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Via Email and Private Carrier

Mr. James R. Carroll
Program Administrator
Land Restoration Program
Land Management Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 625
Baltimore, Maryland 21230

**Subject: 2017 Monitoring of Dredge Area D2-6 for Sediment Deposition
Middle River Complex, Middle River, Maryland**

Dear Mr. Carroll:

Dredging of the lower portion of Cow Pen Creek, including DMU D2-6, was completed in March 2017 (i.e., Season 1 of the sediment remediation project). However, a single confirmation sample within DMU D2-6 at a depth of seven feet below starting grade remained above the remedial action goal for cadmium as defined for remedial action verification in the *Risk-Based Disposal Approval Application for PCB-Contaminated Sediment Removal in Dark Head Cove, Middle River Complex, Middle River Maryland*, June 2016. This resulted in a request by the Maryland Department of the Environment (MDE) during a meeting on March 1, 2017 to verify natural deposition would occur, further isolating this area from ecological receptors. This letter represents the first round of monitoring results (January 24, 2018) results of monitoring of the natural deposition and Residual Management Layer (RML) stability to determine the rate of deposition and the current depth to sediment in D2-6.

Sampling Procedures

The depth to sediment was measured at 4 locations within DMU D2-6 (Figure 1). Depth measurements were made using a scientific-grade sounding pole. This is the same equipment used during the sediment remediation project to conduct the high sub-grade poling. It is designed to not penetrate into the sediment. In order to account for fluctuations in the tidal cycle, water levels were

measured and calibrated at a tide gauge on Dark Head Cove’s bulkhead. All elevations in this project are relative to MLLW (Mean Lower Low Water). Depth to sediment measures were made at four sampling locations in D2-6 (Table 1; Figure 1).

Table 1
Sampling points for sediment depth in D2-6 and the depth at each
point currently (01/24/18) and after the RML placement

Location	Northing	Easting	Depth to Sediment (01/24/18) (ft. MLLW)	Depth to Sediment after Final RML (ft. MLLW)	Change in Depth to Sediment since RML completion (ft.)
1	604168.172	1473138.130	-16.00	-16.97	0.97
2	604168.031	1473115.499	-14.70	-15.04	0.34
3	604153.601	1473138.222	-13.30	-16.01	2.71
4	604146.229	1473124.124	-12.40	-15.02	2.62

Sediment cores were also collected and visually inspected for the presence of the residual management layer (sand) and deposition and mixing of additional sediment. Field technicians took core samples using a sediment check-valve sampler. Figures 2 - 5 are the photos of the cores from the four sampling locations in January 2018.

Sampling Results

All sampling results were converted to feet relative to MLLW and the results of the sampling indicated a depth of -12.40 ft. to -16.00 ft. to the sediment (Table 1). The depths of these locations after RML placement from the post-RML survey bathymetry that was completed were compared with the current depth to determine the rate of sediment deposition in the past 10 months including the addition of the RML layer (Table 1).

The difference between the depth after RML placement and the current depth represents the amount of deposition or redistribution of sediment including the RML that has occurred since the dredging was completed (Table 1). The results indicate that since RML placement was completed all four locations showed a decreased depth to the sediment, thus an increase in the thickness of sediment overlying the bottom of dredged excavation.

The individual sediment cores collected at each sampling location were used to determine the thickness of the RML and new sediment deposition in DMU D2-6 (Table 2).

Table 2
Depth of sand and new sediment deposited
(Sediment core images available below
in Figures 2, 3, 4, and 5)

Location	Thickness of RML (inches)
1	12.0
2	9.5
3	5.5
4	6.0

An additional round of monitoring is scheduled for fall 2018 based on the approved project workplan. Please let me know if you have any questions. My office phone is (301) 548-2209.

Sincerely,



Thomas D. Blackman
 Project Lead, Environmental Remediation

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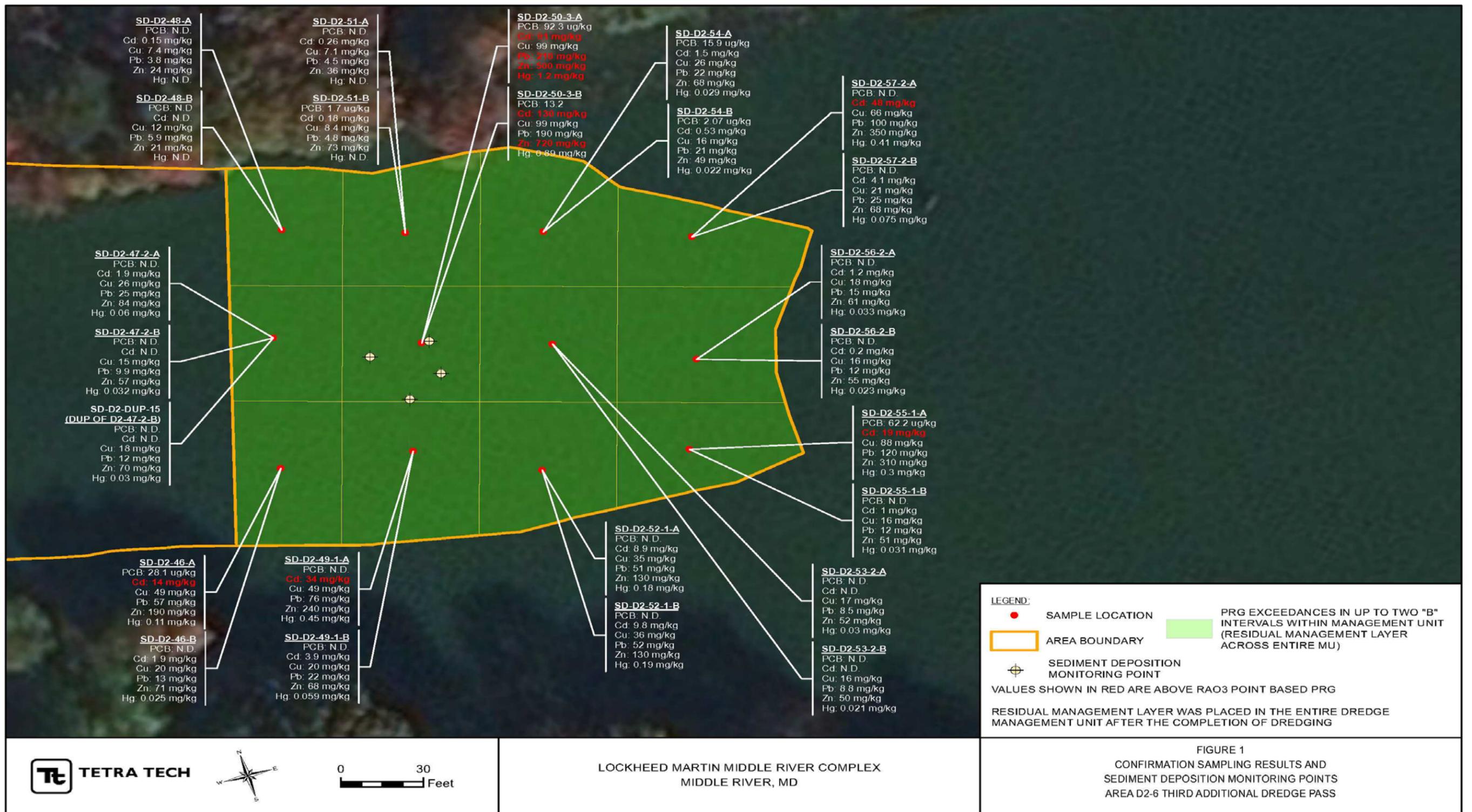


Figure 1. January 2018 sampling locations for the depth to sediment in DMU D2-6.



Figure 2. Sediment core from January 2018 DMU D2-6 sampling location #1.



Figure 3. Sediment core from January 2018 DMU D2-6 sampling location #2.

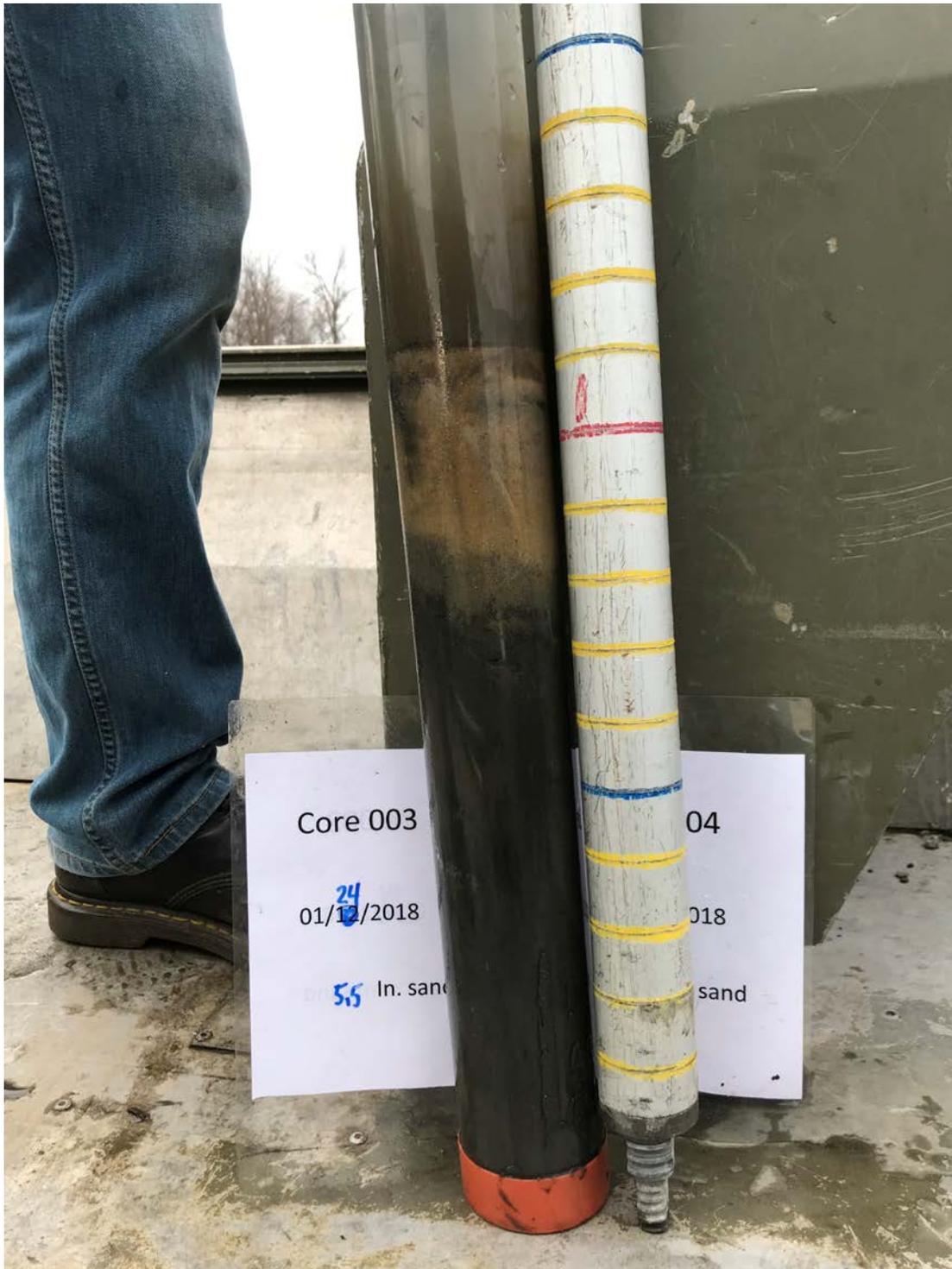


Figure 4. Sediment core from January 2018 DMU D2-6 sampling location #3.



Figure 5. Sediment core from January 2018 DMU D2-6 sampling location #4.