

Lockheed Martin Corporation
6801 Rockledge Drive MP: CCT-246
Bethesda, MD 20817
Telephone (301) 548-2209



December 8, 2016

VIA PRIVATE CARRIER

Ms. Ruth Prince, PhD Toxicologist
U.S. Environmental Protection Agency, Region 3
Land and Chemicals Division
1650 Arch St.
Mail Code 3LC40
Philadelphia, Pennsylvania 19103

Subject: Transmittal of the Block E Soil Remedial Investigation Work Plan Addendum 2:
Winter 2016/2017 Soil Sampling
Lockheed Martin Corporation; Middle River Complex
2323 Eastern Boulevard, Middle River, Baltimore County, Maryland

Dear Ms. Prince:

For your information please find enclosed two hard copies with a CD of the above-referenced document. This work plan addendum has been prepared to describe additional activities for the Block E soil remedial investigation proposed to take place during the Winter of 2016-2017 at Lockheed Martin's Middle River Complex in Middle River, Maryland.

Please let me know if you have any questions. My office phone is (301) 548-2209.

Sincerely,

A handwritten signature in dark ink, appearing to read "Tom D. Blackman", with a long horizontal flourish extending to the right.

Thomas D. Blackman
Project Lead, Environmental Remediation

cc: (via email without enclosure)
Gary Schold, MDE
Mark Mank, MDE
James Carroll, MDE
Christine Kline, Lockheed Martin
Norman Varney, Lockheed Martin
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December 8, 2016

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: **Block E Soil Remedial Investigation Work Plan Addendum 2:
Winter 2016/2017 Soil Sampling
Middle River Complex, Middle River, Maryland**

Dear Mr. Carroll:

This work plan addendum has been prepared to describe additional activities for the Block E soil remedial investigation. During the spring 2016 investigation in Block E, the United States Environmental Protection Agency (USEPA) triad approach was used as discussed in Section 3 of the parent *Block E Soil Remedial Investigation Work Plan* prepared by Tetra Tech, Inc. in December 2015. Samples were collected from over 120 sampling locations to define the nature and extent of polychlorinated biphenyl (PCB), trichloroethene (TCE), and polycyclic aromatic hydrocarbon (PAH) concentrations in soils. Additional soil sampling is needed to fully characterize these site contaminants. This investigation will consist of the following activities:

1. Soil samples will be collected from twelve locations (E-SB-1572 through E-SB-1583) in the **southeastern portion of Block E to delineate TCE contamination** downgradient of the underground storage tank discovered in 2012. Direct push technology (DPT) will be used to drill to a depth of 12-feet below ground surface (bgs) in each sampling location. Samples will be collected from 1-2, 2-4, 4-6, 6-8, and 10-12 feet bgs and sent to an off-site laboratory. All soil samples will be analyzed for volatile organic compounds by USEPA SW846 Method 8260B. Proposed sampling locations for TCE delineation are depicted on Figure 1.

2. Thirteen soil borings (E-SB-1584 through E-SB-1596) will be drilled via DPT around former **Transformer Room #3** to vertically delineate PCB concentrations in soil. Samples will be collected from the following depth intervals:
 - a. 0-1, 1-2, and 2-3 feet bgs at E-SB-1589, E-SB-1593 and E-SB-1594
 - b. 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, and 20-22 feet bgs at E-SB-1584 and E-SB-1585
 - c. 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, and 20-22 feet bgs at E-SB-1586, E-SB-1587 and E-SB-1588
 - d. 4-6, 6-8, 8-10, 10-12, 12-14, and 14-16 feet bgs at E-SB-1591
 - e. 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, and 20-22 feet bgs at E-SB-1590 and E-SB-1592
 - f. 0-1, 1-2, 2-4, 4-6, 6-8, 8-10 feet bgs at E-SB-1595 and E-SB-1596
 - g. All soil samples will be sent to an offsite laboratory and analyzed for PCBs by USEPA SW846 Method 8082A. Proposed Transformer Room #3 sampling locations are depicted on Figure 2.
3. Eleven soil borings (E-SB-1597 through E-SB-1607) will be drilled via sonic drill rig around former **Transformer Room #4** to delineate PCB concentrations in soil. A sonic drill rig will be used to drill soil borings in and around Transformer Room #4. High concentrations of PCBs have been detected in deep soils in this area and sonic drilling provides the most effective way to telescope drill casing minimizing the potential for cross contamination. Samples will be collected from the following depth intervals:
 - a. 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22, and 22-24 feet bgs at E-SB-1597
 - b. 8-10, 10-12, 12-14, and 14-16 feet bgs at E-SB-1598 through E-SB-1601
 - c. 0-1, 1-2, 2-4, 4-6, and 6-8 feet bgs at E-SB-1602 and E-SB-1603
 - d. 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20 feet bgs at E-SB-1604 through E-SB-1606
 - e. 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, and 20-22 feet bgs at E-SB-1607
 - f. All soil samples will be sent to an off-site laboratory and analyzed for PCBs by USEPA SW846 Method 8082A. Figure 3 illustrates the proposed sampling locations for former Transformer Room #4.
4. Eighteen soil borings (E-SB-1608 through E-SB-1625) will be drilled via sonic drill rig around former **Transformer Room #2** to delineate PCB concentrations in soil. A sonic drill rig will be used to drill soil borings in and around Transformer Room #2 because sonic

drilling technology can accommodate drilling through soil piles that sit on top of the concrete where the room was located and then progress through the concrete. Samples will be collected from the following depth intervals:

- a. 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20 feet bgs at E-SB-1613, E-SB-1616, E-SB-1618, and E-SB-1622
 - b. 10-12, 12-14, 14-16, 16-18, and 18-20 feet bgs at E-SB-1608 through E-SB-1612, E-SB-1614, E-SB-1617, E-SB-1619 through E-SB-1621, and E-SB-1623 through E-SB-1625
 - c. 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20 feet bgs at E-SB-1615
 - d. Concrete samples will also be collected from soil cores at E-SB-1613 and E-SB-1616 to determine how concrete in this area will be handled during future remediation efforts. All soil and concrete samples will be sent to an off-site laboratory and analyzed for PCBs by USEPA SW846 Method 8082A. Proposed Transformer Room #2 sampling locations are depicted on Figure 4.
5. Soil samples will be collected from three locations (E-SB-1626, E-SB-1627, and E-SB-1633) in the **southeastern portion of Block E to delineate PCB** Aroclor 1254. Five additional locations (E-SB-1628 through E-SB-1632) will be sampled to delineate Aroclor 1260 concentrations in soil. Although specific Aroclors are targeted for delineation extent, all samples will be analyzed for the full list of PCB Aroclors. Samples will be collected from the following depth intervals:
- a. 0-1, 1-2 feet bgs at E-SB-1628 through E-SB-1632
 - b. 0-1, 1-2 and 2-4 feet bgs at E-SB-1633
 - c. 0-1, 1-2, 2-4, 4-6, and 6-8 feet bgs at E-SB-1626
 - d. 1-2, 2-4, 4-6 and 6-8 feet bgs at E-SB-1627
 - e. All soil samples will be sent to an offsite laboratory and analyzed for PCBs by USEPA SW846 Method 8082A. Proposed delineation-sampling locations for Aroclor 1254 and 1260 are depicted on Figure 5.
6. Soil samples will be collected from forty-four locations (E-SB-1661 through E-SB-1699, and E-SB-1713 through E-SB-1717) across Block E to delineate **shallow PCB** concentrations in soil. DPT will be used to drill to a maximum depth of three feet bgs in each location. Samples will be collected from 0-1 and 1-2 feet bgs at each location, and from the 2-3 depth interval at location E-SB-1713 to vertically delineate PCB concentrations at former sampling location E-SB-1455. All samples will be sent to an off-site laboratory and analyzed for PCBs by USEPA SW846 Method 8082A. Proposed shallow PCB soil delineation samples are depicted on Figures 6 through 9.

7. Soil samples will be collected from forty locations (E-SB-1634 through E-SB-1660, and E-SB-1700-1712) across Block E to fill in “white spaces” for **PAH** concentrations in shallow soil. DPT will be used to drill to a depth of two feet bgs in each location. Samples will be collected from 0-1 and 1-2 feet bgs at each location and sent to an off-site laboratory. All soil samples will be analyzed for PAHs by USEPA SW846 Method 8260B. Proposed sampling locations are depicted on Figure 10.
8. Tetra Tech will **excavate the sump/catch basin** located in former Transformer Room #3 to observe the subsurface slab infrastructure and determine if it was a preferential pathway for PCBs. Transformer Room # 3 was chosen because it is outside of the radiological contamination area and, unlike Transformer Rooms 1 and 2, it is not buried under soil piles. The concrete slab around the sump/catch basin will be saw cut, and a mini excavator will be used to remove the concrete and surrounding soil. The sump/catch basin will be removed from the ground, placed on polyethylene sheeting, and visually inspected for evidence of contamination. Photographs of the sump/catch basin and subsurface area around it will document the removal. Soil and concrete removed during the inspection will be placed back into the excavation area upon completion if there are no visual signs of contamination and radiation levels are less than background plus 3 sigma. If visual signs of contamination are found on the sump/catch basin, it will be broken up and placed in 55-gallon drums. The excavation will be filled with either clean backfill or stone to grade. If no visual signs of contamination are present, it will be placed into the excavation area with the other materials.

Consistent with the parent work plan, all soil samples will be field screened for radiological activity to detect radiation levels that may be greater than background plus 3 sigma. If radiation levels greater than background plus 3 sigma are encountered, additional samples will be collected and analyzed for isotopic uranium (U-233, U-234, U-235, U-236 and U-238) by ICP mass spectrometry Method 6020A, and isotopic thorium (Th-228, Th-230 and Th-232) by Method Alpha Spectroscopy A-01-R. A list of sampling locations, depths, and analyses to be performed is in Table 1.

All samples will be sent to an offsite laboratory with a 21-day turnaround time. Duplicate samples will be collected for quality control purposes at a rate of 1:20. Bottleware, preservation, and holding time requirements are in Table 2. The samples will be analyzed by a Department of Energy Consolidated Audit Program or state-accredited laboratory for the compounds and methodologies prescribed in the work plan. All data provided by the laboratory will be validated for all quality assurance/quality control (QA/QC) parameters including accuracy, precision, completeness, and comparability, in accordance with USEPA Region 3 Level M2 and IM1 protocols.

Continuous soil samples will be collected for lithological description and field screening at all soil boring locations. Ground surface is defined as the soil surface beneath the concrete. The soil will be screened by visual inspection and odor along with a photoionization detector (PID) using a consistent headspace screening methodology (i.e., zip-top bag technique). Field screening for radiological activity will be conducted on each soil core as described above. After completion, each borehole will be sealed up to the ground surface with granular bentonite. The drill rods and stainless steel samplers will be decontaminated between sample collections and boring locations to allow proper decontamination and to prevent cross contamination.

Investigation derived waste (IDW) (consisting of all drill cuttings and soil cuttings, decontamination rinse water, excess soil from sampling, and personal protective equipment [PPE]) will be generated during characterization sampling. PPE IDW will be placed in trash bags that will be transferred to a facility trash receptacle to be disposed of as general refuse. Soil cuttings and water will be collected and stored in U.S. Department of Transportation-approved 55-gallon drums. Any IDW generated from sampling locations where suspect radiological readings are observed will be segregated from the normal IDW waste stream. IDW will be characterized and disposed of in accordance with applicable state and federal regulations and the MRC waste management plan.

Tetra Tech will prepare a report that will include a summary of field activities. The report will include summary tables and figures, and recommendations for future actions. If you have any questions regarding the work plan, please feel free to contact me at (301) 528-3022.

Sincerely,



Lynnette M. Drake
Project Lead Associate, Environmental Remediation
Lockheed Martin Corporation.

Enclosures: Figures 1 through 10, Tables 1 and 2

cc: (via email without enclosure)

Gary Schold, MDE
Mark Mank, MDE
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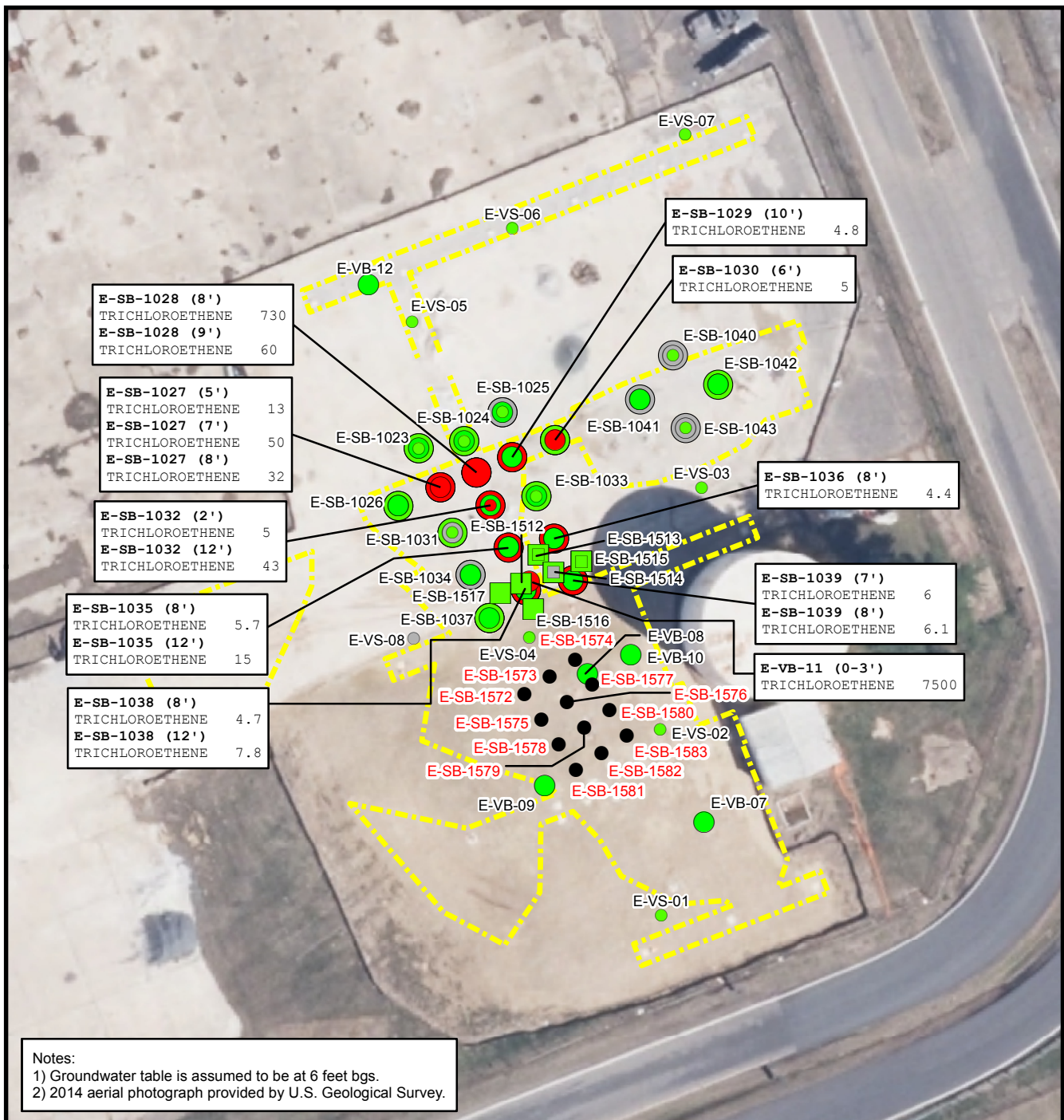
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Doug Mettee, Lockheed Martin MST
John Morgan, LMCPI

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FIGURES



LEGEND

- | | |
|----------------------------|-----------------------------------|
| ● PROPOSED SAMPLE LOCATION | ○ Depth Range Less than 2 Feet |
| □ 2016 SAMPLE LOCATION | ○ Depth Range Between 2-6 Feet |
| ○ PRE-2015 SAMPLE LOCATION | ○ Depth Range Greater than 6 Feet |
- TCE Results**
- | | |
|--------------------------|---|
| ● Less than 4.1 mg/kg | APPROXIMATE LIMIT OF
GROUNDWATER RESPONSE
ACTION EXCAVATION

mg/kg = milligrams per kilogram. |
| ● Greater than 4.1 mg/kg | |
| ● Non-Detect | |

0 25 50 Feet



FIGURE 1

TCE SAMPLING LOCATIONS, BLOCK E

**Lockheed Martin Middle River Complex
Middle River, Maryland**

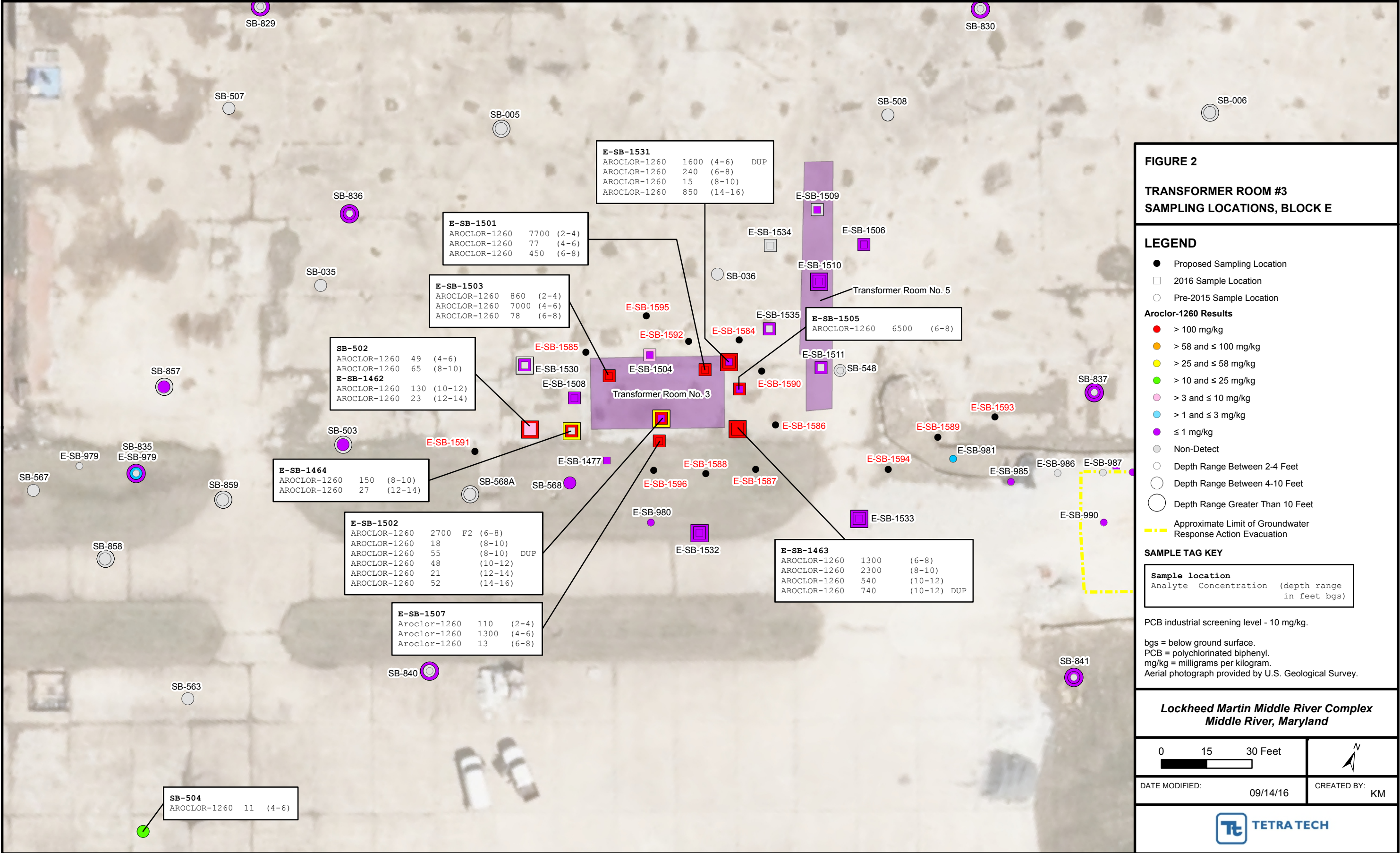
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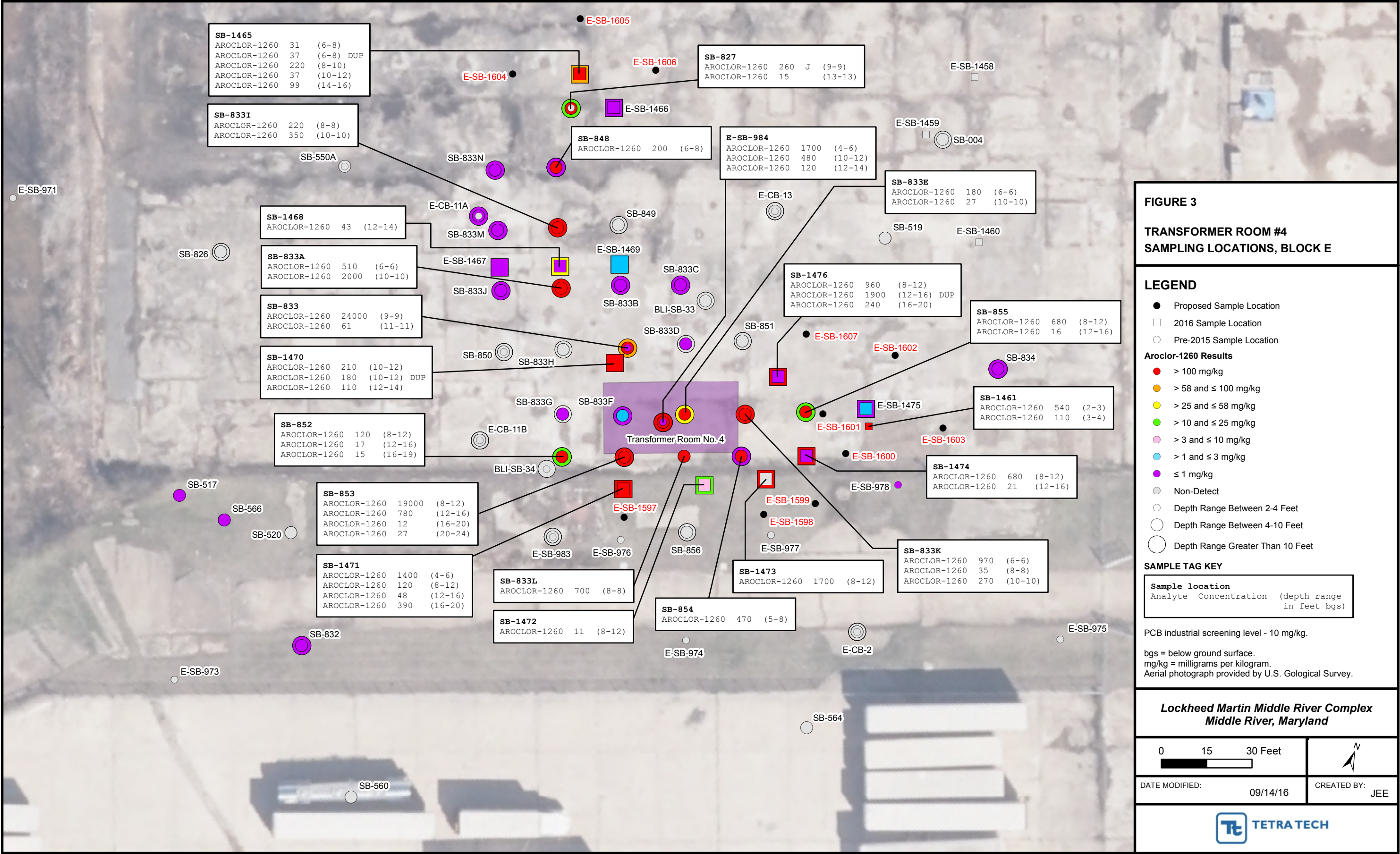
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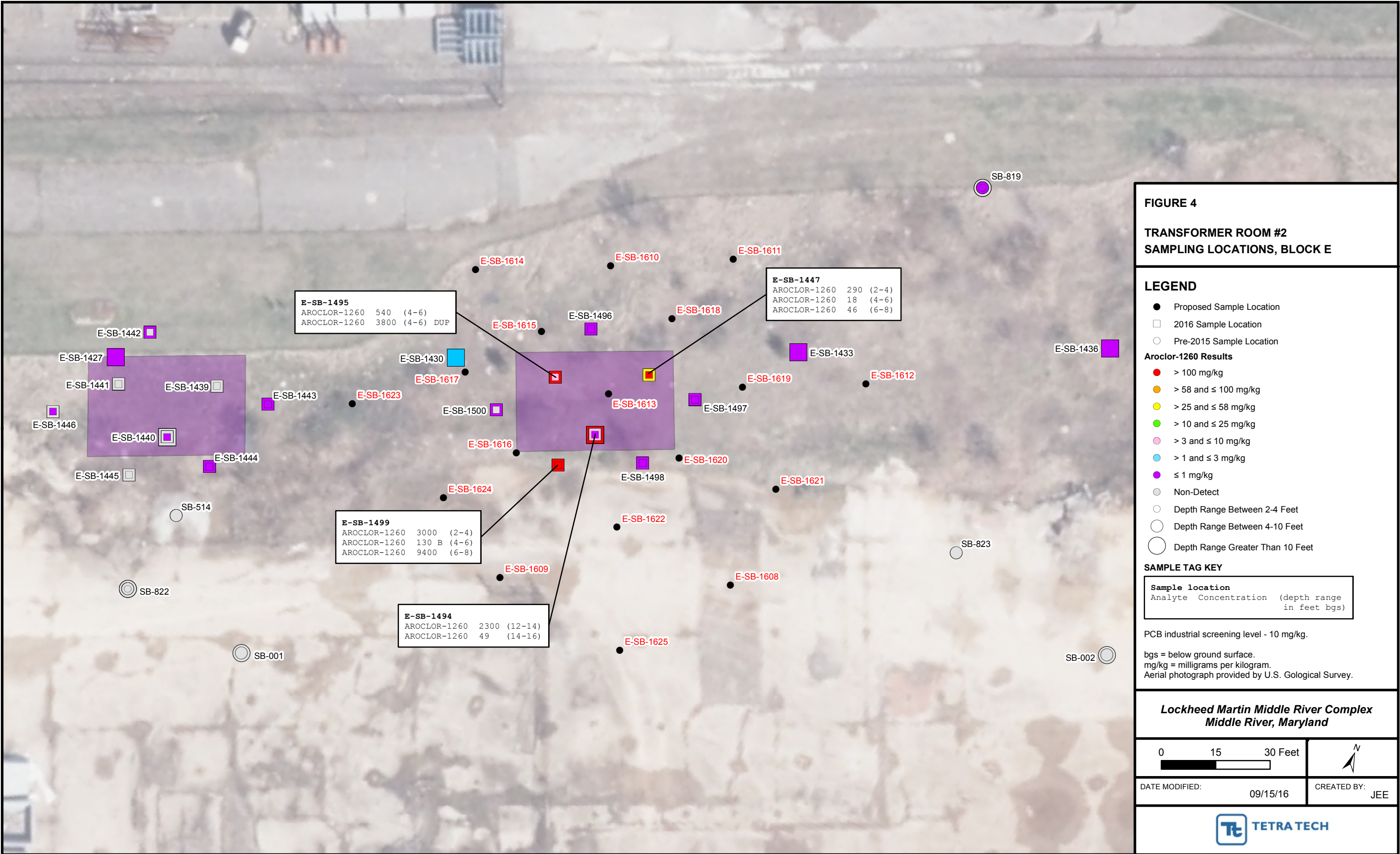
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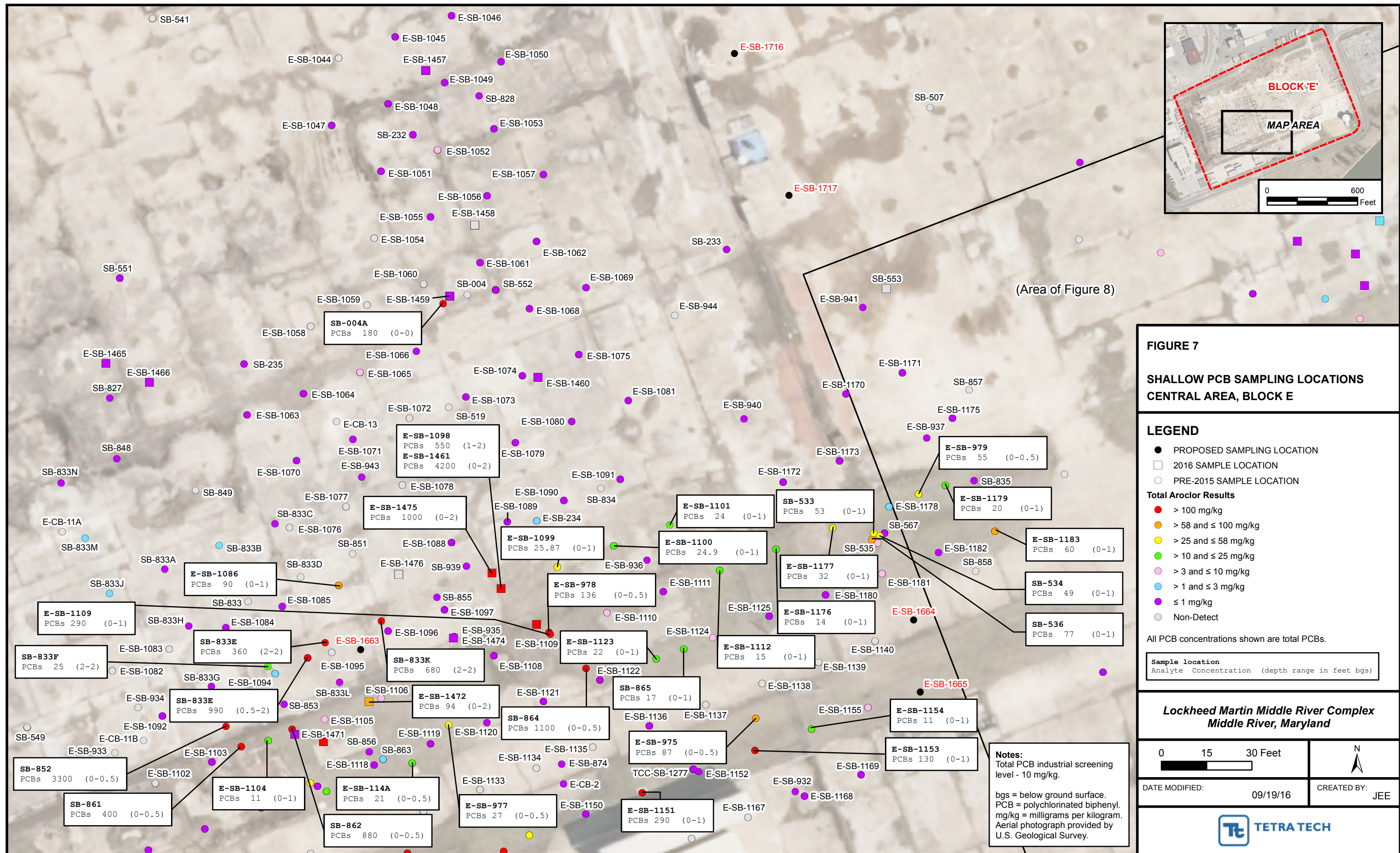


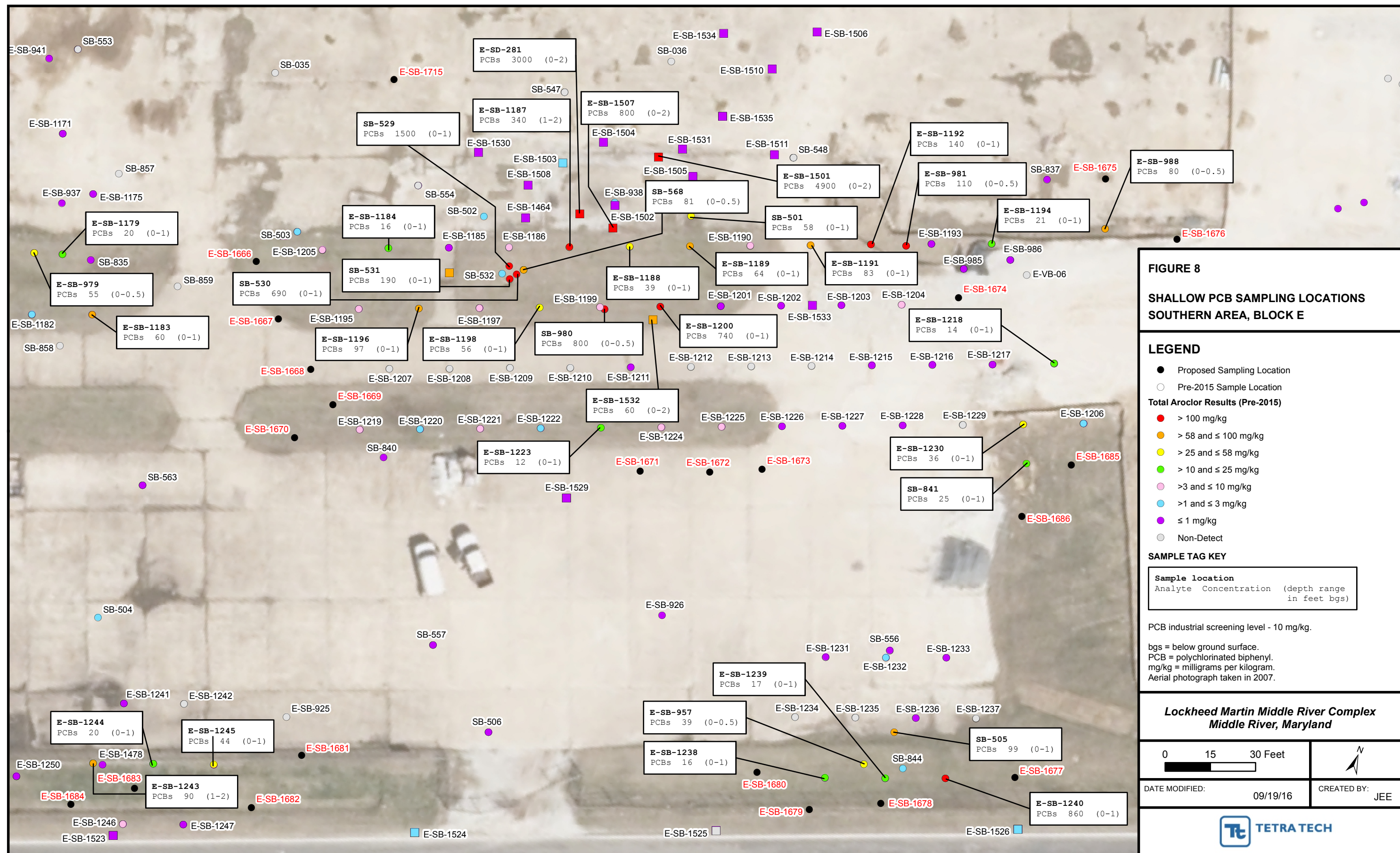


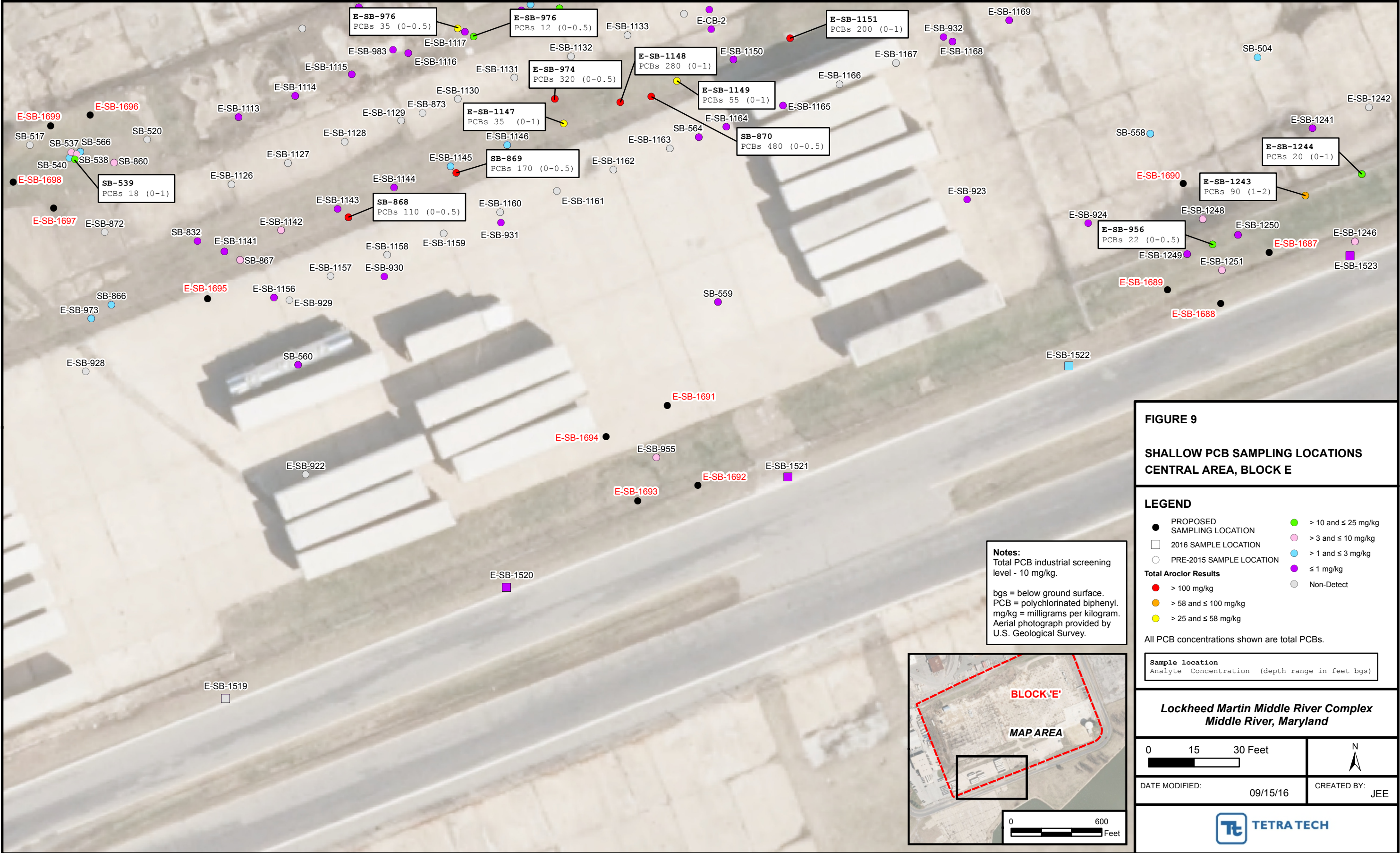












TABLES

Table 1

Sampling Locations and Chemical Analyses
Block E Soil Remedial Investigation Work Plan Addendum #2
Lockheed Martin Middle River Complex, Middle River, Maryland
Page 1 of 4

Sampling Area	Sample Identification	Boring Depth (ft bgs)	Sampling Depth Interval (ft bgs)	PCB Analysis USEPA Method 8082A	PAH Analysis USEPA Method 8270D	VOC Analysis USEPA Method 8260
TCE Delineation Area Figure 1	E-SB-1572	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1573	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1574	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1575	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1576	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1577	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1578	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1579	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1580	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1581	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1582	12	1-2, 2-4, 4-6, 6-8, 10-12			X
	E-SB-1583	12	1-2, 2-4, 4-6, 6-8, 10-12			X
Transformer Room No. 3 PCB Delineation Figure 2	E-SB-1584	22	2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1585	22	2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1586	22	6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1587	22	6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1588	22	6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1589	3	0-1, 1-2, 2-3	X		
	E-SB-1590	22	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1591	16	4-6, 6-8, 8-10, 10-12, 12-14, 14-16	X		
	E-SB-1592	22	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		
	E-SB-1593	3	0-1, 1-2, 2-3	X		
	E-SB-1594	3	0-1, 1-2, 2-3	X		
	E-SB-1595	10	0-1, 1-2, 2-4, 4-6, 6-8, 8-10	X		
	E-SB-1596	10	0-1, 1-2, 2-4, 4-6, 6-8, 8-10	X		
Transformer Room No. 4 PCB Delineation Figure 3	E-SB-1597	24	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22, 22-24	X		
	E-SB-1598	16	8-10, 10-12, 12-14, 14-16	X		
	E-SB-1599	16	8-10, 10-12, 12-14, 14-16	X		
	E-SB-1600	16	8-10, 10-12, 12-14, 14-16	X		
	E-SB-1601	16	8-10, 10-12, 12-14, 14-16	X		
	E-SB-1602	8	0-1, 1-2, 2-4, 4-6, 6-8	X		
	E-SB-1603	8	0-1, 1-2, 2-4, 4-6, 6-8	X		
	E-SB-1604	20	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1605	20	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1606	20	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1607	20	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22	X		

Table 1

Sampling Locations and Chemical Analyses
Block E Soil Remedial Investigation Work Plan Addendum #2
Lockheed Martin Middle River Complex, Middle River, Maryland
Page 2 of 4

Sampling Area	Sample Identification	Boring Depth (ft bgs)	Sampling Depth Interval (ft bgs)	PCB Analysis USEPA Method 8082A	PAH Analysis USEPA Method 8270D	VOC Analysis USEPA Method 8260
Transformer Room No. 2 PCB Delineation Figure 4	E-SB-1608	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1609	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1610	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1611	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1612	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1613/ E-SB-1613-CS	20	2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20 Concrete: 0-0.5	X		
	E-SB-1614	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1615	20	4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1616/ E-SB-1616-CS	20	2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20 Concrete: 0-0.5	X		
	E-SB-1617	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1618	20	2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1619	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1620	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1621	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1622	20	2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1623	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1624	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
	E-SB-1625	20	10-12, 12-14, 14-16, 16-18, 18-20	X		
Aroclor 1254 Delineation Area (Southeastern Corner) Figure 5	E-SB-1626	8	0-1, 1-2, 2-4, 4-6, 6-8	X		
	E-SB-1627	8	1-2, 2-4, 4-6, 6-8	X		
	E-SB-1628	2	0-1, 1-2	X		
	E-SB-1629	2	0-1, 1-2	X		
	E-SB-1630	2	0-1, 1-2	X		
	E-SB-1631	2	0-1, 1-2	X		
	E-SB-1632	2	0-1, 1-2	X		
	E-SB-1633	4	0-1, 1-2, 2-4	X		
PCB Shallow Soil Sampling Figure 6	E-SB-1661	2	0-1, 1-2	X		
	E-SB-1662	2	0-1, 1-2	X		
	E-SB-1713	3	0-1, 1-2, 2-3	X		
	E-SB-1714	2	0-1, 1-2	X		
PCB Shallow Soil Sampling Figure 7	E-SB-1663	2	0-1, 1-2	X		
	E-SB-1664	2	0-1, 1-2	X		
	E-SB-1665	2	0-1, 1-2	X		
	E-SB-1716	2	0-1, 1-2	X		
	E-SB-1717	2	0-1, 1-2	X		

Table 1

Sampling Locations and Chemical Analyses
Block E Soil Remedial Investigation Work Plan Addendum #2
Lockheed Martin Middle River Complex, Middle River, Maryland
Page 3 of 4

Sampling Area	Sample Identification	Boring Depth (ft bgs)	Sampling Depth Interval (ft bgs)	PCB Analysis USEPA Method 8082A	PAH Analysis USEPA Method 8270D	VOC Analysis USEPA Method 8260
PCB Shallow Soil Sampling Figure 8	E-SB-1666	2	0-1, 1-2	X		
	E-SB-1667	2	0-1, 1-2	X		
	E-SB-1668	2	0-1, 1-2	X		
	E-SB-1669	2	0-1, 1-2	X		
	E-SB-1670	2	0-1, 1-2	X		
	E-SB-1671	2	0-1, 1-2	X		
	E-SB-1672	2	0-1, 1-2	X		
	E-SB-1673	2	0-1, 1-2	X		
	E-SB-1674	2	0-1, 1-2	X		
	E-SB-1675	2	0-1, 1-2	X		
	E-SB-1676	2	0-1, 1-2	X		
	E-SB-1685	2	0-1, 1-2	X		
	E-SB-1686	2	0-1, 1-2	X		
	E-SB-1677	2	0-1, 1-2	X		
	E-SB-1680	2	0-1, 1-2	X		
	E-SB-1679	2	0-1, 1-2	X		
	E-SB-1678	2	0-1, 1-2	X		
	E-SB-1681	2	0-1, 1-2	X		
	E-SB-1682	2	0-1, 1-2	X		
	E-SB-1683	2	0-1, 1-2	X		
	E-SB-1684	2	0-1, 1-2	X		
PCB Shallow Soil Sampling Figure 9	E-SB-1715	2	0-1, 1-2	X		
	E-SB-1687	2	0-1, 1-2	X		
	E-SB-1688	2	0-1, 1-2	X		
	E-SB-1689	2	0-1, 1-2	X		
	E-SB-1690	2	0-1, 1-2	X		
	E-SB-1691	2	0-1, 1-2	X		
	E-SB-1692	2	0-1, 1-2	X		
	E-SB-1693	2	0-1, 1-2	X		
	E-SB-1694	2	0-1, 1-2	X		
	E-SB-1695	2	0-1, 1-2	X		
	E-SB-1696	2	0-1, 1-2	X		
	E-SB-1697	2	0-1, 1-2	X		
	E-SB-1698	2	0-1, 1-2	X		
	E-SB-1699	2	0-1, 1-2	X		

Table 1

Sampling Locations and Chemical Analyses
Block E Soil Remedial Investigation Work Plan Addendum #2
Lockheed Martin Middle River Complex, Middle River, Maryland
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Sampling Area	Sample Identification	Boring Depth (ft bgs)	Sampling Depth Interval (ft bgs)	PCB Analysis USEPA Method 8082A	PAH Analysis USEPA Method 8270D	VOC Analysis USEPA Method 8260
PAH Shallow Soil Sampling Figure 10	E-SB-1634	2	0-1, 1-2		X	
	E-SB-1635	2	0-1, 1-2		X	
	E-SB-1636	2	0-1, 1-2		X	
	E-SB-1637	2	0-1, 1-2		X	
	E-SB-1638	2	0-1, 1-2		X	
	E-SB-1639	2	0-1, 1-2		X	
	E-SB-1640	2	0-1, 1-2		X	
	E-SB-1641	2	0-1, 1-2		X	
	E-SB-1642	2	0-1, 1-2		X	
	E-SB-1643	2	0-1, 1-2		X	
	E-SB-1644	2	0-1, 1-2		X	
	E-SB-1645	2	0-1, 1-2		X	
	E-SB-1646	2	0-1, 1-2		X	
	E-SB-1647	2	0-1, 1-2		X	
	E-SB-1648	2	0-1, 1-2		X	
	E-SB-1649	2	0-1, 1-2		X	
	E-SB-1650	2	0-1, 1-2		X	
	E-SB-1651	2	0-1, 1-2		X	
	E-SB-1652	2	0-1, 1-2		X	
	E-SB-1653	2	0-1, 1-2		X	
	E-SB-1654	2	0-1, 1-2		X	
	E-SB-1655	2	0-1, 1-2		X	
	E-SB-1656	2	0-1, 1-2		X	
	E-SB-1657	2	0-1, 1-2		X	
	E-SB-1658	2	0-1, 1-2		X	
	E-SB-1659	2	0-1, 1-2		X	
	E-SB-1660	2	0-1, 1-2		X	
	E-SB-1700	2	0-1, 1-2		X	
	E-SB-1701	2	0-1, 1-2		X	
	E-SB-1702	2	0-1, 1-2		X	
	E-SB-1703	2	0-1, 1-2		X	
	E-SB-1704	2	0-1, 1-2		X	
	E-SB-1705	2	0-1, 1-2		X	
	E-SB-1706	2	0-1, 1-2		X	
	E-SB-1707	2	0-1, 1-2		X	
	E-SB-1708	2	0-1, 1-2		X	
	E-SB-1709	2	0-1, 1-2		X	
	E-SB-1710	2	0-1, 1-2		X	
	E-SB-1711	2	0-1, 1-2		X	
	E-SB-1712	2	0-1, 1-2		X	

Notes:

ft bgs - feet below ground surface

PCB - polychlorinated byphenol

VOC - volatile organic carbon

PAH - polycyclic aromatic hydrocarbon

USEPA - United States Environmental Protection Agency

Table 2
Bottleware, Preservation, and Holding-Time Requirements
for Environmental Samples
Lockheed Martin Middle River Complex, Middle River, Maryland
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Analyte/Method	Bottleware	Preservation	Holding Time
SOIL/CONCRETE			
Volatile organic compounds USEPA SW-846 8260B	Sealed, zero-headspace container or 40-milliliter glass vial with preservative; Teflon lined cap	Cool to 4 degrees Celsius $\pm$ 2 degrees Celsius methanol or sodium bisulfide if glass vials are used	48 hours for sealed zero-headspace containers (unfrozen); freezing can extend the holding time; 14 days from collection if preserved in methanol or sodium bisulfide
Polycyclic aromatic hydrocarbons/ USEPA SW-846 8270D	4- or 8-ounce glass, wide-mouth jar; Teflon lined cap	Cool to 4 degrees Celsius $\pm$ 2 degrees Celsius	14 days for extraction; 40 days from extraction to analysis
Polychlorinated biphenyls/ USEPA SW-846 8082A	4- or 8-ounce glass, wide-mouth jar; Teflon lined cap	Cool to 4 degrees Celsius $\pm$ 2 degrees Celsius	None
Isotopic thorium/ HASL A-01-R	8-ounce glass, wide-mouth jar; Teflon lined cap	Cool to 4 degrees Celsius $\pm$ 2 degrees Celsius	6 months
Isotopic uranium/ USEPA SW-846 6020A	as above (for thorium)	Cool to 4 degrees Celsius $\pm$ 2 degrees Celsius	6 months

HASL – Health and Safety Laboratory (U.S. Department of Energy Environmental Measurements Laboratory)

U – uranium

USEPA – United States Environmental Protection Agency