each reading or observation.

ii. A narrative discussing all exceedances, controls applied and their effectiveness, subsequent monitoring, work stoppages, and any other actions taken.

2) Stormwater Discharge Pollution Prevention: All projects that involve land disturbance or impervious surfaces must implement prevention or control measures to avoid discharge of pollutants in stormwater runoff to waters of the state.

a. For land disturbances during construction, the permittee must obtain and implement permits where required (see: http://www.deq.state.or.us/wq/stormwater/construction.htm) and follow DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005 (or most current version), http://www.deq.state.or.us/wq/stormwater/docs/escmanual/appxd.pdf.

b. Following construction, prevention or treatment of on-going stormwater runoff from impervious surfaces must be provided (including but not limited to NWP categories 3, 12, 14, 15, 28, 29, 31, 32, 36, 39, 42, 43, and 51). DEQ encourages prevention of discharge by managing stormwater on site through Low Impact Development principles and other prevention techniques. Assistance in developing an approvable stormwater management plan is available in DEQ's *Stormwater Management Plan Submission Guidelines for Removal/Fill Permit Applications Which Involve Impervious Surfaces*, January 2012 (or most current version), available at: http://www.deq.state.or.us/wq/sec401cert/docs/stormwaterGuidlines.pdf.

c. In lieu of a complete stormwater management plan, the applicant may submit:

i. Documentation of acceptance of the stormwater into a DEQ permitted National Pollutant Discharge Elimination Strategy (NPDES) Phase I or II Municipal Separate Storm Sewer System (MS4); or

ii. Reference to implementation of a programmatic process developed to achieve these expectations, and acknowledged by DEQ as adequately addressing pollution control or reduction through basin-wide post-construction stormwater management practices.

3) Vegetation Protection and Restoration: Riparian, wetland, and in-water vegetation in the authorized project area must be protected from unnecessary disturbance to the maximum extent practicable through methods including:

a. Minimization of project and impact footprint;

b. Designation of staging areas and access points in open, upland areas;

c. Fencing or other barriers demarking construction areas;

d. Use of alternative equipment (e.g., spider hoe or crane); and,

e. Replacement - If authorized work results in unavoidable vegetative disturbance that has not been accounted for in planned mitigation actions; riparian, wetland and in-water vegetation must be successfully reestablished to a degree that it functions (for water quality purposes) at least as well as it did before the disturbance. The vegetation must be reestablished by the completion of authorized work.

4) Land Use Compatibility Statement: In accordance with OAR 340-048-0020(2) (i), each permittee must submit findings prepared by the local land use jurisdiction that demonstrates the activity's compliance with the local comprehensive plan. Such findings can be submitted using Block 7 of the USACE & DSL Joint Permit Application, signed by the appropriate local official and indicating:

a. "This project is consistent with the comprehensive plan and land use regulations;" or,

b. "This project will be consistent with the comprehensive plan and land use regulations when the following local approvals are obtained," accompanied by the obtained local approvals.

c. Rarely, such as for federal projects on federal land, "this project is not regulated by the comprehensive plan" will be acceptable.

5) A copy of all applicable 401 WQC conditions must be kept on the job site and readily available for reference by the permittee, their contractors, DEQ, USACE, NMFS, USFWS, DSL, ODFW, and other appropriate state and local government inspectors.

6) DEQ may modify or revoke these 401 WQC conditions, in accordance with OAR 340-048-0050, in the event that project activities are having a significant adverse impact on state water quality or beneficial uses.

Category Specific Conditions

In addition to all national and regional conditions of the USACE permit and the 401 Water Quality Certification general conditions above, the following conditions apply to the noted specific categories of authorized activities.

NWP 7 – Outfall Structures and Associated Intake Structures:

7.1) The following actions are denied certification:

a. Discharge outfalls that are not subject to an NPDES permit; and,

b. Outfalls that discharge stormwater without pollutant removal demonstrated to meet water quality standards prior to discharge to waters of the state.

7.2) If a permittee cannot obtain an NPDES permit or submit an approvable stormwater management plan per DEQ's Guidelines (at: http://www.deq.state.or.us/wq/sec401cert/docs/stormwaterGuidlines.pdf), the permittee must submit complete project information and water quality impacts analysis directly to DEQ in order to undergo individual 401 WQC evaluation and fulfill public participation requirements.

NWP 12 – Utility Lines:

12. 1) For proposals that include directionally-bored stream or wetland crossings:

a. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, must be completely isolated, recovered, then recycled or disposed of to prevent entry into waters of the state. Recycling using a tank instead of drill recovery/recycling pits is preferable;

b. In the event that drilling fluids enter a water of the state, the equipment operator must stop work, immediately initiate containment measures and report the spill to the Oregon Emergency Response System (OERS) at 800-452-0311.

c. Prior to cleaning up drilling fluids spilled into waters of the state, cleanup plans must be submitted and approved by the regulatory agencies; and

d. An adequate supply of materials needed to control erosion and to contain drilling fluids must be maintained at the project construction site and deployed as necessary.

NWP 13 – Bank Stabilization:

13.1) Projects that do not include bioengineering are denied certification, unless a registered professional engineer provides a written statement that non-bioengineered solutions are the only means to protect an existing transportation-related structure.

13.2) To apply for certification for a project without bioengineering, the permittee must submit complete project information and water quality impacts analysis directly to DEQ in order to undergo individual 401 WQC evaluation and fulfill public participation requirements.

NWP 14 – Linear Transportation:

14.1) For projects that include bank stabilization, bioengineering must be a component of the project, unless a registered professional engineer provides a written statement that non-bioengineered solutions are the only means to protect an existing transportation related structure.

14.2) To apply for certification for a project without bioengineering, the permittee must submit complete project information and water quality impacts analysis directly to DEQ in order to undergo individual 401 WQC evaluation and fulfill public participation requirements.

NWP 16 - Return Water from Contained Upland Disposal Areas: Water quality criteria and guidance values for toxics, per OAR 340-041-0033, are available in Tables 20, 33A, 33B, and 33C at: http://www.deq.state.or.us/wq/standards/toxics.htm#Cur.

16.1) Return to waters of the state of water removed with contaminated dredged material that exceeds a chronic or acute toxicity water quality standard is denied certification.

16.2 Water removed with contaminated dredged material that could or does exceed chronic water quality criteria must be contained and disposed of at an appropriately sized and sealed upland facility by evaporation or infiltration.

16.3) If a Modified Elutriate Test (MET) is performed for the known contaminants of concern (CoCs) and CoC concentrations are below DEQ chronic water quality criteria; return water discharge is not limited.

a. The MET must be performed before dredging.

b. DEQ must approve the list of CoCs and analytical method prior to the permittee performing the MET.

c. DEQ must review the results and provide approval of discharge from return water, in writing, prior to dredging.

NWP 20 – Response Operations for Oil and Hazardous Waste:

20.1) Coordination with DEQ's Emergency Response program is required. See: http://www.deq.state.or.us/lq/cu/emergency/index.htm.

NWP 22 – Removal of Vessels:

22.1) Coordination with DEQ's Emergency Response program is required. See: http://www.deq.state.or.us/lq/cu/emergency/index.htm.

NWP 31 – Maintenance of Existing Flood Control Facilities:

31.1) Projects at existing facilities in streams with Temperature TMDLs and that propose net permanent, riparian vegetation removal are denied certification.

31.2) To apply for certification for projects where riparian vegetation removal is unavoidable and vegetation cannot be re-established, the permittee must submit complete project information and water quality impacts analysis directly to DEQ in order to undergo individual 401 WQC evaluation and fulfill public participation requirements.

NWP 38 – Cleanup of Hazardous and Toxic Waste:

38.1) For removal of contaminated material from waters, dredging method is limited to diver assisted hydraulic suction, hydraulic suction, closed-lipped environmental bucket, or excavation in the dry.

a. For in-water isolation measures, the permittee is referred to Appendix D of DEQ's *Oregon Erosion and Sediment Control Manual*, April 2005 (or most current version), at: http://www.deq.state.or.us/wq/stormwater/docs/escmanual/appxd.pdf.

38.2) Discharge to waters resulting from dewatering during dredging or release of return water from an upland facility is prohibited except as provided below.

a. All water removed with sediment must be contained and disposed of at an appropriately sized and sealed upland facility by evaporation or infiltration; or,

b. A Modified Elutriate Test (MET) may be performed for the known CoCs and if CoC concentrations are below DEQ chronic water quality criteria, return water discharge is not limited.

i. The MET must be performed before dredging.

ii. DEQ must approve the list of CoCs and analytical method prior to the permittee performing the MET.

iii. DEQ must review the results and provide approval of discharge from dewatering and return water in writing prior to dredging.

38.3) Dredged material must be disposed of in compliance with DEQ Rules governing Hazardous Waste (see: http://www.deq.state.or.us/lq/hw/hwmanagement.htm) or Solid Waste (see: http://www.deq.state.or.us/lq/sw/index.htm).

38.4) The new in-water surface must be managed to prevent exposure or mobilization of contaminants.

NWP 41 - Reshaping Existing Drainage Ditches:

41.1) To the extent practicable, permittees must work from only one bank in order to minimize disturbance to existing vegetation, preferably the bank with the least existing vegetation;

41.2) Following authorized work, permittee must establish in-stream and riparian vegetation on reshaped channels and side-channels using native plant species wherever practicable. Plantings must be targeted to address water quality improvement (e.g., provide shade to water to reduce temperature or provide bank stability through root systems to limit sediment inputs). Planting options may include clustering or vegetating only one side of a channel, preferably the side which provides maximum shade.

NWP 42 – Recreational Facilities:

42.1) For facilities that include turf maintenance actions, the permittee must develop and implement an Integrated Pest Management Plan (IPM) that describes pest prevention, monitoring and control techniques with a focus on prevention of chemical and nutrient inputs to waters of the state, including maintenance of adequate buffers for pesticide application near salmonid streams, or coverage under an NPDES permit, if required (information is available at: http://www.deq.state.or.us/wq/wqpermit/pesticides.htm).

NWP 43 – Stormwater Management Facilities:

43.1) Projects that propose the following elements are denied certification:

a. In-stream stormwater facilities;

b. Discharge outfalls not subject to an NPDES permit; and,

c. Proposals that do not demonstrate pollutant removal to meet water quality standards prior to discharge to waters of the state.

43.2) To apply for certification for a project with in-stream stormwater facilities, without an NPDES permit, or without submittal of an approvable stormwater management plan per DEQ's Guidelines (at: http://www.deq.state.or.us/wq/sec401cert/docs/stormwaterGuidlines.pdf), the permittee must submit complete project information and water quality impacts analysis directly to DEQ in order to undergo individual 401 WQC evaluation and fulfill public participation requirements.

NWP 44 – Mining Activities:

44.1) Projects that do not obtain an NPDES 700-PM or Individual permit are denied certification.

44.2) To apply for certification for a project without an NPDES permit, the permittee must submit complete project information and water quality impacts analysis directly to DEQ in order to undergo individual 401 WQC evaluation and fulfill public participation requirements.

NWP 51 – Land-Based Renewable Energy Generation Facilities:

51.1) For associated utility lines with directionally-bored stream or wetland crossings proposed, condition 12.1) must be applied.

DEPARTMENT OF THE ARMY
Corps of Engineers, Portland District
Regulatory Branch

Inadvertent Discovery Plan (IDP)

Background

Traditionally, Tribes have managed the lands in Oregon for thousands of years. Although these lands are now broken up into segments of various ownerships and managing agencies, Native Americans still retain a strong connection to their ancestral lands. For Oregon Tribes, archeological/burial sites are not simply artifacts of the Tribe's cultural past, but are considered sacred and represent a continuing connection with their ancestors. Native American ancestral remains, funerary objects, sacred objects, and objects of cultural patrimony associated with Oregon Tribes are protected under state and federal law. These laws recognize and codify the Tribes' rights in the decision-making process regarding ancestral remains and associated objects. Therefore, both the discovered ancestral remains and/or archeological objects should be treated in a sensitive and respectful manner by all parties involved.

In addition to potential Tribal related sites, cultural resources that date to the historic-period, and more recent past are also protected under state and federal law. Examples of cultural material that constitute such sites include, but are not limited to the following: glass bottles, cans, structural foundations, nails and many other items. If material such as this is uncovered during the course of a project, the procedures outlined below are applicable.

It is the policy of the U.S. Army Corps of Engineers (Corps) Regulatory program to work effectively with Native American Tribes, landowners, resource agencies, historic preservation organizations, stakeholders, applicants and the public to comply with the National Historic Preservation Act (NHPA) and other applicable laws and regulations, Executive Orders, Presidential Memoranda, and policy guidance documents and to efficiently process permit applications so that development projects can proceed for the good of the Nation's economic health and national security. Respectful and meaningful coordination and consultations between the Corps, Native American Tribes, and the Oregon State Historic Preservation Office (SHPO) are conducted as we strive to balance economic needs with historic preservation concerns.

This IDP ensures all parties involved during inadvertent discovery of cultural materials are contacted and fulfill their obligation under state and federal laws, including but not limited to the following:

National Historic Preservation Act (NHPA) – **[16 USC 470] [36 CFR 60]**
Native American Graves Protection and Repatriation Act – **[25 USC 3001] [43 CFR 10]**
Indian Graves and Protection Objects – **ORS 97.740-S 97.760**
Archaeological Objects and Sites – **ORS 358.905 – 358.955**
Permits and Conditions for Excavation or Removal of Archaeological or Historical Material; Rules; Criminal Penalty – **ORS 390.235**
Procedures for the Protection of Historic Properties – **[33 CFR 325 – Appendix C]**
Consultation and Coordination with Indian Tribal Governments – **[Executive Order – 13175]**

Suspend Work

Cultural Resources and Human Burials: In the event evidence of human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the NHPA, are discovered and/or may be affected during the course of the authorized work, the permittee shall **Immediately Cease All Ground Disturbing Activities**.

Failure to stop work immediately and until such time as the Corps has coordinated with all appropriate agencies and complied with the provisions of 33 CFR 325, Appendix C, the NHPA and other pertinent regulations, could result in violation of state and federal laws. Violators are subject to civil and criminal penalties.

Notification Process for Permittee and/or Archeological Monitor

The person(s) making the discovery shall immediately notify the permittee(s), the Corps of Engineers, and other appropriate agencies as necessary.

- Notification to the Portland District Regulatory Branch shall be made by fax (503-808-4375) as soon as possible following discovery but in no case later than 24 hours or via email to christopher.m.page@usace.army.mil, (503) 808-4389. The fax shall clearly specify the purpose is to report a cultural resource discovery, provide the permittee's name, Corps Permit No., and the archeological monitor's and/or project manager's contact information for follow-up purposes.
- Follow up the fax notification with an email and phone call to the Corps Project Manager identified in the permit letter.

Notification Process for Corps Project Manager

The Project Manager or person(s) designated to manage the inadvertent discovery shall immediately notify the following agencies:

- Oregon State Historic Preservation Office:
  Dr. Dennis Griffin, office phone (503) 986-0674, cell (503) 881-5038.
- Oregon State Police **[if human remains are found]**:
  Sergeant Chris Allori, office phone (503) 731- 4717 cell (503) 708-6461.
  - Commission on Indian Services (CIS) [provide the list of appropriate Native American Tribes], Karen Quigley, Director, office phone (503) 986-1067.

Tribes:

- Confederated Tribes of the Grand Ronde Community of Oregon:
  David Harrelson (503) 879-2320; Dustin Kenney (503) 879-1679; or Misty Thorsgard (503) 879-2320
- Confederated Tribes of the Warm Springs Reservation of Oregon:
  Holly Shea (541) 553-3555
- Confederated Tribes of the Siletz Reservation, Oregon:
  Robert Kentta (800-922-1399 xtn. 1244
- Confederated Tribes of the Umatilla Reservation, Oregon:
  Teara Farrow (541) 276-3629; or Catherine Dickson (541) 429-7231.
- Cow Creek Band of Umpqua Tribe of Indians:
  Jessie Plueard (541) 677-5575 ext. 5577

- Coquille Tribe of Oregon:
  Kassandra Rippee (541) 756-0904 ext 10216
- Klamath Tribes, Oregon:
  Perry Chocktoot (541) 783-2210 ext. 178
- Confederated Tribes of Coos Lower Umpqua and Siuslaw Indians of Oregon:
  Stacy Scott (541) 888-7513 cell (541) 297-5543
- Fort Bidwell Indians Community of the Fort Bidwell Reservation of California:
  Bernard Pollard (530) 279-6310.
- Tolowa Dee-ni' Nation, California:
  Suntayea Steinruck (707) 487-9255 ext. 3180
- Burns Paiute Tribe of the Burns Paiute Indian Colony of Oregon:
  Diane Teeman (541) 573-8090 cell (541) 413-1190
- Nez Perce Tribe of Idaho:
  Patrick Baird (208) 621-3851
- Confederated Tribes and Bands of the Yakama Nation, Washington:
  Johnson Meninick (509) 865-5121
- Cowlitz Indian Tribe, Washington:
  Dave Burlingame, (360) 577-6962

The Corps will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Registry of Historic Places. In addition, the Corps will coordinate a Site Avoidance Plan and/or a Scope of Work with the SHPO, the Tribe(s) and the permittee to avoid or excavate the archeological/burial site. In the event the Corps decides to delegate their cultural resource protection responsibilities to another federal or state agency, the Corps shall contact the interested parties and provide those parties with the appropriate new contact person(s).

Plan of Action (POA)

In the event human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the NHPA, are discovered and/or may be affected during the course of the work authorized, the archeological monitor, and/or designee, has the authority to temporarily stop all ground disturbance activities to further inspect the material(s). If an isolated artifact (defined as fewer than 10 artifacts by the Oregon SHPO) is identified, the monitor or project designee shall determine whether sufficient quantities and/or evidence of artifacts warrant presence to define a site. If upon closer examination the materials discovered are not consistent with human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the NHPA, the monitor will allow work to proceed but with caution and at a slower rate until the monitor is confident no sites are represented.

Upon positive identification of human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the NHPA, the monitor will maintain the cease work order, make efforts to secure the discovery location, and immediately notify the permittee and/or designee of the positive discovery as defined in the notification process above. Examples of cultural material that constitutes such sites include, but are not limited to the following: 1) historic sites can include glass bottles, cans, structural foundations; and 2) prehistoric sites include lithic flakes, shell, beads, ovens, etc.

Human Remains POA

If human burials and/or human remains are discovered, the monitor will treat the remains with sensitivity and respect, ensure all unauthorized personnel have vacated the site location in a safe manner, make reasonable efforts to secure the location, and stabilize the remains if necessary, e.g. they are endangered of falling out a trench wall. Every reasonable effort will be made by the monitor(s) to ensure the remains are not physically handled or examined by unauthorized personnel until the proper notifications have been made. Reference is made to the Tribal Position Paper on Human Remains found on SHPO's website at: http://www.oregon.gov/OPRD/HCD/ARCH/docs/Tribal_position_paper_on_Human_Remains.pdf.

Treatment Plan (TP)

A treatment plan (TP) will be developed between the Corps, SHPO, Tribe(s) and the permittee during consultation to ensure the proper handling and curation of human remains and/or cultural items is clearly outlined and agreed upon. The TP will define the items found; develop a strategy for handling/moving human remains and/or cultural items; develop a strategy for determining whether additional human remains and/or cultural items are endangered; determine if additional testing is necessary to identify site boundaries; and determine the disposition of the human remains and/or cultural items. The TP will be agreed upon by all parties involved before any future ground disturbance activities resume.

Construction related activities and/or ground disturbance activities shall not resume until authorization from the Corps has been received.

This plan was developed to ensure the safeguarding of our Nation's heritage through inadvertent discovery, and to ensure the Corps' Tribal-Trust responsibilities are met with Diligence, Responsiveness, Reliability, Accuracy, and Respect to our fellow government agencies.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

U.S. Army Corps of Engineers

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): May 4, 2016

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Oregon Department of Environmental Quality
c/o Jennifer Sutter
700 NE Multnomah St.
Suite 600
Portland, Oregon 97232

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CENWP-OD-G, NWP-2016-72, DEQ NWR Cleanup – Lower Columbia Slough, RM 6.2 offshore of Pacific Meat

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: Oregon County: Multnomah City: Portland

Center coordinates of site:

Universal Transverse Mercator:

Latitude/Longitude: Lat 45.591494°/Long -122.693720°

Authority: ☑ Section 404 ☑ Section 10

Name of nearest waterbody: Columbia Slough RM 6.2

Identify (estimate) amount of waters in the review area:

Non-wetland waters: # linear feet: # width (ft) and/or 1.39 acres.

Cowardin Class: Riverine

Stream Flow: Not Applicable

Wetlands: # acres.

Cowardin Class: Choose Wetland Class

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: Not Applicable

Non-Tidal: Columbia Slough

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☑ Office (Desk) Date: May 4, 2016

☐ Field Determination. Date(s): *Date*

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply) - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- [x] Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: plans submitted with application
- [ ] Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report.
- [ ] Data sheets prepared by the Corps: *Click here to enter text.*
- [ ] Corps navigable waters' study: *Click here to enter text.*
- [ ] U.S. Geological Survey Hydrologic Atlas: *Click here to enter text.*
  - [ ] USGS NHD data.
  - [ ] USGS 8 and 12 digit HUC maps.
- [ ] U.S. Geological Survey map(s). Cite scale & quad name: *Click here to enter text.*
- [ ] USDA Natural Resources Conservation Service Soil Survey. Citation: *Click here to enter text.*
- [ ] National wetlands inventory map(s). Cite name: *Click here to enter text.*
- [ ] State/Local wetland inventory map(s): *Click here to enter text.*
- [ ] FEMA/FIRM map(s): *Click here to enter text.*
- [ ] 100-year Floodplain Elevation is: *Click here to enter text.* (National Geodetic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): Google Earth 5/4/2016
  or [ ] Other (Name & Date): *Click here to enter text.*
- [ ] Previous determination(s). File no. and date of response letter: *Click here to enter text.*
- [ ] Applicable/supporting case law: *Click here to enter text.*
- [ ] Applicable/supporting scientific literature: *Click here to enter text.*
- [ ] Other information (please specify): *Click here to enter text.*

<u>IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.</u>

WHITE.MELODY.J.1292348157

Digitally signed by WHITE.MELODY.J.1292348157
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=WHITE.MELODY.J.1292348157
Date: 2016.05.09 08:51:49 -07'00'

Signature and date of Regulatory Project Manager (REQUIRED)

Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. §331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Site Number	Latitude	Longitude	Cowardin Class/ Stream Flow	Estimated Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
NWP-2016-72	45.591494°	-122.693720°	Riverine	1.39 acres	Section 10 & 404

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Oregon Department of Env. Quality c/o Jennifer Sutter	File Number: NWP-2016-72	Date: May10, 2016

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
x	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found in Corps regulations at 33 CFR Part 331, or at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/FederalRegulation.aspx

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Shawn H. Zinszer U.S. Army Corps of Engineers Portland District Office PO Box 2946 Portland OR 97208-2946	If you only have questions regarding the appeal process you may also contact: US Army Corps of Engineers, Northwestern Division Attn: Mary Hoffman, Regulatory Appeals Review Officer P.O. Box 2870 Portland, OR 97208-2870 Telephone (503) 808-3888 Mary.J.Hoffman@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

STATE OF OREGON
Department of State Lands
Short Term Access Agreement
Waterway
59063-AA

The STATE OF OREGON, Department of State Lands, GRANTOR, hereby grants to

NAME of GRANTEE:	ADDRESS:
Oregon Dept of Environmental Quality	700 NE Multnomah St Ste 600 Portland, OR 97201

hereinafter called "GRANTEE", a *Short Term Access Agreement* upon the following described submerged and submersible land of the Columbia Slough, hereinafter called "**Lands in Use**" described as follows:

All submerged lands below Ordinary High Water in the Lower Columbia Slough, in Section 9, Township 1 North, Range 1 East, Willamette Meridian, Multnomah County, Oregon, more particularly described as follows:

An area bounded by the following points:

(a) 122.694405 W, 45.591633 N
(b) 122.694256 W, 45.591948 N
(c) 122.691249 W, 45.590990 N
(d) 122.691552 W, 45.590615 N

Containing 1.4 acres or 60,000 square feet, more or less, and as shown on the attached Exhibit A.

Which are subject to the following terms and conditions:

1. The owner hereby grants to GRANTEE a *Short Term Access Agreement* upon the **Lands in Use** at any time from the date of this instrument until February 1, 2017, in order to complete a pilot study described herein, and further, the GRANTOR does hereby covenant that he is the lawful owner of a sufficient estate in the said **Lands in Use** to enable him to give the permission herein granted and that the said **Lands in Use** are free from any encumbrances which would interfere with the said permission.

2. This *Short Term Access Agreement* includes the right to ingress and egress on other lands of the GRANTOR described above, providing that the GRANTOR is given notification of such ingress and egress and such ingress and egress is approved by the GRANTOR, and provided such ingress and egress is necessary and not otherwise conveniently available to GRANTEE, and a *Short Term Access Agreement* for persons, pipelines, machinery and/or other equipment, over and across said Lands along such routes as may be necessary for the hereinabove stated purpose.

3. GRANTEE shall comply with all applicable local, state and federal laws and regulations affecting the **Lands in Use** and the use thereof, including local comprehensive land use planning and zoning ordinances, and correct at GRANTEE'S own expense any failure of compliance created through GRANTEE'S fault or by reason of GRANTEE'S use:

Dispose of all waste in a legal and proper manner and not allow debris, garbage or other refuse to accumulate within the **Lands in Use**; provided that, if GRANTEE allows debris, garbage or other refuse to accumulate within the **Lands in Use**, State shall have the right to remove the debris, garbage and other refuse, and collect the cost of such removal from GRANTEE;
Conduct all operations within the **Lands in Use** in a manner that conserves fish and wildlife habitat, protects water quality, and does not contribute to soil erosion or the infestation or spread of noxious weeds;

And, if applicable; maintain all buildings, docks, pilings, floats, gangways, similar structures, and other improvements located within the **Lands in Use** in a good state of repair; and

Not unreasonably interfere with the public's trust rights of commerce, navigation, fishing or recreation.

4. **Submerged/Submersible Only** In addition to any other applicable laws and regulations, GRANTEE shall comply with Oregon Department of Environmental Quality and Oregon State Marine Board requirements for sewage collection and waste water disposal for boats and floating structures.

5. GRANTEE shall not use, store, or dispose of, or allow the use, storage, or disposal within the **Lands in Use** of any materials that may pose a threat to human health or the environment, including without limitation, pollutants, hazardous solid waste, hazardous substances, pesticides, herbicides, or petroleum products (a "Hazardous Substance") except in strict compliance with applicable laws, regulations and manufacturer's instructions and shall take all necessary precautions to protect human health and the environment and to prevent discharge or release of any Hazardous Substance to the environment from the **Lands in Use**.

GRANTEE shall keep and maintain accurate and complete records of the amount of all such pollutants, hazardous solid waste, hazardous substances, pesticides, herbicides, or petroleum products (a "Hazardous Substance") stored or used on the **Lands in Use**, and shall immediately notify State of any release or threatened release of any such Hazardous Substance to the environment from the **Lands in Use** or otherwise attributable to operations or activities on the **Lands in Use**.

In the event any pollutants, hazardous solid waste, hazardous substances, pesticides, herbicides, or petroleum products (a "Hazardous Substance") is released, GRANTEE shall promptly and fully remediate such release in accordance with State and federal regulations and requirements. If GRANTEE fails to so remediate, State shall have the right to remove and remediate any release of a Hazardous Substance on the Lands in

Use or attributable to operations or activities conducted or allowed by GRANTEE on the **Lands in Use** and to collect the cost of such removal or remediation from GRANTEE.

In addition to any duty to indemnify described elsewhere in this *Short Term Access Agreement*, GRANTEE shall indemnify State against any claim or costs arising from or related to a release of a pollutants, hazardous solid waste, hazardous substances, pesticides, herbicides, or petroleum products (a "Hazardous Substance") on or from the **Lands in Use**.

6. All tools, equipment, and other property belonging to GRANTEE taken upon or placed upon the land by GRANTEE shall remain the property of GRANTEE and may be removed by GRANTEE at any time within a reasonable period after the expiration of this *Short Term Access Agreement*.

7. GRANTEE agrees to defend, indemnify and hold State harmless from and against all claims, demands, actions, suits, judgment, losses, damages, penalties, fines, costs, and expenses (including expert witness fees and costs and attorney's fees in an administrative proceeding, at trial, or on appeal) arising from or attributable, in whole or in part, to the access agreement or any operations conducted or allowed by GRANTEE on the **Lands in Use**. As used in this Section 7.0 only, "State" means the State of Oregon and its boards, commissions, agencies, officers, employees, contractors, and agent.

This *Short Term Access Agreement* may be cancelled by GRANTOR after thirty (30) days written notice to GRANTEE for noncompliance with the above conditions or any lawful requirement.

Department of State Lands

Justin Russell

Authorized Signature/Printed Name
Aquatic Resource Management

6-23-16

Date

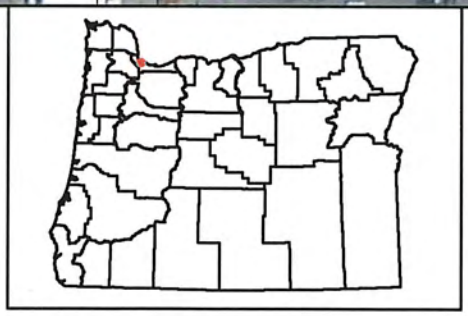
Oregon Department of State Lands
Land Management Division

N
W E
S

0 75 150
Feet

1 inch = 157 feet

Map Projection:
Oregon Statewide Lambert
Datum NAD83
International Feet



Vicinity Map

Exhibit A

Legend

Authorized Area

This map depicts the approximate location and extent of a Deptartment of State Lands, Land Management Division authorization for use and/ or property transaction. This product is for informational purposes only and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Contact:
State of Oregon
Department of State Lands
Land Management Division
503-986-5309
www.oregon.gov/dsl/LW

Date: 6/21/2016

Software: ESRI ArcMap 10.0
Document Path: C:\Users\jrussell\Desktop\Scratch Pad Map 10.2 JRR.mxd

PORTLAND PARKS
& RECREATION

PERMIT OF ENTRY FOR PARK PROPERTY – PERMIT #2016-28

Recitals:

This Permit is granted by the City of Portland, by and through its bureau Portland Parks & Recreation ("PP&R" or "City") pursuant to Portland City Code 20.08.070: Non-Park Use of Park Property.

Certain real property located at 1940 N. Victory Boulevard and designated as R314518, TL 400, 359.941 acres, Section 55 1N 1E ("Property"), which includes Portland International Raceway (PIR) and the Columbia Slough Trail, is located in Multnomah County, Oregon, is owned and managed by PP&R.

State of Oregon Department of Environmental Quality and its contractor Apex Companies, LLC (collectively, "Permittee") desires access to Property to complete a pilot study of the use of activated carbon in contaminated soil remediation.

Agreed:

1. **Grant of Permit of Entry.** Permittee is hereby granted a Permit to enter Property solely to access and use the Work Site for the purposes described in Section 4 of this Permit. The location of the work is illustrated on Attachment A ("Work Site"). Access to the site will be from the gate at Denver/Schmeer overpass. If access through PIR is necessary, contact E.C. Mueller at 503-823-5899 or 503-720-2238.

2. **Term.** The term of this permit is approximately 3 (three) weeks. Work is planned to start September 1, 2016, upon Notice to Proceed by Parks after the execution of this NPUP. Authorized uses shall not commence until Permittee receives a Notice to Proceed from PP&R's Project Manager. The Permit will expire at midnight on September 15, 2016 unless otherwise agreed in writing. Permittee will notify the PP&R Project Manager when the work has been completed.

3. **Acceptance of Property.** Permittee has examined Property and accepts Property "as is". City or its officers, agents or employees make no representations or warranties, express or implied, as to the condition of Property. City shall have no liability to Permittee for any damage or injury caused by the condition of Property. Furthermore, Permittee accepts the Property subject to any and all valid rights or interests, including without limitation rights of access by the public, existing permits, licenses, leases, easements, franchise agreements, railroad facilities, pipelines, telephone, telegraph, communication, power and signal lines, or any similar facilities, together with any future installations.

4. **Scope of Work or Use.** Work under this Permit consists of site preparation, equipment staging, materials staging, and any necessary, additional remediation. All work associated with the project will be conducted in a professional manner using industry-standard work and safety best practices.

   Specific project plans are incorporated into this Permit as Attachment B. The scope of work included in or attached to this Permit constitutes the entirety of the expected use or scope of work. No changes to the scope of work or use shall be deemed authorized under this Permit, unless those changes are specifically described, authorized and approved by PP&R in writing prior to the commencement of any such work.

5. **As-Builts.** Permittee shall keep accurate maps and records, including the approved as-built construction plans and specifications of its facilities and improvements located on the Property. Permittee shall provide to PP&R, within sixty (60) days of the project's completion, copies of such maps, records and as-builts, in a form (digital and/or paper) that is to the complete satisfaction of PP&R, unless an agreement to do otherwise is memorialized. As-built specifications will be discussed with the PP&R Project Manager and, if necessary, will be included as an attachment to this Permit.

6. **Park or Trail Closures**. Permitted work will not result in any park or trail closure, at any time without PP&R approval. Permittee will take reasonable precautions to avoid conflicts between the permitted work and the public's use of any park or trail. Permittee shall coordinate with the PP&R Project Manager in order to determine any measures that need to be taken in order to notify the public of the work to be done under the Project, and Permittee shall obtain approval from PP&R Project Manager for any measures undertaken to notify the public of any park or trail closures or of any disruption of the public's use of the park or trail.

7. **PP&R Project Manager.** Permittee shall coordinate with PP&R Project Manager Lynn Barlow, who may be reached by phone at (503) 823-4404 or by email at Lynn.Barlow@portlandoregon.gov. The contact for Permittee is Jennifer Sutter, who can be reached at 503-229-6148, by cell at 503-442-0449 or email at sutter.jennifer@deq.state.or.us. The contact person for the Contractor is Ashleigh K. Fines, Senior Project Manager, who can be reached at (503) 924-4704, extension 1903 or email at AFines@apexcos.com. The PP&R Project Manager shall be provided at least two business days' (weekends and City holidays excluded) notice prior to the anticipated commencement of work under this Permit.

8. **Locates**. Permittee shall not begin any excavation or other subsurface activity in the Work Site without first contacting the One-Call Locates number and shall expressly indicate the property is managed by PP&R. One-Call Locates phone number is 1-800-332-2344. Permittee shall also contact Mike VanYserloo, PP&R Locates, at (503) 823-1611 at least three business days before commencing excavation or other subsurface activities at the Work Site. For all locates calls regarding work within the scope of this permit, disclose the NPUP permit number, which is #2016-28.

9. **Trees and Urban Forestry**. While no impact upon trees within the worksite is anticipated, where any permitted project or activity does not have an approved Tree Plan, but will occur

adjacent to, or under, the branches of any PP&R tree, the Permittee must contact an Urban Forestry Inspector for advice by calling 503-823-TREE. Detailed Tree Plan requirements may be found at

https://www.portlandoregon.gov/trees/article/497210

The following activities ("Basic Tree Protection Rules") are prohibited without the approval of an Urban Forestry Inspector:

(1) Cutting or pruning any tree trunk, branch or root,

(2) Driving or parking any vehicles or machinery under the branches of any tree,

(3) Leaning or attaching any item to any tree,

(4) Storing or staging any material or equipment under or adjacent to any tree, or

(5) Discharging water or any effluent in the vicinity of any tree.

If Permittee (1) cuts, damages or injures a tree or (2) breaches an approved Tree Plan or (3) violates the Basic Tree Protection Rules, an Urban Forestry Inspector must be notified within 24-hrs by calling 503-823-TREE.

The Urban Forester may require the Permittee to remedy any tree damage or injury, or any breaches of an approved Tree Plan or of the Basic Tree Protection Requirements. This may include any or all of the following: contracting for a qualified person to undertake remedial tree work or treatment; tree removal and replacement; or, payment of a Restoration Fee, all as detailed under Chapter 11.70 of the City Code. The standards and provisions in an Urban Forestry Permit shall be controlling as to any activities under this Permit, including, but not limited to the following: 1) General Tree Protection Standards; 2) Prohibited Activities within the Root Protection Zone; 3) Tree Protection Fencing - Prescribed Path; 4) Tree Protection Fencing – Performance Path; and, 5) Heritage Trees. In the event of any uncertainty or question about the applicability of any of above-noted provisions to any work done under this Permit, an Urban Forestry Inspector should be contacted immediately, at 503-823-TREE, in order to provide clarification.

10. **Equipment and/or Materials to be used on site.** Equipment to be used includes any combination of the following: industrial trucks & forklifts, cranes, motor vehicles, barges and scows telebelt, manually operated pneumatic spreader, silt fencing materials, activated carbon media and re-vegetation tools and materials to include native plant species. Permittee assumes all risk for any damage to their equipment while working under the authority of this Permit. Permittee shall keep all equipment within the confined Work Site. All vehicles brought into the Property must be marked as corporate vehicles belonging to the Permittee, or its subcontractors, if any. Personal vehicles belonging to Permittee's employees shall not be parked on the Property.

11. **Maintenance, Repair and Restoration.** Permittee, at their cost, shall maintain the Work Site in a neat condition, free of trash and debris, in good and substantial condition, order and repair. Permittee shall repair, at their cost and with prior written approval of PP&R, any damage to the Property or surrounding City property caused by Permittee's work, entry or occupancy of the Property under this Permit. Restoration shall be made to conditions equal to or better than those pre-existing the Permittee's work. PP&R, at its sole discretion, may elect to complete necessary repairs and Permittee agrees to pay the reasonable costs of repairs performed by the PP&R. No part of this Permit, whether contained within its terms or incorporated as an attachment, shall be construed to replace, limit, or invalidate the remedies available to PP&R under this section.

12. **Signage.** The work area will be delineated in accordance with the ODOT Oregon Temporary Traffic Control Handbook, including warning signs (initial and 2 subsequent warning signs, in each direction) and cones (including taper) to delineate the work area.

13. **Security.** Permittee must take appropriate safety measures, including without limitation signage, coning, and fencing, to keep people away from equipment and work areas and to warn people of any hazards. Permittee's safety measures are subject PP&R's approval. Permittee shall give PP&R immediate notice of any hazardous condition, disturbance, accident or occurrence related to Permittee's use or occupancy of the Property. Concurrently, Permittee shall take all reasonable action to mitigate or resolve any such damage caused by any such condition, disturbance, accident or occurrence, as soon as is practicable, under the circumstances.

14. **Indemnification.** Permittee agrees to be responsible for any damage or any third party liability which may arise from its work conducted on Park's property subject to the limitations and conditions of the Oregon Tort Claims Act, ORS 30.260 through 30.300, and the Oregon Constitution Article XI, Section 7, to the extent of liability arising out of the negligence of Permittee. Permittee shall not be required to indemnify or defend the City of Portland, Parks & Recreation for any liability arising out of the wrongful acts of its officers, directors, agents and employees.

    City, its officers, directors, agents and employees shall not be liable for any damage to equipment or any other property of Permittee or to any person in or upon the Property including but not limited to damage by fire, explosion, electricity, flooding, vandalism, water or rain, or any other cause whatsoever unless caused by or due to the sole negligence of City, officers, directors, agents and employees.

    City or its officers, directors, agents and employees shall not be liable for any latent defect at the Property. Subject to the limitations and conditions of the Oregon Tort Claims Act, ORS 30.260 through 30.300, and the Oregon Constitution Article XI, Section 7, Permittee agrees to be responsible for damages, costs, liabilities, and expenses caused by, arising out of, or in connection with, the handling, storage, discharge, transportation or disposal of hazardous or toxic wastes or substances, pollutants, oils, materials or contaminants, as those terms are defined by federal, state or local law or regulation, as amended from time to time. Damages,

costs, liabilities and expenses shall include any amounts claimed to be owed by any regulating and administering agency.

14) Insurance. Permittee shall obtain and maintain in full force at Permittee expense, throughout the duration of the Permit and any extension periods, the required insurance identified below. The City reserves the right to require additional insurance coverage as required by statutory or legal changes to the maximum liability that may be imposed on Oregon cities during the term of the Permit.

Permittee shall obtain workers' compensation insurance as required by ORS Chapter 656 as it may be amended. Unless exempt under ORS Chapter 656, the Permittee shall maintain coverage for all subject workers.

Permittee shall obtain general commercial liability (CGL) insurance covering bodily injury, personal injury, and property damage, including coverage for independent contractor's protection (required if any work will be subcontracted), premises liability, ongoing operations, contractual liability, products and completed operations, in per-occurrence limit of not less than $1,000,000, and an aggregate limit of not less than $2,000,000.

Permittee shall obtain automobile liability insurance with coverage of not less than $1,000,000 each accident. The insurance shall include coverage for any auto or all owned, scheduled, hired and non-owned auto.

The Permittee agrees to maintain continuous, uninterrupted coverage for the duration of the Permit. There shall be no termination, cancellation, material change, potential exhaustion of aggregate limits or nonrenewal of coverage without thirty (30) days written notice from Permittee to the City. If the insurance is canceled or terminated prior to expiration of the Permit, Permittee shall immediately notify the City and provide a new policy with the same terms. Any failure to comply with this clause shall constitute a material breach and shall be grounds for immediate termination of this Permit.

The liability insurance coverages, except workers' compensation, shall be without prejudice to coverage otherwise existing, and shall name the City of Portland and its officers, agents and employees as additional insureds, with respect to the Permittee's activities to be performed, or products or services to be provided. Coverage shall be primary and non-contributory with any other insurance and self-insurance. Notwithstanding the naming of additional insureds, the insurance shall protect each additional insured in the same manner as though a separate policy had been issued to each, but nothing herein shall operate to increase the insurer's liability as set forth elsewhere in the policy beyond the amount or amounts for which the insurer would have been liable if only one person or interest had been named as insured.

Permittee shall provide proof of insurance through acceptable certificate(s) of insurance, including additional insured endorsement form(s) and all other relevant endorsements, to the City prior to execution of the Permit. The Certificate(s) will specify all of the parties who are endorsed on the policy as Additional Insureds (or Loss Payees). Insurance coverages required

under this Permit shall be obtained from insurance companies acceptable to the City of Portland. The Permittee shall pay for all deductibles and premium. The City reserves the right to require, at any time, complete, certified copies of required insurance policies, including endorsements evidencing the coverage required.

15) **Risk Management.** If a Permittee is a City bureau ("Bureau Permittee"), then Sections 13 and 14 shall not apply. If there are any claims or damages arising from this project involving a Bureau Permittee, all responsibility for the damages shall be assigned by Risk Management to Bureau Permittee.

16) **Hazardous Materials.** No materials shall be stored, used, manufactured or disposed of within the Property or the surrounding City property except in compliance with all federal, state and local laws, provided that in no case may there be stored, used, manufactured or disposed of within the Property or surrounding City property any hazardous substances, as defined by ORS 465.200 and implementing regulations of the State of Oregon Department of Environmental Quality or which constitute a public health hazard, as defined by rules of the Oregon State Health Division, and no condition shall be permitted within the Property or surrounding property which constitutes a health hazard, as defined by the rules of the Health Division.

17) **Compliance with Laws.** In connection with its activities under this Permit, Permittee shall comply with all applicable federal, state and local laws and regulations. Permittee shall correct at Permittee's own expense any failure of compliance created by the fault or use of Permittee or their agents, employees or invitees. Permittee is responsible for determining and acquiring all other permits, licenses and approvals that may be required for this project. This Permit does not bind other City bureaus to take any particular course of action with regard to adjudicating other permit applications which are necessary for the intended use of the Property.

18) **Notice.** All notices under this Permit shall be in writing and shall be deemed validly given if sent by first class or certified mail, nationally recognized courier or facsimile transmission, and shall be effective upon receipt. Notices should be addressed as follows:

To City: City of Portland
Parks and Recreation – Property Manager
1120 SW 5th Avenue, Room 1302
Portland, OR 97204-1933

To PERMITTEE: State of Oregon, DEQ
Attn: Jennifer Sutter
700 NE Multnomah Street, Ste 600
Portland, OR 97232

CONTRACTOR: Apex Companies, LLC
Attn: Ashleigh K. Fines
15850 Crabbs Branch Way Ste. 200
Rockville, MD 20855-2616

19) **Entry by City.** PP&R reserves the right to enter upon the Property for any purposes, including inspection, but agrees to make reasonable efforts not to interfere with Permittee's work when doing so. PP&R inspections are for the sole benefit of PP&R and do not constitute or imply acceptance of any work as conforming to the requirements of this Permit. The presence or absence of a PP&R inspector does not relieve Permittee from any requirement of this Permit, nor is the inspector authorized to change any term or requirement of this Permit without the written authorization of the PP&R Property Manager.

20) **Oregon Law and Forum.** This Permit of Entry shall be governed by the laws of the State of Oregon. Any suit or action arising under this Permit shall occur, if in the state courts, in the Multnomah County Court having jurisdiction thereof, and if in the federal courts, in the United States District Court for the District of Oregon.

21) **Revocable Permit.** This Permit is revocable by PP&R at any time for any reason, including failure of Permittee to comply with the terms and conditions of this Permit. No expenditure of money hereunder, lapse of time, or other act or thing shall operate as an estoppel against PP&R or the City, or be held to give the Permittee any vested or other right. In the event that the Permit is revoked, PP&R's obligation is limited, solely, to a refund of prepaid use fees, which will be prorated for the remainder of the previously-anticipated Permit term.

22) **Waiver of Breach.** The waiver by PP&R of the breach of any condition, covenant, or agreement that was meant to be kept, observed and performed by the Permittee shall in no way impair the right of the City to avail itself of any subsequent breach thereof. No waiver is effective unless that specific waiver is in writing and signed by the waiving party.

23) **Termination.** Prior to the termination date provided for by this Permit, or upon the Permit being revoked by PP&R, Permittee shall restore the Property to the satisfaction of PP&R and shall cease all activities on the Property. Improvements authorized by this Permit shall not remain in the Property without written authorization from PP&R, which may be in the form of a written extension to this Permit or a separate agreement between PP&R and Permittee.

24) **No Liens.** Permittee shall keep Property and any adjacent City property used in connection with this Permit free from any liens arising from any work performed, materials furnished, or obligations incurred by or at the request of Permittee.

25) **Entire Agreement.** This Permit contains the entire agreement between PP&R and the Permittee, regarding the subject of this Permit, and supersedes all prior written or oral discussions or agreements regarding the subject of this Permit.

26) **Illegality.** If any provision of this Permit is determined by a proper court to be invalid, illegal or unenforceable, such invalidity, illegality or unenforceability shall not affect the other provisions of this Permit, and this Permit shall remain in full force and effect without such invalid, illegal, or unenforceable provision.

27) **Assignability.** This Permit is not assignable.

30) Application and Impact Fees. The $1,000 application fee and/or any associated use fees are waived.

28) Counterparts. This Agreement may be executed in Counterparts and via facsimile or electronically via .pdf with the same force and effect as if executed in one complete document.

IN WITNESS WHEREOF, the parties have caused this Permit of Entry to be executed in triplicate on the dates shown below.

PERMITTEE

Oregon Department of Environmental Quality

Kevin Parrett	Manager, NW Region Cleanup Program
Print Name	Title
	8/31/16
Signature	Date

Contractor

Herb F. Clough	West Region Manager
Print Name	Title
	8/31/16
Signature	Date

CITY OF PORTLAND

	9-7-16
Zalane Nunn Interim Property & Business Development Manager Portland Parks and Recreation	Date

APPROVED AS TO FORM

Chief Deputy City Attorney

APPROVED AS TO FORM

CITY ATTORNEY 6F 9/2/16

Appendix B

Archaeological Documentation

TECHNICAL MEMORANDUM

Records Search for the Proposed Pacific Meats Material Placement Project,
Portland, Multnomah County, Oregon

Matt Goodwin

August 24, 2016

Introduction

Apex Companies LLC (Apex) contracted with Willamette Cultural Resources Associates, Ltd. (WillametteCRA), to conduct a records search for a proposed material placement project along the Columbia Slough in Portland, Oregon (Figure 1). The project location is adjacent to the former Pacific Meats facility in Township 1 North, Range 1 East, Section 4, Willamette Meridian (Figure 2). The proposed project will place a total of 346 cubic yards of fill over a 60,000-square-foot area of the slough along the southern shore. The project is a designed to evaluate 3 different blends of activated carbon (AC) fill material. The 60,000 square foot project area will be divided into three 20,000 foot plots, with each plot containing a different type/blend of AC material.

Regulatory Context

The Columbia Slough is a navigable waterway and sampling or mitigation activity within the waters of the slough is subject to permitting requirements of the United States Army Corps of Engineers (USACE). Under the terms of USACE issued Nationwide Permit (NWP), Apex is required to contract a professional archaeologist to review of records on file with the Oregon State Historic Preservation Office (SHPO) online database system to identify any previous cultural resource studies and archaeological or historical resources at or in the vicinity of the project location.

Environmental and Cultural Context

Environmental Setting

The proposed project lies in the Portland Basin, a broad lowland formed where the Columbia River bisects the north-south Puget Trough. In their seminal archaeological work in the area, Ames et al. (1999) refer to the study area as the Wapato Valley. The Wapato Valley is the southern end of the Puget Trough that extends from southeast Alaska to the southern end of the Willamette Valley.

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The dominant geographic features of the Wapato Valley are the Columbia and Willamette rivers and their associated floodplain systems of lakes, sloughs, and wetlands. Two topographic areas exist in the Wapato Valley: the alluvial bottom lands along the shores of the Columbia River and the uplands. Three prime factors account for the surficial geomorphology of the area: late Pleistocene glacial outburst floods, eustatic sea level rise, and Holocene alluvial deposition. The Wapato Valley falls into Franklin and Dryness' "*Pinus-Quercus-Pseudotsuga*" Zone. Along the rivers are riparian forests of black cottonwood (*Populus trichocarpa*), Oregon ash (*Fraxinus latifolia*), bigleaf maple (*Acer macrophyllum*), Oregon white oak (*Quercus garryana*), red alder (*Alnus rubra*), and ponderosa pine (*Pinus ponderosa*). Oak woodlands dominate the zone's forests and savannas. Riparian communities and poorly drained areas generally host a variety of minor hardwood species (Franklin and Dryness 1988:124-126). In addition, the Wapato Valley was home to a rich array of terrestrial and aquatic mammals, as well as fish and birds (Ames et al. 1999).

The proposed project area is located approximately 1.75 km (1 mi.) south of the Columbia River and 3 km (1.9 mi) northeast of the Willamette River. Soils in the immediate project vicinity are classed as Urban land-Latourell complex, 3 to 8 percent slopes. Urban land-Latourell is characterized by well drained loam formed on terraces from alluvium. A typical profile consists of moderately acid, loam from 0 to 16 in.; moderately acid, loam from 16 to 56 in.; and slightly acid, very gravelly sandy loam from 56 to 66 in. below surface (Green 1983).

Native Peoples

From historical accounts and ethnographic data, anthropologists have reconstructed that the project area lies within the traditional homeland of the Chinookan peoples, but other groups may have also had a presence in the area. Upper Chinookans in the Portland area consisted of two groups, the Multnomah and the Clackamas. Multnomah villages were concentrated on Sauvie Island, along the Multnomah Channel, and along the northern bank of the Columbia River downstream of the mouth of the Willamette (French and French 1998:360-363; Silverstein 1990:533-535). Several Sahaptin-named places occur within the vicinity of the Columbia and Willamette rivers. The closest of these to the current project location is *Neerchokioo*, which is described as a village area on the banks of the Columbia River, approximately 9 km (0.5 mi.) north of the current project parcel (Saleeby and Pettigrew 1983:180).

The extensive wetlands on the nearby Columbia River offered a bounty of plant resources. The most important of these was wapato, a plant that grows in shallow ponds and lakes, the tubers of which were a staple food and major trade item for Chinookans. Wapato was so abundant in the area and such an important resource for Native peoples that Lewis and Clark termed the area "Wap-pa-too Valley," Sauvie Island "Wappâto Island," and the local Indians "Wap-pa-to Indians" (Moulton 1990:24, 484). The river floodplains also had extensive prairies that attracted deer and elk, and some

of those grasslands also supported camas, the bulbs of which were another dietary staple. (Norton et al. 1983:126, 144).

Indirect contact with European Americans began to disrupt Native ways of life in the 1700s, including a smallpox epidemic in the late 1770s that may have killed a third of the population, which recurred every 20 to 25 years afterwards (Boyd 1990). Native populations in the lower Columbia and Willamette valleys were further decimated by a malaria epidemic that killed 90 to 95 percent between 1830 and 1834 (Boyd 1990).

The first major expansion of European American settlements began in the 1840s, as thousands of American settlers flooded into western Oregon and Washington. They met with minimal resistance from the Native groups that had been devastated by the epidemics. For a brief period during the 1840s, immigrants and Native populations lived uneasily side by side. By 1850, however, the need to clear Indian title to the land to provide a legal basis for the land claims of American settlers led to a series of treaty negotiations beginning in 1851.

The first treaties signed with the surviving tribes of western Oregon would have established several Indian reserves in the Willamette Valley. These treaties were never ratified by Congress due to opposition by American settlers to the reservations. Treaties signed during a second round of negotiations in 1854 and 1855 were ratified. One of these treaties included the Kalapuyan peoples of the Willamette Valley and Chinookan groups of the Clackamas and lower Willamette river drainages (Beckham 1990; Kappler 1904:II:665). No reservations were formally defined in the treaties with the tribes of western Oregon, but two reservations (Coast and Grand Ronde) were established by executive order shortly after the treaties were ratified. With creation of the reservations, federal troops began the process of relocating the lower Columbia and Willamette Valley groups to the reservations.

Archaeological Context

Archaeological survey and excavation is relatively widespread in the Portland Basin, but little of this data has been synthesized into coherent narratives. Research topics are not widely agreed upon; rather, nearly all local archaeological work has been geared towards detailed material description and site age. Exceptions occur (Ames 1994), but for the vast amount of data available, models of hunter-gatherer adaptive strategies, settlement patterns or land-use are largely non-existent.

A fairly fine-grained, chronological framework is available for the past 2,500 years of Portland Basin prehistory (Pettigrew 1981), which has been integrated into a longer, broad regional archaeological framework for the Northwest coast (Ames 1994; Ames and Maschner 1999). The last 6,000 years of Northwest Coast prehistory saw dramatic changes in Native lifeways including increased populations and density and appearance of different settlement patterns hinged on winter

sedentism and increases in logistical mobility. These changes were largely enabled by development of complex food storage technology, resource diversification and intensification, and increased social complexity (Ames 1994; Ames and Maschner 1999).

The Early Pacific Period (ca. 5,500-3,500 before present [BP]) was characterized by a cooler and moister climate and sea level was still low along the Washington and Oregon coasts (Ames and Maschner 1999). Early Pacific sites are relatively rare in the Portland Basin lowlands, but more common in the uplands, particularly inland Clark County. Assemblages often contain broad-necked, large stemmed and side-notched points. Regionally, bone and antler tools increase in frequency and groundstone appears. Resource use was diverse, suggesting a broad-spectrum diet. Few special purpose camps are evident. Storage was likely practiced in a limited fashion throughout the Early Pacific; however, it did not become important until the end of the period (Ames and Maschner 1999). No evidence for plankhouses dating to the Early Pacific has been found in the Portland area.

By the beginning of the Middle Pacific period (ca. 3,500-1,500 BP) the climate is similar to modern conditions and sea level is near current levels. The basic economic and technological traits observed at historic contact are often found (Wessen 1983:25). Square or rectangular plankhouses and villages appear elsewhere on the coast after about 3,500 BP, although the earliest houses in the Portland Basin are about 2,000 years old (Ames 1994). Site types are diverse and site frequency increases. After about 3,000 years ago, site frequency on the Columbia floodplain increases.

Most investigated sites in the region generally and the Portland Basin specifically, date to after about 1,500 years ago, the Late Pacific Period (ca. 1,500 to 100 BP). Site frequency increases dramatically, particularly on the lowlands (Ames 1994; Wessen 1983). Assemblages are thought to be diverse and contain small, triangular-shaped, narrow-stemmed projectile points. Several Late Pacific period sites in the Portland Basin have been investigated in some manner, with the best known dating to the past 800 years, including the Meier and Cathlapotle sites. Resource use appears diverse and intensive.

European American Development

The first European Americans in the project vicinity were fur trappers employed by the Pacific Fur Company, North West Company, and Hudson's Bay Company (HBC) after 1811. Most of these individuals were part of mobile trapping and trading expeditions. Settlement in the area was especially encouraged with passage of the Donation Land Act in 1850, which allowed a single man or a married couple who settled in Oregon Territory by December 1, 1850, up to 320 acres for an unmarried man and 640 acres for a couple. The current project parcel was located within the 554 acre Donation Land Claim (DLC) of John W. Force (BLM 2016). The General Land Office (GLO) map for this area depicts no development within or near the current project APE (GLO 1852). By the 1890s, property owners began to heavily subdivide their land parcels, resulting in another

increase in population along with the construction of new residences (United States Geological Survey [USGS] 1897). In 1911 there were twelve major manufacturing firms located in the Kenton Neighborhood, making this area second only to St. Johns as a manufacturing center (Mitchoff 2016). In 1905 the topographic map shows Lombard Street connecting Kenton with the St. Johns neighborhood and depicts North Denver Avenue and Lombard serving as the main thoroughfares in this portion of Portland (USGS 1905).

USGS topographic quadrangles from the early and mid-1900s depict industrial development along the slough in the project vicinity beginning in the 1920s-1930s. The 1927 USGS map of the project depicts industrial buildings along the railroad line and Columbia Blvd. in the project vicinity and the 1961 quad shows a massive expansion of industrial development in the project area (USGS 1927, 1961).

Previous Archaeology

Records on file with the Oregon State Historic Preservation Office (SHPO) show there have been multiple archaeological surveys in the vicinity of the current project area. The nearest surveys to the proposed Pacific Meats material placement project location are two surveys conducted along the slough by Heritage Research Associates in the 1990s (Musil et al. 1994, 1995), and two efforts conducted by CH2MHill in 2005 (Durio 2005) and the University of Oregon in 2006 (Bland and Connolly 2006) for proposed improvements to Interstate 5. Additionally, WillametteCRA conducted a survey for a proposed Oregon Department of Transportation (ODOT) project along Schmeer Rd. in 2013 (Ogle 2013). The WillametteCRA project is located approximately 1.25 miles east of the current project.

Musil et al. 1994 reports the results of a survey conducted for a proposed force main sewer pipeline. The survey included pedestrian survey, auger probes and monitoring of geotechnical boring. No archaeological resources were recorded during this investigation (Musil et al. 1994). The 1995 investigation by Musil et al. was conducted on behalf of the USACE for planning purposes, and did not have a specific regulatory nexus. The cultural resources assessment included background field review and limited pedestrian survey along portions of the Columbia slough, including areas adjacent to the current project area. No archaeological resources were recorded during this investigation (Musil et al. 1995).

Durio 2005 reports the results of a survey for proposed improvements along the Interstate 5 corridor, including the Denver Avenue crossing of the slough, approximately 400 m east of the current project. The 2005 effort included records review and pedestrian survey of the proposed project APE, no resources were identified within or near the Pacific Meats project area (Durio 2005). Bland and Connolly 2006 presented the results of probing and test excavations in portions of the above mentioned I5 project APE. Three shovel probes were excavated on the north side of the

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slough, approximately 300 m east/northeast of the current project APE, no cultural material was identified and no further work was recommended at this location (Bland and Connolly 2006).

Ogle 2013 reports the results of a pedestrian survey and records search for an ODOT to improve a viaduct and ramp at N. Denver Avenue and N. Schmeer Rd., approximately 1.25 east along the Columbia Slough. The survey did not identify any resources and no further work was recommended (Ogle 2013).

The nearest known precontact archaeological site to the proposed Pacific Meats material placement project area (35MU113) was recorded about 1.5 miles to the northeast, near the former shoreline of the drained Force Lake (Ellis 1998). The site consists of a possible hearth feature containing charcoal and 4 pieces of fire cracked rock. The nearest historic-period archaeological site, 35MU203, was recorded approximately 1.25 miles east of the Pacific Meats project area during a 2009 survey for a proposed bridge replacement project. The site consists of a series of abandoned and decaying wooden pilings and 3-pole dolphins along the southern shore of the slough (Chapman et al. 2009). The site was not determined to be NRHP eligible and no further work was recommended.

Conclusions and Recommendations

At the request of Apex Companies LLC, WillametteCRA has completed a records search for a proposed material placement project along the Columbia Slough in Portland, Oregon. Records on file with the SHPO show there have been multiple archaeological surveys in the vicinity of the current project area. None of these surveys have identified resources within or adjacent to the project APE. The nearest previously recorded archaeological resources are located more than 1 mile from the Pacific Meats project location. Review of historic period maps indicated industrial development along this portion of the slough beginning in the 1920s-1930s. No evidence of historic period structures within or immediately adjacent to the current project APE was indicated.

It is therefore our professional opinion that the project APE has little potential for previously unreported cultural resources and the proposed material placement project is unlikely to affect any archaeological resources. We recommend no further investigations, including monitoring, at this time. Should unanticipated archaeological or historical resources be encountered during future activities at this location, all ground-disturbing activity in the vicinity of the find should be halted and the Oregon SHPO notified immediately. In the event that evidence of human skeletal remains is encountered during future work, all ground-disturbing activity in the vicinity of the discovery should be halted immediately, efforts taken to protect such evidence in place, and SHPO, Oregon State Police, appropriate Tribes and agencies, and the Multnomah County Medical Examiner promptly notified to ensure compliance with state and federal laws.

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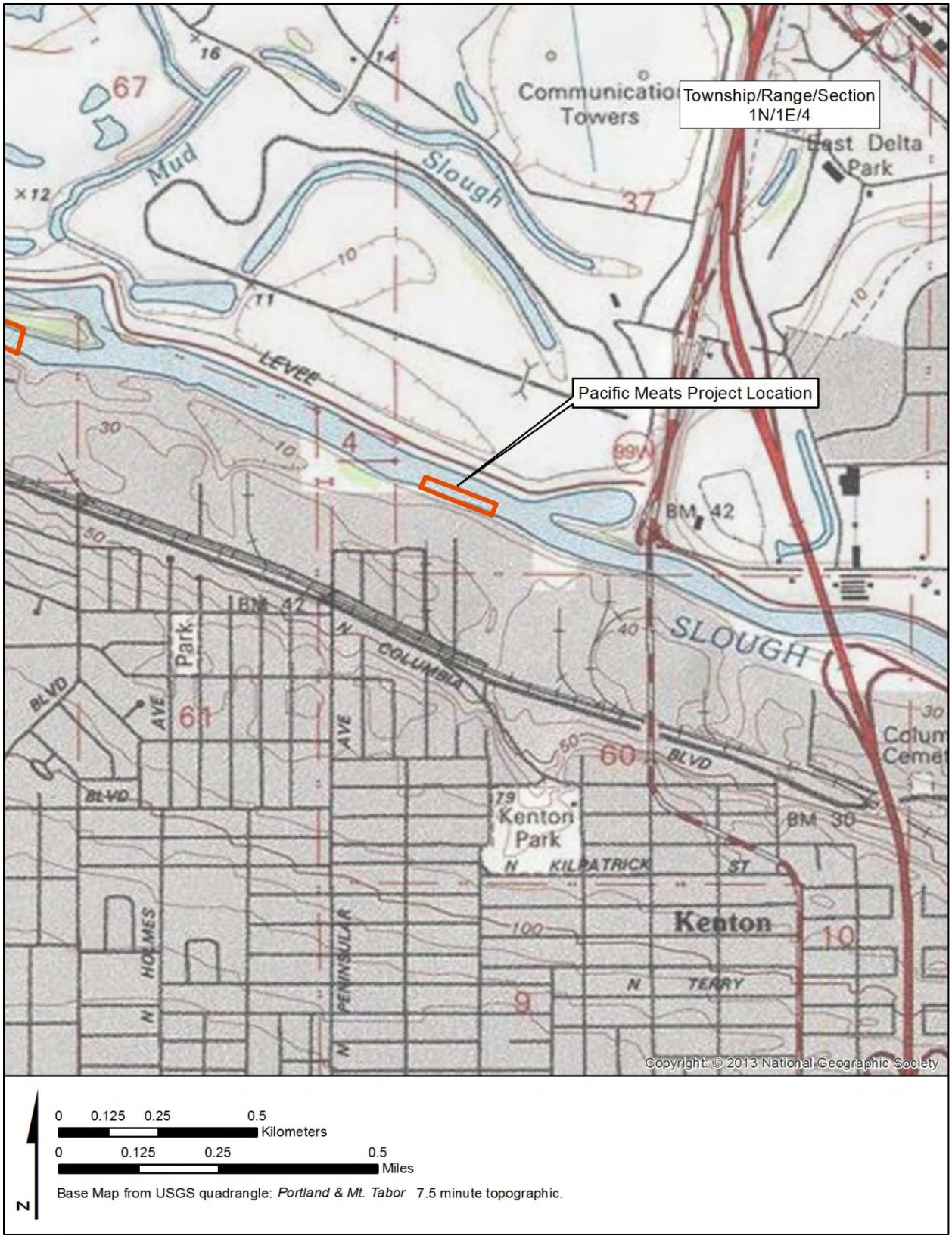

Figure 1. Project location

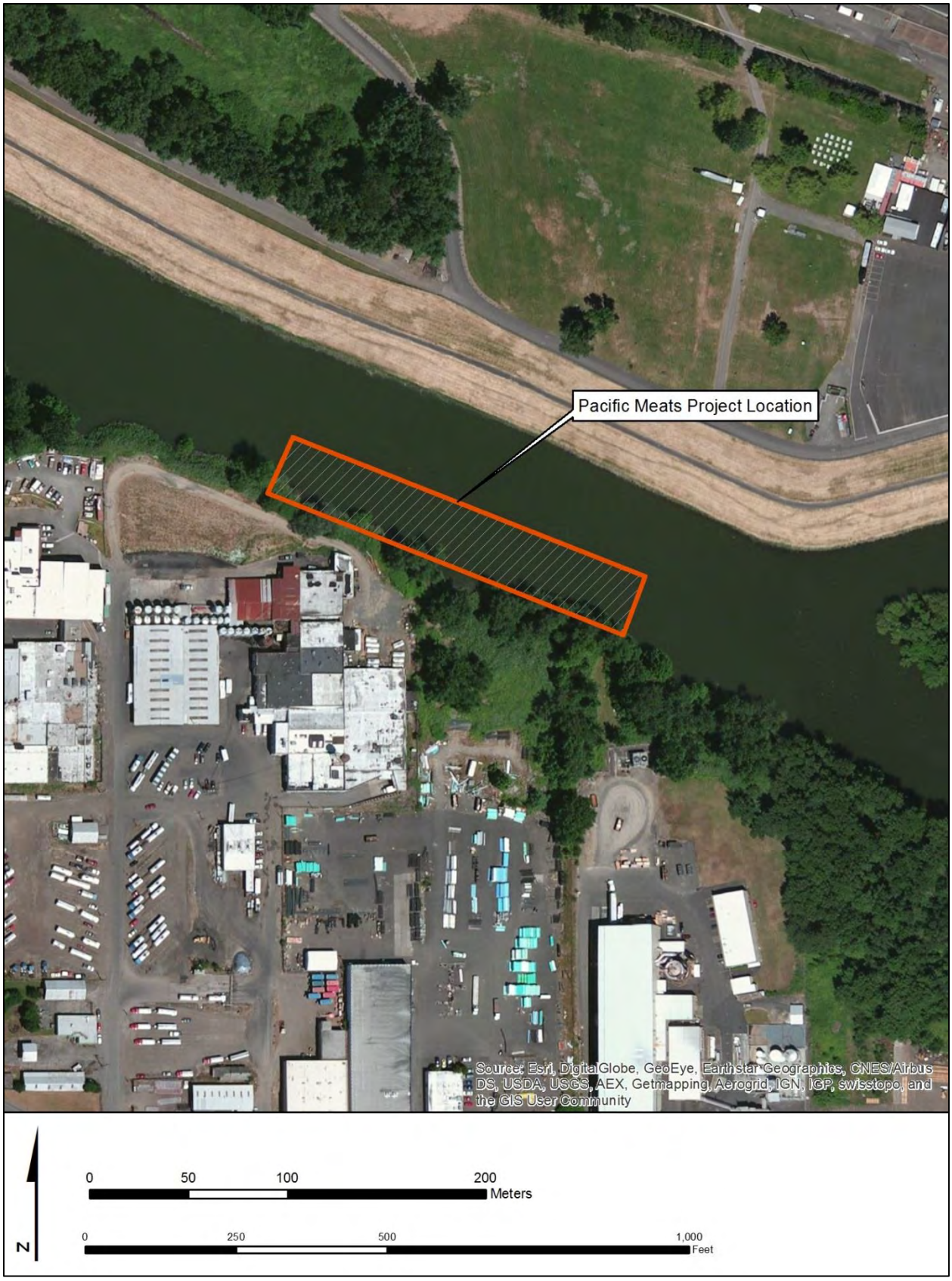

Figure 2. Aerial view of project location.

Appendix C

Dixon Technical Proposal

Dixon Marine Services, Inc.

Technical Proposal

Activated Carbon Placement Services Pacific Meats Pilot Study

20-13-37

415.669.7369 OFFICE P.O.BOX 424, INVERNESS, CA 94937 415.669.7409 FAX

Dixon Marine Services, Inc. (DMS) is pleased to submit a technical proposal for the Activated Carbon Placement Services for the Pacific Meats Pilot Study in Portland, Oregon. DMS is an Oceanographic Wetland Restoration firm specializing in the remediation of contaminated sediments. Since our founding in 1998, the business has grown around projects that include sediment investigations, water quality monitoring, hydrographic surveying, environmental dredging, and sediment capping projects. DMS is also a certified Women's Business Enterprise (WBE) and certified Small Business (SB).

Our expertise lies in our ability to define the nature and extent of an environmental problem, assess the physical setting with our oceanographic capabilities, and evaluate remedies by performing "Proof of Concept" work with our treatability lab and pilot systems. DMS can then implement remedies with our marine construction group. We have completed many in-water and near water sediment remediation projects from pilot studies to full scale applications for mitigation and restoration projects, complying with the EPA, NEPA, Oregon's DEQ regulations, Washington Department of Ecology & CEQA guidelines.

1.0 Solutions & Approach for Successful Performance

The company's past experience with in-water, thin-cap projects has proven that the most important factors for accurate thin layer placement are limiting process variables, standardization & repeatability of the placement process, and precise positioning. This Technical Approach eliminates as many variables as possible, and provides a cost effective method for accurate and efficient thin-cap placement in the sub-tidal and intertidal zones. This approach will produce robust material performance data of the Activated Carbon(AC) amendments within the site.

1.1 Capping Approach Overview

Based on the results of the Pre-Pilot Demonstration Project, two application methods will be employed. The SediMite will be placed with a blower truck using visual and engineering controls. The Aquagate will be placed with a Telebelt that will be directed using the navigation program Hypack™.

Accurate placement of the SediMite™ will be achieved through the establishment of a visual grid for amendment placement, and the dredge positioning software Hypack™. Immediately prior to placement, DMS crew will survey and stake the plot limits and create a visual grid of cells using PVC poles for the placement crew to follow. The grid will be established using RTK survey equipment and will be based on a template established in Hypack™. The placement cells will be sized to allow for the largest cell size practical while still maintaining a high level of placement accuracy. For river access and AC placement, DMS will utilize airboats and small skiffs to reduce the risk of damage to the cap from scour. Use of airboats will also eliminate the need to work off hours as airboats do not require standing water to operate, and will not be affected by river stage. This method would significantly reduce the amount of space required for operations as well as the need for site preparation required for larger, water based equipment mobilization. The airboat will be fully instrumented with navigation software and equipment as a redundancy to the visual grid established for the pilot study.

Access to the Pilot Cells for the Aquagate will be achieved by clearing and pruning under brush and tree limbs to allow increased swing radius for the Telebelt.

415.669.7369 OFFICE P.O.BOX 424, INVERNESS, CA 94937 415.669.7409 FAX

1.3 AC Amendment Placement Overview

Material supplier information generally recommends placement from 'deep water to shallow water' for areas with high risk of sloughing due to slope. Given the bathymetry of the pilot test area and recommendation from material suppliers, the risk of sloughing in this application is low.

Sedimite placement will be achieved through the use of a truck mounted aggregate blower. For Aquagate placement, a Putzmeister TB 130 Telebelt positioned on the southern bank will be used.

Weather will be a critical factor to the pilot test. It is imperative that amendment material be kept completely dry at all times until actual deployment in the slough. Final direction will be the responsibility of Apex, however, DMS strongly suggests that placement operations be suspended should precipitation be forecast.

1.3.1 SediMite Placement with Blower Truck

SediMite will be placed with a blower truck equipped with a 4" diameter discharge hose which will be controlled by DMS crew below in the slough, placing the material uniformly in each cell. Material will be loaded into the hopper in a pre-determined volume that corresponds to the area of each cell. This will prevent over, or under placement of amendment. Placement will begin at the upstream limits of the project and progress downstream, with material placement progressing from shore towards the center of the slough. Placement lanes, perpendicular to the shore, will be numbered, with 1 being the furthest upstream. Each placement cell will be identified by a letter, with 1A being the furthest upstream and inshore cell. Placement will begin with cell 1A and continue until all cells in lane 1 have been filled.

Once positioned alongside placement cell 1A, the vessel will be stabilized by small spuds and placement will commence. AC material will be loaded into the blower hopper in batches that correspond to the placement cells' percentage of the total area for each respective amendment. DMS crew will manipulate the discharge hose and deposit the AC amendment evenly throughout the placement cell with a minimum of two complete passes of coverage in each cell. Once material in the blower has been depleted, the vessel will reposition alongside cell 1B, and the process will repeat. Once the final cell for lane 1 has been filled the vessel will reposition at cell 2A and continue placement in lane 2. This process will continue until all cells have been filled. Pressure washers will be used to manage any fugitive dust generated during the placement process.

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1.3.2 Aquagate Placement with Telebelt

Aquagate™ will be placed with a Puzmister T-130 Telebelt. It will be positioned perpendicular to the slough on the southern bank, and be equipped with a spreader that redirects material flow from the Telebelt chute to a uniform sheet of material, parallel to the Telebelt boom. Prior to placement activities, a dry run will be performed on land to fine tune the variables inherent to the Telebelt. Specifically:

- Belt speed
- Swing speed
- Spreader hopper aperture

The dry run will be conducted as follows:

Material will be loaded into the feeder hopper. A suitable location for a small amount of material placement will be identified on land. Belt speed and swing rate are governed by engine RPM and rheostat controls on the operator's remote control. Based on previous experience with this method, DMS will direct the Telebelt operator to begin the flow of material over the belt at a prescribed engine RPM and belt speed. Once material flow through the spreader hopper is visible, the operator will begin to swing the belt. Once the operator reaches the opposite end of the test area, the belt will be stopped and the material deposited will be analyzed and documented for lift thickness and uniformity across the material width. Adjustments to belt speed, swing rate, and spreader aperture will be made based on findings, and if needed, a second test will be performed. This process will repeat until repeatable, accurate placement results can be expected.

The Telebelt will be equipped with RTK DGPS system running Hypack™, that will monitor and display, in real time, the position of the belt tip and center of rotation relative to the placement areas. As the boom tip passes over placement areas in arcs, a matrix file created within Hypack™ will generate a color gradient on screen that will visually confirm where material has been placed and areas yet to receive amendment. A simplified analogous explanation would be that the operator will "paint" the placement area with material. Starting at the offshore limits of the plot area, the belt will be positioned over the upstream limit of the placement area. Once material flow begins, the operator will navigate the belt tip across the plot. DMS will direct the operator to stop flow and swing based on site geometry at a line drawn perpendicular to the slough. At which point, the belt will retract the length of the spreader, re-start the belt, and proceed back across the plot area to the starting point. This will repeat until all areas within reach of the Telebelt have been filled. At which point, the truck will reposition to a new alignment downstream, and repeat the process. Belt speed and swing rate will remain constant throughout placement. Discrete areas that cannot be reached due to trees or other obstructions will be marked with PVC poles for hand Line-Vac application.

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The Line-Vac™ is a pneumatic device that when installed in-line and supplied with compressed air, creates a strong vacuum that is capable of transporting granular material over moderate distances and elevations.

For placement using the Line-Vac™ system, the area of the amendment plots will be delineated in the same manner as with the blower truck approach and areas that were deficient will be amended. The material will be loaded into a small hopper on the southern bank. Each hopper will be manned and equipped with a tow-behind air compressor to provide air to operate each Line-Vac™. Material will be loaded into the primary hopper in a pre-measured amount based on the cell area. One or more intermediary hoppers may be necessary to productively transfer material to the placement crew. These will be set in place by a mobile hydraulic crane and be set inside secondary containment at all times and equipped with fire extinguishers and spill kits. If necessary, additional compressors and Line-Vacs™ can be installed on a shallow draft aluminum pontoon boat positioned in the slough.

1.4 Material Handling

Material for the project will be delivered to the site from the Apex holding facility where the material was stored indoors until delivery. It is anticipated that Apex will provide the transport of material to the site using a flatbed truck, in batches, based on laydown area availability at the site and weather predictions. Once onsite, material will be completely covered with plastic at the end of each work day to protect from moisture. Sacks will remain on pallets until they are emptied at the site. Loading will be done with a telescopic forklift into the hopper of the blower truck.

1.5 Quality Control

The following section provides an overview of the quality control efforts DMS will perform to ensure accurate placement of AC amendments.

Primary quality control will be achieved by limiting the placement cells to manageable sizes that correspond to the known weight of material to be applied to each cell. For the Aquagate™, one whole sack will be loaded into the blower truck at a time. Once the material from one sack is depleted, the correct amount of amendment will have been placed.

Secondary quality control measures will be test pans. These will be placed on the river bottom prior to placement with a frequency of one pan for every 5000 square feet. These pans will be retrieved immediately after placement and will be used to verify target thicknesses are being met.

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Prior to in-water amendment placement, DMS will perform on-shore demonstrations to familiarize the crew with the dispersal equipment and confirm the feasibility of the proposed cell size. DMS will perform two test demonstrations, at minimum, per amendment to the satisfaction of the engineer. Ideally, two DMS crew members will be selected to place material and only those selected as suitable by the engineer will perform in-water placement, to provide placement consistency

Super sacks will be marked with the corresponding placement cell for potential review and a concise log will be kept of all placement activities both on land and at the application site.

1.6 Water Quality Protection

Dixon Marine Services, Inc. fully acknowledges and will adopt all the requirements of the engineers Water Quality Plan. One of the primary environmental concerns associated with in-situ treatments is the increase of suspended solids in the water column during amendment application. The amendment operations will result in a controlled increase in turbidity in the work area. DOT Type 2 turbidity barriers will be placed to surround the work site prior to any in water work. Water Quality parameters, including Turbidity (NTU), will be monitored during all in-water work where the sediment has the potential to be disturbed. Water quality monitoring criteria for this project is regulated and turbidity shall not exceed a 10 percent increase in turbidity over background. Measurements will be taken at regular intervals and at locations specified in applicable permits and specifications. DMS will use a handheld Quanta data collector for water quality measurements.

1.7 Overview of Equipment & Personnel

Staffing for Positioning and Placement

- 1 Leverman
- 2 Deck Hands
- Project Superintendent
- Field Engineer

Staffing for Material Handling

- 1 Equipment Operator
- 1 Deck Hand
- 1 Blower Truck Operator
- 1 Telebelt operator

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Equipment Overview

- Aggregate Blower Truck
- 6000 lb mast forklift
- Flatbed truck or Trailer
- Work trucks
- Putzmeister TB130 Telebelt
- DMS Air Boats (2)
- Telescopic Forklift
- DMS "Work Skiff" (24'x8' Single Screw 115hp)
- Survey Equipment

.

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2.0 Experience & Past Performance

DMS, Inc. has performed significant capping projects over the last five years with increasingly precise tolerances specified. DMS has performed work on RAD sites at the Seaplane Lagoon in Alameda and Hunters Point naval ship yard, therefore has completed all equipment and personnel safety protocols required. DMS has been involved in most of the high profile EPA site remediation projects in the San Francisco bay area. Most recently DMS constructed and monitored an acre test cell at Hunters Point, composed of SediMite™ and Aquagate™.

Hunters Point Naval Shipyard (HPNS) is located in southeast San Francisco on a peninsula that extends east into the San Francisco Bay. Historical site activities resulted in the release of chemicals to offshore sediments in Parcel F, which includes approximately 457 acres of offshore sediment within San Francisco Bay that bounds HPNS to the north, east and south. The southern portion of Parcel F – referred to as South Basin – has been affected by the release of PCBs from on-shore activities. Treatability studies conducted under three SERDP/ESTCP projects (Luthy et. al., 2009) have indicated activated carbon (AC) may be effective in reducing the bioavailability of PCBs. Earlier studies were performed in the shallow intertidal areas. The current field pilot study is assessing the effectiveness of two types of carbon, in deeper water that is more representative of the depths where full-scale remediation is expected, and with a different AC deployment method.

The field pilot was designed to assess the efficacy of two types of carbon amendment in reducing the ecological risk associated with PCB-contaminated sediment and to assess the use of full scale equipment within the tidally influenced work area. The AC amendments selected for testing in this pilot study were (1) a composite particle system based on the AquaGate™+ PAC™ technology platform (henceforward referred to as AquaGate™; AquaBlok Ltd., Toledo, Ohio), and (2) SediMite™ (Sediment Solutions, Ellicott City, Maryland). Two 0.4 acre plots within a 1-acre pilot area were designated for placement of each amendment. The plots were separated by a buffer zone approximately 45 feet wide. This pilot study included amendment placement in both shallow and deeper water without any mechanical mixing. One of the performance objectives for this study was designed to assess physical endpoints, including amendment placement, distribution, mixing and stability. Other objectives focused on measuring tissue concentrations, evaluating changes to benthic invertebrate communities, and chemical analysis for parameters including PCBs, total organic carbon, and black carbon.

Accurate placement of the AC was achieved through a truck mounted Telebelt radial conveyor system positioned on a barge that was equipped with a 4-point anchor system to provide maneuvering capabilities and ensure that the barge was stationary during placement activities. The anchors were positioned outside the AC placement area. Accuracy during placement activities required maintaining a constant thickness of AC on the Telebelt conveyor (by maintaining a full feed hopper) and consistent conveyor belt and swing speeds. The Telebelt was equipped with a custom fabricated spreader with an adjustable aperture fitted to the discharge end, which allowed amendment to be vertically released in a 3-foot wide swath perpendicular to the swing arc. The barge and the Telebelt were each equipped with real time kinematic global positioning systems (RTK GPS) that displayed and recorded the exact position of the placement equipment. The positioning information was continuously transmitted to an onboard navigation and monitoring system that recorded the horizontal position and track lines to ensure there were no gaps in coverage. Cover thickness during placement was verified using settling pans (galvanized washtubs, approximately 2.5 feet in diameter and 18 inches deep) placed on the bottom of the test area. Upon retrieval, the AC thickness measured in the settling pans represented the AC thickness on the sediment. Subsequent quartile monitoring by the project engineer is being conducted with DMS in collecting push cores, installing and retrieving pore water samplers deploying and retrieving laboratory tissue analysis from Bivalves and Slice camera work looking at how the vertical profile of the carbon amendment is morphologically changing with time.

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In 2012 DMS completed a 5-year project at Castro Cove for Chevron and administered by URS Corp in Richmond, California. It started with vibracoring, dredging and then treatability studies before the actual capping work in 2011. This project successfully remediated the historical discharge from the Chevron Refinery. DMS performed the work through every phase of the project over the course of 5 years. This capping effort had three layers. The first was laying out a Reactive Core Mat (RCM) over the most problematic area, about 5 acres. The second layer was a 6" sand cap over the full 20 acres and then third, an 18" clay/silt layer from local young bay mud. The sand was obtained through DI Aggregates and delivered to the site by barge and tug services provided by Jerico/Lind Marine. DMS provided design assistance and implementation of the capping process and project technical design assistance from Dr. Ian Austin (URS).

In 2013 DMS completed the remediation and abatement of lead shot at the south shore of Treasure Island for the U.S.D.O.D. and was administered by Tetra Tech. DMS provided the dredging and subsequently the two phase capping of the area. The capping consisted of an 18" layer of coarse sand and a 12" layer of armor stone.

The latest project just completed in February of 2015 was a precision dredging and capping project for the Port of Ridgefield, WA. This project consisted of high precision mechanical dredging of constantly variable bucket cut depths. After the dredging was completed and accepted, a 12" layer of sand was placed over the area, approximately 11 acres in water. This was completed using two 6" passes. The last application was a 6" thick layer of 12" minus river rock of varying thicknesses in the intertidal zone, approximately 4 acres.

The two most technically complex are included below, the Castro Cove Remediation project and the Port of Ridgefield, WA. Remediation project.

Figure 2A – Slurry Sand Capping at Chevron

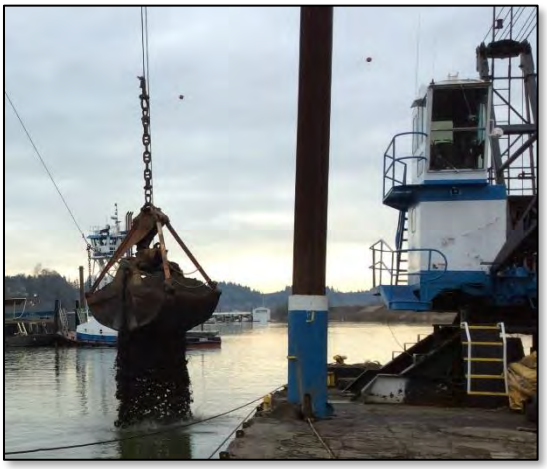

Figure 2B – Mechanical Sand Capping at Ridgefield

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2.1 Hunters Point Naval Shipyard Activated Carbon Pilot Study, San Francisco, CA (2015-2016)

Owner: U.S. Navy
General Prime: CH2M Hill – 155 Grand Avenue, Suite 800 Oakland, CA 94612
Contact: George Hicks – Project Manager
Phone: 8129461669
Contract Amount: $250,000 | DMS Sub
Construction Time:
Placement – 6 Days
On Schedule: YES
Claims or Disputes: None

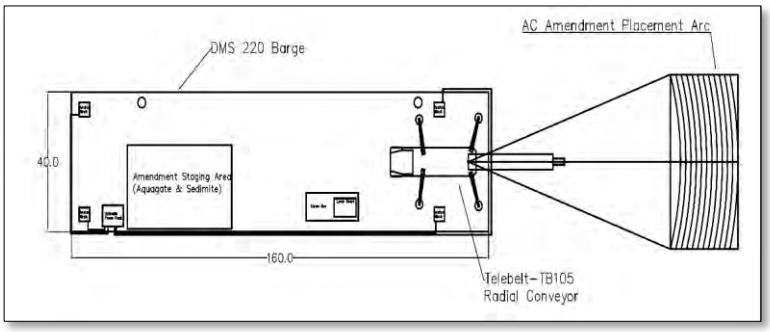

Figure 5 – Telebelt Placement Barge Layout

Historical site activities resulted in the release of chemicals to the environment, including offshore sediments. Two apparent major source areas of polychlorinated biphenyl (PCBs) to the South Basin were identified. PCB-concentration gradients indicated that the highest concentrations of PCBs were discharged to the South Basin via a former slough at the north end of the basin.

The project is a pilot study for evaluating and validating activated carbon (AC) amendment placement for in-situ treatment of PCB contaminated sediments at a test site in the South Basin of Parcel F within Hunters Point Naval Shipyard and included placement of activated carbon in both shallow and deeper water on the sediment surface without any mechanical mixing. The study focuses on validating (1) placement of two types of activated carbon amendments, AquaGate™ + PAC & SediMite™, within two half-acre plots of a single parcel's sediments, (2) physical stability and longevity of the amendments in the sediment following placement, (3) effectiveness of the amendments in controlling contaminant bioavailability over time, and (4) response of the benthic community to the amendments.

For accurate amendment placement, DMS deployed a 220 barge equipped with a 4-point anchor system that provided maneuvering capabilities and ensured the barge stability during placement. Both the barge and the Radial Stacker were equipped with RTK GPS systems that displayed and recorded the exact position of the placement equipment at all times during the project. Operators positioned the barge and placed material with the aid of a computer running the dredge positioning software Hypack™. The safe telescoping range of the Radial Stacker allowed the maximum amount of coverage with minimal barge fleeting within the Pilot Area. Material passing over the Radial Stacker entered a spreader that directed the material flow such as to discharge a uniform sheet of material across its width. Rate of placement was regularly confirmed by totaling the area covered by the spreader and the calculated and actual weight of material used.

Turbidity curtain was deployed across the entire width of the cove, completely isolating the area from the rest of San Francisco Bay.

2.2 Lake River Sediment Remediation (2014 – 2015)

Owner: Port of Ridgefield – 111 W Division St. Ridgefield, WA 98642
Owner Contact: Laurie Olin Director of Operations - Port of Ridgefield phone: 360.887.3873 lolin@portridgefield.org
Engineer: Maul Foster & Alongi | 2001 NW 19th Avenue, Suite 200, Portland, OR 97209
PM: Madi Novak
Phone: Direct 503 501 5212 | Cell 971 227 1060
Email: mnovack@maulfoster.com
Engineer: Connor Lamb, PE
Phone: Direct 503 501 5213 | Cell 360 977 8056 Email: clamb@maulfoster.com
Bid Price: $4.5 Million | DMS Prime:
Final Construction Cost: $5.5 Million
Construction Time:
Dredging – 42 Days,
ENR Sand Cap – 25 Days
Fish mix Placement – 20 Days
Completed on Schedule: Yes
Claims or Disputes: A 'Change of Conditions' relating to the sediment dewatering process.

Figure 3 – Precision Dredging with Young Clamshell Bucket

This site was home to the most productive wood and timber treatment plant that supplied building materials for the Vietnam war effort. The remediation of Lake River followed a 3 phase approach. The dredging and transloading of contaminated sediment was followed by the placement of an Enhanced Natural Recovery (ENR) layer of sand and finalized with 25,000 tons of a 'Fish Mix' aggregate along the shoreline to facilitate the creation of spawning habitat for native salmonids.

Dredging was performed over the site with a precision dredging Young Hydraulic Clamshell bucket mounted on a CAT 374 excavator with positioning in all 3 axes (XYZ) including rotation to within 2 cm. 11,000 cubic yards of sediment was removed from the site after being dredged and offloaded to a treatment site that required a rigid decontamination protocol. The material was treated with an amendment before trucking.

The dredge template and surrounding sediment was then capped with an ENR sand. The cap was placed with two different clamshell buckets using precise techniques demonstrated with a two pass system resulting in an even spread of six inches each. The operator used RTK GPS and Dredgepack™ software for precise placement and tracking of the sand cap.

The river rock aggregate called "fish mix" was placed from both the land and the water side. Most of the placement was performed on land with standard construction staking methods using excavators. All the material was delivered by barge and either placed or transferred to the beach for placement.

The Turbidity monitoring controls incorporated the use of floating data collection platforms. Each platform collected data for pH, temperature, turbidity, dissolved oxygen content, and conductivity in the water. The data was then uploaded via a cellular network modem to our partners at Eyasco Inc. which publish the data online for review and provide early warning alerts when key parameters hit predefined thresholds.

2.3 Castro Cove Sediment Remediation, Richmond CA (2007-2012)

Owner: Chevron, Chevron Environmental Management Company 940 Hensley Street Bldg. 227, Room 94 Richmond, CA 94801
Owner Contact: Paul Ryan – Project Director
Phone: 925-548-8900
Engineer: URS Corp Post Montgomery Center, One Montgomery Street, Suite 900 San Francisco, CA 94104
Eng. Contact: Ian Austin, PhD, P.E. Vice President, Marine Services - 415-686-6474
Contract Amount: $12.5 Million | DMS Prime
Final Construction Cost: $12.5 Million
Construction Time:
Dredging – 45 Days
Sediment Cap 90 Days
Sheet Pile Removal – 5 Days
Completed on Schedule: YES
Claims or Disputes: None

Figure 4 – Castro Cove Capping AOC

The remediation and restoration site presented a very challenging environment with extensive, very soft tidal mudflats subject to twice-daily exposure, adjacent to an active refinery and wetlands. In 2007 DMS, dredged 97,000 cubic yards of contaminated sediment, with a hydraulic dredge from a 20-acre expanse of tidally influenced wetland defined by 2,700ft of sheet pile wall. The sheet-pile enclosure was used to maintain 3 to 5 feet of water over this Area of Concern (AOC).

By 2010, confirmation testing of residual exposed sediment indicated it did not meet regulated concentrations resulting in design and construction of an in-situ engineered cap. One Geosynthetic Clay Liner overlaid with a two-layer sand and clay cap was designed using the Reible™ chemical flux model, including a 6-inch minimum thickness sand layer and 18-inch minimum thickness clay layer (Bay mud). In 2012 DMS constructed these thin cap remedies. The Sand layer provides containment and isolation; clay layer provides for benthic community and marsh restoration. The clay layer material came from beneficial reuse of sediment dredged from two nearby maintenance dredging projects.

The exposed contaminated sediment could not be disturbed or remobilized during placement of the sand layer resulting in a need for considerable finesse during sand placement. Access to the cap placement site had limitations because the water was not deep enough to allow daily access by a small sand barge. Therefore, the sand cap was placed hydraulically by pumping the 'sand-slurry' from a yacht harbor one mile away. A closed loop make-up water system was constructed because discharge of decant water was not allowed. Hydraulic placement of the 6-inch sand layer required the design and construction of a winch-driven placement barge. The placement barge navigation system included two DGPS antennas, real-time kinematic positioning and a Hypack™ navigation system. The spreader tray on the placement barge was designed to slow the 3,300gpm, 14% solids, sand slurry from 12' to 14' per second to 2'-3' per second with horizontal discharge into AOC water causing sand to fall out under gravity, thereby minimizing bottom disturbance. The barge placement speed was 4 feet per minute; its location was tracked in real-time using Hypack. The thickness of placed sand was confirmed visually on daily basis using transparent core tubes, and weekly using a purpose-built, 5-sensor shallow water bathymetric survey system.

2.4 Treasure Island (IR Site 27), Treasure Island, CA (2013)

Owner: U.S. Navy
Prime Contract Number: N62473-12-D-2006 - NAVFAC SW – UR EMAC
Contact: Lora Battaglia
phone: (619) 532-0968
email: lora.battaglia.ctr@navy.mil
Engineer: Tetra Tech EC, Inc. | 1230 Columbia St. Ste. 750 | San Diego, CA 92101
Contact: Vince Richards
phone:949-283-0589
email: vincent.richards@tetratech.com
Contract Amount: $1.4 Million | DMS Prime
Construction Time:
Dredging – 42 Days
ENR Sand Cap – 25 Days
Fish mix Placement – 20 Days
Completed on Schedule: No
Claims or Disputes: None

Figure 6 – Capping Layer of Sand Filter Material

IR Site 27 is located along the Southern side of Treasure Island in San Francisco Bay. DMS performed clamshell dredging of sediment in Clipper Cove at the former Naval Air Station Treasure Island (TI) to achieve the environmental cleanup goals of the US Navy in support of the Base Closure and Realignment Program. The constituent of concern for this project was lead shot deposited when the area was previously used as a skeet range. The lead shot poses an ecological concern for diving ducks that may consume the lead shot in the cove. Dredged material was deposited in a hopper barge for transport to Naval Air Station Alameda (Alameda Point) where it was offloaded, dewatered, and characterized for disposal.

Figure 7 – Turbidity Curtain Install

DMS provided continuous water quality monitoring using DCP's at two locations and at two different depths. Data was presented to a web page in real time for the regulatory committee and client to monitor during the course of the dredging process. Twenty-foot turbidity curtain was used as an engineering control to manage any suspended solids generated during the dredging or capping process.

After the completion of dredging and disposal operations the dredge template was capped with filter material and an armoring layer to eliminate any residual exposure. Dredge and capping tolerance was accurate to six inches. This cap prevents the future mobilization of lead shot located below the proposed dredge template. Material was placed in two layers; one layer a filter material and the other an armor material. Material arrived to Clipper Cove on deck barges and was placed per the project specifications using the DB Columbia.

3.0 Company & Personnel information

Please refer to the resume package attachment of qualified Storm Water Pollution Prevention Plan (SWPPP) Practitioner (QSP), Project Manager, Health & Safety Manager, and other key personnel (see the 'Additional Attachments' folder). Also attached is an organizational chart that identifies the proposed project management team. DMS will subcontract QSP services, crane services and tug boat services as required. No other subcontractors will be included for this project. DMS employs are a highly skilled marine labor force with decades of over the water experience. All DMS professional and field employees have their 40hr Hazwoper Training, as per 1910.120. All of the staff proposed for this project have extensive capping experience and all have worked on the most recent carbon pilot study at Hunters Point.

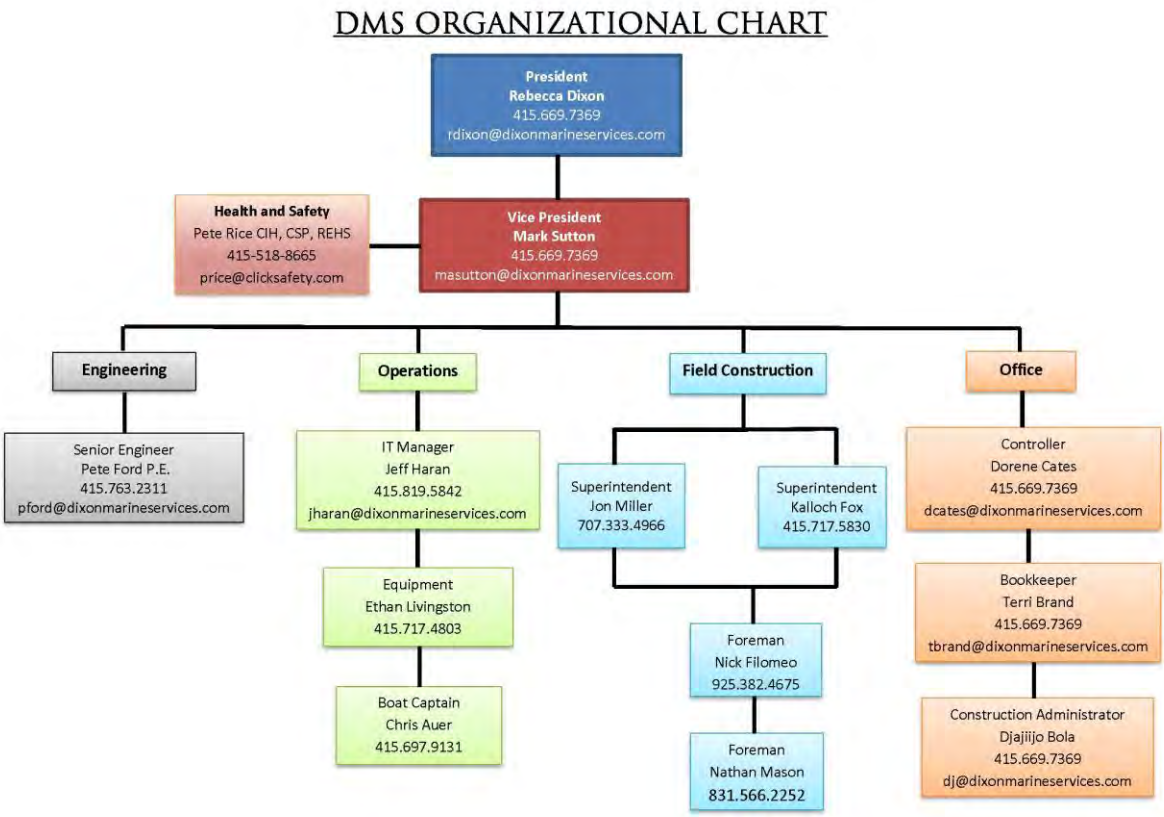

Figure 8 – Organizational Chart

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3.1 Project Management

Project management for this project will encompass overseeing the sites SSO, Superintendents and the engineering for implementation of the project. The PM will work with the project's engineers to produce meaningful data from this pilot study. The health and safety of all personnel involved with the project is the first concern, ensuring the project will be implemented in a safe and productive manner. This will include additional and refresher training for the field staff, developing AHAs that reflect the tasks at hand and review exiting AHA for tasks we perform on a routine basis on the water.

Project management will also encompass the communications with client, engineering staff, regulatory agencies, as well as state and local agencies. Police, Fire, Coast Guard and Vessel Traffic Services (VTS) will be notified of the proposed hours of operations and associated activities along with contact names and numbers. As part the Float Plan, local emergency facilities will be notified as well.

Project QA/QC will be managed from project inception and throughout pre-mobilization activities of setting up the placement barge for capping operations and installing the navigation control and testing systems prior to departure. Pilot placement tests will be performed at the job site to calibrate the carbon delivery rate and placement thickness. Pre-deployment tests will be performed at the site on the material barge all products to ensure proposed equipment will perform for the different products as designed. This step is essential to ensure the deployment goes according to plan.

Project management will encompass the management of the project schedule and the day to day performance of the project to ensure the timely and safe completion of the project.

4.0 Business Factors

DMS is a proud member of the Engineering & Utility Contractors Association and Western Dredging Association and has worked extensively with the Oil and Gas Industry, Transportation and Power Industries on a broad range of wetland and sediment projects. We have worked closely with the Army Corps (USACE), Water Resources Department, Oregon's Department of Environmental Quality, Department of Ecology with the State of Washington, California Fish and Wildlife (CDFW) as well as many other governmental and non-governmental organizations such as the San Francisco Estuary Institute (SFEI), on a host of projects all along the west coast. DMS understands that communication and collaboration are the keys to a successful venture; our reputation for achieving success precedes us.

DMS believes a conscientious Health and Safety program is a necessary concern which operates at all levels of the corporation. As an employer, we recognize our responsibility to provide a safe and healthy work environment to our employees. We understand that it is our responsibility to provide tools to our employees in order to assess, engage, assist and reinforce safe behaviors. DMS has implemented a behavior based health and safety program where individuals hold safety as a value and not a just a priority. Individuals take responsibility for the safety of their co-workers in addition to themselves and all levels of employees are willing and able to act on the science of responsibility.

The elements to our program to facilitate a 'Total Safety Culture' are:

1. A strong management commitment towards maintaining and improving behavioral safety, witnessed in the regular acts of individuals at the management level.
2. Respectful, trusting open communication between management and employee groups about all aspects of safety in the work place.
3. All employees have stop work authority.
4. An open, feedback-rich culture among employees which enables consistent growth and learning.

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5. A commitment to improving the profile and attitude to health and safety and increased employee engagement in safety.
6. A strong, consistent, timely reaction to the discovery of unsafe acts, weather the result in injury or not.
7. Safety incidents are viewed as an opportunity to learn and improve.
8. Generally transparent and fair leadership from all, from the owner down to the entry-level employee.

The nature of our work demands the attention and active participation of every employee. Owner, managers and supervisory personnel are expected to provide leadership which encourages compliance with safe work practices.

The company's Experience Modification Rating (EMR) has progressively been trending downward. This is attributed to several factors: a steady work force, many of our employees have been with DMS for more than 8 years and have, over time, embraced our approach to safety. The program itself is well established and the concept on responsibility for an employee's co-worker has a strong resonance throughout our company. There is an open, feedback rich atmosphere in the firm that helps propagate our philosophy. Please refer to attachments for more details on DMS' Health & Safety Program example of certificate of insurance, evidence of bonding capacity, small business certification, and financial viability.

5.0 Cost Proposal

DMS' Cost estimate is based on the information provided by Apex. All DMS staff members are current with OSHA 1910.120 health and safety requirements. DMS anticipates 4 days for Mobilization and 18 days of in water work. Including site setup of turbidity curtain and water quality equipment.

Bid Schedule

ITEM	UNITS	UNIT PRICE	EXTENDED PRICE
MOB/DEMOB	1	$40,150	$40,150
SITE PREP	1	$50,560	$50,560
ACTIVATED CARBON PLACEMENT SERVICES	1	$124,080	$124,080
	Total Cost		$214,790.

Respectfully Submitted,

Mark A. Sutton
Principal
Dixon Marine Services, Inc.

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General Terms and Conditions:

- Availability of personnel and equipment are subject to written notification of award of contract and with specified notice period for mobilization.
- Pricing is based on Dixon Marine Services, Inc. providing all labor and equipment necessary to complete the work in a safe and timely manner.
- Price is based on client managing all investigation derived waste
- Pricing does not include "As Built" drawings.
- All prices and terms quoted herein are valid for a period of 15 days FOR ACCEPTANCE from the date of this proposal.
- Pricing is based on continuous operation, including mobilization and demobilization.
- Pricing does not include additional mobilization/demobilization.
- This contract is governed under the laws of the State of California, U.S.A.
- Does not include cost for permits.

Technical Proposal Assumptions:

- DMS assumes that we will have full unrestricted access to the site 24 hrs per day 7 days per week.

Appendix D

Photographic Documentation

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 1

Photo Date: August 26, 2016

Orientation: North

Description:

Pre-pilot test of AquaGate+PAC™ with bark blower.

Photo No: 2

Photo Date: August 26, 2016

Orientation: North

Description:

Land test of telebelt with AquaGate+PAC™

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 3	
Photo Date: September 2, 2016	
Orientation: Northeast	
Description: Lowering jet boat into Slough with mobile crane.	

Photo No: 4	
Photo Date: September 2, 2016	
Orientation: Northeast	
Description: Installation of turbidity curtain.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 5	
Photo Date: September 2, 2016	
Orientation: Northeast	
Description: Sweeping fish from application area during turbidity curtain installation.	

Photo No: 6	
Photo Date: September 6, 2016	
Orientation: East	
Description: Loading blower truck with Sedimite™.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 7	
Photo Date: September 6, 2016	
Orientation: Southwest	
Description: Blower truck staged at top of bank with hard and flexible piping leading to Sedimite™ application area.	

Photo No: 8	
Photo Date: September 6, 2016	
Orientation: Southwest	
Description: Sedimite™ application with barge for worker access to Slough and pressure washer for dust control.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 9	
Photo Date: September 6, 2016	
Orientation: East	
Description: Sedimite™ application from shore.	

Photo No: 10	
Photo Date: September 10, 2016	
Orientation: Northeast	
Description: Loading hopper that was used to transfer AquaGate+PAC™ onto a converyor belt to be loaded into telebelt.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 11	
Photo Date: September 10, 2016	
Orientation: Northeast	
Description: Fully extended telebelt used to apply AquaGate+PAC™.	

Photo No: 12	
Photo Date: September 10, 2016	
Orientation: Southwest	
Description: Telebelt applying AquaGate+PAC™.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 13	
Photo Date: September 10, 2016	
Orientation: South	
Description: Tracking of telebelt location to monitor application of AquaGate+PAC™.	

Photo No: 14	
Photo Date: September 10, 2016	
Orientation: Northeast	
Description: Application of AquaGate+PAC™.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 15	
Photo Date: September 10, 2016	
Orientation: Southeast	
Description: Placement of layer thickness measurement pan for quality control.	

Photo No: 16	
Photo Date: September 10, 2016	
Orientation: Southwest	
Description: Retrieval and measurement of layer thickness in previously placed pan.	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 17

Photo Date: September 13, 2016

Orientation: Northeast

Description:

Verification of layer thickness using Russian Peat Corer.

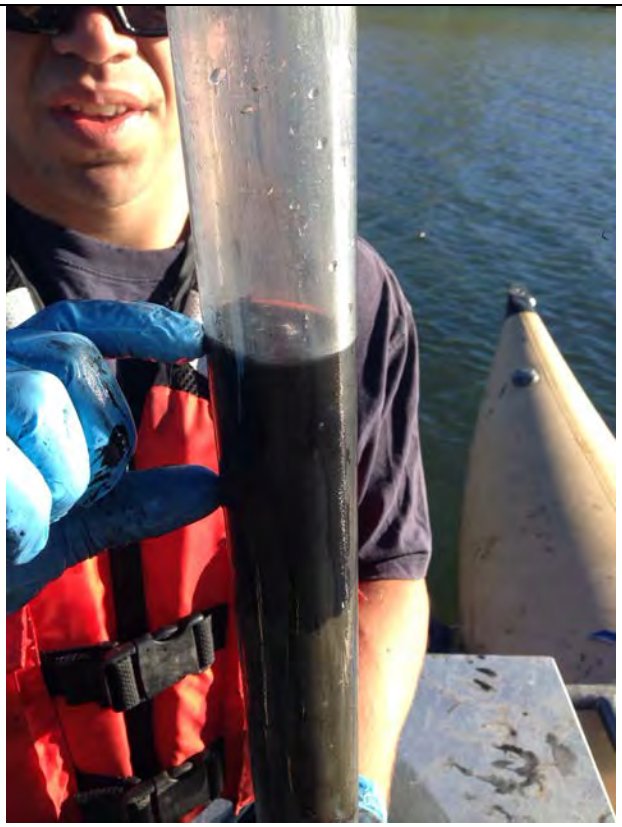

Photo No: 18

Photo Date: September 7, 2016

Orientation: North

Description:

The variation in size of Sedimite™ products from different supersacks.

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 19	
Photo Date: September 7, 2016	
Orientation: North	
Description: Scratch test showing differing hardness of Sedimite™ products.	

Photo No: 20	
Photo Date: September 10, 2016	
Orientation: Northeast	
Description: Aquagate+PAC™ after application	

PHOTOGRAPH LOG

Project Name: Pacific Meats Pilot Study
Project Number: 1888-03

Client: Oregon DEQ
Location: Portland, OR

Photo No: 21	
Photo Date: September 13, 2016	
Orientation: Northeast	
Description: Separation of PAC from aggregate core in Aquagate+PAC™	

Photo No: 22	
Photo Date: September 10, 2016	
Orientation: Northwest	
Description: Sedimite™ after application.	

Appendix E

Quality Assurance Monitoring Sample Results

Table E1 – Quality Assurance Sample Results
Pacific Meats Pilot Study
Oregon Department of Environmental Quality
Portland, Oregon

Quality Control Sample	Layer Thickness (inches)
Sedimite™	
Pre-Placed Pans	
1A	0.4
2A	1.75
3A	1.25
4A	0.7
5A	1
6A	0.3
7A	0.5
8A	0.7
9A	1
10A	0.4
11A	1.5
12A	0.8
13A	0.6
14A	0.8
15A	0.5
16A	0.5
17A	0.6
18A	0.8
20A	0.3
1B	2
2B	1.5
3B	1.5
4B	2.25
5B	2.25
6B	0.75
7B	2
8B	2
9B	1.75
10B	2.25
11B	1.5
12B	1.5
13B	3.5
14B	2
15B	0.5
16B	0.1
17B	0.1
Average pre-placed pan thickness	1.2
Core Samples	0.5
	0.3
	0.3
	0.6
	0.2
	0.3
	0.5
	0.2
	0.1
	0.2
	0.3
	0.1
	0.1
	0.2
	0.8
	0.3
	0.1
	0.4
	0.1
	0.5
	0.1
	0.1
	0.2
	0.1
	0.2
	0.1
Average core sample thickness	0.3
Average Sedimite™ layer thickness	0.8

Table E1 – Quality Assurance Sample Results
Pacific Meats Pilot Study
Oregon Department of Environmental Quality
Portland, Oregon

Quality Control Sample	Layer Thickness (inches)
AquaGate+PAC™	
Pre-Placed Pans	
1	3.5
	1.5
	2
	2.5
	2.5
	2
	1.25
	1.5
2	0.25
	1
	2.5
	1
	1.5
	1.5
	1.25
3	3
	1.8
	1.3
	1.5
	1.6
	0.25
	2
	2.5
4	0.75
	1.4
	2
	3.25
	3.25
	1
	2.75
5	2
	2.5
	1.5
	2
	2.5
	3
	1
	3.5
6	0.5
	1
	2.5
	3
	3.5
	1.75
	3.5
Average pre-placed pan thickness	1.9
Core Samples	2.0
	2.0
	1.0
	0.5
	1.2
	1.3
	1.5
	2.0
	2.0
	1.8
	2.0
	2.2
	1.8
	1.9
	2.1
	1.8
	2.5
Average core sample thickness	1.7
Average AquaGate+PAC™ layer thickness	1.9

Table E2 – Turbidity Measurements
Pacific Meats Pilot Study
Oregon Department of Environmental Quality
Portland, Oregon

Date	Time	Gauge Height[4]	Rising or Falling Tide	Station	
				Upstream	Downstream
		Feet		NTU	
9/6/16	1430	2.50	Falling	6.5	7.00
9/7/16	0820	1.80	Rising	5.0	4.70
	1230	2.00	Falling	3.9	4.0
	1630	1.40	Falling	21.0	38.0
9/8/16	1000	2.20	Rising	8.5	17.6
	1230	2.25	Rising	7.5	18.1
	1600	NM	NM	8.5	17.5
9/916	0755	0.48	Rising	7.4	11.2
	1200	0.10	Rising	8.5	13.0
	1610	0.47	Falling	9.5	14.3
9/10/16	0820	0.53	Falling	4.5	5.2
	1210	0.13	Rising	4.0	7.1
	1625	0.18	Falling	38.0	5.8
	1830	0.31	Falling	4.2	5.6
9/11/16	0.745	1.50	Rising	1.3	20.0
	1120	NM	NM	1.3	15.6
9/12/16	0710	1.80	Falling	8.2	9
	1230	1.00	Falling	7.6	8.2
	1605	0.50	Rising	6.0	9.5

Notes

1. NTU = Nephelometric turbidity units
2. Feet ASL = Feet above sea level
3. NM = Tidal position was inadvertently note measured during these turbidity measurements
4. Gauge Height as measured at USGS Station 14211820 - Columbia Slough