

## QUALITY ASSURANCE/QUALITY CONTROL FACT SHEET

The need for Quality Assurance/Quality Control (QA/QC) is to provide a quantified degree of confidence in the data collected by establishing a system of quality and performance checks on data collection, analysis, and reporting activities. It is important to achieve compliance with established performance and quality criteria to ensure that data are meaningful, usable, and defensible. Important QA/QC issues for dredge material characterization include:

### *Data Quality Objectives*

- Precision: Multiple measurements of the same parameter should be in mutual agreement (i.e., relative percent difference between replicate samples). This is measured by submitting one “blind” duplicate sample (a split sample that is submitted to the laboratory under a unique sample number to keep the duplicate identity unknown to the laboratory) per analyses for each 20 samples collected.
- Accuracy: Parameter measurement should be in agreement to true value (i.e., percent recovery of spiked sample or reference material). The laboratory should analyze one matrix spike (a field sample into which the laboratory “spikes” a known volume of a contaminant to check the analytical method) for every 20 samples collected.
- Representativeness: Samples collected are representative of the entire volume of dredged material. This is addressed through proper sample location and collection, and the use of trip blanks (provided by the laboratory), rinsate blanks (clean water run over sampling equipment after decontamination), and wipe blanks (laboratory-provided gauze wipes of decontaminated equipment).
- Completeness: Sufficient number of samples to characterize volume of dredge material. This is addressed when identifying the samples to be collected.
- Comparability: Data collected and analyzed in a manner consistent with accepted protocols and procedures. This is addressed by requiring standard sample collection and handling procedures and specifying standard analytical techniques at the laboratory.

### *Sample Collection and Handling Methods*

- Make sure you select sample locations and an adequate number of representative samples based on the volume and nature of material (see DEQ fact sheet on Fill Evaluation).
- Use appropriate, pre-cleaned sample containers (usually provided by laboratory), preservatives, and storage requirements (i.e., dark, 4°C) for each analysis.
- Use standard sediment sampling equipment (i.e., stainless steel) and decontaminate the equipment properly prior to collecting each sample. Decontamination usually involves four steps consisting of spraying and scrubbing loose material from the equipment, washing with an Alconox soap-water solution, a tap water rinse, and a distilled water rinse.

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## Ross Island Sand & Gravel

- Collect field QA/QC samples (e.g., duplicate samples; trip blanks; rinsate blanks; and wipe blanks as needed).
- Properly calibrate and maintain field instruments and equipment.

#### *Laboratory Analyses*

- All chemical analyses should be conducted by an experienced analytical laboratory within recommended holding times using accepted methods and recommended reporting limits (see Ross Island's fact sheet titled "Analyses for Dredge Sediment Characterization").
- Specify the appropriate laboratory QC samples.

#### *Documentation*

- Write detailed field notes when sampling. Map the sample locations; document the sampling methods used, the planned dredge area, its volume and depth. Describe any observations (rough percentage of sand or gravel in sample, color and smell of sample, presence of other objects such as fishing line or paint chips), difficulties encountered, and general conditions (environmental and operational) during sample collection.
- Maintain chain-of-custody records that document, with signatures, who was in possession and control of samples at all times from collection to analysis to ensure sample integrity. Chain-of-custody forms are often provided by the analytical laboratories with sampling containers and coolers for transport and storage of samples. Completed chain-of-custody forms are then submitted to the laboratories with the samples to be analyzed.