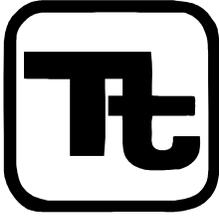


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TECHNICAL MEMORANDUM REGARDING CONCRETE AND SOIL SAMPLING AND
ANALYSIS RESULTS SOLID WASTE MANAGEMENT UNIT 9 (SWMU 9) PESTICIDE
CONTROL AREA CONCRETE WASH RACK NSA CRANE IN

07/14/2011
TETRA TECH



TECHNICAL MEMORANDUM

DATE: July 14, 2011

TO: Mr. Tom Brent, NSA Crane

FROM: Tony Klimek, Tetra Tech; Cincinnati, OH
George Ten Eyck, Tetra Tech; Cincinnati, OH

CC: Mr. Howard Hickey, NAVFAC MW
Mr. John Trepanowski, Tetra Tech
Mr. Ralph Basinski, Tetra Tech
Project File – CTO F273

SUBJECT: NSA Crane – SWMU 9 Pesticide Control Area – Concrete Wash Rack

- Concrete and Soil Sampling and Analysis Results

In May 2011, Tetra Tech collected twelve (12) concrete samples and five (5) soil samples from the concrete wash rack at SWMU 9 – Pesticide Control Area; these samples were analyzed for pesticides. This Technical Memorandum summarizes the work performed and the analytical results.

BACKGROUND INFORMATION

As shown on the Figures and Photographs in Attachment A, the concrete wash rack is a below ground structure that is approximately 17 feet wide by 19 feet long. The top of the wash rack has been partially demolished; it is approximately 12 feet deep on the east side and 6 feet deep on the west side. The wash rack consists of six concrete walls, four outer walls (north, south, east, and west) and two interior walls (northern interior wall and southern interior wall) that divide the wash rack into three cells. There is a concrete floor covering the middle cell, the north and south cells have a gravel/soil floor.

The May 2011 sampling and analysis was performed in general accordance with the April 21, 2011 Technical Memorandum Supplemental Work Plan. The twelve concrete samples were collected from the six concrete walls in accordance with the Work Plan. Soil samples from the floor of the north and south cells were also collected in accordance with the Work Plan. However, because there is a concrete floor, a soil sample was collected from the material on the floor in the middle cell. No samples were collected from the soil outside the wash rack.

CONCRETE SAMPLING ACTIVITIES

Because the wash rack is a below ground structure, it was filled with water (see Photos in Attachment A). Therefore, on May 9, water was pumped from the wash rack and transferred to the wastewater treatment plant via a nearby manhole. At the end of pumping, approximately 6" of mud and water remained on the wash rack floor.

The wash rack was considered a confined space; therefore, Tetra Tech performed air monitoring prior to entering the wash rack and during all sampling activities. The ambient air was monitored to ensure a safe working condition with a MultiRAE Photoionization Detector (PID). The air within the wash rack was continually monitored during all sampling activities. All oxygen concentrations within the wash rack were normal with no major variances during the sampling.

A total of twelve (12) concrete samples (09CS007 to 09CS018) were collected on May 10 and 11, 2011. Two samples were collected from each of the wash rack walls; one sample was collected from the lower area and one from the upper area of each wall. All concrete samples were composites. As shown on Figures 2 and 3, four discrete aliquots (A, B, C, and D) were collected from each upper and lower area. The four aliquots from each area were then composited to create a sample to represent that area.

The concrete samples were collected using a demolition hammer drill with a one inch diameter drill bit in accordance with the US Environmental Protection Agency (EPA) Region 1 Standard Operating Procedure for Sampling Concrete in the Field. Samples were collected by drilling holes into the concrete wall to a depth of one inch. The concrete cuttings were collected as the holes were drilled. An average of five holes was drilled per aliquot to obtain sufficient quantity (5 ounces) of material; sampling equipment (drill bit) was decontaminated between collection of each aliquot sample. Each composite sample was comprised of equal parts of each aliquot and consisted of approximately 4 ounces. The remaining aliquot sample quantity is sufficient for individual aliquot analysis, if requested.

SOIL SAMPLING ACTIVITIES

A total of five soil samples were collected from three locations (166 to 168); from at or below the wash rack floor as shown on Figure 4. Two soil samples were collected from below the wash rack floor in the south and north cell (09SB166 and 09SB168 respectively) using a hand auger; at each location one sample was collected from 0 to 2 feet below ground surface (bgs) and 2 feet to 4 feet bgs. Approximately 6 inches of gravel was on the floor of the north and south cells; the soil below the wash rack was very wet brown and gray clay. Because the middle cell has a concrete floor, soil sample 09SB167 was collected from material on the floor (see Figure 5 photos).

LABORATORY ANALYSIS

The composite concrete samples and the soil samples were sent to an offsite laboratory (Empirical) and analyzed using US EPA SW 846 Method 8081. The analytical results are presented on the tags on Figures 2, 3, and 4.

Attachment A - Figures

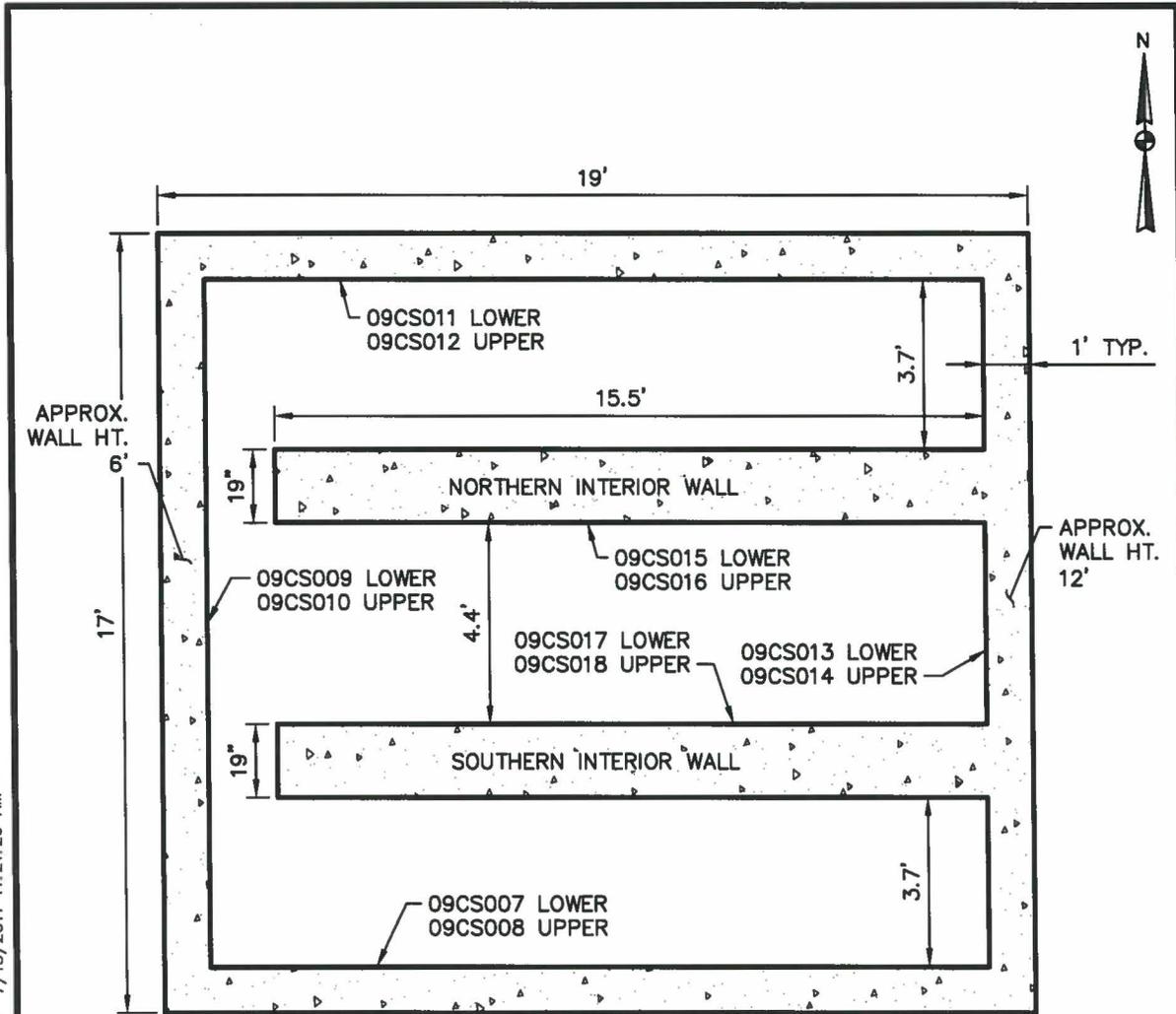
Figure 1 – Concrete Sampling at Wash Rack – Plan View

Figure 2 – Concrete Sampling at Wash Rack – Wall View

Figure 3 – Concrete Sampling at Wash Rack – Wall View

Figure 4 – Soil Sampling at Wash Rack – Plan View

Figure 5 – Site Photos

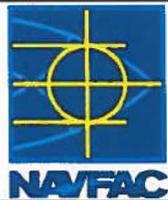


SAMPLING LOCATION NOTES:

1. ALL CONCRETE SAMPLES WERE COMPOSITES.
2. FOUR (4) DISCRETE SAMPLES (ALIQUOT) WERE COLLECTED FOR EACH COMPOSITE SAMPLE.
3. SEE FIGURE 2 & 3 FOR VIEW OF WALLS.

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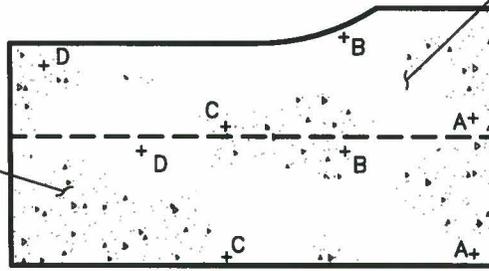


**CONCRETE SAMPLING AT
WASH RACK - PLAN
SWMU 9 VIEW
NSA CRANE, CRANE, IN**

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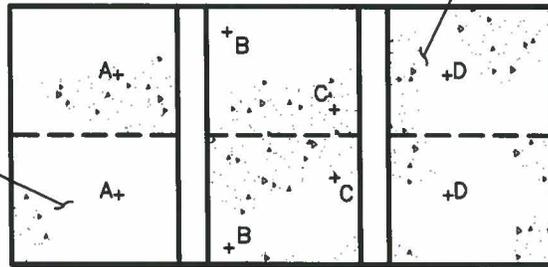
09CS011		
4,4'-DDD	2.75	J
4,4'-DDE	9.83	J
4,4'-DDT	12.1	J
ALPHA-CHLORDANE	2.58	U
DIELDRIN	0.897	UJ
GAMMA-CHLORDANE	5.9	J
HEPTACHLOR	0.897	UJ



NORTH WALL

09CS012		
4,4'-DDD	12.1	
4,4'-DDE	814	
4,4'-DDT	358	J
ALPHA-CHLORDANE	30.6	
DIELDRIN	18.1	
GAMMA-CHLORDANE	29.7	
HEPTACHLOR	2.32	

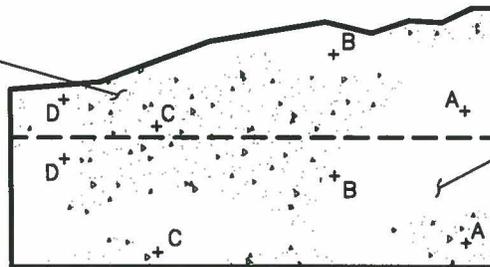
09CS014		
4,4'-DDD	464	
4,4'-DDE	12100	
4,4'-DDT	4480	J
ALPHA-CHLORDANE	823	J
DIELDRIN	85.8	J
GAMMA-CHLORDANE	984	J
HEPTACHLOR	136	



EAST WALL

09CS013		
4,4'-DDD	4.49	J
4,4'-DDE	15.3	J
4,4'-DDT	20.9	J
ALPHA-CHLORDANE	2.95	U
DIELDRIN	0.221	UJ
GAMMA-CHLORDANE	3.4	J
HEPTACHLOR	0.702	UJ

09CS016		
4,4'-DDD	1270	J
4,4'-DDE	10500	
4,4'-DDT	2350	J
ALPHA-CHLORDANE	243	J
DIELDRIN	61	J
GAMMA-CHLORDANE	381	J
HEPTACHLOR	17.4	



NORTHERN INTERIOR WALL

09CS015		
4,4'-DDD	6.75	J
4,4'-DDE	18.6	J
4,4'-DDT	19.7	J
ALPHA-CHLORDANE	2.4	U
DIELDRIN	0.263	UJ
GAMMA-CHLORDANE	3.38	J
HEPTACHLOR	0.711	UJ

NOTES:

1. + A APPROXIMATE LOCATION OF ALIQUOT (A, B, C, AND D)
2. TAGS SHOW ANALYTICAL RESULTS IN ug/kg (ppb)

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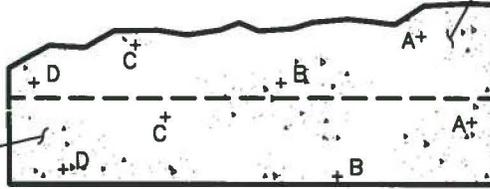
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CONCRETE SAMPLING AT
WASH RACK - CROSS-SECTIONS
SWMU 9 WORK PLAN
NSA CRANE, CRANE, IN

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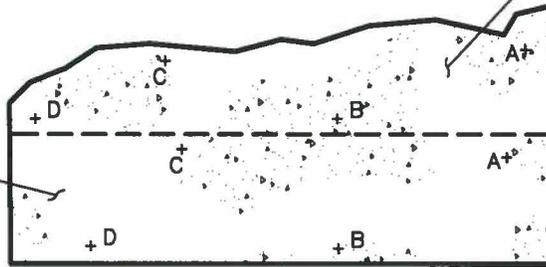
09CS017		
4,4'-DDD	4.83	J
4,4'-DDE	15	J
4,4'-DDT	18.8	J
ALPHA-CHLORDANE	4.98	J
DIELDRIN	0.604	J
GAMMA-CHLORDANE	7.35	J
HEPTACHLOR	0.301	J



09CS018		
4,4'-DDD	235	J
4,4'-DDE	10300	J
4,4'-DDT	1830	J
ALPHA-CHLORDANE	376	J
DIELDRIN	22.7	J
GAMMA-CHLORDANE	277	J
HEPTACHLOR	44.8	J

SOUTHERN INTERIOR WALL

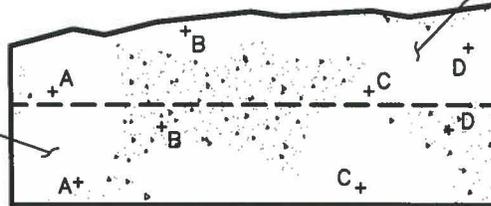
09CS007		
4,4'-DDD	5.12	J
4,4'-DDE	7.5	J
4,4'-DDT	16.5	J
ALPHA-CHLORDANE	2.08	U
DIELDRIN	0.19	J
GAMMA-CHLORDANE	2.11	J
HEPTACHLOR	0.736	UJ



09CS008		
4,4'-DDD	5.72	
4,4'-DDE	86	
4,4'-DDT	58.1	
ALPHA-CHLORDANE	17.5	
DIELDRIN	0.667	
GAMMA-CHLORDANE	17.1	
HEPTACHLOR	0.799	

SOUTH WALL

09CS009		
4,4'-DDD	13.35	J
4,4'-DDE	8.69	J
4,4'-DDT	10.7	J
ALPHA-CHLORDANE	7.4	J
DIELDRIN	0.218	J
GAMMA-CHLORDANE	7.7	J
HEPTACHLOR	0.709	UJ



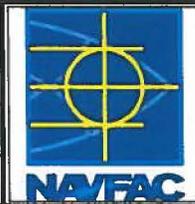
09CS010		
4,4'-DDD	5.98	J
4,4'-DDE	33.7	J
4,4'-DDT	55.4	J
ALPHA-CHLORDANE	18.8	J
DIELDRIN	0.556	J
GAMMA-CHLORDANE	18	J
HEPTACHLOR	0.285	J

WEST WALL

NOTES:

- + A APPROXIMATE LOCATION OF ALIQUOT (A, B, C, AND D)
- TAGS SHOW ANALYTICAL RESULTS IN ug/kg (ppb)

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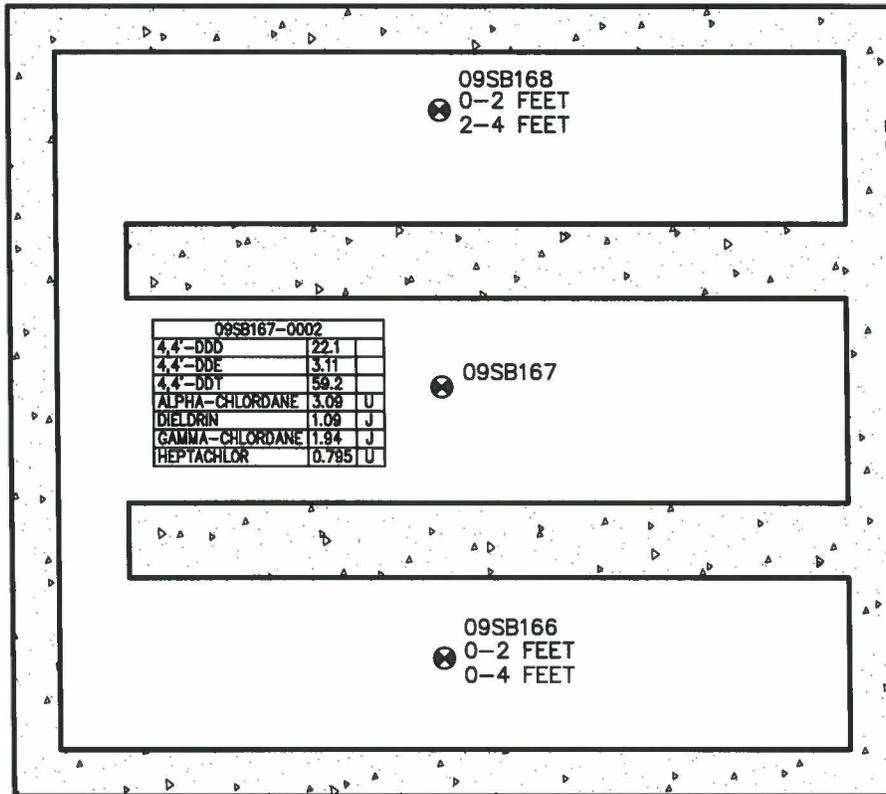
**CONCRETE SAMPLING AT
WASH RACK - CROSS-SECTIONS
SWMU 9 WORK PLAN
NSA CRANE, CRANE, IN**

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09SB168-0002		
4,4'-DDD	18.1	
4,4'-DDE	3.18	
4,4'-DDT	16	
ALPHA-CHLORDANE	0.816	UJ
DIELDRIN	0.211	J
GAMMA-CHLORDANE	6.58	J
HEPTACHLOR	0.816	U

09SB168-0204		
4,4'-DDD	25.9	
4,4'-DDE	4.2	
4,4'-DDT	57.6	
ALPHA-CHLORDANE	4.99	J
DIELDRIN	0.788	U
GAMMA-CHLORDANE	0.913	J
HEPTACHLOR	0.368	J



09SB167-0002		
4,4'-DDD	22.1	
4,4'-DDE	3.11	
4,4'-DDT	59.2	
ALPHA-CHLORDANE	3.09	U
DIELDRIN	1.09	J
GAMMA-CHLORDANE	1.94	J
HEPTACHLOR	0.795	U

09SB166-0002		
4,4'-DDD	106	J
4,4'-DDE	18.9	J
4,4'-DDT	99.9	J
ALPHA-CHLORDANE	11	J
DIELDRIN	1	J
GAMMA-CHLORDANE	10.4	J
HEPTACHLOR	0.84	UJ

09SB166-0204		
4,4'-DDD	248	J
4,4'-DDE	36.2	J
4,4'-DDT	410	J
ALPHA-CHLORDANE	20.5	J
DIELDRIN	1.61	J
GAMMA-CHLORDANE	22.6	J
HEPTACHLOR	0.82	UJ

NOTES:

1. SOIL SAMPLES 09SB166 AND 09SB168 COLLECTED USING HAND AUGER FROM MATERIAL BELOW THE WASH RACK FLOOR
2. SAMPLE 09SB167 COLLECTED FROM MATERIAL ON CONCRETE FLOOR OF CENTER CELL
3. TAGS SHOW ANALYTICAL RESULTS IN ug/kg (ppb)

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SOIL SAMPLING AT
WASH RACK - PLAN
SWMU 9 VIEW
NSA CRANE, CRANE, IN

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FIGURE 5 - SITE PHOTOGRAPHS



Date: 05/09/2011	View: W	Photographer: M. Reising
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View of:
Wash rack during pump down operation on first day on site.



Date: 05/10/2011	View: E	Photographer: M. Reising
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View of:
Wash rack in the final stages of pump down during the second day on site.



Date: 05/10/2011	View: E	Photographer: M. Reising
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View of :
Collecting concrete sample from east wall.



Date: 05/10/2011	View: E	Photographer: M. Reising
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View of:
Collecting concrete sample from east wall.

FIGURE 5 - SITE PHOTOGRAPHS



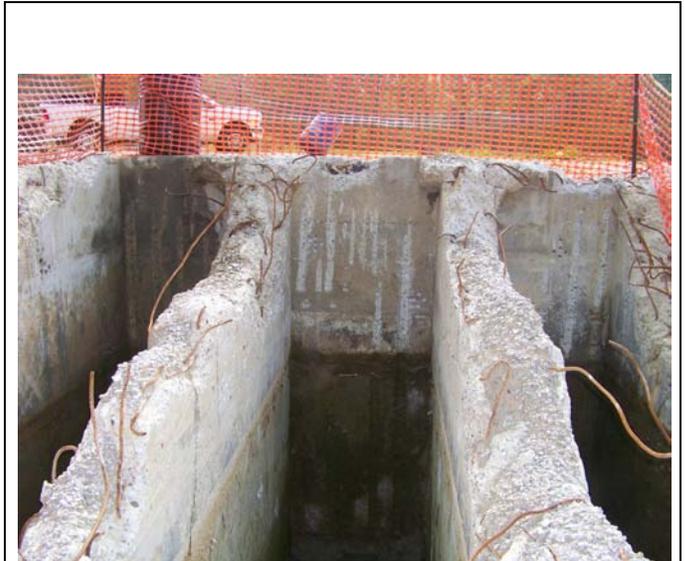
Date: 05/10/11	View: E	Photographer: M. Reising
View of: Collecting concrete sample from east wall.		



Date: 05/10/11	View: W	Photographer: M. Reising
View of: Collecting soil sample from below wash rack floor at location SB166.		



Date: 05/10/11	View: E	Photographer: M. Reising
View of: Floor of center section of concrete wash rack. There was approximately 6 inches of material on the concrete floor. Soil sample SB167 was collected from this material.		



Date: 05/12/11	View: E	Photographer: K. Losekamp
View of: East wall of wash rack at completion of sampling activities. Sample aliquot locations 0014 B, C and D are visible on the east wall.		