



15 Loveton Circle  
Sparks, Maryland 21152  
Telephone: 410-771-4950  
Fax: 410-771-4204

**EA Engineering, Science,  
and Technology**

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**TO:** Mona Ponnappalli, Design Team Leader (DTL), USACE - Baltimore District  
Helen Kim, Project Leader, New York District

**FROM:** Daniel Hinckley, Ph.D. –Project Manager, EA

**SUBJECT:** Field Report and Recommendations, Fort Totten Building 615 Remedial Excavation,  
22 March 2007

**Introduction**

A remedial excavation at Fort Totten, Bayside, Queens was completed on 22 March 2007. Present during the excavation were: James Gatherer (EA), Vernon Griffin (USACE), and Sal Messina and Sean Terry (Terry Contracting). The purpose of the remedial excavation was to excavate and remove impacted soils from a “hot spot” of mercury contamination identified from the results of soil samples collected during the 30-31 October 2006 investigation. The following activities were completed at the site:

- Excavation of Hot Spot
- Post-Excavation Confirmatory Sampling.

**Field Activities**

Remedial Excavation

Previous investigations identified a hot spot of mercury contamination centered around soil sample locations SB-08 (6.5 mg/kg at 4.2 ft bgs) and SB-09 (25 mg/kg at 4.4 ft bgs) (see Figure 1). Based on the distribution of mercury concentrations and the current location of the drain-line, it is hypothesized that the drain-line extended out from the building footing at the approximate location of sample SB06, and terminated at a point proximate to SB-09.

An additional approximate ten cubic yards of soil was excavated from the hot spot area. The excavation extended laterally west to the three dry wells, east to the buried power line, north to SB-07 and south to SB-02 (Figure 1). Vertically, the excavation extended down to approximately 7-ft bgs. The three cesspools and the buried power line were not disturbed during the excavation. Excavated soils were stored on-site in a lined 20 yard roll-off container pending waste characterization and the determination of the soil disposal location.

Post-Excavation Confirmatory Sampling and Waste Characterization Sampling

Confirmatory composite soil samples were collected from the side walls and bottom of the excavation to assess the presence or absence of residual soil contamination in soils above the water table. One composite soil sample was collected from each sidewall of the excavation where soil is exposed. That is, samples were collected from the north (SB 18), east (SB 17) and south (SB 16) walls of the excavation. The east wall sample (SB 17) was collected from soil beneath the approximately 2-ft depth concrete electrical conduit that extends along the entire length of the east wall. No sample was collected from the west wall since this was the exposed surface of the three brick cesspools (see Figure 1). Also, one composite soil sample was collected from the bottom of the excavation (SB 15). Four grab samples were collected from each sidewall/bottom to form each composite sample. Confirmatory soil samples were analyzed for mercury by EPA Method 7471.



Excavated soils were sampled for waste characterization purposes. Soils were analyzed for mercury, Full TCLP plus RCRA characteristics. Soil disposal options will be determined based on the results of the waste characterization analysis.

Soil sampling procedures were completed in accordance with the Field Sampling Plan and Field Sampling Plan Addendum.

### Findings

The table below provides preliminary results from post-excavation confirmatory soil sampling:

Preliminary Mercury Results from Post-Excavation Confirmatory Soil Sampling (mg/kg)		
Sample ID	Sampling Location	Preliminary Result
SB 15	Bottom Excavation	9.8
SB 16	South Wall Excavation	6.6
SB 17	East Wall Excavation	12.2
SB 18	North Wall Excavation	2.0

As shown in the table above, elevated mercury concentrations in soil remain to the north, east, and south of the excavation in addition to the bottom of the excavation.

Waste characterization sampling results are pending.

### Recommendations

Recommendations for the future actions at this site are predicated on the following points.

- The Region 9 Preliminary Remedial Goal (PRG) for methyl mercury for a industrial worker is 62 mg/kg and the PRG for mercury and compounds (a mixture of inorganic mercury) is 310 mg/kg. The PRGs are significantly larger than measured concentrations at the site, indicating that industrial workers exposed to these soils would have acceptable risk levels. It is important to note that the exposure factors used to derive the PRGs for industrial workers are significantly higher than would ever be expected for subsurface soils covered with asphalt. For example, the exposure scenario for industrial workers assumes exposure to these soils for 250 days/year for 25 years, certainly an exposure that would never be expected for these subsurface soil samples.
- The soils on the east wall of the excavation are supporting a 2 ft x 2 ft concrete high voltage powerline. While it is certainly possible to shore up such a structure during excavation, and replace the mercury containing soils with clean fill, it is possible that significantly greater danger could result from undermining the soils supporting the high voltage powerline.
- There is no evidence that the mercury in the subsurface soil is being transported and released to the environment. Studies of biota in Little Bay conducted in 2006 did not show evidence of releases of mercury to the bay. It is expected that the mercury in the subsurface soil is likely present as insoluble minerals, which would not be expected to solubilize and be released to the environment, either through groundwater release or any other release mechanism.

Given the above factors it is recommended that the site be closed without further excavation. The 10 cubic yards of material excavated on 22 March 2007 will be disposed of as required, based on the results of the waste characterization results. The excavation will be lined with snow fence (as a marker), filled with clean fill material, and covered with asphalt. Finally the relocated AST will be place back in its original location.

The use of a deed restriction limiting digging could be considered to further minimize potential exposure to these soils.