

March 31, 1988

Mr. Craig Smith  
Chief, Compliance Section  
U.S. Environmental Protection Agency  
Region VII, Superfund Branch  
726 Minnesota Avenue  
Kansas City, Kansas 66101

Ms. Nancy Johnson  
Regional Project Manager  
U.S. Environmental Protection Agency  
Region VII, Superfund Branch  
Kansas City, Kansas 66101

Project: REM II - EPA Contract No.: 68-01-6939  
Work Assignment No.: 290-7LX7  
Document No.: 320-ES1-EP-FZBX-1  
Subject: Field Activities Report for February 16-19, 1988  
and March 8, 1988, DuPont Landfill Site  
Camanche, Iowa

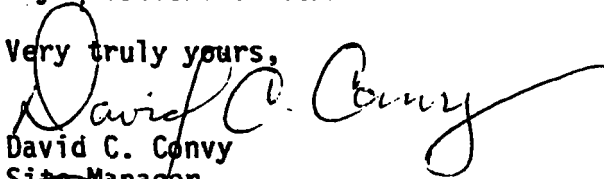
Dear Mr. Smith and Ms. Johnson:

REM II (Woodward-Clyde Consultants) was present at the DuPont Landfill Site during PRP field activities on February 16-19, 1988 and March 8, 1988. REM II activities included observation of test pit excavation, geotechnical boring and piezometer installation, and the collection of split soil and ground water samples.

The attached report describes the activities observed by REM II and discusses split sample locations.

Please review the attached report and feel free to contact us if you have any questions or comments.

Very truly yours,

  
David C. Convy  
Site Manager

  
Dennis Y. Takade, Ph.D.  
Project Manager

tar

Attachment

cc: M. L. Kiefer - Camp, Dresser & McKee Inc.



FIELD ACTIVITIES REPORT  
DUPONT LANDFILL SITE  
CAMANCHE, IOWA

MARCH 31, 1988

\* \* \* ENFORCEMENT SENSITIVE \* \* \*  
DO NOT RELEASE

WORK ASSIGNMENT NO.: 290-7LX7

DOCUMENT NO.: 320-ES1-EP-FZBX-1

REM II  
WOODWARD-CLYDE CONSULTANTS  
5055 Antioch Road  
Overland Park, Kansas 66203

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FIELD ACTIVITIES REPORT  
DUPONT LANDFILL SITE  
CAMANCHE, IOWA

SUMMARY

REM II (Woodward-Clyde Consultants) was present at the DuPont Landfill Site, Camanche, Iowa on February 16-19, 1988 and March 8, 1988 to observe field activities associated with the PRP lead Remedial Investigation and Feasibility Study (RI/FS). REM II activities included observation of three test pit excavations, three geotechnical borings, one piezometer installation, and the collection of two soil and three ground water split samples.

Addendum E, to the POP/QAPP dated September 12, 1986 (Document No.: 320-WP1-OP-OANW-1), specifies collecting two test pit soil split samples, five ground water split samples, and a surficial soil split sample. However, installation of DuPont's geotechnical borings indicated that a second water-bearing unit did not exist in the area. As a result, the scheduled deep monitoring wells were not installed, resulting in two ground water samples being unavailable to split. The decision not to install the deep monitoring wells was in accordance with the provisions set forth in the work plan.

DuPont sampled and split the scheduled test pit and three ground water samples with REM II; however, the surficial soil sample was not scheduled for collection by DuPont during the time REM II was on-site. This final split sample will be collected by the PRP and provided to EPA for analysis during subsequent field activities. Table 1 presents the REM II sample numbers and the corresponding DuPont sample numbers for the samples collected during REM II oversight.

REM II split soil samples will be analyzed for volatile organics (VOA), semi-volatile organics (BNA) and EP toxic metals. Split ground water samples will be analyzed for VOAs, BNAs, dissolved metals, and sulfides.

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An audit sample for analysis by the PRPs laboratory was submitted directly to the laboratory by USEPA Region VII.

This report describes the field activities observed by REM II during field oversight and notes the locations where split samples were collected.

TABLE 1

SAMPLE NUMBER CROSS REFERENCE

<u>EPA Sample Number</u>	<u>Location</u>	<u>DuPont Sample Number</u>
	<u>Soil</u>	
QA3X7001	Test Pit (TP-01)	TP-01-01
QA3X7002	Test Pit (TP-03)	TP-03-01
	<u>Water</u>	
QA3X7003	DP-02	ETC-BD6524
QA3X7004	PZ-02	ETC-BD6514
QA3X7005	DP-05	ETC-BD6525

FIELD ACTIVITIES REPORT  
DUPONT LANDFILL SITE  
CAMANCHE, IOWA

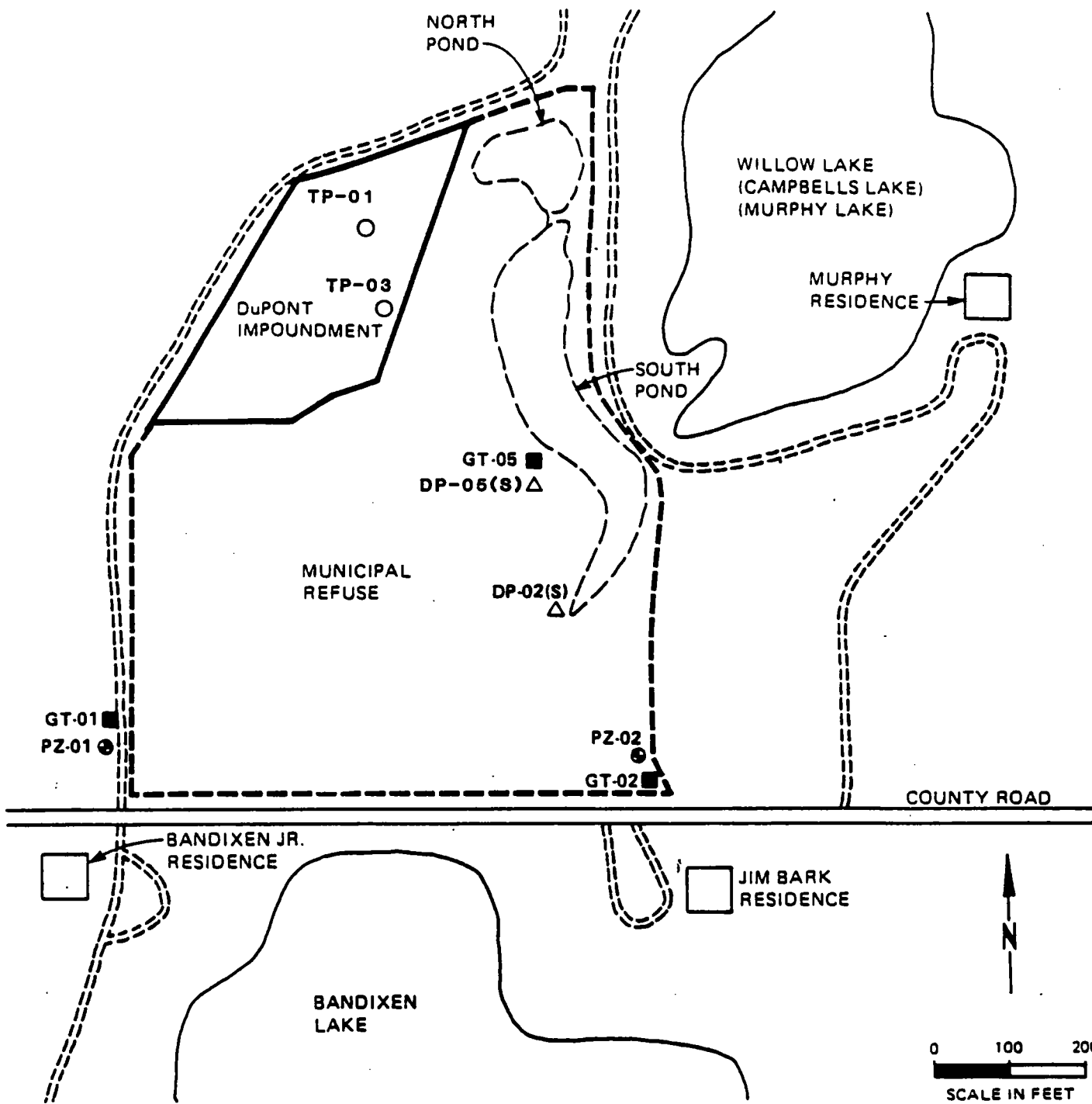
FEBRUARY 16, 1988

REM II traveled from Kansas City to Camanche, Iowa and arrived on-site at 1030 hours. DuPont's consultant (CH<sub>2</sub>M Hill) was excavating and sampling test pit number 2 (TP-02) at the time REM II arrived on-site. Activities by CH<sub>2</sub>M Hill at TP-02 were being conducted in Level B protection. A second CH<sub>2</sub>M Hill work crew was concurrently drilling and sampling geotechnical boring number 1 (GT-01). The location of this boring is shown in Figure 1.

Because test pit excavation activities were being conducted in level B protection, REM II was not able to enter the exclusion zone and directly observe test pit excavation. Therefore, oversight activities were conducted from a location outside the exclusion zone approximately 20 feet from the actual test pit excavation. Following completion of test pit excavation CH<sub>2</sub>M Hill reported to REM II that the subsurface soils encountered in TP-02 had the following composition:

<u>Depth (feet)</u>	<u>Composition</u>
0 - 4	Loose to medium dense silt, some very fine sand
4 - 5	Gray-green discolored silt
5 - 6	Black contaminated looking material
6	Bottom of excavation

CH<sub>2</sub>M Hill also reported that a drum was encountered during excavation at a depth of approximately 5 feet below ground surface. The drum reportedly contained white, gray and black shredded plastic-like material. Water was also encountered in TP-02 at a depth of approximately 5 feet below ground surface and contained a visible organic sheen. Excavation of the test pit was halted at a depth of 6 feet below ground surface because the test pit walls were caving.



**LEGEND**

- GT-01 GEOTECHNICAL BORING
- △ DP-01(S) SHALLOW MONITORING WELL
- TP-01 TEST PIT EXCAVATION
- ⊙ PZ-01 PIEZOMETER

NOTE: SAMPLES WERE NOT SPLIT AT GT-01, GT-02 AND GT-05 HOWEVER WORK WAS OBSERVED BY REM II.

<b>DuPONT LANDFILL SITE CAMANCHE, IOWA</b>			
<b>Woodward-Clyde Consultants</b> ENGINEERS, GEOLOGISTS, AND ENVIRONMENTAL SCIENTISTS			
<b>REM II SPLIT SAMPLE LOCATIONS</b>			
DRN. BY	JDK	DATE	3/25/88
CHKD BY	JDE	DATE	3/31/88
PROJECT NO.		FIG. NO.	
320ES1		1	



REM II did not split any samples at this location, but CH<sub>2</sub>M Hill obtained a soil sample and a grab sample of the standing water (free liquid). Samples were obtained directly from the bucket of the backhoe being utilized for excavation.

After obtaining their required environmental samples, CH<sub>2</sub>M Hill began backfilling the test pit. Because the test pit encountered free liquid, a landfill boring through the base of the test pit, as called for in the work plan dated February 12, 1988, was not installed. The decision not to install the landfill boring was consistent with the provisions set forth in the work plan.

The work plan called for sealing the test pit bottom with a 1 foot thick layer of bentonite/cement grout, then backfilling the test pit using the segregated materials removed during test pit excavation. CH<sub>2</sub>M Hill did not seal the pit bottom in this manner and stated that they didn't feel it was necessary since the synthetic landfill liner had not been exposed or its integrity breached.

Following the backfilling operations, the backhoe was moved to the decontamination pad and steam cleaned. Decontamination water was not retained but was allowed to freely discharge over the municipal portion of the landfill.

At 1530 hours CH<sub>2</sub>M Hill began the excavation of test pit number 3 (TP-03) (Figure 1). As with TP-02, excavated materials were segregated based on visual observation. The following materials were encountered during test pit excavation.

<u>Depth (feet)</u>	<u>Composition</u>
0 - 5.0	Medium dense, light gold/brown very fine sandy silt to very fine sand
5.0 - 7.5	Gray to black, loose fine grained silty sand
7.5 - 8.5	Loose, gray to black mottled, very fine sandy silt
8.5	Bottom of excavation

During excavation black staining was first observed at a depth of approximately 2.5 feet below ground surface and water began to enter the pit at a depth of approximately 6.0 feet below ground surface. The water was dark gray and effervesced, however, no visible organic sheen was noted as in TP-02. CH<sub>2</sub>M Hill also reported encountering a synthetic liner at a depth of between 6.5 and 8.0 feet below ground surface. The liner was torn by the backhoe during excavation.

At a depth of 5 feet below ground surface, prior to the influx of water or encountering the liner, CH<sub>2</sub>M Hill collected a soil sample which was split with REM II. The EPA sample number QA3X7002 corresponds to CH<sub>2</sub>M Hill sample number TP-03-01 (Table 1). This area was selected for sampling because organic vapors detected just above the sampled interval registered 120 ppm above background on the organic vapor analyzer (OVA). Grab samples were obtained from the backhoe bucket.

A grab sample of the free liquid in the test pit was also obtained by CH<sub>2</sub>M Hill but was not split with REM II.

At approximately 1715 hours CH<sub>2</sub>M Hill grouted the bottom of the excavation and began backfilling the trench. REM II observed the grouting and departed the site for the day at 1730 hours.

Other activities completed by CH<sub>2</sub>M Hill during the day but not observed full time by REM II included the drilling and geophysical logging of geotechnical boring number 1 (GT-01). REM II was unable to observe these

activities full time because of the time spent observing the excavation at TP-02. However, CH<sub>2</sub>M Hill informed REM II that the geotechnical boring encountered the following profile:

<u>Depth (feet)</u>	<u>Composition</u>
0 - 10.5	Silty sand
10.5 - 18.5	Coarse sand and gravel
18.5 - 36.5	Stiff silty clay/clayey silt, little sand and gravel
36.5 - 55	Bedrock, highly fractured, weathered dolomite
(45 - 55)	Rock coring
55	Bottom of boring

Following the completion of drilling and coring activities at GT-01 the bore hole was geophysically logged utilizing gamma, resistivity, and SP techniques. These results were not reported to REM II on-site.

FEBRUARY 17, 1988

REM II arrived on-site at 0725 hours and observed CH<sub>2</sub>M Hill decontaminating and preparing their equipment to begin excavation at test pit number 1 (TP-01) (Figure 1).

At 0915 hours CH<sub>2</sub>M Hill began excavating at TP-01. The ground surface was frozen, and it took approximately 30 minutes to dig through the initial 12 inches of soil after which the excavation proceeded more rapidly. As with TP-02 and TP-03, CH<sub>2</sub>M Hill was utilizing level B protection and segregating the overburden materials.

The following materials were encountered by the excavation of TP-01:

<u>Depth (feet)</u>	<u>Composition</u>
0 - 3	Loose to medium dense, light brown, very fine silty sand
3 - 6	Gray-green silty sand
6	Bottom of pit

CH<sub>2</sub>M Hill reported encountering black effervescing water a depth of approximately 5.5 feet below ground surface. Just before encountering the water CH<sub>2</sub>M Hill collected a soil sample which REM II split. The EPA sample number QA3X7001 corresponds to CH<sub>2</sub>M Hill sample number TP-01-01 (Table 1). CH<sub>2</sub>M Hill also obtained a grab sample of the free liquid encountered in the test pit. REM II did not split a sample of this material.

CH<sub>2</sub>M Hill personnel decontaminating and packaging the samples obtained from TP-01 reported a faint sulfide odor.

As with TP-02, the presence of free liquid in the trench resulted in the elimination of the scheduled landfill boring at this location. Therefore, following sample collection, CH<sub>2</sub>M Hill grouted the bottom of the pit and backfilled the excavation in a manner consistent with the work plan.

At 1605 hours CH<sub>2</sub>M Hill began drilling at geotechnical boring number 2 (GT-02). Drilling proceeded through sand and gravel to a depth of approximately 10 feet below ground surface and was halted for the day.

REM II departed the site at 1715 hours.

FEBRUARY 18, 1988

REM II arrived on-site and met with CH<sub>2</sub>M Hill. The second drill rig scheduled to arrive on-site to assist with geotechnical borings and monitoring well installation had been delayed.

REM II proceeded to GT-02 to observe drilling. Drilling proceeded through sand and gravel to a depth of 25 feet below ground surface at which time a drive shoe was lost in the borehole. As a result, CH<sub>2</sub>M Hill was forced to pull the drill rod and casing and abandon the hole. The initial hole was grouted closed and the rig was offset to a new location and drilling continued.

Sand and gravel were encountered in the new borehole from the ground surface to a depth of approximately 40.5 feet below ground surface at which time soft gray silty clay and fine sand with traces of organics (wood and roots) was encountered. This material graded to a gray clayey silt with a lesser sand content. These materials remained virtually unchanged until drilling was halted for the day at a depth of approximately 70 feet below ground surface.

REM II departed the site at 1730 hours.

FEBRUARY 19, 1988

REM II arrived on-site at 0730 hours and initially observed set up and the initiation of drilling at GT-02. CH<sub>2</sub>M Hill sampled the interval from 73.5 to 75.0 feet below ground surface at 0910 hours and encountered silty clay with some sand. This was the same material that had been observed in samples obtained from a depth of 40.5 feet below ground surface to the current sample depth. Small sand lenses, approximately 1 inch thick, were occasionally encountered, but no signs of a second water bearing unit were evident.

At 0945 hours REM II moved to the location of GT-05 to observe drilling directly downgradient of the landfill. CH<sub>2</sub>M Hill began drilling at GT-05 at 1015 hours.

A small amount of surficial trash (paper and plastic) was encountered initially in GT-05. A layer of sand was encountered from immediately below the waste material to a depth of approximately 4.5 feet below ground surface at which time soft brown silty clay was encountered.

CH<sub>2</sub>M Hill then installed approximately 8.5 feet of surface casing, flushed the borehole with clean drilling mud and continued drilling.

A description of spilt-spoon samples collected in boring GT-05 is provided below:

<u>Sample Depth (feet)</u>	<u>Blow Counts (per six-inches)</u>	<u>Composition</u>
3.5 - 5.0	2 - 2 - 3	Sandy waste, grading to soft brown silty clay at 4.5 feet
8.5 - 10	2 - 4 - 5	Moist clay with trace silt/sand, a little wood
13.5 - 15	3 - 3 - 3	Approximately 2 inches clay grading to brown fine sandy silt to brown grey silty/clay
18.5 - 20	NA	Medium stiff brown to gray silty clay (no gradation as above), well laminated
23.5 - 25	4 - 5 - 6	Brown to gray silty clay, medium stiff
28.5 - 30	3 - 4 - 6	Very fine silty sandy clay, soft to medium stiff (sample deflected HNu 0.2 ppm)
33.5 - 35	4 - 7 - 11	Brown to gray silty clay, medium stiff to stiff (sample deflected HNu 0.4 ppm)
38.5 - 40	5 - 8 - 12	Top 6" fine silty sand grading to gray silty clay
43.5 - 45	NA	Brown to gray silty clay
48.5 - 50	9 - 12 - 18	Brown gray silty clay, very stiff, trace sand
53.5 - 55	12 - 18 - 24	Brown to gray silty clay, very stiff

At 1615 hours REM II departed GT-05 and returned to GT-02 to check drilling progress. The subsurface materials encountered had not changed substantially over the past 65 feet (silty clay with some fine to medium sand seams, occasional organics). REM II then departed the site to return to Kansas City.



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FEBRUARY 20, 1988

REM II delivered split soil sample numbers QA3X7001 and QA3X7002 to the EPA Region VII lab. Sample custody was signed over to Mr. William Bunn.

MARCH 8, 1988

On March 8, 1988 REM II returned to the DuPont site to collect split ground water samples. A cross reference of ground water sample numbers is provided in Table 1. Sample locations are depicted in Figure 1.

Upon arrival at the site REM II first observed the purging of PZ-02. Approximately 12 gallons were removed from the well by bailing prior to sampling. REM II noted that samples were collected in accordance with the work plan and sample collection was completed at approximately 0910 hours. The following field parameters were recorded by CH<sub>2</sub>M Hill at PZ-02:

pH - 7.47  
Specific Conductivity - 1320 umhos/cm  
Temperature - 13°C

By comparison specific conductivity measurements recorded by REM II during September 1986 and August 1987 at the Bark residence (the closest well to PZ-02 previously sampled) were 790 umhos/cm and 450 umhos/cm, respectively.

Sampling activities were moved to DP-02 where the well was purged prior to sampling using a decontaminated Brainard-Killman (B-K) pump. Approximately 50 gallons were removed prior to sampling. Samples were collected in accordance with the work plan and sample collection was completed at approximately 1045 hours. The following field parameters were recorded by CH<sub>2</sub>M Hill at DP-02:

pH - 7.01  
Specific Conductivity - 1540 umhos/cm  
Temperature - 11°C

Conductivity measurements recorded by REM II in 1986 and 1987 in MW-4 and MW-5 ranged from 1100 umhos/cm to 3600 umhos/cm and 2500 umhos/cm to 4500 umhos/cm, respectively.

The final REM II split sample was obtained at well DP-05. The B-K pump was used to purge this well prior to sampling and approximately 25 gallons were removed. During purging the well was pumped dry approximately 10 times prior to removing the 25 gallons. Samples were collected in accordance with the work plan and sample collection was completed at 1225 hours. The following field parameters were recorded by CH<sub>2</sub>M Hill at DP-05:

pH - 7.19  
Specific Conductivity - 1480 umhos/cm  
Temperature - 13°C

Conductivity in MW-2 ranged from 810 umhos/cm to 990 umhos/cm during REM II sampling events in 1986 and 1987.

Following the completion of split sample collection the sample custody was signed over to REM II. REM II packaged the samples and departed the site at 1330 hours.

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MARCH 9, 1988

REM II delivered split ground water sample numbers QA3X7003, QA3X7004, and QA3X7005 to the EPA Region VII lab. Sample custody was signed over to Mr. Rodney Brock.

ATTACHMENT 1  
FIELD SHEETS



FIELD SHEET  
 U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
 ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: DuPont Landfill Site Site Number:  
 Location: Clinton (Camanche), Iowa Site Code:

Collected: YR: 86 MO: 2 Day: 16 Time: 1630 Leader: REM II/WCC  
 Convy

Sample Number: QA3X7002 SMO #: NA

Sample Media (circle one):  
SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: wisk source area  
soil/sediment

Sample Split (circle one): YES NO

CHAM Hill Sample # TP-03-01

Sample Container	Tag Color	Preservative	Analysis Requested
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2 X 40 ml VOA	Lime	Cool to 4°C	Volatile organics
1 X 8 oz. jar	Purple	Cool to 4°C	BNA
1 X 8 oz. jar		Cool to 4°C	EP Toxicity metals

Depth: ~5' NA Pan #: NA Aliquots: NA

Samplers: Mark Hinchey CHAM Hill

transferred to Dave Convy REM II oversight

COMMENTS OF FIELD PERSONNEL

Site Description:

DuPont Landfill Site  
 Test pit TP-03  
 Sample depth ~ 5 feet

FIELD SHEET  
 U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
 ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

: Site Name: DuPont Landfill Site Site Number: \_\_\_\_\_  
 : Location: Clinton (Camanche), Iowa Site Code: \_\_\_\_\_

: Collected: YR: ~~86~~ MO: 3 Day: 3 Time: 1017 Leader: REM II/WCC  
 : 83 20 3/3/83 Convy  
 : Sample Number: QA3X7003 SMO #: NA

: Sample Media (circle one):  
 : SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER: \_\_\_\_\_

: Sample Split (circle one): YES NO  
 : CH2MHILL Sample # ETC # BD6524

: Sample Container : Tag Color : Preservative : Analysis Requested :

: 2 X 40 ml VOA	: Lime	: Cool to 4°C	: VOA and Tetrahydrofuran
: 1 X 80 oz. amber	: Purple	: Cool to 4°C	: BNA
: 1 X 1 liter poly	: White	: Cool to 4°C as per PRP	: Total metals <u>Dissolved</u> <u>20 3/3/83</u>
: 1 X 1 liter poly	: Tan	: NaOH to pH 9 2ml Zn Acetate	: Sulfide

Depth: 4.96' Pan #: NA Aliquots: NA

Samplers: JEFF LAMONT  
Richard Newlin

COMMENTS OF FIELD PERSONNEL

: Site Description:  
 : Collected Metals Sample in 1 L poly to be filtered into 2 poly  
 : METALS SAMPLE BOTTLE  
 : INVA BIKZE ROUND - 3ppm  
 : pH = 7.01 metals preserved w/ HNO<sub>3</sub>  
 : Conductivity = 1540  $\mu$ mhos in the field after returning  
 : Temperature = 11°C to lab  
 : WELL # DRO2





FIELD SHEET  
 U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII  
 ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: DuPont Landfill Site Site Number:  
 Location: Clinton (Camanche), Iowa Site Code:

Collected: YR: ~~86~~<sup>87</sup> MO: 3 Day: 8 Time: 12:05 Leader: REM II/WCC  
 Convy

Sample Number: QA3X7005 SMO #: NA

Sample Media (circle one):  
 SOIL, DUST, RINSATE, SEDIMENT, WATER OTHER: \_\_\_\_\_

Sample Split (circle one): YES NO

*CH2M Hill Sample # etc. BDES25*

Sample Container : Tag Color : Preservative : Analysis Requested :

2 X 40 ml VOA	Lime	Cool to 4°C	VOA and Tetrahydrofuran
1 X 80 oz. amber	Purple	Cool to 4°C	BNA
1 X 1 liter poly	White	Cool to 4°C as per PRP	Total metals Discovered 2/3/88
1 X 1 liter poly	Tan	NaOH to pH 9 2ml Zn Acetate	Sulfide

Depth: 4.98' Pan #: NA Aliquots: NA

Samplers: JEFF LAMONT  
RICK NEWELL

COMMENTS OF FIELD PERSONNEL

Site Description:  
 Dissolved Metals Sample collected in 1 liter amber and  
 filtered into 1 liter poly sample bottle.  
 pH = 7.19  
 Conductivity = 1480 µmhos  
 Temperature = 13°C  
 metals preserved w/ HNO<sub>3</sub>  
 after returning to lab  
 WELL DP-05

ATTACHMENT 2  
CHAIN-OF-CUSTODY



