Owner: King County  
Project: Lower Duwamish Waterway ENR/AC Pilot  
Dates: November 29, 2016 to December 2, 2016

Weekly Progress Meeting Summary:
- The first weekly progress meeting is not scheduled to occur until Dec 6th.

Construction Progress:
- Schedule (updated weekly by contractor – Attached)
  - Note: Scour plot may move up the schedule dependent on Ash Grove maintenance dredging that is to occur in the next 60 days. Schedule for that work is currently unknown and it is anticipated that schedule will be firmed up by weeks end (Dec 9th, 2016).
- General progress with respect to schedule
  - The KP-2 barge was flooded to soak the Gravelly Sand + AC and Sand + AC for approximately 24 hours prior to the start of the test placements.
  - Test placement was completed for both the Gravelly Sand + AC and Sand + AC. A single pass pattern and a two pass with overlapping bucket pattern, as illustrated in the specifications, were tested. Based on the quantitative data and visual inspection of both test plots it was determined that the 2 pass with overlapping bucket pattern appeared to be better of the two patterns.
  - Work scheduled for this week:
    - Load the KP-3 with Gravelly Sand (12/5/16) at Cal-Portland facility. Soak Gravelly Sand at PPM yard (12/6 – 12/7).
    - Complete Gravelly Sand + AC placement in intertidal plot.
    - Daily hydrographic surveys at end of each shift.
    - Diver confirmation measurements of the Gravelly Sand + AC placement.
    - Start Gravelly Sand placement at intertidal plot.

Problems Encountered (If Any) & Associated Action Items: ☑️ None ☑️ See Comments below:

<table>
<thead>
<tr>
<th>Problems Encountered</th>
<th>Date</th>
<th>Required Action</th>
<th>Completed Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity plume while pumping out of the barge.</td>
<td>11/30/2016</td>
<td>Replace 25 micron filter in filters with 1 micron filters. Recycle water back into barge before discharging in the river.</td>
<td>12/1/2016</td>
</tr>
</tbody>
</table>

Water Quality Monitoring:
- Observed non-construction-related events that impacted water quality.
  - A stormwater located ~100 feet downstream of the work area was observed discharging highly turbid water while placement operations were occurring.
- Summary of water quality criteria violations and actions taken.
Nov 29, 2016: Compliance point was 23.3 NTU above ambient during the 14:28 monitoring event. Placement had already stopped to relocate from the Sand + AC test plot to the Gravelly Sand + AC test plot when notification of exceedance was received.

Nov 30, 2016: Compliance point was 8.0 NTU above ambient during the 13:37 monitoring event. Placement operations halted for ~28 minutes. Operations started again after WQM vessel verified that WQ was within allowable tolerances.

Dec 1, 2016: Compliance point was 5.3 NTU above ambient during the 11:35 monitoring event. Placement operations halted for ~21 minutes. Operations started again after WQM vessel verified that WQ was within allowable tolerances.

Dec 2, 2017: Compliance point was 10.0 NTU above ambient during the 13:33 monitoring event. Placement operations halted for ~68 minutes. Operations started again after WQM vessel verified that WQ was within allowable tolerances.

**Figure 1: Water Quality Monitor Data Summary for Week Ending December 2, 2016**

**QA Inspections:**

- **Results:**
  - QA Inspections
  - Surveying (Performed at the end of each shift. Attached is the Dec 2nd, 2016 survey)
  - Monitoring Activities:
    - Visual inspection and stake measurements performed at the end of each day during the low tide during the test plot placement. Field measurement summary for both test plots are attached.
- Out of Spec Conditions (if encountered) & Corrective Actions:
  - None
  - See Comments below:

<table>
<thead>
<tr>
<th>Out of Spec condition</th>
<th>Date</th>
<th>Corrective Action</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Sand + AC test plot had 2 locations that had less than 4 inches of material after the completion of the test plot.</td>
<td>11/30/2016</td>
<td>No action at this time. It is believed that tidal action and river current will level the plot out so that no locations are less than 4 inches thick.</td>
<td>11/30/2016</td>
</tr>
</tbody>
</table>
Photo 1-A: Example of a stake placed in the intertidal plot that will be used to measure the cap thickness. All stakes extended 18 inches above the mudline.

Photo 1-B: Activated carbon settled outside of the placement plot. This is approximately 15 feet outside of the placement area.
**Photo 2-A:** The bag filter system used for barge water filtration. The four furthest filters had 25 micron bag filters initially but were replaced with 1 micron filters after a turbidity plume was observed during barge pumping.

**Photo 2-B:** Operators DredgePack screen. The blue marks are tracked locations of bucket placements.
<table>
<thead>
<tr>
<th>Task</th>
<th>Start Date</th>
<th>Finish Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
<td>0 days</td>
</tr>
<tr>
<td>Contract Award</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
<td>0 days</td>
</tr>
<tr>
<td>Phase 1 Notice-to-Proceed</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
<td>0 days</td>
</tr>
<tr>
<td>Start In-Water Work</td>
<td>Fri 11/25/16</td>
<td>Fri 11/25/16</td>
<td>0 days</td>
</tr>
<tr>
<td>Phase 2 Substantial Completion</td>
<td>Thu 1/18/17</td>
<td>Thu 1/18/17</td>
<td>0 days</td>
</tr>
<tr>
<td>Parcels</td>
<td>Fri 1/27/17</td>
<td>Mon 2/13/17</td>
<td>2 days</td>
</tr>
<tr>
<td>Closeout</td>
<td>Mon 2/13/17</td>
<td>Mon 2/13/17</td>
<td>0 days</td>
</tr>
<tr>
<td>Complete In-Water Work</td>
<td>Mon 2/13/17</td>
<td>Mon 2/13/17</td>
<td>0 days</td>
</tr>
<tr>
<td>Final Acceptance</td>
<td>Mon 2/13/17</td>
<td>Mon 2/13/17</td>
<td>0 days</td>
</tr>
<tr>
<td>Materials Placement</td>
<td>Fri 1/13/17</td>
<td>Fri 1/13/17</td>
<td>0 days</td>
</tr>
<tr>
<td>Test Placement</td>
<td>Mon 2/13/17</td>
<td>Mon 2/13/17</td>
<td>0 days</td>
</tr>
<tr>
<td>Test Placement Area - Sand + AC</td>
<td>Fri 11/25/16</td>
<td>Fri 11/25/16</td>
<td>1 day</td>
</tr>
<tr>
<td>Test Placement Area - Gravelly Sand + AC</td>
<td>Fri 11/25/16</td>
<td>Fri 11/25/16</td>
<td>1 day</td>
</tr>
<tr>
<td>Inter tidal Plot</td>
<td>Thu 12/1/16</td>
<td>Thu 12/1/16</td>
<td>1 day</td>
</tr>
<tr>
<td>Inter tidal Plot - Gravelly Sand + AC</td>
<td>Thu 12/1/16</td>
<td>Thu 12/1/16</td>
<td>6 days</td>
</tr>
<tr>
<td>Inter tidal Plot - Gravelly Sand</td>
<td>Thu 12/1/16</td>
<td>Thu 12/1/16</td>
<td>6 days</td>
</tr>
<tr>
<td>Hydrographic As-Built Survey</td>
<td>Fri 12/4/16</td>
<td>Fri 12/4/16</td>
<td>0 days</td>
</tr>
<tr>
<td>Sub tidal Plot</td>
<td>Mon 12/16/16</td>
<td>Mon 12/16/16</td>
<td>13 days</td>
</tr>
<tr>
<td>Sub tidal Plot - Sand + AC</td>
<td>Mon 12/16/16</td>
<td>Mon 12/16/16</td>
<td>6 days</td>
</tr>
<tr>
<td>Sub tidal Plot - Sand</td>
<td>Mon 12/16/16</td>
<td>Mon 12/16/16</td>
<td>6 days</td>
</tr>
<tr>
<td>Hydrographic As-Built Survey</td>
<td>Thu 12/22/16</td>
<td>Thu 12/22/16</td>
<td>0 days</td>
</tr>
<tr>
<td>Scour Plot</td>
<td>Mon 1/9/17</td>
<td>Mon 1/9/17</td>
<td>13 days</td>
</tr>
<tr>
<td>Scour Plot - Gravelly Sand + AC</td>
<td>Mon 1/9/17</td>
<td>Mon 1/9/17</td>
<td>6 days</td>
</tr>
<tr>
<td>Scour Plot - Gravelly Sand</td>
<td>Mon 1/9/17</td>
<td>Mon 1/9/17</td>
<td>6 days</td>
</tr>
<tr>
<td>Hydrographic As-Built Survey</td>
<td>Thu 1/12/17</td>
<td>Thu 1/12/17</td>
<td>0 days</td>
</tr>
</tbody>
</table>
1. PROGRESS SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016.
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AND HYPACK HYDRODATA.
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1".

LEGEND

- PILOT / DEMONSTRATION LIMIT
- OPTIONAL EXCESS MATERIAL PLACEMENT
- SURVEY CONTOURS, 5' INTERVAL
- SURVEY CONTROL

SURVEY CONTROL

<table>
<thead>
<tr>
<th>N</th>
<th>E</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLAG 2</td>
<td>194,112.367</td>
<td>1,276,323.484</td>
</tr>
</tbody>
</table>

NOTE: THE SURVEY EXTENT OF THE AREA OF INTEREST IS SHOWN IN THE MAP.
ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
MULTIBEAM HYDROGRAPHIC SURVEY

NOTES
1. PROGRESS SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML; A-SEA SOUND VELOCITY PRO; E, AND HYPAC HYDREACH 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"

DATUM INFORMATION
Horizontal: WASHINGTON STATE PLANE NORTH, NAD 83, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES
1. PROGRESS SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML; A-SEA SOUND VELOCITY PRO; E, AND HYPAC HYDREACH 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
DATUM INFORMATION
Horizontal: WASHINGTON STATE PLANE NORTH, NAD 3, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES
1. PRE-PLACEMENT SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
4. PROFILE VERTICAL EXAGGERATION IS X1.0

ENHANCED NATURAL RECOVERY ACTIVATED CARBON PILOT STUDY MULTIBEAM HYDROGRAPHIC SURVEY

40'X60' SAND + AC DEMONSTRATION AREA

ENR GRAVELLY SAND + AC SUBPLOT

PROFILES LEGEND

CURRENT SURVEY
PRE-SURVEY (NOV 18, 2016)

SLAG 1
N: 194,112.357
E: 1,276,323.484
Z: 10.905

SLAG 2
N: 194,112.026
E: 1,276,325.646
Z: 10.895

SURVEY CONTROL

SLAG 1
N: 194,112.357
E: 1,276,323.484
Z: 10.905

SLAG 2
N: 194,112.026
E: 1,276,325.646
Z: 10.895
NOTES
1. PRE-PLACEMENT SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016.
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERITAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016.
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1."
4. PROFILE VERTICAL EXAGGERATION IS x1.0.

PROFILES LEGEND
- CURRENT SURVEY
- PRE-SURVEY (NOV 18, 2016)

SURVEY CONTROL
SURVEY COORDINATES
SLAG 2
N: 194,112.265
E: 1,276,323.484
Z: 10.905

SLAG 3
N: 194,112.286
E: 1,276,325.646
Z: 10.895
DATUM INFORMATION
Horizontal: WASHINGTON STATE PLANE NORTH, NAD 3, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES
1. PRE-PLACEMENT SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, EML: EARLY X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT “SLAG 1”
4. PROFILE VERTICAL EXAGGERATION IS x1.0

PROFILES LEGEND
- CURRENT SURVEY
- PRE-SURVEY (NOV 18, 2016)

SURVEY CONTROL

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
MULTIBEAM HYDROGRAPHIC SURVEY

INTERTIDAL PROGRESS
DATUM INFORMATION
Horizontal: WASHINGTON STATE PLANE NORTH, NAD 3, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 19 3-2001

NOTES
1. PRE-PLACEMENT SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 02, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERITAL NAVIGATION SYSTEM, AML: EAM: APPLAI: WAVEMASTER INERITAL
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
4. PROFILE VERTICAL EXAGGERATION IS 1.0

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
MULTIBEAM HYDROGRAPHIC SURVEY
INTERTIDAL PROGRESS

PROFILES LEGEND
- PLOT 8 TENT (8 INCHES)
- CURRENT SURVEY
- PRE-SURVEY (NOV 1, 2016)

SURVEY CONTROL

DATUM: 1983-2001 MLLW EASTERN Continental Shelf

SLAG 2
N: 194,112.357
E: 1,276,323.484
Z: 10.905

SLAG 1
N: 194,112.026
E: 1,276,325.646
Z: 10.895

PACIFIC PILE & MARINE
700 S Riverdale Drive | SEATTLE, WA 98108

BOI NW 43rd Street, Suite 215 | Seattle, Washington 98107

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
MULTIBEAM HYDROGRAPHIC SURVEY
Owner: King County  
Project: Lower Duwamish Waterway ENR/AC Pilot  
Dates: December 5, 2016 to December 9, 2016

**Weekly Progress Meeting Summary:**
Internal (KC, PPM, DOF) meeting occurred on Dec 6th.
- **Schedule:**
  - Intertidal Plot is scheduled to be completed on Dec 15, 2016.
  - Ash Grove maintenance dredging is not scheduled to occur until January or February. Based on PPM’s Dec 2 updated schedule the Scour Plot placement was scheduled to occur in January. The new schedule attached has placement within this plot now scheduled to start on Dec 16th in order to avoid conflict with Ash Grove’s schedule.
  - A visitor day will be scheduled to occur when work is being performed in the Scour Plot.
- **Tribal Fishing:**
  - There has been no nets or other fishing activities have been observed in the waterway between PPM’s yard and the Intertidal Plot area.
  - No work will be performed if the work has the potential to impact Tribal fishing.
- **1st weekly meeting with Agency representatives is scheduled to occur on Dec 13th.**

**Construction Progress:**
- **Schedule (updated weekly by contractor – Attached)**
  - Note that the scour plot was moved from early January 2017. It is now scheduled to be started on December 16, 2016.
- **General progress with respect to schedule**
  - The KP-3 barge was loaded on Dec 5, 2016 with Gravelly Sand ENR.
  - The KP-3 was flooded to soak the Gravelly Sand ENR on Dec 6th.
  - The last of the Gravelly Sand + AC in the KP-2 material barge was placed in the Intertidal Gravelly Sand + AC subplot Thursday morning, Dec 8th.
  - Placement within the Intertidal Gravelly Sand subplot was started on Thursday afternoon, Dec 8th.
  - Work scheduled for this week:
    - Load the KP-2 with Gravelly Sand + AC (12/13/16) at Cal-Portland facility. Soaking of Gravelly Sand + AC will occur either Wed, Dec 14, or Thur, Dec 15th, depending if completion Intertidal Gravelly Sand subplot on or ahead of schedule.
    - Complete Gravelly Sand + AC placement in intertidal plot.
    - Daily hydrographic surveys at end of each shift.
    - Confirmation measurements of the Gravelly Sand + AC placement.
    - Start Gravelly Sand+AC placement at scour plot.

**Problems Encountered (If Any) & Associated Action Items: ☒ None ☐ See Comments below:**

<table>
<thead>
<tr>
<th>Problems Encountered</th>
<th>Date</th>
<th>Required Action</th>
<th>Date Completed</th>
</tr>
</thead>
</table>

Weekly Report  
LDW ENR/AC Project  
Page 1 of 5
Water Quality Monitoring:

- Observed non-construction-related events that impacted water quality.
  - None
- Summary of water quality criteria violations and actions taken.
  - Dec 5, 2016: Compliance point was 8.1 NTU above ambient during the 14:50 monitoring event. Placement operations halted for ~14 minutes. Operations started again after WQM vessel verified that WQ was within allowable tolerances.
  - Dec 9, 2016: Compliance point was 5.0 NTU above ambient during the 10:38 monitoring event. Placement operations halted for ~13 minutes to move the barge and while waiting for waiting for other marine traffic to clear the area. Operations started again after WQM vessel verified that WQ was within allowable tolerances.
  - Dec 19, 2016: Compliance point was 5.3 NTU above ambient during the 11:43 monitoring event. Placement operations halted for ~48 minutes. Operations started again after WQM vessel verified that WQ was within allowable tolerances.

QA Inspections:

- Results:
  - QA Inspections
  - Surveying (Performed at the end of each shift. Attached is the Dec 9th, 2016 survey)
  - Monitoring Activities:
    - None.
- Out of Spec Conditions (if encountered) & Corrective Actions: ☐ None ☒ See Comments below:

<table>
<thead>
<tr>
<th>Out of Spec condition</th>
<th>Date</th>
<th>Corrective Action</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Intertidal Gravelly Sand + AC subplot is ~90% complete. ~2000 sq ft of the plot area Still requires the planned 2&lt;sup&gt;nd&lt;/sup&gt; lift.</td>
<td>12/8/2016</td>
<td>A 2&lt;sup&gt;nd&lt;/sup&gt; lift will be placed on the remaining area after the 2&lt;sup&gt;nd&lt;/sup&gt; load of GS+AC is soaked and prior to moving to Scour Plot.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Photo 1-B: KP-2 material barge after all of the Gravelly Sand + AC was placed.
Photo 2-A: KP-3 material barge arrives on-site with Gravelly Sand. The excavator knocked down the wind rows prior to soaking.

Photo 2-B: Overnight snow covered the exposed gravelly sand in the KP-3 materials barge. Weather conditions did not impact operations.
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General</td>
<td>176 days</td>
<td>Wed 6/1/16</td>
<td>Thu 2/9/17</td>
</tr>
<tr>
<td>2</td>
<td>Contract Award</td>
<td>0 days</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
</tr>
<tr>
<td>3</td>
<td>Phase 1 Notice to Proceed</td>
<td>0 days</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
</tr>
<tr>
<td>4</td>
<td>Start In-Water Work</td>
<td>0 days</td>
<td>Tue 11/29/16</td>
<td>Tue 11/29/16</td>
</tr>
<tr>
<td>5</td>
<td>Phase 2 Substantial Completion</td>
<td>0 days</td>
<td>Mon 1/23/17</td>
<td>Mon 1/23/17</td>
</tr>
<tr>
<td>6</td>
<td>Punchlist</td>
<td>2 days</td>
<td>Tue 1/24/17</td>
<td>Wed 1/25/17</td>
</tr>
<tr>
<td>7</td>
<td>Closeout</td>
<td>10 days</td>
<td>Thu 1/26/17</td>
<td>Wed 2/8/17</td>
</tr>
<tr>
<td>8</td>
<td>Complete In-Water Work</td>
<td>0 days</td>
<td>Thu 2/9/17</td>
<td>Thu 2/9/17</td>
</tr>
<tr>
<td>9</td>
<td>Final Acceptance</td>
<td>0 days</td>
<td>Thu 2/9/17</td>
<td>Thu 2/9/17</td>
</tr>
<tr>
<td>10</td>
<td>Materials Placement</td>
<td>37 days</td>
<td>Tue 11/29/16</td>
<td>Mon 1/23/17</td>
</tr>
<tr>
<td>11</td>
<td>Test Placement</td>
<td>2 days</td>
<td>Tue 11/29/16</td>
<td>Wed 11/30/16</td>
</tr>
<tr>
<td>12</td>
<td>Test Placement Area- Sand + AC</td>
<td>1 day</td>
<td>Tue 11/29/16</td>
<td>Tue 11/29/16</td>
</tr>
<tr>
<td>13</td>
<td>Test Placement Area- Gravelly Sand + AC</td>
<td>1 day</td>
<td>Wed 11/30/16</td>
<td>Wed 11/30/16</td>
</tr>
<tr>
<td>14</td>
<td>Intertidal Plot</td>
<td>11 days</td>
<td>Thu 12/1/16</td>
<td>Thu 12/15/16</td>
</tr>
<tr>
<td>15</td>
<td>Intertidal Plot- Gravelly Sand + AC</td>
<td>6 days</td>
<td>Thu 12/1/16</td>
<td>Thu 12/8/16</td>
</tr>
<tr>
<td>16</td>
<td>Intertidal Plot- Gravelly Sand</td>
<td>5 days</td>
<td>Fri 12/9/16</td>
<td>Thu 12/15/16</td>
</tr>
<tr>
<td>17</td>
<td>Hydrographic As-Built Survey</td>
<td>0 days</td>
<td>Thu 12/15/16</td>
<td>Thu 12/15/16</td>
</tr>
<tr>
<td>18</td>
<td>Scour Plot</td>
<td>12 days</td>
<td>Fri 12/16/16</td>
<td>Wed 1/4/17</td>
</tr>
<tr>
<td>19</td>
<td>Scour Plot- Gravelly Sand + AC</td>
<td>6 days</td>
<td>Fri 12/16/16</td>
<td>Fri 12/23/16</td>
</tr>
<tr>
<td>20</td>
<td>Scour Plot- Gravelly Sand</td>
<td>6 days</td>
<td>Tue 12/27/16</td>
<td>Wed 1/4/17</td>
</tr>
<tr>
<td>21</td>
<td>Hydrographic As-Built Survey</td>
<td>0 days</td>
<td>Wed 1/4/17</td>
<td>Wed 1/4/17</td>
</tr>
<tr>
<td>22</td>
<td>Subtidal Plot</td>
<td>12 days</td>
<td>Thu 1/5/17</td>
<td>Mon 1/23/17</td>
</tr>
<tr>
<td>23</td>
<td>Subtidal Plot- Sand + AC</td>
<td>6 days</td>
<td>Thu 1/5/17</td>
<td>Thu 1/12/17</td>
</tr>
<tr>
<td>24</td>
<td>Subtidal Plot- Sand</td>
<td>6 days</td>
<td>Fri 1/13/17</td>
<td>Mon 1/23/17</td>
</tr>
<tr>
<td>25</td>
<td>Hydrographic As-Built Survey</td>
<td>0 days</td>
<td>Mon 1/23/17</td>
<td>Mon 1/23/17</td>
</tr>
</tbody>
</table>
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 12, 2016.
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016.
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1".
NOTES

1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 12, 2016

2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016

3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
### DATUM INFORMATION

**Horizontal:** Washington State Plane North, NAD 3, U.S. Feet  
**Vertical:** Mean Lower Low Water (MLLW) NOS Seattle Epoch 1983-2001

### NOTES

1. Survey for the Intertidal Area was conducted by Terrasond Limited on December 09, 2016.  
2. Hydrographic data was collected using a Reson 7125 400kHz Multibeam, Applanix WAVEMASTER Inertial Navigation System, AML Base-X Sound Velocity Probe, and HYPACK HYSWEEP 2016.  
3. Real-Time Kinematic (RTK) positioning was based on record coordinates for point “SLAG 1.”  
4. Profile vertical exaggeration is x1.0
NOTES

1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 09, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
4. PROFILE VERTICAL EXAGGERATION IS x1.0
NOTES
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 09, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
4. PROFILE VERTICAL EXAGGERATION IS x1.0

DATUM INFORMATION
Horizontal: WASHINGTON STATE PLANE NORTH, NAD 3, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NO S SEATTLE EPOCH 1983-2001
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 09, 2016.
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERITAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016.
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1".
4. PROFILE VERTICAL EXAGGERATION IS x1.0.
Weekly Progress Meeting Summary:
Weekly meeting occurred on Tuesday, Dec 13, 2016 at 08:30.

- Schedule (3 week look ahead):
  - Intertidal plot is scheduled to be completed by Dec 16, 2016
  - Mob to Scour Plot scheduled for Dec 16, 2016.
  - Gravelly Sand +AC (GS+AC) Scour subplot placement scheduled to start on Dec 19, 2016.
  - Both the Gravelly Sand (GS) and GS+AC subplots are scheduled to be completed the 1st week of Jan 2017.
  - Visitor day is scheduled for December 20, 2016 at Harbor Island near the marina where the placement operations in the Scour Plot can be observed.

- Tribal Fishing:
  - No fishing nets or other fishing activities were observed near the work area or downstream between the work area and Harbor Island.

- Issues & Challenges:
  - The excavator was down for approximately half a day when its alternator failed. A new alternator was installed without incident and the damaged alternator will be repaired on brought back onsite as a backup.

- Water Quality Monitoring:
  - It has been determined that there has been no significant difference in water quality when placing gravelly sand + AC and placing gravelly sand.

Construction Progress:

- Schedule (updated weekly by contractor – Attached)
  - Note that the scour plot mob was moved was pushed back to December 19, 2016.

- General progress with respect to schedule
  - The KP-2 barge was loaded on Dec 13, 2016 with Gravelly Sand +AC ENR.
  - KP-2 was flooded on Dec 14 to soak the GS+AC the minimum 12 hours prior to placement.
  - The KP-3 barge was loaded on Dec 16, 2016 with Gravelly Sand ENR.
  - All of the Gravelly Sand in the KP-3 that was loaded into the barge the previous week was placed in the Intertidal Gravelly Sand during the week. The subplot was not complete when the KP-3 was empty. See Problems Encountered below.
  - Placement within the Intertidal GS+AC subplot was completed on Thursday, Dec 15th.
  - No work was performed on Dec 16, 2016 due to not having enough GS to finish the GS subplot.
  - Work scheduled for this week:
    - Complete Gravelly Sand placement in intertidal plot.
    - Mob to Scour Plot.
    - Start GS+AC at Scour Plot on Dec 20, 2016 and continue to place GS+AC for the remainder of the week.
    - Daily hydrographic surveys at high tide during each shift.
Problems Encountered (If Any) & Associated Action Items:

<table>
<thead>
<tr>
<th>Problems Encountered</th>
<th>Date</th>
<th>Required Action</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The excavator's alternator failed and had to be replaced.</td>
<td>12/12/2016</td>
<td>Replaced alternator</td>
<td>12/12/2016</td>
</tr>
<tr>
<td>KP-3 barge leaking turbid water. Turbid leaks have only been observed after material at the base of the bin wall has been removed.</td>
<td>12/14/2016, 12/15/2016</td>
<td>PPM will continue to monitor for leaks. Leaks were and will continue to be plugged immediately after being observed.</td>
<td>12/14/2016, 12/15/2016</td>
</tr>
<tr>
<td>Ran out of GS before finishing subplot. This is related to the out of spec condition detailed below.</td>
<td>12/15/2016</td>
<td>Ordered additional 200 tons material loaded when scour plot GS was loaded.</td>
<td>12/15/2016</td>
</tr>
</tbody>
</table>

Water Quality Monitoring:

- Observed non-construction-related events that impacted water quality.
  - None
- Summary of water quality criteria violations and actions taken.
  - No exceedances observed.

![WQM Data for Dec 12, 2016 - Dec 16, 2016](image_url)

Figure 1: Water Quality Monitor Data Summary for Week Ending December 16, 2016
QA Inspections:

- Results:
  - QA Inspections:
    - DOF representative was onsite for each to the barge loading events to ensure proper materials were being loaded and to verify the % AC for the GS+AC material. Samples of the GS+AC were collected from the conveyor belt that transported the material to the barge. This material was sent to the lab for analysis.
  - Surveying (Performed at the end of each shift. Attached is the Dec 15, 2016 survey)
  - Monitoring Activities:
    - DOF and AMECFW representatives performed a visual inspection and grade stake measurement during the evening low tides that occurred on Dec 13th and Dec 15th.
      During the visual inspection objects thought to be rocks greater than 2 inches in diameter up to approximately 6 inches in diameter were observed on and upstream of the GS+AC subplot. After further investigation it was determined that these objects were not rock but were comprised of blackish, soft, fine to medium grained material. These objects may be comprised of AC and fine silts. See Photos 2-A and 2-B showing observed objects.

Average placement thickness over the upstream half of the GS subplot was approximately 12 inches as measured on Dec 13th. The average thickness measurements at the stakes that had material placed after modifying the bucket fill factor was approximately 6 inches. The minimum thickness over all of the stakes in areas where material was by end of shift Dec 15 was 4 inches and the maximum was 14 inches. Attached is a figure with stake locations and measurements.

- Out of Spec Conditions (if encountered) & Corrective Actions: None
  
<table>
<thead>
<tr>
<th>Out of Spec condition</th>
<th>Date</th>
<th>Corrective Action</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured material thickness on the upstream portion of the GS sub-plot greater than 12 inches in several locations.</td>
<td>12/13/2016</td>
<td>Modified bucket fill factor to reduce placement thickness.</td>
<td>12/14/2016</td>
</tr>
</tbody>
</table>
**Photo 1-A:** PPM field engineer performing bucket calibration check.

**Photo 1-B:** Leak observed mid-barge after the material at the base of the bin wall was removed.
Photo 2-A: Rock shaped object observed in the GS+AC subplot.

Photo 2-B: Rock shaped object split in half.
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Mode</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ENR</td>
<td>Material Loading</td>
<td>14 days</td>
<td>Mon 12/19/16</td>
<td>Mon 1/9/17</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Barge #5 (KP2): Sand + AC</td>
<td>0 days</td>
<td>Tue 1/3/17</td>
<td>Tue 1/3/17</td>
</tr>
<tr>
<td>3</td>
<td>ENR</td>
<td>Placement Activities</td>
<td>14 days</td>
<td>Mon 12/19/16</td>
<td>Mon 1/9/17</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Intertidal</td>
<td>1 day</td>
<td>Mon 12/19/16</td>
<td>Mon 12/19/16</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Finish Placement Activities</td>
<td>1 day</td>
<td>Mon 12/19/16</td>
<td>Mon 12/19/16</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Scour</td>
<td>12 days</td>
<td>Tue 12/20/16</td>
<td>Fri 1/6/17</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Place Gravelly Sand + AC</td>
<td>6 days</td>
<td>Tue 12/20/16</td>
<td>Wed 12/28/16</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Place Gravelly Sand</td>
<td>6 days</td>
<td>Thu 12/29/16</td>
<td>Fri 1/6/17</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Subtidal</td>
<td>1 day</td>
<td>Mon 1/9/17</td>
<td>Mon 1/9/17</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Place Sand + AC</td>
<td>1 day</td>
<td>Mon 1/9/17</td>
<td>Mon 1/9/17</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Survey Activities</td>
<td>7 days</td>
<td>Tue 12/20/16</td>
<td>Fri 12/30/16</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Intertidal: As-Built Survey</td>
<td>0 days</td>
<td>Tue 12/20/16</td>
<td>Tue 12/20/16</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Subtidal: Pre-Placement Survey</td>
<td>0 days</td>
<td>Fri 12/30/16</td>
<td>Fri 12/30/16</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Visitor Day</td>
<td>0 days</td>
<td>Tue 12/20/16</td>
<td>Tue 12/20/16</td>
</tr>
<tr>
<td>ID</td>
<td>Task Name</td>
<td>Duration</td>
<td>Start</td>
<td>Finish</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>General</td>
<td>178 days</td>
<td>Wed 6/1/16</td>
<td>Fri 2/10/17</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Contract Award</td>
<td>0 days</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Phase 1 Notice to Proceed</td>
<td>0 days</td>
<td>Wed 6/1/16</td>
<td>Wed 6/1/16</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Start In-Water Work</td>
<td>0 days</td>
<td>Tue 11/29/16</td>
<td>Tue 11/29/16</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Phase 2 Substantial Completion</td>
<td>0 days</td>
<td>Wed 1/25/17</td>
<td>Wed 1/25/17</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Punchlist</td>
<td>2 days</td>
<td>Thu 1/26/17</td>
<td>Fri 1/27/17</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Closeout</td>
<td>10 days</td>
<td>Mon 1/30/17</td>
<td>Fri 2/10/17</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Complete In-Water Work</td>
<td>0 days</td>
<td>Thu 2/9/17</td>
<td>Thu 2/9/17</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Final Acceptance</td>
<td>0 days</td>
<td>Thu 2/9/17</td>
<td>Thu 2/9/17</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Materials Placement</td>
<td>39 days</td>
<td>Tue 11/29/16</td>
<td>Wed 1/25/17</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Test Placement</td>
<td>2 days</td>
<td>Tue 11/29/16</td>
<td>Wed 11/30/16</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Test Placement Area- Sand + AC</td>
<td>1 day</td>
<td>Tue 11/29/16</td>
<td>Tue 11/29/16</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Test Placement Area- Gravelly Sand + AC</td>
<td>1 day</td>
<td>Wed 11/30/16</td>
<td>Wed 11/30/16</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Intertidal Plot</td>
<td>14 days</td>
<td>Thu 12/1/16</td>
<td>Tue 12/20/16</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Intertidal Plot- Gravelly Sand + AC</td>
<td>6 days</td>
<td>Thu 12/1/16</td>
<td>Thu 12/8/16</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Intertidal Plot- Gravelly Sand</td>
<td>7 days</td>
<td>Fri 12/9/16</td>
<td>Mon 12/19/16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Hydrographic As-Built Survey</td>
<td>0 days</td>
<td>Tue 12/20/16</td>
<td>Tue 12/20/16</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Scour Plot</td>
<td>12 days</td>
<td>Tue 12/20/16</td>
<td>Fri 1/6/17</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Scour Plot- Gravelly Sand + AC</td>
<td>6 days</td>
<td>Tue 12/20/16</td>
<td>Wed 12/28/16</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Scour Plot- Gravelly Sand</td>
<td>6 days</td>
<td>Thu 12/29/16</td>
<td>Fri 1/6/17</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Hydrographic As-Built Survey</td>
<td>0 days</td>
<td>Fri 1/6/17</td>
<td>Fri 1/6/17</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Subtidal Plot</td>
<td>12 days</td>
<td>Mon 1/9/17</td>
<td>Wed 1/25/17</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Subtidal Plot- Sand + AC</td>
<td>6 days</td>
<td>Mon 1/9/17</td>
<td>Tue 1/17/17</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Subtidal Plot- Sand</td>
<td>6 days</td>
<td>Wed 1/18/17</td>
<td>Wed 1/25/17</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Hydrographic As-Built Survey</td>
<td>0 days</td>
<td>Wed 1/25/17</td>
<td>Wed 1/25/17</td>
<td></td>
</tr>
</tbody>
</table>
NOTES
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DEC 15, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
NOTES
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DEC 15, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 15, 2016.
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML BASE-X SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016.
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT “SLAG 1”.
4. PROFILE VERTICAL EXAGGERATION IS x1.0.
DATUM INFORMATION
Horizontal: WASHINGTON STATE PLANE NORTH, NAD 3, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES
1. SURVEY FOR THE INTERTIDAL AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 15, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz, AML-EAM, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML-42L SOUND VELOCITY PROBE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "SLAG 1"
4. PROFILE VERTICAL EXAGGERATION IS X1.0

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
MULTIBEAM HYDROGRAPHIC SURVEY

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
MULTIBEAM HYDROGRAPHIC SURVEY

INTERTIDAL PROGRESS