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- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

5/15/15 SEDIMENT CHARACTERIZATION REPORT FOR THE PORT OF UMPQUA, SALMON HARBOR MARINA, EAST AND WEST BASINS

Utilizing Data from SEF-Guided Lab Analyses of Sediment Samples Collected During 5/5/15 Sampling Event

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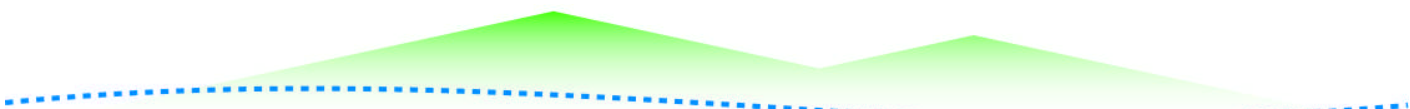
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Attached

- **Sediment Core Logs (Recorded by Jack Akin, EMC)**
- **Plan and Elevation Views of Completed 5/5 - 5/6/15 Sampling Event**
- **ALS (Columbia Analytical Services) Report**
- **Approved SAP**





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Three photos above show typical sediment penetration, performed after the Project Manager (EMC) has measured depth to mudline, read tide level MLLW, calculated mudline elevation MLLW and called for necessary penetration length. Field personnel (NRC and Dan Hoover from Port of Brookings) proceed to select aluminum tube length and penetrate sediment floor to specified penetration depth. Once achieving desired depth or refusal they then extract the tube and cap the tube end. The space at the top of the tube is measured, and the % recovery calculated by EMC. Finally the top of the tube is capped and the tube and core labeled and set aside.



After the in-water work is completed the cores are transferred to a sheltered and tarped work area. The tubes are individually cut open by router and the cores exposed. Each dredge prism and NSM section for each composite (sub-sample) is measured, and EMC log observations (color, grain size, odors, biota, etc.).



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After core inspections and log entries are completed the composite cores are collected into individual, stainless steel bowls, one per dredge prism and NSM, until all composites are collected for each sample. Bowls are covered by heavy-duty aluminum foil between composite inspection and collection procedures.



After collection of all composites into bowls is completed for each sample the sediments are completely mixed and placed into the labeled laboratory-supplied sample containers. These containers are then placed into coolers that are supplied with ice to keep the samples at about 4 deg. Celcius. The ice chests were delivered by NRC to the laboratory (ALS), as described and dated in the chain-of-custody.