8 TIER 2: CHEMICAL TESTING

Following an assessment of existing information for a project in Tier 1, chemical testing of the dredged material is usually required. Chemical analysis includes both the measurement of "conventional" parameters and the measurement of concentrations of chemicals which have been identified by DMMP as chemicals of concern (COCs) for the project.

8.1 SEDIMENT CONVENTIONAL PARAMETERS

Sediment conventionals provide information about the physical nature of the dredged material and aid in interpreting chemical and biological test results. Table 6-1 lists the conventional parameters required for analysis and recommended analytical methods.

Table 8-1. Sediment Conventionals and Recommended Analytical Methods

SEDIMENT CONVENTIONAL	ANALYSIS METHOD
Total solids	PSEP (1986)
Total volatile solids (TVS)	PSEP (1986)
Grain size	PSEP (1986)/ASTM D-422 (modified)
Total organic carbon (TOC)	EPA 5310B/EPA 9060 (modified)
Total sulfides	PSEP (1986)/Plumb (1981)
Ammonia	Plumb (1981)

Grain size may be determined using either PSEP (1986) or ASTM Method D-422 (modified), which subdivide the silt-clay fraction by pipette and hydrometer respectively. One of the following sieve series must be used: 1) Modified EPA - sieve numbers 4, 10, 18, 35, 60, 120, 230 or 2) Modified ASTM - sieve numbers 4, 10, 20, 40, 60, 140, 230. The fine-grained fraction must be classified by phi size (+5, +6, +7, +8, >8). The delineation of sand vs. gravel fractions is achieved through use of the #10 sieve (2 mm). Similarly, the delineation of fines (silt and clay) vs. sand is achieved through use of the #230 sieve (62.5 microns). It is therefore critical that these two sieve sizes be used in analyzing grain size. The following general classifications are used in the DMMP:

- **Gravel**: >2,000 microns (2 mm)
- **Sand**: 62.5 to 2,000 microns
- **Silt**: 3.9 to 62.5 microns
- **Clay**: 0 to 3.9 microns

Appendix D of *Recommended Guidelines for Measuring Organic Compounds in Puget Sound Water, Sediment and Tissue Samples* (PSEP, 1997b) must be consulted for required modifications of methods EPA 5310B and EPA 9060 for the analysis of TOC.